K-Shell-Ewin Pass 80(3)A

GEOLOGICAL BRANCH

ASSESSMENT REPORT

00397

Ewin Pass Lode Copy IN BOREHOLE AND ADIT INFORMATION

397

CROW EST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS	DATE	BEGIN	Aug. 21/80	HOLE No. EP 101
AREA	S.E. B.C.		END	Aug. 26/80	PAGE 1 OF 17

HOLE PARTICULARS

LOCATION	N 5,539,848.46		
	E 660,809.06		
ELEVATION	2085.6	HOLE BEARING (AZ°)	
TOTAL DEPTH	220.4	HOLE ANGLE (°)*	90

LOGGING Det.Den.of Coal Seams

LOGS RUN	Gamma Ray, Neutron, Den., Cal.,
LOGGED BY	Davies Expl.Logging
OTHER TESTS	Directional Survey

COAL CORING PERFORMANCE

CORE DIAMETER		HQ 0-209.1 NQ 209.2-220.4
TOTAL	CORE RECOVERED	
	LENGTH CORED	
	CORE RECOVERY	%

EXAMINATION

LOG USED	Gamma, Den.,
No. OF SEAMS SAMPLED	4
EXAMINER (S)	C. Beavan
DATE	Sept./80

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
1		0.00	10.24	.91	SST	fine to medium-grained, carbonaceous towards bottom, broken	70°										
		10.24	10.40	.16	Shale	carbonaceous, broken											
	10.4																
		10.40	10.90	.50	Shale	as above											
		10.90	11.54	1.64	SST	fine to medium-grained, laminated, shale rip-up clasts towards bottom	70°										
	12.3																
		12.30	12.75	.45	Shale	dark gray											
		12.75	13.01	.26	SST	medium grained, broken											
2																	
		13.01	13.43	.42	SST	as above											
	13.2																
		13.20	14.65	1.45	Shale	dark gray, carbonaceous in places											
	14.9																
		14.90	16.86	1.96	SLTST	laminated, sandy in part, minor calcite-filled fractures	45°										
	17.1																
		17.10	17.24	.14	SLTST	as above											
3																	
		17.24	20.04	2.80	SST	fine to medium grained, laminated and cross-laminated, partly broken, calcite-filled fractures, coarser towards bottom	75°										
	20.1																
		20.10	21.50	1.40	SST	as above but generally medium-grained	70°										
4		21.50	22.05	.55	SST	as above											
	22.1																
		22.10	24.30	2.20	SST	medium to coarse-grained, coal stringers	45°										
	24.5																
		24.50	25.39	.89	SST	as above	60°										

ALL LINEAR UNITS IN METRES

* : MEASURED FROM THE HORIZONTAL PLANE

† : • R &/OR S — GOLDER ASSOCIATES HARDNESS CODE

• RQD — ROCK QUALITY DESIGNATION (%)

FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101

FILE No. BA-211A
REVISED Nov. 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
4	25.3																
		25.30	25.63	.33	SST	as above	55°										
5																	
		25.63	26.80	1.17	SST	coarse-grained, 0.02 m shale at bottom	70°										
	26.8																
		26.80	27.77	.97	SST	some shaley beds with slickensides, some coal stringers, some shale rip-up clasts at bottom											
	27.7																
		27.70	28.48	.78	SST	some silty beds											
	28.6																
		28.60	29.43	.83	SST	as above, calcite vein	50°										
		29.43	29.61	.18	Coal	powder and rubble		4	↑								
6																	
	29.9								EP-10	5.99	0.68	4.61	29.05	65.66	8		Yield 88% *
		29.90	29.97	.07	Coal	rubble			20								
		29.97	30.18	.21	Coal	slickensides, broken											
		30.18	30.40	.22	Coal	dull with bright bands but mostly slickensides, broken											
		30.40	30.64	.24	Coal	dull and bright but mostly slickensides, stick			↓								
		30.64	30.71	.07	Coal	dull, stick, pyrite			↑								
		30.71	30.81	.10	Coal	slickensides, broken											
		30.81	30.95	.14	Coal	dull and bright, broken											
	31.4																
		31.40	31.64	.24	Coal	dull with bright bands, broken											
		31.64	31.75	.11	Coal	dull, rubble											
		31.75	32.04	.29	Coal	powder, some rubble, slickensides											
		32.04	32.11	.07	Coal	carbonaceous, stick											
		32.11	32.49	.38	Coal	powder and rubble, slickensides											
	32.6																
		32.60	32.70	.10	Coal	rubble, dull and bright											
		32.70	33.10	.40	Coal	dull and bright, slickensides, broken, pyrite											
		33.10	33.56	.46	Coal	dull, slickensides, broken, pyrite											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY
* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No. BA-212 A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
6	33.8																
		33.80	34.13	.33	Coal	dull, slickensides											
		34.13	34.24	.11	Coal	powder											
		34.24	34.59	.35	Coal	dull with bright bands, pyrite, stick			EP-101 21	3.46	0.57	2.66	28.92	67.85	8.5		Yield 81% *
		34.59	34.63	.04	Coal	rubble, slickensides											
7																	
		34.63	34.94	.31	Coal	slickensides, stick, dull and bright											
		34.94	35.13	.19	Coal	powder and rubble, slickensides											
	35.4																
		35.40	35.91	.51	Coal	dull and bright, slickensides, broken											
		35.91	36.26	.35	Shale	carbonaceous and stoney coal, broken											
		36.26	36.45	.19	Coal	rubble, dull											
		36.45	36.53	.08	Coal	dull and bright, slickensides, broken											
		36.53	36.73	.20	Coal	powder and rubble, slickensides											
		36.73	36.89	.16	Coal	rubble, dull											
	36.9																
		36.90	37.12	.22	Coal	dull, slickensides, broken											
		37.12	37.25	.13	Coal	dull and bright, slickensides, broken											
		37.25	37.50	.25	Coal	rubble, dull and bright											
		37.50	37.57	.07	Coal	powder											
	37.5					Log thickness 8.2 Core thickness 6.77 Core recovery 83%											
		37.50	38.84	1.34	Shale	dark gray, carbonaceous, coal lenses											
8																	
		38.84	38.93	.09	Shale	as above											
	39.2																
		39.20	40.81	1.61	Shale	some silty beds	60°										
	40.8																
		40.80	41.59	.79	SLTST	light gray, calcite veins and filled fractures											

ALL LINEAR UNITS IN METRES

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FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No. 84-212 A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
8		41.59	42.35	.76	Shale	dark gray											
	42.4																
		42.40	43.20	.80	Shale	darker gray towards bottom	50°										
9																	
		43.20	43.98	.78	Shale	as above											
	43.9																
		43.90	45.53	1.63	Shale	as above with some coal lenses near top	75°										
	45.4																
		45.40	46.97	1.57	Shale	as above but lighter gray towards bottom	40°										
	46.9																
		46.90	47.10	.20	Shale	as above											
10		47.10	48.52	1.42	Shale	as above											
	48.5																
		48.50	50.25	1.75	Shale	as above, bottom 0.40 m rubble											
	50.0																
		50.00	50.69	.69	Shale	dark gray											
	50.6																
		50.60	50.83	.23	Shale	carbonaceous fracture planes											
11		50.83	51.03	.20	Shale	as above, minor calcite veins											
		51.03	51.13	.10	Shale	rubble, mixed shale and coal											
	53.3																
		53.30	54.05	.75	Shale	carbonaceous											
		54.05	54.24	.19	Coal	powder, some shale											
	54.6																
		54.60	54.90	.30	Shale	dark gray											
		54.90	55.18	.28	Coal	mostly powder, slickensides											
	55.2																
		55.20	55.38	.18	Shale	rubble, carbonaceous along broken surfaces											
		55.38	55.70	.32	Shale	dark gray											
		55.70	55.78	.08	Shale	rubble, carbonaceous											
		55.78	56.08	.30	Coal	mostly rubble and powder, slickensides											

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No BA-212 A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
11	56.1																
		56.10	56.21	.11	Coal	as above, pyrite											
		56.21	57.24	1.03	Shale	dark gray, carbonaceous towards top, silty towards bottom	55°										
12																	
		57.24	57.40	.16	Shale	carbonaceous											
	57.6																
		57.60	57.93	.33	Shale	dark gray, carbonaceous in part, slickensided fractures											
		57.93	58.09	.16	Shale	carbonaceous and coaly											
		58.09	58.43	.34	Shale	dark gray	35°										
		58.43	58.64	.21	Shale	carbonaceous and coaly											
	59.0																
		59.00	60.68	1.68	Shale	medium gray, silty in part	55°										
	60.5																
		60.50	61.87	1.37	Shale	as above	50°										
13																	
		61.87	62.25	.38	Shale	dark gray											
	62.2																
		62.20	62.31	.11	Shale	as above											
		62.31	62.60	.29	Shale	carbonaceous and coal lenses, rubble											
		62.60	62.84	.24	Shale	dark gray											
	62.8																
		62.80	64.43	1.63	Shale	as above, becoming increasingly silty	50°										
	64.3																
		64.30	65.75	1.45	SLTST	medium gray, becoming increasingly sandy, laminated and cross-laminated, calcite veins, coal-lined fracture surfaces, some with pyrite	40°										
14																	
		65.75	65.86	.11	SLTST	as above, carbonaceous											
	65.8																
		65.80	67.36	1.56	SST	medium gray, fine-grained, laminated and cross-laminated, mud clasts in places, calcite-lined fractures and veins	30°										R3

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
14	67.4																
		67.40	68.80	1.40	SST	as above, coaly wisps at top	45°										
	68.9																
		68.90	70.10	1.20	SLTST	medium gray, shaley towards bottom	50°										
15																	
		70.10	70.51	.41	Shale	silty in part											
	70.4																
		70.40	71.92	1.52	Shale	as above	55°										
	71.9																
		71.90	73.47	1.57	Shale	as above	45°										
	73.5																
		73.50	74.15	.65	Shale	carbonaceous, coal-lined fractures											
16																	
	74.1																
		74.10	74.70	.60	Shale	dark gray											
	74.7																
		74.70	76.38	1.68	Shale	calcite veins, minor carbonaceous zone, silty towards bottom	50°										
	76.2																
		76.20	77.77	1.57	Shale	as above	40°										
	77.7																
		77.70	78.06	.36	Shale	as above											
17																	
		78.06	79.21	1.15	SLTST	some shaley beds, some calcite veins	40°										
	79.2																
		79.20	80.65	1.45	Shale	dark gray, minor silty beds											
	80.3																
		80.80	80.99	.19	Shale	as above											
		80.99	82.40	1.41	SLTST	light gray, laminated and cross-laminated, minor sandy beds, some calcite veins	50°										
18																	
	82.3																
		82.30	83.22	.92	Shale	dark gray, minor silty beds	50°										
		83.22	83.97	.75	SLTST	laminated and cross-laminated, some laminations bent and off-set along calcite veins	40°										

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No BA-212 A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	BEDDING ANGLE (▲)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
18	82.3																
		82.30	83.75	1.45	Shale	some silty beds	55°										
	83.8																
		83.80	84.38	.58	Shale	as above											
		84.38	84.84	.46	SLTST	light gray, some calcite veins	40°										
19																	
		84.84	85.39	.55	SLTST	as above											
	85.3																
		85.30	86.89	1.59	Shale	dark gray, silty towards bottom	40°										
	86.9																
		86.90	88.50	1.60	Shale	approximately one-third siltstone											
	88.4																
		88.40	88.79	.39	Shale	increasingly silty, carbonaceous wisps											
20																	
		88.79	88.87	.08	Shale	as above											
		88.87	88.91	.04	Coal	dull and bright, stick											
		88.91	89.07	.16	Coal	mixed coal and bone, rubble											
	89.1																
		89.10	89.20	.10	Shale	coaly											
		89.20	89.24	.04	Coal	slickensides, rubble											
		89.24	89.44	.20	Shale	coaly and bone, stick											
									EP101	3.22	0.57	3.05	26.73	69.65	8.5		Yield 94% *
		89.44	89.65	.21	Coal	dull and bright, stick		5	22								
		89.65	89.88	.23	Coal	dull, stick, some slickensides											
		89.88	89.99	.11	Coal	slickensides, rubble											
		89.99	90.09	.10	Coal	dull and bright, stick											
		90.09	90.45	.36	Coal	dull with bright bands, stick, pyrite											
	90.7								EP101	4.38	0.59	3.53	26.39	69.49	8		Yield 88% *
		90.70	90.84	.14	Coal	rubble, slickensides			23								
		90.84	90.96	.12	Coal	dull and bright, stick											
		90.96	91.13	.17	Coal	dull, broken											

ALL LINEAR UNITS IN METRES

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* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. CONTINUED EP 101

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % e.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
20		91.13	91.56	.43	Coal	dull and bright, broken			↓								
						Log thickness 1.8											
						Core thickness 1.57											
						Core recovery 87%											
		91.56	91.58	.02	Shale	carbonaceous			↑								
									EP101	8.75	0.53	5.01	26.62	67.84	8.5		Yield 93% *
		91.58	91.64	.06	Coal	bright, stick			24								
	91.7																
		91.70	91.74	.04	Coal	rubble											
		91.74	92.43	.69	Coal	dull and bright, broken			↓								
		92.43	92.49	.06	Shale	carbonaceous											
	93.0																
		93.00	93.11	.11	Shale	slickensides											
		93.11	93.15	.04	Shale	rubble											
		93.15	93.39	.24	Coal	dull, broken and rubble, slickensides											
21																	
		93.39	93.49	.10	Coal	~~bright with dull bands, broken~~											
		93.49	93.75	.26	Coal	bone with bright bands, broken											
		93.75	93.94	.19	Coal	powder and rubble, bone and coal											
	93.9																
		93.90	94.06	.16	Coal	powder and rubble, bone and coal											
		94.06	94.10	.04	Shale	coaly											
		94.10	94.18	.08	Coal	bone and bright coal, stick											
		94.18	94.32	.14	Shale	coaly, mostly rubble											
	94.2																
		94.20	94.43	.23	Shale	carbonaceous and coaly, rubble											
		94.43	94.91	.48	Shale	dark gray, carbonaceous in places, coaly slickensides											
		94.91	95.41	.50	Shale	rubble and powder, mixed coal and shale											
	95.4																
		95.40	96.42	1.02	Shale	carbonaceous in places											

ALL LINEAR UNITS IN METRES

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FF —•— FRACTURE FREQUENCY
* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No 8A-212A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST ● o.r.b.	MOIST residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
21	96.6																
		96.60	97.30	.70	Shale	as above, coaly zones											
	97.2																
		97.20	97.31	.11	Shale	dark gray											
22																	
		97.31	97.39	.08	Shale	rubble and carbonaceous and coaly											
		97.39	97.81	.42	Shale	carbonaceous											
		97.81	98.04	.23	Coal	dull and bright, broken											
		98.04	98.24	.20	Shale	carbonaceous											
	98.5																
		98.50	99.00	.50	Shale	minor coal lenses											
	99.1																
		99.10	100.66	1.56	Shale	as above											
	100.6																
		100.60	101.62	1.02	Shale	coal-lined fractures towards top											
23																	
		101.62	102.19	.57	Shale	dark gray											
	102.1																
		102.10	103.73	1.63	Shale	as above											
	103.6																
		103.60	104.24	.64	Shale	as above, carbonaceous at bottom											
		104.24	104.60	.36	Shale	carbonaceous shale and coal mixed in rubble											
	104.5																
		104.50	105.17	.67	Shale	dark gray											
		105.17	105.33	.16	SLTST	light gray, laminated	60°										
24																	
		105.33	105.84	.51	SLTST	as above, increasingly shaley	55°										
		105.84	106.04	.20	Shale	dark gray											
	106.1																
		106.10	107.40	1.30	Shale	as above, some silty zones, large calcite-filled fracture in middle	60°										
		107.40	107.61	.21	Coal	rubble, slickensides											
		107.61	107.77	.16	Shale	dark gray, coal lenses with pyrite											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No BA-212A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
24	107.7																
		107.70	107.80	.10	Coal	rubble											
		107.80	108.38	.58	Shale	highly carbonaceous, coal-lined fractures											
		108.38	109.33	.95	Shale	less carbonaceous with scattered coal lenses											
									EP101	7.69	0.55	2.94	23.71	72.80	5		Yield 86% *
		109.33	109.40	.07	Coal	rubble		6	25								
25	109.4																
		109.40	109.47	.07	Coal	dull, slickensides, broken											
		109.47	109.58	.11	Shale	carbonaceous											
									EP101	9.09	0.49	3.85	25.32	70.34	8		Yield 67% *
		109.58	109.67	.09	Coal	dull and bright, stick			26								
		109.67	109.79	.12	Coal	slickensides, dull, stick											
		109.79	109.92	.13	Coal	dull with bright bands, slickensides, broken											
		109.92	110.26	.34	Coal	dull and bright, broken, some slickensides											
		110.26	110.43	.17	Coal	rubble and powder, dull											
	110.6																
		110.60	110.62	.02	Coal	dull, broken											
						Log thickness 1.2											
						Core thickness 1.12											
						Core recovery 93%											
		110.62	110.79	.17	Shale	dark gray, carbonaceous with coal lenses											
		110.79	111.40	.61	SLTST	light gray, minor calcite veins	60°										
	111.6																
		111.60	112.32	.72	SLTST	as above, shaley in part with coaly lenses	55°										
	112.5																
		112.50	112.81	.31	SLTST	as above	30°										R4
		112.81	113.81	1.00	Shale	some silty beds	60°										
26																	
		113.81	114.07	.26	Shale	dark gray											
	114.0																
		114.00	114.78	.78	Shale	as above											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY
* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No BA-212 A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
26	114.9																
		114.90	116.15	1.25	Shale	some coal-lined fractures											
	116.1																
		116.10	117.32	1.22	Shale	dark gray											
		117.32	117.51	.19	SST	fine-grained, light gray											R4
	117.7																
		117.70	118.17	.47	SST	some well-laminated and some more massive	45°										
		118.17	119.29	1.12	SST	as above, some silty beds	50°										
	119.2																
		119.20	120.70	1.50	SST	as above, some calcite veins and fracture fillings	55°										
	120.7																
		120.70	121.42	.72	SST	fine-grained	60°										
		121.42	122.28	.86	SLTST	medium gray, sandy in part											
		122.28	123.78	1.50	SLTST	shaley in part, laminated and cross-laminated	60°										
	123.7																
		123.70	125.21	1.51	SLTST	as above, both shaley and sandy in part	50°										
	125.3																
		125.30	126.60	1.30	SLTST	as above	60°										
29																	
		126.60	127.00	.40	SST	fine-grained, calcite-filled fractures											
	126.8																
		126.80	128.30	1.50	SST	increasingly coarser grained, calcite-filled fractures, shale rip-up clasts in one place	60°										R3
	128.3																
		128.30	129.86	1.56	SST	medium grained, calcite-filled fractures, coarse grained at bottom											
	129.8																
		129.80	130.46	.66	SST	coarse grained, cross-laminated	60°										
30		130.46	131.36	.90	SST	as above, coal-lined fractures	55°										R4
	131.4																
		131.40	132.85	1.45	SST	as above, coal wisps and stringers											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No. RA-212 A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
30	132.7																
		132.70	133.62	.92	SST	as above, some pebble zones											R4
		133.62	134.07	.45	Shale	dark gray, some silty beds, some coal lenses at bottom	60°										
		134.07	134.28	.21	SST	coarse-grained, some coal lenses											
	134.3																
		134.30	134.52	.22	SST	as above, increasingly carbonaceous											
31																	
		134.52	135.56	1.04	SST	pebble beds with pebbles up to 4 mm, coal stringers and wisps											
	135.6																
		135.60	137.10	1.50	SST	coarse-grained, increasingly carbonaceous with coal stringers and wisps towards bottom	60°										
	137.2																
		137.20	138.76	1.56	SST	as above, some pebble beds, some finer-grained beds, carbonaceous in part	50°										
32																	
	138.7																
		138.70	139.15	.45	SST	as above, pyrite associated with coal											
	139.1																
		139.10	139.63	.53	SST	pebble bed at top, medium to coarse grained at bottom	75°										
		139.63	140.50	.87	SLTST	laminated	55°										
	140.5																
		140.50	142.04	1.54	SLTST	as above, some sandy beds	70°										
	142.0																
		142.00	142.62	.62	SLTST	as above	65°										
33																	
		142.62	143.15	.53	SLTST	as above	70°										
		143.15	143.43	.28	Congl.	pebbles to 1 cm, also medium to coarse-grained sandstone											
	143.6																
		143.60	145.16	1.56	Congl.	as above, some coaly fractures, some coal stringers and wisps											R3
	145.1																
		145.10	147.00	1.90	Congl.	as above, in places altering conglomerate and sandstone beds, some pebbles up to 3 cm (some coal pebbles)	55°										

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No. BA-212 A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
34																	
		147.00	148.10	1.10	Congl.	conglomerate beds graded - coarse at bottom grading smaller upwards, some coal stringers and lenses in places	70°										
	148.1																
		148.10	150.39	2.29	Congl.	as above but no coal											
		150.39	150.89	.50	SST	coarse-grained, scattered pebbles											
	151.2																
		151.20	151.58	.38	SST	as above											
35																	
		151.58	153.15	1.57	SS/Congl	alternating sandstone/conglomerate beds, each averaging 0.2 m											
		153.15	154.01	.86	Shale	dark gray											
	154.1																
		154.10	155.96	1.86	Shale	as above, minor slickensides											
		155.96	157.13	1.17	Shale	as above, some silty beds, minor coal lenses	50°										
	157.0																
		157.00	157.76	.76	Shale	as above											
		157.76	159.56	1.80	SLTST	some shale and sand beds, laminated and cross-laminated	55°										
		159.56	160.53	.97	Shale	dark gray, some siltstone beds	55°										
37	160.2																
		160.20	163.18	2.98	Shale	as above	60°										
	163.4																
		163.40	164.61	1.21	Shale	as above, becoming increasingly silty											
38																	
		164.61	166.42	1.81	SLST/SH	alternating beds of 0.3 m											
	166.4																
		166.40	168.91	2.51	SLST/SH	as above, becoming increasingly shaley towards bottom	50°										
39																	
		168.91	169.17	.26	SLST/SH	as above											
	169.5																
		169.50	171.20	1.70	SLTST	medium gray, laminated and cross-laminated, calcite veins and filled fractures, some fine-grained sandy beds	45°										R3

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
39	171.9																
		171.90	173.57	1.67	SLTST	as above, increasingly shaley towards bottom	50°										
	172.5																
		172.50	173.01	.51	Shale	some silty beds	55°										
40																	
		173.01	173.72	.71	Shale	as above											
		173.72	175.52	1.80	SLTST	laminated and cross-laminated, some shaley beds, some scours (siltstone into shale)	45°										
	175.6																
		175.60	177.28	1.68	SLTST	as above, increasingly shaley	55°										
41																	
		177.28	178.63	1.35	SLST/SH	alternating beds about 0.2 m thick, calcite veins	65°										
	178.6																
		178.60	180.65	2.05	SLST/SH	as above, some sandy beds, (sharp lower shale to siltstone contacts in places)	55°										
		180.65	181.55	.90	Shale	dark gray, minor silty beds, calcite-filled fractures	50°										
42	181.7																
		181.70	184.52	2.82	Shale	as above, increasingly silty towards bottom	60°										
	184.7																
		184.70	186.18	1.48	Shale	as above with silty beds throughout	50°										
43																	
		186.18	187.85	1.67	Shale	dark gray											
	187.7																
		187.70	188.48	.78	Shale	as above											
		188.48	189.48	1.00	SLTST	some shaley beds, calcite fracture fillings	55°										
		189.48	190.38	.90	Shale	dark gray, calcite fractures fillings											
44																	
	190.2																
		190.20	190.96	.76	Shale	dark gray, broken											
	191.3																
		191.30	193.50	2.20	Shale	as above, abundant calcite fracture fillings and veins											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No. BA-212 A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
44	193.4																
		193.40	194.55	1.15	Shale	as above but not as much calcite, some silty beds	50°										
45		194.55	196.45	1.90	Shale	as above, but no siltstone, becoming slightly carbonaceous at bottom											
	196.6																
		196.60	197.54	.94	Shale	as above, slightly carbonaceous throughout											
		197.54	197.57	.03	Coal	bone		8									
		197.57	197.63	.06	Coal	bright, broken											
		197.63	197.66	.03	Coal	bright with dull bands, broken											
		197.66	197.82	.16	Coal	dull and bright, broken											
		197.82	197.92	.10	Shale	carbonaceous											
	198.4								EP101 27	7.37	0.32	5.46	25.31	68.91	8		Yield: 62% *
		198.40	198.51	.11	Shale	carbonaceous											
		198.51	198.56	.05	Coal	rubble and powder											
		198.56	198.73	.17	Coal	rubble, slickensides											
		198.73	198.76	.03	Coal	dull and bright, broken											
		198.76	199.19	.43	Coal	rubble and powder (dull and bright)											
46	199.9																
		199.90	200.00	.10	Coal	dull with bright bands, broken											
		200.00	200.78	.78	Coal	rubble, dull and bright											
	201.5																
		201.50	201.65	.15	Coal	rubble, dull and bright											
		201.65	201.78	.13	Coal	dull with bright bands, stick											
		201.78	202.00	.22	Coal	rubble, dull and bright											
		202.00	202.07	.07	Coal	dull, stick											
		202.07	202.14	.07	Coal	bright with dull bands, broken											
		202.14	202.44	.30	Coal	dull with bright bands, broken											
		202.44	202.67	.23	Coal	dull with bright bands, stick											

ALL LINEAR UNITS IN METRES

† :*R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
*RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
46		202.67	202.91	.24	Coal	rubble, dull and bright											
		202.91	203.02	.11	Coal	dull, broken											
	302.0																
		203.00	203.09	.09	Coal	dull, broken											
		203.09	203.86	.77	Coal	rubble, dull and bright											
		203.86	204.00	.14	Coal	dull with bright bands, stick											
		204.00	204.25	.25	Coal	rubble, dull and bright											
	204.2																
		204.20	204.29	.09	Coal	dull, stick											
		204.29	204.35	.06	Coal	dull with bright bands, stick											
		204.35	204.44	.09	Coal	rubble, dull and bright											
		204.44	204.60	.16	Coal	bright with dull bands, broken											
		204.60	204.63	.03	Shale	carbonaceous											
									EP101	8.22	0.40	4.54	26.05	69.01	8.5		Yield 75%
		204.63	204.68	.05	Coal	rubble and powder			28								
		204.68	204.76	.08	Coal	dull with bright bands, stick											
47																	
		204.76	204.87	.11	Coal	dull with bright bands, stick	50°										
		204.87	205.21	.34	Coal	rubble, dull with bright bands											
	206.0																
		206.00	206.26	.26	Coal	dull and bright, broken											
		206.26	206.43	.17	Coal	dull with bright bands, broken											
		206.43	206.47	.04	Coal	bright, broken											
		206.47	206.94	.47	Coal	rubble and powder, dull and bright											
	207.4																
		207.40	207.48	.08	Coal	dull with bright bands, stick											
		207.48	207.81	.33	Coal	dull and bright, broken											
		207.81	208.66	.85	Coal	rubble, dull and bright											
		208.66	208.84	.18	Coal	powder											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No 8A-212 A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 101 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
47																	
	209.1					reduced to NQ rods											
	210.6																
		210.60	210.69	.09	Coal	rubble, dull and bright											
		210.69	210.97	.28	Coal	powder											
		210.97	211.15	.18	Coal	dull with bright bands, broken											
		211.15	211.22	.07	Coal	rubble, dull and bright											
	211.8																
		211.80	211.98	.18	Coal	powder											
		211.98	212.43	.45	Coal	rubble, dull and bright											
48																	
		212.43	213.04	.61	Coal	dull and bright, broken			↓								
						Log thickness 16.4											
						Core thickness 10.17											
						Core recovery 62%											
	213.3																
		213.30	213.44	.14	Shale	dark gray to black, carbonaceous											
	214.3																
		214.30	215.66	1.36	Shale	dark gray, becoming silty towards bottom	50°										
	215.6																
		215.60	215.98	.38	SLTST	laminated and cross-laminated, carbonaceous at bottom	55°										R3
	216.3																
		216.30	216.70	.40	Shale	dark gray, some rubble											
		216.70	217.21	.51	SLTST	laminated and cross-laminated, some shale beds	60°										
		217.21	217.74	.53	Shale	dark gray, minor silty beds	60°										
49																	
		217.74	219.22	1.48	Shale	as above, minor calcite veins											
	219.3																
		219.30	219.97	.67	Shale	as above, carbonaceous at bottom	60°										
	220.4																
						Ends of Drill Hole EP 101											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 101 CONTINUED

FILE No 8A-212 A

CROW NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS	DATE	BEGIN	Aug. 12/80	HOLE No. EP 102
AREA	S.E. BRITISH COLUMBIA		END	Aug. 20/80	PAGE 1 OF 20

HOLE PARTICULARS

LOCATION	5,539, 593.93 N 661, 093.58 E		
ELEVATION	2175.3	HOLE BEARING (AZ°)*	100m .079 260m 082
TOTAL DEPTH	263.6	HOLE ANGLE (°)*	100m 59° 260m 61°

LOGGING

LOGS RUN	Gamma, Neutron, Density, Detailed density, caliper
LOGGED BY	Davies Exploration Logging Ltd.
OTHER TESTS	Directional Survey

COAL CORING PERFORMANCE

CORE DIAMETER		HQ
TOTAL	CORE RECOVERED	
	LENGTH CORED	
	CORE RECOVERY	%

EXAMINATION

LOG USED	Gamma-Density
No. OF SEAMS SAMPLED	7
EXAMINER (S)	C. Beavan
DATE	Aug./1980

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
1		0	0.31	.31	SLTST	light gray, laminated and cross-laminated, broken and weathered, calcite fracture fillings											
	3.7	3.70	5.31	1.61	SLTST	as above, some is orange weathered	85°										
	5.2	5.20	6.51	1.31	SLTST	as above, some shaley beds (0.1 m)											
	6.4	6.40	7.14	.74	SLTST	as above											
2		7.14	7.95	.81	SLTST	as above											
	7.9	7.90	8.45	.55	SLTST	as above, shale rip-up clasts											
		8.45	9.36	.91	SST	medium grained, carbonaceous wisps, stringers											
	9.4	9.40	11.04	1.64	SST	as above, minor calcite veins											
	11.0	11.0	11.15	.15	SST	as above											
3		11.15	12.55	1.40	SST	as above											
	12.5	12.50	12.55	.05	SST	as above											
		12.55	13.25	.70	Shale	dark gray, slightly silty in places											
		13.25	14.18	.93	SST	medium gray, carbonaceous wisps, stringers and zones at bottom, minor calcite veins											R3
	14.0	14.00	14.44	.44	SST	as above											
		14.44	15.10	.66	Shale	dark gray, sandy towards bottom											

ALL LINEAR UNITS IN METRES

* : MEASURED FROM THE HORIZONTAL PLANE

† : • R &/OR S — GOLDER ASSOCIATES HARDNESS CODE

• RQD — ROCK QUALITY DESIGNATION (%)

FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102

FILE No. BA-211A
REVISED Nov. 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
4																	
	15.5																
		15.50	17.08	1.58	SST	medium to coarse grained, coal wisps and lenses, some pebble bands, some finer beds	85°										
	17.1																
		17.10	18.65	1.55	SST	as above, some lighter coloured bands	75°										
	18.6																
		18.60	18.92	.32	SST	as above											
		18.92	19.65	.73	SLTST	medium gray, laminated and cross-laminated	85°										
5																	
		19.65	20.19	.54	SLTST	as above, not laminated at bottom											
	20.1																
		20.10	21.68	1.58	SST	fine-grained, some silty beds, laminated	85°										
	21.6																
		21.60	21.74	.14	SST	as above											
		21.74	21.98	.24	SST/ Congl.	medium-grained sandstone and pebble bands interbedded	90°										R3
		21.98	22.20	.22	Congl.	graded with bigger pebbles (0.01 m) at bottom up to 0.001 m at top, coaly at top											
		22.20	22.98	.78	Shale	black, coal lenses											
	23.2																
		23.20	23.76	.56	Shale	as above											
6																	
		23.76	26.18	2.42	Shale	as above											
	26.2																
		26.20	28.13	1.93	Shale	becoming lighter (dark gray), becoming less carbonaceous											
7																	
		28.13	29.30	1.17	Shale	as above											
	29.3																
		29.30	31.80	2.50	SLTST	some shaley beds, numerous sedimentary structures (flame, scour, cross-lamination)	65°										
		31.80	32.42	.62	Shale	dark gray, some silty areas											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No. 8A-212A
REVISED Nov. 1978

CRL ... NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
8	32.3																
		32.30	35.33	3.03	Shale	as above, some calcite-filled fractures and veins											
	35.4																
		35.40	36.56	1.16	Shale	as above											
9																	
		36.56	38.36	1.80	Shale	increasing silty beds	75°										
	38.4																
		38.40	40.87	2.47	SLTST	light and medium gray, laminated and cross-laminated	85°										
10																	
		40.87	41.43	.56	SLTST	as above											
	41.5																
		41.50	44.53	3.03	Shale	dark gray, some silty beds	80°										
	44.5																
		44.50	45.22	.72	Shale	as above											
11																	
		45.22	47.42	2.20	Shale	as above, carbonaceous at bottom	70°										
	47.5																
		47.50	47.89	.39	Shale	increasingly carbonaceous											
		47.89	48.15	.26	Coal	dull and bright, stick, slickensides		8	↑								
		48.15	48.24	.09	Coal	bright, stick											
		48.24	48.52	.28	Coal	dull and bright, stick											
		48.52	48.82	.30	Coal	broken, slickensides, pyrite			EP-102								
		48.82	49.10	.28	Coal	dull and bright, stick			31	6.77	0.71	4.59	25.67	69.03	8.5		Yield 83% *
	49.1																
		49.10	49.28	.18	Coal	slickensides, broken											
		49.28	49.32	.04	Shale	gray			↓								
		49.32	49.68	.36	Coal	dull and bright, slickensides			↑								
12																	
		49.68	49.94	.26	Coal	bright with dull bands, stick											
		49.94	50.03	.09	Coal	powder											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
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FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No 8A-212A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
12	50.6																
		50.60	51.38	.78	Coal	dull with bright bands, stick											
		51.38	51.44	.06	Coal	bright, stick											
		51.44	51.98	.54	Coal	dull with bright bands, slickensides, stick											
		51.98	52.09	.11	Coal	dull and bright, broken											
		52.09	52.65	.56	Coal	powder and rubble, slickensides											
	52.9																
		52.90	53.16	.26	Coal	dull, stick											
		53.16	53.61	.45	Coal	dull with bright bands, stick, pyrite											
		53.61	53.71	.10	Coal	bright, stick, slickensides											
		53.71	53.95	.24	Coal	dull and bright, broken, slickensides											
		53.95	54.10	.15	Coal	bright, stick											
		54.10	54.30	.20	Coal	powder											
		54.30	54.55	.25	Coal	dull, stick											
		54.55	54.82	.27	Coal	rubble and powder, slickensides											
	54.9																
		54.90	55.13	.23	Coal	slickensides, broken											
		55.13	55.53	.40	Coal	dull with bright bands, slickensides, stick			EP-102 32	3.96	0.77	4.97	25.72	68.54	8		Yield 83% *
		55.53	56.15	.62	Coal	dull, slickensides, stick											
		56.15	56.35	.20	Coal	dull with bright bands, stick											
		56.35	56.53	.18	Coal	powder, dull and bright											
		56.53	56.60	.07	Coal	dull with bright bands, broken											
	56.7																
		56.70	57.35	.65	Coal	dull and bright, slickensides, stick											
		57.35	57.63	.28	Coal	powder and rubble, dull and bright, slickensides											
		57.63	58.08	.45	Coal	powder											
	58.8																
		58.80	59.05	.25	Shale	carbonaceous, some coal lenses											

ALL LINEAR UNITS IN METRES

† :-R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No BA-212A
REVISED Aug. 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
		59.05	59.22	.17	Coal	dull, broken											
		59.22	59.82	.60	Coal	dull and bright, stick											
14																	
		59.82	60.10	.28	Coal	bright with dull bands, slickensides, stick											
		60.10	60.18	.08	Coal	powder											
		60.18	60.30	.12	Coal	dull, stick											
		60.30	60.56	.26	Coal	powder											
	60.7																
		60.70	60.11	.04	Coal	bright, stick											
		60.11	60.49	.38	Coal	dull with bright bands, slickensides, stick											
		60.49	60.55	.06	Coal	powder											
		60.55	60.76	.21	Coal	bright with dull bands, broken											
		60.76	60.94	.18	Coal	dull with bright bands, stick											
		60.94	61.48	.54	Coal	powder, dull and bright											
	62.5																
		62.50	62.79	.29	Coal	dull, stick											
		62.79	62.84	.05	Coal	dull with bright bands, stick											
		62.84	62.95	.11	Coal	bright with dull bands, broken											
		62.95	63.09	.14	Coal	dull with bright bands, stick			↓								
						Log thickness 15.0											
						Core thickness 12.95											
						Core recovery 86%											
	63.1																
		63.10	63.99	.89	Shale	black, carbonaceous with coal lenses											
		63.99	64.27	.28	Coal	bright with dull bands, stick											
		64.27	64.32	.05	Coal	bone, stick											
	64.3																
		64.30	65.09	.79	SLTST	medium gray, laminated but not well	80°										R3
	65.8																
		65.80	68.30	2.50	SLTST	as above but better laminated towards bottom, some shale towards middle with some coal lenses	70°										

ALL LINEAR UNITS IN METRES

† :R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
*RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
16																	
		68.30	68.41	.11	SLTST	as above											
		68.41	70.06	1.65	SLTST	as above with increasing shale beds											
		70.06	71.46	1.40	Shale	dark gray											
	71.9																
		71.90	72.85	.95	Shale	as above											
17																	
		72.85	74.76	1.91	Shale	as above, carbonaceous with coal stringers and blebs towards bottom											
	75.0																
		75.00	77.42	2.42	Shale	dark gray											
18																	
		77.42	77.85	.43	Shale	as above											
	78.0																
		78.00	81.02	3.02	Shale	as above											
	81.0																
		81.00	81.71	.71	SLTST	medium gray, featureless											R3
19																	
		81.71	84.08	2.37	SLTST	as above											
	84.1																
		84.10	86.03	1.93	SLTST	as above but slightly laminated											
20																	
		86.03	87.13	1.10	SLTST	increasingly laminated	75°										
	87.2																
		87.20	90.34	3.14	SLTST	as above but becoming less laminated at bottom and more coarse											
21																	
	90.2																
		90.20	93.02	2.82	SST	mostly fine-grained with some medium-grained beds in middle section, shale rip-up clasts, and coal lenses and stringers, pyrite coating one fracture	80°										
	93.2																
		93.20	94.62	1.42	SST	mostly medium grained, some calcite-filled fractures	85°										

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
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FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No BA-212 A
REVISED Nov. 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
22																	
		94.62	94.90	.28	SST	featureless											
		94.90	96.22	1.32	Shale	dark gray, some coaly fractures											
	96.3																
		96.30	99.10	2.80	Shale	as above											
23																	
		99.10	99.33	.23	Shale	as above											
	99.4																
		99.40	101.41	2.01	Shale	as above											
		101.41	102.43	1.02	SLTST	medium to light gray, laminated and cross-laminated, some calcite veins, shaley towards bottom	85°										
	102.4																
		102.40	102.90	.50	SLTST	as above but no fractures											
		102.90	103.56	.66	Shale	dark gray											
24																	
		103.56	104.04	.48	Shale	as above											
		104.04	104.42	.38	SLTST	carbonaceous at top, laminated	85°										
		104.42	105.49	1.07	Shale	dark gray, some silty beds (0.1 m), carbonaceous in part											
	105.5																
		105.50	107.95	2.45	Shale	as above but becoming darker towards bottom											
		107.95	108.41	.46	Shale	black											
		108.41	108.44	.03	Coal	dull											
	108.5																
		108.50	111.54	3.04	Shale	black at top grading to medium gray towards bottom, carbonaceous towards top											
	111.6																
		111.60	112.38	.78	Shale	as above but not carbonaceous											
26																	
		112.38	113.58	1.20	Shale	as above, silty in places											
		113.58	114.79	1.21	SLTST	light to medium gray, laminated in places	75°										R3

ALL LINEAR UNITS IN METRES

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•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No 8A-212 A
REVISED May 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
26	114.6																
		114.60	116.62	2.02	SLTST	laminated and cross-laminated, some calcite veins and fracture fillings	75°										
27																	
		116.62	117.65	1.03	SLTST	as above											
	117.7																
		117.70	120.73	3.03	SLTST	as above											
	120.7																
		120.70	120.85	.15	SLTST	as above											
28																	
		120.85	123.73	2.88	SLTST	as above	80°										
	123.7																
		123.70	125.23	1.53	SLTST	as above	85°										
29																	
		125.23	126.74	1.51	SLTST	as above											
	126.8																
		126.80	129.72	2.92	SLTST	as above	85°										
30																	
		129.72	129.89	.17	Shale	medium gray											
	129.8																
		129.80	131.80	2.00	Shale	as above, slightly silty at top											
		131.80	133.81	2.01	Shale	silty towards top, becoming darker with depth, coal lenses towards bottom											
		133.81	133.93	.12	Shale	highly carbonaceous											
31																	
		133.93	134.02	.09	Coal	dull and bright, stick		9 Upper	EP-102								
		134.02	134.08	.06	Coal	dull, stick			33	1.24	0.64	7.61	22.94	68.81	8		Yield 75% *
		134.08	134.36	.28	Coal	bright with dull bands, stick											
	134.7																
		134.70	135.00	.30	Coal	bright and dull, stick											
		135.00	135.09	.09	Coal	dull, stick											
		135.09	135.33	.24	Coal	dull and bright, broken											
		135.33	135.53	.20	Coal	dull, stick											

ALL LINEAR UNITS IN METRES

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FF — FRACTURE FREQUENCY

* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
31		135.53	135.66	.13	Coal	dull and bright, broken											
		135.66	135.97	.31	Coal	slickensides											
		135.97	136.37	.40	Coal	dull with bright bands, stick											
		136.37	136.40	.03	Shale	carbonaceous											
		136.40	136.45	.05	Coal	bright, stick											
		136.45	136.47	.02	Shale	carbonaceous											
	136.5																
		136.50	136.70	.20	Shale	as above											
		136.70	137.01	.31	Coal	dull with bright bands, stick											
		137.01	137.32	.31	Coal	bright with dull bands, stick											
		137.32	137.42	.10	Oolitic Coal	black, heavy			EP-102 34	1.35	0.63	6.50	21.85	71.02	3.5		Yield 72% *
		137.42	137.59	.17	0.Coal	dull with bright bands, stick											
		137.59	137.90	.31	0.Coal	dull, stick											
		137.90	138.27	.37	0.Coal	dull with bright bands, stick											
32	139.0																
		139.00	139.49	.49	0.Coal	dull, stick											
		139.49	139.66	.17	0.Coal	bright, rubble											
		139.66	140.80	1.14	0.Coal	dull, broken											
	140.7																
		140.70	140.87	.17	0.Coal	dull, broken											
		140.87	141.10	.23	0.Coal	dull with bright bands, stick											
		141.10	141.17	.07	Shale	carbonaceous											
		141.17	141.22	.05	Coal	bright with dull bands, stick											
		141.22	141.67	.45	Coal	dull with bright bands, stick											
		141.67	142.21	.54	Coal	dull and bright, stick											
	142.0																
		142.00	142.21	.21	Coal	dull with bright bands, stick											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY
* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No. BA-212 A
REVISED Nov. 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
32																	
		142.21	142.40	.19	Oolitic Coal	black, heavy, some bright bands											
		142.40	142.87	.47	Coal	dull and bright, stick											
		142.87	143.14	.27	Coal	dull with bright bands, stick											
33																	
		143.14	143.66	.52	Coal	dull with bright bands, stick											
		143.66	143.72	.06	Shale												
		143.72	144.05	.33	Coal	dull with bright bands, stick											
	144.0																
		144.00	144.14	.14	Shale	carbonaceous											
		144.14	144.31	.17	Coal	dull and bright, stick											
						Log thickness 10.2 Core thickness 8.24 Core recovery 81%											
		144.31	145.07	.76	Shale	dark gray to black, carbonaceous											
	145.1																
		145.10	145.20	.10	Shale	as above											
		145.20	147.15	1.95	SLTST	medium gray, laminated, some shale beds (0.1 m thick), some calcite-filled fractures	90°										
34																	
	147.2																
		147.20	147.71	.51	Shale	dark gray, carbonaceous, minor calcite veins											
	147.8																
		147.80	148.99	1.19	Shale	as above											
		148.99	149.06	.07	Coal	bright with dull bands, stick		10B Upper	EP-102 35								
		149.06	149.07	.01	Shale					2.12	0.45	10.18	21.08	68.29	3.5		Yield 52% *
		149.07	149.16	.09	Coal	powder											
		149.16	149.47	.31	Coal	dull with bright bands, stick											
		149.47	149.55	.08	Shale												
		149.55	149.64	.09	Coal	dull and bright, stick			EP-102 36	1.23	0.42	6.15	20.81	72.62	2.5		Yield 67% *

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY
* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No 8A-212A
REVISED Nov 1978

CRO..S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ MOONG ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
34		149.64	149.65	.01	Shale												
		149.65	149.68	.03	Coal	dull with bright bands, stick											
		149.68	149.74	.06	Shale	carbonaceous											
		149.74	149.96	.22	Coal	dull with bright bands, stick											
		149.96	149.97	.01	Shale												
		149.97	150.16	.19	Coal	dull with bright bands, broken			↓								
						Log thickness 1.2											
						Core thickness 1.17											
						Core recovery 100%											
	150.3																
		150.30	151.15	.85	Shale	black, carbonaceous											
		151.15	151.52	.37	Shale	as above											
35																	
		151.52	153.05	1.53	Shale	as above											
	153.2																
		153.20	153.72	.52	Shale	not carbonaceous											
	153.6																
		153.60	154.40	.80	Shale	concentration of calcite veins at bottom											
	154.5																
		154.50	155.70	1.20	Shale	black, carbonaceous at bottom											
36																	
		155.70	157.11	1.41	Shale	as above, again carbonaceous especially at bottom											
	157.3																
		157.30	157.87	.57	Shale	as above											
		157.87	157.93	.06	Coal	dull and bright, broken		10A Upper	↑ EP-102								
		157.93	158.00	.07	Shale	carbonaceous			37	0.87	0.65	7.73	20.74	70.88	3.5		Yield 50% *
		158.00	158.08	.08	Coal	bright with dull bands, stick											
		158.08	158.10	.02	Shale	carbonaceous			↓								
		158.10	158.19	.09	Coal	dull with bright bands, stick			↑								
		158.19	158.31	.12	Coal	dull and bright, dull is black oolitic looking, but is not heavy											

ALL LINEAR UNITS IN METRES

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* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
36		158.31	158.34	.03	Shale	carbonaceous											
		158.34	158.36	.02	Coal	bright, broken			EP-102 38	4.65	0.54	8.68	22.15	68.63	7		Yield 56% *
		158.36	158.49	.13	Mixed Coal+Sh	rubble											
		158.49	158.59	.10	Coal	dull and bright											
		158.59	158.63	.04	Shale	carbonaceous											
		158.63	158.77	.14	Coal	dull and bright, stick											
		158.77	158.90	.13	Shale	carbonaceous											
		158.90	159.04	.14	Coal	dull with bright bands											
		159.04	159.15	.11	Coal	oolitic coal (black) with bright bands, heavy											
		159.15	159.16	.01	Shale	carbonaceous											
		159.16	159.23	.07	Coal	oolitic coal (black) with bright bands, heavy											
		159.23	159.60	.37	Coal	powder and rubble, dull and bright, some slickensides			↓								
						Log thickness 2.3 Core thickness 1.73 Core recovery 75%											
37																	
		159.60	159.71	.11	Shale	carbonaceous											
		159.71	159.77	.06	Coal	dull and bright											
		159.77	159.78	.01	Shale												
		159.78	159.82	.04	Coal	dull											
		159.82	161.97	2.15	Shale	black near top and medium gray towards bottom, carbonaceous for top .80 m											
		161.97	162.77	.80	SLTST	medium gray, featureless											
	163.4																
		163.40	164.58	1.18	SLTST	becoming laminated towards bottom, some shaley beds	80°										
38																	
		164.58	165.56	.98	SLTST	as above, some calcite veins											

ALL LINEAR UNITS IN METRES

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•RQD — ROCK QUALITY DESIGNATION (%)
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* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No. BA-212 A
REVISED Nov 1974

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
38		165.56	166.47	.91	Shale	dark gray											
	166.4																
		166.40	168.90	2.50	Shale	as above											
39																	
		168.90	169.08	.18	Shale	as above											
		169.08	169.63	.55	SLTST	medium gray, calcite-filled fractures											
	169.5																
		169.50	171.94	2.44	SLTST	as above	90°										
		171.94	172.49	.55	Shale	dark gray											
		172.49	172.69	.20	SLTST	medium gray, shale rip-up clasts	80°										
	172.5																
		172.50	173.00	.50	SLTST	shaley towards bottom, calcite-filled fractures											
40																	
		173.00	174.51	1.51	Shale	medium gray											
		174.51	174.66	.15	SLTST	featureless											
						BASAL SANDSTONE											
		174.66	175.49	.83	SST	fine to medium grained, some shale rip-up clasts											R3
	175.6																
		175.60	177.56	1.96	SST	medium to coarse grained at top and fine to medium grained towards bottom, carbonaceous wisps and stringers towards bottom, salt and pepper	75°										R4
41																	
		177.56	178.70	1.14	SST	as above except carbonaceous at top											
	178.6																
		178.60	181.60	3.00	SST	some slight lamination, a few carbonaceous spots, some shale clasts towards bottom, calcite veins and fracture fillings throughout											
42																	
	181.7																
		181.70	184.75	3.05	SST	as above with the odd shale clast throughout, some broken core near top											
	184.7																
		184.70	185.86	1.16	SST	salt and pepper											
43		185.86	187.64	1.78	SST	as above											

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
43	187.7																
		187.70	188.78	1.08	SST	as above											
		188.78	189.34	.56	SST	carbonaceous, dark gray with coal lenses											
		189.34	190.22	.88	SLTST	shaley towards top with a sharp upper contact with sandstone, laminated and rippled	80°										
44																	
		190.22	190.72	.50	Shale	black, slightly silty towards base											
	190.8																
		190.80	192.46	1.66	SLTST/ Shale	alternating sequence with beds averaging 0.2 m	85°										
		192.46	193.24	.78	SST	coarse-grained salt and pepper											
		193.24	193.92	.68	SLTST/ Shale	alternating sequence with beds averaging 0.2 m black shale											
	193.8																
		193.80	194.39	.59	SLTST/ Shale	as above											
45																	
		194.39	195.41	1.02	SST	coarse-grained salt and pepper, shale rip-up clasts at base, in part broken and calcite-filled, fractures throughout											
		195.41	196.89	1.48	SLTST/ Shale	alternating sequence with beds averaging 0.4 m	85°										
	196.9																
		196.90	198.74	1.84	Shale	dark gray to black, some silty and sandy beds averaging 0.05 m											
46																	
		198.74	199.91	1.17	SLTST/ Shale	alternating sequence with beds averaging 0.3 m											
	199.9																
		199.90	200.85	.95	SLTST/ Shale	as above	85°										
		200.85	203.01	2.16	SST	coarse-grained salt and pepper, minor coal lenses, minor calcite-filled fractures											
47																	
	203.0																
		203.00	206.05	3.05	SST	as above but bedded	70°										
	206.0																
		206.00	207.29	1.29	SST	as above but massive at bottom											

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
48																	
		207.29	208.79	1.50	SLTST/ Shale	alternating beds are irregular with flame structures, etc. at tops and bottoms of beds											
		208.79	209.09	.30	SST	light gray, medium gray, slightly laminated and cross-laminated, calcite-filled fractures	80°										R3
	209.1																
		209.10	210.66	1.56	SST	as above, some shale rip-up clasts, some dark beds with associated coaly lenses											
		210.66	211.68	1.02	SLTST/ Shale	alternating sequence with beds averaging 0.2 m											
49																	
		211.68	212.09	.41	SLTST/ Shale	as above with sandy bed at top											
	212.1																
		212.10	215.08	2.98	SST	grading upwards sequences of coarse-grained, massive to medium-grained, massive to fine-grained, laminated, some shale rip-up clasts in coarse sequences	85°										R3
	215.2																
		215.20	216.10	.90	SST	as above with a 0.3 m sequence of shale rip-up calsts											
50																	
		216.10	216.64	.54	SST	as above											
		216.64	217.29	.65	Shale/ SST	beds vary from 0.05 to 0.5 m, rip-up clasts in sandstone, coarse-grained sandstone, minor coal associated with sandstone											
	218.2																
		218.20	219.43	1.23	SH/SST	increasingly sandy towards bottom											
		219.43	220.30	.87	SST	alternating massive, coarse-grained to laminated fine-grained	85°										
51																	
		220.30	221.20	.90	SST	coarse-grained, shale rip-up clasts											
	221.3																
		221.30	222.34	1.04	SST	as above with coal lenses											
	222.5																
		222.50	224.65	2.15	SLTST	medium to dark gray, laminated and cross-laminated, minor shale beds											

ALL LINEAR UNITS IN METRES

† :*R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No BA-212A

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
51	224.3																
		224.30	224.48	.18	SLTST	as above											
52																	
		224.48	227.37	2.89	SLTST	as above but not well laminated	85°										
	227.4																
		227.40	228.90	1.50	SLTST	as above											
53																	
		228.90	231.85	2.95	SLTST	as above											
	230.4																
		230.40	231.75	1.35	Shale	dark gray to black towards bottom. minor silty beds											
54																	
		231.75	232.09	.34	Shale	carbonaceous											
	233.5																
		233.50	233.74	.24	Coal	broken and rubble, bright and dull		9 Lower	↑								
		233.74	233.85	.11	Shale	carbonaceous											
		233.85	233.93	.08	Coal	powder			EP-102 39	0.70	0.53	9.94	20.79	68.74	5.5		Yield 49% *
		233.93	233.97	.04	Coal	dull											
		233.97	234.03	.06	Shale	carbonaceous											
		234.03	234.22	.19	Coal	dull with bright bands, broken and rubble											
		234.22	234.34	.12	Coal	dull, stick			↓								
		234.34	234.76	.42	Coal	dull and bright, stick			↑								
		234.76	235.16	.40	Coal	dull with bright bands, stick, minor pyrite											
		235.16	235.27	.11	Coal	dull and bright, stick											
		235.27	235.37	.10	Coal	powder											
	235.6																
		235.60	235.73	.13	Coal	dull with bright bands, stick											
		235.73	235.79	.06	Shale												
		235.79	236.01	.22	Coal	slickensides, broken											
		236.01	236.63	.62	Coal	dull with bright bands, stick											

ALL LINEAR UNITS IN METRES

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* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CR. .S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
54		236.63	236.72	.09	Coal	bright with dull bands, broken											
		236.72	236.75	.03	Shale												
		236.75	236.86	.11	Coal	dull, stick											
		236.86	237.03	.17	Coal	dull with bright bands, stick											
		237.03	237.04	.01	Shale												
		237.04	237.16	.12	Coal	dull with bright bands, stick											
55																	
		237.16	237.29	.13	Coal	dull, stick											
		237.29	237.40	.11	Shale	carbonaceous											
		237.40	237.66	.26	Coal	dull and bright, broken											
		237.66	237.67	.01	Shale												
		237.67	237.85	.18	Coal	dull with bright bands, stick											
		237.85	237.86	.01	Shale												
		237.86	238.46	.60	Coal	dull and bright, stick											
		238.46	238.49	.03	Shale	carbonaceous											
		238.49	239.05	.56	Coal	dull with bright bands, stick			EP-102 40	2.12	0.47	8.09	21.85	69.59	4.5		Yield 72% *
		239.05	239.06	.01	Shale												
		239.06	239.32	.26	Coal	dull with bright bands, stick											
	239.6																
		239.60	239.74	.14	Coal	oolitic looking coal with bright bands, stick											
		239.74	240.30	.56	Coal	dull and bright, stick											
		240.30	240.45	.15	Coal	slickensides, stick											
		240.45	240.91	.46	Coal	dull with bright bands, broken											
	240.8																
		240.80	241.00	.20	Coal	slickensides, broken											
		241.00	241.53	.53	Coal	dull with bright bands, broken, slickensides											
56																	
		241.53	242.63	1.10	Coal	broken, rubble, powder, dull with bright bands											

ALL LINEAR UNITS IN METRES

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•RQD — ROCK QUALITY DESIGNATION (%)
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* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. CONTINUED EP 102

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
56																	
	242.6																
		242.60	242.64	.04	Shale	carbonaceous											
		242.64	242.74	.10	Coal	dull and bright, broken											
		242.74	242.86	.12	Coal	rubble, dull and bright											
		242.86	242.89	.03	Shale												
		242.89	242.95	.06	Coal	rubble, dull and bright											
						Log thickness 9.6 Core thickness 9.08 Core recovery 95%											
		242.95	243.17	.22	Shale	dark gray											
	242.9																
		242.90	245.11	2.21	Shale	as above											
	245.7																
		245.70	246.02	.32	Shale	as above											
57																	
		246.02	246.20	.18	Shale	carbonaceous											
		246.20	246.26	.06	Coal	dull, broken		10B Lower	EP-102 41	1.25	0.41	14.14	20.72	64.73	7.5		Yield 55% *
		246.26	246.32	.06	Shale	carbonaceous											
		246.32	246.74	.42	Coal	dull, stick											
		246.74	246.77	.03	Shale												
		246.77	247.35	.58	Coal	dull, stick											
		247.35	247.80	.45	Coal	dull with bright bands, stick			EP-102 42	0.62	0.43	11.26	20.44	67.87	7		Yield 47% *
		247.80	248.04	.24	Coal	dull and bright, stick											
		248.04	248.06	.02	Shale												
		248.06	248.15	.09	Coal	bright with dull bands, stick											
		248.15	248.29	.14	Shale												
		248.29	248.42	.13	Coal	bright, stick											
						Log thickness 2.2 Core thickness 2.22 Core recovery 100%											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. CONTINUED EP 102

FILE No. BA-212 A
REVISED Nov. 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
57		248.42	248.85	.43	Shale	dark gray, carbonaceous at top											
	248.7																
		248.70	250.20	1.50	SLST/SH	alternating sequence with beds averaging 0.1 m											
58																	
		250.20	251.88	1.68	SLST/SH	as above											
	251.8																
		251.80	254.58	2.78	SLST/SH	as above, ~~some calcite veins, some straight~~ contacts, some with very disturbed contacts (sedimentary)											
59																	
		254.58	254.95	.37	Shale	dark gray											
	254.8																
		254.80	257.31	2.51	Shale	as above, a few silty beds, calcite-filled fractures	90°										
	257.2																
		257.20	257.62	.42	Shale	dark gray			EP-102 43	0.00	0.39	7.40	19.62	72.09	3.5		Yield 86% *
		257.62	258.13	.51	Coal	dull with bright bands, stick		10A Lower									
		258.13	258.14	.01	Shale				EP-102 44	0.30	0.37	6.87	18.96	73.80	2		Yield 81% *
		258.14	258.75	.61	Coal	dull with bright bands, stick											
						Log thickness 1.1 Core thickness 1.13 Core recovery 100%											
60																	
		258.75	258.96	.21	Shale	dark gray, carbonaceous											
		258.96	259.03	.07	Coal	powder											
		259.03	259.11	.08	Shale	carbonaceous											
		259.11	259.18	.07	Coal	powder											
		259.18	259.64	.46	Shale	dark gray, carbonaceous											
		259.64	259.73	.09	Coal	powder											
		259.73	260.45	.72	Shale	dark gray											
	260.4																
		260.40	262.82	2.42	Shale	medium to dark gray, minor silty beds, some calcite veins and fracture fillings	85°										

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

Ch. /S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 102 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
61																	
		262.82	263.42	.60	Shale	as above											
	263.6																
						End of Hole EP 102											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 102 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CROWS ST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

DATE		
BEGIN	Aug. 9, 1980
END	Aug. 12, 1980

HOLE No. EP 103

PAGE 1 OF 11

HOLE PARTICULARS

LOCATION	N 5,539,998.11		
	E 661,164.81		
ELEVATION	2249.0	HOLE BEARING (AZ°)	
TOTAL DEPTH	132.6	HOLE ANGLE (°)*	90

LOGGING

LOGS RUN	Gamma, Den., Neutron, Cal, Detailed Den. of coal seams
LOGGED BY	Davies Exploration Logging Ltd.
OTHER TESTS	Directional Survey

COAL CORING PERFORMANCE

CORE DIAMETER		HQ
TOTAL	CORE RECOVERED	
	LENGTH CORED	
	CORE RECOVERY	%

EXAMINATION

LOG USED	Gamma Density
No. OF SEAMS SAMPLED	4
EXAMINER (S)	C. Beavan
DATE	Aug., 1980

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
1																	
			0.80	.80	Shale	Gray, broken and weathered											
	3.7																
		3.70	3.93	.23	Shale	as above											
		3.93	4.78	.85	SLTST	gray, laminated and cross-laminated, some carbonaceous wisps, broken and weathered orange	30°										
	4.6																
		4.60	5.93	1.33	SLTST	as above											
		5.93	6.54	.61	Shale	dark gray, some silty beds, weathered	50°										
2																	
		6.54	7.06	.52	Shale	as above											
		7.06	7.30	.24	Shale	dark gray to black, carbonaceous											
	7.3																
		7.30	7.67	.37	Coal	dull and bright, broken, slickensides		6		4.54	0.75	5.90	25.68	67.67	3.5		Yield 89% *
		7.67	7.69	.02	Shale	yellow, earthy looking											
		7.69	7.89	.20	Coal	dull and bright, rubble, some red weathering on some cleat surfaces, slickensides			EP-103-30	8.50	1.13	5.65	27.90	65.32	0.5		Yield 68% *
		7.89	8.32	.43	Coal	earthy-looking and slickensided rubble mixed											
		8.32	8.42	.10	Coal	powder											
						Log thickness 1.5 Core thickness 1.12 Core recovery 75%											
	8.2																
		8.20	9.02	.82	SLTST	medium gray, laminated and cross-laminated	60°										
		9.02	9.51	.49	Shale	dark gray, weathered orange along joints											

ALL LINEAR UNITS IN METRES

* : MEASURED FROM THE HORIZONTAL PLANE

▲ ANGLE MEASURED FROM CORE AXIS

† : • R &/OR S — GOLDER ASSOCIATES HARDNESS CODE

• RQD — ROCK QUALITY DESIGNATION (%)

FF — FRACTURE FREQUENCY

* — WASHED TO S.G. 1.5

HOLE No. EP 103

FILE No. BA-211A
REVISED Nov. 1978

C .S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

HOLE No. CONTINUED EP 103

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
2	9.7																
		9.70	10.54	.84	Shale	carbonaceous with minor coal lenses											
3																	
		10.54	11.79	1.25	Shale	as above											
	11.7																
		11.70	13.41	1.71	Shale	not carbonaceous											
	13.7																
		13.70	14.91	1.21	SLTST	medium gray, some fine-grained sandy beds	60°										R3
4																	
		14.91	15.29	.38	SLTST	as above	50°										
		15.29	16.89	1.60	Shale	gray, minor silty beds with no distinct tops and bottoms											
	16.9																
		16.90	19.34	2.44	Shale	as above											
5																	
		19.34	19.98	.64	Shale	as above	65°										
	19.9																
		19.90	22.85	2.95	Shale	as above but with both silty and sandy beds	45° @ top 60° @ bottom										
	23.2																
		23.20	23.74	.54	Shale	as above											
6																	
		23.74	25.22	1.48	Shale	as above, increasingly sandy											
		25.22	26.28	1.06	SST	fine to medium grained, some shale incorporated as discontinuous beds											
	26.2																
		26.20	27.93	1.73	SST	as above, increasingly medium grained towards bottom											R3
7																	
		27.93	29.33	1.40	SST	medium grained, well bedded	55°										
	29.2																
		29.20	32.00	2.80	SST	as above											
8	32.3																
		32.30	32.35	.05	Congl.	carbonaceous wisps											
		32.35	32.69	.34	SST	coarse grained, scattered shale rip-up clasts, massive											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. CONTINUED EP 103

FILE No. BA-212 A
REVISED Nov. 1978

CK /S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

HOLE No. EP 103 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
8																	
		32.69	35.42	2.73	SST	medium-grained, mostly well bedded and laminated, some beds with short coaly wisps, some beds with shale rip-up clasts, some conglomerate beds 0.01 to 0.05 m thick, carbonaceous laminations scattered throughout	60°										
	35.4																
		35.40	36.42	1.02	SST	coarse-grained, minor conglomerate beds, carbonaceous laminations scattered throughout											
9																	
		36.42	37.19	.77	SST	as above, porosity visible											
		37.19	37.79	.60	Congl.	pebble size graded within beds, some carbonaceous wisps											
		37.79	38.47	.68	Shale	dark gray											
	38.4																
		38.40	40.75	2.35	Shale	as above, carbonaceous zones in bottom half											
10																	
		40.75	41.52	.77	Shale	as above											
	41.5																
		41.50	43.02	1.52	Shale	as above											
		43.02	44.54	1.52	SLTST	light to medium gray, laminated and cross-laminated, minor shale beds	60°										
	44.5																
		44.50	45.01	.51	SLTST	as above											
11																	
		45.01	46.01	1.00	SLTST	as above	55°										
		46.01	47.60	1.59	Shale	medium to dark gray, very minor coal and/or calcite along slickensided fractures											
	47.5																
		47.50	49.30	1.80	Shale	dark gray towards bottom, silty towards top but no definite beds											
12																	
		49.30	50.59	1.29	Shale	silty beds	60°										
	50.6																
		50.60	53.68	3.08	SLTST	light gray, laminated and very cross-laminated a little coarser grained towards bottom, minor coal lense near bottom	60°										R3

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 103 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CRL NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

HOLE No. EP 103 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
13	53.6																
		53.60	56.11	2.51	SLTST	as above with coal wisps in a few places	65°										
		56.11	56.63	.52	SST	medium-grained, mostly massive but some cross-bedding, coal wisps throughout	65°										R3
	56.7																
		56.70	58.01	1.31	SST	as above, but no cross-bedding											
14																	
		58.01	59.86	1.85	SST	as above, becoming coarser grained towards bottom											
	59.7																
		59.70	61.01	1.31	SST	as above, but coarse grained											
	61.0																
		61.00	62.14	1.14	SST	as above, but both coarse and medium-grained beds (mostly coarse)	60°										
15																	
		62.14	62.80	.66	SST	as above											
	62.8																
		62.80	65.32	2.52	SST	as above except bedded with graded bedding											
		65.32	65.72	.40	Shale	medium gray											
		65.72	65.84	.12	SLTST	light gray, laminated and cross-laminated	65°										R3
	65.8																
		65.80	66.31	.51	SLTST	as above											
16																	
		66.31	67.81	1.50	SLTST	as above	65°										
		67.81	68.86	1.05	Shale	dark gray, some silty beds											
	68.9																
		68.90	70.25	1.35	Shale	as above, very minor coal lenses towards bottom											
	70.4																
		70.40	70.65	.25	Shale	as above											
		70.65	70.69	.04	Coal	dull, stick, pyrite on coal/shale contact	50°	8 Upper	↑								
		70.69	70.70	.01	Shale												
		70.70	70.74	.04	Coal	dull, stick											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 103 CONTINUED

FILE No BA-212A
REVISED Nov 1978

CR 5 NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

HOLE No. EP 103 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
16		70.74	70.75	.01	Shale												
		70.75	70.80	.05	Coal	bright, stick			EP-103-58	3.58	0.47	4.85	26.54	68.14	8		Yield 70%
17																	
		70.80	70.90	.10	Coal	bright, stick											
		70.90	71.30	.40	Coal	dull with bright bands, stick											
		71.30	71.40	.10	Coal	powder											
		71.40	71.49	.09	Shale												
		71.49	71.59	.10	Shale	powder											
		71.59	71.97	.38	Shale	dull, pyrite, stick											
	71.9																
		71.90	72.12	.22	Shale	dull, pyrite, slickensides, stick											
		72.12	72.18	.06	Shale	dull and bright, stick											
		72.18	72.19	.01	Shale												
		72.19	72.21	.02	Coal	bright, stick											
		72.21	72.22	.01	Shale	carbonaceous											
		72.22	72.52	.30	Coal	bright with dull bands, stick											
		72.52	72.91	.39	Coal	dull and bright, stick											
		72.91	72.96	.05	Coal	powder											
		72.96	73.07	.11	Coal	bright with dull bands, stick											
		73.07	73.12	.05	Coal	dull, stick											
		73.12	73.40	.28	Coal	dull and bright, stick											
		73.40	73.57	.17	Coal	powder											
		73.57	73.58	.01	Shale	rubble											
		73.58	73.70	.12	Coal	rubble, dull											
	73.8																
		73.80	73.87	.07	Coal	dull with bright bands, stick			EP-103-59	4.50	0.63	4.29	26.60	68.48	8		Yield 83% *
		73.87	73.88	.01	Shale	pyrite along shale/coal contact											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
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FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 103 CONTINUED

FILE No BA-212A
REVISED Nov 1978

CL .ZS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

HOLE No. EP 103 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
17		73.88	75.04	1.16	Coal	dull with bright bands, stick											
		75.04	75.23	.19	Coal	powder											
18																	
	75.3																
		75.30	75.74	.44	Coal	dull with bright bands, minor pyrite, broken											
		75.74	75.90	.16	Coal	powder											
	76.2																
		76.20	76.86	.66	Coal	dull with bright bands, slickensides, broken											
		76.86	76.99	.13	Coal	powder											
		76.99	77.19	.20	Coal	dull, broken											
	77.1																
		77.10	77.44	.34	Coal	broken, dull and bright											
		77.44	77.50	.06	Shale	broken											
		77.50	77.55	.05	Coal	rubble											
	78.0																
		78.00	78.33	.33	Coal	dull, slickensides, rubble											
		78.33	78.36	.03	Shale												
		78.36	78.63	.27	Coal	rubble, dull, slickensides											
		78.63	79.40	.77	Coal	powder											
	80.2																
		80.20	80.42	.22	Coal	rubble, slickensides											
						Log thickness 9.6 Core thickness 8.21 Core recovery 86%											
		80.42	80.85	.43	Shale	dark, silty towards bottom											
19																	
		80.85	81.13	.28	Shale	as above											
		81.13	81.60	.47	SLTST	medium gray, poorly laminated, very minor calcite veins											R3

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 103 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CRL NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

HOLE No. EP 103 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS?
19	81.4																
		81.40	84.15	2.75	SLTST	well laminated and cross-laminated, some calcite veins throughout, one 3 cm wide calcite vein with siltstone inclusions at bottom	55°										
	84.1																
		84.10	84.67	.51	SLTST	as above											
20																	
		84.67	87.28	2.61	SLTST	as above, broken in places, slickensided fractures and several calcite vein zones	70°										
	87.2																
		87.20	88.70	1.50	SLTST	as above but little calcite veining, minor carbonaceous wisps near bottom	55°										
21																	
		88.70	90.31	1.61	SLTST	as above but minor carbonaceous wisps scattered throughout	65°										
	90.2																
		90.20	90.45	.25	SLTST	as above											
		90.45	93.07	2.62	Shale	medium gray, minor irregular silty zones, calcite vein zones throughout											
22																	
		93.07	93.55	.48	Shale	as above											
	93.3																
		93.30	96.38	3.08	Shale	dark gray, calcite veins throughout, minor carbonaceous wisps in middle, some silt towards bottom											
	96.3																
		96.30	96.94	.64	Shale	not as dark as above, very minor calcite veins, minor silty zones											
23																	
		96.94	98.74	1.80	Shale	as above											
		98.74	99.09	.35	Coal	powder		8 Lower	EP-103-60								
	99.4																
		99.40	99.50	.10	Coal	bright and dull, stick				8.53	0.44	5.28	26.35	67.93	8		Yield 84% *
		99.50	99.85	.35	Coal	slickensides, broken											
		99.85	99.99	.14	Coal	rubble, slickensides											

ALL LINEAR UNITS IN METRES

† :RB/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 103 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CR 5 NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

HOLE No. EP 103 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
23		99.99	100.34	.35	Coal	dull with bright bands, slickensides, broken											
		100.34	100.44	.10	Coal	dull, stick											
		100.44	100.68	.24	Coal	rubble, slickensides											
	100.9																
		100.90	101.04	.14	Coal	rubble, slickensides											
		101.04	101.18	.14	Coal	dull with bright bands, stick											
		101.18	101.52	.34	Coal	rubble, slickensides, dull											
24																	
		101.52	101.60	.08	Coal	dull, stick											
		101.60	101.72	.12	Coal	powder											
		101.72	101.90	.18	Coal	rubble, dull											
	102.4																
		102.40	102.45	.05	Coal	dull, broken											
		102.45	102.62	.17	Coal	dull, stick											
		102.62	103.35	.73	Coal	dull, broken											
	104.5																
		104.50	104.52	.02	Shale												
		104.52	105.43	.91	Coal	dull with bright bands, pyrite along a few slickensides, stick											
		105.43	105.66	.23	Coal	broken, slickensides											
		105.66	105.98	.32	Coal	dull and bright, stick											
		105.98	106.09	.11	Coal	dull with bright bands, stick											
	106.8																
		106.80	107.43	.63	Coal	dull with bright bands, stick, some slickensides											
		107.43	107.60	.17	Coal	bright, stick											
		107.60	107.77	.17	Coal	rubble, slickensides											
		107.77	107.87	.10	Coal	bright and dull, stick											
		107.87	108.09	.22	Coal	dull with bright bands, stick			EP-103-61	4.73	0.34	5.29	25.54	68.83	8		Yield 78% *

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 103 CONTINUED

FILE No. BA-212 A
REVISED Nov 1078

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

HOLE No. EP 103 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
25									EP-108-61								
		108.09	108.22	.13	Coal	powder											
		108.22	108.27	.05	Coal	dull, stick											
	108.5																
		108.50	108.60	.10	Coal	broken, dull and bright											
		108.60	109.39	.79	Coal	dull and bright, stick											
		109.39	109.57	.18	Coal	rubble, dull											
		109.57	109.68	.11	Coal	powder											
		109.68	109.97	.29	Coal	dull and bright, minor pyrite, stick											
	110.2																
		110.20	110.34	.14	Coal	dull with bright bands, broken											
		110.34	110.43	.09	Coal	bright, stick											
		110.43	110.47	.04	Shale												
		110.47	110.54	.07	Coal	rubble, bright											
		110.54	110.60	.06	Coal	bright, stick											
		110.60	110.75	.15	Coal	dull with bright bands, stick											
		110.75	110.90	.15	Coal	powder											
		110.90	111.10	.20	Coal	dull with bright bands, broken											
	111.6																
		111.60	111.74	.14	Coal	dull and bright, stick											
		111.74	111.88	.14	Coal	dull, stick											
		111.88	112.22	.34	Coal	rubble, slickensides											
						Log thickness 13.4											
						Core thickness 9.63											
						Core recovery 74%											
	112.2																
		112.20	112.80	.60	Shale	black, carbonaceous											
	112.8																
		112.80	112.81	.01	Coal	shaley (bone)											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 103 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CRO NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

HOLE No. EP 103 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
25		112.81	112.88	.07	Coal	bright with dull bands, stick											
		112.88	112.90	.02	Shale	carbonaceous											
		112.90	112.95	.05	Coal	bright, stick											
		112.95	112.98	.03	Shale	carbonaceous			EP-103-62	1.11	0.14	6.48	26.37	67.01	8.5		Yield 63% *
26		112.98	112.99	.01	Coal	bright, slickensides, broken											
		112.99	113.06	.07	Shale	highly carbonaceous											
		113.06	113.19	.13	Coal	dull with bright bands, stick, slickensides											
		113.19	113.20	.01	Shale												
		113.20	113.40	.20	Coal	dull and bright, stick, slickensides											
		113.40	113.54	.14	Coal	powder											
						Log thickness 0.9											
						Core thickness 0.74											
						Core recovery 82%											
		113.54	113.62	.08	Shale	black, carbonaceous											
		113.62	114.62	1.00	SLTST	medium gray, some shale beds, better laminated towards bottom	50°										R3
	114.6																
		114.60	115.39	.79	SLTST	as above but well laminated and cross-laminated towards top											
		115.39	116.46	1.07	Shale	black, carbonaceous in middle											
		116.46	117.07	.61	SLTST	irregular laminations and beds, some calcite veins towards top	60°										
		117.07	117.31	.24	Shale	black											
27		117.31	117.69	.38	Shale	as above											
	117.6																
		117.60	120.66	3.06	Shale	as above with a silty zone towards top 0.3 m thick											
	120.7																
		120.70	121.51	.81	Shale	carbonaceous at bottom											
		121.51	121.56	.05	Coal	broken, dull and bright											

ALL LINEAR UNITS IN METRES

† :*R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
*RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 103 CONTINUED

FILE No BA-212A
REVISED Nov 1978

CROW. .EST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

HOLE No. EP 103 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
28	121.6																
		121.60	123.21	1.61	Shale	black, carbonaceous in middle											
	123.1																
		123.10	125.68	2.58	Shale	as above but not carbonaceous											
29																	
		125.68	126.16	.48	Shale	as above											
	126.3																
		126.30	127.20	.90	Shale	as above											
		127.20	129.25	2.05	Shale	medium gray, calcite-filled fractures											
		129.25	129.52	.27	Shale	as above, silty in part											
	129.5																
		129.50	129.98	.48	Shale	as above, a 1 cm thick calcite vein, faint bedding planes	55°										
30																	
		129.98	132.63	2.65	Shale	increasingly silty with some beds (0.2 m thick) well laminated and cross-laminated	60°										
	132.6					End of EP 103											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 103 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CRO' NEST RESOURCES LIMITED

COKE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

DATE	
BEGIN	July 30, 1980
END	Aug. 8, 1980

HOLE No. EP 104

HOLE PARTICULARS

LOCATION	N 5,540,247.15		
	E 660,912.51		
ELEVATION	2214.2	HOLE BEARING (AZ°) (true)	S 76° E
TOTAL DEPTH	252.1	HOLE ANGLE (°)*	60°

LOGGING

LOGS RUN	Natural gamma density neutron, caliper, detailed density
LOGGED BY	Davies Exploration of Coal Seams Logging Ltd
OTHER TESTS	Directional Survey

COAL CORING PERFORMANCE

CORE DIAMETER		HQ
TOTAL	CORE RECOVERED	
	LENGTH CORED	
	CORE RECOVERY	%

EXAMINATION

LOG USED	Gamma-Density
No. OF SEAMS SAMPLED	4
EXAMINER (S)	C. Beaven
DATE	Aug. 1980

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
1	3.0					Casing 10'											
		3.0	3.23	.23	SST	light gray, coarse-grained, rubble											
		3.23	3.97	.74	Shale	dark gray, carbonaceous, mostly rubble											
	4.9																
		4.90	5.90	1.00	Shale	top 0.2 m rubbley, coaly lenses											
	6.1																
		6.10	6.46	.36	Shale	as above, broken											
	6.4																
		6.40	7.59	1.19	Shale	as above, less carbonaceous											
	7.8																
		7.80	8.51	.71	Shale	as above, more carbonaceous towards bottom											
2																	
		8.51	9.40	.89	Shale	as above											
	9.3	9.30	9.92	.62	Shale	as above											
		9.92	11.47	1.55	Shale	as above with silty patches											
	11.4																
		11.40	12.69	1.29	Shale	as above	75°										
3																	
		12.69	12.96	.27	Shale	as above											
	12.8																
		12.80	13.74	.94	Shale	as above											
		13.74	14.30	.56	SST	light gray, medium grained, sharp upper contact, minor calcite veins											R3-R4
	14.3																
		14.30	15.89	1.59	SST	as above, beds of finer sandstone that are laminated and cross-laminated & carbonaceous	70°										

ALL LINEAR UNITS IN METRES

* : MEASURED FROM THE HORIZONTAL PLANE

† : • R &/OR S — GOLDER ASSOCIATES HARDNESS CODE

• RQD — ROCK QUALITY DESIGNATION (%)

FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104

FILE No. BA-211A
REVISED Nov. 1978

C VS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
	15.8																
		15.80	16.66	.86	SST	medium grained, top 0.15 rubbley, minor calcite veins	60°										
4																	
		16.66	17.37	.71	SST	as above with coal wisps and lenses											
	17.4	17.40	19.05	1.65	SST	as above with coal wisps and lenses, shale beds 0.10 m thick, shale rip up clasts in places	80°										
	18.9																
		18.90	20.14	1.24	SST	as above with coal and shale	70°										
		20.14	20.37	.23	SLTST	medium gray, laminated	85°										
	20.4																
		20.40	20.82	.42	Shale	dark gray, medium grained sandstone lenses containing shale rip up clasts	90°										
5																	
		20.82	21.96	1.14	SST	light gray, massive, medium grained											R3-R4
	21.9																
		21.90	23.35	1.45	SST	as above											
	23.5																
		23.50	24.95	1.45	SST	as above with beds of fine grained sandstone laminated towards bottom, minor calcite veins	75°										
	25.0																
		25.00	25.22	.22	SST	as above but not laminated											
6																	
		25.22	26.77	1.55	SST	as above but increasingly laminated towards bottom	70°										
	26.5																
		26.50	27.70	1.20	SST	as above with some coaly wisps and lenses and some shale clasts											
		27.70	28.08	.38	SLST/SH	interbedded											
	28.0																
		28.00	28.97	.97	SLST/SH	as above, at the base of one siltstone bed are shale rip up clasts	70°										
7																	
		28.97	29.46	.49	SST	light gray, fine-grained, laminated and cross-laminated in places	80°										

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No BA-212A
REVISED Nov 1978

CR NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
7	29.6	29.60	31.07	1.47	SST	as above, shale rip up clasts in places	70°										
	31.1																
		31.10	32.80	1.70	SST	as above, last 0.60 m broken and is weathered, orange along broken surfaces (joints?)											
	32.6																
		32.60	33.12	.52	SST	as above											
8																	
		33.12	34.06	.94	SST	as above, medium grained in places	80°										
	34.1																
		34.10	35.63	1.53	SST	as above, medium grained beds, not laminated											
	35.7																
		35.70	37.26	1.56	SST	as above, minor calcite veins, orange weathering at bottom	80°										R3-R4
	37.2																
		37.20	37.44	.24	SST	as above											
9																	
		37.44	37.62	.18	SST	as above											
		37.62	37.82	.20	Coal	dull, broken											
		37.82	38.08	.26	Shale	carbonaceous											
		38.08	38.14	.06	Coal	stony, rubble											
		38.14	38.39	.25	Shale	carbonaceous, bands of coal and stony coal, rubble and coal in small pieces											
		38.39	38.44	.05	Shale	dark gray											
	38.7																
		38.70	39.19	1.49	Shale	carbonaceous, slickensides polished with coal											
	40.2																
		40.20	41.70	1.50	Shale	not carbonaceous											
	41.8																
		41.80	42.06	.26	Shale	becoming silty											
10																	
		42.06	43.39	1.33	Shale	coal lenses											
	43.3																
		43.30	44.80	1.50	Shale	silty in places											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CR..S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
10																	
	44.8																
		44.80	46.05	1.25	Shale	as above, no coal or silt											
11																	
		46.05	46.38	.33	Shale	as above											
	46.3																
		46.30	46.86	.56	Shale	as above											
		46.86	47.51	.65	Coal	dull and bright, stony towards top											
		47.51	47.86	.35	Shale	dark gray, carbonaceous											
	47.9																
		47.90	49.24	1.34	Shale	as above											
		49.24	50.01	.77	Shale	as above, increasingly carbonaceous											
12	49.4																
		49.40	50.83	1.43	Shale	as above											
		50.83	50.98	.15	Shale	coaly, pyrite on fractures											
	50.9																
		50.90	51.14	.24	Shale	coaly											
		51.14	52.43	1.29	Shale	silty beds, calcite veins	70°										R3
	52.4																
		52.40	53.52	1.12	Shale	some minor silty beds, slightly carbonaceous towards bottom	70°										
13																	
		53.52	53.78	.26	Shale	slightly silty											
		53.78	53.94	.16	Coal	broken and rubbley, pyrite along some surfaces											
	53.9																
		53.90	54.34	.04	Coal	slickensided, broken											
		54.34	54.76	.42	Shale	dark gray, some silty beds											
	55.5																
		55.50	56.23	.73	Shale	as above											
		56.23	56.69	.46	Shale	carbonaceous and coal bands, broken and rubble											
	56.7																
		56.70	57.65	.95	Shale	dark gray											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No BA-212 A
REVISED Nov 1978

C /S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % o.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
13	56.7																
		57.65	57.75	.10	Shale	carbonaceous and coal bands											
14																	
		57.75	57.79	.04	Shale	as above											
		57.79	58.35	.56	Shale	dark gray											
	58.2																
		58.20	59.80	1.60	Shale	minor silty beds, minor coal lense towards base											
	59.7																
		59.70	60.55	.85	Shale	some silty beds, carbonaceous towards bottom											
		60.55	60.67	.12	Shale	carbonaceous, broken											
		60.67	60.97	.30	Coal	dull banded, broken and rubbley at base											
		60.97	61.04	.07	Shale	dark gray											
	61.6																
		61.60	61.93	.33	Shale	as above											
15																	
		61.93	63.13	1.20	Shale	carbonaceous beds and coal lenses											
	63.1																
		63.10	64.46	1.36	Shale	as above											
	64.6																
		64.60	66.16	1.50	Shale	as above, silty beds, minor calcite veins at bottom											
16	66.1																
		66.10	67.56	1.46	Shale	minor silty beds											
	67.7																
		67.70	69.30	1.60	Shale	as above											
	69.2																
		69.20	70.32	1.12	Shale	darker gray, coal lenses											
17																	
		70.32	70.44	.12	Shale	dark gray											
	70.7																
		70.70	71.98	1.28	Shale	carbonaceous in places											
		71.98	72.28	.30	Shale	carbonaceous, broken											

ALL LINEAR UNITS IN METRES

† •RB/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No 8A-212A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
17	72.2																
		72.20	73.75	1.55	Shale	silty beds	85°										
	73.8																
		73.80	74.13	.33	Shale	as above											
		74.13	74.37	.24	Coal	dull and bright, some carbonaceous shale											
		74.37	74.55	.18	Shale	dark gray, carbonaceous											
		74.55	74.68	.13	Coal	slickensided											
18																	
		74.68	74.85	.17	Coal	broken											
		74.85	75.05	.20	Shale	dark gray											
		75.05	75.36	.31	Coal	dull and bright, broken											
	75.3																
		75.30	75.70	.40	Shale	carbonaceous and coaly, broken											
		75.70	75.95	.25	Coal	dull and bright, stick											
		75.95	76.19	.24	Shale	coaly and carbonaceous											
		76.19	76.50	.31	Coal	broken											
		76.50	76.64	.14	Shale	coaly and carbonaceous											
		76.64	76.77	.13	Coal	broken											
		76.77	77.01	.24	Shale	coaly and carbonaceous											
	76.8																
		76.80	77.96	1.16	Shale	dark gray, silty beds	85°										
	78.3																
		78.30	78.76	.46	Shale	as above											
19																	
		78.76	79.89	1.13	Shale	dark gray											
	79.9																
		79.90	81.35	1.45	Shale	dark gray, silty beds											
	81.4																
		81.40	82.45	1.05	Shale	as above											
		82.45	82.94	.49	SLTST	medium gray, some shaley beds, laminated and cross-laminated	80°										

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No BA-212 A
REVISED Nov 1978

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CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
20	82.9																
		82.90	84.41	1.51	SLTST	silty throughout, some laminated with coal, some coal lenses	85°										
	84.4																
		84.40	85.84	1.44	SLTST	silty throughout											
	86.0																
		86.00	87.22	1.22	SLTST	as above, coaly laminations towards top	80°										
21																	
		87.22	87.58	.36	SLTST	silty throughout											
	87.5																
		87.50	88.93	1.43	SLTST	fine to medium grained sandstone beds throughout	85°										R3
		88.93	89.03	.10	SLTST	rubbley, coaly											
	89.0																
		89.00	90.58	1.58	Shale	dark gray, silty beds	85°										
	90.5																
		90.50	91.28	.78	Shale	as above, some silty beds have shale rip-up clasts											
22		91.28	91.86	.58	Shale	shaley throughout											
	92.0																
		92.00	93.26	1.26	Shale	some silty beds	80°										
		93.26	93.29	.03	Coal	rubble											
	93.6								EP-104-11								
		93.60	93.68	.08	Coal	rubble				2.71	0.73	7.51	25.62	66.14	7.5		Yield 86% *
		93.68	93.84	.16	Coal	dull and bright - broken											
		93.84	94.04	.20	Coal	dull - broken and rubble											
		94.04	94.28	.24	Coal	dull and bright - stick											
		94.28	94.51	.23	Coal	dull - stick											
	95.1																
		95.10	95.24	.14	Coal	rubble											
		95.24	95.64	.40	Coal	dull with bright bands, stick											
		95.64	96.38	.74	Coal	dull - slickensides, stick											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY
* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CRO..S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
23																	
		96.38	96.46	.08	Coal	dull and bright - stick											
	96.6																
		96.60	96.79	.19	Coal	dull - stick											
		96.79	96.87	.08	Coal	bright - stick											
		96.87	97.16	.29	Coal	dull with bright bands - stick											
		97.16	97.50	.34	Coal	dull - stick											
		97.50	97.81	.31	Coal	slickensides, broken			EP-104-12	7.17	0.78	2.58	26.71	69.93	8		Yield 43% *
	98.1																
		98.10	98.32	.22	Coal	rubble, slickensides											
		98.32	98.46	.14	Coal	dull - broken											
		98.46	98.75	.29	Coal	dull and bright - broken											
		98.75	98.91	.16	Coal	dull - stick											
	99.7																
		99.70	99.80	.10	Coal	dull - stick											
		99.80	99.18	.18	Coal	dull and bright - stick											
						Log thickness 5.2											
						Core thickness 4.60											
						Core recovery 89%											
		99.18	99.98	.70	Shale	dark gray, carbonaceous in part											
		99.98	100.11	.13	Coal	bright - stick											
		100.11	100.12	.01	Shale	carbonaceous			EP-104-13	3.09	0.69	9.91	26.46	62.94	8.5		Yield 61% *
		100.12	100.19	.07	Coal	dull - stick											
						Log thickness 0.6											
						Core thickness 0.21											
						Core recovery 35%											
				.26	Shale	dark gray, carbonaceous, slickensides & broken											
	101.2																
		101.20	101.43	.23	Shale	as above											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
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FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No. BA-212 A
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CRL NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
24																	
		101.43	101.95	.52	Shale	as above											
		101.95	102.06	.11	Coal	stony											
		102.06	102.19	.13	Shale	dark gray, carbonaceous											
		102.19	102.33	.14	Coal	stony											
		102.33	102.46	.13	Coal	dull - broken											
		102.46	102.61	.15	Coal	stony											
		102.61	102.69	.08	Coal	dull and bright - stick											
		102.69	102.84	.15	Shale	dark gray, carbonaceous											
	102.7																
		102.70	102.86	.16	Shale	rubble											
		102.86	102.95	.09	Coal	rubble											
		102.95	103.12	.17	Coal	dull - stick											
		103.12	103.24	.12	Coal	dull and bright - stick											
		103.24	103.61	.37	Shale	dark gray, carbonaceous at top, silty beds towards bottom	70°										
	104.2																
		104.20	104.44	.22	Shale	as above											
		104.44	104.60	1.16	Shale	carbonaceous throughout											
		104.60	104.91	.31	Shale	silty beds											
25	105.8																
		105.80	107.20	1.40	Shale	dark gray											
	107.3																
		107.30	107.70	1.40	Shale	carbonaceous, some silty beds towards bottom											
		107.70	107.87	.17	SLTST	medium gray											
	108.9																
		108.90	110.10	1.20	SLTST	laminated and cross-laminated, minor calcite veins	70°										R3

ALL LINEAR UNITS IN METRES

† :-R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

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CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
26																	
		110.10	110.35	.25	SLTST	as above											
	110.3																
		110.30	111.74	1.44	SLTST	as above	75°										
	111.9																
		111.90	113.36	1.46	SLTST	as above, some shaley beds											
	113.4																
		113.40	114.35	.95	SLTST	as above											
27																	
		145.35	114.94	.59	Shale	dark gray, carbonaceous at bottom											
	114.9																
		114.90	115.63	.73	Shale	as above											
		115.63	116.43	.80	SLTST	medium gray, minor shaley beds	70°										R3
	116.4																
		116.40	117.95	1.55	SLTST	as above	70°										
	117.9																
		117.90	118.33	.43	SLTST	as above, minor calcite veins											
28																	
		118.33	119.21	.88	SLTST	as above, very well defined cross-laminations	90°										
		119.21	119.37	.16	Shale	dark gray, minor silty beds											
	119.5																
		119.50	120.68	1.18	Shale	as above, calcite veins, broken with calcite and slickensides on many surfaces											
	120.4																
		120.40	120.70	.30	Shale	as above											
	121.0																
		121.00	122.60	1.60	Shale	as above, one calcite vein up to 0.02m thick	90°										
29	122.5																
		122.50	124.04	1.54	Shale	fewer silty beds, no calcite veins											
	124.1																
		124.10	125.70	1.60	Shale	increasingly silty											
	125.6																
		125.60	126.56	.96	Shale	as above											
30																	
		126.56	127.08	.52	Shale	as above	70°										

ALL LINEAR UNITS IN METRES

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FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

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CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
30	127.1																
		127.10	130.04	2.94	Shale	as above but increasingly only shale towards bottom											
	130.1																
		130.10	130.87	.77	Shale	dark gray to black, carbonaceous towards bottom with coaly flecks and stringers											
31																	
	130.8																
		130.80	130.92	.12	Shale	as above											
		130.92	131.09	.17	Coal	dull - rubble		5	4 14**	16.00	0.72	4.54	26.55	68.19	8.5		Yield 87% *
		131.09	131.42	.33	Coal	dull with bright bands - broken stick											
		131.42	131.83	.41	Coal	dull - stick			EP-104-15	2.47	0.71	4.28	26.29	68.72	8		Yield 68% *
		181.83	132.08	.25	Coal	dull and bright - rubble											
		132.08	132.20	.12	Coal	dull - broken											
		132.20	132.41	.21	Coal	powder											
						Log thickness 2.2 Core thickness 1.49 Core recovery 68%											
	133.2																
		133.20	133.44	.24	Shale	dark gray											
		133.44	133.58	.14	Shale	carbonaceous and coaly lenses											
		133.58	133.93	.35	Shale	minor coaly lenses											
		133.93	133.96	.03	Coal	bright											
		133.96	135.02	1.06	Shale	dark gray, becoming silty towards middle and shaley again at bottom											
		135.02	135.34	.32	Shale	almost stony coal											
		135.34	135.48	.14	Coal	bright and dull, some stony lenses											
		135.48	135.65	.17	Shale	very carbonaceous											
32	136.2																
		136.20	136.36	.16	Shale	as above											
		136.36	136.66	.30	Shale	not carbonaceous											

ALL LINEAR UNITS IN METRES

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* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

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CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
32	136.2																
		136.66	136.97	.31	Shale	very carbonaceous											
		136.97	137.15	.18	Coal	dull - stick											
		137.15	137.42	.27	Shale	carbonaceous											
		137.42	137.66	.24	Coal	powder and rubble, rubble is stony coal											
		137.66	138.10	.44	Shale	very carbonaceous											
	138.7																
		138.70	138.97	.27	Shale	as above											
		138.97	139.37	.40	Coal	stony, some bright bands											
		139.37	139.52	.15	Shale	carbonaceous											
		139.52	139.68	.16	Coal	stony, rubble and powder											
	140.2																
		140.20	140.46	.26	Shale	carbonaceous											
		140.46	141.30	.84	SLTST	medium gray, calcite veins throughout, laminated and cross-laminated	80°										R3
33																	
		141.30	142.36	1.06	Shale	silty beds	80°										
	142.3																
		142.30	145.07	2.77	Shale	as above, carbonaceous and coal beds up to 0.01 m											
	145.4																
		145.40	145.82	.42	Shale	as above											
34																	
		145.82	147.96	2.14	Shale	carbonaceous at top and silty towards bottom											
		147.96	148.29	.33	SLTST	medium gray, laminated, minor shaley beds	80°										
	148.4																
		148.40	150.27	1.87	SLTST	some fine to medium gray sandstone beds and some shaley beds, minor calcite veins, increasingly shaley towards bottom	85°										
35																	
		150.27	150.32	.05	Shale	dark gray											
		150.32	150.34	.02	Coal	stony - pyrite		6	↑ EP-104-								
		150.34	150.40	.06	Coal	bright banded - stick			16 ↓	6.25	0.56	7.51	25.09	66.84	8		Yield 82% *

ALL LINEAR UNITS IN METRES

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* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

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CR ; NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % o.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
35		150.40	150.60	.20	Coal	dull - stick											
		150.60	150.70	.10	Coal	dull - rubble											
		150.70	150.83	.13	Coal	dull and bright - stick, pyrite											
		150.83	150.97	.14	Coal	dull - stick			EP-104-17	5.76	0.55	5.95	25.58	67.92	8		Yield 88% *
		150.97	151.05	.08	Coal	dull - rubble											
		151.05	151.08	.03	Coal	bright - stick											
		151.08	151.13	.05	Coal	dull - broken											
		151.13	151.22	.01	Coal	dull and bright - broken											
						Log thickness 0.9 m Core thickness 0.9 m Core recovery 100%											
		151.22	151.37	.15	Shale	dark gray											
	151.5																
		151.50	152.88	1.38	Shale	silty at top, carbonaceous and slickensided in middle											
	153.0																
		153.00	154.56	1.56	Shale	some silty beds											
36	154.5																
		154.50	154.87	.37	Shale	as above											
		154.87	157.60	2.73	SLTST	medium gray laminated and cross-laminated, calcite veins and calcite-coated fractures	75° 85°										R3
	157.5																
		157.50	158.49	.99	SLTST	as above	80°										
37																	
		158.49	160.56	2.07	SLTST	as above	70°										
	160.6																
		160.60	162.96	2.36	SST	medium gray, fine to medium grained, laminated and cross-laminated, mud rip-up clasts in places	85°										R3
38																	
		162.96	163.71	.75	SST	a 0.1 m shale bed	75°										
	163.7																
		163.70	166.74	3.04	SST	minor silty and shale beds, mud rip-up clasts in places	80°										

ALL LINEAR UNITS IN METRES

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* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

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CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
38	166.7																
		166.70	167.12	.42	SST	fine grained											
39																	
		167.12	169.61	2.49	SST	shale beds up to 0.3 m	75°										
		169.61	169.77	.16	SST	medium grained											
	169.8																
		169.80	171.52	1.72	SST	medium to coarse grained, coaly stringers, a few scattered pebbles towards bottom	85°										R3
40																	
		171.52	172.89	1.37	Congl.	pebbles up to 2 cm some shale pebbles but mostly siltstone(bluish) some coal stringers minor sandstone bed											R4
	172.8																
		172.80	173.34	.54	Congl.	as above											
		173.34	175.57	2.23	SLTST	medium to dark gray, laminated and cross-laminated, minor shaley beds and sandy beds	85°										R3
		175.57	175.80	.23	SST	medium to coarse grained, a few pebbles											
41																	
		175.80	175.85	.05	SST	as above											
	175.9																
		175.90	178.04	2.14	SST	as above, minor coal stringers towards bottom											
		178.04	178.88	.84	Shale	dark gray											
	178.9																
		178.90	180.16	1.26	Shale	as above, calcite veins at bottom											
42																	
		180.16	181.99	1.83	Shale	as above, minor calcite veins throughout											
	182.0																
		182.00	184.51	2.51	Shale	as above											
43																	
		184.51	184.84	.33	Shale	as above											
	185.0																
		185.00	187.76	2.76	Shale	silty beds, coaly fractures, coal lenses	40°										
		187.76	188.21	.45	SLTST	medium gray, laminated and cross-laminated	70°										

ALL LINEAR UNITS IN METRES

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•RQD — ROCK QUALITY DESIGNATION (%)
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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

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CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
43																	
		188.21	188.35	.14	Shale	dark gray											
	188.0																
		188.00	188.53	.53	Shale	as above											
44																	
		188.53	191.18	2.65	Shale	minor silty beds	70°										
	191.1																
		191.10	192.88	1.78	Shale	as above	80°										
45																	
		192.88	194.11	1.23	Shale	no silty beds											
	194.1																
		194.10	197.00	2.90	Shale	as above											
	197.2	197.20	197.30	.10	Shale	as above											
46																	
		197.30	200.37	3.07	Shale	some silty beds towards bottom											
	200.2																
		200.20	201.54	1.34	SLTST	some shaley beds	80°										
47																	
		201.54	203.26	1.72	Shale	dark gray											
	203.3																
		203.30	205.95	2.65	Shale	some silty beds, very minor calcite veins	85°										
48																	
		205.95	206.21	.26	Shale	as above											
	206.3																
		206.30	209.32	3.02	SLTST	laminated and cross-laminated, increasingly shaley towards bottom	85°										
	209.4																
		209.40	210.34	.94	Shale	dark gray											
49																	
		210.34	212.39	2.05	Shale	some silty beds	75°										
	212.4																
		212.40	214.68	2.28	Shale	as above	80°										
50																	
		214.68	215.39	.71	Shale	as above	70°										

ALL LINEAR UNITS IN METRES

† :*R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
*RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CR. .S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
50	215.5																
		215.50	217.75	2.25	Shale	as above, shalier towards bottom											
		217.75	217.93	.18	Coal	dull with bright bands, stick		8	↑								
		217.93	218.17	.24	Coal	bright with dull bands, rubble											
		218.17	218.35	.18	Coal	dull and bright, stick			EP-104-18	2.50	0.70	3.52	25.80	69.98	8.5		Yield 89% *
		218.35	218.44	.09	Coal	dull, stick											
	218.5																
		218.50	218.99	.49	Coal	dull and bright, rubble			X								
51		218.99	219.37	.38	Coal	dull and bright, rubble											
		219.37	219.58	.21	Coal	dull with bright bands, stick											
		219.58	219.72	.14	Coal	bright and dull, rubble											
		219.72	219.97	.25	Coal	bright and dull, rubble and powder											
	220.1																
		220.10	220.22	.12	Coal	powder											
		220.22	220.32	.10	Coal	dull with bright bands, broken											
		220.32	220.40	.08	Coal	bright, pyrite, stick											
		220.40	220.56	.16	Coal	dull, stick											
		220.56	220.63	.07	Shale	carbonaceous											
		220.63	220.83	.20	Coal	dull with bright bands, stick											
		220.83	221.42	.59	Coal	dull, powder, some rubble											
	221.6																
		221.60	222.08	.48	Coal	dull, stick											
		222.08	222.28	.20	Coal	dull with bright bands, stick											
		222.28	222.40	.12	Coal	powder, pyrite											
		222.40	222.63	.23	Coal	dull with bright bands, pyrite, stick											
		222.63	222.73	.10	Coal	rubble, pyrite, slickensides											
		222.73	223.04	.31	Coal	dull, stick, pyrite											
		223.04	223.13	.09	Coal	dull with bright bands, stick											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CR(NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
51																	
		223.13	223.35	.22	Coal	dull, pyrite, stick											
		223.35	223.43	.08	Coal	dull with bright bands, stick			EP-104-19	2.73	0.76	4.75	25.59	68.90	8.5		Yield 70% *
52																	
		223.43	223.55	.12	Coal	powder											
	223.7																
		223.70	223.78	.08	Shale	carbonaceous											
		223.78	223.96	.18	Coal	dull, stick											
		223.96	224.08	.12	Coal	dull, rubble											
		224.08	224.36	.28	Coal	dull, stick											
		224.36	224.53	.17	Coal	dull and bright, stick											
		224.53	224.77	.24	Coal	dull, stick											
		224.77	224.99	.22	Coal	dull, rubble											
		224.99	225.07	.08	Shale	carbonaceous, rubble											
		225.07	225.29	.22	Shale	unbroken											
	225.2																
		225.20	225.36	.16	Shale	as above											
		225.36	225.46	.10	Coal	dull and bright, stick											
		225.46	225.79	.33	Coal	dull, stick											
		225.79	226.21	.42	Shale	dark gray, carbonaceous, coal lenses, mostly broken											
		226.21	226.27	.06	Coal	powder											
		226.27	226.42	.15	Coal	dull and bright, broken											
		226.42	226.79	.37	Coal	rubble and powder, dull											
	226.8					Log thickness 9.6 Core thickness 7.61 Core recovery 80%											
		226.80	227.07	.27	Shale	carbonaceous											
		227.07	227.49	.42	SLTST	light and dark gray beds, calcite-filled fractures	65°										

ALL LINEAR UNITS IN METRES

†: R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No 8A-212A
REVISED Nov 1978

CR[illegible]S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
53																	
		227.49	228.06	.57	SLTST	as above											
	228.3																
		228.30	231.31	3.01	Shale	dark gray, some silty beds, calcite veins towards bottom	75°										
	231.6																
		231.60	232.12	.52	Shale	as above, calcite-filled fractures, slickensides, broken											
54																	
		232.12	232.62	.50	Shale	broken											
		232.62	232.93	.31	Shale	bone coal -stoney coal (heavy), broken											
		232.93	233.09	.16	Shale	bone - stoney, rubble and powder											
		233.09	233.17	.08	Shale	bone - stoney, stick											
		233.17	233.27	.10	Shale	carbonaceous											
	233.5																
		233.50	235.46	1.96	Shale	dark gray, carbonaceous in part, some coal lenses											
		235.46	236.32	.86	SLTST	medium and dark gray, laminated and cross-laminated	80°										
55	236.7																
		236.70	239.96	3.26	SLTST	as above, some minor calcite veins	80°										R3
	239.9																
		239.90	240.89	.99	SLTST	some shaley beds with slickensides, minor calcite veins	70°										
56																	
		240.89	241.09	.20	Shale	rubble, slickensides											
		241.09	241.78	.69	SLTST	medium and dark gray, laminated and cross-laminated, some calcite veins, shaley towards bottom	60°										
	242.9																
		242.90	245.28	2.38	SLTST	carbonaceous shale at top and shaley towards middle	55°										
57																	
		245.28	245.94	.66	SLTST	minor shaley beds											
	246.0																
		246.00	248.97	2.97	Shale	some silty beds, some slickensides, some calcite veins	60°										

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 104 CONTINUED

FILE No BA-212A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 104 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
57																	
	249.0																
		249.00	249.58	.58	Shale	mostly shale											
58																	
		249.58	252.08	2.50	Shale	dark gray, a few coaly horizons including lenses and stringers,											
						minor silty beds	75°										
	252.1					End of EP 104											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CROWS ST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	S.E. B.C.

DATE		
BEGIN	July 19,1980
END	July 29,1980

HOLE No. EP-105

PAGE 1 OF 19

HOLE PARTICULARS

LOCATION	N 5,540,589.03		
	E 661,179.99		
ELEVATION	2388.7	HOLE BEARING (AZ°)	@ 240 m S 83° E
TOTAL DEPTH	246.0	HOLE ANGLE (°)*	65°

LOGGING

LOGS RUN	Nat.Gam,Den,Neut,Cal, Det.Den.of Coal Seams
LOGGED BY	Davies Exp.Logging
OTHER TESTS	Directional Survey

COAL CORING PERFORMANCE

CORE DIAMETER		HQ
TOTAL	CORE RECOVERED	
	LENGTH CORED	
	CORE RECOVERY	%

EXAMINATION

LOG USED	
No. OF SEAMS SAMPLED	
EXAMINER (S)	
DATE	

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
1	6.1	6.10	7.15	1.05	Shale	medium gray, some thin calcite-filled fractures, slickensides											R3
						at 7.2 crumbled zone with slickensides											
		7.15	7.68	.53	SST	light to medium gray, fine grained	60°										R4
	7.9																
		7.90	8.43	.53	SST	finely laminated and cross-bedded, burrowed, coaly wisps containing pyrite, calcite-filled fractures											
		8.43	8.83	.40	SLTST	medium gray, some coaly material	70°										R3
	8.8																
		8.80	9.19	.39	Shale	dark gray, silty towards top	70°										
	9.1																
		9.10	10.50	1.40	Shale	minor coaly wisps, minor thin calcite-filled fractures											
2		10.50	10.70	.20	Shale	as above											
	11.0																
		11.00	11.90	.90	Shale	as above	70°										
		11.90	12.09	.19	Shale	broken zone with coaly stringers and slickensides											
		12.09	12.37	.28	Coal	dull with bright bands, slickensides, minor pyrite, broken stick											
	12.5																
		12.50	12.53	.03	Shaley Coal												
		12.53	13.53	1.00	Shale	dark gray, minor calcite veinlets, a broken slickensided zone with coal and pyrite on slickensides	65°										
		13.53	13.63	.10	Coaly Shale	pyritic											

ALL LINEAR UNITS IN METRES

* : MEASURED FROM THE HORIZONTAL PLANE

† : • R &/OR S — GOLDER ASSOCIATES HARDNESS CODE

• RQD — ROCK QUALITY DESIGNATION (%)

FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105

FILE No. BA-211A
REVISED Nov. 1978

C. S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	BEDDING ANGLE (°) ▲	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
2		13.63	14.19	.56	SLTST	medium gray, shaley, laminated	70°										R3
	14.3																
		14.30	15.31	1.01	SLTST	some coaly zones, calcite-filled fractures, becoming shaley towards the base and less laminated	50°										
3																	
		15.31	15.56	.25	SLTST	increasingly shaley	63°										
	15.5																
		15.50	16.92	1.42	SLTST	calcite-filled veinlets at 15.81	60°										
		16.92	17.11	.19	Shale	medium gray, minor carbonaceous material											
	17.1																
		17.10	18.65	1.55	Shale	crumbly, orange-coated fractures, smooth slickensides starting at 17.80											
	18.6																
		18.60	19.50	.90	Shale	slickensides 18.6 - 18.8 calcite veinlets 18.8 - 19.5											
4																	
		19.50	20.14	.64	Shale	increasingly silty towards base	70°										
	20.4																
		20.40	23.07	2.67	Shale	silty at top to 20.8, broken carbonaceous zone 22.1 - 22.3 becoming increasingly silty at 22.7											R3
	23.5																
		23.50	24.43	.93	SLTST	light and medium gray, cross-bedded, calcite healed fracture plus calcite veinlets at 23.9, burrows											
5																	
		24.43	26.44	2.01	SLTST	shaley in places, carbonaceous zone at 25.43 smooth slickensides at 25.43	50°										
	26.5																
		26.50	28.74	2.24	SLTST	minor calcite veinlets, slickensides at 28.5 minor coaly lenses	85°										
6																	
		28.74	29.63	.89	SLTST	calcite-filled fractures	70°										
	29.6																
		29.60	32.65	3.05	SLTST	calcite-healed zones from 30.3 - 30.5 and 37.75- 31.95 1 contact between a siltier and shalier zone has rip-up clasts and flame structures											
	32.6																
		32.60	32.90	.30	SLTST	calcite-healed zone at 32.7 - 32.9, cross-bedded	70°										

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No. BA-212 A
REVISED Nov. 1978

CR. S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
7																	
		32.90	35.04	2.14	SLTST	shaley zone with coaly lenses and smooth slickensides 33.3 - 33.6, calcite vein zone 34.1 - 34.3	60°										
		35.04	35.58	.54	Shale	calcite veins at top, silty zones											R3
	35.7																
		35.70	37.34	1.64	Shale	as above, calcite-healed zone at 36.4 - 36.5	80°										
8																	
		37.34	37.54	.20	Shale	as above											
		37.54	38.70	1.16	SLTST	light gray with some darker beds, minor calcite veinlets	80°										
	38.7																
		38.70	41.70	3.00	SLTST	as above, healed calcite zone 41.5 - 41.7 burrows, cross-bedded	65°										R3
9																	
	41.8																
		41.80	44.90	3.10	SLTST	as above, calcite veinlets throughout, a 1 mm coal lense, healed calcite zone 43.2 - 43.3 underlain by 0.1 coaly shale zone	65°										
	44.8																
		44.80	46.15	1.35	SLTST	as above, coaly flecks towards bottom	60°										
10																	
		46.15	47.88	1.73	SLTST	as above, minor shaley zones	60°										
	47.9																
		47.90	49.07	1.17	Shale	dark gray, minor coaly lenses with associated pyrite, minor slickensides (not smooth)											
		49.07	50.57	1.50	SLTST	medium gray, becoming increasingly light, coaly shale zone at 49.7 - 49.8 with slickensides	70°										
11																	
		50.57	50.71	.14	SLTST	as above											
	50.9																
		50.90	53.66	2.76	SST	becoming lighter and coarser with depth, calcite-filled fractures offset bedding, sharp contact at 53.4 between dark and light siltstone, fine to medium grained	65°										R3
	53.9																
		53.90	55.33	1.43	SLTST	shaley zone from 54.1 - 54.4 with slickensides shaley towards bottom	55°										

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No BA-212A
REVISED Nov 1978

CRC ... NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
12																	
		55.33	57.04	1.71	SLTST	as above with shaley zones, at base a 1 cm wide calcite healed fracture											
	57.0																
		57.00	57.58	.58	Shale	dark gray											
		57.58	57.60	.02	Coal	shaley coal - crumbled		4 Rider		3.38	0.85	3.38	29.13	66.64	9		Yield 82% *
		57.60	57.74	.14	Coal	dull - broken, sheared			EP-105-								
		57.74	57.87	.13	Coal	dull - stick, sheared											
		57.87	58.06	.19	Coal	dull with bright bands, stick, sheared, pyrite											
		58.06	58.50	.44	Coal	dull - stick, sheared, pyrite											
		58.50	58.65	.15	Coal	stoney coal - broken, some pulverized											
		58.65	58.83	.18	Coal	dull with bright bands - pyrite, some sheared, stick			EP-105- 2	3.37	0.86	4.59	28.38	66.17	8.5		Yield 89% *
		58.83	59.03	.20	Coal	dull with bright bands - broken, sheared, pyrite											
		59.03	59.10	.07	Coal	shaley coal											
						Log thickness 1.7											
						Core thickness 1.52											
						Core recovery 89%											
	59.1																
		59.10	59.41	.31	Shale	dark gray											
		59.41	59.46	.05	SLTST	light gray, shaley in places											
13																	
		59.46	61.43	1.97	SLTST	sandy in places, especially towards middle, minor calcite veinlets	70°										
		61.43	61.48	.05	Coal	shaley		4									
		61.48	61.54	.06	Coal	dull and bright - broken											
	62.2																
		62.20	62.35	.15	Coal	stoney - minor bright bands, pyrite smears, (heavy)											
		62.35	62.52	.17	Coal	dull & bright - pyrite specks, stick	60°			1.53	0.92	10.88	25.46	67.24	6		Yield 26% *
		62.52	62.62	.10	Coal	stoney - bright lenses, stick			EP-105- 3								
		62.62	62.69	.07	Shale	dark gray, pyrite specks											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

* Washed to S.G. 1.5

HOLE No. EP-105 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CE 3 NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. CONTINUED EP-105

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
13		62.69	62.71	.02	Coal	dull											
		62.71	62.85	.14	SLTST	medium gray, cut by fractures coated with coal and pyrite specks											
		62.85	63.13	.33	Coal	dull with bright bands - pyrite, stick											
	63.1																
		63.10	63.31	.21	Coal	dull and bright - sheared, pyrite, stick											
		63.31	63.71	.40	Coal	dull - sheared, pyrite, stick											
		63.71	63.76	.05	Shale	dark gray											
		63.76	63.79	.03	Coal	bright											
		63.79	63.83	.04	Coal	stoney											
		63.83	64.21	.38	Coal	dull with bright bands - sheared											
14																	
		64.21	64.60	.39	Coal	dull - sheared, pyrite specks, stick											
		64.60	65.20	.60	Coal	dull - sheared, broken stick											
	66.1																
		66.10	66.27	.17	Coal	dull - sheared, broken, pyrite											
		66.27	66.45	.18	Coal	dull with bright bands - sheared, broken stick			EP-105-								
		66.45	66.59	.14	Coal	dull and bright - broken stick			4	0.64	0.84	4.13	26.23	68.80	8		Yield 81% *
		66.59	66.71	.12	Coal	dull - pulverized											
	67.0																
		67.00	67.08	.08	Coal	dull - pulverized											
		67.08	67.22	.14	Coal	dull - broken stick											
		67.22	67.44	.22	Coal	dull with bright bands - stick, sheared											
		67.44	67.54	.10	Coal	dull - pulverized											
	68.6																
		68.60	68.80	.20	Coal	dull with bright bands											
		68.80	68.87	.07	Shale	coaly											
	69.2																
		69.20	69.22	.02	Shale	coaly											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

* Washed to S.G. 1.5

HOLE No. CONTINUED EP-105

FILE No BA-212 A
REVISED Nov 1978

CRO...NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
14		69.22	69.46	.24	Shale	coaly, slickensided, pyrite											
		69.46	69.55	.09	Coal	dull											
		69.55	69.56	.01	Shale	coaly											
		69.56	69.78	.22	Coal	dull - sheared, broken stick											
		69.78	69.84	.06	Coal	dull - pulverized											
		69.84	69.96	.12	Coal	dull - sheared, broken stick											
		69.96	70.05	.09	Coal	dull - with bright bands - broken stick											
		70.05	70.23	.18	Coal	dull - sheared, pyrite, broken stick											
		70.23	70.36	.13	Coal	dull with bright bands, stick											
						Log thickness 9.4											
						Core thickness 5.77											
						Core recovery 61%											
		70.36	70.52	.16	SLTST	light gray, burrowed											
	70.7																
		70.70	71.13	.43	SLTST	laminated	55°										R3
15																	
		71.13	71.57	.44	SLTST	as above, coaly lenses	50°										
		71.57	71.91	.34	Shale	dark gray, coaly lenses											
	72.2																
		72.20	74.31	2.11	Shale	as above, silty intervals, minor calcite-filled fractures	50°										
		74.31	74.48	.17	Coal	shaley, slickensides											
		74.48	74.71	.23	Shale	coal stringers											
	75.3																
		75.30	76.33	1.03	Silty-shale	dark gray with light gray silty zones throughout, minor calcite-filled fractures											
16																	
		76.33	76.63	.30	Silty-shale	as above	70°										
		76.63	76.87	.24	Coal	some thin shaley bands, dull banded, broken, slickensided											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
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FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CR . NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
16		76.87	77.16	.29	Shale	dark gray, coaly lenses											
		77.16	78.42	1.26	SLTST	alternating light and medium gray, some turbulent laminations, calcite-filled fractures	50°										
	78.3																
		78.30	78.96	.66	Shale	dark gray, breaks into small rectangles											R2
		78.96	79.03	.07	Coal	pulverized											
		79.03	80.51	1.48	SLTST	light gray, contorted bedding, minor calcite-filled fractures	50°										R3
17																	
		80.51	81.54	1.03	SLTST	as above	50°										
	81.37																
		81.37	83.94	2.57	SLTST	calcite veins almost perpendicular laminations throughout											
		83.94	84.42	.48	Shale	dark gray	60°										
	84.4																
		84.40	84.69	.29	Shale	as above											
18																	
		84.69	85.51	.82	Shale	as above											
		85.51	87.38	1.87	SLTST	light gray, disturbed laminations, minor calcite veinlets	60°										
	87.5																
		87.50	89.29	1.79	SLTST	minor shale interbeds, concentrations of calcite veinlets and fracture infilling, bedding almost parallel core axis	20°										
19																	
		89.29	89.63	.34	SLTST	as above											
		89.63	90.53	.90	Shale	dark gray, minor silty bands	20°										
	90.5																
		90.50	90.83	.33	Shale	as above											
		90.83	92.68	1.85	SLTST	light gray, carbonaceous spots, 0.10 zone of calcite veins and fractures fillings at 90.4, shalier towards base	30°										R3
	92.7																
		92.70	93.45	.75	SLTST	as above, numerous calcite veins (.3 mm wide)											

ALL LINEAR UNITS IN METRES

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FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No 8A-212A
REVISED Nov 1978

CRO NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
20																	
		93.45	95.64	2.19	SLTST	as above, very few calcite veins, some contorted laminations	85°										
		95.64	94.80	.16	Shale	dark gray, some silty bands											
	95.7																
		95.70	97.72	2.02	Shale	as above, minor calcite veins	90°										
21																	
		97.72	98.73	1.01	Shale	as above											
	98.8																
		98.80	98.93	.13	Coal	dull - broken stick											
		98.93	99.03	.10	Coal	dull with bright bands - stick			EP-105-5	2.12	0.44	2.44	25.82	71.30	8		Yield 60% *
		99.03	99.36	.33	Coal	dull with bright bands - stick, sheared											
		99.36	99.44	.08	Coal	bright - stick											
		99.44	99.56	.12	Coal	dull - stick, sheared											
		99.56	99.80	.24	Coal	dull with bright bands - sheared, stick											
		99.80	100.05	.25	Coal	dull - sheared, stick											
		100.05	100.11	.06	Coal	bright - sheared, stick, pyrite											
		100.11	100.38	.27	Coal	dull with bright bands - stick, pyrite			EP-105-6	3.09	0.36	4.63	25.83	68.18	8		Yield 87% *
		100.38	100.52	.14	Coal	dull - sheared, pyrite, broken stick											
	100.6																
		100.60	100.85	.25	Coal	dull and bright - very broken, pyrite											
		100.85	100.97	.12	Coal	dull and bright - powdery											
		100.97	101.08	.11	Coal	dull and bright - broken, pyrite											
	101.8																
		101.80	101.92	.12	Coal	bright with dull bands - sheared, stick											
						Log thickness 3.3											
						Core thickness 2.32											
						Core recovery 70%											
		101.92	103.16	1.24	Shale	dark gray, coaly lenses, silty towards base	50°										

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS
* Washed to S.G. 1.5

HOLE No. EP-105 CONTINUED

FILE No BA-212A
REVISED Nov 1978

C NS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
22																	
		103.16	104.65	1.49	SLTST	light and medium gray, some shaley zones especially towards base, a 0.30 zone of calcite veins at 104.3	45°										R3
	104.8																
		104.80	105.20	.40	SLTST	as above, calcite veins throughout, up to 2 mm thick, small fault contact at siltstone/shale contact with a 4 cm displacement along a reverse type fault	55°										
		105.20	105.73	.53	Shale	dark gray, silty patches											
		105.73	105.89	.16	Coal	dull - broken, sheared											
		105.89	106.01	.12	Stoney Coal	slickensides, pyrite on slickensides											
		106.01	106.82	.81	Shale	dark gray, 1 cm thick coaly horizons (some with slickensides) throughout											
	108.1																
		108.10	108.97	.87	Shale	as above, breaks into small rectangles	50°										
23																	
		108.97	109.43	.46	Shale	as above, 0.16 stoney coal horizon at 108.97											
	109.7																
		109.70	111.54	1.84	Shale	as above, calcite veins and healed fractures											
	111.9																
		111.90	113.95	2.05	Silty Shale	banded zone at 112.09 with a 1 cm calcite vein at base, vein separates zones of different dip, thin coaly zones throughout, silty at top and shalier towards bottom	25° 65° 90°										R3
24																	
		113.95	114.14	.19	Shale	dark gray											
	114.9																
		114.90	118.03	3.13	Shale	calcite veins scattered throughout, minor silty zones	60°										
	118.0																
		118.00	119.08	1.08	Shale	as above											
25																	
		119.08	119.44	.36	Shale	as above											

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CRO. NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
25																	
	119.2																
		119.20	121.37	2.17	Shale	as above, 1 cm pyrite bed at 119.26,											
						silty zones,	85°										
						coaly zones, usually with slickensides											
	122.2																
		122.20	122.61	.41	Shale	as above											
						Seam 6 - Coal missing entirely from core											
	124.7																
		124.70	124.85	.15	Shale	as above											
	125.6																
		125.60	126.73	1.13	Silty	dark gray,	60°										
					Shale	coaly slickensides at top & towards base	40°										
26																	
		126.73	127.10	.37	Silty	as above											R3
					Shale												
	127.1																
		127.10	129.48	2.38	Silty	as above, becoming increasingly silty,	50°										
					Shale	no coal, minor calcite veins											
		129.48	130.21	.73	SLTST	light gray, cross laminated	55°										R3
						calcite veins (minor)											
	130.1																
		130.10	131.05	.95	SLTST	as above	55°										
27																	
		131.05	131.56	.51	Silty	medium gray, becoming shalier with depth											
					Shale												
		131.56	131.61	.05	Coal	bright banded - stick			EP-105-								
		131.61	131.64	.03	Coal	dull - stick			7	2.38	0.31	5.63	24.31	69.79	8		Yield 84% *
		131.64	131.79	.15	Coal	dull with bright bands - stick											
		131.79	132.02	.23	Coal	dull - slickensided, broken, pyrite											
		132.02	132.09	.07	Coal	dull - stick			EP-105-								
		132.09	132.21	.12	Coal	dull and bright - stick			8	0.62	0.31	6.65	24.81	68.23	8		Yield 87% *
		132.21	132.42	.21	Coal	dull with bright bands - broken, pyrite											
		132.42	132.52	.10	Coal	dull with bright bands - very broken											
		132.52	132.72	.20	Coal	pulverized											
						Log thickness 1.2											
						Core thickness 1.16											
						Core recovery 97%											
		132.72	132.89	.17	Shale	dark gray											

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

* Washed to S.G. 1.5

HOLE No. EP-105 CONTINUED

FILE No. BA-212 A
REVISED Nov. 1978

C. /S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	BEDDING ANGLE (°) ▲	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
	132.6																
		132.60	135.29	2.69	Shale	as above, silty zones, coaly stringers and lenses	55°										
28																	
		135.29	135.48	.19	Shale	as above											
	135.6																
		135.60	138.65	3.05	Shale	as above, coaly lenses towards top, siltier towards base, calcite veins, slickensides in coaly zones	40°										
	138.7																
		138.70	139.82	1.12	SLTST	light and medium gray, cross-laminated	55°										
29																	
		139.82	141.97	2.15	SLTST	as above, minor calcite veins											R3
	141.7																
		141.70	143.86	2.16	SLTST	as above, shaley zones more calcite (one up to 1 cm wide) veins towards base	30°										
30																	
		143.86	144.75	.89	SLTST	as above, with shaley zones and calcite veins											
	145.1																
		145.10	148.40	3.30	SLTST	as above (possible fault considering bedding angle)	20°										
31																	
	148.1																
		148.10	151.22	3.12	SLTST	as above, 0.20 calcite healed zone at top	35°										
	151.2																
		151.20	152.45	1.25	SLTST	as above	35°										
32																	
		152.45	152.70	.25	SLTST	as above											
		152.70	153.23	.53	SST	light gray, fine to medium gray, very faint bedding	45°										R4
		153.23	154.21	.98	Silty Shale	dark gray, slickensides towards top (one is S-shaped), rip-up clasts at sandstone contact											
		154.21	154.51	.30	SLTST	medium gray, laminated	30°										R3
	154.2																
		154.20	155.07	.87	SST	medium gray, becoming coarser grained towards bottom, slickensides and calcite veins	50°										R3

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

C OWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS †
32		155.07	156.46	1.39	Silty Shale	dark gray, some slickensides towards top, minor calcite veins	25°										
33																	
		156.46	157.35	.89	Shale	as above											
	157.3																
		157.30	159.23	1.93	SLTST	light gray, grading downwards to medium gray increasing carbonaceous laminations downwards along some of which there are slickensided, minor calcite veins	40°										R3
	159.0																
		159.00	160.40	1.40	SLTST	as above but no carbonaceous laminations, more shaley zones	30°										R3
34																	
		160.40	160.56	.16	SLTST	as above											
	160.6																
		160.60	163.52	2.92	SLTST	as above, calcite healed zone at top 2 cm wide, at 161 a .20 m zone of calcite veins with displacement along them	25°										
	163.4																
		163.40	164.24	.84	SLTST	as above											
		164.24	164.54	.30	SST	medium gray, medium grained											
35																	
		164.54	166.20	1.66	SST	as above, scattered calcite veins, rip-up clasts at 166.0											
	166.4																
		166.40	169.06	2.66	SST	as above, coarser zones at 166.9 and 168.5, rip-up clasts at 168.7 and 168.4, porous zone at 167.4 (dissolved calcite veins?)											R3
36																	
		169.06	169.15	.09	SST	as above	40°										
		169.15	169.66	.51	Shale	dark gray											

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No BA-212A
REVISED Nov 1978

C. /S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
36																	
		169.66	172.46	2.80	SST/ Congl.	light gray, coarse grained sandstone, pebbles concentrated in zones, some pyritized pebbles, coaly stringers and lenses	50°										R3-R4
	172.5																
		172.50	173.04	.54	SST/ Congl.	as above, becoming finer grained and laminated towards bottom											
37																	
		173.04	173.86	.82	SST	medium gray with dark gray towards bottom, fine grained, coaly laminations towards bottom	55°										R3
		173.86	175.77	1.91	SST/ Congl.	medium gray, medium to coarse grained, pebble zones with pebbles up to 3 cm but averaging 0.5 - 1.0 cm, coaly streaks, lenses, patches; towards bottom a coaly slickenside abuts 2 different bedding angle orientations. 0.29 m broken core at bottom	45° 40°, 10°										R3-R4
	175.6																
		175.60	177.18	1.58	SST	medium gray, medium grained, laminated, small faults showing offsets throughout, faults have coaly surfaces	10°										R3
38																	
		177.18	177.87	.69	SST	as above, core broken at top											
		177.87	178.81	.94	SST/ Congl.	medium gray, medium to coarse grained, pebble zones 0.1 to 0.2 m thick											R3
	178.6																
		178.60	181.11	2.51	SST/ Congl.	as above, coal stringers, lenses, pods throughout, coaly slickensides throughout	10°										
	181.0																
		181.00	181.13	.13	Congl.	pebbles more concentrated than in previous zones											R3-R4
39																	
		181.13	181.47	.34	Congl.	as above, coaly stringers, lenses, pods throughout, porosity along washed-out lenses											
		181.47	181.82	.35	SST	light gray, coarse-grained											
		181.82	183.07	1.25	SST	light gray, fine grained, laminated, minor calcite vines, two grain sizes separated along a coaly horizon	75°										R3

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CRO. . NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
	184.1																
		184.10	185.46	1.36	SST	as above, well laminated, becoming finer with depth, minor calcite veins	70°										
40																	
		185.46	187.23	1.77	SLTST	medium gray, well laminated with some coaly laminations, minor calcite veins, minor sandy zones, also well laminated	70°										R3
	187.4																
		187.40	189.36	1.96	SLTST	as above, bedding angle changes from top to bottom	70° ↓ 0° ↓ 25°										
	189.3																
		189.30	189.53	.50	SLTST	as above	0° ↓ 40°										
41																	
		189.53	190.26	.73	SLTST	as above, concentration of calcite veins and coaly laminations and slickensides gives it a "messed up" appearance											
		190.26	191.29	1.03	SST/ Congl.	light gray, medium grained, pebbles in zones, one with an eroded surface below it, broken core for last 0.2 m	70°										R3
	191.1																
		191.10	193.74	2.64	SST	medium gray, well laminated, a coaly slickenside between the two bedding attitudes, minor coal stringers, lenses and pods becoming coarser grained towards bottom	30° ↓ 90°	top									
42																	
		193.74	194.40	.66	SST/ Congl.	medium gray, coarse grained, pebbly zones											R3-R4
	194.1																
		194.10	196.96	2.86	SST/ Congl.	as above, some coaly stringers and lenses throughout	80°										
	197.2																
		197.20	198.10	.90	SST/ Congl.	as above, porous where coal has been washed out											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No. BA-212 A
REVISED Nov. 1978

C ..NS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
43																	
		198.10	200.34	2.24	SST	medium gray, coarse grained, coaly laminations and lenses towards bottom	80°										R3-R4
	200.2																
		200.20	200.45	.25	SST	as above, linear porosity, sharp lower contact											
		200.45	202.32	1.87	Shale	dark gray, some silty interbeds, minor calcite veins	80°										
44																	
		202.32	203.49	1.17	Shale	as above, no siltstone interbeds											
	203.3																
		203.30	206.40	3.10	SLTST	medium gray, laminated and cross-laminated, some shaley zones	90°										R3
45																	
	206.3																
		206.30	209.51	3.21	SLTST	as above, some calcite veins, less shaley											
	209.4																
		209.40	209.48	1.08	SLTST	as above	80°										
46																	
		209.48	211.49	2.01	SLTST	as above	90°										
	212.4																
		212.40	214.80	2.40	SLTST	as above, some shaley zones	90°										
47																	
		214.80	215.52	.72	SLTST	as above, becoming increasingly shaley											
	215.5																
		215.50	218.54	3.04	SLTST	as above, shaley in the middle and at the bottom, calcite veins	90°										
	218.5																
		218.50	219.03	.53	Silty Shale	as above, but overall finer grained and more shaley											
48																	
		219.03	220.86	1.83	Shale	as above											
		220.86	221.44	.58	Shale	as above, coal splits, slickensides											
		221.44	221.55	.11	Coal	dull and bright, slickensided upper contact, stick		8	↑								

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No. BA-212 A
REVISED Nov. 1978

CRO NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
48	221.6								EP-105-								
		221.60	222.15	.55	Coal	dull with bright bands, slickensides, broken			9	22.93	0.89	4.34	24.71	70.06	8		Yield 83% *
		222.15	222.31	.16	Coal	dull banded - stick											
		222.31	222.44	.13	Coal	dull - broken to powdery											
		222.44	222.53	.09	Coal	dull - stick											
		222.53	222.66	.13	Coal	bright with dull bands - stick											
		222.66	222.75	.09	Coal	dull and bright - stick											
		222.75	222.99	.24	Coal	dull - stick, some slickensides											
		222.99	223.11	.12	Coal	dull and bright - broken											
	223.1																
		223.10	223.26	.16	Coal	dull - stick											
49																	
		223.26	223.34	.08	Coal	bright - stick											
		223.34	223.53	.19	Coal	bright -slickensided, broken											
		223.53	223.55	.02	Coal	bright - stick											
		223.55	223.79	.24	Coal	dull - stick											
		223.79	223.96	.17	Coal	dull with bright bands - stick											
		223.96	224.05	.09	Coal	dull - broken and pulverized											
		224.05	224.13	.08	Coal	dull - stick, pyrite											
		224.13	224.61	.48	Coal	dull with bright bands - broken and pulverized, some pieces have 1 mm shale bands											
	224.6																
		224.60	224.66	.06	Coal	dull with bright bands, stick											
		224.66	224.95	.29	Coal	dull and bright - slickensided, stick											
		224.95	225.24	.29	Coal	dull and bright -slickensided, stick, pyrite blebs											
		225.24	226.31	.07	Shale	dark gray, slickensided											
		226.31	226.39	.08	Coal	dull - stick											

ALL LINEAR UNITS IN METRES

† :-R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS
* Washed to S.G. 1.5

HOLE No. EP-105 CONTINUED

FILE No BA-212A
REVISED Nov 1978

C. /S NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % o.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
49		226.39	226.44	.05	Coal	dull - broken and pulverized			EP-105-10	4.00	0.73	4.38	24.87	69.57	8.5		Yield 77% *
		226.44	226.60	.16	Shale	dark gray, coaly bands											
		226.60	226.74	.14	Coal	dull - stick											
		226.74	226.83	.09	Coal	bright - slickensides, stick											
	226.2																
		226.20	226.34	.14	Coal	dull with bright bands - stick											
		226.34	226.57	.23	Coal	dull and bright - broken, pyrite											
		226.57	226.92	.35	Coal	bright with dull bands - stick, pyrite											
		226.92	227.16	.24	Coal	dull - stick, pyrite											
		227.16	227.39	.23	Coal	dull with bright bands - stick, pyrite											
		227.39	227.48	.09	Coal	bright with dull bands - stick, pyrite											
	227.4																
		227.40	227.44	.04	Coal	powder											
		227.44	227.69	.25	Coal	dull - stick											
		227.69	227.76	.07	Coal	dull and bright - stick											
50																	
		227.76	227.97	.21	Coal	bright - stick											
		227.97	228.13	.16	Coal	dull - stick, pyrite											
		228.13	228.16	.03	Shale	dark gray, broken											
		228.16	228.47	.31	Coal	dull and bright - stick											
		228.47	228.82	.35	Coal	dull with bright bands - broken											
		228.82	229.04	.22	Coal	bright - broken, pyrite											
		229.04	229.27	.23	Coal	powder											
		229.27	229.67	.40	Coal	dull and bright - broken											
	229.8																
		229.80	229.94	.14	Coal	dull - broken											
		229.94	230.00	.06	Coal	bright - stick											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS
* Washed to S.G. 1.5

HOLE No. EP-105 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CRO. ↓ NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
50		230.00	230.06	.06	Coal	powder											
		230.06	230.10	.04	Coal	stoney coal											
		230.10	230.17	.07	Coal	dull - broken											
		230.17	230.28	.11	Shale	dark gray											
		230.28	230.45	.17	Coal	dull - broken											
		230.45	230.75	.30	Coal	dull and bright - broken											
		230.75	230.89	.14	Coal	dull with bright bands - broken			↓								
						Log thickness 9.2 Core thickness 9.0 Core recovery 98%											
		230.89	232.16	1.27	Shale	dark gray, carbonaceous, coal stringers and lenses, silty towards bottom											
51																	
		232.16	232.96	.80	Shale	as above, slickensides											
	232.9																
		232.90	233.79	.89	SLTST	light gray, laminated and cross-laminated, some turbulent lamination at bottom	80°										R3
		233.79	233.95	.16	Shale	dark gray											
		233.95	234.13	.18	Coal	bright, 0.01 carbonaceous shale at top											
		234.13	236.11	1.98	Shale	dark gray, carbonaceous throughout, 0.01 pyrite band at 235.4											
	235.9																
		235.90	236.16	.26	Shale	as above, increasing coal lenses and bands towards bottom - 0.1 m coal at bottom, slickensides											
	236.8																
		236.80	238.17	1.37	SLTST	light gray, becoming increasingly laminated and less shaley towards bottom, minor calcite veins	90°										R3
		238.17	239.19	1.02	Shale	dark gray to black, very carbonaceous, coal bands up to 0.1 m											
	239.3																
		239.30	240.62	1.32	SLTST	laminated and cross-laminated, in places fine grained sandstone, in places shaley, worm burrows	80°										R3

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CRC , NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP-105 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
53																	
		240.62	241.59	.97	SLTST	as above, no worm burrows, mostly silty with some fine-grained sandstone	85°										
		241.59	242.41	.82	Shale	dark gray, sharp upper contact, silty patches											
	242.3																
		242.30	244.13	1.83	Shale	as above, becoming increasingly carbonaceous towards bottom, more slickensides towards bottom, rubbly zone for 0.4 m above marker block, some slickensides pyritized											
	244.1																
		244.10	244.78	.68	Shale	as above but less carbonaceous and more silty, top 0.1 m rubbly											
54																	
		244.78	245.68	.90	Shale	as above, still increasingly silty											
		245.68	246.06	.38	SLTST	light gray, unconformable contact	90°										R3
	246.0																
						END OF HOLE EP 105											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP-105 CONTINUED

FILE No 8A-212A
REVISED Nov. 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWI. PASS
AREA	S.E. B.C.

DATE	
BEGIN	Sept. 17/80
END	Sept. 28/80

HOLE No.	EP 106

Sh. 1 of 14

HOLE PARTICULARS

LOCATION	N 5,540,972.65		
	E 661,253.17		
ELEVATION	2388.1	HOLE BEARING (AZ°)*	
TOTAL DEPTH	254.5	HOLE ANGLE (°)*	90°

LOGGING

LOGS RUN	Gam,Den,Neutron,Cal, Det'd Den.of Coal Seams
LOGGED BY	Davies Expl.Logging
OTHER TESTS	Directional Survey

COAL CORING PERFORMANCE

CORE DIAMETER		HQ to 75.14 NQ after
TOTAL	CORE RECOVERED	75.14
	LENGTH CORED	
	CORE RECOVERY	%

EXAMINATION

LOG USED	Gamma-Density
No. OF SEAMS SAMPLED	6
EXAMINER (S)	C. Beavan
DATE	Sept. 1980

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH % d.b.	V.M. % d.b.	F.C. % d.b.	F.S.I.	C.V.	REMARKS†
1	6.1	6.1	6.31	0.21	Shale	dark grey, broken											
	6.7																
		6.7	7.38	0.68		as above, but carbonaceous at base											
	7.6																
		7.6	8.58	0.98		broken and parts are highly slickensided, 0.1m											
						coal zone in middle											
	8.8																
		8.8	9.70	0.90	Sltst	dark grey, shaly interbeds towards top	50°										
	9.7																
		9.7	10.85	1.15		laminated, cross-laminated and cross-bedded,	30°-										
						numerous calcite veins and fracture fillings	70°										
		10.85	11.46	0.61		as above but increasingly sandy	35°										
	11.3																
		11.3	12.82	1.52	SS	fine to medium grained, light grey, numerous	20°										R3
						calcite veins and fracture fillings, orange											
						weathered in places											
	12.8																
		12.8	14.30	1.50		shaly in part, parts are highly orange weathered											
						numerous calcite veins & fracture fillings											
	14.3																
		14.30	14.52	0.22		medium grained, numerous calcite veins and											
						fracture fillings											
3																	
		14.52	15.72	1.20	Shale	medium grey, sandy towards top, numerous calcite											
						veins and fracture fillings towards top, orange											
						weathered in part											
	15.8																
		15.80	15.90	0.10		as above											
		15.90	16.77	0.87		carbonaceous, entirely slickensided											
		16.77	16.97	0.20	Coal	powder, some shale mixed in, slickensided											
		16.97	17.68	0.71	Shale	dark grey, silty towards bottom, calcite veins	50°										
						towards bottom											
	17.40																
		17.40	18.34	0.94	Sltst	shaly at top, sandy towards bottom calcite veins	50°										R3
4																	
		18.34	18.89	0.55	SS	fine grained	50°										R3
	18.90																
		18.90	20.52	1.62		partly carbonaceous, numerous calcite veins and											
						fracture fillings, dramatic change in lamina-	50°-										
						tion angle across one 0.01 m calcite vein	0°										

ALL LINEAR UNITS IN METRES

* : MEASURED FROM THE HORIZONTAL PLANE

† : • R &/OR S — GOLDER ASSOCIATES HARDNESS CODE

• RQD — ROCK QUALITY DESIGNATION (%)

FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106

FILE No. BA-211A
REVISED Nov. 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS†
	20.4																
		20.40	21.83	1.43		as above	10°										
	21.9																
		21.9	22.50	0.60		as above											
5																	
		22.50	23.48	0.98		fewer calcite veins	0°										
	23.5																
		23.5	24.88	1.38		as above, but partly silty											
	25.0																
		25.0	26.72	1.72		again numerous calcite veins, orange weathering on fractures	10°										
6	26.5																
		26.5	27.94	1.44		as above											
	28.0																
		28.0	29.57	1.57		as above	0°										
	29.6																
		29.6	30.92	1.32		as above	0°										
7																	
		30.92	31.06	0.14		as above											
	31.1																
		31.1	32.67	1.57		as above											
	32.6																
		32.6	33.26	0.66		as above											
		33.26	34.11	0.85	Shale	sharp but irregular contact with calcite veins along it, broken with orange weathering, slickensides, dark grey	0-50°										
	34.1																
		34.1	35.12	1.02		slickensided zone in middle, some calcite veins towards bottom											
8																	
		35.12	35.84	0.72		silty in middle	30°										
	35.6																
		35.6	36.64	1.04		coaly zones, broken, some slickensides											
	36.8																
		36.8	38.51	1.71		as above, orange weathered fractures											
	38.6																
		38.6	39.44	0.84	Siltst	dark grey at top to light grey towards bottom laminated and cross laminated	40°										
9																	
		39.44	40.26	0.82		as above, orange weathering along breaks	50°										
	40.2																
		40.2	41.70	1.50	Shale	dark grey, some silty beds near top	50°										
	41.8																
		41.8	42.51	0.71		as above											
	42.4																
		42.4	42.49	0.09		carbonaceous, rubble											
		42.49	42.53	0.04	Coal	bright with dull bands, stick		Rider	60° 106 45	4.54	0.84	6.85	27.51	64.80	8		Yield 88% *
		42.53	43.12	0.59		highly slickensided, stick but crumbly			71								

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % o.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS †
	43.3																
		43.3	43.89	0.59		highly slickensided, dull and bright, stick but crumbly											
10																	
		43.89	44.05	0.16		dull, stick											
		44.05	44.14	0.09		powder			EP106 46	2.69	0.65	5.82	26.83	66.70	8½		Yield 74% *
		44.14	44.34	0.20		dull with bright bands, broken											
	44.5																
		44.5	44.59	0.09		dull with bright bands, broken											
		44.59	44.79	0.20	Shale	carbonaceous, very broken, pyrite											
		44.79	44.85	0.06	Coal	slickensided, rubble											
	44.8																
		44.8	44.93	0.13		slickensided, stick Log thickness: 2.4; Core thickness: 2.15; Core recovery: 90%											
		44.93	46.08	1.15	Shale	dark grey, carbonaceous at top, orange weathering along breaks											
	46.3																
		46.3	47.88	1.58		silty in middle	50°										
	47.9																
		47.9	48.05	0.15		as above											
11																	
		48.05	49.26	1.21	Sltst	medium grey, carbonaceous at bottom, calcite veins											
	49.4																
		49.4	50.66	1.26		as above but dark grey											
		50.66	50.96	0.30	Shale	dark grey											
	50.9																
		50.9	52.03	1.13		broken, carbonaceous in places											
	52.1																
		52.1	52.43	0.33		as above											
12																	
		52.43	52.57	0.14		as above											
		52.57	52.97	0.40	Coal	bone, heavy		4									
		52.97	53.92	0.75		slickensided, stick			EP106 47	1.95	0.69	7.27	24.27	67.77	7½		Yield 60% *
	53.9																
		53.9	54.15	0.25		dull, stick											
		54.15	54.24	0.09		powder and rubble, minor shale											
		54.24	55.59	1.35		dull, stick and broken, some slickensided											
	55.5																
		55.5	56.40	0.90		dull, slickensided, stick, minor pyrite											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY
* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS†
		56.40	56.64	0.24	Shale	carbonaceous											
		56.64	56.75	0.11	Coal	dull, stick											
13		56.75	56.95	0.20		dull, stick											
	57.0																
		57.0	57.06	0.06		dull, stick											
		57.06	57.11	0.05	Shale												
		57.11	58.49	1.32	Coal	dull with bright bands, stick, minor pyrite											
	58.5																
		58.5	58.98	0.48		broken and rubble, dull with bright bands											
		58.98	59.14	0.16		dull, stick											
		59.14	59.44	0.30		powder and rubble											
	59.7																
		59.7	61.40	1.70		dull with bright bands, stick			EP 106								
									48	3.75	0.69	3.96	26.64	68.71	8½		Yield 78% *
		61.40	61.53	0.13		powder											
14	61.3																
		61.30	61.86	0.56		slickensided, broken and rubble											
		61.86	62.59	0.73		powder and rubble											
	62.8																
		62.8	63.60	0.80		slickensided, stick, dull, pyrite											
		63.60	63.88	0.28		powder											
	64.0																
		64.0	65.39	1.39		dull with bright bands, broken, slickensides											
	65.8																
		65.8	66.40	0.60		dull with bright bands, stick and broken											
		66.40	66.53	0.13	Shale	carbonaceous											
15																	
		66.53	66.64	0.11		as above											
		66.64	66.88	0.24	Coal	powder											
		66.88	66.93	0.05	Shale												
		66.93	67.50	0.57	Coal	powder											
	67.7	67.70	68.52	0.82	Coal	slickensided, broken and rubble											
						Log thickness 15.1			✓								
						Core thickness 14.77											
	68.6					Core recovery 98%											
		68.6	69.69	1.09	Shale	dark grey to black, carbonaceous with coal stringers											
		69.69	70.35	0.66	Coal	powder											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
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FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS†
	70.4																
		70.4	71.14	0.74	Shale	dark grey to black, carbonaceous, minor silty beds	65°										
16																	
		71.14	71.59	0.45		as above											
	71.6																
		71.6	72.24	0.64		as above											
	72.2																
		72.2	73.12	0.92		as above	65°										
	73.1																
		73.1	74.45	1.35		as above, coal-lined fractures, minor calcite veins	55°										
	74.5																
		74.5	75.14	0.64		as above											
17						CORE CHANGES TO NQ											
		75.14	76.16	1.02		as above, top 0.4 m silty	40°										
	76.8																
		76.8	79.07	2.27	Siltst/ Shale	shale has a few minor carbonaceous zones, siltstone laminated	50°										
	79.2																
		79.2	80.04	0.84	Shale	black at top to grey at bottom, minor calcite veins											
18																	
		80.04	82.15	2.11		some silty beds	40°										
	82.4																
		82.4	82.76	0.36		as above											
		82.76	84.47	1.71	Siltst	light to medium grey, lamianted and cross laminated, minor calcite veins and calcite filled fractures	55°										
19																	
		84.47	85.41	0.94		as above, minor shaly beds (0.05 m)	60°										R3
	85.6																
		85.6	88.60	3.00		as above, shale/siltstone contacts very irregular	65°										
	88.8																
		88.8	89.11	0.31	Shale	dark grey, calcite filled fracture											
20																	
		89.11	90.12	1.01		minor silty beds, no calcite veins (driller's note on marker block: "hole is 5 ft. deeper is now")	50°										
	91.4																
		91.4	92.32	0.92		as above	45°										
	92.9																
		92.9	94.93	2.03		as above, no siltstone											
21																	
		94.93	95.65	0.72		as above											
	96.0																
		96.0	97.86	1.86		as above but minor silty beds again	50°										

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA - 212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS †
	97.8																
		97.8	99.02	1.22		as above but increasingly silty											
	99.4																
		99.4	99.71	0.31		as above											
22																	
		99.71	102.42	2.71		as above	35°										
	102.4																
		102.4	104.06	1.66	Sltst/	shale - alternating beds 0.3 m thick worm burrows	55°										
23																	
		104.06	105.46	1.40		as above, minor calcite veins											
	105.3																
		105.46	107.48	2.02	Shale	minor siltstone beds, broken at the bottom with calcite along fracture planes	55°										
	107.6																
		107.6	108.31	0.71		no siltstone											
24																	
		108.31	109.24	0.93	Sltst	laminated and cross laminated, minor calcite veins and fracture fillings	40°										R3
		109.24	110.36	1.12	Shale	dark grey grading to black at bottom, very minor silty beds, minor calcite veins	50°										
	110.3																
		110.3	112.00	1.70		as above											
	112.4																
		112.4	112.49	0.09	Coal	powder, bright and dull		5	↑								
		112.49	112.59	0.10		bone?, broken			EP 106 49	6.31	0.55	8.67	23.72	67.06	8		Yield 90% *
		112.59	112.93	0.34		bright with dull bands, stick											
26																	
		112.93	113.25	0.32		bright with dull bands, stick, pyrite											
		113.25	113.63	0.38		dull and bright, stick, pyrite											
		113.63	113.94	0.31		dull with bright bands, stick, pyrite											
		113.94	114.09	0.15		dull and bright, stick, pyrite											
	114.6																
		114.6	114.97	0.37		bright with dull bands, stick, pyrite											
		114.97	115.05	0.08		dull, stick, pyrite											
		115.05	115.31	0.26		dull with bright bands, stick, pyrite											
		115.31	115.35	0.04		bright, stick, pyrite											
		115.35	115.36	0.01	Shale												
		115.36	115.52	0.16	Coal	bright with dull bands, stick, pyrite			EP 106 50	2.39	0.64	3.89	25.25	70.22	8		Yield 86% *

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
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FF — FRACTURE FREQUENCY
* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS†
		115.52	115.53	0.01	Shale	pyrite											
		115.53	115.79	0.26	Coal	dull and bright, stick, pyrite											
		115.79	115.80	0.01	Shale	pyrite											
		115.80	116.02	0.22	Coal	dull with bright bands, stick, pyrite											
		116.02	116.03	0.01	Shale	pyrite											
		116.03	116.13	0.10	Coal	dull and bright, stick, pyrite											
		116.13	116.14	0.01	Shale	pyrite											
		116.14	116.20	0.06	Coal	dull and bright, stick, pyrite											
						Log thickness 4.1											
						Core thickness 3.29											
	116.4					Core recovery 80%											
		116.4	116.66	0.26	Shale	black, carbonaceous											
		116.66	116.78	0.12	Coal	bright, stick											
		116.78	116.87	0.09	Shale	carbonaceous											
		116.87	116.93	0.06	Coal	bright with dull bands, stick											
		116.93	116.95	0.02	Shale	carbonaceous											
		116.95	116.98	0.03	Coal	bright, stick											
		116.98	117.50	0.52	Shale	carbonaceous											
	117.6																
		117.6	117.77	0.17		as above											
26																	
		117.77	118.81	1.04		as above											
	119.1																
		119.1	119.72	0.62		as above											
		119.72	119.87	0.15	Coal	dull with bright bands, stick											
		119.87	119.89	0.02	Shale	carbonaceous											
		119.89	120.03	0.14	Coal	dull with bright bands, stick											
		120.03	120.28	0.25	Shale	black, carbonaceous											
	120.6																
		120.6	120.73	0.13		as above											
		120.73	122.37	1.64	Siltst	light grey, laminated and contorted laminations and cross laminated	55°										
		122.37	122.50	0.13	Shale	medium grey											

ALL LINEAR UNITS IN METRES

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FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA-212 A
REVISED Nov. 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS†
27		122.50	122.68	0.18		dark grey, carbonaceous											
		122.68	122.76	0.08	Coal	dull with bright bands, stick											
		122.76	122.86	0.10		bone?											
		122.86	123.54	0.68	Shale	black, highly carbonaceous											
	123.7																
		123.7	124.39	0.69		as above											
		124.39	124.51	0.12	Coal	dull, stick											
		124.51	124.62	0.11	Shale	carbonaceous											
		124.62	125.14	0.52	Coal	bright with dull band, stick											
		125.14	125.20	0.06	Shale	carbonaceous											
		125.20	125.32	0.12	Coal	rubble											
	125.2																
		125.2	125.34	0.14	Shale	highly carbonaceous											
		125.40	125.50	0.10	Shale	carbonaceous											
		125.50	125.78	0.28	Coal	bright with dull bands, stick											
		125.78	126.04	0.26		dull with bright bands, stick											
		126.04	126.38	0.34	Shale	black											
	126.7																
		126.7	127.14	0.44		dark grey, carbonaceous coated fractures, very minor silty laminations	50°										
28																	
		127.14	129.24	2.10		as above but no silt											
	129.8																
		129.8	131.77	1.97		as above but silty beds present again, minor calcite veins and fracture fillings	80°										
29																	
		131.77	132.06	0.29		as above											
		132.06	132.78	0.72	Sltst	medium grey, some shaly beds, minor calcite veins and fracture fillings											
	132.8																
		132.8	133.83	1.03		increasingly shaly, minor carbonaceous zone towards bottom											R3
	133.8																
		133.8	135.08	1.28		increasing shaly	45°										
		135.08	135.86	0.78	Shale	dark grey											
	135.9																
		135.9	136.11	0.21		as above											

ALL LINEAR UNITS IN METRES

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▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA-212A
REVISED Nov. 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS†
30																	
		136.11	137.48	1.37		as above											
		137.48	137.58	0.10	Coal	powder		6	EP 106 51	0.00	0.58	7.41	25.52	66.79	8½		Yield 58% *
		137.58	137.70	0.12		slickensided, dull, broken											
	138.0								EP 106 52	1.78	0.57	6.69	23.49	69.25	7½		Yield 86% *
		138.0	138.61	0.61		slickensided, dull with bright bands, stick Log thickness: 1.3; Core thickness: 0.83; core recovery: 64%											
		138.61	138.75	0.14	Shale	dark grey, slightly carbonaceous											
	138.9																
		138.9	139.03	0.13		as above, very broken			EP 106 53	4.52	0.51	6.41	23.91	69.05	7½		Yield 44% *
		139.03	139.59	0.56	Coal	slickensided, dull, broken											
		139.59	140.96	1.37	Shale	dark, carbonaceous											
31																	
		140.96	141.52	0.56		as above											
		141.52	142.28	0.76	Siltst/ shale	alternating sequence with beds averaging 0.3m minor calcite veins	45°										
	142.6																
		142.6	143.14	0.54		as above											
		143.14	144.84	1.20	Shale	dark grey to black at bottom, calcite filled fractures, carbonaceous at bottom											
		144.84	144.89	0.05	Coal	dull with bright bands, pyrite, minor carbonaceous shale		7	EP 106 54	0.00	0.48	11.37	22.54	65.61	7		Yield 96% *
	145.0																
		145.0	145.34	0.34	Coal	dull with bright bands, slickensides, broken											
32		145.34	145.88	0.54	Coal	dull with bright bands, stick Log thickness 1.0 Core thickness 0.93 Core recovery 93%			EP 106 55	0.00	0.49	5.43	23.56	70.52	8		Yield 86% *
		145.88	148.01	2.13	Shale	black, carbonaceous, a few silty beds	60°										
	148.7																
		148.7	150.2	1.50		as above											
33																	
		150.2	151.23	1.03		dark grey											
	151.1																
		151.1	152.55	1.45		as above											
		152.55	154.21	1.66		silty beds	55°										
	154.2																
		154.2	154.30	0.10		carbonaceous											
34		154.30	157.10	2.80		silty beds	50°										
	157.2																

ALL LINEAR UNITS IN METRES

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* — WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS†
		157.2	158.76	1.56		very little silt											
35																	
		158.76	160.30	1.54		as above, minor calcite veins											
	160.3																
		160.3	162.16	1.86		increasingly silty, calcite veins and fracture fillings											
36																	
		162.16	162.47	0.31		as above											
	163.3																
		163.3	166.6	3.00		as above, bottom half broken up along calcite fractures and slickensides											
	166.4																
		166.4	167.38	0.98		as above but less broken											
37																	
		167.38	168.24	0.86		less silty, carbonaceous in part, calcite veins											
	168.5																
		168.5	169.35	0.85		black at top and dark grey towards bottom, tiny calcite veins and stringers											
	169.4																
		169.4	171.94	2.54		grading to black and carbonaceous towards bottom											
38																	
		171.94	172.16	0.22		black, carbonaceous, broken											
	172.5																
		172.5	175.17	2.67		as above but only broken in a couple of places											
	175.5																
		175.5	176.88	1.38		as above											
39																	
		176.88	178.62	1.74		light grey, becoming silty towards bottom	55°										
	178.6																
		178.6	181.22	2.62		as above but less silty	50°										
40																	
		181.22	181.61	0.39		as above											
	181.6																
		181.6	184.46	2.86		as above but silty towards top	55°										
	184.6																
		184.6	185.59	0.99		black, carbonaceous in middle, minor calcite veins											
41																	
		185.59	187.55	1.96		as above but increasingly carbonaceous											
	187.7																
		187.7	189.52	1.82		very little carbonaceous material											
		189.52	190.05	0.53	Sltst	light grey, bedded, laminated and cross-laminated	60°										
42																	
		190.05	190.75	0.70		as above											
	190.8																
		190.8	193.77	2.97		sandy at top, some 0.1m shale beds, some calcite veins	45°										
	193.9																

ALL LINEAR UNITS IN METRES

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•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS†
		193.9	194.20	0.30		as above											
43																	
		194.20	197.01	2.81		as above	65°										
	196.9																
		196.9	198.52	1.62		increasingly sandy with irregular shale/siltstone contacts	50°										
44																	
		198.52	199.92	1.40	Shale	medium grey, some silty, sandy beds 0.1m thick	60°										
	199.9																
		199.9	202.95	3.05		little silt	60°										
	203.0																
		203.0	204.27	1.27		dark grey, no silt											
45																	
		204.27	206.09	1.82		medium grey, some silty beds	55°										
	206.0																
		206.0	208.95	2.95		dark grey, minor silty beds, some calcite veins and fracture fillings	60°										
	209.1																
		209.1	210.15	1.05		as above but no silty material											
46																	
		210.15	212.16	2.01		slightly silty towards bottom, numerous calcite veins and fracture fillings towards top											
	212.1																
		212.1	215.20	3.10		dark grey, uniform, very minor calcite veins											
	215.2																
		215.2	215.88	0.68		as above											
47																	
		215.88	218.24	2.36		as above but slightly silty and carbonaceous towards bottom											
	218.2																
		218.2	219.56	1.36		very carbonaceous with one 0.1 m slickensided coal band near top											
		219.56	219.60	0.04	Coal	powder		8	↑								
		219.60	219.70	0.10		dull with bright bands											
	220.4																
		220.4	220.58	0.18		dull and bright, broken, slickensides											
		220.58	220.59	0.01	Shale	carbonaceous, broken											
		220.59	220.74	0.15	Coal	dull and bright, broken, slickensides											
		220.74	220.78	0.04	Shale	carbonaceous			EP 106 54	1.52	0.49	4.57	24.33	70.61	8		Yield 43% *
		220.78	220.88	0.10	Coal	slickensides, broken											
		220.88	220.93	0.05	Shale	slickensides, heavy, broken											
		220.93	221.01	0.08	Coal	slickensides, broken											

ALL LINEAR UNITS IN METRES

† :•RB/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY
* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS†
		221.01	221.11	0.10	Shale	slickensides, broken, heavy											
	221.1																
		221.1	221.58	0.48	Coal	dull with bright bands, broken and stick											
		221.58	221.80	0.22	Shale	slickensides, heavy, broken											
		221.80	222.14	0.34	Coal	dull, slickensides, broken											
48	222.8																
		222.8	222.91	0.11		powder											
		222.91	223.37	0.46		dull with bright bands, stick, some slickensides											
		223.37	223.42	0.05	Shale	carbonaceous, slickensides											
	224.3																
		224.3	224.40	0.10	Coal	slickensides, rubble											
		224.40	224.43	0.03	Shale	slickensides											
		224.43	225.25	0.82	Coal	dull with bright bands, stick, slickensides at bottom											
		225.25	225.58	0.33		rubble and powder, slickensides											
	225.1																
		225.1	225.37	0.27		slickensides, stick											
		225.37	226.05	0.68		dull with bright bands, stick											
		226.05	226.11	0.06		rubble, slickensdies											
	227.4																
		227.4	229.02	1.62		dull, stick, some slickensides											
	228.9								EP 106								
		228.9	229.04	0.14		powder			52	2.80	0.59	4.32	24.19	70.90	8		Yield 78% *
		229.04	229.64	0.60		dull, stick, some slickensides											
		229.64	230.12	0.48		dull with bright bands, stick											
49																	
		230.12	230.42	0.30		dull, slickensides, rubble, some powder											
	230.4																
		230.42	230.66	0.24		dull, broken, some slickensides											
		230.66	230.76	0.10	Shale	carbonaceous											
		230.76	230.83	0.07	Coal	rubble, slickensides											
		230.83	230.88	0.05	Shale	carbonaceous											
		230.88	231.09	0.21	Coal	dull, rubble											
	231.4																
		231.4	233.00	1.60		dull with bright bands, stick											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF —— FRACTURE FREQUENCY
* —— WASHED TO S.G. 1.5

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. CONTINUED EP 106

FILE No. BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP 106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS†
		233.0	233.37	0.37		dull, stick											
		233.37	233.53	0.16		powder and rubble, slickensides											
		233.53	233.54	0.01	Shale												
		233.54	233.69	0.15	Coal	powder and rubble, slickensides											
	233.0																
		233.0	233.66	0.66	Coal	dull with bright bands, slickensides, stick											
	234.5																
		234.5	234.6	0.10	Coal	broken, slickensides											
		234.6	235.45	0.88	Coal	dull with bright bands, stick											
		235.45	235.84	0.39	Coal	dull with bright bands, broken and rubble											
	236.0	236.00	236.03	0.03	Coal	dull and bright, broken											
						Log thickness 16.8											
						Core thickness 12.93											
						Core recovery 77%											
				0.53	Shale	black, carbonaceous, carbonaceous fracture planes, minor silty bands	45°										
50																	
		236.03	236.83	0.80		as above											
	237.6																
		237.6	239.2	1.6	Sltst	medium grey, laminated and cross laminated, some carbonaceous shale beds 0.2 m thick	50°										R3
	239.1																
		239.1	241.37	2.27	Shale	black, carbonaceous throughout, minor siltstone towards top	50°										
	242.0																
		242.0	242.99	0.99	Sltst	shale at top, carbonaceous in spots, laminated, cross-laminated and cross bedded											
51																	
		242.99	243.44	0.45	Shale	black, highly carbonaceous towards bottom											
	243.8																
		243.8	245.14	1.34		highly carbonaceous towards top											
	245.4																
		245.4	247.8	2.40		increasingly silty towards bottom, black at top to medium grey at bottom, minor calcite veins	60°										
		247.8	248.51	0.71	Sltst	light grey, laminated, minor shale at bottom	55°										
	248.0																
		248.9	248.53	0.63		as above, flame structures											
		248.63	249.54	0.91	shale	dark grey at top to black at bottom, minor siltstone towards top	45°										
		249.54	249.74	0.20	Coal	dull and bright, stick											
		249.74	249.94	0.20	Shale	highly carbonaceous											

ALL LINEAR UNITS IN METRES

† :•R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. CONTINUED EP 106

FILE No. BA-212 A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	EWIN PASS
AREA	

HOLE No. EP106 CONTINUED

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	▲ BEDDING ANGLE (°)	SEAM DESIG.	SAMPLE No.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.	REMARKS †
		249.94	250.08	0.14	Coal	dull and bright, stick											
		250.08	250.23	0.15	Shale	highly carbonaceous											
		250.23	251.82	0.59		black, carbonaceous											
	251.5																
		251.5	251.85	0.35		as above											
		251.85	252.32	0.47		highly carbonaceous											
		252.32	252.74	0.42		black, carbonaceous, slickensides at bottom with pyrite											
	252.9																
		252.9	253.82	0.92		black, minor silty beds	45°										
		253.82	254.27	0.45	Sltst	dark grey, lamiated and cross laminated											
		254.27	254.59	0.32	Shale	black, a 0.05 m coal band											
	254.5																
						END OF EP 106											

ALL LINEAR UNITS IN METRES

† :-R&/OR S — GOLDER ASSOCIATES HARDNESS CODE
•RQD — ROCK QUALITY DESIGNATION (%)
FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. EP 106 CONTINUED

FILE No. BA-212A
REVISED Nov 1978

CROWS NEST RESOURCES LIMITED

CORE & COAL CORE DESCRIPTION

PROJECT	[illegible]	DATE	BEGIN	Sept. 12 1980	HOLE No. [illegible]
AREA	[illegible] Rocky [illegible]		END	Sept. 28 1980	PAGE 1 OF 4

HOLE PARTICULARS

LOCATION	N 5,044,772.63		
	E 661,253.17		
ELEVATION	2388.1	HOLE BEARING (AZ°)	
TOTAL DEPTH	254.5	HOLE ANGLE (°)#	90°

LOGGING

LOGS RUN	Gamma, Density, Neutron, Caliper, Detailed density of seams
LOGGED BY	Crows Exploration Logging Co
OTHER TESTS	Directional survey

COAL CORING PERFORMANCE

CORE DIAMETER		NQ - % 75.19 NQ - % 75.19
TOTAL	CORE RECOVERED	
	LENGTH CORED	
	CORE RECOVERY	%

EXAMINATION

LOG USED	Gamma - Density
No. OF SEAMS SAMPLED	6
EXAMINER (S)	C. Beavan
DATE	Sept. 1980

BOX No.	DEPTH AT TOP OF BOX	DEPTH FROM	DEPTH TO	TH.	LITHO DESCRIPTION MAIN	LITHO DESCRIPTION AMPLIFIED (INCLUDE COAL RECOVERY FOR EACH SEAM)	SEAM DESIG	▲ BEDDING ANGLE (°)	SUMMARY GEOTECH HARDNESS	SUMMARY GEOTECH FRAC. FREQ.	SUMMARY GEOTECH RQD	SAMPLE NO.	ANALYTICAL DATA MOIST % a.r.b.	MOIST % residual	ASH %	V.M. %	F.C. %	F.S.I.	C.V.

ALL LINEAR UNITS IN METRES

: MEASURED FROM THE HORIZONTAL PLANE

† : • R &/OR S — GOLDER ASSOCIATES HARDNESS CODE

• RQD — ROCK QUALITY DESIGNATION (%)

FF — FRACTURE FREQUENCY

▲ ANGLE MEASURED FROM CORE AXIS

HOLE No. [illegible]

FILE No. BA-267
REVISED Feb. 1981
FORMERLY FILE No. BA-211A

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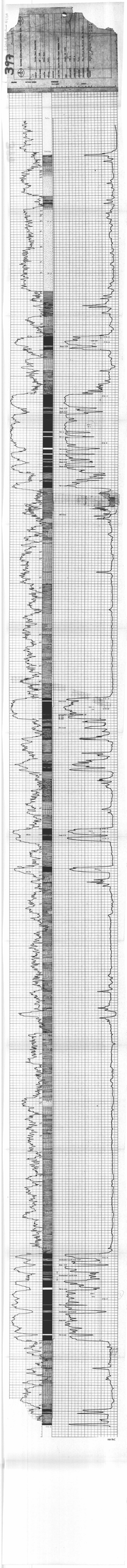
K-Shell-Ewin Pass 80(3)A

ENCLOSURE 9

DAVIES EXPLORATION LOGGING LTD.

COMPANY Crows Nest Resources
HOLE NUMBER EP - 106
LOCATION Ewin Pass
PROVINCE B.C.
ELEVATION
LOG TYPE: CALIPER, NATURAL GAMMA, ~~RESISTIVITY~~, DENSITY
DATE Sept. 26 1980
DRILLED DEPTH 254 m
LOGGED DEPTH 255 m
ZERO DATUM G.L.
HOLE DIAMETER NQ., 253 m to 76.5 m HQ. to G.L.
CASING LENGTH
REMARKS: Drift 4° Bearing N. 83 E. @ 250 m
" 1.5° " ----- @ 100 m

~~CALIPER~~ NATURAL GAMMA ~~RESISTIVITY~~ Caliper DENSITY



HA-76C

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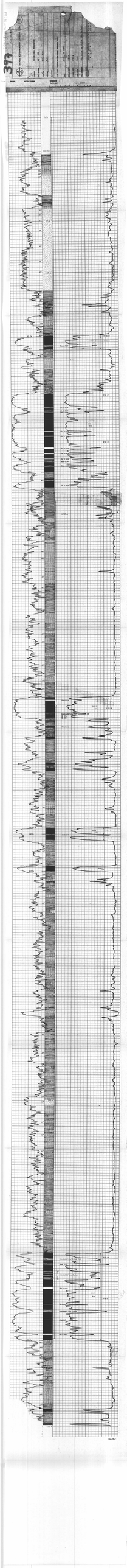
K-Shell-Ewin Pass 80(3)A

ENCLOSURE 9

DAVIES EXPLORATION LOGGING LTD.

COMPANY Crows Nest Resources
HOLE NUMBER EP - 106
LOCATION Ewin Pass
PROVINCE B.C.
ELEVATION
LOG TYPE CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY
DATE Sept. 26 1980
DRILLED DEPTH 254 m
LOGGED DEPTH 255 m
ZERO DATUM G.L.
HOLE DIAMETER NQ. 253 m to 76.5 m HQ. to G.L.
CASING LENGTH
REMARKS Drift 4° Bearing N. 83 E. @ 250 m
" 1.5° " @ 100 m



E-Shell Ewin Pass 8D (3) A

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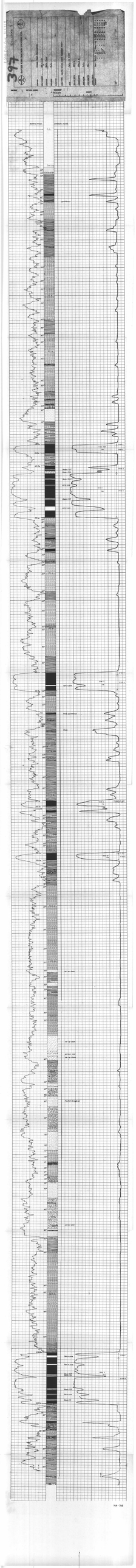
ENCLOSURE 9

DAVIES EXPLORATION LOGGING LTD.

COMPANY Crows Nest Resources
HOLE NUMBER EP-105
LOCATION Ewin Pass
PROVINCE B.C.
ELEVATION
LOG TYPE: CALIPER, NATURAL GAMMA, ~~RESISTIVITY~~, DENSITY
DATE July 29 1980
DRILLED DEPTH 245 m
LOGGED DEPTH 244.5 m
ZERO DATUM G.L.
HOLE DIAMETER HQ.
CASING LENGTH
REMARKS: Dev. Drift 25° Bearing N.55 E. @ 240 m
" " 25° " N.53 E. @ 200 m
" " 27° " N.55° E. @ 150 m
" " 27.5° " N.53° E. @ 100 m
" " 28° " N.54° E. @ 50 m



HA - 76E

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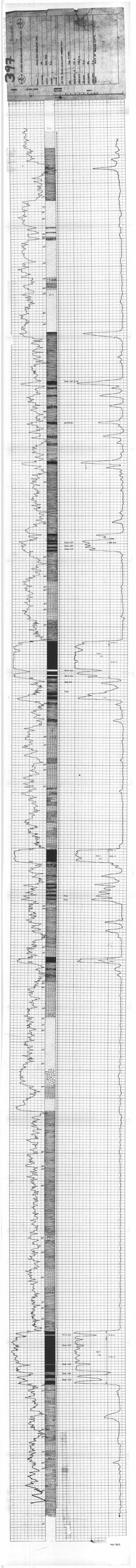
K-Shell-Ewin Pass 80(3)A

ENCLOSURE 9

DAVIES EXPLORATION LOGGING LTD.

COMPANY	Crows Nest Resources Ltd.
HOLE NUMBER	104
LOCATION	Ewin Pass
PROVINCE	B.C.
ELEVATION	
LOG TYPE:	CALIPER, NATURAL GAMMA, ~~RESISTIVITY~~, DENSITY
DATE	Aug. 8 1980
DRILLED DEPTH	251 m
LOGGED DEPTH	250.5 m
ZERO DATUM	G.L.
HOLE DIAMETER	HQ.
CASING LENGTH	6 m
REMARKS:	Drift 30° Bearing S.76°E.



HA-76D

K Shell-Ewin Pass 80(3)A

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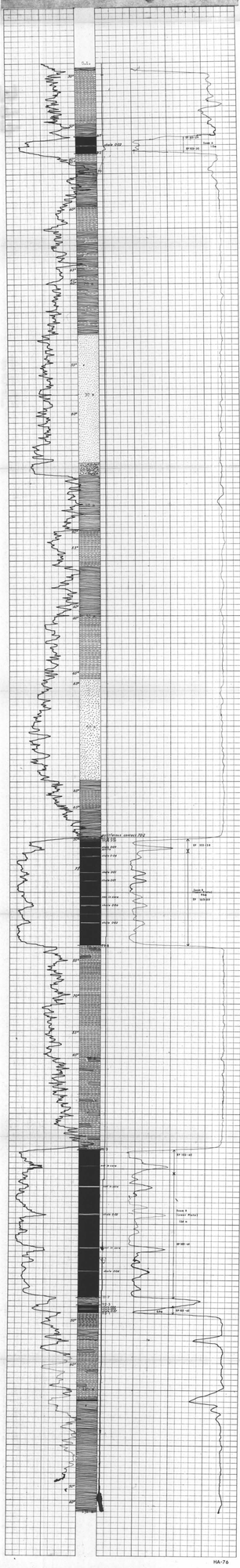
ENCLOSURE 9

DAVIES EXPLORATION LOGGING LTD.

COMPANY Crows Nest Resources
HOLE NUMBER EP - 103
LOCATION Ewin Pass
PROVINCE B.C.
ELEVATION
LOG TYPE: CALIPER, NATURAL GAMMA, ~~RESISTIVITY~~ DENSITY
DATE Aug. 12 1980
DRILLED DEPTH 132 m
LOGGED DEPTH 131 m
ZERO DATUM G.L.
HOLE DIAMETER HQ.
CASING LENGTH 7 m
REMARKS: Drift 1.2° Bearing N. 79° E. @ 130 m
" 0 " " @ 50 m

~~CALIPER~~ NATURAL GAMMA ~~RESISTIVITY~~ Caliper DENSITY

5



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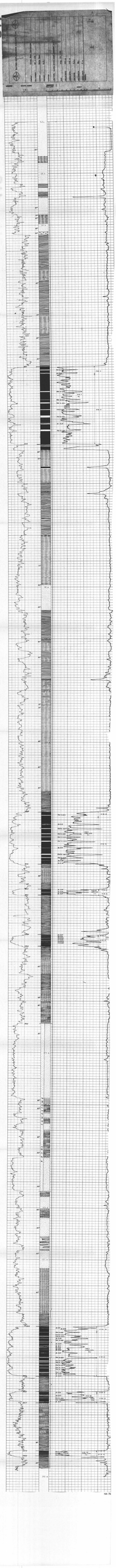
HA-76



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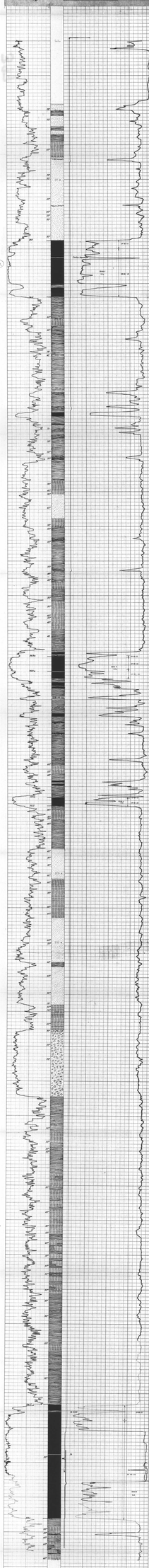
WATER EXPLORATION LOGGING CHART

COMPANY: Dallas Water Commission
WELL: Joe Pool Dam
FIELD: Joe Pool
COUNTY: Dallas
STATE: Texas
COORDINATES: Joe Pool Dam
ELEVATION: 535 ft
DATE: Aug. 27, 1970
DRILLED: 1970
TOTAL DEPTH: 1000 ft
CASING: 20" x 16" x 10" x 8"
CASING DEPTH: 1000 ft
DRILLER: Dallas Water Commission
LOGGED BY: Dallas Water Commission
REMARKS: Dallas Water Commission



HA-768

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Fault Gouge Zone FOCUS

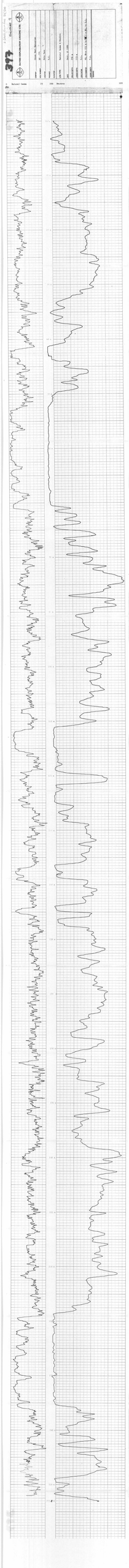
EXHIBIT 9

DAVIES EXPLORATION LOGGING LTD.

COMPANY: Cross Bell Resources
HOLE NUMBER: EP-1-105
LOCATION: Eva Tank
COUNTRY: Peru
ELEVATION: 5,000
LOG TYPE: CROSS HOLE SONIC RESONANCE DENSITY
DATE: Sept. 26 1985
DRILLED DEPTH:
LOGGED DEPTH:
ZERO DATUM: Gr.
FOLD FREEZE: No.
CASING: 4½
CROSS SECTION:
CROSS PLOT:

CALIPER | NATURAL GAMMA | RESONANCE | DENSITY

Detail | Detail

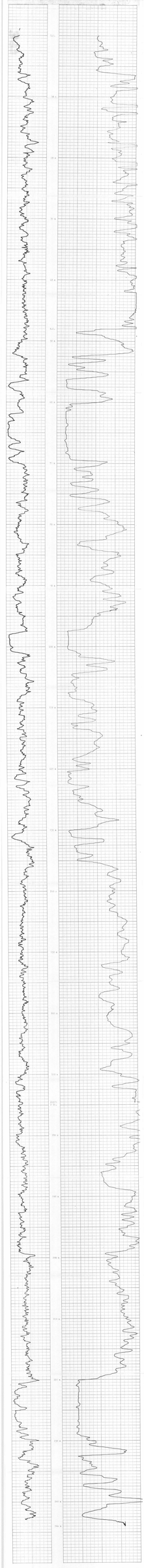

Electrical Tremor
Electrode 4
397
Patient Name
Date
Time
Medication
Notes
Rate
Sensitivity
Filter
Speed
Channel
Montage
Technician
Comments
0
25
50
75
100

397 Encounter 3

SWISS VITAMIN-INSTITUTE LOCARNO LTD.

name:	Jesus Bell Sarmiento
birth date:	27.7.1951
sex:	male
diagnosis:	Pain
therapist:	Kuhn
date:	July 23, 1996
time:	Normal, Sleep & Arousal
pat.	
physician:	Dr. K.
physiotherapist:	Dr. K.
[illegible]	
[illegible]	
[illegible]	

Behavioral Genesis 30 120 Sessions: 1201



K-Shell-Ewin Pass 80(3)A

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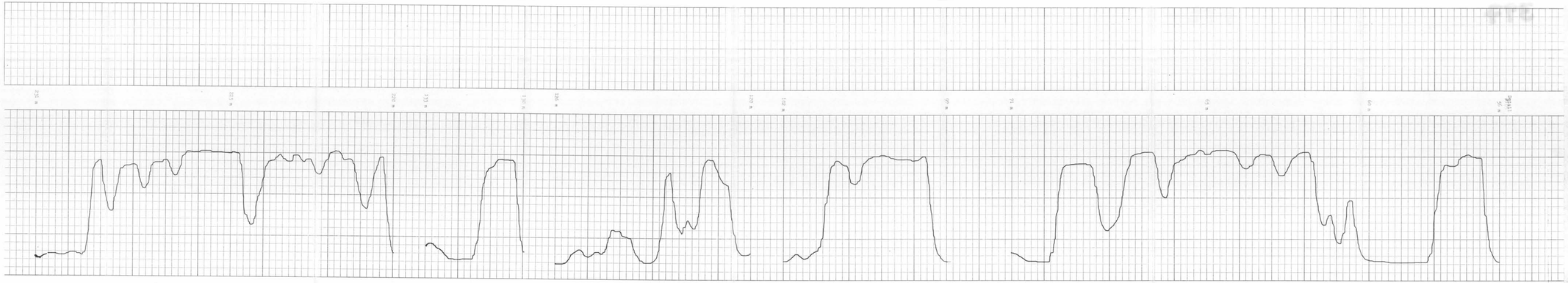
ENCLOSURE 9



DAVIES EXPLORATION LOGGING LTD.

COMPANY	Crown West Resources
HOLE NUMBER	KP - 105
LOCATION	Kwin Pass
PROVINCE	B.C.
ELEVATION	
LOG TYPE:	CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY
DATE	July 29 1988
DRILLED DEPTH	295 m
LOGGED DEPTH	
ZERO DATUM	G.L.
HOLE DIAMETER	BQ.
CASING LENGTH	nil
REMARKS	Detail

K-Shell-Ewin Pass 80(B)A

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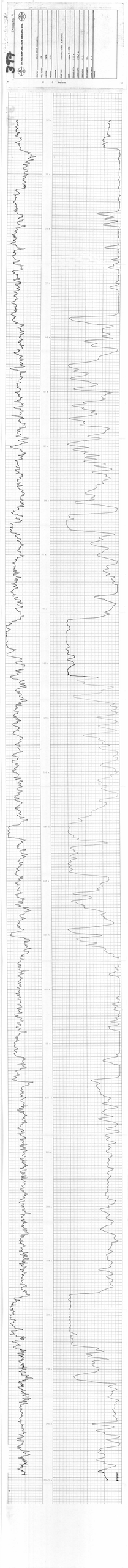
ENCLOSURE 9

DAVIES EXPLORATION LOGGING LTD.

COMPANY	Crows Nest Resources
HOLE NUMBER	104
LOCATION	Ewin
PROVINCE	B.C.
ELEVATION	
LOG TYPE:	Natural Gamma & Neutron
DATE	Aug. 8 1980
DRILLED DEPTH	252 m
LOGGED DEPTH	250.5 m
ZERO DATUM	G.L.
HOLE DIAMETER	HQ.
CASING LENGTH	6 m
REMARKS:	



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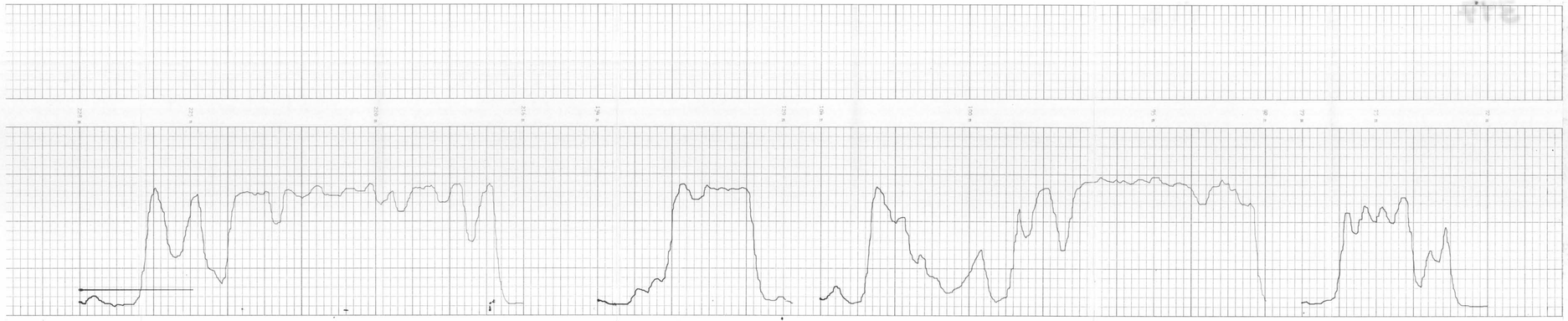
K-Shell-Ewin Pass 80(3)M

ENCLOSURE 9



DAVIES EXPLORATION LOGGING LTD.

COMPANY	Crown Nest Resources
HOLE NUMBER	10A
LOCATION	Ewin
PROVINCE	B.C.
ELEVATION	
LOG TYPE: CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY	
DATE	Aug. 8 1980
DRILLED DEPTH	252 m
LOGGED DEPTH	250.5 m
ZERO DATUM	G.L.
HOLE DIAMETER	NQ
CASING LENGTH	Nil
REMARKS:	

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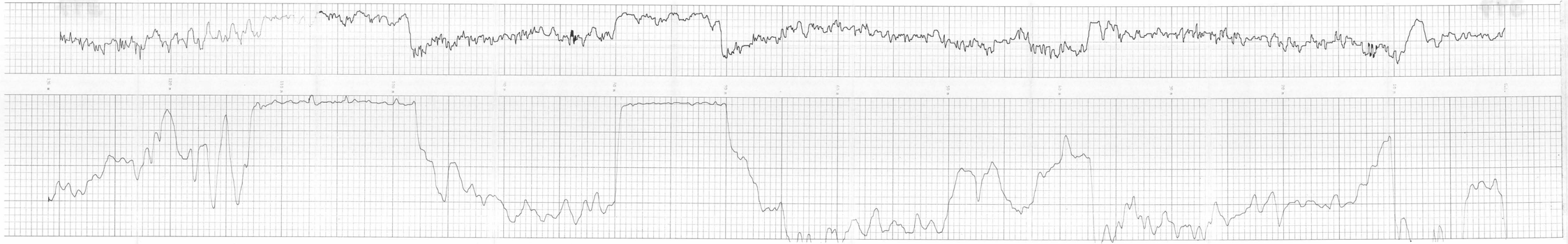
K-Shell Exploration Ltd. 31C/3/A

ENCLOSURE 9



DAVIES EXPLORATION LOGGING LTD.

COMPANY	Crown Nest Resources
HOLE NUMBER	KP - 103
LOCATION	Kwin Pass
PROVINCE	B.C.
ELEVATION	
LOG TYPE:	Natural Gamma & Neutron
DATE	AUG. 12 1980
DRILLED DEPTH	130 m
LOGGED DEPTH	131 m
ZERO DATUM	G.L.
HOLE DIAMETER	76Ø.
CASING LENGTH	7 m
REMARKS:	

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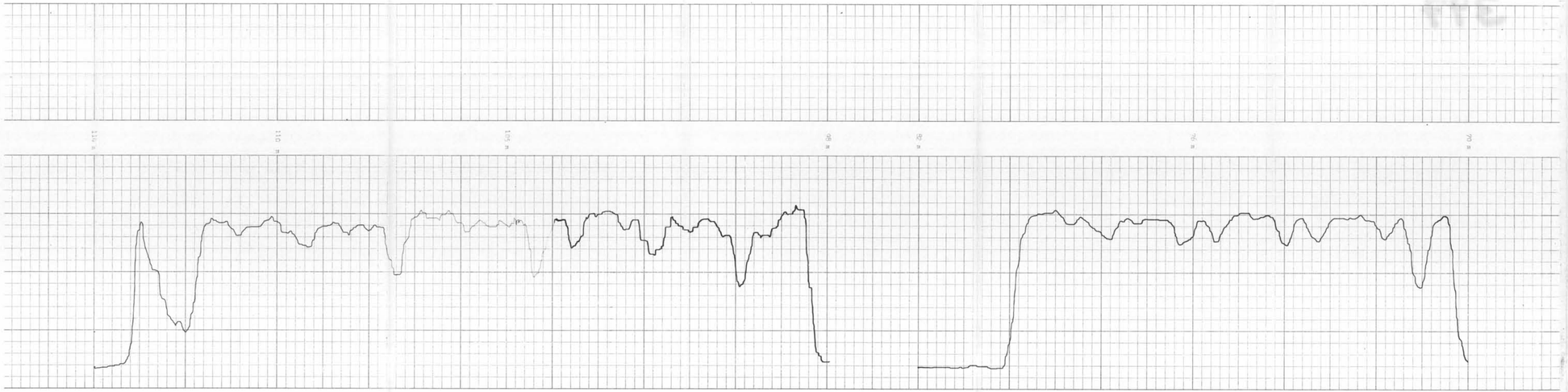
K-Shell-Ewin Pass 80(3)A

ENCLOSURE 9



DAVIES EXPLORATION LOGGING LTD.

COMPANY: Crows Nest Resources

HOLE NUMBER: KP - 103

LOCATION: Ewin Pass

PROVINCE: B.C.

ELEVATION:

LOG TYPE: CALIPER, NATURAL GAMMA, RESISTIVITY, DENSITY

DATE: Aug. 12 1980

DRILLED DEPTH:

LOGGED DEPTH:

ZERO DATUM: G.L.

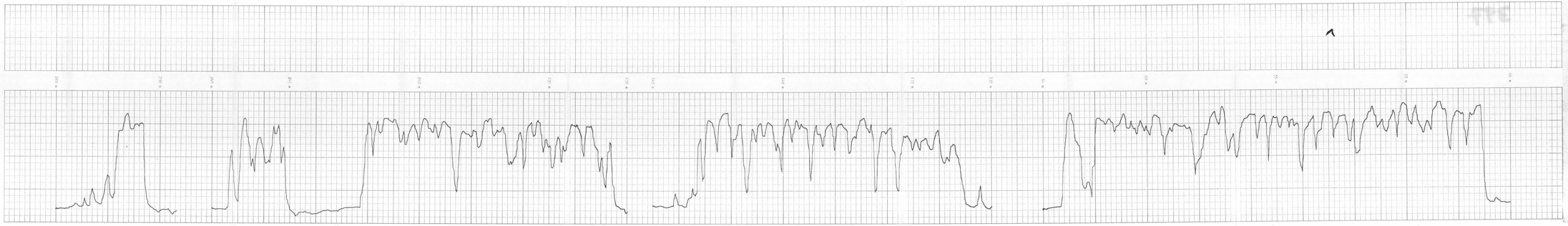
HOLE DIAMETER: HC.

CASING LENGTH: Nil

REMARKS: Detail

Shell Exp. Pan BCDA

397 ENCLOSURE 4



DAVIES EXPLORATION LOGGING LTD.

COMPANY: Crown East Resources

HOLE NUMBER: 82 - 102

LOCATION: Swin Pane

PROVINCE: B.C.

ELEVATION:

LOG TYPE: CALIPER, NATURAL GAMMA, NORMAL RESISTIVITY, DENSITY

DATE: Aug. 20 1980

DRILLED DEPTH:

LOGGED DEPTH:

ZERO DATUM: G.L.

HOLE DIAMETER: HL.

CASING LENGTH:

REMARKS:

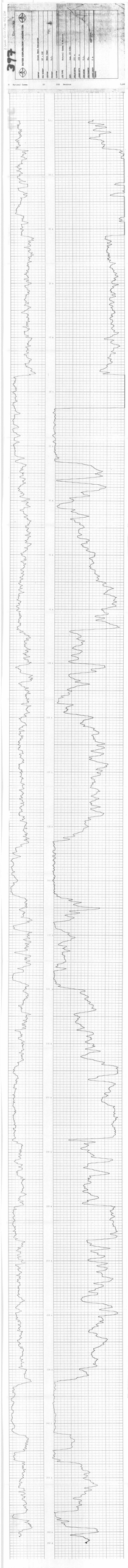
X-Shell-Ewin Pass 80(3)A

377

ENCLOSURE 9

DAVIES EXPLORATION LOGGING LTD.

COMPANY Crows Nest Resources
HOLE NUMBER EP - 102
LOCATION Ewin Pass
PROVINCE B.C.
ELEVATION
LOG TYPE: Natural Gamma & Neutron
DATE Aug. 20 1980
DRILLED DEPTH 263 m
LOGGED DEPTH 262 m
ZERO DATUM G.L.
HOLE DIAMETER HQ.
CASING LENGTH 6 m
REMARKS:



397

Encl.#88-9

SUNDE EXPLORATION DRILLING LTD.

Date: June 9th 1988
Hole number: 88-2-20
Lining: 5 1/2
Casing: 5 1/2
Casing: 5 1/2
Log type: Natural Gamma & Neutron
Operator: Jim
Recorder: Jack & John
Observer: Jack & John
Assistant: Jim
Assistant: Jim
Assistant: Jim
Assistant: Jim

9 Natural Gamma AG CPS Neutron QAvf

K-Shell-Ewin Pass 80(4)A

NTS 82-G-15

"Ewin Pass Coal Property"
COAL ANALYSIS DATA

C.L.# 283, 286-289,
1300

397

CONFIDENTIAL

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 397

APPENDIX C

MOVABLE-WALL COKE OVEN TESTS AND RELATED ANALYSES OF TWO COAL BLEND SAMPLES FROM EWIN PASS SUBMITTED BY CROWS NEST RESOURCES LIMITED

Project 03-3-1/11-5

by

J.G. Jorgensen*, T.A. Lloyd*, and W. Gardiner*

INTRODUCTION

This investigation deals with the carbonization and related analyses of cleaned coal blend samples composed of Seam 4, Seam 8 and Seam 9 from Ewin Pass. Duplicate coking tests were conducted on a clean coal blend composed of 66.7% of Seam 8 and 33.3% of Seam 4. This sample was received on May 7, 1980. Duplicate coking tests were also conducted on a clean coal blend composed of 57.1% of Seam 8, 28.6% of Seam 4 and 14.3% of Seam 9.

The project was initiated by R. Crisafio, Senior Metallurgist, Crows Nest Resources Limited, Fernie, British Columbia in a letter dated November 15, 1979, which is reproduced in Appendix 1.

The cleaned bulk sample was carbonized in the 12-inch width movable-wall coke oven located at the CANMET Bells Corners Complex near Ottawa. Representative samples were taken and analysed for chemical analysis, thermal rheological and petrographical properties. The results of the testing and analyses are listed in Tables 1 to 6.

---

*Heads, Coal Petrography, Coal Treatment, and Carbonization Operations Sections, respectively, Coal Resource and Processing Laboratory, Energy Research Laboratories, CANMET, Department of Energy, Mines and Resources, Ottawa, Canada.

TABLE 1 Chemical Analyses of Component Coals

Identification	
Laboratory Number	3178-80
Description	Clean Coal Blend 66.7% Seam 8 33.3% Seam 4
Classification	
Rank (ASTM)	mvb
International System	533
Specific Volatile Index	177
Carbon (dmmfb) .....%	89.0
Proximate Analysis (db)	
Ash .....%	7.0
Volatile Matter .....%	28.3
Fixed Carbon .....%	64.7
Gross Calorific Value (db)	
Btu per pound	14270
Ultimate Analysis (db)	
Carbon .....%	82.1
Hydrogen .....%	5.0
Sulphur .....%	0.43
Nitrogen .....%	1.5
Ash .....%	7.0
Oxygen (by difference) .....%	4.0
Ash Analysis (db)	
SiO_2 .....%	52.1
Al_2O_3 .....%	29.9
Fe_2O_3 .....%	7.8
TiO_2 .....%	1.7
P_2O_5 .....%	1.2
CaO .....%	1.9
MgO .....%	0.9
SO_3 .....%	1.1
Na_2O .....%	0.3
K_2O .....%	0.9

TABLE 2 Physical Tests and Fusibility of Ash of Component Coals

Identification				
Laboratory Number		3178-80	3212-80	3665-80
Description		Clean Coal Blend Tests 776 & 778	Test 777	Test 790
Coal Pulverization	Seam #8	66.7%	57.1%	57.1%
	Seam #4	33.3%	28.6%	28.6%
	Seam #9		14.3%	14.3%
Sieve Analysis				
Passing	Retained On			
	1/4 in. %	0.1	0.1	0.0
1/4 in.	6 mesh %	14.8	14.3	11.8
6 mesh	12 mesh %	20.8	20.8	19.5
12 mesh	20 mesh %	19.9	20.9	21.0
20 mesh	..... %	44.4	43.9	47.7
Total Passing	6 mesh %	85.1	85.6	88.2
Grindability				
Hardgrove Index				
Fusibility of Ash				
Initial Deformation Temp. ... °F		2580		
Softening Temp. Spherical ... °F		2680		
Softening Temp. Hemispherical °F		2700+		
Fluid Temp. ..... °F		2700+		

TABLE 3 Thermal Rheological Properties of Component Coals

Identification			
Laboratory Number	3178-80	3212-80	3665-80
Description	Tests 776 and 778	Test 777	Test 790
	66.7% Seam 8 33.3% Seam 4	57.1% Seam 8 28.6% Seam 4 14.3% Seam 5	57.1% Seam 8 28.6% Seam 4 14.3% Seam 9
Linear Expansion			
Bd. 52 lb/ft^3 at 2% moisture...%			
Gieseler Plasticity			
Start .....°C	426	433	429
Fusion Temp. .....°C	438	447	445
Max. Fluid Temp. .....°C	460	464	460
Final Fluid Temp. .....°C	484	479	477
Solidification Temp. .....°C	487	483	481
Melting Range .....°C	58	46	68
Max. Fluidity .....dd/m	161.5	24.5	24
Torque .....g.in.	40	40	40
Dilatation			
Ti - Softening Temp. .....°C	397	402	399
Tii - Max. Contraction Temp. °C	442	448	447
Tiii - Max. Dilatation Temp. °C	470	474	470
Contraction .....%	27	25	26
Dilatation .....%	48	-4	-9
Free Swelling Index			
F.S.I.	8	8	8

TABLE 4 Petrographic Analysis of Component Coals

Identification	
Laboratory Number.....	3178-80
Description.....	Blend of 66.7% Seam 8 33.3% Seam 4
Distribution of Vitrinite Types	
V-6.....%	
V-7.....%	
V-8.....%	
V-9.....%	0.7
V-10.....%	43.3
V-11.....%	26.7
V-12.....%	1.4
V-13.....%	
V-14.....%	
V-15.....%	
V-16.....%	
V-17.....%	
V-18.....%	
Reactive Components	
Total Vitrinite.....%	72.2
Reactive Semi-fusinite (1/3)...%	4.8
Exinite.....%	1.5
Total.....%	78.5
Inert Components	
Inert Semi-fusinite (2/3).....%	9.6
Micrinite.....%	1.8
Fusinite.....%	6.2
Mineral Matter.....%	3.9
Total.....%	21.5
Petrographic Indices	
Mean Reflectance.....%	1.08
Balance Index.....	0.79
Strength Index.....	4.08
Stability Index.....	56.0

Test Identification Number.....	776		778		777		790	
Date of Test.....	13 May/80		21 May/80		15 May/80		9 July/80	
Laboratory Number.....								
Description.....								
Blend of Seam #8 ...	66.7%		66.7%		57.1%		57.1%	
Seam #4 ...	33.3%		33.3%		28.6%		28.6%	
Seam #9 ...					14.3%		14.3%	
CARBONIZATION DATA								
Net Weight of Charge (wet).....lb	556.0		551.5		567.0		555.2	
Moisture in Charge.....%	2.5		2.7		2.6		3.0	
ASTM Bulk Density (wet).....lb/ft^3								
Oven Bulk Density (db).....lb/ft^3	49.4		48.9		50.3		49.0	
CARBONIZATION RESULTS								
Gross Coking Time.....hr:min	9:05		9:10		8:55		9:05	
Maximum Wall Pressure.....lb/in^2	N.A.		1.22		2.02		1.16	
Coke Yield Actual.....%	75.6		75.6		76.7		75.8	
Mean Coke size.....in	1.93		1.93		1.90		1.87	
Apparent Specific Gravity.....	0.903		0.908		0.924		0.924	
Screen Analysis of Coke (cumulative percentage retained on)								
3 inch sieve.....	4.1		5.3		4.1		4.4	
2 inch sieve.....	41.2		40.1		40.0		36.0	
1 1/2 inch sieve.....	73.8		74.1		70.0		71.0	
1 inch sieve.....	93.8		94.0		93.3		93.5	
3/4 inch sieve.....	95.8		95.9		95.7		96.0	
1/2 inch sieve.....	96.9		97.0		96.7		96.7	
Percentage -1/2 inch (breeze).....	3.1		3.0		3.3		3.3	
Tumbler Test (ASTM)								
Stability Factor.....	49.5		51.1		48.6		50.5	
Hardness Factor.....	65.7		65.5		66.5		67.4	
Japanese Drum Test (JIS) (cumulative percentage retained on)	*	**	*	**	*	**	*	**
50 mm sieve.....	9.8	1.6	8.5	1.2	7.6	1.0	9.2	0.8
25 mm sieve.....	85.3	68.4	85.1	68.0	82.9	63.5	83.1	63.1
15 mm sieve.....	92.8	81.4	93.0	81.5	93.1	81.1	93.2	80.7

*30 revs **150 revs

TABLE 6

Analyses of Coke Oven Charges and Resultant Cokes

Identification				
Test Number.....	776	778	777	790
Date Charged.....	13/5/80	21/5/80	14/5/80	5/7/80
Description.....				
Blend of Seam #8	66.7	66.7	57.1	57.1
Seam #4	33.3	33.3	28.6	28.6
Seam #9			14.3	14.3
Coke Oven Charge				
Laboratory Number.....	3178-80	3178-80	3212-80	3665-80
Proximate Analysis (db)				
Ash.....%	7.0	7.0	7.0	7.4
Volatile Matter.....%	28.3	28.3	27.0	27.3
Fixed Carbon .....%	64.7	64.7	66.0	65.3
Sulphur (db).....%	0.43	0.43	0.33	0.35
Resultant Coke				
Laboratory Number.....	3230-80	3557-80	3231-80	3815-80
Proximate Analysis (db)				
Ash.....%	9.0	9.0	9.3	9.6
Volatile Matter.....%	1.2	1.7	1.3	1.1
Fixed Carbon.....%	89.8	89.3	89.4	89.3
Sulphur (db).....%	0.32	0.28	0.31	0.29

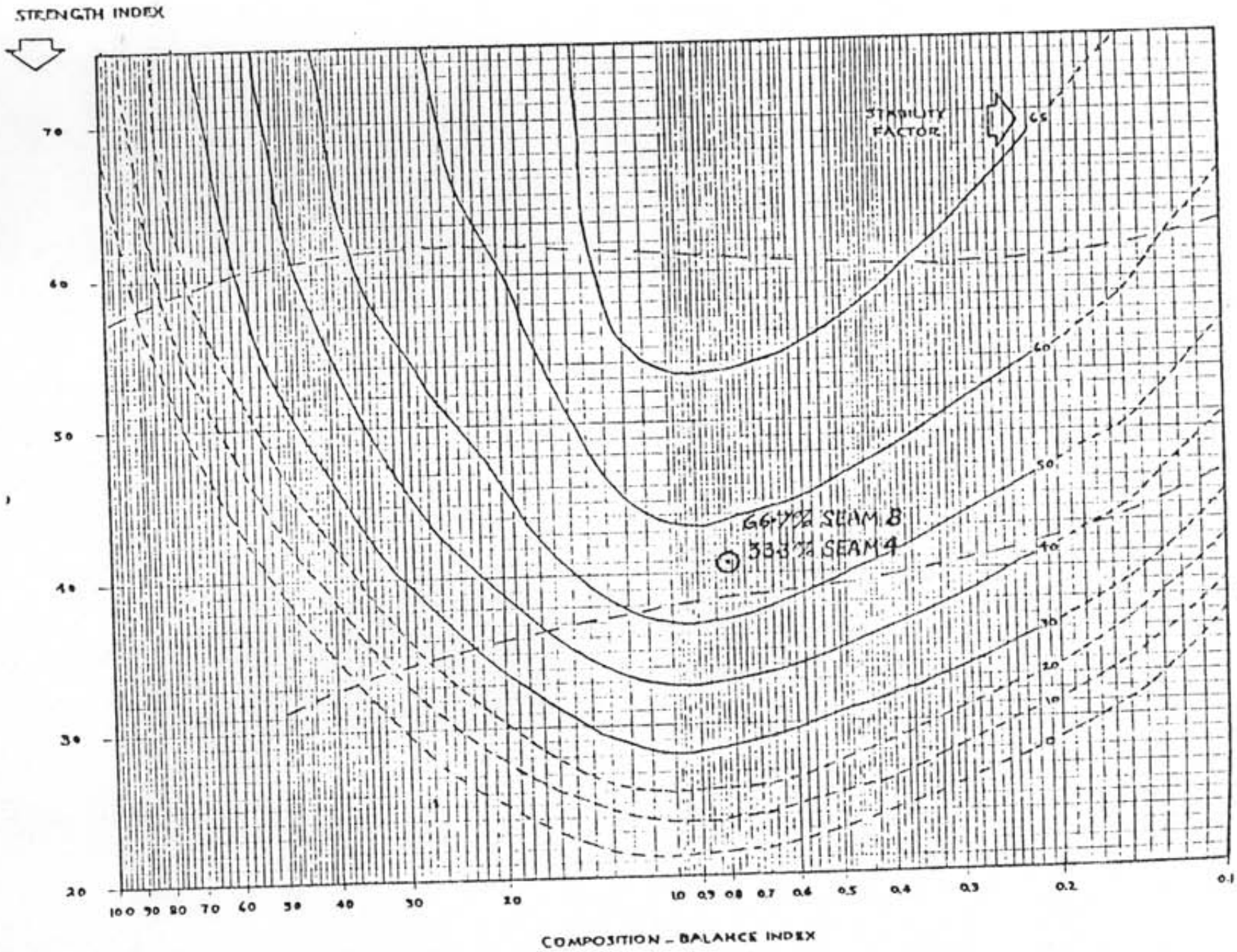
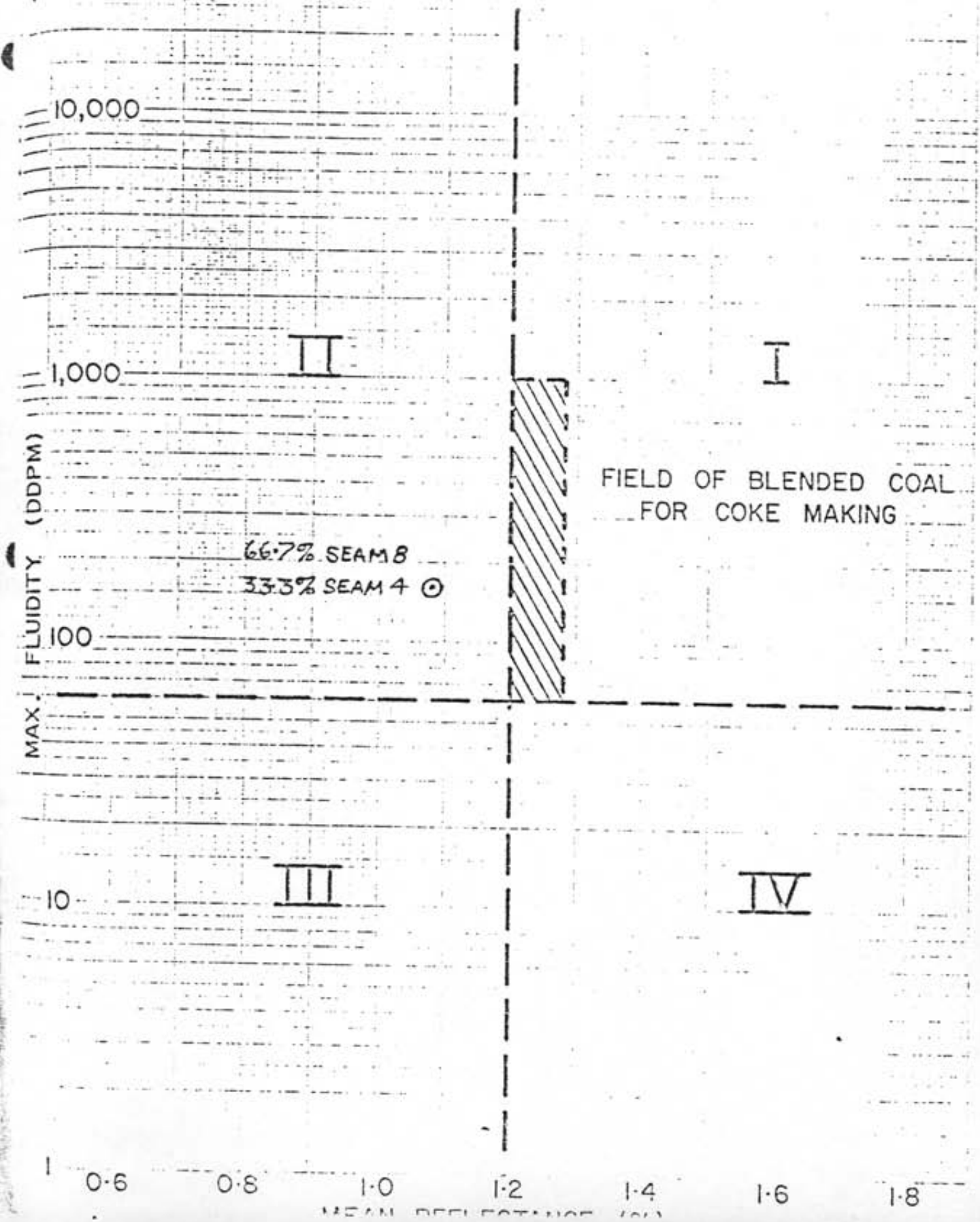


Figure 1. Predicted Stability Factor from Petrographic Data of a Clean Coal Blend

Figure 2. RELATIONSHIP BETWEEN MAX. FLUIDITY AND MEAN REFLECTANCE.



APPENDIX 1

Crows Nest Resources LIMITED
P.O. Box 250 Fernie British Columbia V0B 1M0 (604) 423-4464

November 15, 1979

Dr. W.R. Leeder
Western Research Lab
C/O Alberta Research Council Bldg.
Highway 10 East
Clover Bar
Edmonton, Alberta

Dear Dr. Leeder:

Relative to our phone conversation 15 November, 1979, you will receive from Birtley Coal Testing the following samples from "Ewin Pass" in the Upper Elk Coal Fields.

Adit 1, Adit 2, Adit 3 - 4 drums from each

I would request a complete set of tests to be conducted such as proximate, ultimate, ash analysis, B.T.U., rheology, carbonization drum tests, sole heated oven, hardgrove and such other data, as screen analysis, as may be derived during the testing procedures

I would also request a confidentiality period of two years because of possible marketing implications.

The need for this information is not pressing, so that you can schedule the tests at your earliest convenience.

Yours truly,

R. Crisafio
Metallurgist

PC: J. Jorgensen - Head Petrographer
E.M.R. Ottawa
J.J. Crabb
D. Riva

MOVABLE-WALL COKE OVEN TESTS AND RELATED ANALYSES OF THREE COAL SAMPLES FROM SEAMS 4, 8 AND 9 FROM EWIN PASS SUBMITTED BY CROWS NEST RESOURCES LIMITED

Project 03-3-1/11-5
(Job No. 3238R)

by

J.G. Jorgensen*, T.A. Lloyd* and W. Gardiner*

INTRODUCTION

This investigation deals with the carbonization and related analyses of cleaned coal samples from Seam 8 (Adit No. 1), Seam 4 (Adit No. 2) and Seam 9 (Adit No. 3), taken from Ewin Pass in the Upper Elk Coal Fields. The project was initiated by R. Crisafio, Metallurgist, Crows Nest Resources Ltd., Fernie, British Columbia in letters dated July 26 and November 15, 1979, which are reproduced in Appendix 1.

The cleaned bulk samples were carbonized in the 12-inch width movable-wall coke oven located at the CANMET Bells Corners Complex near Ottawa. Representative samples of the coals were taken and analysed for chemical, physical thermal rheological and petrographical properties. The results of the testing and analyses are listed in Tables 1 to 6.

---

*Heads, Coal Petrology Section, Coal Treatment and Rheology Section, and Carbonization Operations Section, respectively, Coal Resource and Processing Laboratory, Energy Research Laboratories, CANMET, Department of Energy, Mines and Resources, Ottawa, Canada.

TABLE 1 Chemical Analyses of Component Coals

Identification			
Laboratory Number	2131-80	2132-80	2133-80
Description	Adit #1 Seam 8	Adit #2 Seam 4	Adit #3 Seam 9
Classification			
Rank (ASTM)	mvb	mvb	mvb
International System	534	533	431
Specific Volatile Index	169	177	202
Carbon (dmmfb) .....%	89.0	88.7	89.9
Proximate Analysis (db)			
Ash .....%	6.3	8.2	8.4
Volatile Matter .....%	28.0	28.3	22.9
Fixed Carbon .....%	65.7	63.5	68.7
Gross Calorific Value (db)			
Btu per pound	14155	14065	14415
Ultimate Analysis (db)			
Carbon .....%	82.8	80.7	81.5
Hydrogen .....%	5.1	5.0	4.6
Sulphur .....%	0.42	0.32	0.41
Nitrogen .....%	1.4	1.3	1.1
Ash .....%	6.3	8.2	8.4
Oxygen (by difference) .....%	4.0	4.5	4.0
Ash Analysis (db)			
SiO_2 .....%	56.6	51.0	58.2
Al_2O_3 .....%	26.3	31.7	30.0
Fe_2O_3 .....%	9.1	6.9	4.0
TiO_2 .....%	1.4	1.6	1.7
P_2O_5 .....%	0.7	1.3	0.9
CaO .....%	1.3	2.1	1.3
MgO .....%	0.8	0.5	0.3
SO_3 .....%	1.1	0.8	0.4
Na_2O .....%	0.1	0.7	0.1
K_2O .....%	1.3	0.2	0.6

TABLE 2 Physical Tests and Fusibility of Ash of Component Coals

Identification				
Laboratory Number		2131-80	2132-80	2133-80
Description		Adit #1 Seam 8	Adit #2 Seam 4	Adit #3 Seam 9
Coal Pulverization				
Sieve Analysis				
Passing	Retained On			
	1/4 in. %	0.1	0.3	0.0
1/4 in.	1/8 in. %	14.0	10.7	9.8
1/8 in.	1/16 in. %	20.8	17.7	15.9
1/16 in.	1/32 in. %	21.3	20.3	18.6
1/32 in.	.....%	43.8	51.0	55.7
Total Passing	1/8 in. %	85.9	89.0	90.2
Grindability				
Hardgrove Index		83	73	88
Fusibility of Ash				
Initial Deformation Temp. ... °F		2400	2700+	2700+
Softening Temp. Spherical ... °F		2700+	2700+	2700+
Softening Temp. Hemispherical °F		2700+	2700+	2700+
Fluid Temp. ..... °F		2700+	2700+	2700+

TABLE 3 Thermal Rheological Properties of Component Coals

Identification			
Laboratory Number	2130-80	2132-80	2133-80
Description	Adit #1 Seam 8	Adit #2 Seam 4	Adit #3 Seam 9
Linear Expansion			
Bd. 52 lb/ft^3 at 2% moisture...%	-4.6	-9.7	-15.7
Gieseler Plasticity			
Start .....°C	425	426	447
Fusion Temp. .....°C	437	439	-
Max. Fluid Temp. .....°C	461	458	465
Final Fluid Temp. .....°C	484	483	479
Solidification Temp. .....°C	487	487	485
Melting Range .....°C	59	57	32
Max. Fluidity .....dd/m	203	147.4	2.7
Torque .....g.in.	40	40	40
Dilatation			
Ti - Softening Temp. .....°C	395	402	411
Tii - Max. Contraction Temp. °C	437	448	474
Tiii - Max. Dilatation Temp. .°C	470	470	-
Contraction .....%	28	23	24
Dilatation .....%	78	33	Nil
Free Swelling Index			
F.S.I.	8½	8½	5½

TABLE 4 Petrographic Analysis of Component Coals

Identification			
Laboratory Number	2131-80	2132-80	2133-80
Description	Adit #1 Seam 8	Adit #2 Seam 4	Adit #3 Seam 9
Distribution of Vitrinite Types			
V-6 %			
V-7 %			
V-8 %			
V-9 %	3.0	7.2	
V-10 %	24.3	51.8	1.0
V-11 %	48.7	13.0	6.7
V-12 %			13.4
V-13 %			23.0
V-14 %			3.8
V-15 %			
V-16 %			
V-17 %			
V-18 %			
Reactive Components			
Total Vitrinite %	76.0	72.0	47.9
Reactive Semi-fusinite (1/3) %	4.4	4.6	17.7*
Exinite %	0.8	2.4	0.2
Total %	81.2	79.0	65.8
Inert Components			
Inert Semi-fusinite (2/3) %	8.8	9.2	17.8**
Micrinite %	2.2	1.8	4.7
Fusinite %	4.3	5.4	7.0
Mineral Matter %	3.5	4.6	4.7
Total %	18.8	21.0	34.2
Petrographic Indices			
Mean Reflectance %	1.11	1.05	1.29
Balance Index	0.69	0.73	2.37
Strength Index	4.23	3.80	5.28
Stability Index	57.3	59.7	52.5

*Reactive semi-fusinite (½) **Inert semi-fusinite (½)

TABLE 5 - Carbonization Data

Test Identification Number	753		754		755	
Data of Test	21 Jan/80		24 Jan/80		29 Jan/80	
Laboratory Number	2131-80		2132-80		2133-80	
Description	100% Adit #1 Seam #8		100% Adit #2 Seam #4		100% Adit #3 Seam #9	
CARBONIZATION DATA						
Net Weight of Charge (wet) lb	540.2		547.2		539.7	
Moisture in Charge %	3.1		2.8		3.2	
ASTM Bulk Density (wet) lb/ft^3	-		-		-	
Oven Bulk Density (db) lb/ft^3	49.3		50.0		49.1	
CARBONIZATION RESULTS						
Gross Coking Time hr:min	9:10		9:10		9:15	
Maximum Wall Pressure lb/in^2	1.24		0.81		0.23	
Coke Yield Actual %	75.4		75.6		78.0	
Mean Coke size in	1.99		2.03		1.88	
Apparent Specific Gravity	0.844		0.881		0.835	
Screen Analysis of Coke (cumulative percentage retained on)						
3 inch sieve	4.6		8.9		4.4	
2 inch sieve	47.5		47.0		40.0	
1 1/2 inch sieve	76.3		75.9		72.6	
1 inch sieve	94.6		92.0		91.0	
3/4 inch sieve	96.0		94.6		93.0	
1/2 inch sieve	97.0		96.0		93.9	
Percentage -1/2 inch (breeze)	3.0		4.0		6.1	
Tumbler Test (ASTM)						
Stability Factor	53.0		32.1		46.0	
Hardness Factor	63.4		62.7		61.4	
Japanese Drum Test (JIS) (cumulative percentage retained on)	*	**	*	**	*	**
50 mm sieve	17.9	2.4	15.5	-	17.0	2.8
25 mm sieve	88.1	71.1	74.4	49.1	82.5	63.0
15 mm sieve	93.6	81.3	88.5	72.4	91.5	77.9
	*30 revs	**150 revs				

TABLE 6

Analyses of Coke Oven Charges and Resultant Cokes

Identification			
Test Number.....	753	754	755
Date Charged.....	23/1/80	24/1/80	29/1/80
Description.....	Adit #1 Seam 8	Adit #2 Seam 4	Adit #3 Seam 9
Coke Oven Charge			
Laboratory Number.....	2131-80	2132-80	2133-80
Proximate Analysis (db)			
Ash.....%	6.3	8.2	8.4
Volatile Matter.....%	28.0	28.3	22.9
Fixed Carbon .....%	65.7	63.5	68.7
Sulphur (db).....%	0.42	0.32	0.41
Resultant Coke			
Laboratory Number.....	2235-80	2236-80	2494-80
Proximate Analysis (db)			
Ash.....%	8.6	10.2	10.8
Volatile Matter.....%	1.5	1.6	1.0
Fixed Carbon.....%	89.9	88.2	88.2
Sulphur (db).....%	0.35	0.29	0.35

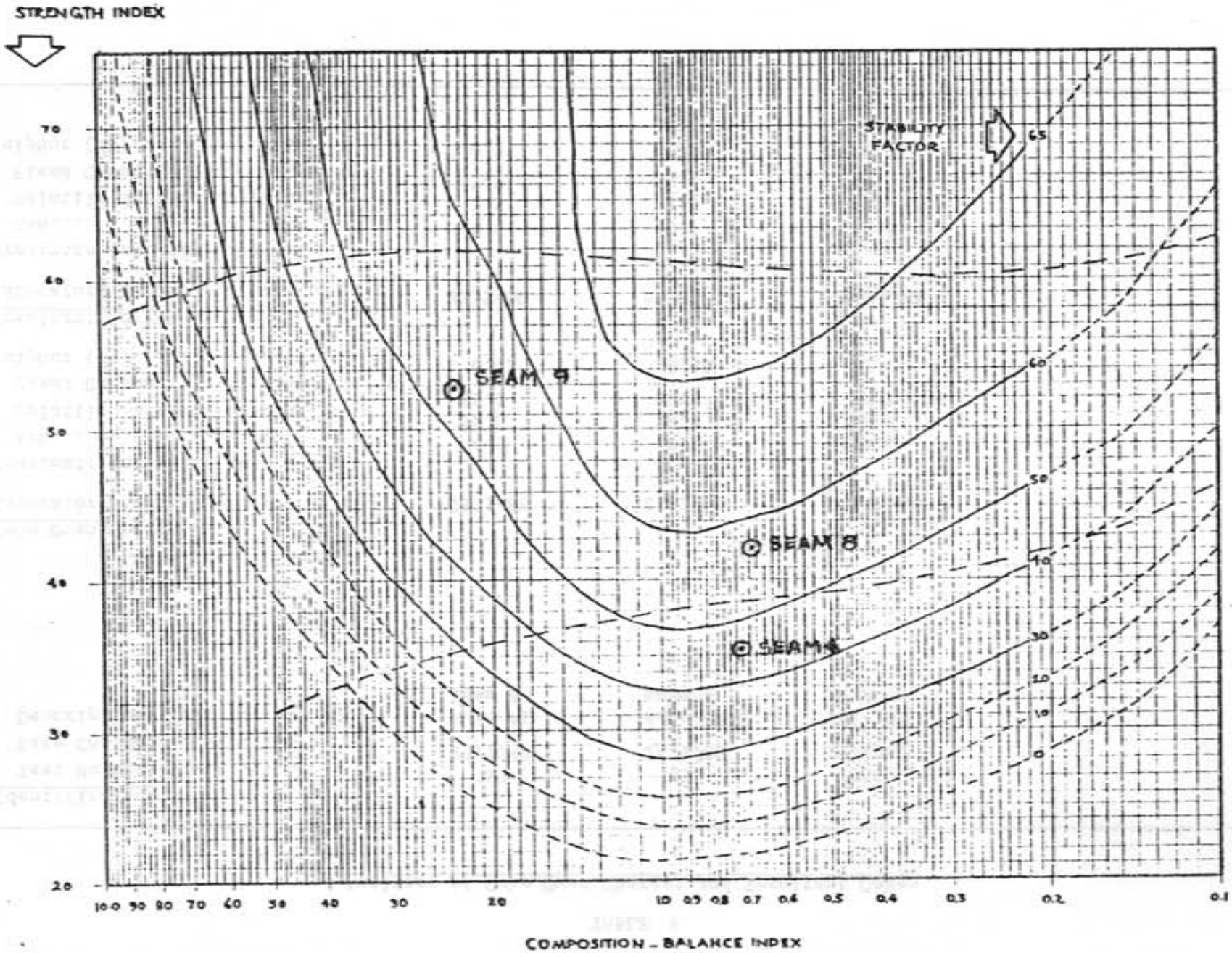
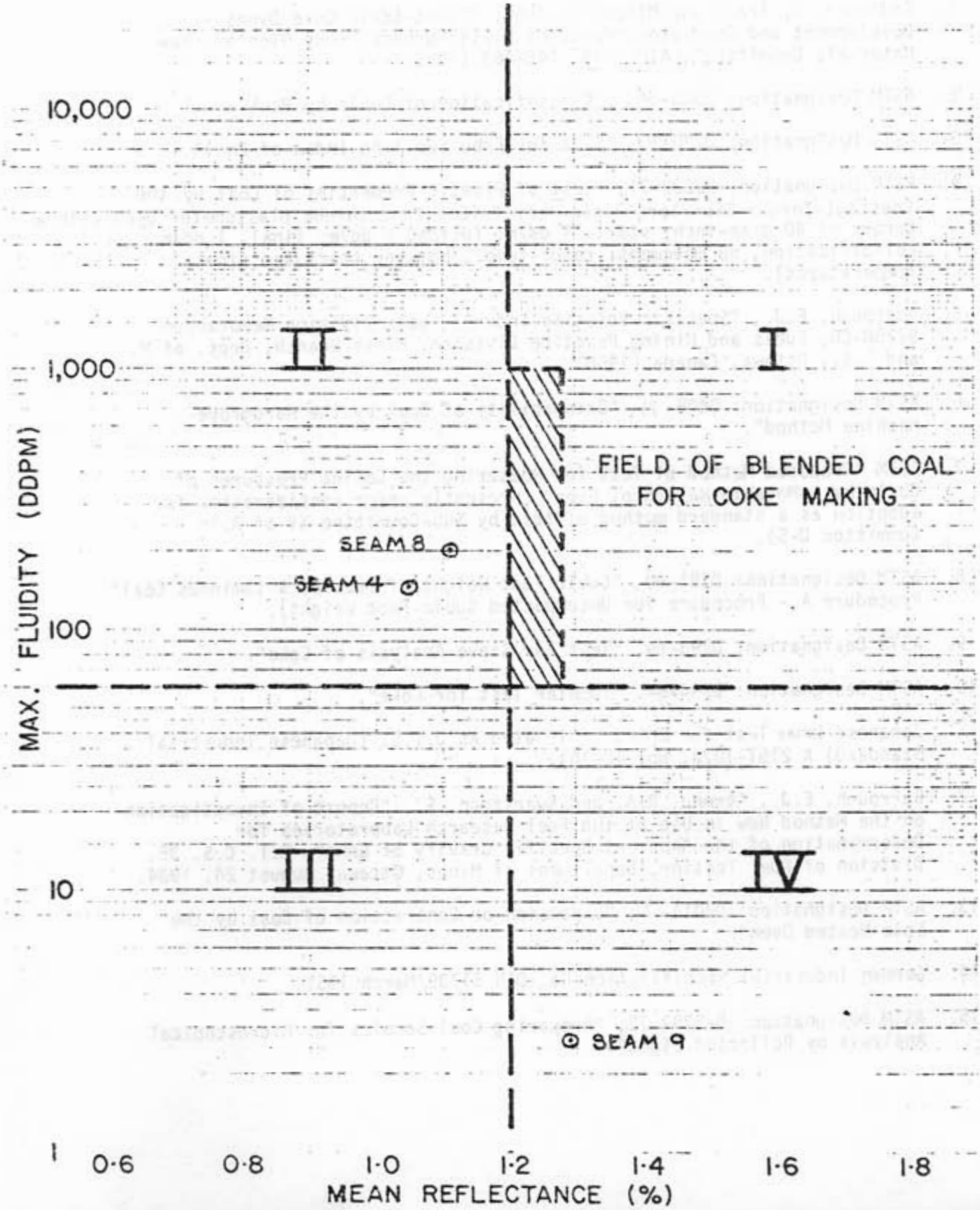


Figure 1. Plot of predicted stability indices from petrographic data for component coals.

Figure 2 . RELATIONSHIP BETWEEN MAX. FLUIDITY AND MEAN REFLECTANCE .



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2. ASTM Designation: D388-66, "Classification of Coals by Rank".

3. ASTM Designation: D720-67, "Test for Free Swelling Index of Coal".

4. ASTM Designation: D2639-71, "Test of Plastic Properties of Coal by the Constant-Torque Gieseler Plastometer." (Constant torque plastometer used with a torque of 40 gram-inch; start, 1 dd/m; fusion, 5 dd/m; final, 1 dd/m; solidification, no movement; range-temp., between start and final temperatures).

5. Burrough, E.J., "Specific Volatile Index", Fuels Division Memorandum 97/58-CG, Fuels and Mining Practice Division, Mines Branch, Dept. of M. and T.S., Ottawa, Canada (1958).

6. ASTM Designation: D409-71, "Grindability of Coal by the Hardgrove-Machine Method".

7. ASTM "Proposed Method of Test for Measuring the Coking Pressures of Coals by a Movable-Wall Slot Oven" (presently under consideration for adoption as a standard method of test by Sub-Committee XV of ASTM Committee D-5).

8. ASTM Designation: D291-60, "Cubic Foot Weight of Crushed Bituminous Coal" Procedure A - Procedure for Uncompacted Cubic Foot Weight).

9. ASTM Designation: D293-69, "Test for Sieve Analysis of Coke".

10. ASTM Designation: D294-64, "Tumbler Test for Coke".

11. Japanese Drum Test for Coke, Designated as J.I.S. (Japanese Industrial Standard) K 2151-1972, pp. 12-16).

12. Burrough, E.J., Strong, R.A. and Swartzman, E., "Report of Investigation on the Method Now in Use at the Fuel Research Laboratories for Determination of the Apparent Specific Gravity of Coke", R.I. C.S. 35, Division of Fuel Testing, Department of Mines, Ottawa, August 24, 1934.

13. ASTM Designation: D2014-71, "Expansion or Contraction of Coal by the Sole-Heated Oven".

14. German Industrial Specification No. DIN 51739/March 1951.

15. ASTM Designation: D-2797-72, "Preparing Coal Samples for Microscopical Analysis by Reflected Light".

16. ASTM Designation: D-2798-72, "Microscopical Determination of the Reflectance of the Organic Components in a Polished Specimen of Coal".

17. ASTM Designation: D-2799-72, "Microscopical Determination of Volume Percent of Physical Components of Coal".

18. Schapiro, N., Gray, R.J., "Petrographic Classification Applicable to Coals of all Ranks", Proc. III, Min. Inst., 1960, 68, 83-97.

19. H. Hoffmann, and K. Hoehne, Brenstoff Chemie, 35, (1954), pp 202, 236, 269 and 298.

APPENDIX 1

Letters dated July 26 and November 15, 1979 from R. Crisafio, Metallurgist, Crows Nest Resources Limited, Fernie, British Columbia.

Crows Nest Resources LIMITED
Shell Centre, 400 - 4th Avenue S.W., Calgary, Alberta (403) 232-4355
P.O. Box 2699 Stn. M, Calgary, Alberta T2P 2M7 Telex 038-24792

July 26, 1979

Mr. J. Botham
Energy Mines & Resources
C.A.N.M.E.T.
555 Booth St.
Ottawa, Ontario K1A 0E4

Dear Jack,

This is to confirm a telephone conversation with J. Jorgensen requesting coal quality, Petrographic and coke tests on samples from Line Creek Ridge and Ewin Pass.

I would request the work be conducted in Ottawa, simply to establish continuity with our previous testing over the years.

The samples would be washed and we would forward two drums (180 kg) clean coal from each seam. Anticipated are samples from:

1) Adit 18 - #8 seam - Upper Line Creek Ridge
#8 seam - Lower Line Creek Ridge

2) Adit 4 - #9 seam - Line Creek Ridge

3) 4 Adit Samples (not yet numbered) - Ewin Pass

4) We will also require a test on a composite #8 seam sample.

Could you please outline anticipated costs as based on your cost recovery program and also what scheduling you would anticipate. Priorities would be #8 seam, #9 seam, Ewin Pass.

Sincerely,

R. CRISAFIO
Metallurgist

P. S. Please direct reply to Fernie as shown on the card.

RC/mi
c.c. D. A. Riva

Crows Nest Resources LIMITED
P.O. Box 250, Fernie, British Columbia V0B 1M0 (604) 423 4464

November 15, 1979

Dr. W.R. Leeder
Western Research Lab
C/O Alberta Research Council Bldg.
Highway 10 East
Clover Bar
Edmonton, Alberta

Dear Dr. Leeder:

Relative to our phone conversation 15 November, 1979, you will receive from Birtley Coal Testing the following samples from "Ewin Pass" in the Upper Elk Coal Fields.

Adit 1, Adit 2, Adit 3 - 4 drums from each

I would request a complete set of tests to be conducted such as proximate, ultimate, ash analysis, B.T.U., rheology, carbonization drum tests, sole heated oven, hardgrove and such other data, as screen analysis, as may be derived during the testing procedures

I would also request a confidentiality period of two years because of possible marketing implications.

The need for this information is not pressing, so that you can schedule the tests at your earliest convenience.

Yours truly,

R. Crisafio
Metallurgist

PC: J. Jorgensen - Head Petrographer
E.M.R. Ottawa
J.J. Crabb
D. Riva

CONFIDENTIAL

APPENDIX D

CROWS NEST RESOURCES ALYSIS REPORT

AREA: EWIN PASS HOLE NO. EPT-0 DATE: August 15/80 ANALYST Bernie

LAB. NO.	SAMPLE NO.	SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CALC. BASIS
80-163	1	2	1.91-5.16	RAW		6.35	21.54			0				ADB
														ARB
							23.00							DB
				1.5 FLOAT		3.28	6.81	27.84	62.07	0		26		ADB
							7.03	28.78	64.19					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
80-164	2	Middle 9	150.48 - 159.39	RAW		7.57	29.25			0				ADB
														ARB
							31.65							DB
				1.5 FLOAT		4.13	7.01	29.53	59.33	0		15		ADB
							7.31	30.80	61.89					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
80-165	3	Lower 9	351.59 - 356.68	RAW		6.62	26.00			0				ADB
														ARB
							27.84							DB
				1.5 FLOAT		4.29	8.70	30.36	56.65	0		26		ADB
							9.09	31.72	59.19					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB

CROWS NEST RESOURCES ALYSIS REPORT

AREA: EWIN PASS HOLE NO. EPT-0 DATE: August 15/80 ANALYST Bernie

LAB. NO.	SAMPLE NO.	SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CALC. BASIS
80-163	1	?	1.91-5.16	RAW		6.35	21.54			0				ADB
														AR3
							23.00							D3
				1.5 FLOAT		3.28	6.81	27.84	62.07	0		26		ADB
							7.03	28.78	64.19					DB
				FLOAT										ADB
														D3
				FLOAT										ADB
														DB
80-164	2	Middle 9	150.48 - 159.39	RAW		7.57	29.25			0				AD3
														ADB
							31.65							D3
				1.5 FLOAT		4.13	7.01	29.53	59.33	0		15		ADB
							7.31	30.80	61.89					D5
				FLOAT										ADB
														DB
				FLOAT										ADB
														D3
80-165	3	Lower 9	351.59 - 356.68	RAW		6.62	26.00			0				AD3
														ADB
							27.84							D5
				1.5 FLOAT		4.29	8.70	30.36	56.65	0		26		ADB
							9.09	31.72	59.19					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB

CROWS NEST RESOURCES ALYSIS REPORT

AREA: EWIN PASS HOLE NO. EPT-1 DATE: August 15/80 ANALYST Bernie

LAB. NO.	SAMPLE NO.	SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CALC. BASIS
80-166	1	8	29.35 - 44.46	RAW		2.25	11.47			0				ADB
														ARB
							11.73							DB
				1.5 FLOAT		2.60	4.04	28.57	64.79	0		67		ADB
							4.15	29.33	66.52					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
80-167	2	4	150.44-159.79	RAW		2.31	10.85			0				ADB
														ARB
							11.11							DB
				1.5 FLOAT		2.47	4.77	28.84	63.92	0		71		ADB
							4.89	29.57	65.54					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
80-168	3	Above 4 ?	212.80 - 223.93	RAW		2.13	13.75			0				ADB
														ARB
							14.05							DB
				1.5 FLOAT		2.22	3.47	29.21	65.10	0		71		ADB
							3.55	29.87	66.58					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB

CROWS NEST RESOURCES ALYSIS REPORT

AREA: EWIN PASS HOLE NO. EPT-2 DATE: August 15/80 ANALYST Bernie

LAB. NO.	SAMPLE NO.	SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CALC. BASIS
80-169	1	8	20.00-31.31	RAW		2.82	10.50			0				ADB
														ARB
							10.80							DB
				1.5 FLOAT		3.59	3.44	28.72	64.25	0		68		ADB
							3.57	29.79	66.64					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
80-170	2	4	203.20-225.80	RAW		3.33	15.37			0				ADB
														ARB
							15.90							DB
				1.5 FLOAT		3.71	3.55	29.16	63.58	0		64		ADB
							3.69	30.28	66.03					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				RAW										ADB
														ARB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB

CROWS NEST RESOURCES ALYSIS REPORT

AREA: EWIN PASS HOLE NO. EPT-3 DATE: August 15/80 ANALYST Bernie

LAB. NO.	SAMPLE NO.	SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CALC. BASIS
80-171	1	4	40.79-46.94	RAW		5.76	10.86			0				ADB
														ARB
							11.52							DB
				1.5 FLOAT		4.14	4.07	29.27	62.52	0		64		ADB
							4.25	30.53	65.22					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
80-172	2	4	54.00 - 77.43	RAW		4.89	19.53			0				ADB
														ARB
							20.53							DB
				1.5 FLOAT		5.21	7.44	30.18	57.17	0		44		ADB
							7.85	31.84	60.31					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				RAW										ADB
														ARB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB

CROWS NEST RESOURCES ALYSIS REPORT

AREA: EWIN PASS HOLE NO. EPT -4 DATE: August 15/80 ANALYST Bernie

LAB. NO.	SAMPLE NO.	SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CALC. BASIS
80-173	1		22.02 - 43.06	RAW		1.65	78.57			0				ADB
														ARB
							79.98							DB
				FLOAT			NO FLOAT							ADB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				RAW										ADB
														ARB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				RAW										ADB
														ARB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB

CROWS NEST RESOURCES ALYSIS REPORT

AREA: EWIN PASS HOLE NO. EPT-5 DATE: Aug 15/80 ANALYST Bernie

LAB. NO.	SAMPLE NO.	SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CALC. BASIS
80-174	1		63.51 - 81.57	RAW		2.83	13.84			0				ADB
														ARB
							13.87							DB
				1.5 FLOAT		2.80	5.55	31.11	60.54	0		66		ADB
							5.71	32.01	62.28					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
80-175	2		134.22 - 143.30	RAW		1.33	52.30			0				ADB
														ARB
							53.00							DB
				1.5 FLOAT		2.42	5.57	31.04	60.97	0		30		ADB
							5.71	31.81	62.48					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				RAW										ADB
														ARB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB

CROWS NEST RESOURCES ALYSIS REPORT

AREA: EWIN PASS HOLE NO. EPT - 6 DATE: August 15/80 ANALYST Bernie

LAB. NO.	SAMPLE NO.	SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CALC. BASIS
80-176	1		38.65 43.30	RAW		2.12	24.59			0				ADB
														ARB
							25.12							DB
				1.5 FLOAT		2.37	3.67	27.42	66.54	0		50		ADB
							3.76	28.09	68.15					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
80-177	2		54.47 - 64.64	RAW		2.09	26.87			0				ADB
														ARB
							27.44							DB
				1.5 FLOAT		1.83	4.17	28.88	65.12	0		54		ADB
							4.25	29.42	66.33					DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				RAW										ADB
														ARB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB
				FLOAT										ADB
														DB

CROWS NEST RESOURCES ANALYSIS REPORT

AREA: IN PASS HOLE NO. TRENCH DATE: MAR. 4/81 ANALYST BERNIE & LAREN

LAB. NO.	SAMPLE NO.	Hole NO. SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	C/B
				RAW	15.46	3.22	8.03			0				
80-482	04	80T-12	219.06-											
			233.85				8.30							
				1.5 FLOAT		1.43	4.34	29.90	64.33	0		.68		
							4.40	30.33	65.27					
				FLOAT										
				FLOAT										
				RAW	16.56	.70	9.89			0				
80-484	1	80T-17	13.65 -											
			21.98				9.96							
				1.5 FLOAT		1.30	5.84	31.11	61.75	0		59		
							5.92	31.52	62.56					
				FLOAT										
				FLOAT										

CROWS NEST RESOU "S ALYSIS REPORT

AREA: EWIN PASS TRENCH HOLE NO. TRENCH DATE: MAR. 4/81 ANALYST BERNIE & I EN

LAB. NO.	SAMPLE NO.	Hole No. SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CA BA
				RAW	11.42	9.61	12.83			0				
80 -	1	80T - 8	26.19 -											
263			33.85				14.19							
				1.5 FLOAT		2.57	4.45	30.22	62.76	0		53		
							4.57	32.04	63.39					
				FLOAT										
				FLOAT										
				RAW	7.92	2.17	14.71			0				
80-264	2	80T-14	61.77 -											
			77.94				15.04							
				1.5 FLOAT		1.09	4.71	28.16	66.04	0		65		
							4.76	28.47	66.77					
				FLOAT										
				FLOAT										
				RAW	13.97	2.07	9.36			0				
80-265	1	80T-13	50.68											
			68.31				9.56							
				1.5 FLOAT		.86	4.68	28.44	66.02	0		67		
							4.72	28.68	66.60					
				FLOAT										
				FLOAT										

CROWS NEST RESOURC[illegible] ALYSIS REPORT

AREA: EWIN PASS HOLE NO. TRENCH [illegible]TE: MAR. 4/81 ANALYST BERNIE & DAF

LAB. NO.	SAMPLE NO.	Hole No. SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CAL BAS
				RAW	15.13	3.17	20.92			0				AD
80-479	01	80T-9	30.35 -											AR
							21.61							DB
			63.69	1.5 FLOAT		1.87	4.75	31.78		0		43		AD
							4.84	32.38						DB
				FLOAT										AD
														DC
				FLOAT										AD
														DE
				RAW	13.87	3.74	10.77			0				AD
80-480	02	80T-12	104.82 -											AS
							11.19							DE
			118.07	1.5 FLOAT		2.03	3.68	30.81	63.48	0		48		AD
							3.76	31.45	64.79					D
				FLOAT										A
														D
				FLOAT										A
														D
				RAW	7.46	2.97	16.21			0				A
80-481	03	80T-12	122.10 -											A
							16.71							D
			191.15	1.5 FLOAT		1.71	5.81	29.68	62.80	0		44		A
							5.91	30.19	63.90					D
				FLOAT										A
														D
				FLOAT										A
														D

CROWS NEST RESOU[illegible]S[illegible]ALYSIS REPORT

AREA: EWIN PASS HOLE NO. TRENCH DATE: MAR. 4/81 ANALYST BERNIE & D[illegible]N

LAB. NO.	SAMPLE NO.	Hole No. SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CA BA
				RAW	12.88	3.46	12.44			0				A
														A
80-266	2	80T-13	88.83-				12.89							D
			110.13	1.5 FLOAT		1.22	5.01	29.01	64.76	0		51		A
							5.07	29.37	65.56					D
				FLOAT										A
														D
				FLOAT										A
														D
				RAW	9.13	5.29	15.49			0				A
														A
80-267	1	80T -	185.45 -				16.35							D
		16	193.39	1.5 FLOAT		1.55	5.48	28.06	64.91	0		38		A
							5.57	28.50	65.93					D
				FLOAT										A
														D
				FLOAT										A
														D
				RAW	8.93	3.97	8.27			0				A
														A
80-268	1	80T -	11.61 -				8.61							D
		18	16.91	1.5 FLOAT		1.17	4.88	30.71	63.24	0		69		A
							4.94	31.07	63.99					D
				FLOAT										A
														D
				FLOAT										A
														D

CROWS NEST RESOURCES ANALYSIS REPORT

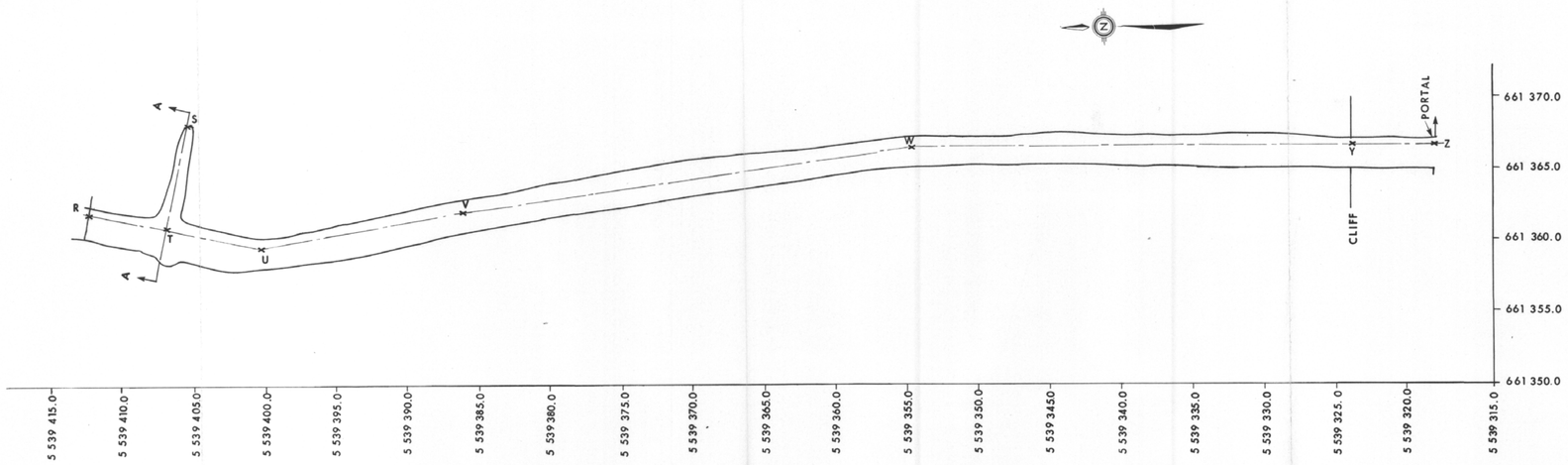
AREA: EWIN PASS HOLE NO. TRENCH DATE: MAR. 4/81 ANALYST BERNIE & LEN

LAB. NO.	SAMPLE NO.	HOle NO. SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	C/B
80-275	1	80T-29	36.86 - 40.95	RAW	6.91	2.71	8.31			0				
							8.54							
				1.5 FLOAT		1.65	3.74	29.56	65.05	0		73		
							3.80	30.05	66.15					
				FLOAT										
				FLOAT										
80-276	2	80T-29	88.78 - 106.68	RAW	7.25	3.05	15.78			0				
							16.28							
				1.5 FLOAT		1.51	3.74	30.63	64.12	0		57		
							3.80	31.10	65.10					
				FLOAT										
				FLOAT										
80-277	3	80T-29	120.04-123.28	RAW	6.78	2.29	6.57			0				
							6.72							
				1.5 FLOAT		1.56	3.40	30.69	64.35	0		80		
							3.45	31.17	65.38					
				FLOAT										
				FLOAT										

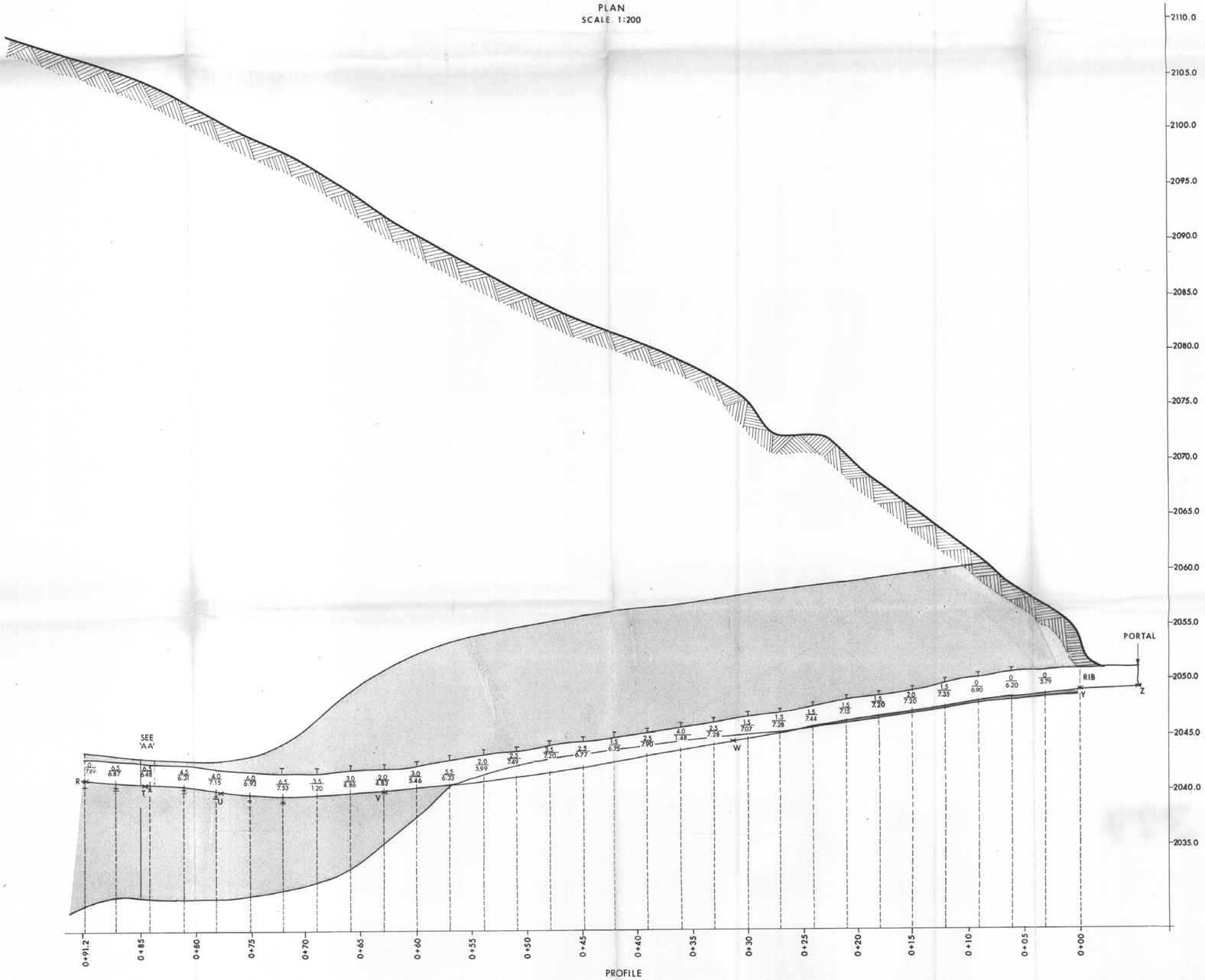
CROWS NEST RESOUR[illegible]ALYSIS REPORT

AREA: EWIN PASS HOLE NO. TRENCH DATE: MAR. 4/81 ANALYST BERNIE & [illegible]EN

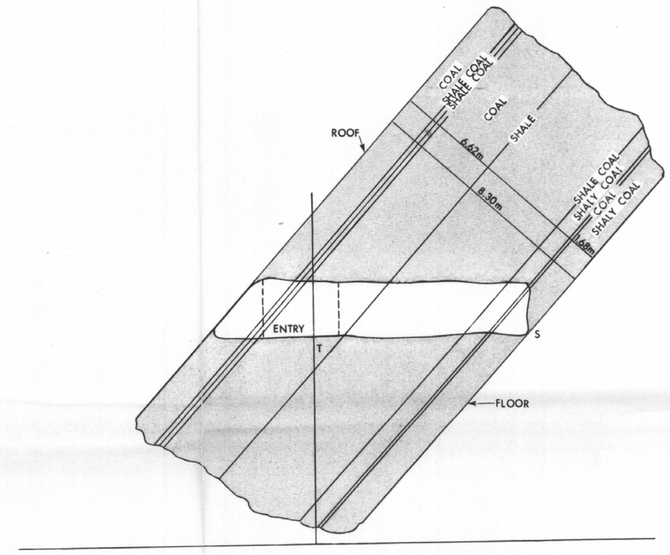
LAB. NO.	SAMPLE NO.	Hole No. SEAM	INTERVAL (METRES)	FRACTION	% AIR DRY LOSS	% MOISTURE	% ASH	% V.M.	% F.C.	F.S.I.	SULFUR	% YIELD	Kcal/kg	CAL BAS
				RAW	11.62	2.04	6.96			0				ADE
														ARE
80-278	4	80T-29	58.20 -				7.11							DB
			64.75	1.5 FLOAT		1.58	3.71	29.55	65.16	0		74		ADE
							3.77	30.02	66.21					DB
				FLOAT										ADE
														DB
				FLOAT										ADE
														DB
				RAW	11.20	2.27	16.45			0				ADE
80-279	5	80T-29	139.82-											ARE
			143.95				16.83							DB
				1.5 FLOAT		1.24	6.14	28.04	64.58	0		52		ADE
							6.22	28.39	65.39					DB
				FLOAT										ADE
														DB
				FLOAT										ADE
														DB
				RAW	18.77	2.56	19.67			0				ADE
80-281	1	80T-14	56.29 -											ARE
			59.91				20.19							DB
				FLOAT		2.38	6.96	30.04	60.62	0		42		ADE
							7.13	30.77	62.10					DB
SAMPLE TAG HARD TO READ - FADED				FLOAT										ADE
														DB
				FLOAT										ADE
														DB



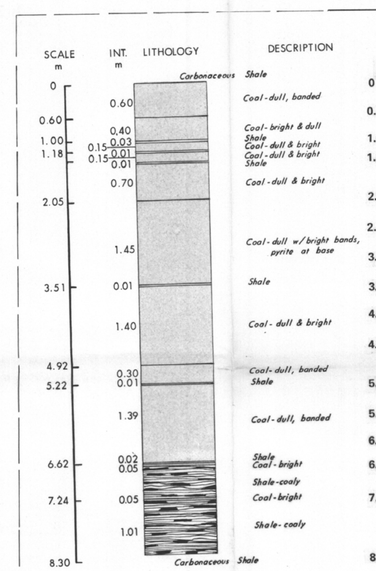
PLAN
SCALE 1:200



PROFILE
SCALE 1:200



X- SECTION AA
SCALE 1:100



SEAM 9
SCALE 1:50

INCREMENT SAMPLE ANALYSES

	% Air Dry Loss	% Moisture	% Ash	% V.M.	% F.C.	FSI	% Yield
0 – 0.5	4.77	0.77	10.88	19.50	68.85	1	73
0.5 – 1.0	1.98	1.01	7.48	20.13	71.38	1	86
1.0 – 1.3	5.30	0.88	9.43	20.41	69.28	1	83
1.3 – 2.0	5.21	0.98	5.87	21.65	71.50	1	85
2.0 – 2.5	2.25	0.80	10.62	19.50	69.08	1	63
2.5 – 3.0	8.33	0.83	3.83	23.30	72.04	3	91
3.0 – 3.5	3.55	0.54	13.11	20.37	65.98	3	85
3.5 – 4.0	2.99	0.80	3.43	23.49	72.23	6.5	94
4.0 – 4.5	2.11	0.82	6.92	20.79	71.47	2	84
4.5 – 5.2	1.11	0.63	6.46	21.13	71.78	3.5	89
5.2 – 5.7	1.85	0.51	6.38	22.77	70.34	7	77
5.7 – 6.2	1.95	0.57	7.29	21.03	71.11	5	75
6.2 – 6.6	2.27	0.53	5.63	21.63	72.21	5	74
6.6 – 7.2	3.36	0.44	8.99	23.96	66.61	8	27
7.2 – 8.3	4.65	0.64	6.99	24.35	68.02	8	6

Washed to S.G. 1.5

CONFIDENTIAL 397

K-Shell-Ewin Pass 80(4)A

STATION	NORTHINGS	EASTINGS	ELEVATION
Z	5 539 318.2	661 371.55	2049.17
W	5 539 323.88	661 371.58	2048.98
Y	5 539 354.80	661 371.75	2044.47
V	5 539 386.19	661 367.03	2040.37
U	5 539 400.42	661 364.52	2040.13
T	5 639 407.10	661 365.91	2040.08
S	5 539 405.41	661 373.12	2041.00
R	5 539 412.40	661 366.89	2041.29

LEGEND

3.5 FSI / 9.31 % ASH (WASHED TO S.G. 1.5)

T AUGER SAMPLE

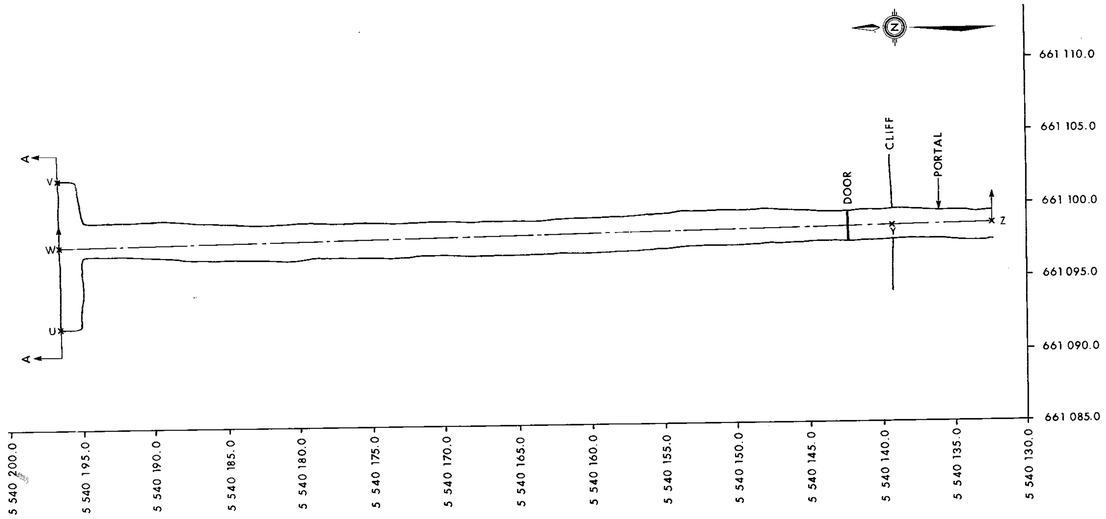
VALUES SHOWN ARE FOR A COMBINED ROOF SAMPLE AND AUGER SAMPLE

Crows Nest Resources Limited
EXPLORATION
EWIN PASS AREA
S.E. BRITISH COLUMBIA

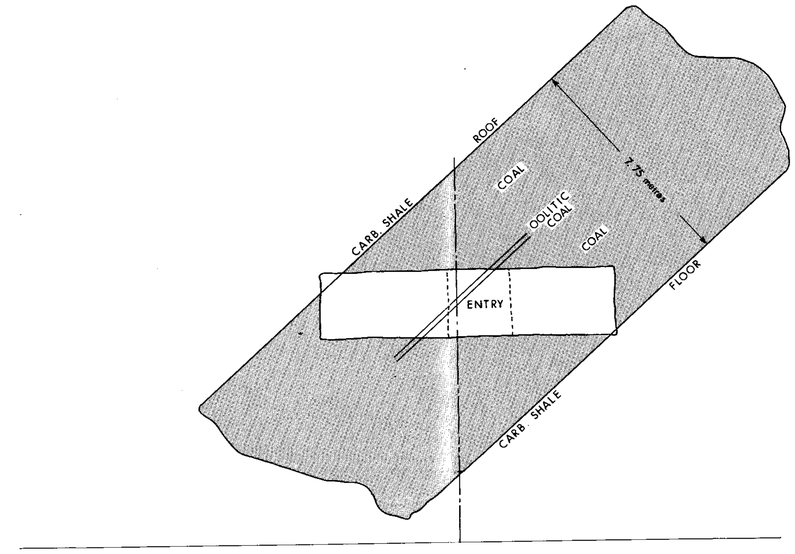
ADIT 3
SEAM 9

AUTHOR: C. BEAVAN	SCALE: AS NOTED	ENCLOSURE No: 6C
DATE: 80 04 14	REVISED: 81 04 10	DRAWING No: HE-50B
To Accompany		

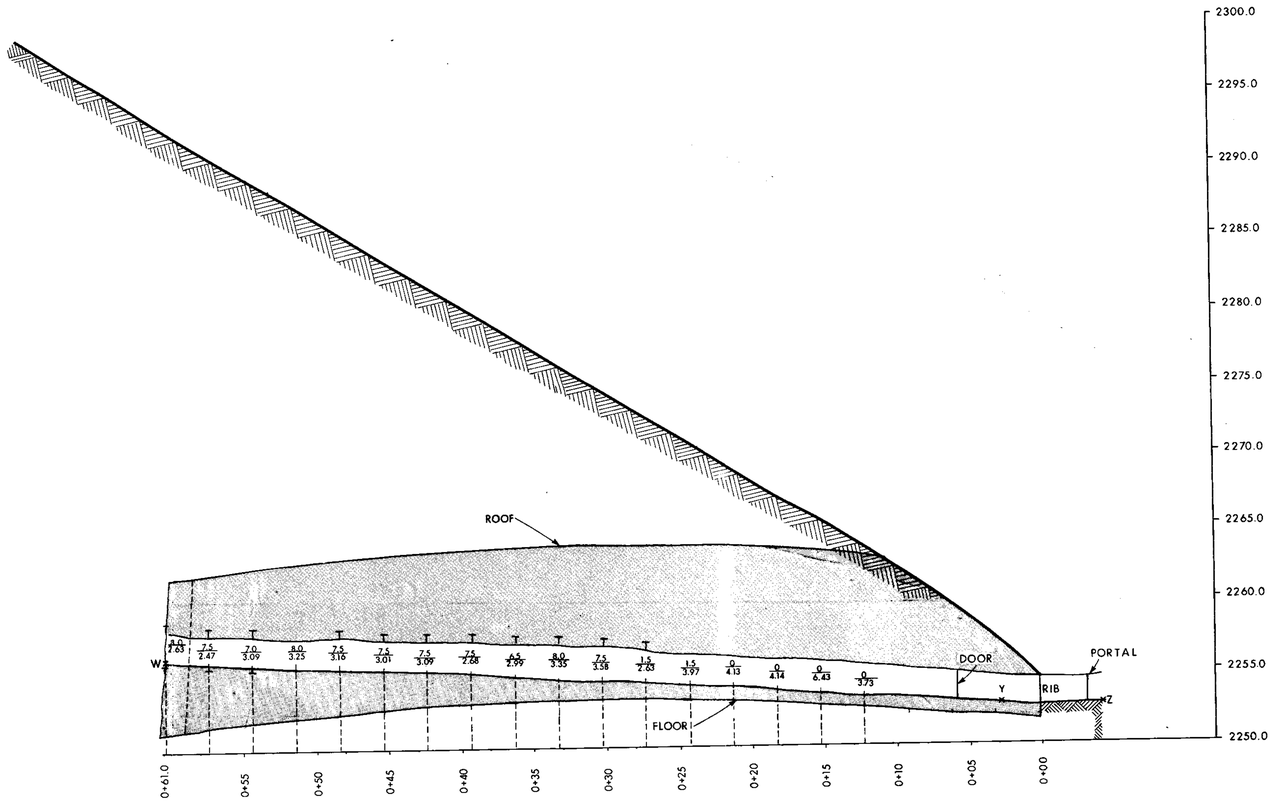
CONFIDENTIAL



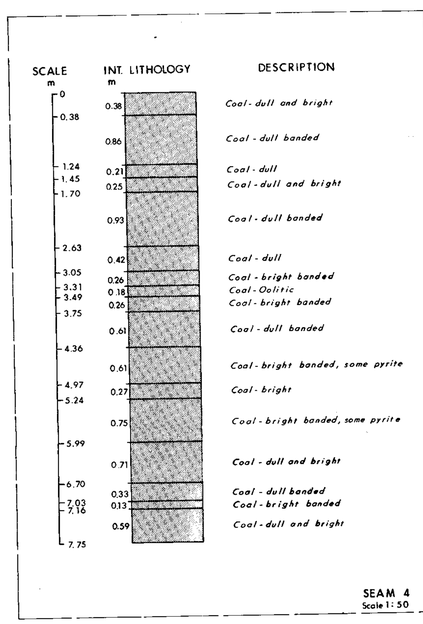
PLAN
SCALE 1:200



X - SECTION AA
SCALE 1:100



PROFILE
SCALE 1:200



SEAM 4
Scale 1:50

INCREMENT SAMPLE ANALYSES

% Moisture	% Ash	% V.M.	% F.C.	FSI	% Yield
0.69	2.35	28.27	68.69	8.5	93
0.57	3.67	28.11	67.65	8	90
0.31	7.84	26.05	65.80	8	87
0.48	3.43	26.60	69.49	8	94
0.45	4.96	22.65	71.94	3.5	93
0.42	1.83	27.92	69.83	8	95
0.99	1.16	27.72	70.13	8	96
0.98	1.49	26.95	70.58	8	96
0.79	0.94	28.67	69.60	8.5	97
0.77	1.34	28.51	69.38	8	97
0.79	3.16	27.84	68.21	8.5	96
0.81	12.43	25.55	61.21	8	26
0.91	1.64	27.53	69.92	8	95
0.92	4.26	27.51	67.31	8.5	79
0.82	9.79	27.05	62.34	8	60

Washed to S.G. 1.5

CONFIDENTIAL 397

K-Shell Ewin Pass 80(6)A

STATION	NORTHINGS	EASTINGS	ELEVATION
Z	5 540 132.03	661 098.59	2252.58
W	5 540 138.93	661 098.48	2252.71
Y	5 540 198.58	661 097.52	2256.72
V	5 540 196.48	661 091.92	2256.72
U	5 540 196.66	661 102.12	2256.73

LEGEND

4.5 FSI / 4.21 % ASH (WASHED TO S.G. 1.5)

T AUGER SAMPLE

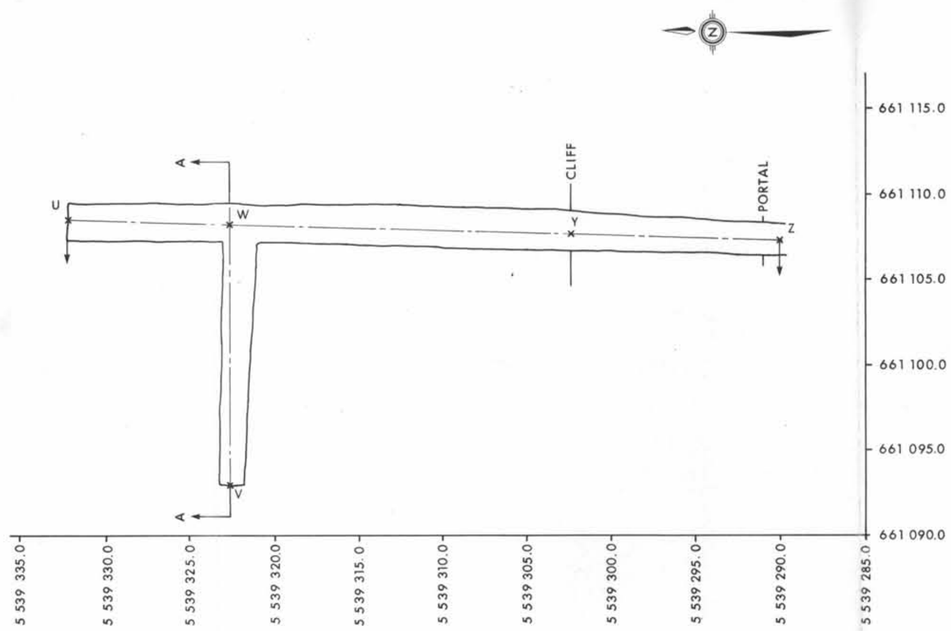
NOTE: VALUES SHOWN ARE COMBINED RIB SAMPLES AND AUGER SAMPLES

Crows Nest Resources Limited
EXPLORATION

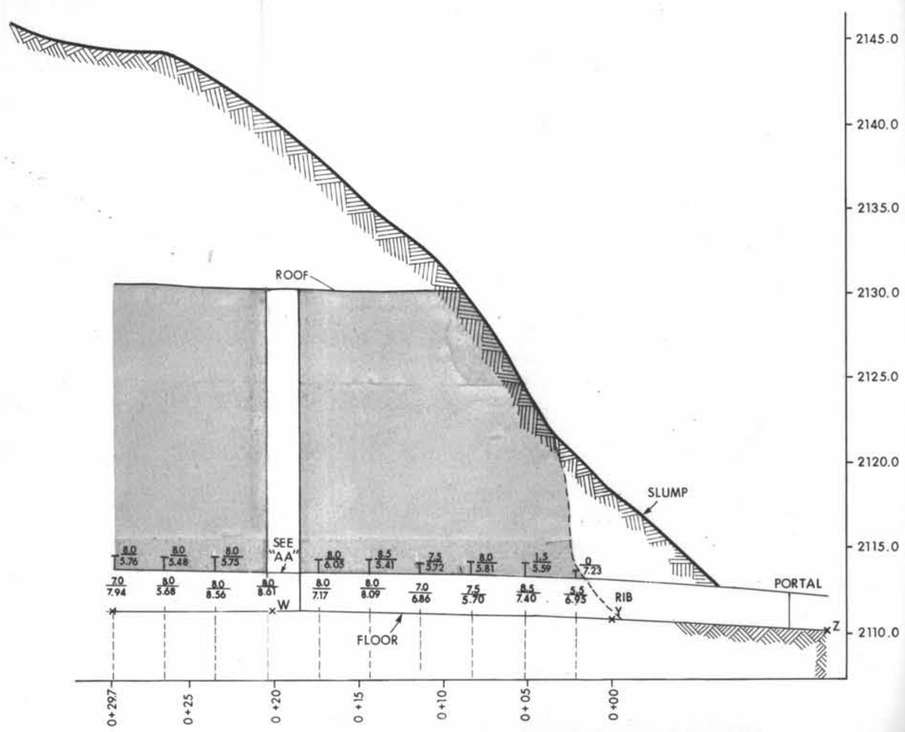
EWIN PASS AREA
S.E. BRITISH COLUMBIA

ADIT 2
SEAM 4

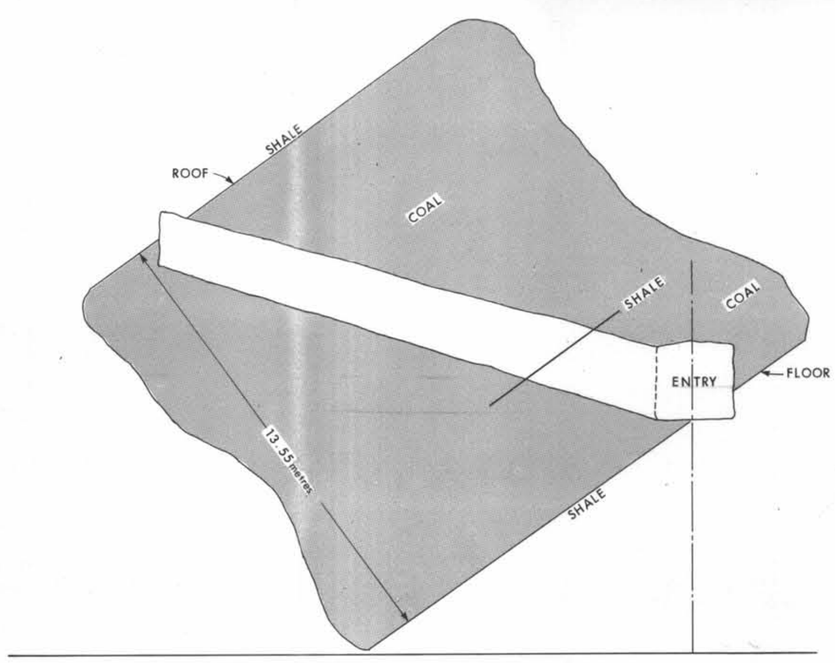
AUTHOR: C. BEAVAN	SCALE: AS NOTED	ENCLOSURE No: 6b
DATE: 80 04 09	REVISED: 81 04 09	DRAWING No: HE-50A
To Accompany		



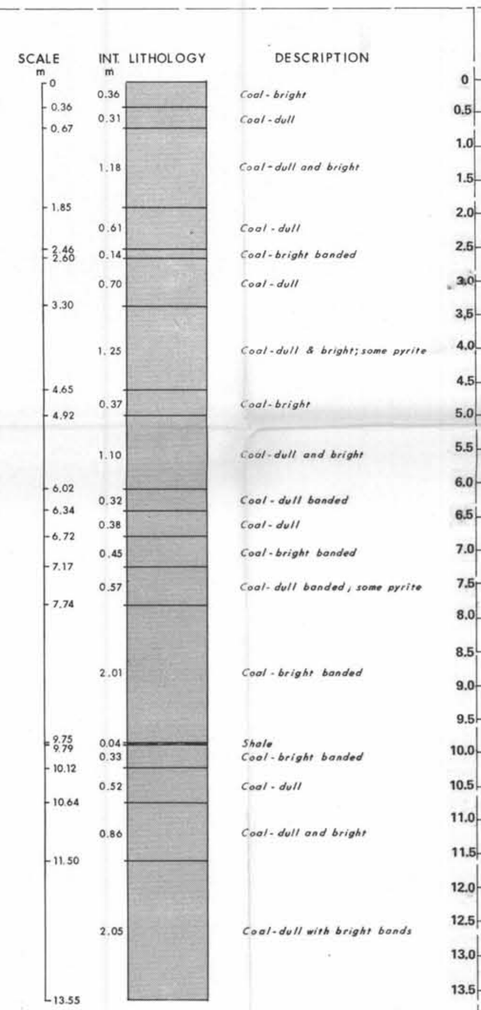
PLAN
SCALE 1:200



PROFILE
SCALE 1:200



X - SECTION "AA"
SCALE 1:100



SEAM 8
SCALE 1:50

INCREMENT SAMPLE ANALYSES

	% Moisture	% Ash	% V.M.	% F.C.	FSI	% Yield
0	0.79	2.68	27.36	69.17	8	
0.5	0.70	5.23	26.97	67.10	8	
1.0	0.50	4.63	27.26	67.61	8.5	
1.5	0.42	4.01	26.99	68.58	8.5	
2.0	0.32	4.98	25.48	69.22	8	
2.5	0.33	5.53	25.46	68.86	8	
3.0	0.87	4.11	26.72	68.30	9	
3.5	0.76	2.93	27.16	68.15	8.5	
4.0	0.72	5.43	28.66	65.19	8.5	
4.5	0.77	5.01	28.29	65.93	8.5	
5.0	0.54	6.32	27.13	66.01	8	
5.5	0.60	5.53	24.75	69.12	7	
6.0	0.79	4.23	25.62	69.36	8	
6.5	0.74	4.96	26.22	68.08	8	
7.0	0.55	5.77	28.33	65.35	8.5	
7.5	0.28	4.93	29.40	65.39	9	
8.0	0.22	6.82	26.41	66.55	8.5	
8.5	0.46	6.87	24.66	68.01	7	
9.0	0.42	4.41	26.08	69.09	8.5	
9.5	0.36	4.43	27.09	68.12	9	
10.0	0.37	7.41	26.60	65.56	8.5	
10.5	0.73	5.42	25.02	68.83	8.5	
11.0	0.58	6.65	22.09	70.68	6	
11.5	0.58	8.47	24.81	66.14	8	89
12.0	0.55	6.83	25.77	66.85	8.5	88
12.5	0.40	7.11	24.49	68.00	8.5	91
13.0	0.32	3.24	26.31	70.13	8.5	95
13.5						

Washed to S.G. 1.5

STATION	NORTHINGS	EASTINGS	ELEVATION
Z	5 539 289.84	661 107.29	2110.12
W	5 539 302.49	661 107.71	2110.90
Y	5 539 322.48	661 108.36	2111.43
V	5 539 322.60	661 092.85	2116.18
U	5 539 332.04	661 108.68	2111.93

LEGEND

$\frac{8.0}{16.0}$ $\frac{FSI}{\%\ ASH}$ (WASHED TO S.G. 1.5)

T AUGER SAMPLE

CONFIDENTIAL

397

K-Shell-Twin Pass 80(4)A

Crows Nest Resources Limited
EXPLORATION

EWIN PASS AREA
S.E. BRITISH COLUMBIA

ADIT 1
SEAM 8

AUTHOR: C. BEAVAN	SCALE: AS NOTED	ENCLOSURE No: 6a
DATE: 80 04 08	REVISED: 81 04 13	DRAWING No: HE-50
To Accompany		