Map Numbers:

6M-394 to 6M-421 Part 2 ~~296~~

6B-570 to 6B-578

6B-677 to 6B-699 & 6B-703

ENTIAL

296 (1)

COLUMBIA IRON MINING COMPANY
FIELD EXPLORATION

DRILL HOLE LOG

NAME OF PROPERTY: CROPCO

File No. 8C-407

HOLE No. 8C-1

LOCATION:

STATE: BRITISH COLUMBIA, CANADA

COUNTY:

DISTRICT:

Section ____, T ____, R ____

Coordinates: 17,974,700 N; 2,121,000 E

ANGLE: Vertical BEARING:

COLLAR ELEVATION: 6100

BOTTOM ELEVATION: 3593

DEPTH:
Overburden: 8
Bedrock: 2499
Total Depth: 2507

SCALE: 1" = 100'

Date Started: 8-24-60
Completed: 10-13-61

Company or Driller: Boyles (Alta); Whatley

Type(s) of Rig(s): BRO-4; Mayhew 2000

Type(s) of Bit(s): Roller; Diamond core; Diamond plug

CASING RECORD: 23' of 9"; 304' of 5"; 1084' of H

CEMENT RECORD: 10 bags Fondu for 9" casing; 100 bags Portland for water at 240'; 75 bags Portland & 10 Fondu on 2nd attempt to stop water; 6 Fondu for 5" casing; 13 Fondu for caving coal at 1002'

REMARKS: Encountered artesian water (43 gal/min) in fault zone at 230-240 ft. Drilled by Boyles to 1934 feet in 1960. Eastman - DX multiple survey to bottom. Schlumberger - Gamma Ray-Neutron and Electrical logs. Completed by L. Whatley in 1961.

Logged by: M. D. Okerlund, P. Mills, R.E. Wright

DEPTH FROM	DEPTH TO	THICKNESS	CORE RECOVERED	DESCRIPTION	LITHO	ANALYSES: PROXIMATE H2O	V.M.	F.C.	Ash	S	ULTIMATE C	H2	N2	O2	Free Swelling Index	DIAL DIVISIONS
0	8	8		Gal												
					10-5/8" R.R.											
					7-5/8" R.R.											
					4-7/8" R.R.											
					500											
					461 core											
1002	1009	7	0	Coal												
					BMF core											
1173	1175	2	0	Coal												
1359	1360	1	0.5	Coal												
					Plug bit											
1438.0	1439.5	1.5	0	Coal												
1534.0	1535.8	1.8	0	Coal												
1688.5	1691.3	2.5	0	Coal												
1691.0	1692.5	1.5	1.5	Cbn sh												
1692.5	1695.5	3.0	1.5	Coal; S 1												
1695.5	1696.7	1.2	1.2	Cbn sh; coal str												
1696.7	1698.6	1.9	1.2	Coal	BMF core	17.3	46.7	35.4	0.4	56.4	3.7	0.9	3.2	8	20
1698.6	1699.7	0.1	0.1	Cbn sh; S 2												
1699.7	1699.9	0.3	0.3	Coal		12.3	25.1	62.6	0.2	30.9	2.3	0.6	3.4	1	3
1699.9	1699.9	0.5	0.5	Cbn sh; coal str	Plug bit											
1699.9	1700.0	0.5	0.2	Coal	BMF core											
1700.0	1703.8	3.8		Cbn sh; coal str												
1703.8	1704.3	0.5	0.4	Coal												
1704.3	1704.8	0.5	0.5	Cbn sh; coal str	M-10											
1756.0	1757.5	1.5		Cbn sh; coal str												
1757.5	1759.0	1.5	1.5	Coal; S 3		20.6	56.6	22.8	0.4	68.0	4.2	1.0	3.5	8½	555
1759.0	1765.6	6.6	0.6	Coal; S 4		22.5	57.7	19.8	0.3	70.6	4.2	1.1	4.0	9	500
1765.6	1766.0	0.4	0.4	Cbn sh; coal str												
1766.0	1768.0	1.8	0.4	Coal												
1768.0	1768.7	0.7	0.7	Cbn sh												
1768.7	1771.7	3.0	2.0	Coal; S 5												
1771.7	1772.3	0.6		Cbn sh		7.6	4.2	38.2	0.3	45.5	3.4	0.9	2.7	5	20
1999.8	2002.8	3.0	3.0	Bone												
2003.0	2005.2	2.2	2.2	Bone												
2005.2	2011.2	6.0	5.1	Coal	BCI-6											
2011.2	2016.2	5.0	4.0	Coal	BCI-7	21.96	66.91	11.12	0.36	78.68	4.51	1.06	3.83	7 1/2	
2016.2	2018.8	2.6	1.2	Bone	BCI-8	22.46	68.10	9.43	0.37	79.59	4.40	1.16	5.05	9	
2021.6	2022.0	0.4	0.4	Coal		19.82	42.26	41.91	0.35	50.03	3.06	0.82	3.83	3 1/2	
2022.4	2023.1	0.7	0.7	Coal												
2023.1	2025.4	0.3	0.3	Bone												
2025.4	2025.7	0.3	0.3	Bone												
2026.4	2028.9	0.5	0.5	Bone												
2042.0	2042.5	0.5	0.5	Bone												
[illegible]	[illegible]	0.2	0.2	Bone												
[illegible]	[illegible]	0.2	0.2	Bone												
[illegible]	[illegible]	0.4	0.3	Bone												
2256.0	2257.1	0.1	0.1	Coal												
2257.1	2257.5	0.1	0.1	Bone												
2257.5	2258.5	0.7	0.7	Bone												
2261.0	2261.6	0.6	0.6	Bone												
2262.2	2265.8	3.6	3.2	Bone	BCI-9											
2265.8	2271.3	5.5	5.3	Bone	BCI-10	13.03	27.47	59.49	0.29	33.59	2.07	0.61	3.95	1	
2273.0	2277.8	4.8	4.7	Cbn sh	BCI-11	12.73	35.66	51.60	0.37	41.24	2.55	0.72	3.52	2	
2279.3	2293.3	10.4	3.3	Coal	BCI-12	8.19	15.29	76.51	0.22	17.60	1.34	0.00	4.33	N.A.	
2290.2	2293.3	3.0	3.0	Cbn sh	BCI-13	16.37	56.95	26.77	0.38	64.32	3.81	1.06	3.66	2	
2293.3	2298.9	5.6	5.6	Bone, sh	BCI-14	8.73	15.57	75.70	4.20	18.59	1.34	0.00	0.17	N.A.	
2299.4	2299.8	0.4	0.4	Bone		14.35	43.90	41.75	0.32	49.78	3.19	0.78	4.18	1 1/2	
2300.4	2301.5	1.1	0.9	Bone, sh, cbn												
2301.7	2302.0	0.3	0.3	Coal, sh												
2309.0	2312.8	3.8	0.8	Coal	BCI-15											
2327.7	2331.7	4.0	3.4	Bone	BCI-16	15.60	55.21	29.21	0.58	61.56	3.53	0.87	4.25	1 1/2	
2332.7	2333.0	0.3	0.3	Bone, sh cbn		12.61	40.96	46.43	0.46	46.32	2.74	0.72	3.33	1	
2333.0	2333.6	0.1	0.1	Coal												
2333.6	2334.0	0.2	0.1	Bone												
2346.7	2346.8	0.1	0.1	Bone												
2346.9	2347.1	0.2	0.1	Coal												
2347.3	2347.7	0.4	0.4	Coal												
2347.7	2349.6	1.9	0.7	Coal												
2463.8	2464.8	0.9	0.4	Coal												
2464.8	2464.9	0.1	0.1	Bone												
2466.6	2466.8	0.2	0.2	Bone												
2466.8	2467.2	0.4	0.4	Bone, sh												
2467.2	2468.2	0.5	0.5	Bone, sh												
2469.1	2470.8	1.7	0.8	Coal												
2470.8	2472.2	1.4	0.0	Coal												
2472.2	2472.7	0.5	0.0	Coal												
2472.7	2473.9	1.2	0.0													
2473.9	2476.7	2.8	2.1	Bone	BCI-17											
2476.7	2480.5	3.8	0.8	Cbn sh	BCI-18	16.90	49.07	34.02	0.40	56.51	3.23	0.94	4.90	3	
2483.3	2484.4	0.1	0.1	Bone		7.71	13.57	78.73	0.16	15.99	1.22	0.44	3.46	N.A.	
2484.4	2485.1	0.2	0.2	Bone												
[illegible]	[illegible]	0.5	0.4	Coal												
[illegible]	[illegible]	0.1	0.1	Bone												
2485.7	2486.0	0.3	0.2	Coal, bone												
2486.6	2487.2	0.6	0.5	Bone, sh												
2488.1	2488.2	0.1	0.1	Bone												
2489.7	2490.0	0.3	0.3	Bone, coal												

COLUMBIA IRON MINING COMPANY
FIELD EXPLORATION

DRILL HOLE LOG

296 (2)

NAME OF PROPERTY: CROPCO '61

File No. 6M-454

HOLE No. BC-2

LOCATION:
STATE: British Columbia, Canada
COUNTY:
DISTRICT:
Section ____, T ____, R ____
Coordinates: 17,966,600 N / 2,118,800 E

ANGLE: Vertical BEARING:
COLLAR ELEVATION: 5550
BOTTOM ELEVATION: 3348

DEPTH:
Overburden: Set on bedrock
Bedrock: 2202
Total Depth: 2202

SCALE: 1" = 100'

Date Started: June 5th. 1961
Completed: Aug. 31, 1961

Company or Driller: Core Drilling Inc.
Type(s) of Rig(s): Sullivan 200
Type(s) of Bit(s): Hughes Tri-cone, Christensen Diamonds

CASING RECORD: 6 1/8 x 6 5/8 x 12'

CEMENT RECORD: Cemented bottom to collar by Halliburton using 214 sacks of Portland cement.

REMARKS: Eastman - DX Multiple survey
Schlumberger - Gamma Ray Log

Logged by: R.E. Wright and G.E. Smith

DEPTH FROM	DEPTH TO	THICKNESS	CORE RECOVERED	DESCRIPTION	LITHO	PROXIMATE V.M.	PROXIMATE F.C.	PROXIMATE Ash	PROXIMATE S	ULTIMATE C	ULTIMATE Hz	ULTIMATE Nz	ULTIMATE Oz	DIAL DIVISIONS
61.0	66.3	5.3	2.5	Bone, inter bd coals	M-9 6 3/4 RB 5 1/8 RB Begin 6 7/8 2 7/8 core	15.03	49.77	35.20			3.39	0.85	2.83	4.0
92.2	97.4	5.2	1.0	Bone, Bright bands BC2-1										
98.5	113.6	15.1	2.5	Coolified sh, coal										
140.7	143.5	2.8	0.4	Coal		14.16	36.26	49.58	0.43	42.35	2.73	0.72	4.19	1
180.4	182.3	1.9	0.8	Bone		27.00	23.36	49.64	0.25	37.70	2.14	0.00	10.27	1
182.3	189.7	7.4	0.7	Bone } Soft sooty BC2-3		13.09	29.68	57.22	0.25	35.94	2.31	0.73	3.55	1
189.7	191.4	1.7	0.6	Bone } BC2-4										
191.4	193.2	1.8		Shale		14.24	40.31	45.45	0.32	46.75	3.05	0.92	3.51	1
193.2	195.1	1.9	2.1	Bone } Soft, few bright BC2-5		22.71	65.61	11.68	0.44	77.90	4.29	1.22	4.47	4
195.1	197.7	2.6	3.2	Coal } bands coal BC2-6		15.34	44.77	39.89	0.55	51.98	3.01	0.97	3.60	7
197.7	200.0	2.3	2.1	Bone } stuffing in BC2-7										
226.7	229.6	2.9	2.1	Coal	Begin 3 7/8 x 2 1/8 core M-8									
229.6	234.8	5.2	4.1	Bone, sh										
240.7	247.2	6.5	3.3	Bone		26.48	61.79	11.73	0.30	74.96	4.03	1.02	7.96	6
248.6	263.2	14.6	3.4	Coal, Bright, bky, bny BC2-8		19.60	48.14	32.25	0.42	58.03	3.41	0.67	5.22	1
263.2	271.4	8.2	2.0	Coal, Soft & sooty BC2-9	M-7									
536.8	539.6	2.8	2.8	Bone										
539.6	547.8	8.2	1.2	Coal, sh										
573.7	574.8	1.1	0.7	Bone										
580.8	583.0	2.2	2.2	Bone										
590.4	593.3	2.9	1.6	Coaly zone										
					M-6 M-5									
					Pinched 3 7/8 RB									
803.2	809.4	6.2	1.0	Bone BC2-10		6.79	9.36	83.85	0.38	11.63	0.92	—	3.22	N.A
809.4	814.8	5.4	4.7	Coal BC2-11		17.50	56.38	26.12	0.34	63.94	3.63	0.93	5.04	1
814.8	818.7	3.9	2.9	Coal BC2-12		19.86	65.98	14.16	0.36	75.91	3.76	0.77	5.04	N.A
818.7	821.3	2.6	2.8	Coal BC2-13		19.67	69.47	10.86	0.36	79.27	3.96	0.93	4.62	1
821.3	824.6	3.3	2.7	Bone BC2-14	M-4U	15.39	41.46	43.15	0.28	48.94	2.91	—	4.72	1
831.8	834.6	2.8	1.4	Coal BC2-15	M-4L	19.97	51.39	28.64	0.41	61.96	3.44	0.73	4.82	N.A.
835.5	837.2	1.7	1.4	Coal BC2-16		20.31	68.05	11.64	0.44	79.08	4.21	0.94	3.69	1
837.2	842.1	4.9	4.0	Coal BC2-17		19.45	68.59	11.95	0.42	77.51	4.05	1.04	5.03	3
842.1	846.0	3.9	3.0	Coal BC2-18		17.49	59.59	22.90	0.41	67.81	3.79	0.92	4.17	—
846.0	847.1	1.1	1.1	Bone BC2-19		10.08	21.83	68.09	0.39	25.91	1.80	0.46	2.35	N.A
847.1	863.2	16.1	0.5	Shale & carb. sh.										
863.2	866.4	3.2	3.2	Coal, Bght, ban, bky BC2-20		17.59	66.70	15.71	0.63	74.59	3.80	0.83	4.44	1
1050.1	1055.0	4.9	2.0	Coal, Bt bd/bkn BC2-21		15.78	66.85	17.37	0.40	73.55	3.36	0.94	4.38	N.A.
1055.0	1060.1	5.1	5.1	Coal, Soft sooty BC2-22		19.14	64.23	16.63	0.36	73.40	3.89	1.10	4.62	1
1060.1	1066.9	6.8	3.4	Bone, Carb frags BC2-23		12.66	43.14	44.20	0.21	48.59	2.66	0.71	3.63	N.A.
1066.9	1072.2	5.3	3.4	Bone, Bt bdy bkn BC2-24	M-3	15.02	48.34	36.63	0.21	55.31	2.91	0.81	4.31	N.A
1072.2	1078.0	5.8	3.3	Coal, Soft sooty BC2-25		20.09	63.27	16.64	0.27	72.87	3.79	1.06	5.37	1
1078.0	1083.4	5.4	3.6	Coal, Thn gy sh bnd BC2-26		21.86	52.41	25.72	0.23	63.24	3.06	0.88	6.87	1
1083.4	1088.6	5.2	3.0	Coal, Bkn, some brt BC2-27		19.78	63.27	16.94	0.27	71.97	3.72	1.05	6.05	1 1/2
1088.6	1093.6	5.0	2.1	Coal, Stf fri BC2-28		11.92	62.68	25.40	0.30	64.88	3.55	0.95	4.92	N.A
1093.6	1096.2	2.6	2.6	Coal, Frags BC2-29		19.71	62.20	18.08	0.34	67.97	3.63	0.90	9.08	N.A
1096.2	1101.3	5.1	4.6	Coal, Bt. bky BC2-30		16.83	67.98	15.19	0.42	75.32	3.91	0.96	4.20	1
1101.3	1107.0	5.7	3.2	Coal, Frags sm bt BC2-31	M-2	15.75	52.45	31.80	0.64	59.21	3.37	0.96	4.02	2 1/2
1180.5	1185.8	5.3	5.2	Bone, Thn sh ptgs BC2-32		10.61	23.72	65.67	0.29	26.87	1.87	—	5.30	N.A.
1185.8	1189.5	3.7	3.7	Bone, lw bt bn con BC2-33		12.71	40.03	47.25	0.38	44.32	2.67	0.59	4.79	N.A.
1189.5	1190.9	1.4	1.1	Coal, Bt bky. bkn BC2-34		11.25	69.00	19.75	0.54	69.67	3.78	0.90	5.36	1
1191.5	1195.5	4.0	3.0	Bone, Bkn gy sh frag BC2-35		22.56	30.53	46.91	0.30	40.83	2.11	—	9.85	N.A.
1208.0	1208.9	2.9	2.0	Bone, Bdly bkn sh fra BC2-36		16.52	40.89	42.59	0.33	49.09	2.82	0.75	4.42	1
1212.2	1220.6	8.4	4.0	Coal, Bt ptgs BC2-37		15.61	52.59	31.79	0.30	58.13	3.36	0.33	6.09	1
1220.6	1224.5	3.9	2.7	Coal, Bt bky. BC2-38		17.89	62.34	19.76	0.29	69.44	3.58	0.88	6.05	1
1224.5	1230.4	5.9	5.0	Coal, Bny bt good cl. BC2-39		24.08	57.28	18.63	0.27	67.69	3.21	0.78	9.42	N.A
1230.4	1235.6	5.2	3.8	Coal, Bt bky. solid BC2-40		16.09	53.19	30.71	0.29	60.44	3.24	0.91	4.41	1
1235.6	1241.3	5.7	2.5	Bone, Dl hd bt bnds BC2-41		13.45	33.78	52.77	0.26	38.08	2.44	0.55	5.90	N.A
1241.3	1244.0	2.7	1.8	Coal, Bt bky BC2-42		16.16	55.86	27.98	0.47	62.58	3.41	0.85	4.71	1-1 1/2
1244.0	1246.2	2.2	1.7	Shale										
1247.2	1247.5	0.3	0.3	Bone										
1522.0	1522.6	0.6	0.6	Coal										
1534.6	1535.1	0.5	0.5	Bone, coal										
1535.4	1536.3	0.9	0.9	Bone, coal										
1536.7	1537.0	0.3	0.3	Bone										
1537.2	1537.7	0.5	0.5	Bone										
1538.6	1538.8	0.2	0.2	Bone										
1539.0	1539.3	0.3	0.3	Bone										
1539.7	1539.8	0.1	0.1	Coal										
1540.8	1541.6	1.0	0.9	Coal, bone	M-1U									
1542.9	1549.3	6.4	2.3	Bone, sh bn ptgs BC2-43	M-1L	12.21	35.23	52.56	0.23	35.16	2.22	—	9.83	N.A.
1549.3	1556.2	6.9	3.8	Coal, " " " BC2-44		19.49	64.74	15.76	0.27	74.15	3.79	1.00	5.03	1 1/2
1556.2	1562.5	6.3	4.2	Coal, BC2-45		17.62	57.39	24.99	0.21	66.17	3.38	0.93	4.32	1
1562.5	1567.4	4.9	3.8	Coal BC2-46		17.45	65.13	17.41	0.20	73.28	3.79	0.92	4.40	1
1567.4	1572.0	4.6	4.4	Coal BC2-47		19.87	67.95	12.07	0.21	79.23	4.07	1.03	3.59	1 1/2
1572.0	1576.8	4.8	4.5	Coal BC2-48	Backs	21.46	57.56	20.97	0.17	66.07	3.39	0.84	8.56	2 1/2-3
1576.8	1583.7	6.9	3.2	Coal BC2-49		18.22	64.96	16.82	0.19	73.86	3.72	0.85	4.56	1
1583.7	1588.9	5.2	4.4	Coal BC2-50		18.05	63.89	18.05	0.22	73.11	3.80	0.89	3.93	2
1588.9	1595.0	6.1	4.8	Coal BC2-51		15.68	62.02	22.30	0.30	68.89	3.62	0.84	4.05	1 1/2-2
1595.0	1603.7	6.8	4.9	Coal BC2-52		15.78	58.26	25.95	0.39	64.97	3.49	0.74	4.46	1 1/2
1603.7	1604.3	0.6	0.6	Coal, " " " BC2-44		16.45	56.42	27.13	0.36	63.18	3.31	0.72	5.30	1
1604.3	1609.1	4.8	4.4	Coal BC2-53		17.66	56.12	26.22	0.34	63.59	3.35	0.79	5.71	1
1609.1	1613.7	4.6	4.3	Coal BC2-54		15.21	50.21	34.57	0.30	54.80	3.16	0.69	6.48	1
1613.7	1618.7	5.0	5.0	Bone BC2-55		18.45	52.92	28.71	0.30	60.24	3.22	0.83	6.70	1 1/2
1618.7	1623.7	5.0	4.4	Coal BC2-56		15.61	48.05	36.33	0.30	53.82	3.08	0.76	5.71	1
1623.7	1628.9	5.2	4.3	Bone BC2-57		17.26	65.98	16.76	0.39	74.22	3.75	0.98	3.90	2
1628.9	1634.4	5.5	4.9	Coal BC2-58		16.01	56.19	27.80	0.41	62.39	3.41	0.79	5.20	1 1/2-2
1634.4	1639.6	5.2	5.5	Coal BC2-59		17.76	65.98	16.25	0.56	74.23	4.03	0.91	4.02	5
1639.6	1642.7	3.1	3.0	Coal BC2-60										

Depth scale: 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200 — 2201.5

COLUMBIA IRON MINING COMPANY
FIELD EXPLORATION

DRILL HOLE LOG

296③

NAME OF PROPERTY CROPCO '61

File No. 6M-455

HOLE No. BC-3

LOCATION:
STATE British Columbia
COUNTY Canada
DISTRICT
Section ___ T. ___ R. ___
Coordinates: 11,996,800 N / 2,155,600 E

ANGLE Vertical BEARING
COLLAR ELEVATION 4550
BOTTOM ELEVATION 2100

DEPTH:
Overburden 0
Bedrock 2450
Total Depth 2450

SCALE 1" = 50'

Date Started July 28 th 1961
Completed October 23rd 1961

Company or Driller Pace Drilling Inc.
Well Site and Chase Drilling Co.

Type (s) of Rig (s) M 25 D
2 Jay 75 Comp 1 Jay Booster

Type(s) of Bit(s) Tricone
Diamond

CASING RECORD 17 feet of 10 3/4" 452 feet of 7" 1762 feet of 4 3/4"

CEMENT RECORD

REMARKS Eastman - DX multiple surveys
Schlumberger - Gamma Ray Neutron log

Logged by J.F.Powers, R.F.Wright, E.F.Smith

DEPTH (Feet)	DEPTH (M)	CORE RECOVERED	DESCRIPTION	LITHO	PROXIMATE %					ULTIMATE %					DIAL DIVISIONS
						A N A L Y S E S									
					M.C.	V.M.	F.C.	Ash	S	C	H	N	O2		
1960.0	1965.0	5.0		B											
1965.0	1970.0	5.0		C											
1970.0	1975.0	5.0		D											
1975.0	1980.0	5.0		E											
1980.0	1985.0	5.0	Bone	BC3-1	9.44	4.62	85.94	0.18	8.83	0.91	–	4.16	N.A.		
1985.0	1990.0	5.0	Bone	BC3-2	10.96	6.28	82.75	0.17	11.17	1.01	–	4.90	N.A.		
1990.0	1995.0	5.0	Shale, minor coal	BC3-3	11.69	5.18	82.93	0.20	10.83	0.98	–	5.08	N.A.		
1995.0	2000.0	5.0	Shale												
2000.0	2005.0	5.0	Clay shale	BC3-4	8.72	9.04	82.24	0.54	13.48	1.15	–	2.59	N.A.		
2005.0	2010.0	5.0	Clay shale	BC3-5	11.07	7.48	84.45	0.20	7.99	0.64	–	5.72	N.A.		
2010.0	2015.0	5.0	Clay shale												
2015.0	2020.0	5.0	Clay shale	BC3-6	12.19	4.34	83.47	0.19	9.36	0.82	–	6.16	N.A.		
2020.0	2025.0	5.0	Coal, shale	BC3-7	11.91	4.22	83.87	0.02	9.50	0.87	–	5.54	N.A.		
2025.0	2030.0	5.0	Clay shale												
2030.0	2035.0	5.0	Clay shale	BC3-8	9.99	2.19	87.81	0.17	6.33	0.65	–	4.84	N.A.		
2035.0	2040.0	5.0	Clay shale	BC3-9	7.49	3.15	89.16	0.19	5.95	0.73	–	3.97	N.A.		
2040.0	2045.0	5.0	Clay shale												
2045.0	2050.0	5.0	Clay shale	BC3-10	8.26	7.37	84.37	0.20	10.91	1.06	–	3.46	N.A.		
2050.0	2055.0	5.0	Clay shale	BC3-11	12.76	20.88	66.38	0.28	27.03	1.92	–	3.70	A.G.		
2055.0	2060.0	5.0	Bone	BC3-12	12.63	18.86	68.51	0.27	25.45	1.84	0.05	3.88	A.G.		
2060.0	2065.0	5.0	Clay shale	BC3-13	19.98	29.93	54.16	0.36	36.40	2.35	–	6.73	A.G.		
2065.0	2070.0	5.0	Clay shale	BC3-14	19.83	31.25	48.92	0.36	42.04	2.70	–	4.58	A.G.		
2070.0	2075.0	5.0	Bone	BC3-15	18.83	39.90	41.27	0.33	43.54	2.78	–	4.28	A.G.		
2075.0	2080.0	5.0	Bone	BC3-16	15.99	32.04	51.97	0.31	40.42	2.63	–	3.86	A.G.		
2080.0	2085.0	5.0	Bone	BC3-17	15.42	27.42	57.16	0.29	35.86	2.42	0.86	5.41	A.G.		
2085.0	2090.0	5.0	Bone	BC3-18	16.82	21.83	61.33	0.25	29.61	2.01	–	4.78	A.G.		
2090.0	2095.0	5.0	Bone	BC3-19	13.90	21.04	65.05	0.25	28.26	1.94	–	4.50	A.G.		
2095.0	2100.0	5.0	Bone	BC3-20	12.96	24.23	62.81	0.28	31.97	2.18	–	4.51	A.G.		
2100.0	2105.0	5.0	Bone	BC3-21	15.21	27.34	57.45	0.29	34.54	2.36	0.62	4.74	A.G.		
2105.0	2110.0	5.0	Bone	BC3-22	15.00	24.17	60.91	0.28	31.92	2.15	–	4.82	A.G.		
2110.0	2115.0	5.0	Bone	BC3-23	16.22	22.80	62.69	0.27	30.18	2.07	–	4.39	N.A.		
2115.0	2120.0	5.0	Bone	BC3-24	14.66	27.20	58.14	0.30	34.75	2.34	0.46	3.83	A.G.		
2120.0	2125.0	5.0	Bone	BC3-25	15.25	31.46	52.28	0.34	39.77	2.63	0.66	4.32	A.G.		
2125.0	2130.0	5.0	Bone	BC3-26	17.85	35.03	47.12	0.37	45.00	2.93	–	4.58	A.G.		
2130.0	2135.0	5.0	Bone	BC3-27	20.99	45.75	33.25	0.44	57.38	3.50	0.98	4.44	A.G.		
2135.0	2140.0	5.0	Bone	BC3-28	18.04	35.24	46.72	0.39	44.72	2.94	0.78	4.67	A.G.		
2140.0	2145.0	5.0	Coarse Bone - bulk	BC3-29	17.95	37.05	45.10	0.36	46.85	2.94	–	4.71	A.G.		
2145.0	2150.0	5.0	Coarse Bone - bulk	BC3-30	14.24	30.95	54.81	0.31	37.97	2.49	0.64	3.78	N.A.		
2150.0	2155.0	5.0													
2155.0	2160.0	5.0													
2160.0	2165.0	5.0													
2165.0	2170.0	5.0													
2170.0	2175.0	5.0													
2175.0	2180.0	5.0													
2180.0	2185.0	5.0													
2185.0	2190.0	5.0													
2190.0	2195.0	5.0													
2195.0	2200.0	5.0													
2200.0	2205.0	5.0													
2205.0	2210.0	5.0													
2210.0	2215.0	5.0													
2215.0	2220.0	5.0													
2220.0	2225.0	5.0													
2225.0	2230.0	5.0													
2230.0	2235.0	5.0													
2235.0	2240.0	5.0													
2240.0	2245.0	5.0													
2245.0	2250.0	5.0													
2250.0	2255.0	5.0													
2255.0	2260.0	5.0													
2260.0	2265.0	5.0													
2265.0	2270.0	5.0													
2270.0	2275.0	5.0													
2275.0	2280.0	5.0													
2280.0	2285.0	5.0													
2285.0	2290.0	5.0													
2290.0	2295.0	5.0													
2295.0	2300.0	5.0													
2300.0	2305.0	5.0													
2305.0	2310.0	5.0													
2310.0	2315.0	5.0													
2315.0	2320.0	5.0													
2320.0	2325.0	5.0													
2325.0	2330.0	5.0													
2330.0	2335.0	5.0													
2335.0	2340.0	5.0													
2340.0	2345.0	5.0													
2345.0	2350.0	5.0													
2350.0	2355.0	5.0													
2355.0	2360.0	5.0													
2360.0	2365.0	5.0													
2365.0	2370.0	5.0													
2370.0	2375.0	5.0													
2375.0	2380.0	5.0													
2380.0	2385.0	5.0													
2385.0	2390.0	5.0													
2390.0	2395.0	5.0													
2395.0	2400.0	5.0													
2400.0	2405.0	5.0													
2405.0	2410.0	5.0													
2410.0	2415.0	5.0													
2415.0	2420.0	5.0													
2420.0	2425.0	5.0													
2425.0	2430.0	5.0													
2430.0	2435.0	5.0													
2435.0	2440.0	5.0													
2440.0	2445.0	5.0													
2445.0	2450.0	5.0													

296 (4)

COLUMBIA IRON MINING COMPANY
FIELD EXPLORATION

DRILL HOLE LOG

NAME OF PROPERTY CROPCO '61

File No. 6M-456

HOLE No. BC-4

ANGLE Vertical BEARING

COLLAR ELEVATION 6,050
BOTTOM ELEVATION 4,646

DEPTH:
Overburden 15
Bedrock 1389
Total Depth 1404

Date Started 26th August 1961
Completed 30 Sept. 1961

LOCATION:
STATE British Columbia
COUNTY Canada
DISTRICT
Section ___, T ___, R ___
Coordinates: 17,968,300 N
2,123,600 E

SCALE 1" = 50'

Company or Driller Core Drilling Inc.

Type(s) of Rig(s) Ideco M 25D
2 Joy 75 Comp. 1 Joy Booster

Type(s) of Bit(s) Tri-cone

CASING RECORD 25 feet of 10 1/2" ; 443 feet 7 5/8" ; 1378 of 4 1/2" bottom 21 ft. piece has casing wedge.

CEMENT RECORD Cement and drilled out several times from 1360' to bottom.

REMARKS

Logged by John F. Powers

DEPTH FROM	DEPTH TO	THICKNESS	CORE RECOVERED	DESCRIPTION	LITHO	ANALYSES: PROXIMATE Hygro	V.M.	F.C.	Ash	S	ULTIMATE C	H2	N2	O2		DIAL DIVISIONS
1351	1363	12		Bone, sh plngs BC4-1			18.40	40.97	40.62	0.56	50.03	3.16	0.86	4.77	7 1/2	

29b (5)

COLUMBIA IRON MINING COMPANY
FIELD EXPLORATION
DRILL HOLE LOG

NAME OF PROPERTY: CROPCO '61

File No. 41 - 147

HOLE No. BC-5

LOCATION:
STATE: British Columbia
COUNTY: Canada
DISTRICT:
Section ____, T ____, R ____
Coordinates: 17,086,000 N
2,130,000 E

ANGLE: VERTICAL BEARING:
COLLAR ELEVATION: 4550±
BOTTOM ELEVATION: 2849

DEPTH:
Overburden: 70
Bedrock: 1730
Total Depth: 1701

SCALE: 1" = 50'

Date Started: October 2nd 1961
Completed: JAN. 1st 1962

Company or Driller: Core Drilling Inc. Canadian Longyear Ltd.

Type(s) of Rig(s): M 25 D, 2 Jay 75 Comp. 1 Jay Rooster, Sullivan 200 Longyear 44

Type(s) of Bit(s): Tri-cone R.B., Diamond

CASING RECORD: 2" FEET OF 10 1/2", 446 FEET OF 7 7/8", 980 FEET OF 4 1/2", 132 FEET OF 3 1/4 x 3 3/4" ALL PRECISTIC 101
SALVAGABLE EXCEPT 1071 OF 3 1/2"

CEMENT RECORD: 1150 TO 1601, 1150 TO 1300, THROUGH PACKER AT 1140 FEET; SIX ATTEMPTS AT CEMENTING WEDGE IN PLACE AT 1129 FEET.

REMARKS: USED AND CHEMICAL GROUT TO BLOCK CIRCULATION AT 1067; CONT 1067 TO T.D. HOLE HAD WATER FLOW WHICH WAS CONTACTED WITH VARIFIED DRILLING MUD AND CEMENT. WEDGE AND REDRILLED FROM 1120 TO 1309.

Logged by: John F. Powers R.E. Wright
B. Murphy

DEPTH FROM	DEPTH TO	THICKNESS	CORE RECOVERED	DESCRIPTION		ANALYSES Proximate V.M.	Proximate F.C.	Proximate Ash	Proximate S	Ultimate C	Ultimate Hz	Ultimate Nz	Ultimate Oz		DIAL DIVISIONS
493	498	5		Coal	BC5-1	19.37	54.96	25.67	0.65	65.10	3.73	1.04	3.81	7	
500.5	502.0	1.5		Bone	BC5-2	13.89	33.91	52.19	0.52	39.36	2.41	0.73	4.79	1	
504.5	508.0	3.5		Bone	BC5-3	12.90	26.47	60.63	0.38	31.72	2.05	0.59	4.63	N.A.	
510	515	5		Coal	BC5-4	20.09	63.30	16.61	0.57	73.81	4.15	1.13	3.73	9	
515	518	3		Bone	BC5-5	16.02	48.05	35.93	0.53	56.53	3.21	0.97	3.83	5 1/2	
518	523	5		Bone	BC5-6	10.55	19.13	70.32	0.27	22.56	1.54	0.49	4.82	N.A.	
555	560	5		Bone	BC5-7	12.81	27.46	59.72	0.38	32.42	2.06	0.64	4.78	1	
600	605	5		Bone	BC5-8	10.77	2.23	87.00	0.14	5.72	0.45	0.16	6.53	N.A.	
607	610	3		Bone	BC5-9	12.45	5.15	82.40	0.14	7.81	0.75	0.15	8.75	N.A.	
711	716	5		Bone	BC5-10	15.15	47.42	37.43	0.34	53.87	3.20	0.86	4.50	5	
716	721	5		Bone	BC5-11	15.93	37.27	46.79	0.32	44.83	2.81	0.80	4.45	3	
721	724	3		Bone	BC5-12	15.74	38.00	46.26	0.30	45.83	2.78	0.77	4.00	4	
729	734	5		Coal	BC5-13	19.79	65.77	14.44	0.36	74.62	4.19	1.20	5.19	8 1/2	
734	739	5		Coal	BC5-14	20.40	67.37	12.23	0.39	77.30	4.31	1.27	4.50	8 1/2	
739	744	5		Coal	BC5-15	20.26	65.77	13.96	0.38	75.70	4.32	1.19	4.45	9	
744	748	4		Coal	BC5-16	18.34	54.40	27.26	0.34	63.97	3.83	1.00	3.60	8	
871	874	3		Bone	BC5-17	18.85	43.58	37.56	0.34	53.06	3.08	0.82	5.14	4 1/2	
886	888	2		Bone	BC5-18	16.53	43.19	40.28	0.53	50.81	3.04	0.18	4.54	4 1/2	
888	893	5		Bone	BC5-19	14.55	35.10	50.35	0.28	41.63	2.55	0.75	4.42	1	
893	895	2		Bone	BC5-20	17.82	39.12	43.06	0.35	48.52	3.00	0.42	4.65	5	
945.0	947.4	1.4	1.4	COAL											
952.2	953.1	0.9	0.5	COAL											
953.1	955.0	1.9	0.9	DONE											
960.1	960.7	0.2	0.2	COAL											
1050.1	1051.7	1.0	1.0	DONE											
1065.0	1066.1	0.6	0.5	DONE											
1066.8	1066.1	2.3	2.1	DONE											
1067.1	1067.7	0.6	0.6	COAL											
1069.2	1069.5	0.2	0.2	COAL											
1069.7	1069.8	1.1	0.6	COAL											
1070.7	1071.0	0.3	0.3	COAL											
1092.2	1092.7	0.5	0.3	COAL											
1099.5	1100.7	1.2	1.2	DONE											
1100.7	1102.0	1.3	1.3	COAL	CORE BC5-1	17.9	59.7	22.4	0.75	68.74	3.88	0.98	3.25	3	23.0
1109.0	1109.2	2.2	2.0	DONE	CORE BC5-2	11.0	24.3	64.7	0.40	28.50	2.06	0.60	3.76	2	N.A.
1120.0	1120.6	0.6	0.6	COAL	CORE BC5-3	15.4	43.2	41.3	0.70	50.69	3.48	0.90	2.91	2 1/2	13.9
1266.0	1270.7	4.7	3.0	DONE											
1275.1	1278.2	3.1	2.1	DONE	CORE BC5-4	13.4	43.7	42.9	0.38	49.98	2.94	0.92	2.87	1	0.6
1278.2	1278.7	0.5	0.6	DONE											
1283.1	1283.8	0.7	0.5	COAL											
1291.5	1292.1	0.6	0.1	LOOSE											
1292.7	1295.7	3.0	1.0	DONE	CORE BC5-5	33.5	31.9	34.6	0.18	48.22	2.50	0.67	13.83	1	0.4
1297.5	1299.3	1.8	0.2	DONE											
1302.3	1302.5	0.2	0.1	COAL											
1328.7	1334.5	5.8	4.8	DONE											
1335.7	1336.7	1.0	0.9	DONE											
1339.3	1341.4	1.7	1.7	DONE	CORE BC5-6										
1335.7	1337.7	2.0	0.3	DONE											
1337.7	1339.3	1.6	0.7	DONE	CORE BC5-7										
1356.5	1357.7	1.0	2.2	DONE											
1357.7	1370.2	2.6	0	COAL (1)											
1370.2	1372.6	2.6	1.8	COAL	CORE BC5-8	17.6	60.4	18.0	0.33	76.04	4.01	0.91	3.01	1 1/2	N.A.
1372.6	1375.1	2.5	1.9	COAL	CORE BC5-9	10.8	67.4	13.7	0.38	79.22	4.35	0.95	5.25	1 1/2	1.4
1375.1	1376.8	1.7	1.1	COAL	CORE BC5-10	15.9	55.6	28.4	0.52	61.32	3.68	0.98	5.03	1	0.3
1376.8	1381.4	4.6	0	COAL (1)											
1386.1	1387.0	0.9	0.6	COAL	CORE BC5-11	15.8	69.8	19.8	0.24	67.13	3.60	0.94	8.03	1	0.3
1387.0	1390.1	3.1	1.1	COAL	CORE BC5-12	17.5	70.5	19.0	0.42	77.00	3.93	0.81	3.68	1	N.A.
1390.1	1395.8	5.8	0	COAL		15.2	58.5	26.3	0.34	65.10	3.50	0.95	3.60	1 1/2	N.A.
1395.8	1397.4	1.6	0.8	COAL	CORE BC5-13										
1397.4	1399.8	2.3	0	COAL											
1399.8	1401.0	1.2	0	COAL											
1468.3	1469.8	1.5	0.9	COAL	CORE BC5-14	16.3	71.8	11.9	0.67	78.90	4.11	0.94	3.81	1	1.8
1469.1	1473.4	4.3	2.0	COAL	CORE BC5-15	16.9	63.7	19.4	0.70	70.64	3.92	0.91	4.33	1	1.4
1473.4	1474.1	0.4	0	COAL											
1531.7	1535.6	0.9	0.9	DONE											
1553.1	1554.6	1.5	0.8	DONE											
1560.3	1561.8	3.5	2.1	DONE	CORE BC5-16	12.9	35.8	51.3	0.43	41.41	2.60	0.85	3.41	1	0.6
1563.9	1566.4	1.8	1.1	DONE	CORE BC5-17	11.3	32.0	55.8	0.32	37.12	2.42	0.66	3.28	1	0.3
1566.4	1572.4	5.6	0	COAL (1)											
1573.4	1576.4	2.6	0.9	COAL	CORE BC5-18	18.2	61.3	15.5	0.45	71.73	4.61	0.94	4.78	1	0.6
1576.4	1578.4	2.0	0.9	COAL	CORE BC5-19	16.8	64.0	18.3	0.51	72.51	3.87	0.91	3.74	1	0.6
1578.4	1579.6	1.5	0.9	DONE	CORE BC5-20	11.9	37.5	50.6	0.33	42.94	2.69	0.84	2.65	1	1.2
1579.6	1581.6	2.0	0.5	DONE	CORE BC5-21	17.0	37.1	35.8	0.38	45.22	3.05	0.88	4.64	1	2.0
1581.6	1583.6	2.0	1.1	COAL	CORE BC5-22	18.3	73.2	8.5	0.58	81.77	4.58	1.33	3.23	1 1/2	1.6
1581.6	1583.6	0.6	NIL	COAL											
1583.6	1584.3	1.0	0.2	DONE											

COLUMBIA IRON MINING COMPANY
FIELD EXPLORATION

DRILL HOLE LOG

296

NAME OF PROPERTY: CROPCO '61

File No. 6M-458

HOLE No. BC-6

ANGLE: Vertical BEARING:

COLLAR ELEVATION: 4050

BOTTOM ELEVATION: 2274

LOCATION:
STATE: British Columbia
COUNTRY: Canada
DISTRICT:
Section ___, T ___, R ___
Coordinates: 17,956,800 N
2,132,700 E

DEPTH:
Overburden: 10
Bedrock: 1766
Total Depth: 1776

SCALE: 1" = 50'

Date Started: October 13th 1961
Completed: December 16th 1961

Company or Driller: Canadian Longyear, Ltd.

Type(s) of Rig(s): Longyear 44

Type(s) of Bit(s): Diamond Wire-Line

CASING RECORD: 10 feet of H, 194 feet of NX

CEMENT RECORD: Cement with Fondu from bottom and washed down to 625 feet.

REMARKS: AM-9 Grout used in attempt to stop coring coals. Grouted at 835, 920, 1340 and 1378.

Logged by: R.E. Wright and J. McAndrew

DEPTH FROM	DEPTH TO	THICKNESS	CORE RECOVERED	DESCRIPTION	LITHO	ANALYSES PROXIMATE H2O	V.M.	F.C.	Ash	S	ULTIMATE C	H2	N2	O2	DIAL DIVISIONS
12.0	12.2	0.2	0.2	Bone											
17.8	19.3	1.5	–	Shale bone											
51.1	52.3	1.2	–	Shale bone											
63.1	63.6	0.5	0.5	Bone	50										
63.8	63.9	0.3	0.3	Coal											
64.5	64.9	0.4	0.4	Bone											
66.6	67.7	1.1	1.1	Bone											
83.0	83.2	0.2	0.2	Coal											
88.1	88.6	0.5	0.5	Coal											
126.7	127.4	0.7	0.7	Bone	100										
					150										
225.9	226.7	0.8	0.8	Bone	200										
226.8	227.0	0.2	0.2	Bone											
233.4	234.0	0.6	0.4	Bone											
239.8	240.1	0.3	0.3	Bone											
243.3	243.7	0.4	0.4	Coal											
245.1	245.5	0.4	0.4	Bone											
246.8	246.9	0.3	0.3	Coal	250										
246.9	247.1	0.2	–	Shale bone											
247.1	248.3	1.2	–	Bone											
249.4	249.7	0.3	0.3	Bone											
251.1	253.2	2.1	1.2	Coal											
253.2	254.0	0.8	0.8	Bone											
268.3	268.4	0.1	0.1	Coal	300										
268.4	268.9	0.5	0.5	Bone											
276.8	279.1	2.3	2.3	Coal											
					350										
437.3	437.7	0.4	0.4	Bone											
437.8	438.1	0.3	0.3	Bone	400										
438.1	439.1	1.0	–	Shale bone											
439.1	439.4	0.3	0.3	Bone											
439.4	440.2	0.8	0.1	Coal											
440.2	440.8	0.6	0.6	Bone sh											
446.3	446.5	0.2	0.2	Bone											
454.3	454.7	0.4	0.4	Bone	450										
456.4	456.8	0.4	0.4	Bone											
461.5	464.2	2.7	1.7	Coal		M-10									
464.2	464.6	0.4	0.2	Bone											
464.6	464.8	0.2	0.2	Coal											
473.0	473.2	0.2	0.2	Bone											
489.6	489.8	0.2	0.2	Coal	500										
489.3	491.5	1.2	1.2	Bone											
489.5	489.7	0.2	0.2	Bone											
489.7	489.9	0.2	0.2	Coal											
490.5	491.7	1.2	0.4	Bone											
					550										
651.0	658.1	7.1	6.3	Coal	650	M-9	16.84	66.97	16.18	0.46	74.35	3.91	1.05	4.05	4
659.1	660.0	0.1	0.1	Bone											
					700										
780.3	781.6	1.3	1.0	Coal											
					800										
835.8	837.6	1.8	1.8	Bone	850										
860.0	866.6	6.6	6.3	Bone	BC6-2		9.63	26.61	63.75	0.27	28.82	1.85	0.62	4.69	N.A.
867.8	873.8	6.0	1.0	Bone	BC6-3		12.85	40.85	46.30	0.31	44.10	2.71	0.84	5.74	N.A.
873.8	880.3	6.4	4.4	Bone	BC6-4		15.31	41.61	43.08	0.24	46.49	2.59	0.83	6.77	N.A.
883.1	885.5	2.2	1.2	Coal	BC6-5	M-8	19.95	56.02	24.03	0.22	64.62	3.34	0.96	6.83	
885.5	890.1	4.6	5.2	Bone gs slough	BC6-6	25	15.38	46.09	38.53	0.29	51.66	2.97	0.84	5.71	N.A.
890.1	891.6	1.7	0.5	Coal	BC6-7	24	16.02	51.42	32.56	0.34	57.46	3.25	0.77	5.62	
924.3	925.7	1.2	1.2	Coal											
925.7	926.0	0.9	0.9	Bone											
929.1	929.4	0.3	0.3	Bone											
1026.2	1026.5	0.2	0.2	Bone											
1026.8	1027.1	0.9	0.2	Coal	950										
1030.3	1030.8	0.5	0.5	Coal											
1030.8	1031.1	0.3	0.3	Bone											
1034.7	1035.1	0.4	0.4	Bone											
					1000										
1056.0	1061.5	5.1	2.5	Bone	BC6-8		10.78	37.55	51.67	0.38	41.36	2.37	0.77	3.45	
1062.0	1067.7	5.3	4.6	Bone	BC6-9	M-8	9.23	28.92	61.85	0.25	31.94	1.97	0.63	3.36	N.A.
1068.0	1071.6	2.9	2.1	Bone	BC6-10		18.89	38.83	46.28	0.32	46.44	2.46	0.70	5.80	N.A.
1072.8	1072.8	0.3	0.3	Coal											
1072.6	1072.9	0.3	0.3	Bone											
1074.1	1074.5	0.4	0.4	Bone	1100										
1074.5	1074.8	0.3	0.3	Coal											
1074.8	1075.5	0.7	0.7	Bone											
1078.3	1079.1	0.8	0.4	Coal											
1080.3	1080.5	0.2	0.2	Coal											
1080.7	1080.9	0.2	0.2	Coal											
1086.3	1086.6	0.1	0.1	Bone											
1082.1	1083.3	0.2	0.2	Bone	1150										
1082.3	1082.5	0.2	0.2	Coal											
					1200										
1213.0	1216.0	3.0	2.9	Bone											
1246.0	1247.2	1.2	0.9	Bone											
					1250										
1252.7	1258.9	6.2	2.4	Bone	BC6-11		12.74	30.46	56.79	0.33	33.73	2.16	0.40	6.59	N.A.
1302.1	1306.0	3.3	2.3	Bone											
1311.0	1316.0	5.0	1.4	Bone	BC6-12	1300	15.12	46.84	38.04	0.30	52.88	2.72	0.67	5.39	N.A.
1316.0	1317.5	1.5	0	Coal											
1318.2	1322.5	4.1	2.2	Coal	BC6-13	6' M-3	15.52	52.80	31.57	0.23	58.75	3.09	0.98	5.30	N.A.
1322.3	1325.0	2.7	1.0	Coal											
1325.3	1329.3	4.0	0.5	Coal	BC6-14		26.42	49.11	24.47	0.22	61.32	2.73	0.61	10.65	N.A.
1329.3	1335.1	5.8	0	Coal											
1335.6	1355.1	19.3	2.4	Shale carb	BC6-15		9.15	22.41	68.43	0.23	24.62	1.61	0.47	4.64	N.A.
1357.5	1360.5	3.1	1.6	Bone											
1388.3	1388.4	0.1	0.1	Bone											
1389.3	1389.4	0.1	0.1	Bone											
1423.6	1423.9	0.3	0.3	Bone	0.3 Bone										
1424.4	1424.5	0.1	0.1	Bone											
1425.4	1426.4	1.0	1.0	Bone		1400									
1426.4	1426.6	0.2	0.2	Coal											
1426.6	1426.9	0.3	0.3	Bone											
1428.1	1431.6	3.2	3.2	Bone	BC6-16		11.90	45.56	42.54	0.48	48.25	2.76	0.68	5.29	N.A.
1431.6	1435.7	4.1	4.0	Coal	BC6-17	M-4	14.14	64.17	21.70	0.68	68.94	3.52	0.97	4.19	
1435.7	1439.5	3.8	3.0	Bone	BC6-18	6'	11.11	41.92	46.97	0.93	45.50	2.56	0.77	3.27	N.A.
1439.5	1449.8	3.4	3.4	Bone	BC6-19	6'	9.82	35.47	54.71	0.47	37.70	2.22	0.53	4.37	N.A.
1449.9	1450.2	0.3	0.3	Bone, coal sh											
1479.3	1480.0	0.7	–	Shale w/coal beds											
1481.0	1483.5	2.5	–	Carb sh w/coal beds											
1483.3	1483.6	0.1	0.1	Coal											
1483.9	1484.4	0.5	0.5	Bone											
1486.4	1487.0	0.6	0.5	Bone											
1496.0	1497.1	0.5	0.5	Bone											
1500.3	1500.4	0.2	0.2	Coal											
1500.4	1501.2	0.8	0.8	Bone											
1501.2	1501.7	0.5	0.5	Coal											
					1850										
1578.2	1578.3	0.1	0.1	Bone											
1578.6	1578.9	0.3	0.3	Bone											
					1800										
					1850										
1672.0	1672.2	0.2	0.2	Bone											
					1700										
1717.0	1725.8	8.8	4.0	Bone, sh cbn											
					1750										
1754.3	1757.8	3.5	0	Coal											
1757.8	1758.4	0.6	–	Bone cbn sh		M-1P									
1758.4	1759.5	0.1	0.1	Coal											
1764.4	1769.1	4.7	1.8	Bone											
1769.1	1770.4	1.3	0.4	Coal											
1770.4	1771.1	0.7	0.7	Bone											
1771.1	1773.1	2.0	0.0	Coal											
1773.1	1775.8	2.7	1.4	Coal											

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COLUMBIA IRON MINING COMPANY

RAW MATERIALS EXPLORATION DIVISION

DRILL HOLE LOG

NAME OF PROPERTY: CROPCO '61

File No. GM-459

HOLE No. BC-7

LOCATION:

ANGLE: Vertical BEARING:

COLLAR ELEVATION: 5200

BOTTOM ELEVATION:

DEPTH:
Overburden: 50
Bedrock: 1475
Total Depth: 1525

SCALE: 1" = 50'

STATE: British Columbia

COUNTRY: Canada

DISTRICT:

Section: T.: R.:

Coordinates: 17,983,600 N
2,139,200 E

Date Started: November 13th 1961
Completed: March 7th 1962

Company or Driller: Canadian Longyear, Ltd.

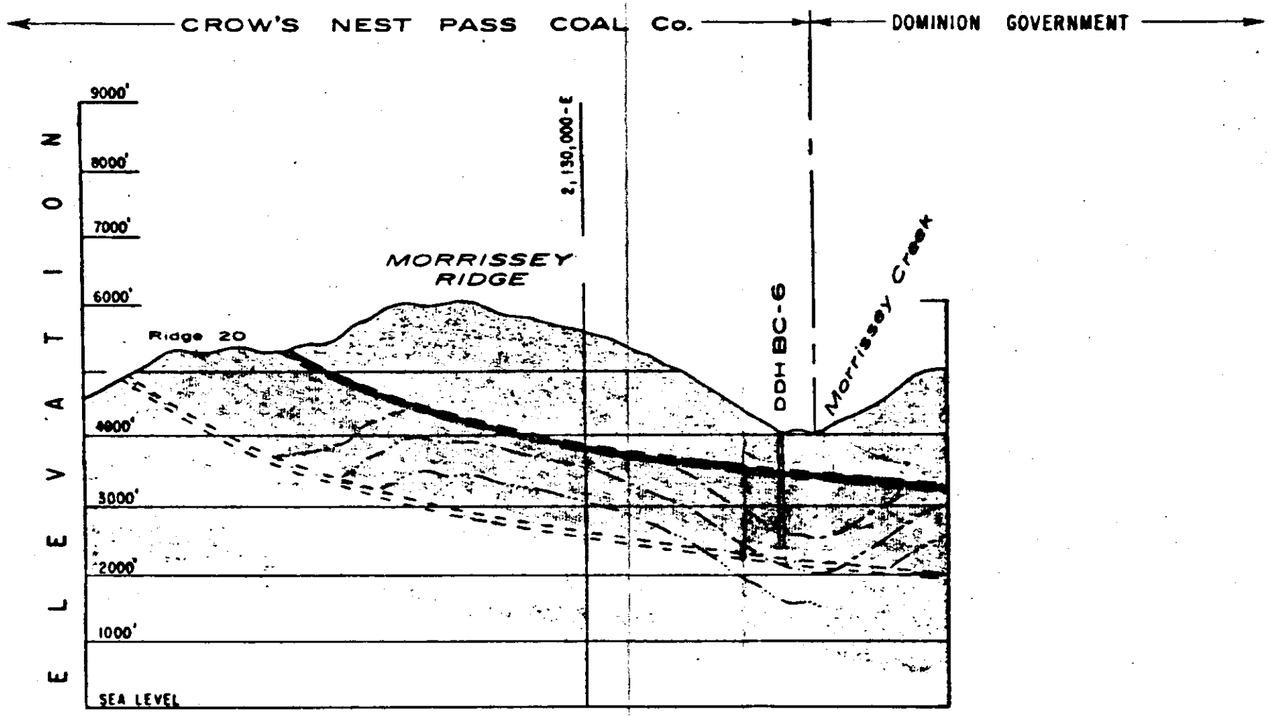
Type(s) of Rig(s): Longyear 44

Type(s) of Bit(s): Diamond Wire-Line

CASING RECORD: BC-7 1st 32' of H, 55' of 3 1/4" x 3 1/2"; BC-7 2nd 59' of H, 436' of 3 1/4" x 3 1/2"

CEMENT RECORD: BC-7 1st. Cemented 1149.9 to 350; BC-7 2nd from 997 to 1525.2

REMARKS: BC-7 1st Attempt abandoned at 1149.9' when rods were cemented in hole; Lost 670 NX WL Rods.
BC-7 2nd " " "



SECTION S1
N 72° E Looking NORTH'erly

EXPLANATION

CRETACEOUS
- Blairmore and Elk Formation (s)
- Basal Elk Conglomerate
- Kootenay Formation
- Basal Kootenay Sandstone

TRIASSIC & JURASSIC
- Fernie Group and Spray River Formation (undifferentiated)

PALEOZOIC
- Undifferentiated

- Fault
- 1,500 ft. vertical cover line
- 2,000 ft. " "
- 2,500 ft. " "

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COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

GEOLOGIC SECTION S1
CROPCO '61
BRITISH COLUMBIA – CANADA

FIELD EXPLORATION			IRONTON-UTAH
SCALE 1in = 2000 ft.			6M-415
	J McA	3-30-62	
	JD	3-30-62	
	VDD	3-30-62	
	LAM-VHJ	3-30-62	
	FED	1961	

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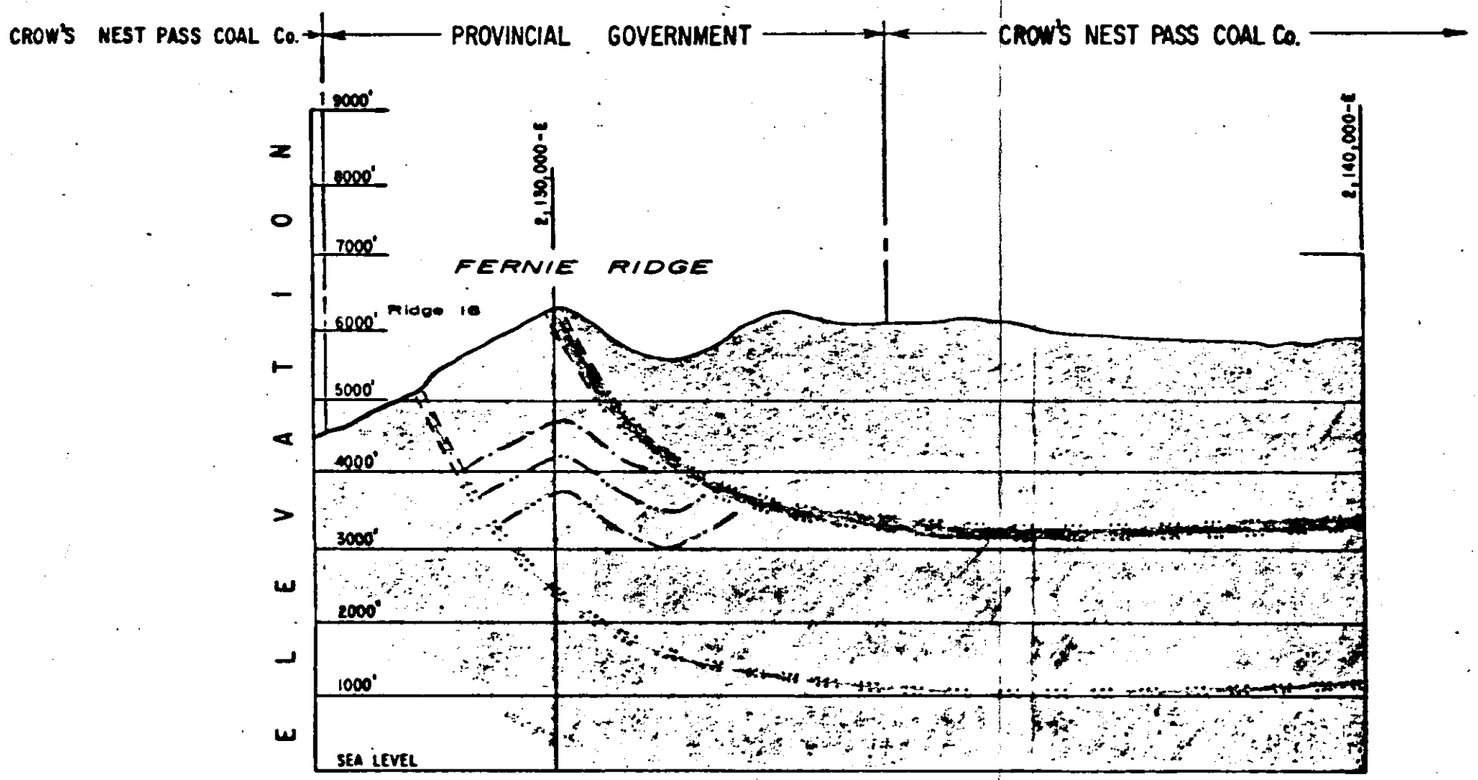

SECTION I₁

N 61° W. Looking NORTHerly

EXPLANATION

CRETACEOUS
- Blairmore and Elk Formation (s)
- Basal Elk Conglomerate
- Kootenay Formation
- Basal Kootenay Sandstone

TRIASSIC & JURASSIC
- Fernie Group and Spray River Formation (undifferentiated)

PALEOZOIC
- Undifferentiated

- Fault
- 1,500 ft. vertical cover line
- 2,000 ft. " " "
- 2,500 ft. " " "

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COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

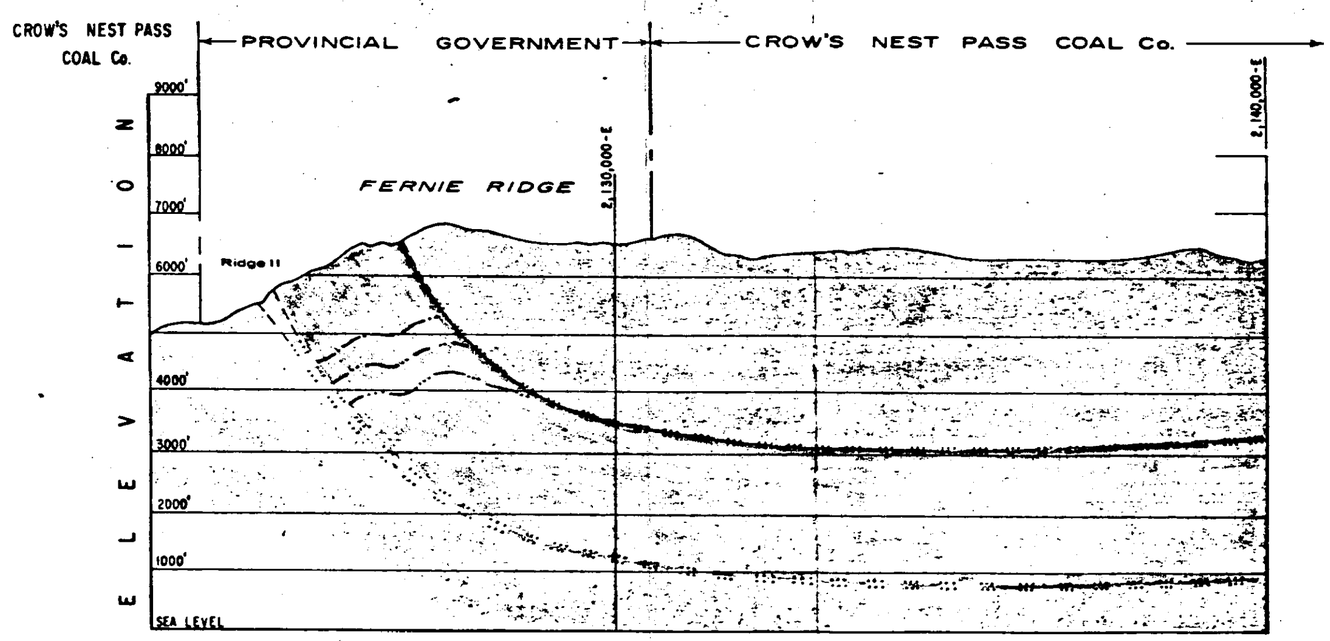
GEOLOGIC SECTION I₁

CROPCO '61
BRITISH COLUMBIA—CANADA

FIELD EXPLORATION — IRONTON-UTAH

SCALE 1in = 2000 ft.

DRAWN	J McA	3-29-62	6M-416
TRACED	JO	3-29-62	
CHECKED	MJO	4-1-62	
APPROVED	CAM-VHJ	3-29-62	
FIELD WORK	FED	1961	



SECTION I 2

N 61° W Looking NORTH'erly

EXPLANATION

CRETACEOUS
- Blairmore and Elk Formation (s)
- Basal Elk Conglomerate
- Kootenay Formation
- Basal Kootenay Sandstone

TRIASSIC & JURASSIC
- Fernie Group and Spray River Formation (undifferentiated)

PALEOZOIC
- Undifferentiated

- Fault
- 1,500 ft. vertical cover line
- 2,000 ft.
- 2,500 ft.

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COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES (USS) STEEL CORPORATION

GEOLOGIC SECTION I 2

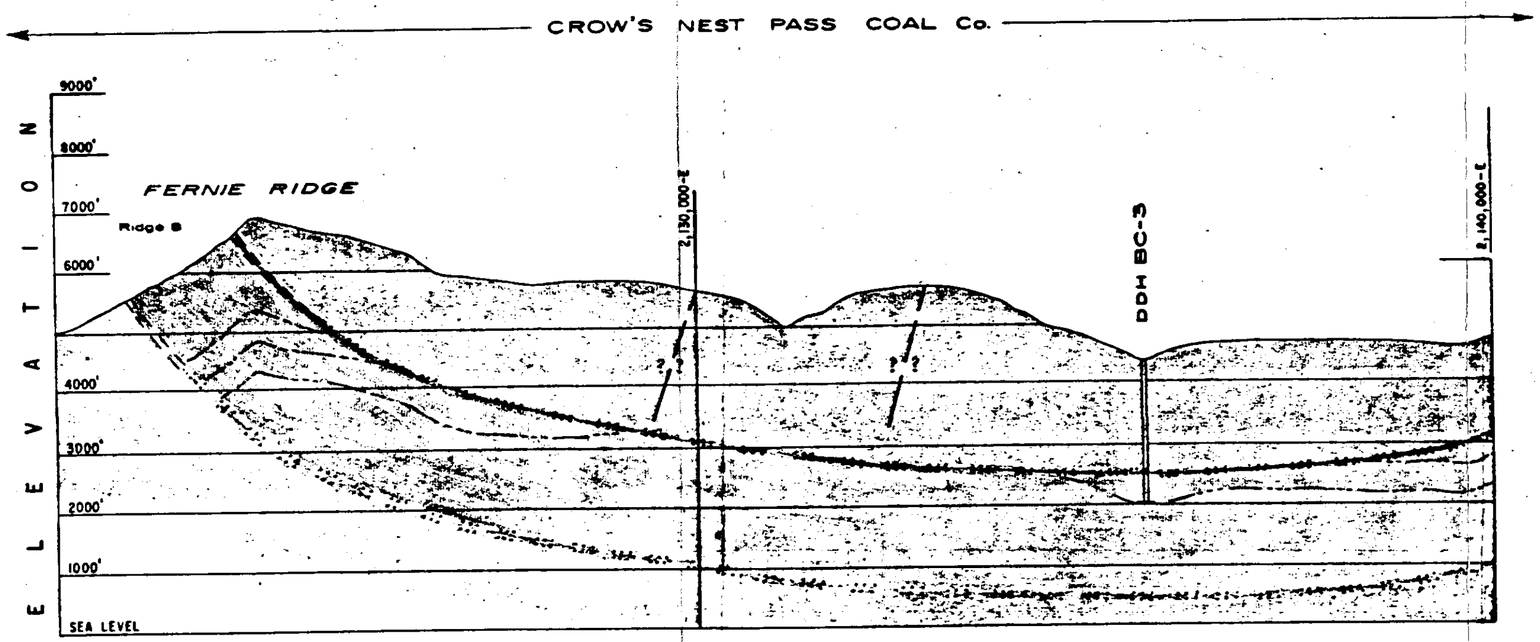
CROPCO '61

BRITISH COLUMBIA – CANADA

FIELD EXPLORATION — IRONTON-UTAH

SCALE 1in = 2000 ft

[illegible]	JMCA	3-29-62	6M-417
[illegible]	JO	3-29-62	
[illegible]	MJO	3-1-62	
[illegible]	CAM-WMH	3-[illegible]-62	
[illegible]	FED	1961	



SECTION I 3
N 48° W Looking NORTH'erly

EXPLANATION

CRETACEOUS
- Blairmore and Elk Formation (s)
- Basal Elk Conglomerate
- Kootenay Formation
- Basal Kootenay Sandstone

TRIASSIC & JURASSIC
- Fernie Group and Spray River Formation (undifferentiated)

PALEOZOIC
- Undifferentiated

- Fault
- 1,500 ft. vertical cover line
- 2,000 ft. " " "
- 2,500 ft. " " "

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COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

GEOLOGIC SECTION I3
CROPCO '61
BRITISH COLUMBIA—CANADA

FIELD EXPLORATION — IRONTON-UTAH
SCALE 1in=2000 ft.

DRAWN	J.MCA	3-30-62
TRACED	HO	3-30-62
CHECKED	MDO	3-30-62
APPROVED	CAW-VHJ	3-30-62
FIELD WORK	FEO	1961

6M-418

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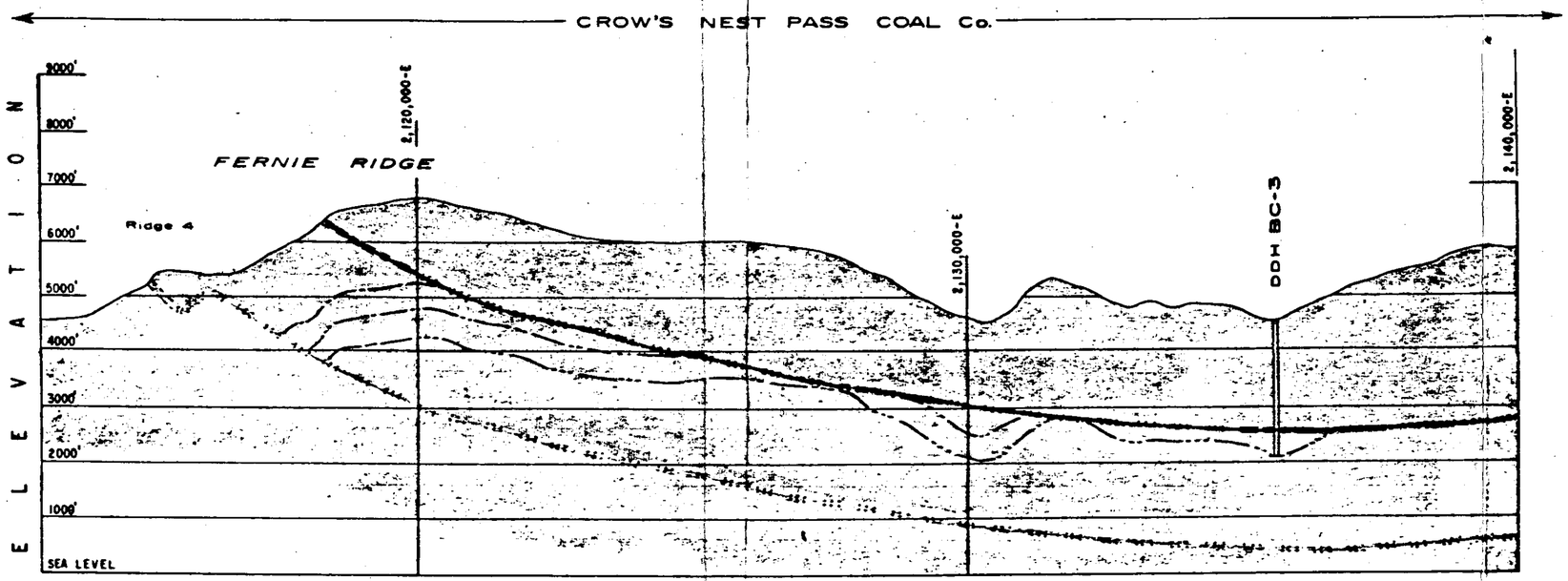

SECTION M1
EAST-WEST Looking NORTH

EXPLANATION

CRETACEOUS
- Blairmore and Elk Formation (s)
- Basal Elk Conglomerate
- Kootenay Formation
- Basal Kootenay Sandstone

TRIASSIC & JURASSIC
- Fernie Group and Spray River Formation (undifferentiated)

PALEOZOIC
- Undifferentiated

- Fault
- 1,500 ft. vertical cover line
- 2,000 ft.
- 2,500 ft.

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COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

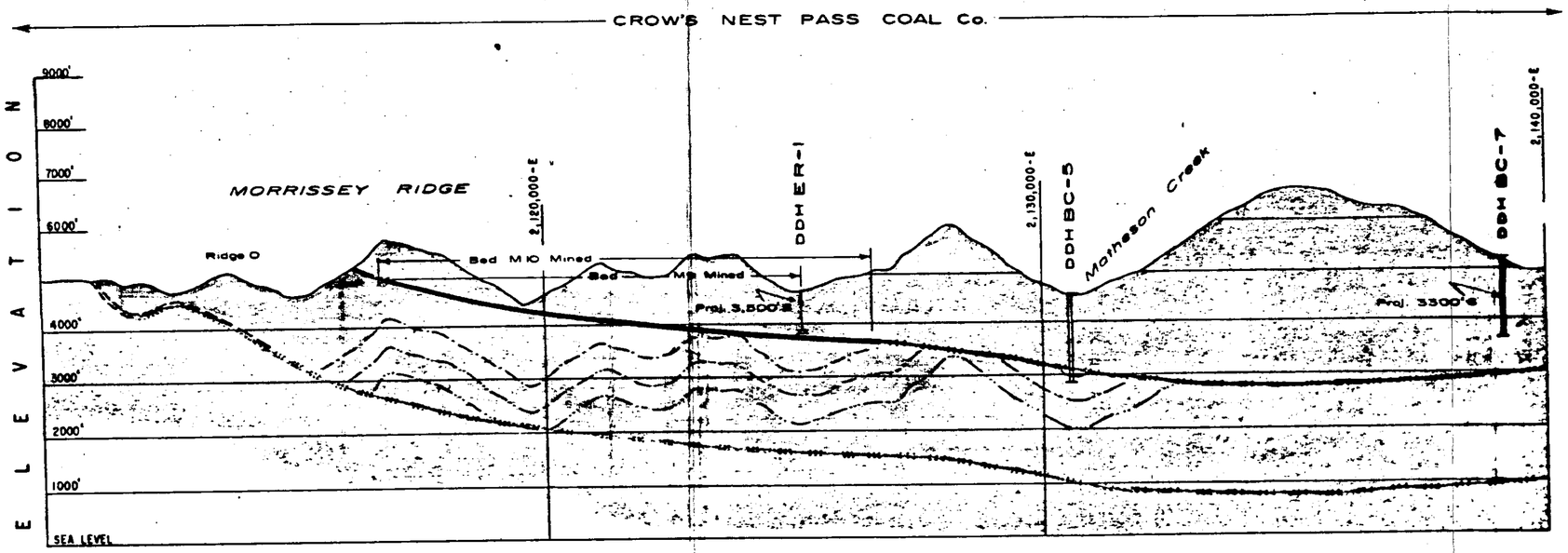
GEOLOGIC SECTION M1
CROPCO '61
BRITISH COLUMBIA – CANADA

FIELD EXPLORATION — IRONTON-UTAH
SCALE 1in = 2000 ft

DRAWN	J.McA	3-30-62
TRACED	JO	3-30-62
CHECKED	MOO	3-30-62
APPROVED	CAM-VH	3-30-62
[illegible]	FED	[illegible]

6M-419

(12)



SECTION M3
EAST-WEST Looking NORTH

EXPLANATION

CRETACEOUS
- Blairmore and Elk Formation
- Basal Elk Conglomerate
- Kootenay Formation
- Basal Kootenay Sandstone

TRIASSIC & JURASSIC
- Fernie Group and Spray River Formation (undifferentiated)

PALEOZOIC
- Undifferentiated

- Fault
- 1,500 ft. vertical cover line
- 2,000 ft. " " "
- 2,500 ft. " " "

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COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

GEOLOGIC SECTION M3
CROPCO '61
BRITISH COLUMBIA—CANADA

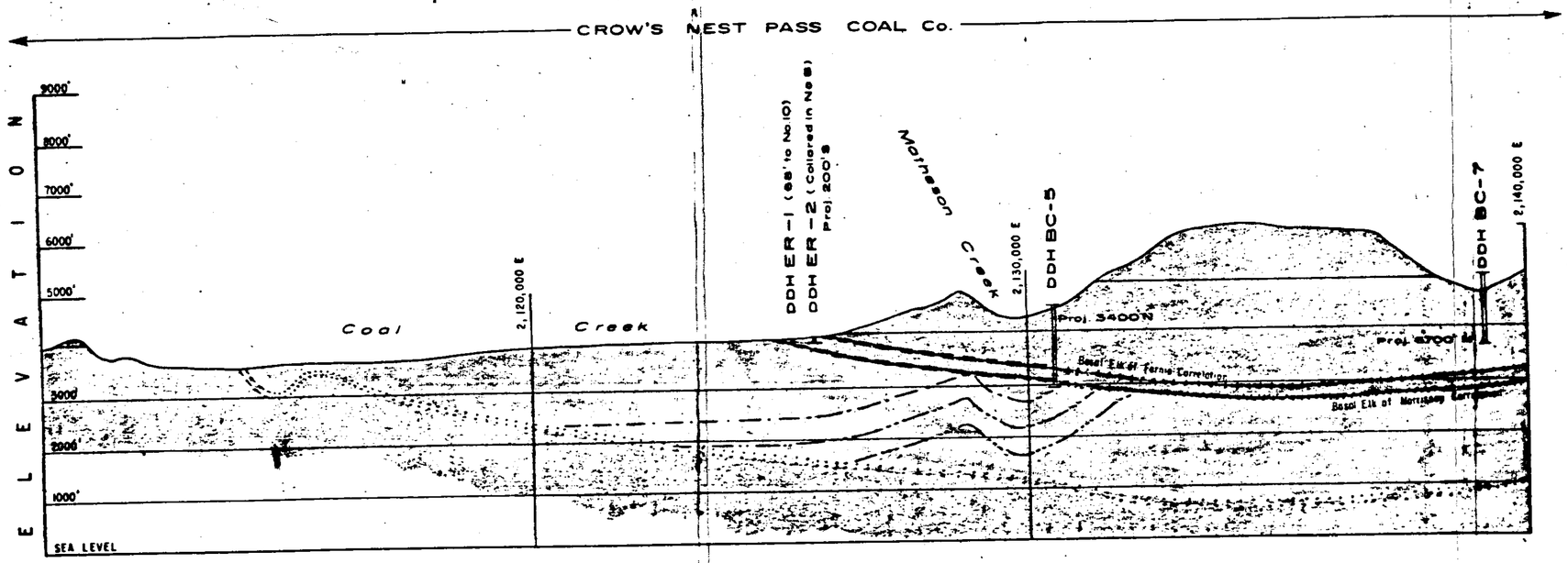
FIELD EXPLORATION
SCALE 1in = 2000 ft.

DRAWN	J.McA	3-30-62
TRACED	TO	3-30-62
CHECKED	KWO	3-31-62
APPROVED	CAM-VHH	3-30-62
FIELD WORK	FED	1961

IRON

6M—

(13)



SECTION M2
EAST-WEST Looking NORTH

EXPLANATION

CRETACEOUS
- Blairmore and Elk Formation (s)
- Basal Elk Conglomerate
- Kootenay Formation
- Basal Kootenay Sandstone

TRIASSIC & JURASSIC
- Fernie Group and Spray River Formation (undifferentiated)

PALEOZOIC
- Undifferentiated

- Fault
- 1,500 ft. vertical cover line
- 2,000 ft. " " "
- 2,500 ft. " " "

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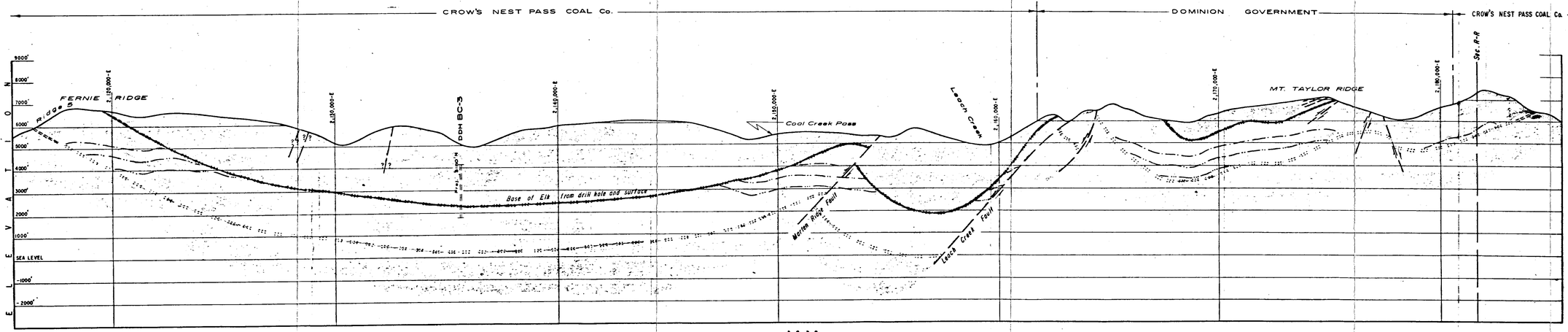
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

GEOLOGIC SECTION M2
CROPCO '61
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-U.T.

SCALE 1 in = 2000 ft.			
DRAWN	J.M.S.A.	4-2-62	6M-42C
TRACED	J.O.	4-2-62	
CHECKED	M.D.O.	4-2-62	
SUBMITTED	CAM-VHJ	4-2-62	
F.E. WORK	F.E.O.	1961	

(14)



SECTION M-M
EAST-WEST Looking NORTH

EXPLANATION

CRETACEOUS
- Blairmore and Elk Formation(s)
- Basal Elk Conglomerate
- Kootenay Formation
- Basal Kootenay Sandstone

TRIASSIC & JURASSIC
- Fernie Group and Spray River Formation (undifferentiated)

PALEOZOIC
- Undifferentiated

Fault

1,500 ft. vertical cover line
2,000 ft.
2,500 ft.

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COLUMBIA IRON MINING COMPANY
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GEOLOGIC SECTION M
CROPCO '61
BRITISH COLUMBIA-CANADA

FIELD EXPLORATION — IRONTON-UTAH
SCALE 1 IN = 2000 ft

DRAWN	BRW	8-8-61
TRACED	JH	8-8-61
CHECKED	RAS	8-8-61
APPROVED	W.C. Hall	8-8-61
SUPERVISOR	W.F. Ross	

GM-394

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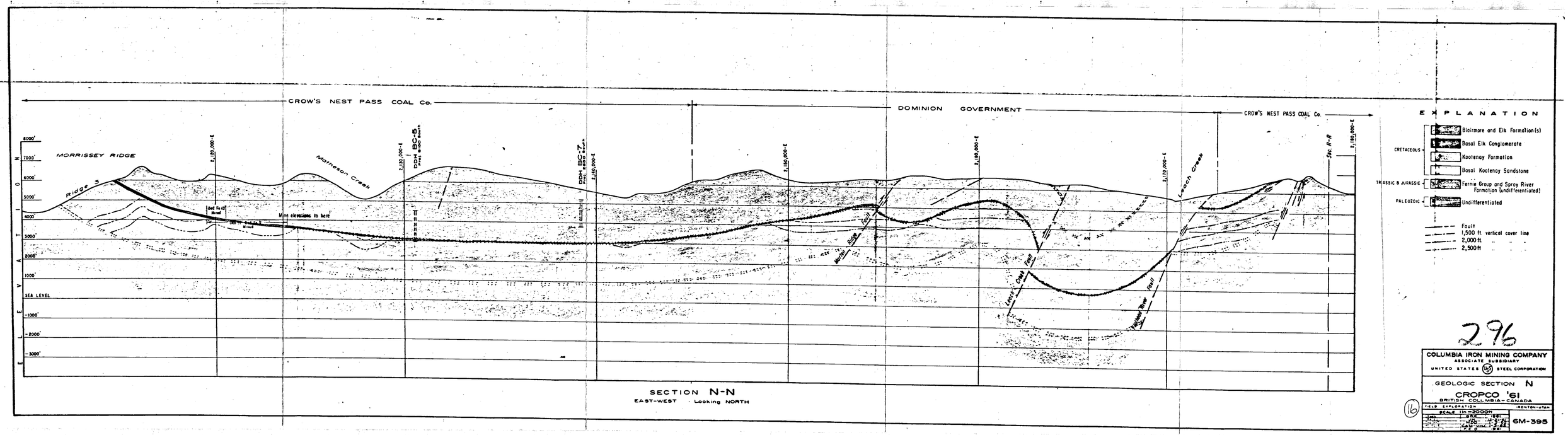
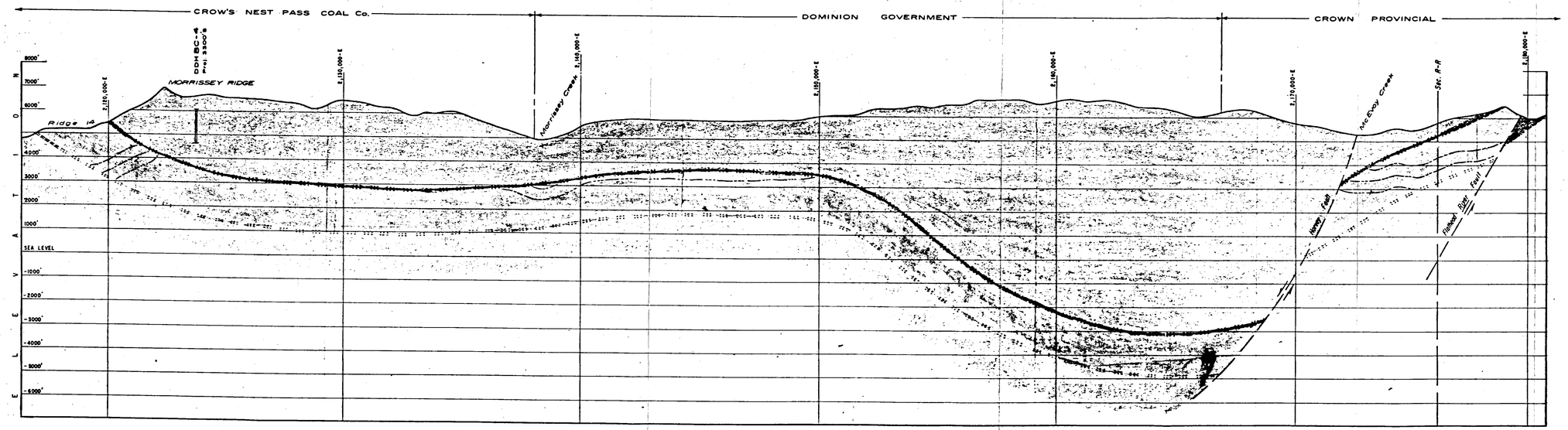


SECTION N-N
EAST-WEST · Looking NORTH

296

(16)



SECTION Q-Q
N 89° E Looking NORTH'erly

EXPLANATION

CRETACEOUS
- Blairmore and Elk Formation(s)
- Basal Elk Conglomerate
- Kootenay Formation
- Basal Kootenay Sandstone

TRIASSIC & JURASSIC
- Fernie Group and Spray River Formation (undifferentiated)

PALEOZOIC
- Undifferentiated

- Fault
- 1,500 ft vertical cover line
- 2,000 ft
- 2,500 ft

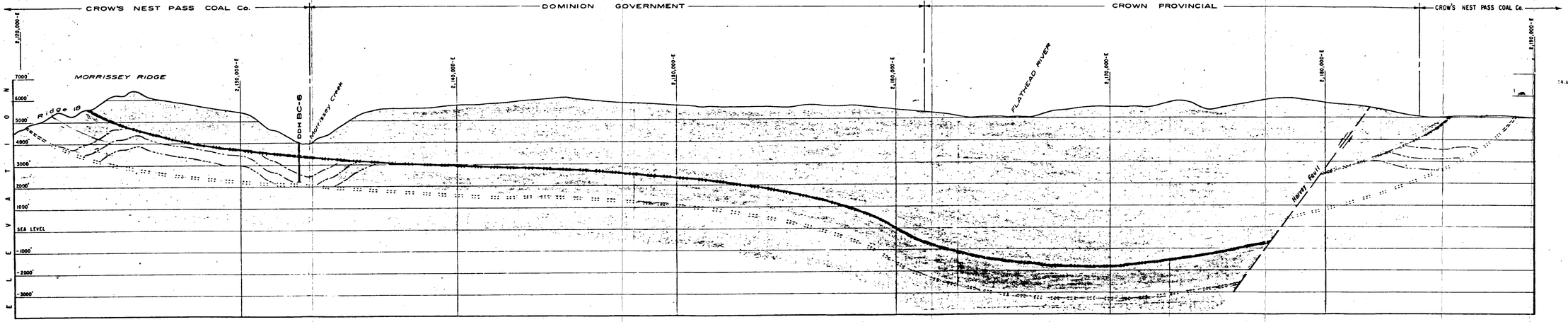
(17) 296

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

GEOLOGIC SECTION Q
CROPCO '61
BRITISH COLUMBIA - CANADA

FIELD EXPLORATION — HOSKIN-UTAH
SCALE 1in = 2000ft

DRN.	FM	APR 1961	
CHK.	JJS	1-5-62	6M-396
APP.	JMA	1-5-62	
APP.		DATE	



SECTION S-S

N 80°W Looking NORTHerly

EXPLANATION

CRETACEOUS
- Blairmore and Elk Formation(s)
- Basal Elk Conglomerate
- Kootenay Formation
- Basal Kootenay Sandstone

TRIASSIC & JURASSIC
- Fernie Group and Spray River formation (undifferentiated)

PALEOZOIC
- Undifferentiated

- Fault
- 1,500 ft. vertical cover line
- 2,000 ft. " " "
- 2,500 ft. " " "

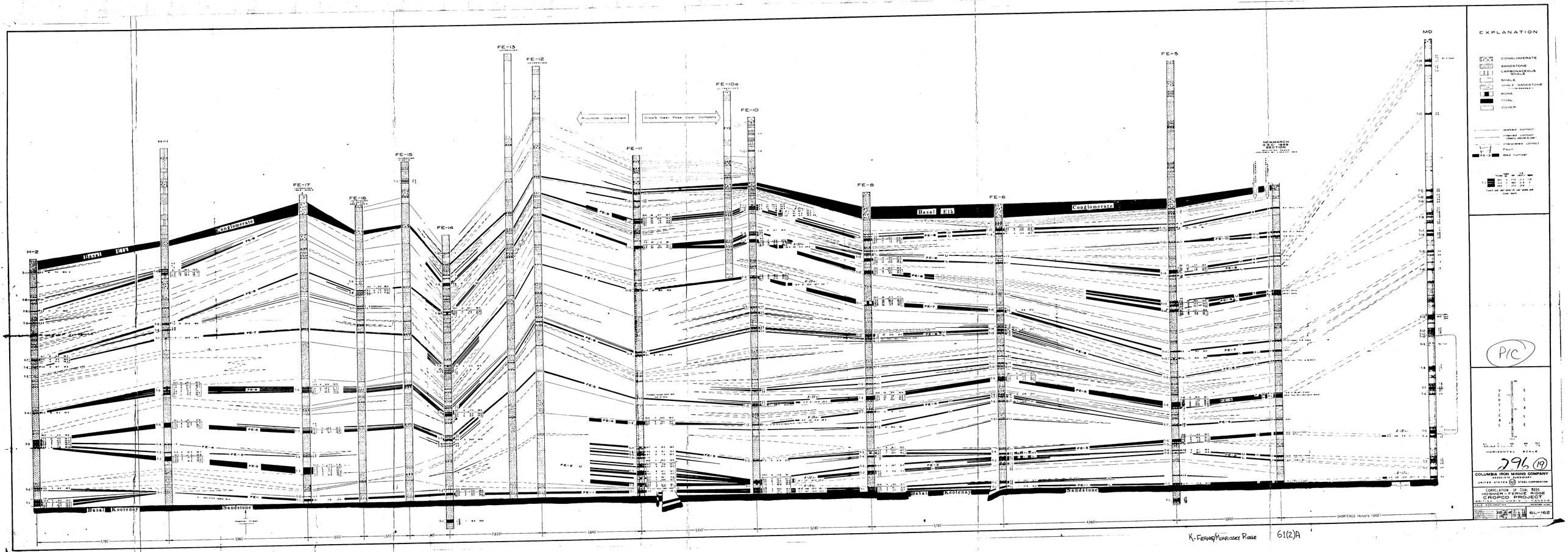
276 (18)

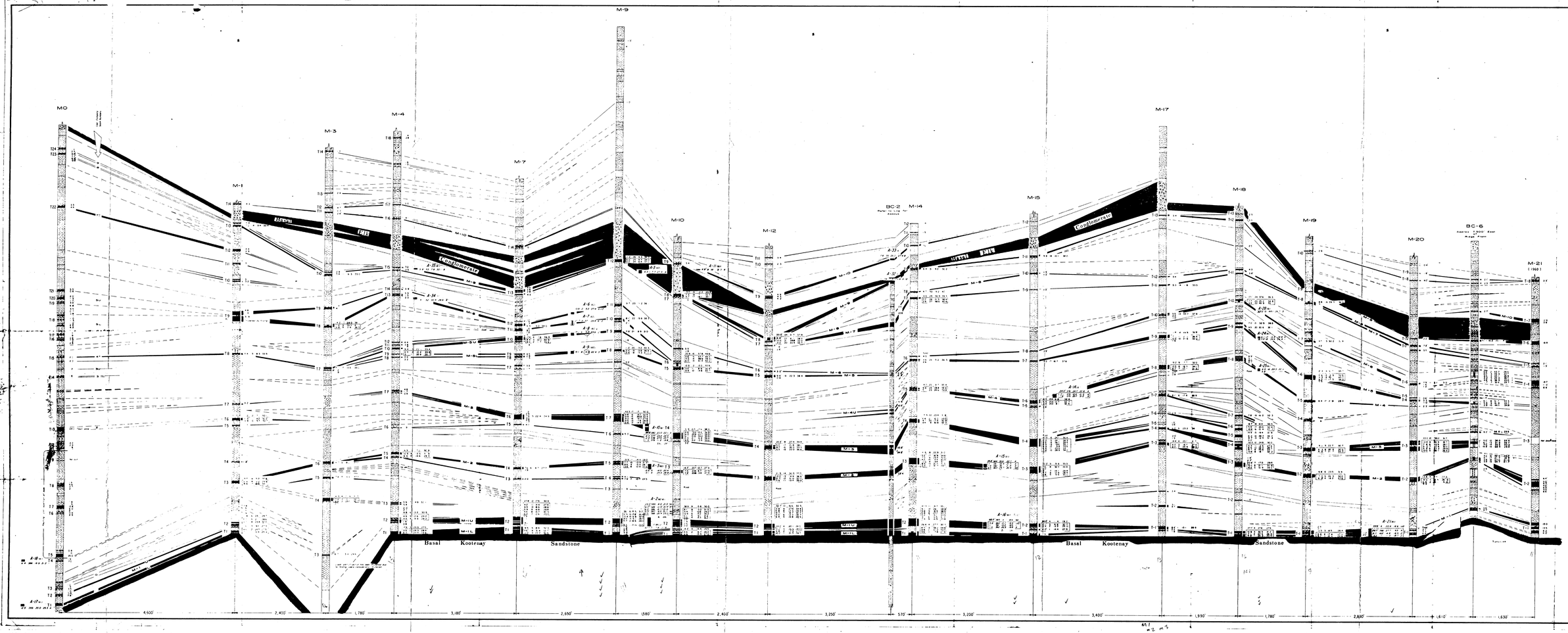
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

GEOLOGIC SECTION S

CROPCO '61
BRITISH COLUMBIA—CANADA

FIELD EXPLORATION		FRONTENAC	
SCALE 1in=2000ft			
DRAWN	J.C.	19 Oct 61	GM-398
TRACED	J.C.	19 Oct 61	
CHECKED		19 Oct 61	
CAMPVILLE		1961	


EXPLANATION
CONGLOMERATE
SANDSTONE
CARBONACEOUS SHALE
SHALE
SHALE SANDSTONE (INTERBANDED)
BONE
COAL
COVER
WORKED CONTACT
UNWORKED CONTACT
INTERPRETED CONTACT
FAULT
FE-3 BED NUMBER
VERTICAL SCALE
HORIZONTAL SCALE
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION
CORRELATION OF COAL BEDS
MORRISSEY-FERNIE RIDGE
CROPCO PROJECT
BRITISH COLUMBIA — CANADA
FIELD EXPLORATION
6L-162
Basal Pit
Conglomerate
Basal Kootenay
Sandstone
Municipal Government
Crow's Nest Pass Coal Company
NEWMARCH
Heaphy Creek
H-1
H-2
FE-5
FE-6
FE-8
FE-10
FE-10a
FE-11
FE-12
FE-13
FE-14
FE-15
FE-16
FE-17
MO
SHORTENED (Activity 11000)
K-FERNIE/MORRISSEY RIDGE
61(2)A
P/C
296 (19)



EXPLANATION

CONGLOMERATE
SANDSTONE
CARBONACEOUS SHALE
SHALE
SHALE-SANDSTONE (Interbedded)
BONE
COAL
COVER

Worked contact
Inferred contact (Seam should be one)
Interpreted contact
Fault
M-3 Bed number

T-1 Thickness of seam in feet

Track no. 1 on 1 of 1 (at 1000 m. east from)

VERTICAL SCALE
HORIZONTAL SCALE

PIC

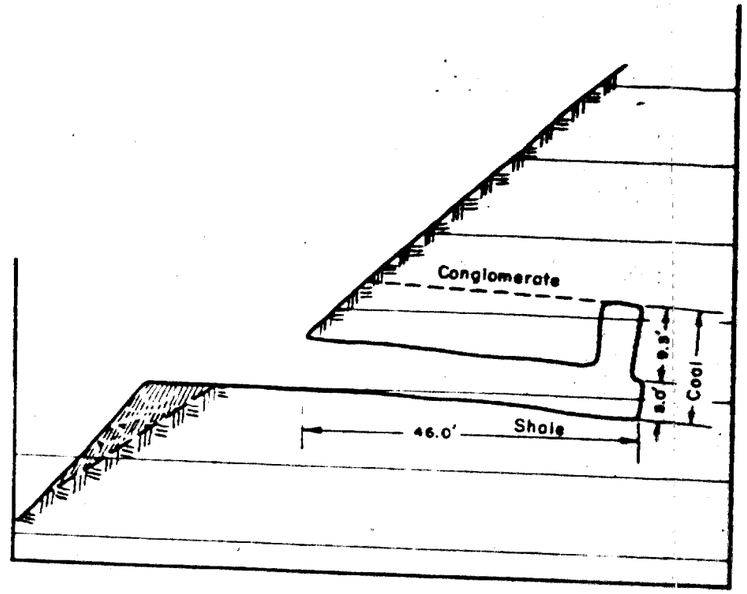
2½ 20

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

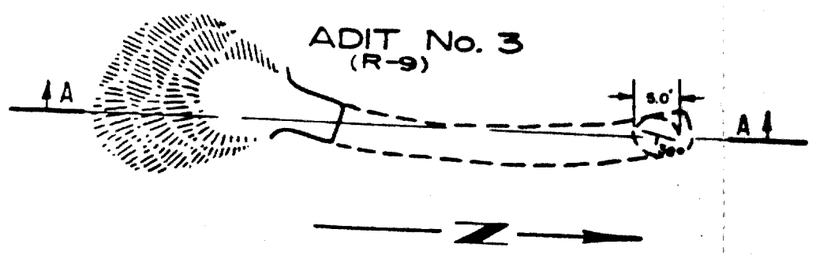
CORRELATION OF COAL BEDS
MORISSET RIDGE
CROWSNEST PROJECT
BELLEVUE - BLAIRMORE, ALTA.

FIELD EXPLORATION | DISTRIBUTION

DATE: 1960 | SCALE: 1" = 100' | 6L-161



SECTION A-A
SCALE 1"=20'



PLAN
SCALE 1"=20'

BULK SAMPLE No. 1

DESCRIPTION: Seam sampled at right angles to walls. Thickness = 14.3'. Floor shale, then 3.0' Clean Coal, then 1.0' Bone, then 10.3' Clean Coal, then Conglomerate Roof.

MINED: Aug. 10, 1960

DATE in BARRELS: Sept. 2 to 30, 1960

NET WEIGHT SHIPPED: 8215.5 lbs.

296 (21)

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

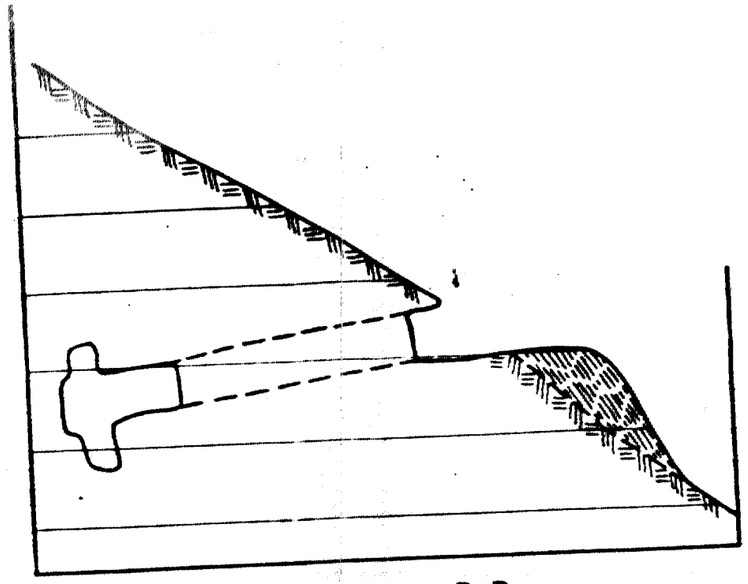
PLAN AND SECTION
ADIT NO. 3 (R-9)

CROPCO PROJECT
BRITISH COLUMBIA-CANADA

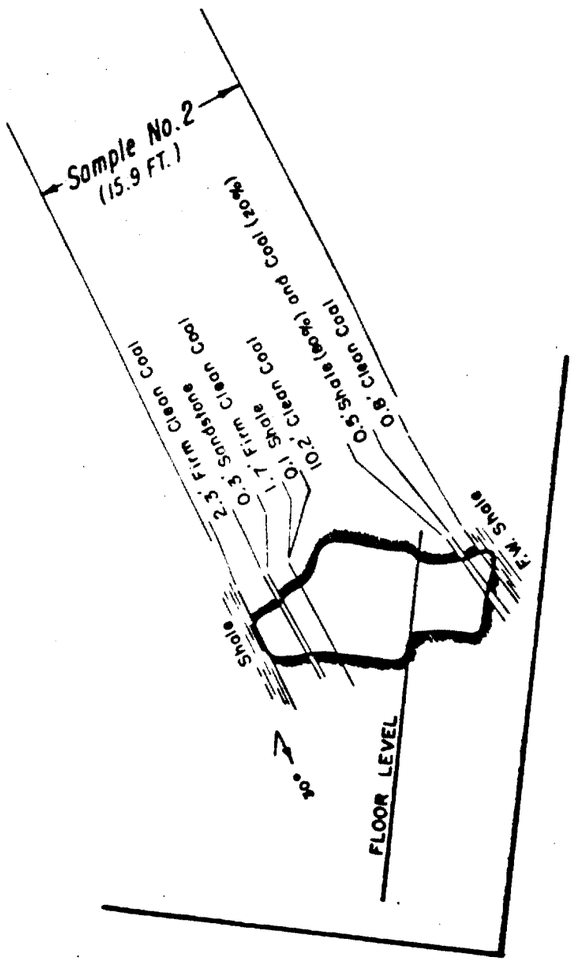
FIELD EXPLORATION — IRONTON-UTAH

SCALE: As Shown

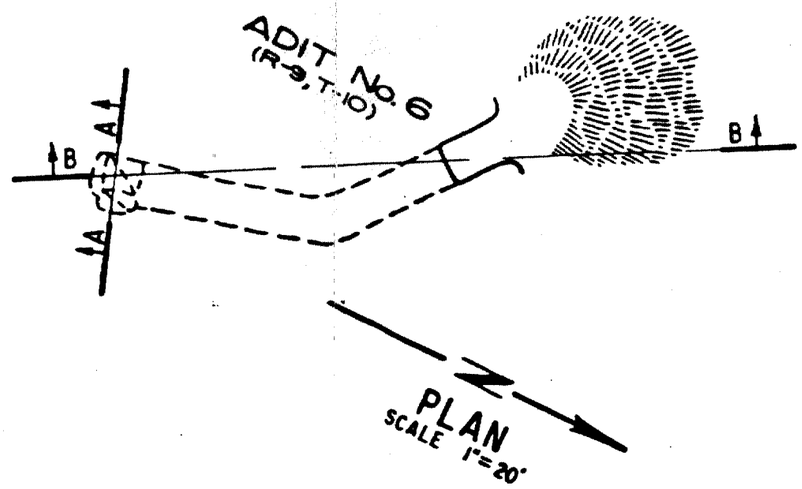
SB-570



SECTION B-B
SCALE 1" = 20'



SECTION A-A
SCALE 1" = 10'



BULK SAMPLE No. 2

MINED: Aug. 24 to 26, 1960

DATE in BARRELS: Sept. 2 to Oct. 3, 1960

NET WEIGHT SHIPPED 8356.5 lbs.

296 (22)

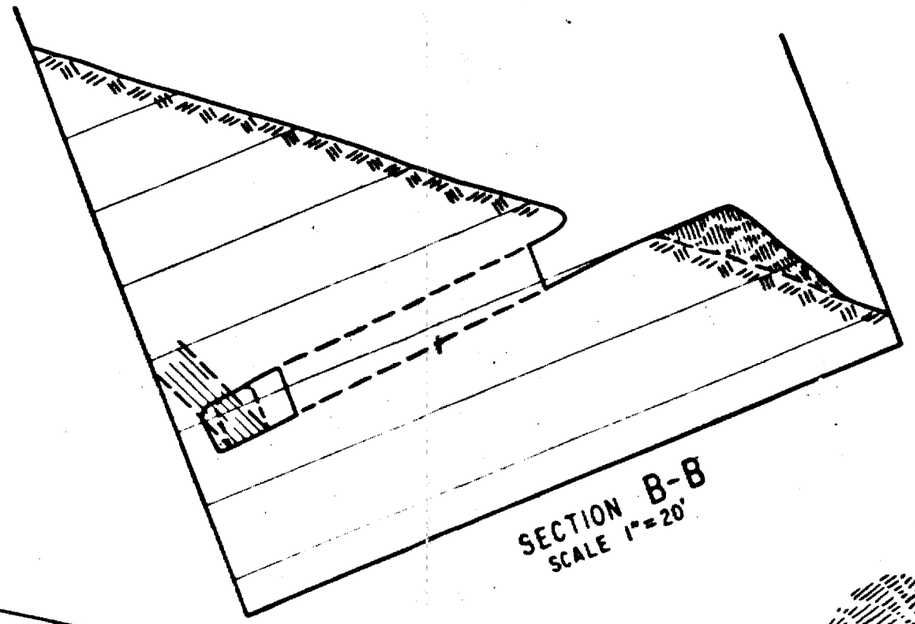
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

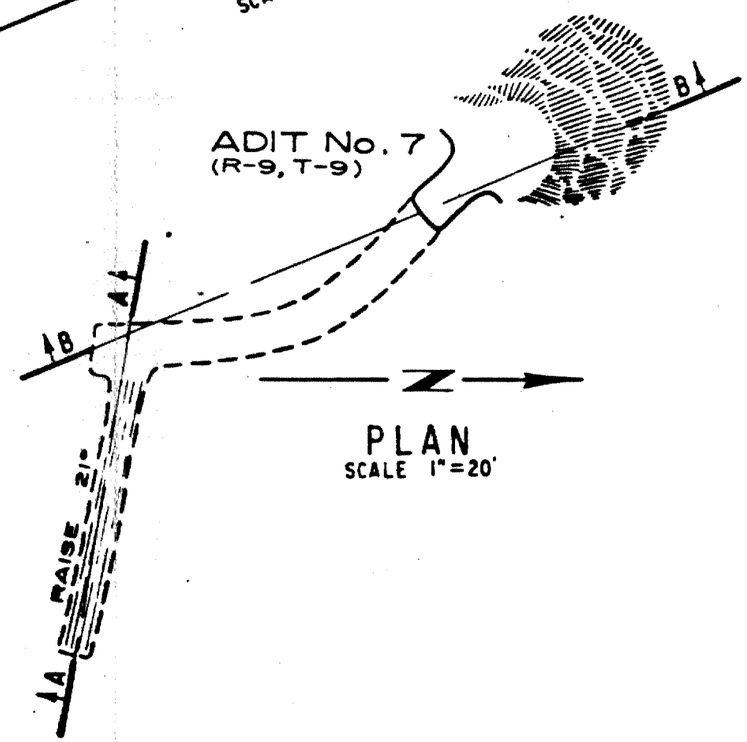
PLAN AND SECTIONS
ADIT NO. 6 (R-9, T-10)
CROPCO PROJECT
BRITISH COLUMBIA-CANADA

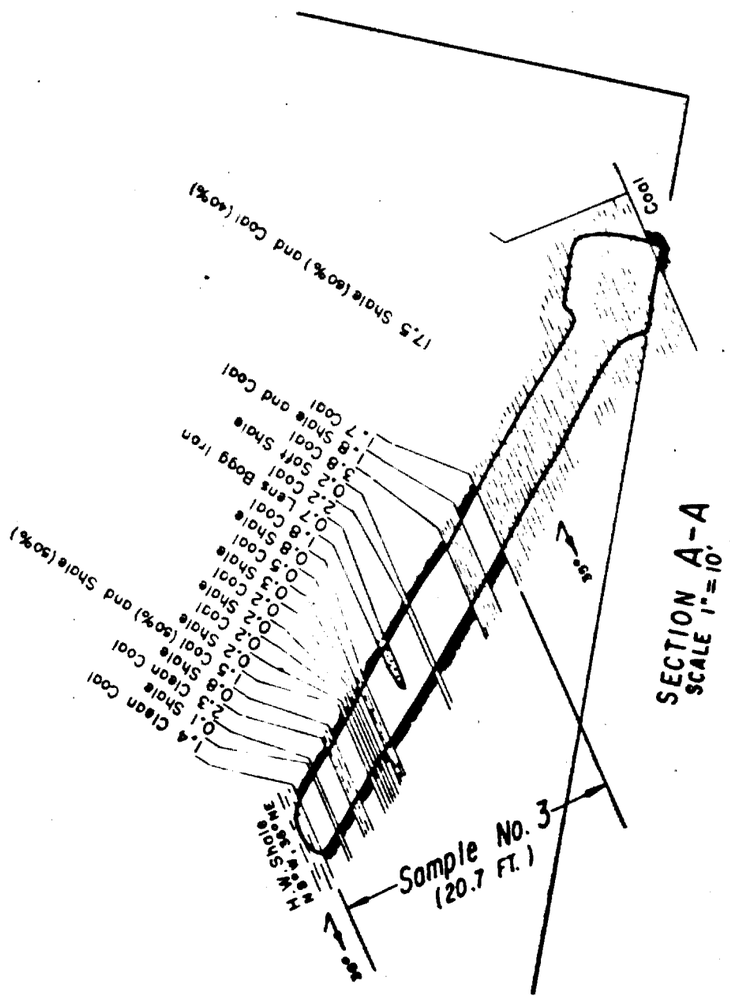
FIELD EXPLORATION — IRONTON-UTAH

SCALE: As Shown

DRAWN	APE	1960	65-571
TRACED	JH		
CHECKED			
APPROVED			
FIELD WORK	AKS	1960	







BULK SAMPLE No. 3

MINED: Aug. 26 to Sept. 1, 1960

DATE in BARRELS: Sept. 6, 7, 1960

NET WEIGHT SHIPPED: 8688.5 lbs.

296 (23)

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

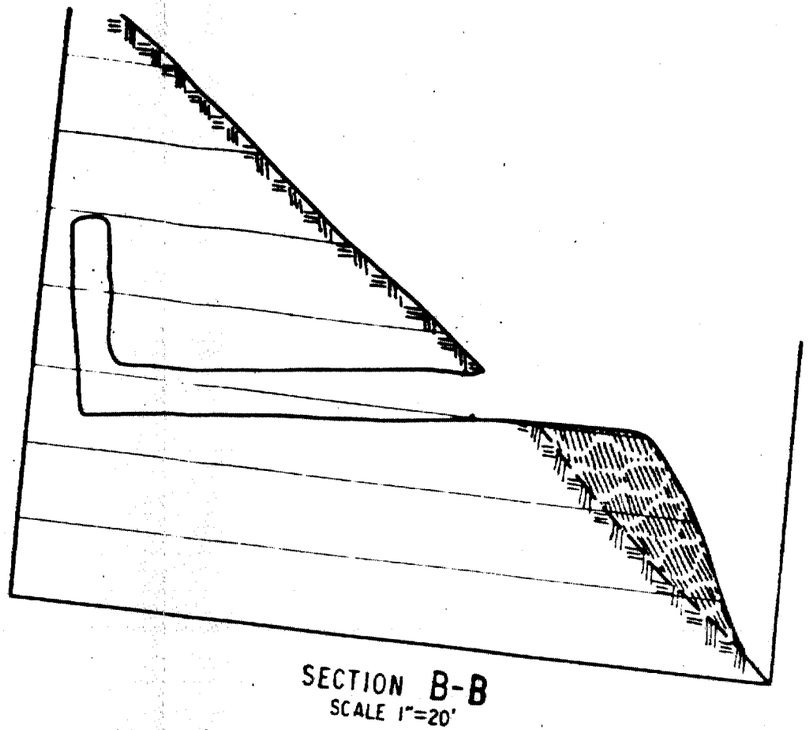
PLAN AND SECTIONS
ADIT NO. 7 (R-9, T-9)

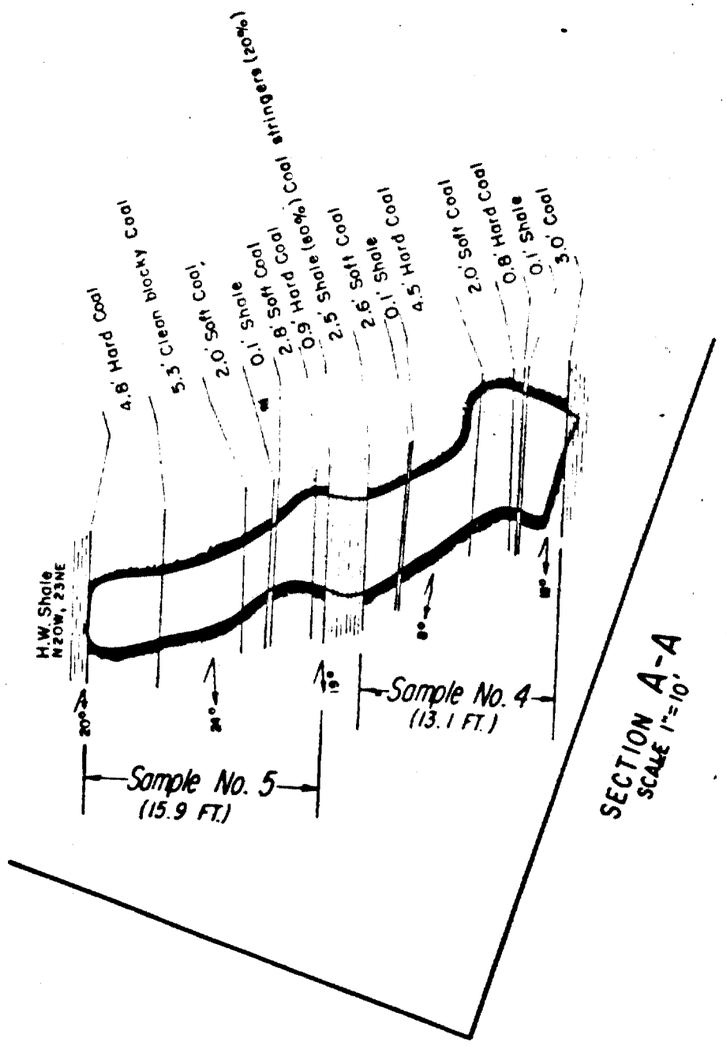
CROPCO PROJECT
BRITISH COLUMBIA-CANADA

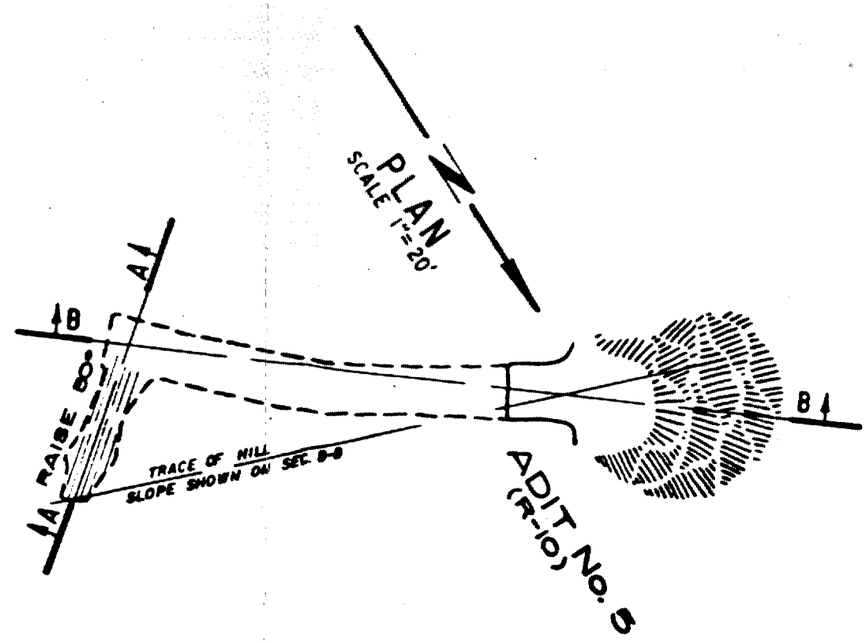
FIELD EXPLORATION — IRONTON-UTAH

SCALE: As Shown

68-572







BULK SAMPLE No. 4 (lower seam)

MINED: Aug. 26 to Sept. 1, 1960

DATE in BARRELS: Sept. 7 & 8, 1960

NET WEIGHT SHIPPED: 9213.0 lbs.

BULK SAMPLE No. 5 (upper seam)

MINED: Sept. 2 to 8, 1960

DATE in BARRELS: Oct. 5 to 11, 1960

NET WEIGHT SHIPPED 8021.0 lbs.

296 (24)

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

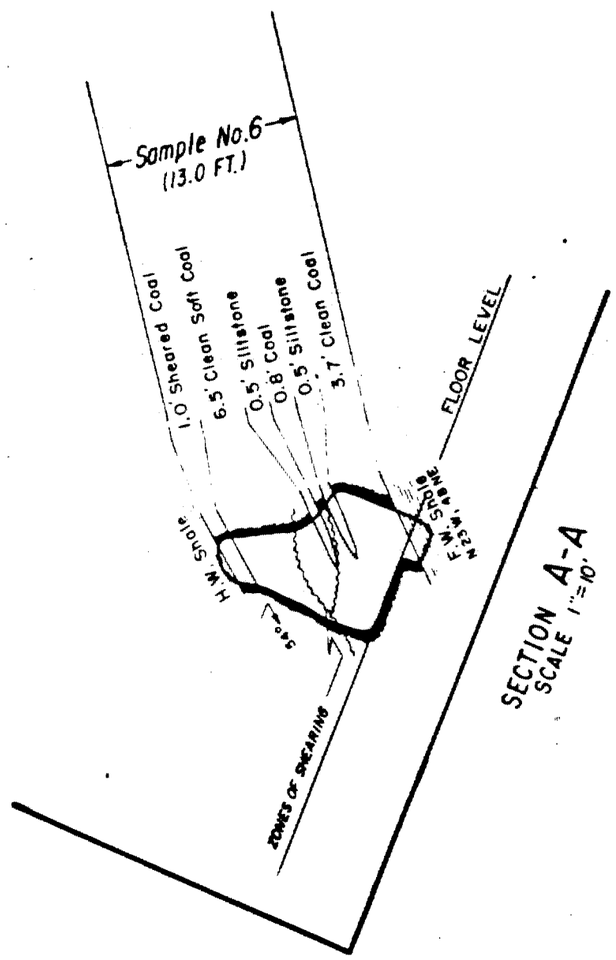
PLAN AND SECTIONS
ADIT NO. 5 (R-10)

CROPCO PROJECT
BRITISH COLUMBIA-CANADA

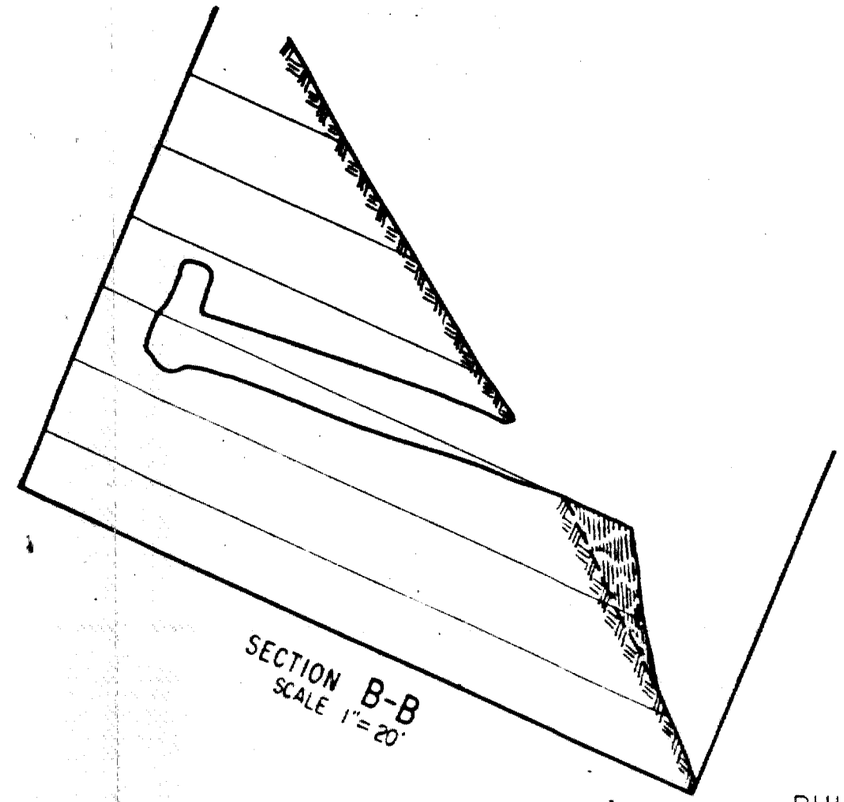
FIELD EXPLORATION — IRONTON-UTAH

SCALE: As Shown

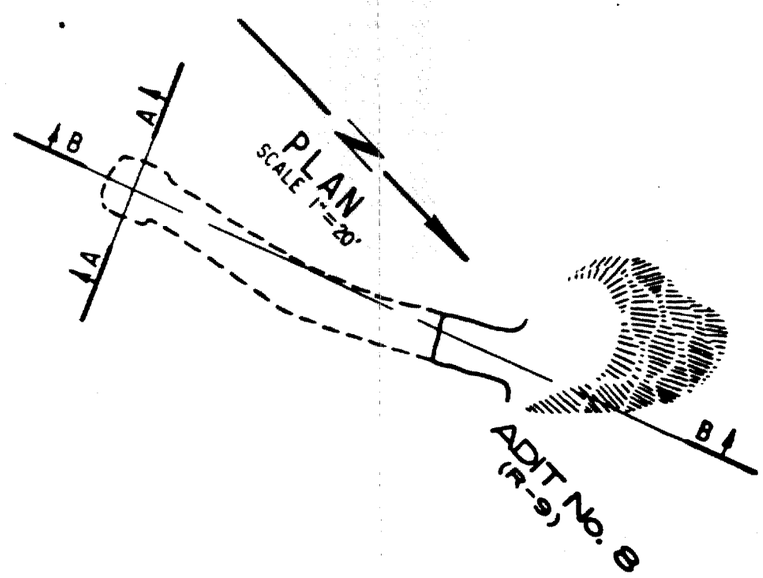
68-573



SECTION A-A
SCALE 1"=10'



SECTION B-B
SCALE 1"=20'



PLAN
SCALE 1"=20'

ADIT No. 8
(R-9)

BULK SAMPLE No. 6

MINED: Sept. 13 to 19, 1960

DATE in BARRELS: Sept. 28 to Oct. 3, 1960

NET WEIGHT SHIPPED: 7759.0 lbs.

296 (25)

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

PLAN AND SECTIONS
ADIT NO. 8 (R-9)

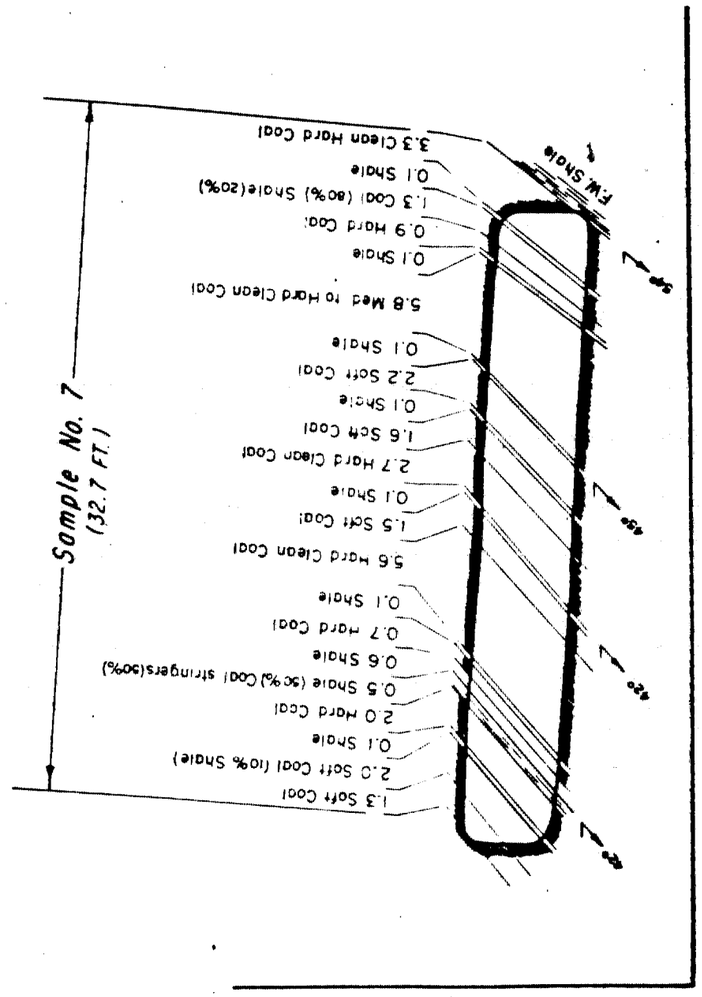
CROPCO PROJECT
BRITISH COLUMBIA-CANADA

FIELD EXPLORATION — IRONTON-UTAH

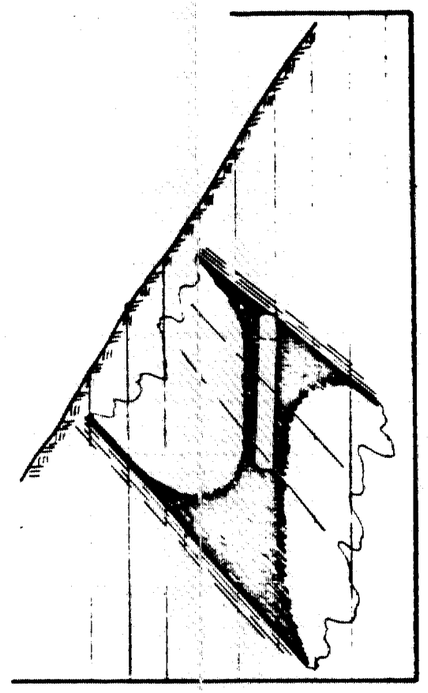
SCALE: As Shown

DRAWN	AMS	1960
TRACED	JH	1960
CHECKED	[illegible]	1960
APPROVED	CAW	1960
[illegible]	ZES	1960

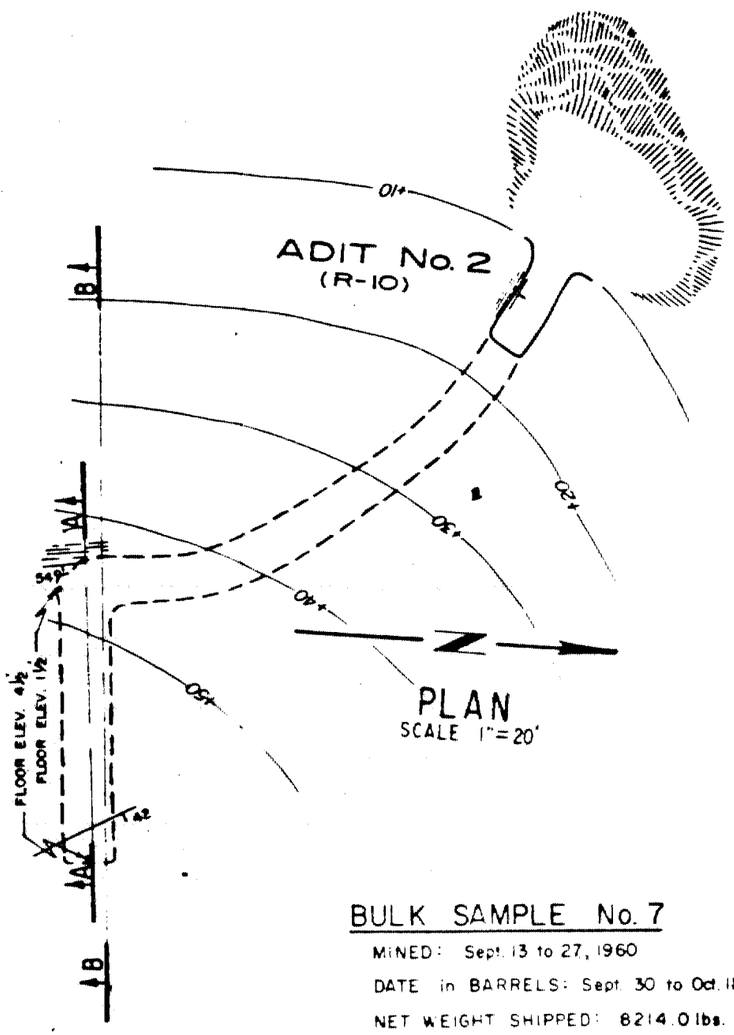
68-574



SECTION A-A
SCALE 1"=10'



SECTION B-B
SCALE 1"=40'



PLAN
SCALE 1"=20'

BULK SAMPLE No. 7

MINED: Sept. 13 to 27, 1960

DATE in BARRELS: Sept. 30 to Oct. 11, 1960

NET WEIGHT SHIPPED: 8214.0 lbs.

296 (26)

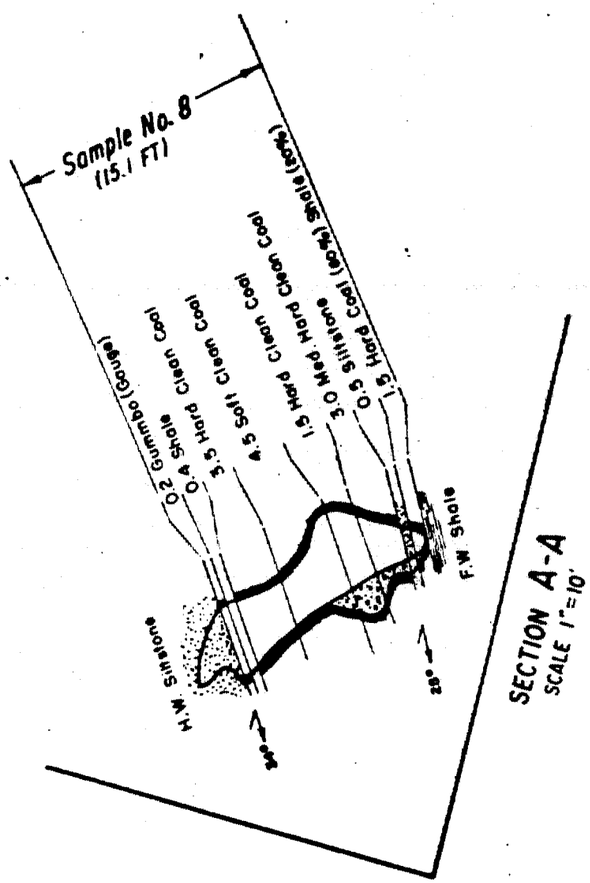
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

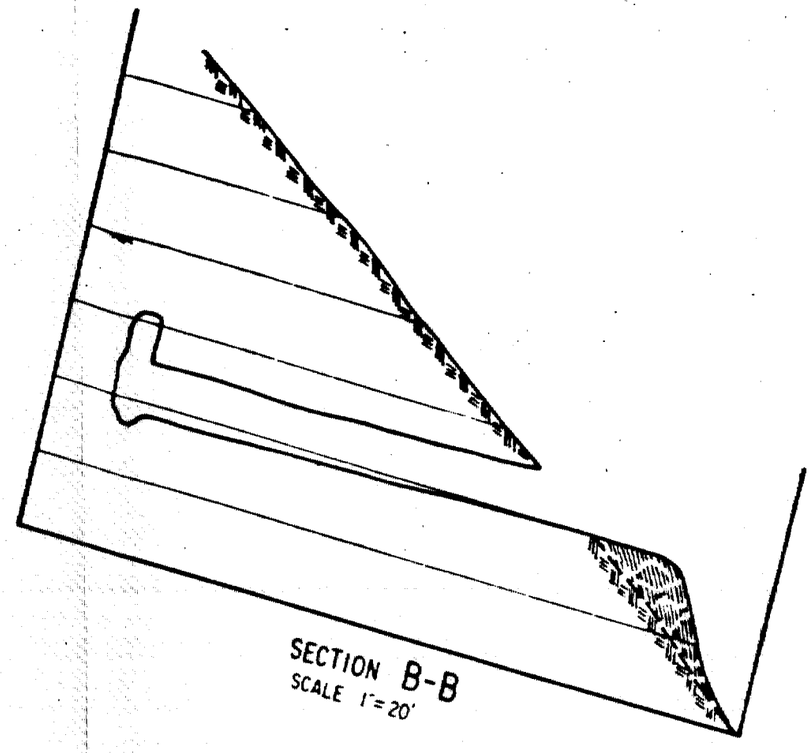
PLAN AND SECTIONS
ADIT NO. 2 (R-10)
CROPCO PROJECT
BRITISH COLUMBIA-CANADA

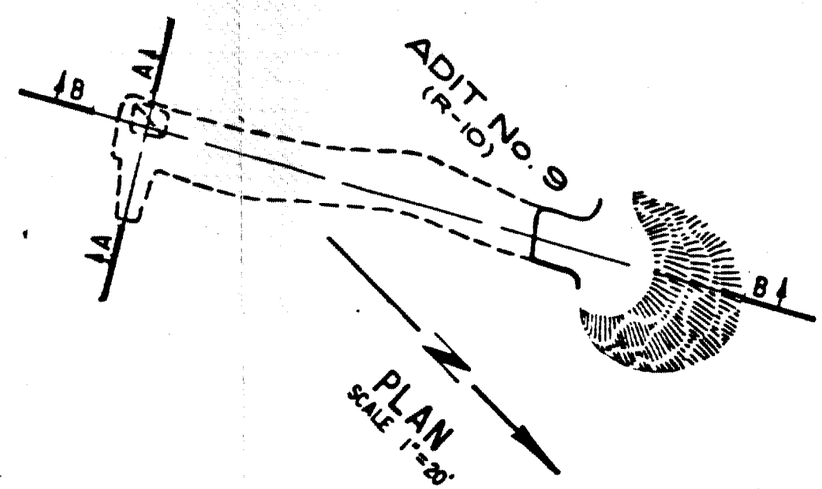
FIELD EXPLORATION — IRONTON-UTAH

SCALE: As Shown

68-575







BULK SAMPLE No. 8

MINED: Sept. 20 & 21, 1960

DATE in BARRELS: Oct. 3 to 5, 1960

NET WEIGHT SHIPPED: 7485.0 lbs.

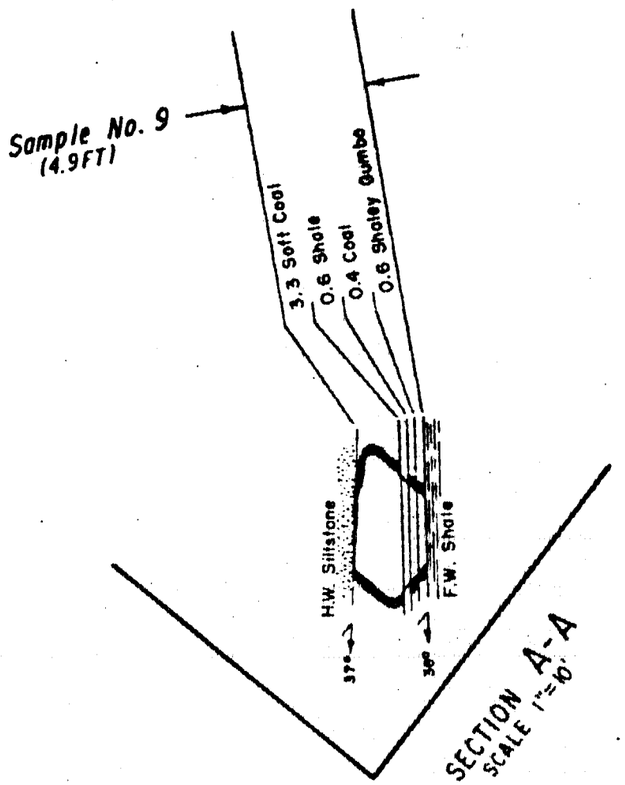
296 (27)

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

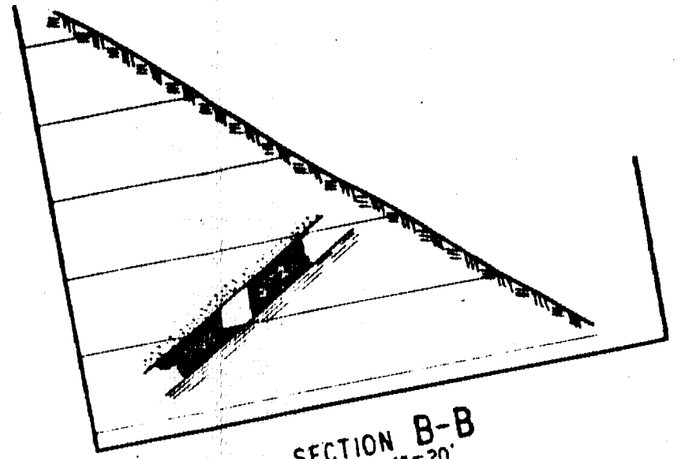
PLAN AND SECTIONS
ADIT NO. 9 (R-9)
CROPCO PROJECT
BRITISH COLUMBIA-CANADA

FIELD EXPLORATION — IRONTON-UTAH

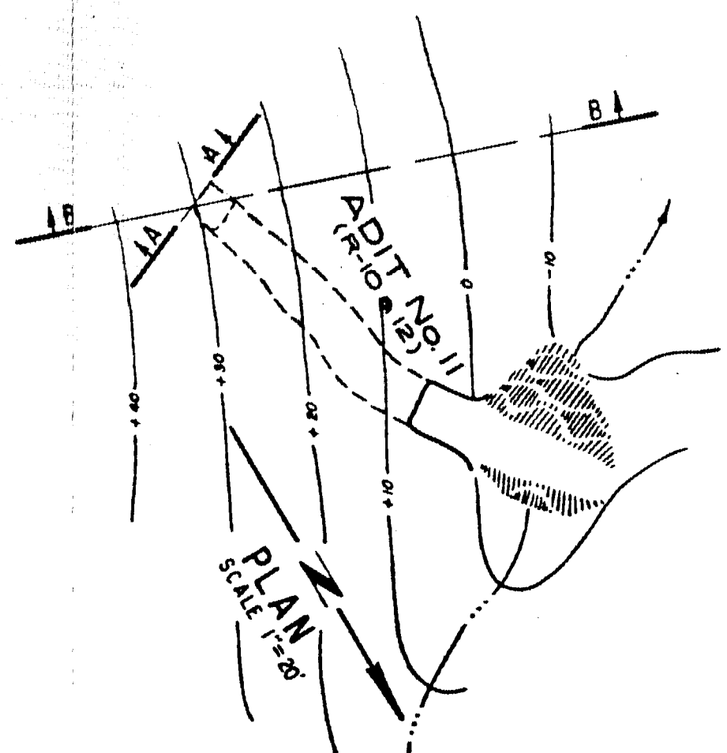
DRAWN	ARS	1960	68-576
TRACED	JK	DEC 61	
CHECKED	WAN	DEC 61	
APPROVED	WAN	DEC 61	
FIELD WORK	ARS	1960	



SECTION A-A
SCALE 1"=10'



SECTION B-B
SCALE 1"=20'



PLAN
SCALE 1"=20'

BULK SAMPLE No. 9

MINED: Sept. 26 to 28, 1960

DATE in BARRELS: Oct. 8, 1960

NET WEIGHT SHIPPED: 8818.0 lbs.

296 (28)

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES (USS) STEEL CORPORATION

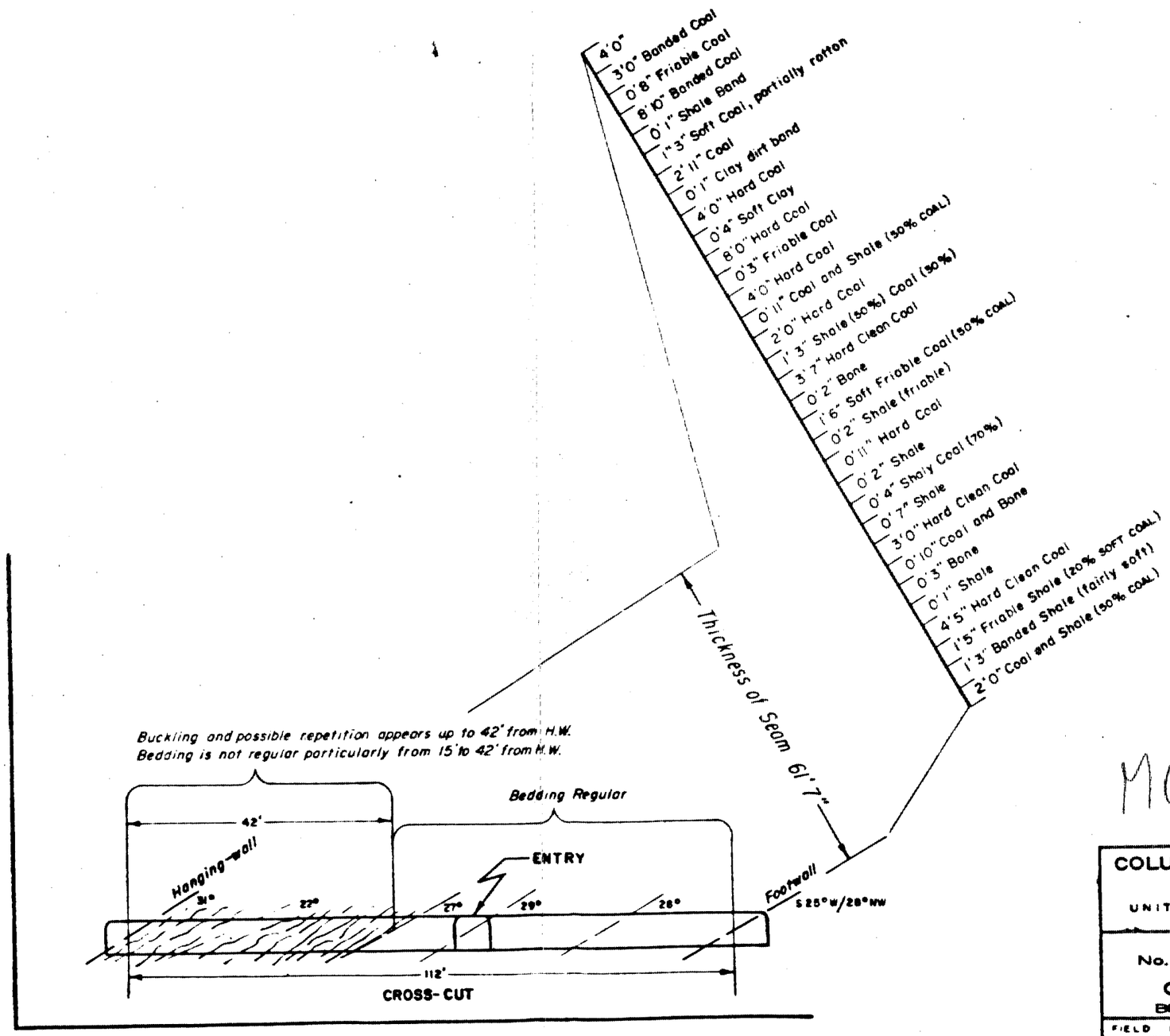
PLAN AND SECTIONS
ADIT NO. 11 (R-10,12)
CROPCO PROJECT
BRITISH COLUMBIA-CANADA

FIELD EXPLORATION — IRONTON-UTAH

SCALE: As Shown

DRAWN	ARB	1960
TRACED		
CHECKED		
APPROVED		

68-577



VERTICAL SECTION ALONG No. 10 SEAM CROSS-CUT
SCALE 1"=20'

296

MC-Seam 10

29

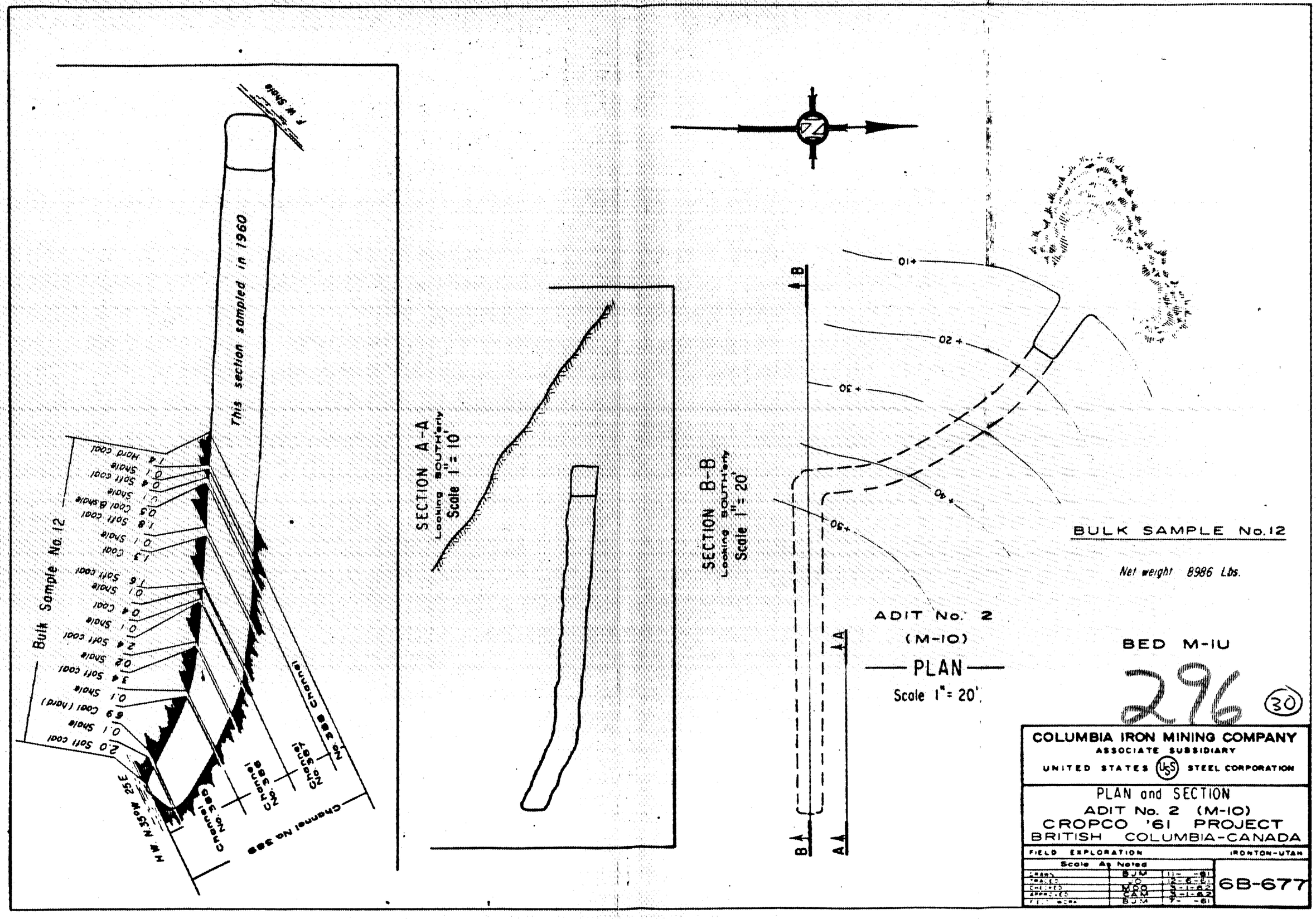
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

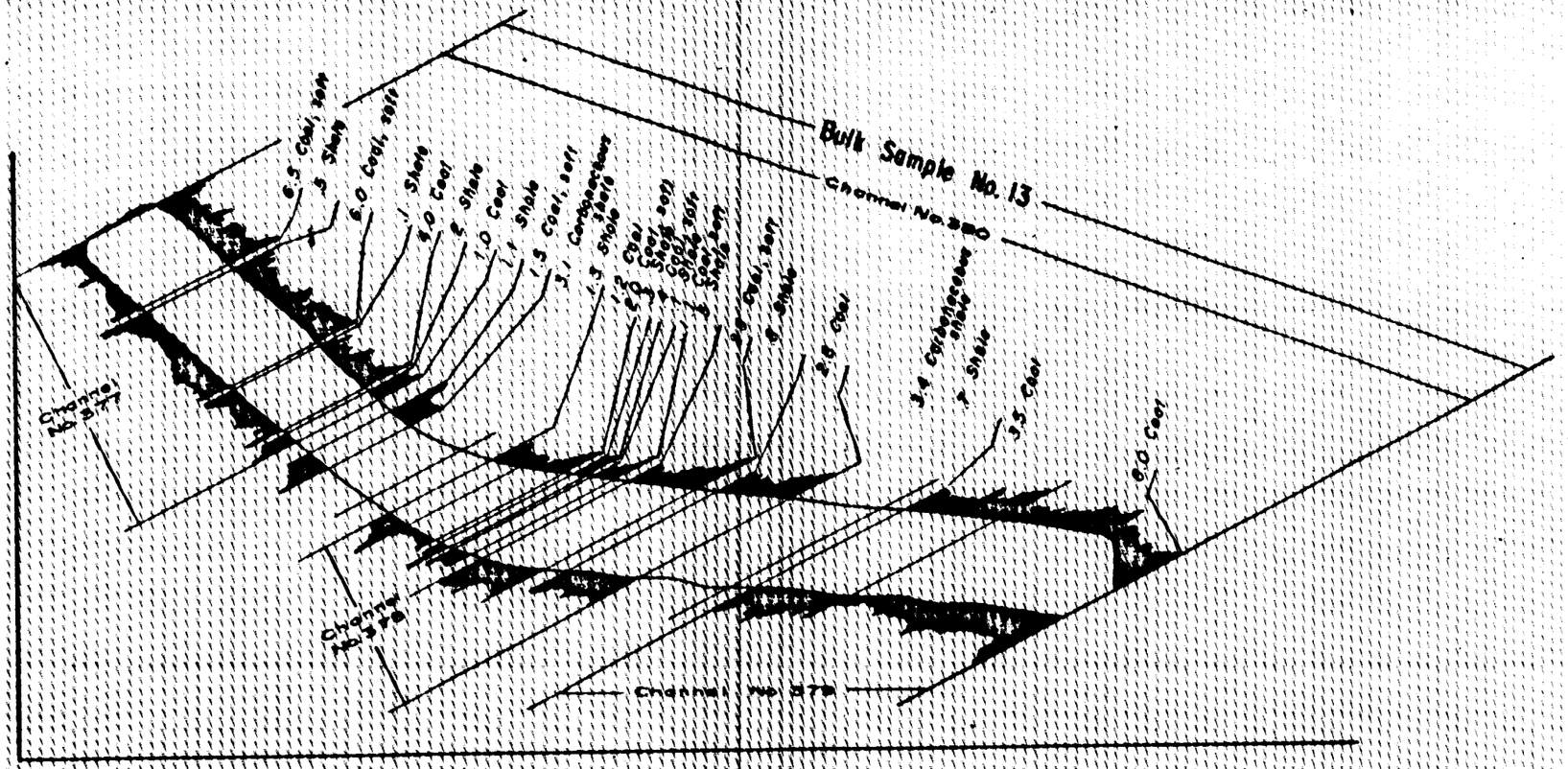
SECTION
No. 10 SEAM—MICHEL COLLIERY
CROPCO PROJECT
BRITISH COLUMBIA-CANADA

FIELD EXPLORATION — IRONTON-UTAH

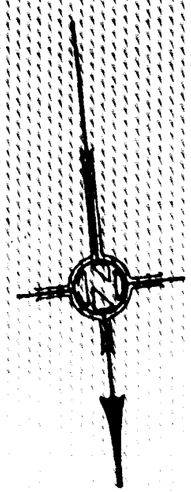
SCALE: As Shown

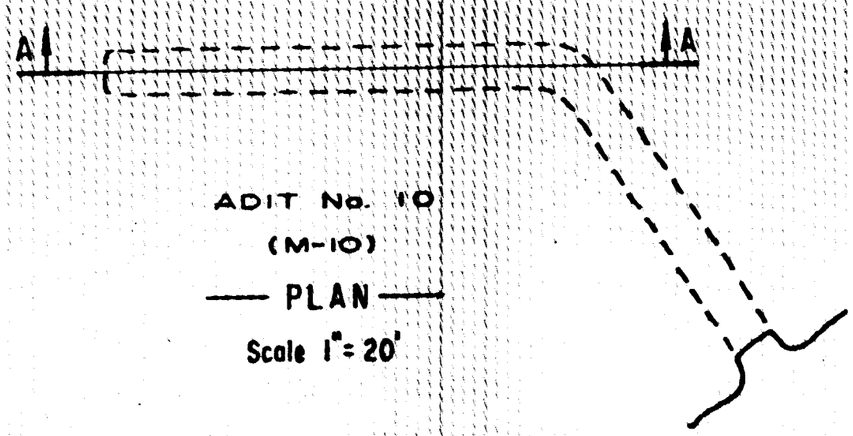
DRAWN	BW	1980	68-578
CHECKED			
APPROVED			
DATE	BW	1980	


This section sampled in 1960
Bulk Sample No. 12
2.0 Soft coal
0.1 Shale
6.9 Coal (hard)
0.1 Shale
3.4 Soft coal
0.2 Shale
2.4 Soft coal
0.1 Shale
0.4 Coal
1.6 Soft coal
0.1 Shale
1.3 Coal
0.1 Shale
1.8 Soft coal
0.3 Coal & shale
0.1 Shale
0.4 Soft coal
1.4 Hard coal
Channel No. 387
Channel No. 388
Channel No. 389
Channel No. 388
N.W. N.35°W 25E
SECTION A-A
Looking SOUTHerly
Scale 1" = 10'
SECTION B-B
Looking SOUTHerly
Scale 1" = 20'
+10
+20
+30
+30
+30
B
A
A
B
ADIT No. 2
(M-10)
PLAN
Scale 1" = 20'
BULK SAMPLE No. 12
Net weight 8986 Lbs.
BED M-IU
226
30
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION
PLAN and SECTION
ADIT No. 2 (M-10)
CROPCO '61 PROJECT
BRITISH COLUMBIA-CANADA
FIELD EXPLORATION
IRONTON-UTAH
Scale As Noted
6B-677



SECTION A-A
Looking SOUTHERLY
Scale 1" = 10'





ADIT No. 10
(M-10)
— PLAN —
Scale 1" = 20'

BULK SAMPLE No. 13

Net weight 7584 Lbs.

BED M-3

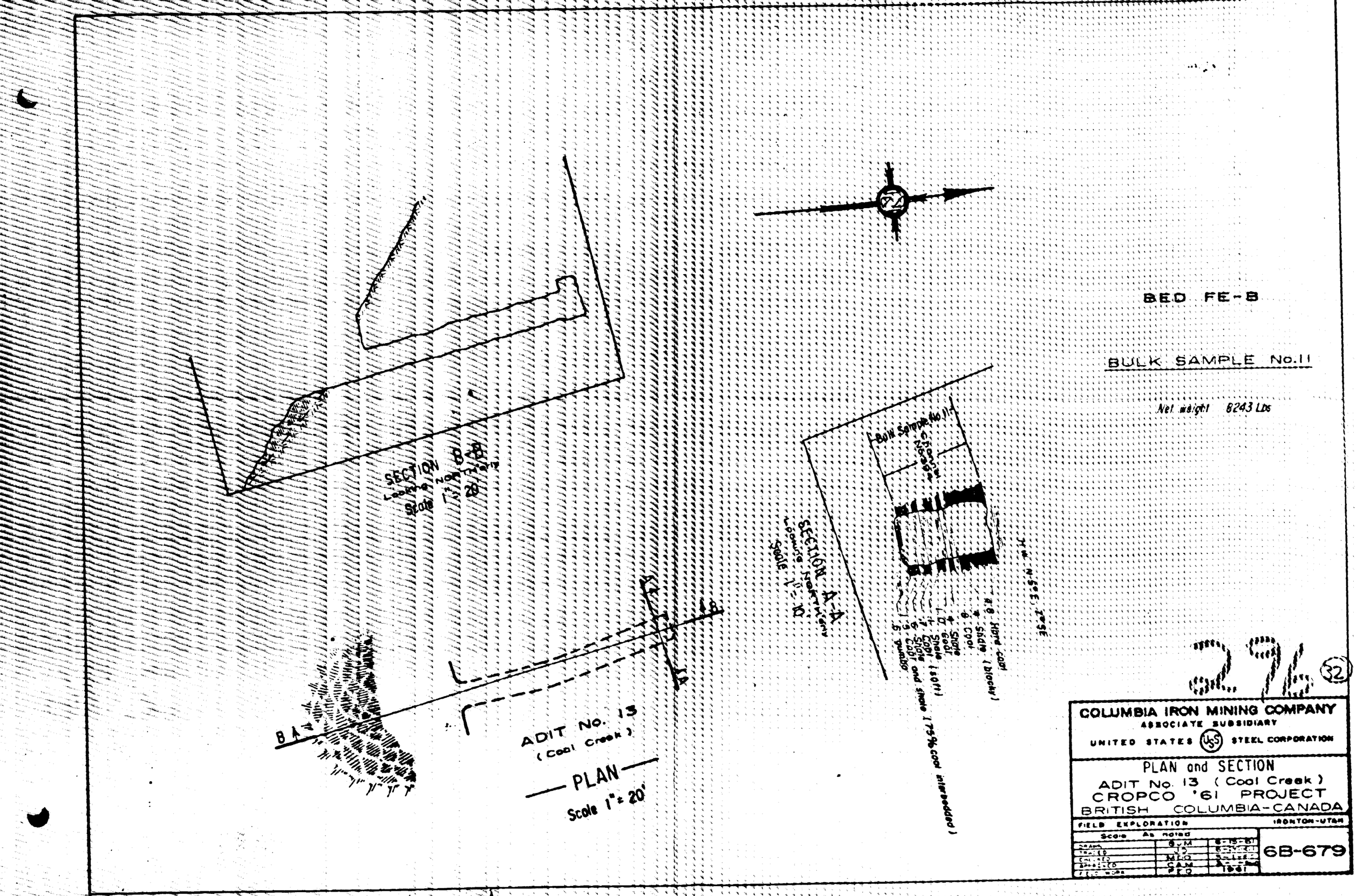
(31)

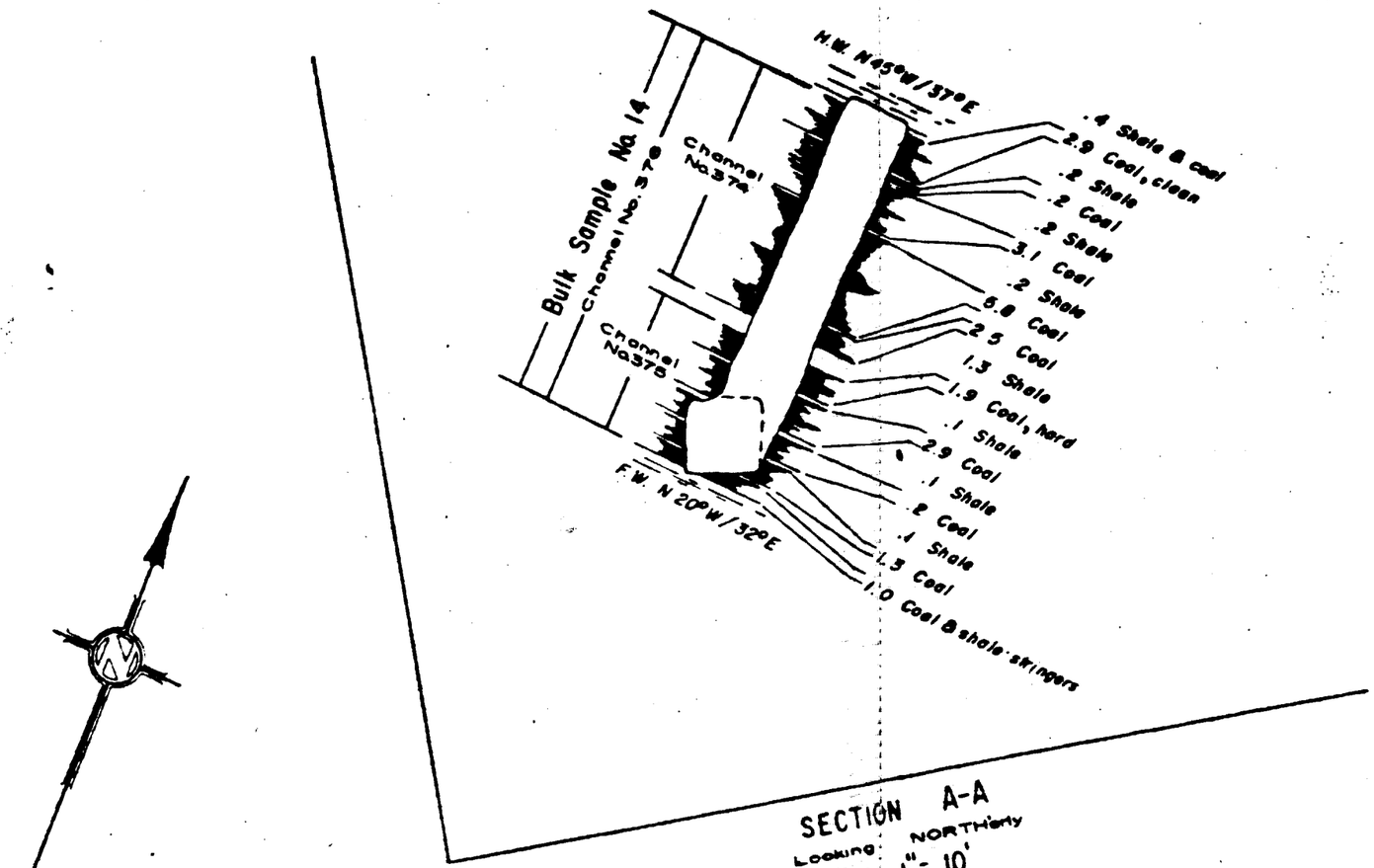
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

PLAN and SECTION
ADIT No. 10 (M-10)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

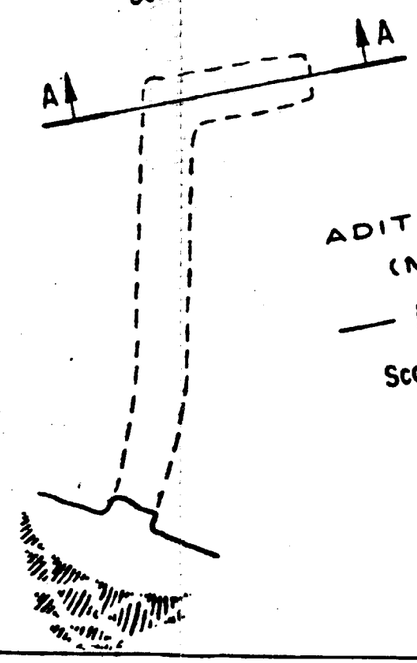
FIELD EXPLORATION — IRONTON-UTAH

DRAWN	MDO	12-8-61	6B-678
TRACED	JO	12-8-61	
CHECKED	MDO	12-8-61	
APPROVED	CAW	12-8-61	
[illegible]	PK	1961	


BED FE-B
BULK SAMPLE No.11
Net weight 8243 Lbs
Bulk Sample No 11
SECTION B-B
Looking North
Scale 1" = 20'
SECTION A-A
Looking Northwest
Scale 1" = 10'
B
A
ADIT No. 13
(Cool Creek)
PLAN
Scale 1" = 20'
8.8 Hard coal
7 Shale (blocky)
6 Coal
5 Shale
4 Coal
3 Shale (soft)
2 Coal
1 Shale and shale 75% coal interbedded)
5 pumice
N.S.E. I.S.E.
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION
PLAN and SECTION
ADIT No. 13 (Cool Creek)
CROPCO '61 PROJECT
BRITISH COLUMBIA-CANADA
FIELD EXPLORATION
IRONTON-UTAH
Scale As noted
DRAWN B.J.M. 8-15-61
TRACED
CHECKED MEAD
APPROVED D.A.M.
FIELD WORK P.G.
6B-679



SECTION A-A
Looking NORTHerly
Scale 1" = 10'



ADIT No. 14
(M-15)
— PLAN —
Scale 1" = 20'

BED M-4

BULK SAMPLE No. 14

Net Weight 8574 Lbs.

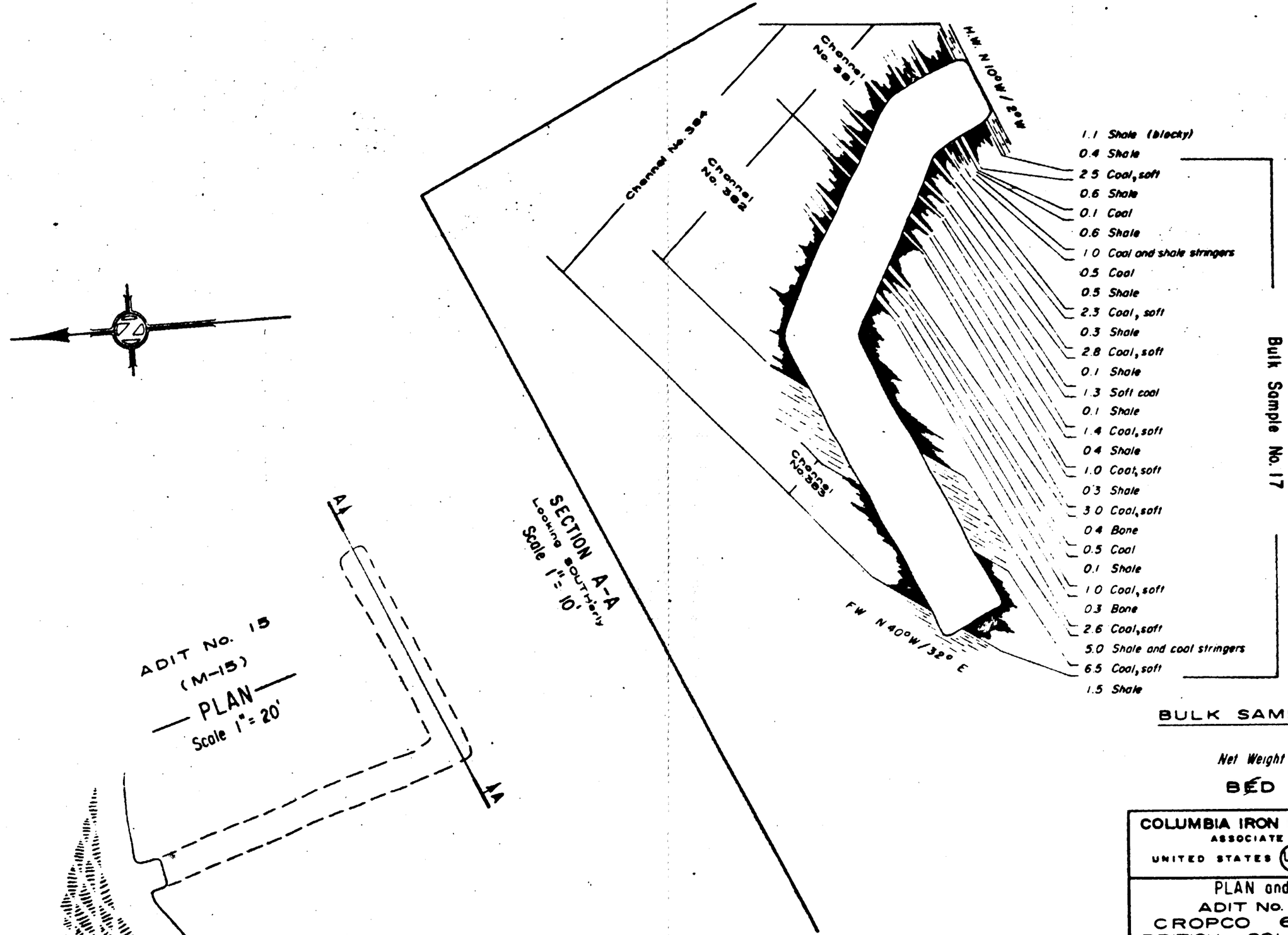
296 (33)

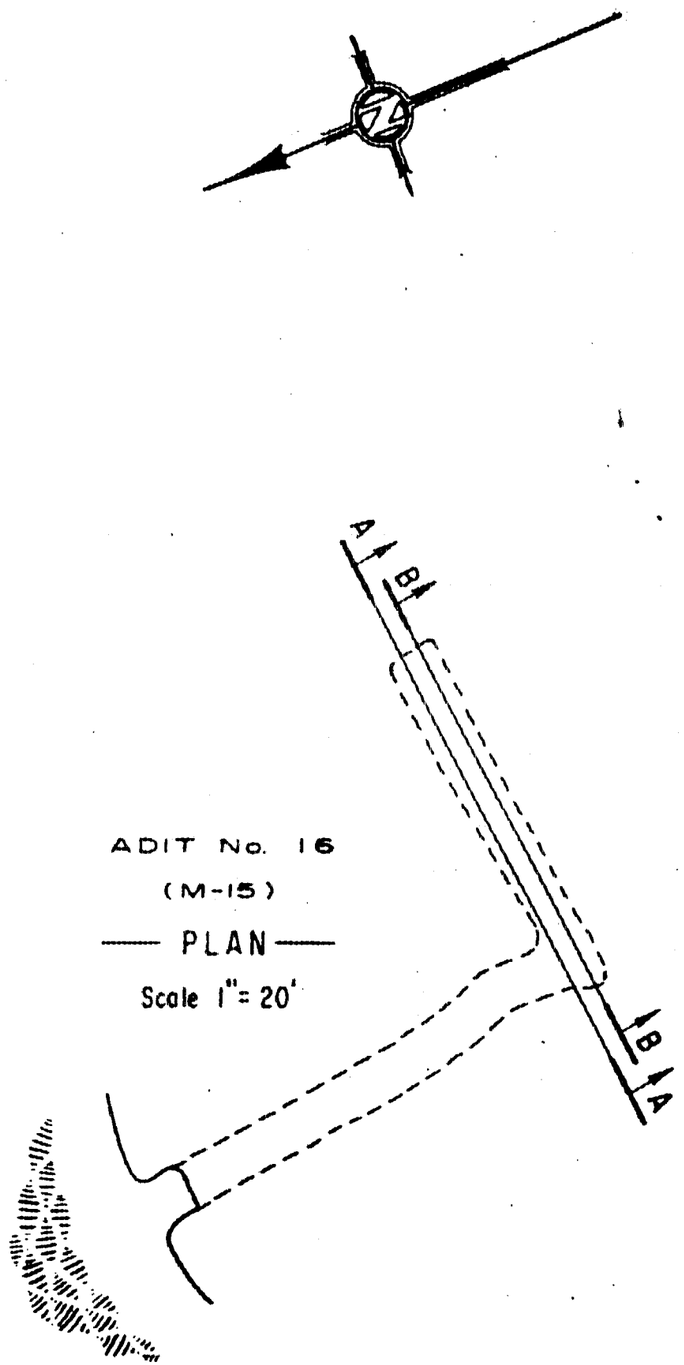
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

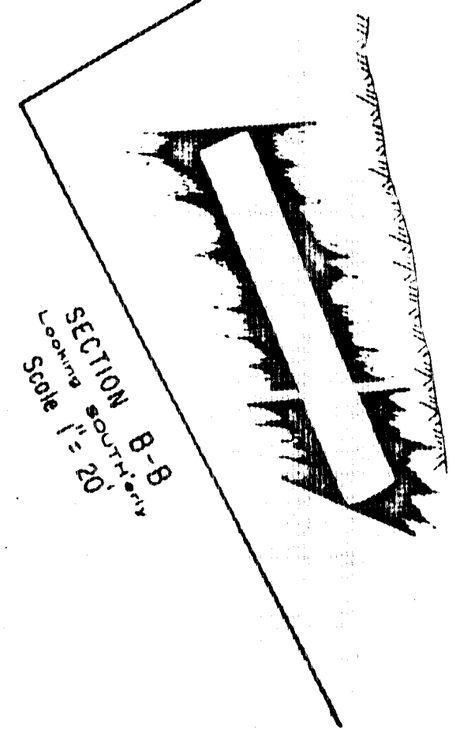
PLAN and SECTION
ADIT No. 14 (M-15)
CROPCO 61 PROJECT
BRITISH COLUMBIA — CANADA

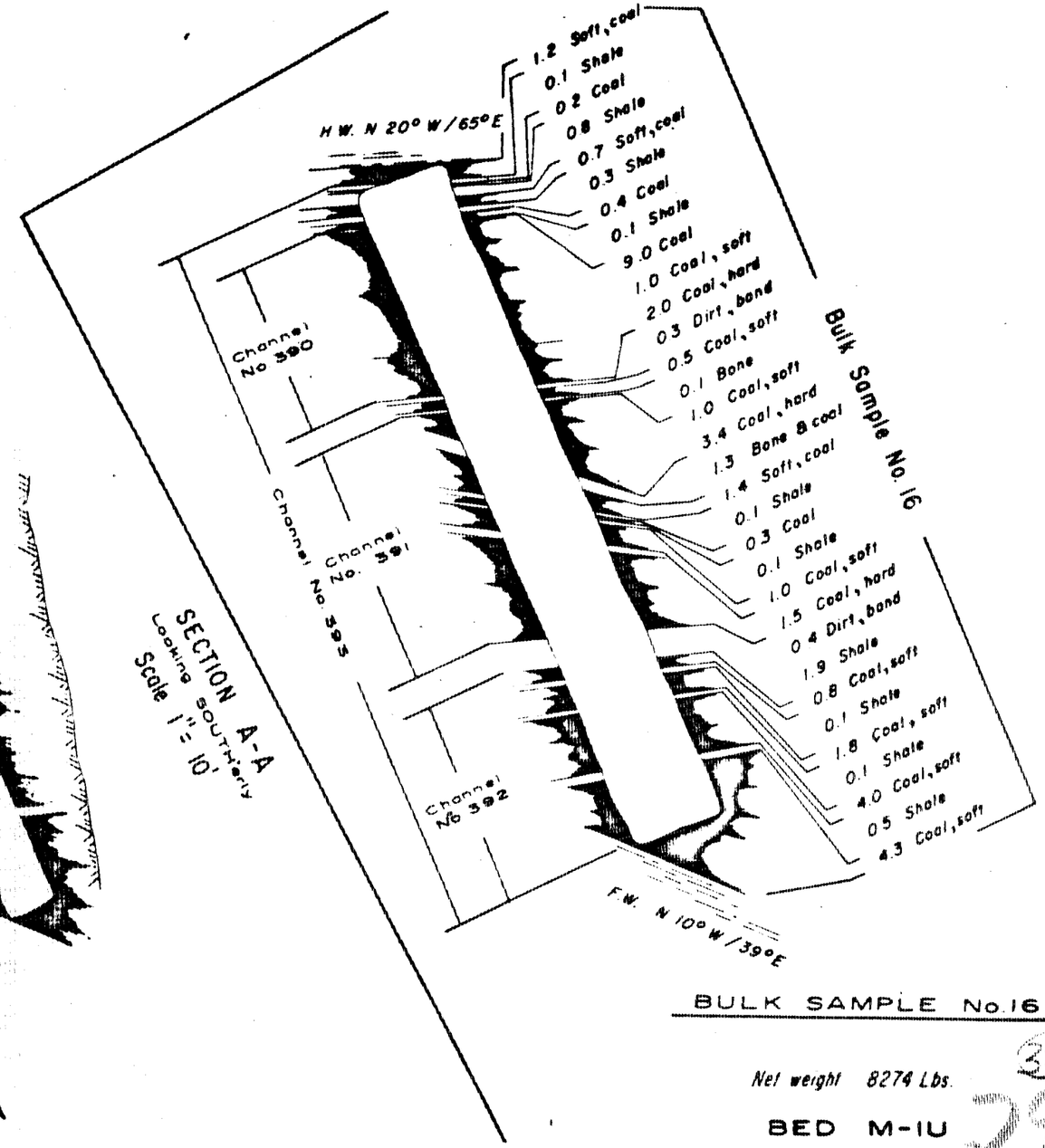
FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	7-19-61	6B-680
TRACED	JO	7-25-61	
CHECKED	WDG	8-1-62	
APPROVED	CAM	8-20-62	
REVISION	PAD	1961	


ADIT No. 15
(M-15)
PLAN
Scale 1" = 20'
A
A
SECTION A-A
Looking Southerly
Scale 1" = 10'
Channel No. 384
Channel No. 382
Channel No. 381
Channel No. 383
H.W. N 10°W / 20°W
FW N 40°W / 32° E
1.1 Shale (blocky)
0.4 Shale
2.5 Coal, soft
0.6 Shale
0.1 Coal
0.6 Shale
1.0 Coal and shale stringers
0.5 Coal
0.5 Shale
2.3 Coal, soft
0.3 Shale
2.8 Coal, soft
0.1 Shale
1.3 Soft coal
0.1 Shale
1.4 Coal, soft
0.4 Shale
1.0 Coal, soft
0.3 Shale
3.0 Coal, soft
0.4 Bone
0.5 Coal
0.1 Shale
1.0 Coal, soft
0.3 Bone
2.6 Coal, soft
5.0 Shale and coal stringers
6.5 Coal, soft
1.5 Shale
Bulk Sample No. 17
BULK SAMPLE No. 17
34
Net Weight 8552.5 Lbs.
BED M-2
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION
PLAN and SECTION
ADIT No. 15 (M-15)
CROPCO 61 PROJECT
BRITISH COLUMBIA-CANADA
FIELD EXPLORATION
IRONTON-UTAH
SCALE AS NOTED
BJM
VO
MDO
CAM
PED
1961
6B-681







BULK SAMPLE No. 16

Net weight 8274 Lbs.

BED M-IU

35

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

PLAN and SECTION
ADIT No. 16 (M-15)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

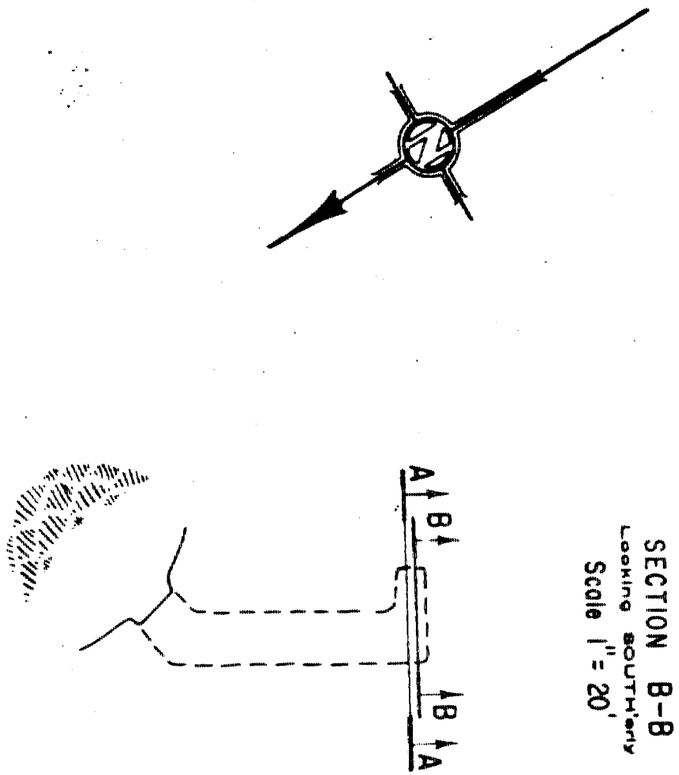
FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	8-16-61	6B-682
TRACED	JO	8-16-61	
SCALED	MDD	8-16-61	
APPROVED	CAM	8-16-61	
FIELD CHIEF	CAF	8-16-61	

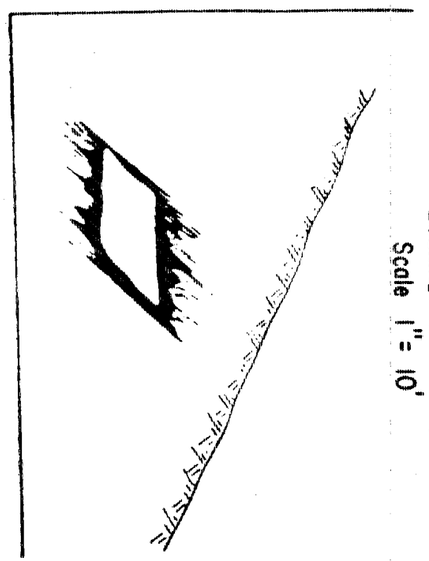
BED M-1L

BULK SAMPLE No.15

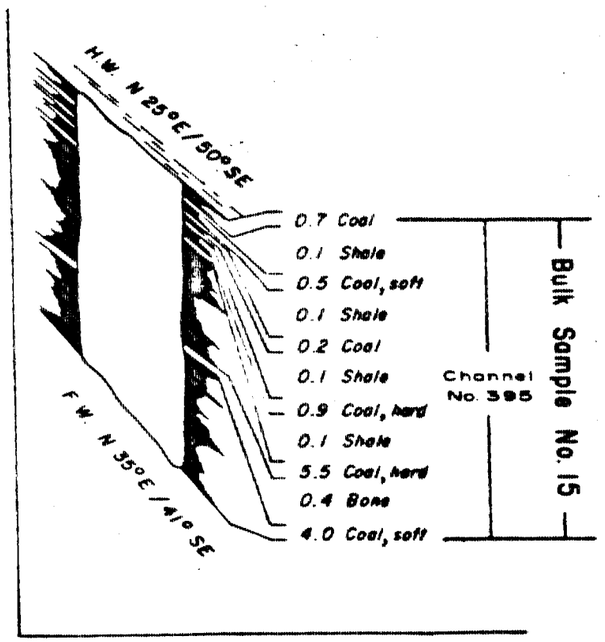
Net weight 9239 Lbs.



ADIT No. 17
(M-O)
PLAN
Scale 1" = 20'



SECTION B-B
Looking SOUTHerly
Scale 1" = 20'



SECTION A-A
Looking SOUTHerly
Scale 1" = 10'

36

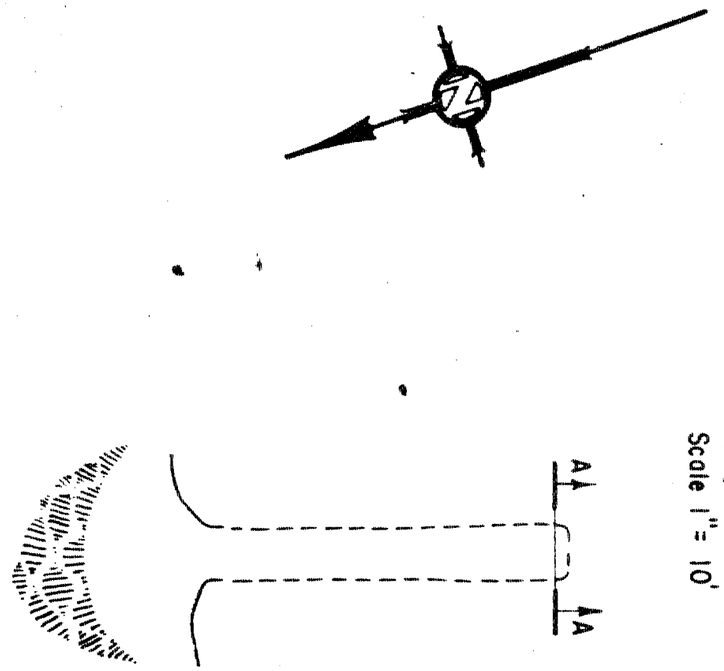
276

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

PLAN and SECTION
ADIT No. 17 (M-O)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	8-3-61	6B-683
TRACED	HD	8-15-61	
CHECKED	MDO	8-16-61	
APPROVED	CAM	8-16-61	
FIELD WORK	FED	1961	



ADIT No. 18

(M – O)

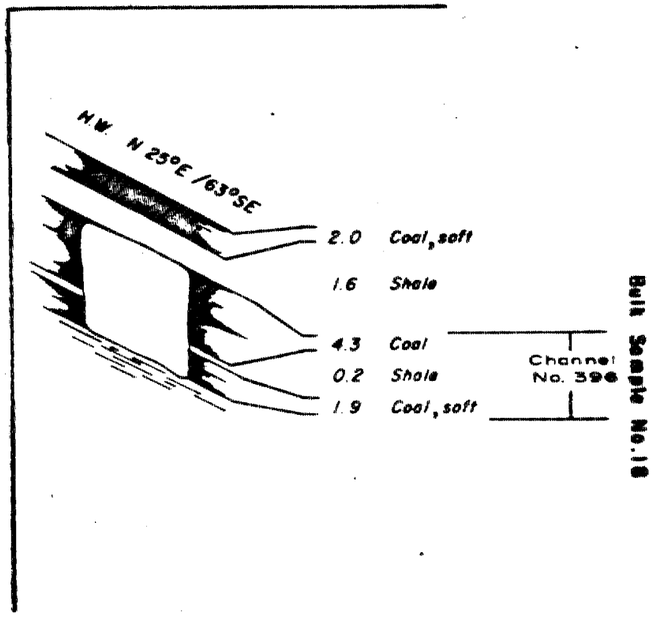
PLAN

Scale 1" = 20'

SECTION A-A

Looking SOUTHerly

Scale 1" = 10'



BED M-2

BULK SAMPLE No. 18

Net weight 8596 Lbs.

296 (37)

COLUMBIA IRON MINING COMPANY

ASSOCIATE SUBSIDIARY

UNITED STATES STEEL CORPORATION

PLAN and SECTION

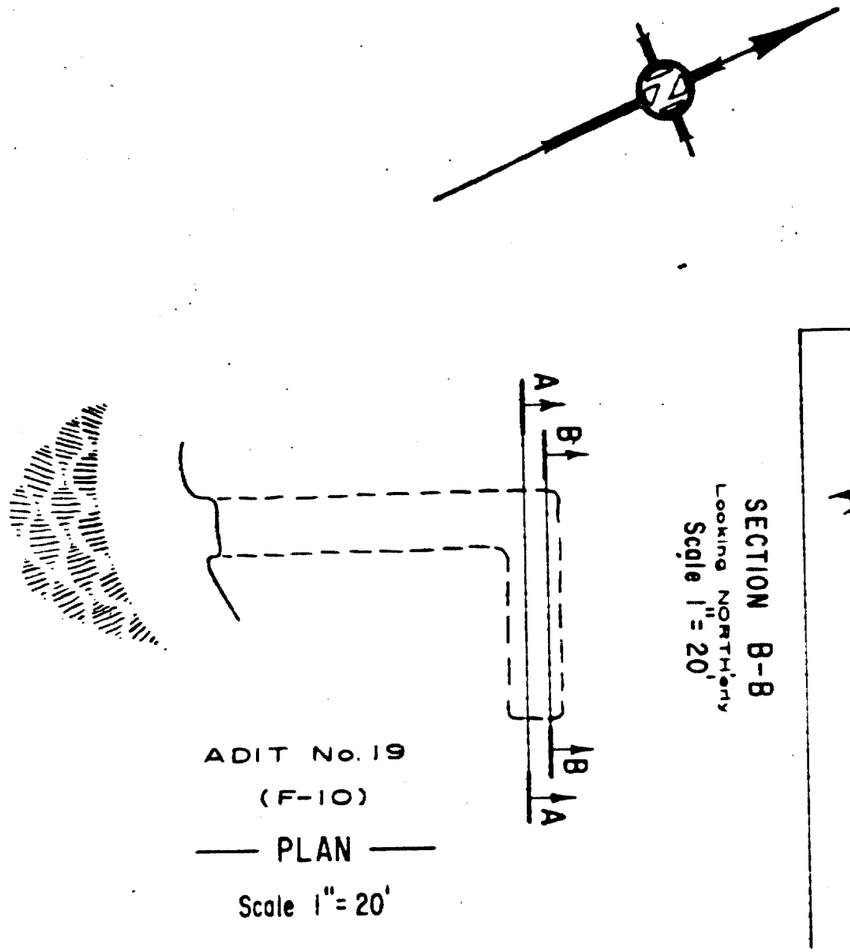
ADIT No. 18 (M–O)

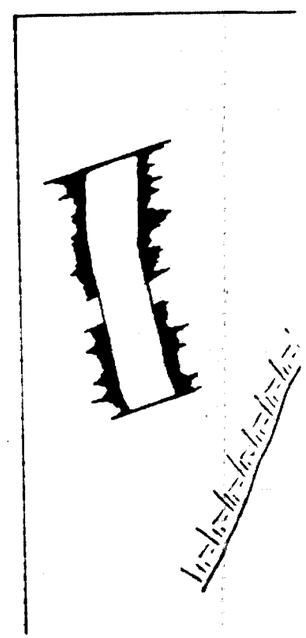
CROPCO '61 PROJECT

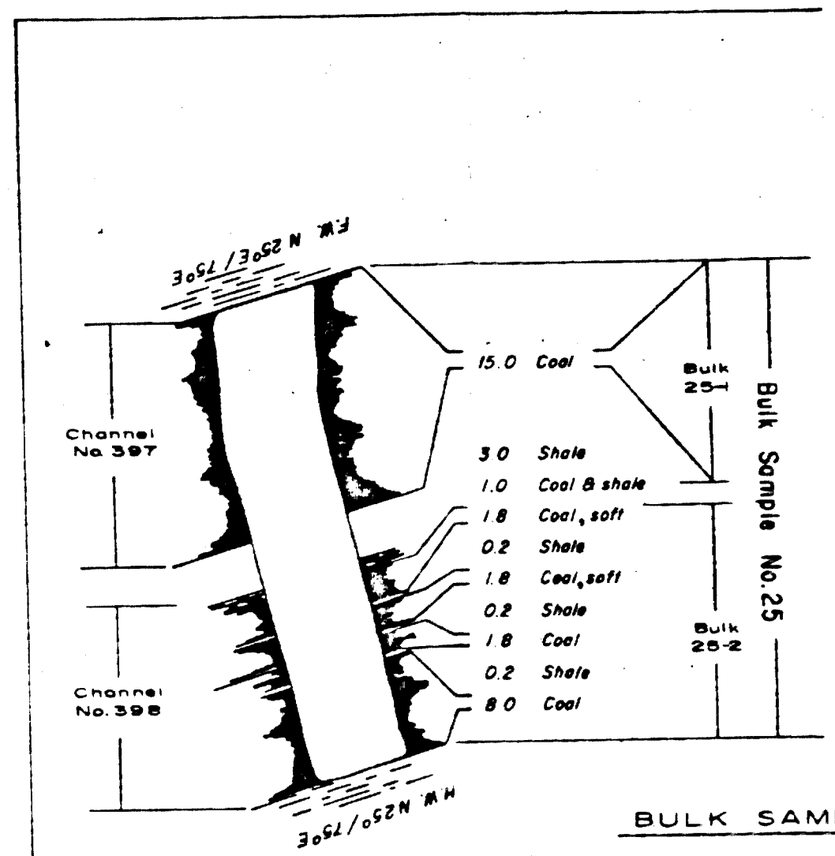
BRITISH COLUMBIA – CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	8-8-61	6B-684
TRACED	JO	[illegible]	
CHECKED	MDO	[illegible]	
APPROVED	CAM	[illegible]	
FIELD WORK	PED	1962	







BULK SAMPLE No. 25

Net weight No. 25-1 8282 Lbs.
Net weight No. 25-2 3892 Lbs.

38

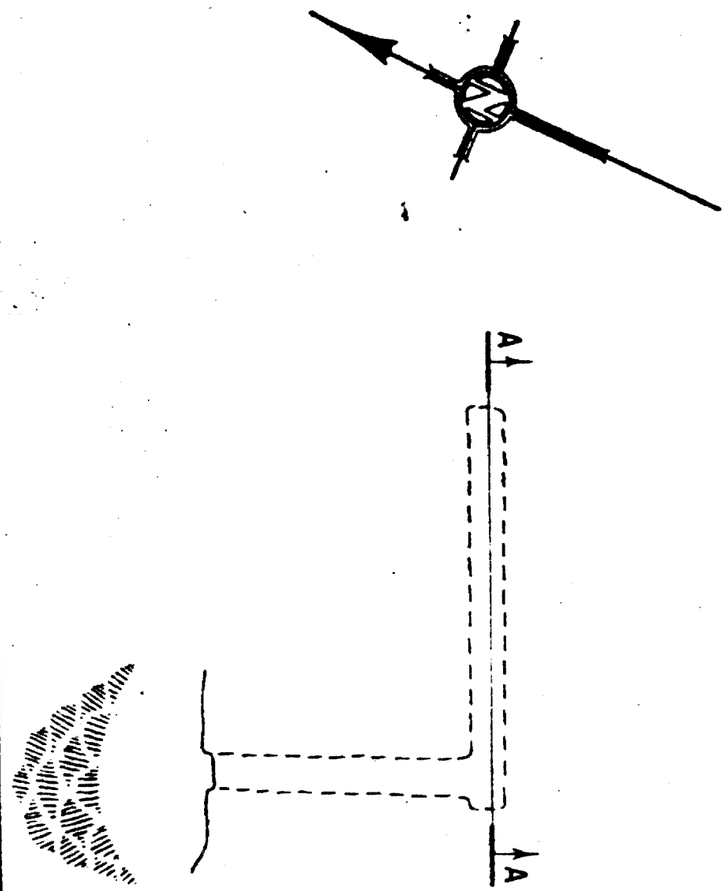
BED FE-1

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

PLAN and SECTION
ADIT No. 19 (F-10)
CROPCO 61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	6-23-61	6B-685
TRACED	JC	6-26-61	
CHECKED	MRD	6-26-61	
APPROVED	CAM	6-26-61	
FIELD WORK	FED	1961	

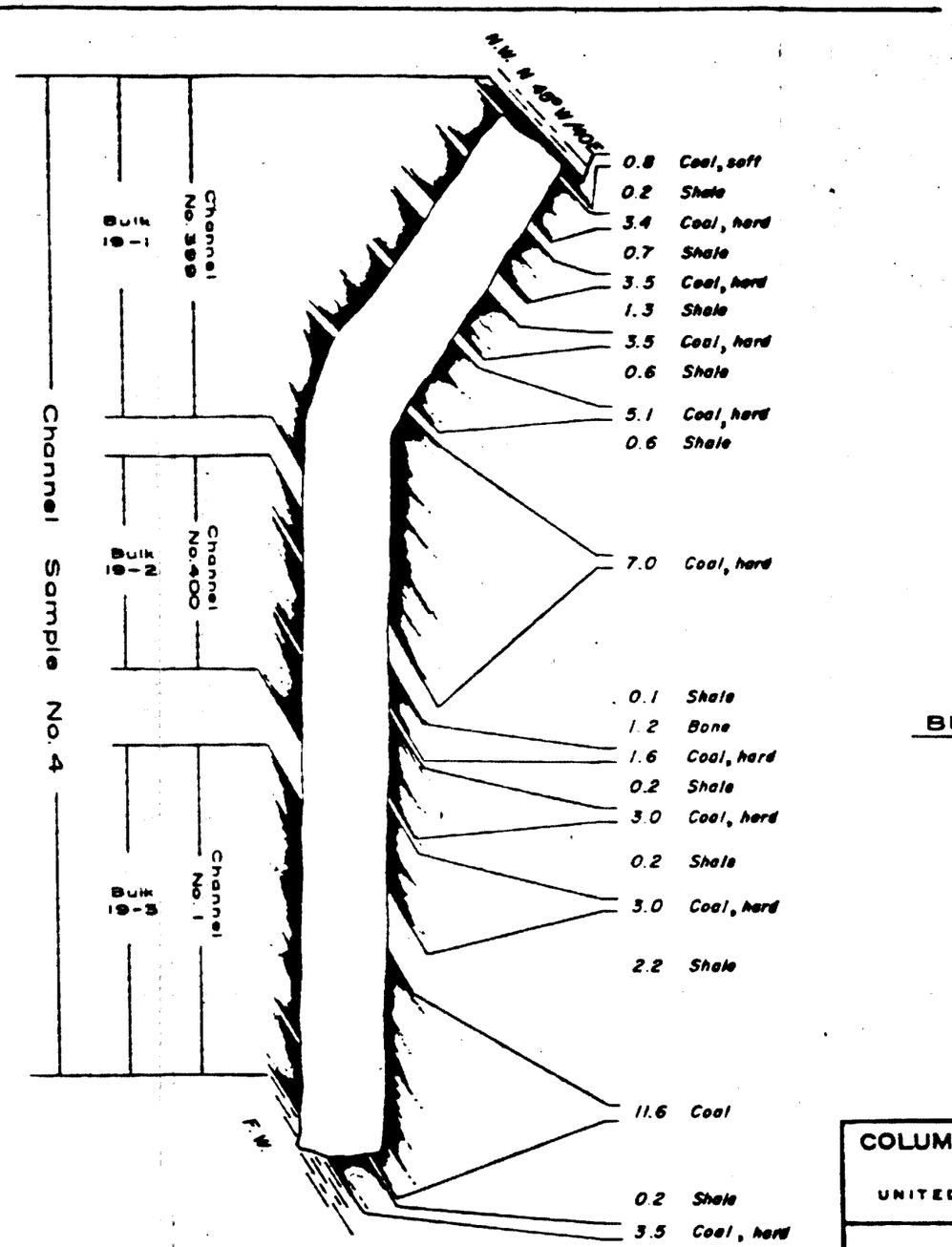


ADIT No. 21
(M-20)

— PLAN —

Scale 1" = 20

SECTION A-A
Looking SOUTHerly
Scale 1" = 10'



BED M-1

BULK SAMPLE No. 19

Net weight No. 19-1 3960 Lbs.
Net weight No. 19-2 3394 Lbs.
Net weight No. 19-3 4009 Lbs.

(39)

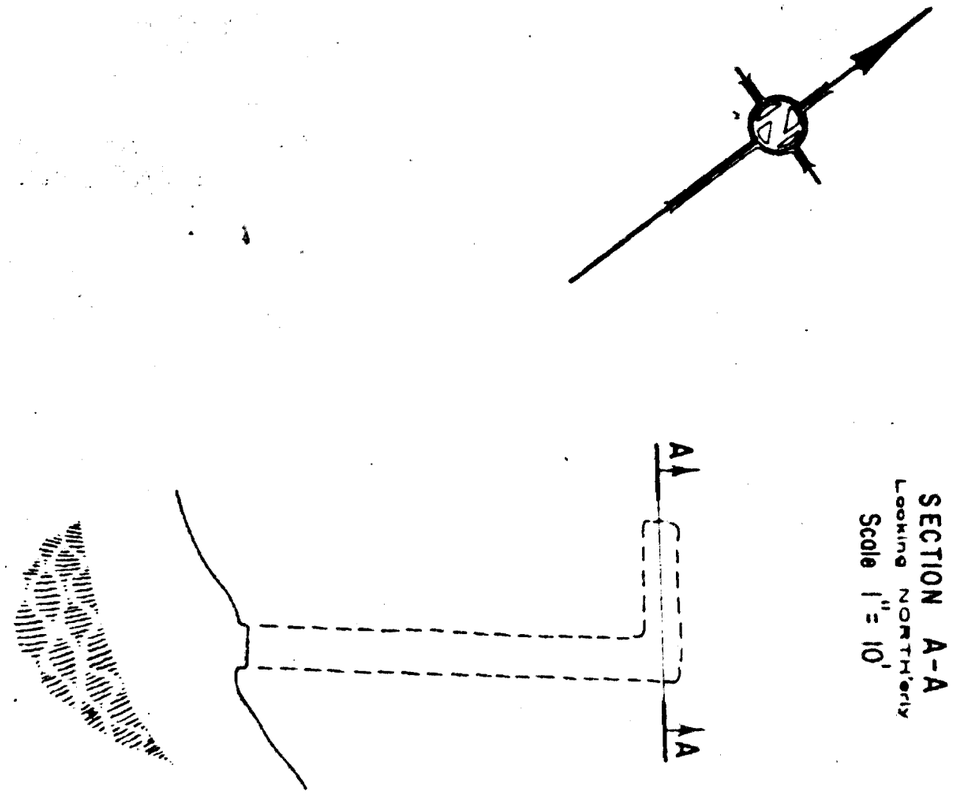
276

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

PLAN and SECTION
ADIT No. 21 (M-20)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	8-8-61	6B-686
TRACED	JO	8-15-61	
CHECKED	MOO	8-15-61	
APPROVED	CAM	8-24-62	
FIELD WORK	FED	1962	

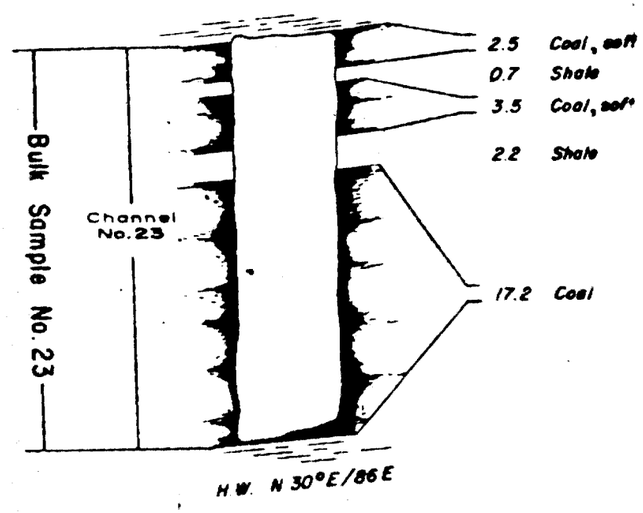


ADIT No. 22
(F-10)

— PLAN —

Scale 1" = 20'

SECTION A-A
Looking NORTHerly
Scale 1" = 10'



BED FE-2

BULK SAMPLE No. 23

Net weight 8131 Lbs.

(40)

276

COLUMBIA IRON MINING COMPANY
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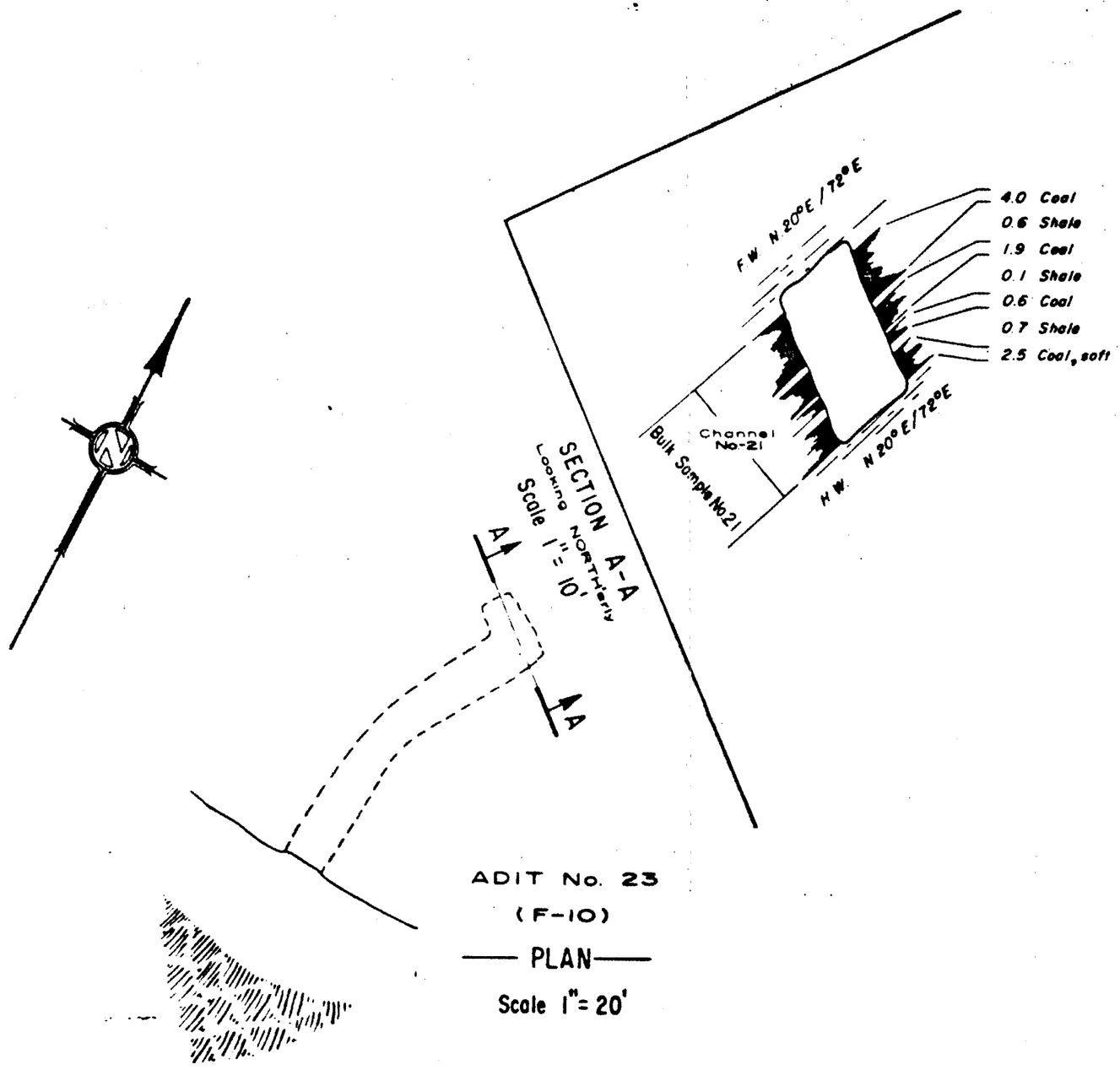
UNITED STATES STEEL CORPORATION

PLAN and SECTION
ADIT No. 22 (F-10)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	8-9-61	6B-687
TRACED	JO	8-16-61	
CHECKED	MOD	8-15-62	
APPROVED	CAM	8-18-62	
FIELD WORK	FED	1962	



BED FE-5

BULK SAMPLE No. 21

Net weight 8116 Lbs.

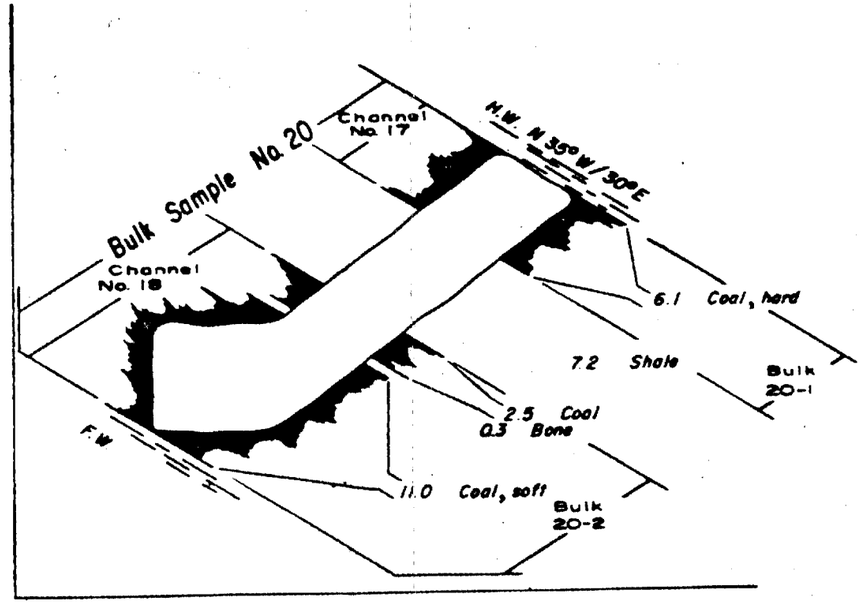
296 (41)

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

PLAN and SECTION
ADIT No. 23 (F-10)
CROPCO '61 PROJECT
BRITISH COLUMBIA - CANADA

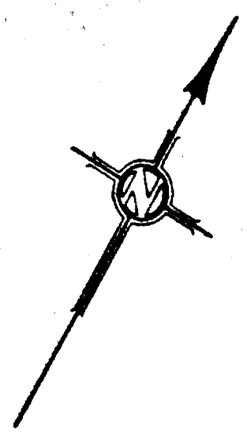
FIELD EXPLORATION — IRONTON-UTAH

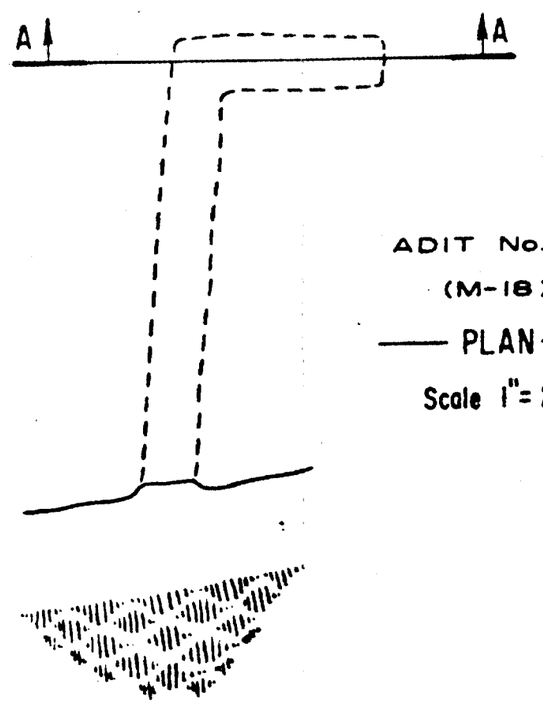
DRAWN	B.J.M.		6B-688
TRACED	J.O.	3-19-62	
CHECKED	M.C.O.	3-1-62	
APPROVED	C.A.M.	3-[illegible]-62	
FIELD WORK	F.E.D.	1961	



SECTION A-A
Looking NORTHerly
Scale 1" = 10'

BED M-5





ADIT No. 24
(M-18)
— PLAN —
Scale 1" = 20'

BULK SAMPLE No. 20

Net weight No. 20-1 8664 Lbs.
Net weight No. 20-2 8737 Lbs.

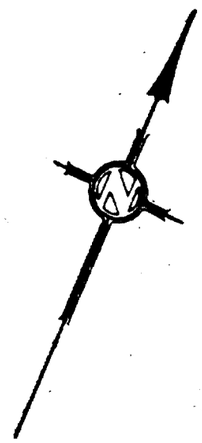
296 (42)

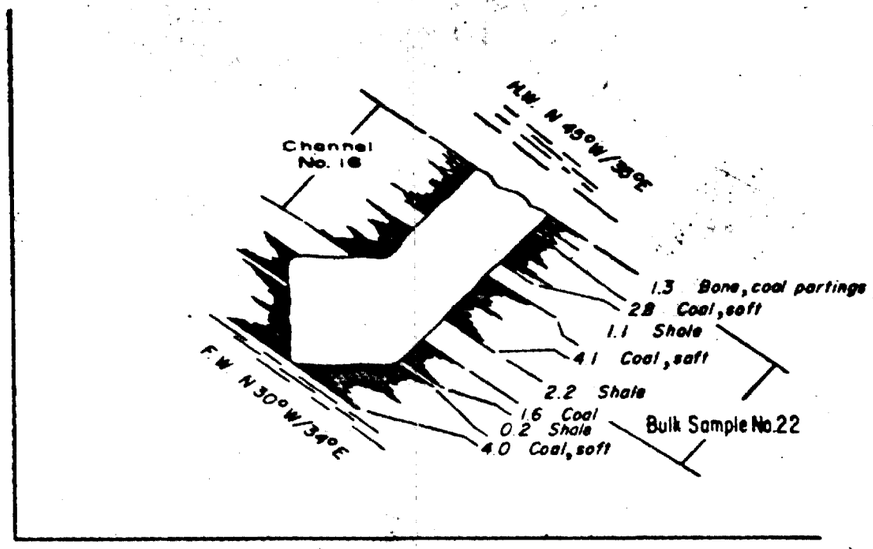
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

PLAN and SECTION
ADIT No. 24 (M-18)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	8-15-61	6B-689
TRACED	JJ	8-15-61	
CHECKED	MRD	8-15-61	
APPROVED	FAM	8-15-61	
FIELD WORK	FED	1961	





SECTION A-A

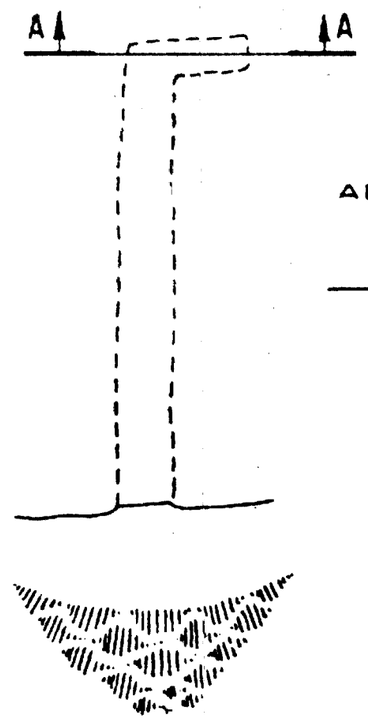
Looking NORTH'erly

Scale 1" = 10'

BED M-4

BULK SAMPLE No.22

Net weight 8379 Lbs.



ADIT No. 25

(M-18)

PLAN

Scale 1" = 20'

296 (43)

COLUMBIA IRON MINING COMPANY

ASSOCIATE SUBSIDIARY

UNITED STATES USS STEEL CORPORATION

PLAN and SECTION

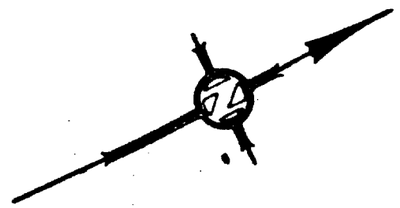
ADIT No. 25 (M-18)

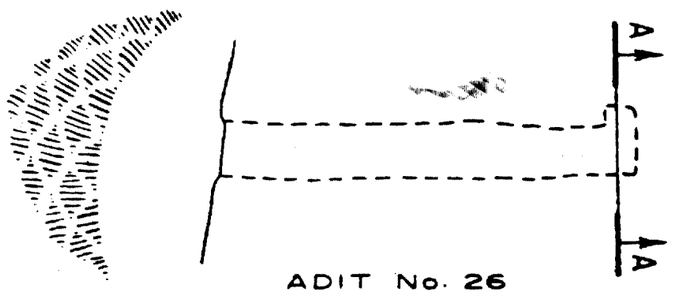
CROPCO '61 PROJECT

BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	10-16-61	6B-690
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	
[illegible]	CAM	[illegible]	
[illegible]	FED	1961	





ADIT No. 26

(F-10)

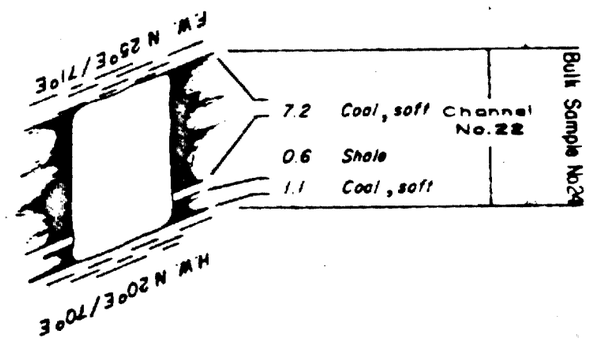
—— PLAN ——

Scale 1" = 20'

SECTION A-A

Looking NORTHerly

Scale 1" = 10'



BED FE-4

BULK SAMPLE No. 24

Net weight 9043 Lbs

1296 (44)

COLUMBIA IRON MINING COMPANY

ASSOCIATE SUBSIDIARY

UNITED STATES STEEL CORPORATION

PLAN and SECTION

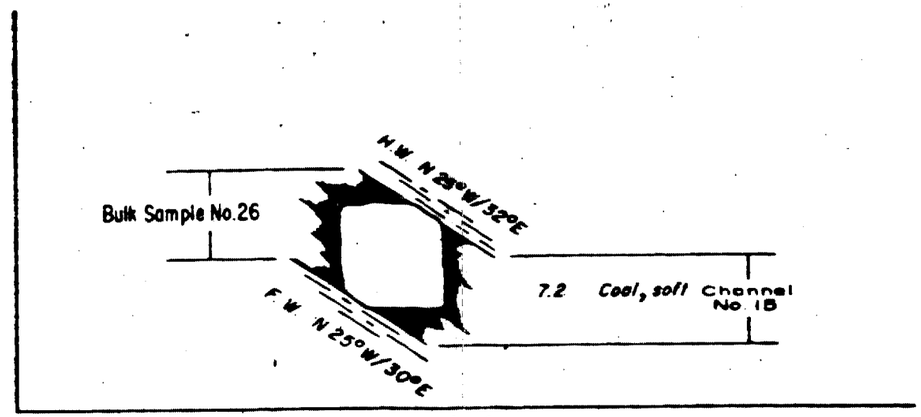
ADIT No. 26 (F-10)

CROPCO 61 PROJECT

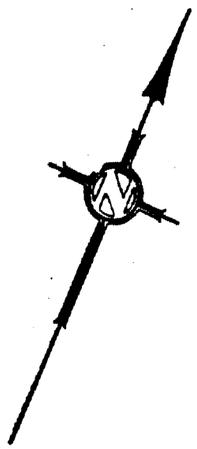
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

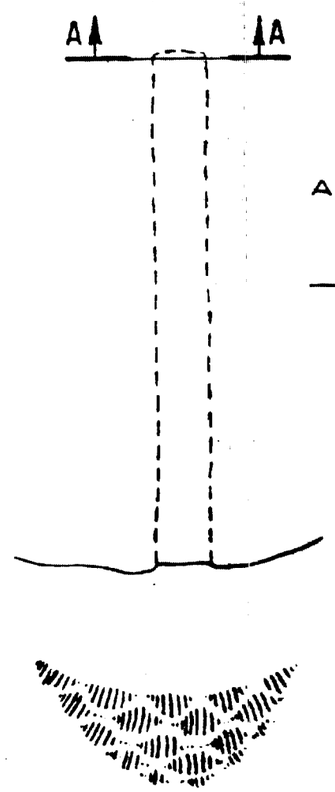
DRAWN	BJM	10-5-61	6B-691
TRACED	JO		
CHECKED	MDR		
APPROVED	CAM		
FIELD WORK	F.E.D.	1961	



SECTION A-A
Looking NORTH'erly
Scale 1" = 10'



BED M-6



ADIT No. 28
(M-18)
— PLAN —
Scale 1" = 20'

BULK SAMPLE No. 26

Net weight 8265 Lbs.

(45)

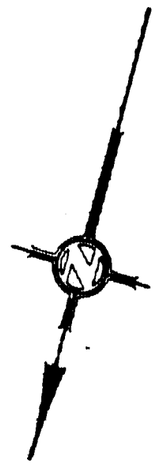
225

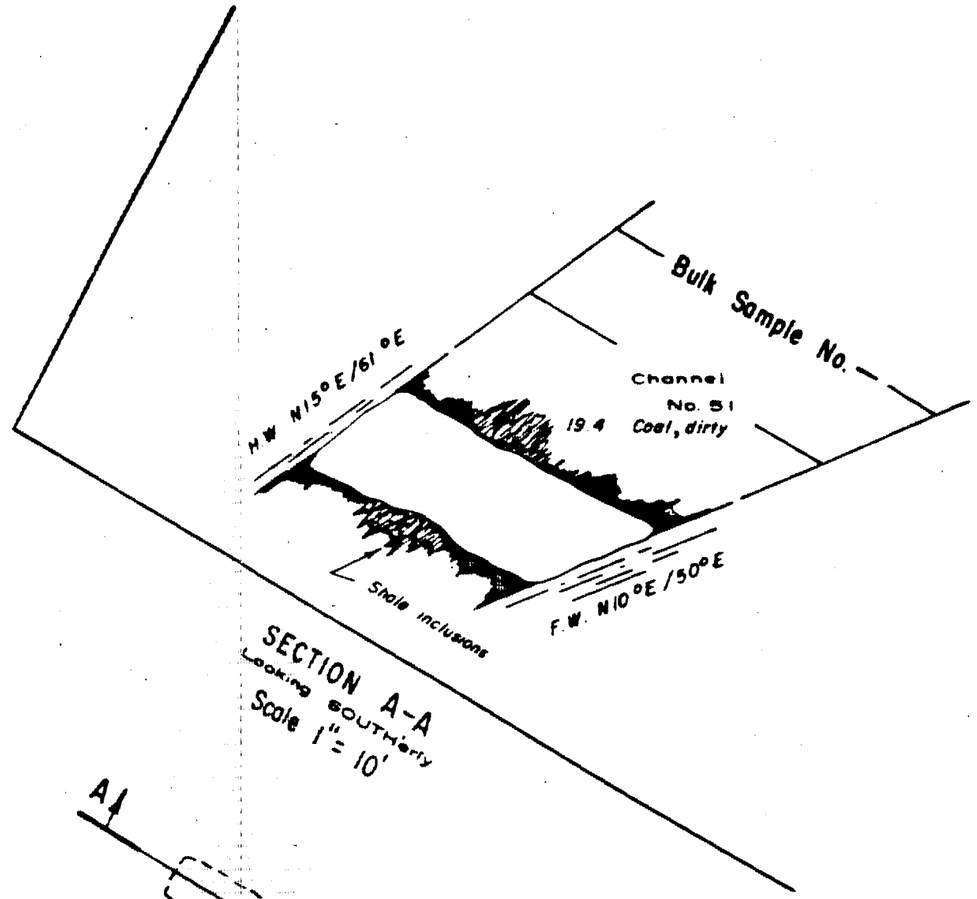
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES STEEL CORPORATION

PLAN and SECTION
ADIT No. 28 (M-18)
CROPCO 61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	10-10-61	6B-692
TRACED	JO	5-20-62	
CHECKED	MDD	5-20-62	
APPROVED	CAM	5-[illegible]-62	
FIELD WORK	FED	1961	



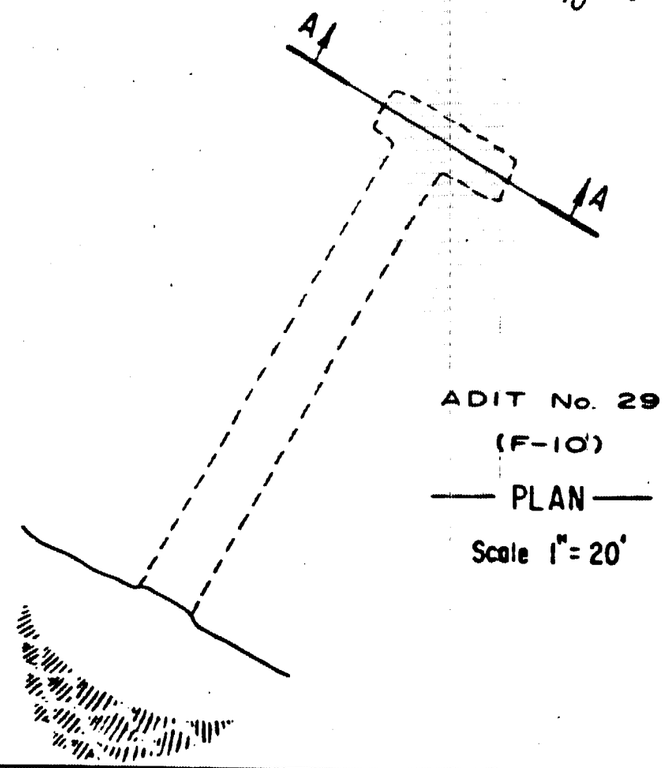


SECTION A-A
Looking SOUTHerly
Scale 1" = 10'

BED FE-7

BULK SAMPLE No. —

Net weight (Not shipped)



ADIT No. 29
(F-10)
— PLAN —
Scale 1" = 20'

46

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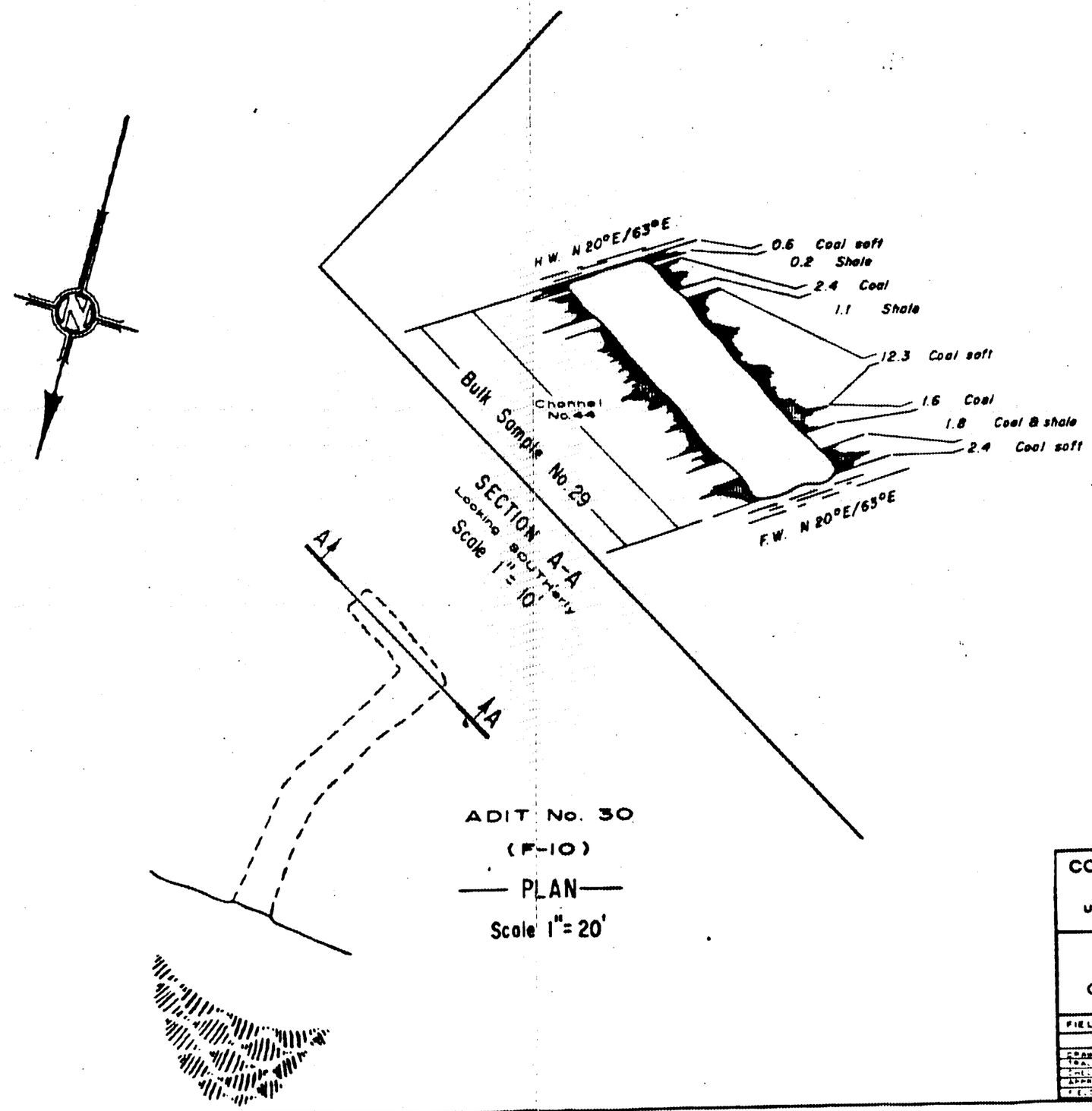
COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

PLAN and SECTION
ADIT No. 29 (F-10)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	11-8-61	6B-693
TRACED	JO	12-20-62	
CHECKED	WDO	12-20-62	
APPROVED	CAM	1-[illegible]-63	
[illegible]	BED	[illegible]	



BED FE-8

BULK SAMPLE No. 29

Net weight 8582 Lbs.

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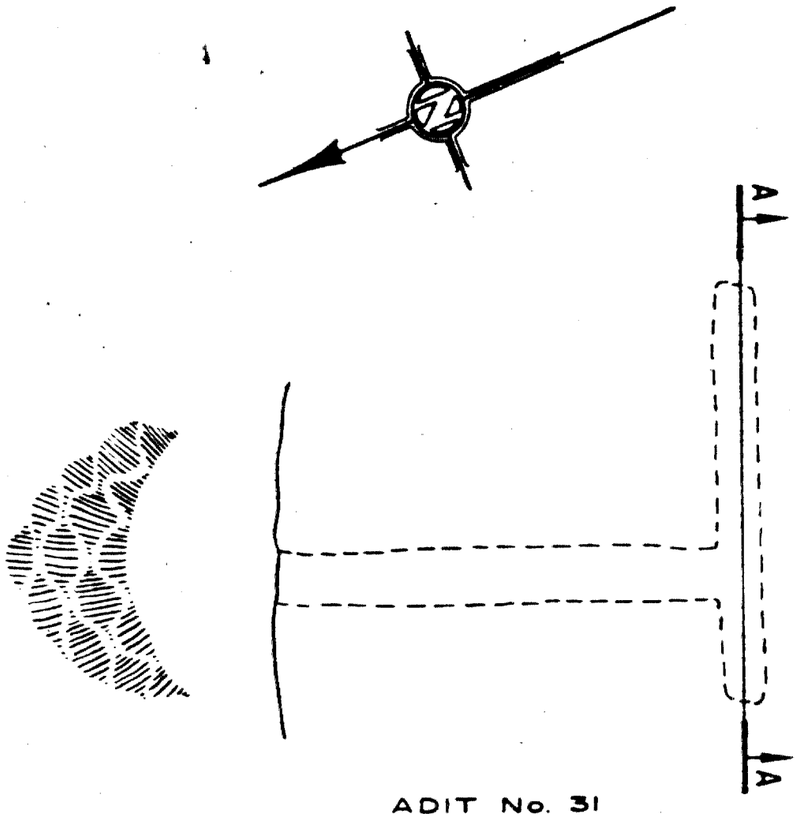
UNITED STATES STEEL CORPORATION

PLAN and SECTION
ADIT No. 30 (F-10)
CROPCO 61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

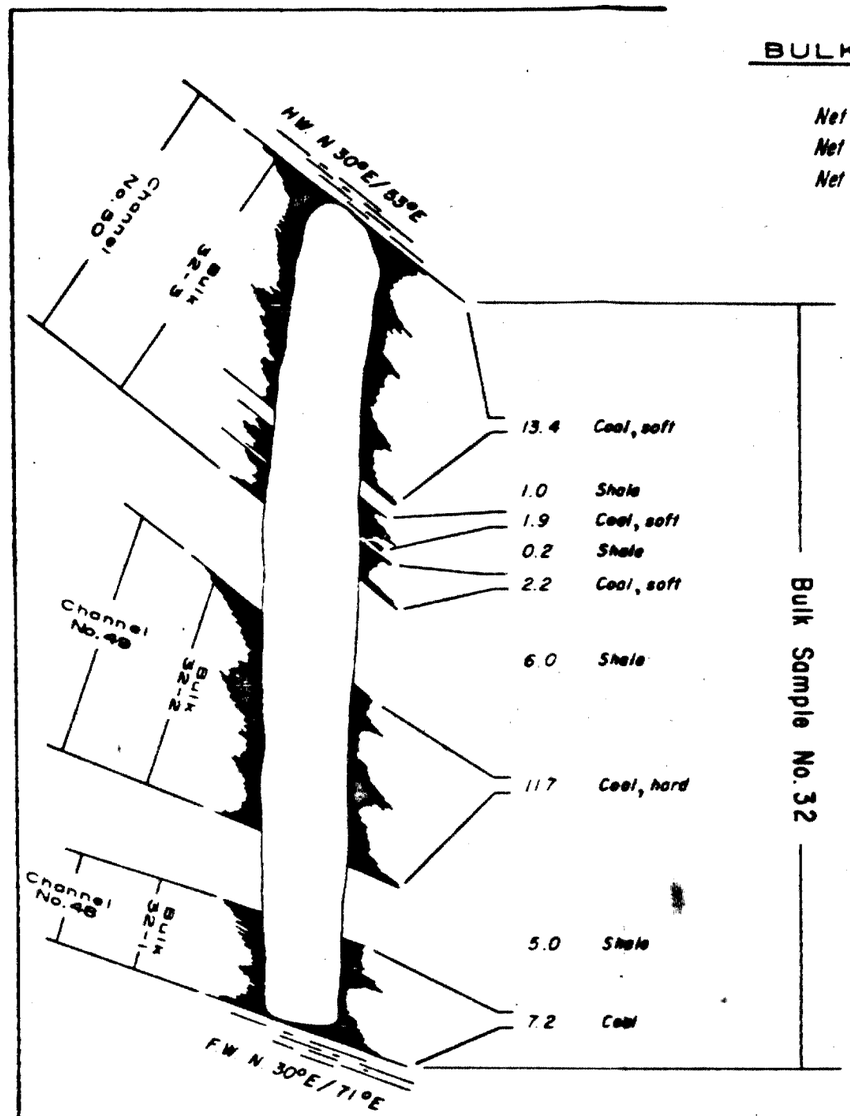
DRAWN	BJM	5-11-61	6B-694
TRACED	JO	5-20-61	
CHECKED	NDO	5-20-61	
APPROVED	FAM	5-22-61	
FIELD WORK	FED	1961	



ADIT No. 31
(F-10)

— PLAN —
Scale 1" = 20'

SECTION A-A
Looking SOUTH'erly
Scale 1" = 10'



296 (48)

COLUMBIA IRON MINING COMPANY
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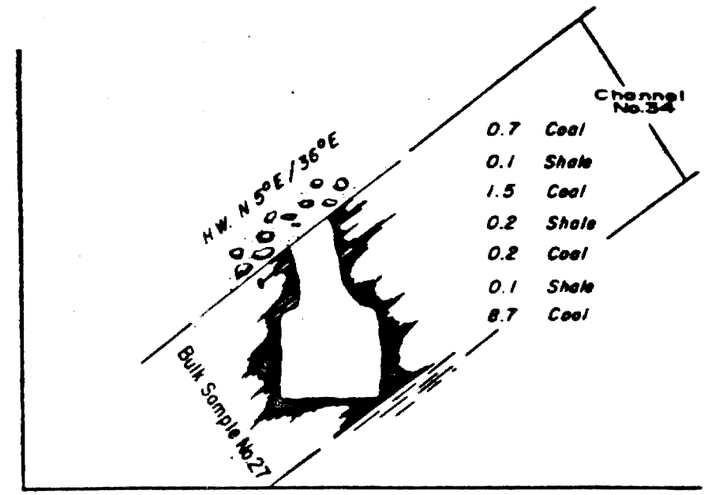
UNITED STATES STEEL CORPORATION

PLAN and SECTION
ADIT No. 31 (F-10)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	11-8-61	6B-695
TRACED	JO	8-20-62	
CHECKED	MDO	8-20-62	
APPROVED	CAM	8-20-62	
FIELD WORK	FED	1961	

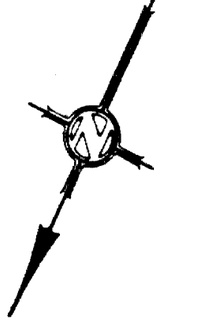


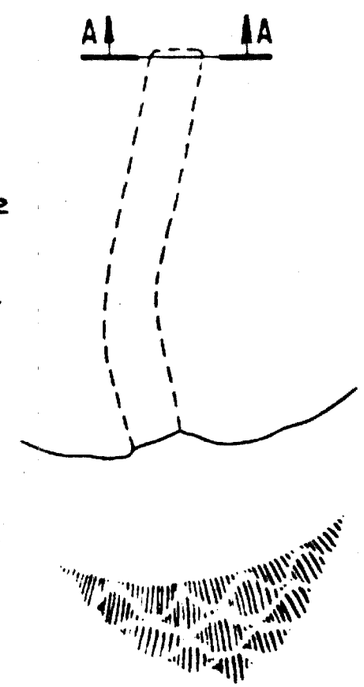
SECTION A-A
Looking SOUTHerly
Scale 1" = 10'

BED M-9

BULK SAMPLE No. 27

Net weight 8106 Lbs.





ADIT No. 32
(M-14)
PLAN
Scale 1" = 20'

296 (49)

COLUMBIA IRON MINING COMPANY
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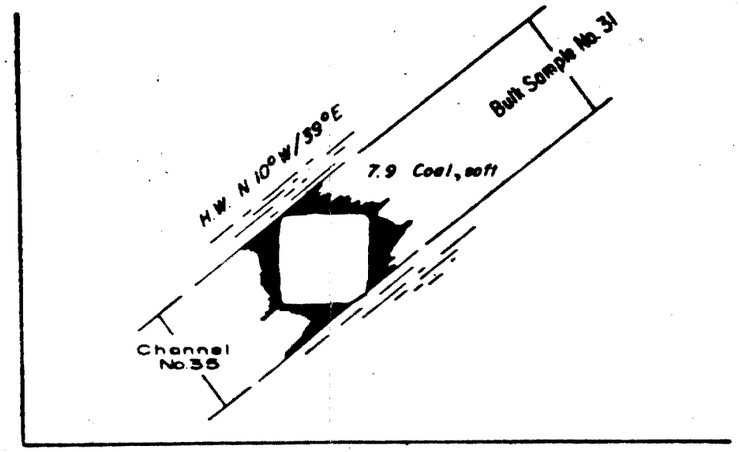
UNITED STATES USS STEEL CORPORATION

PLAN and SECTION
ADIT No. 32 (M-14)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

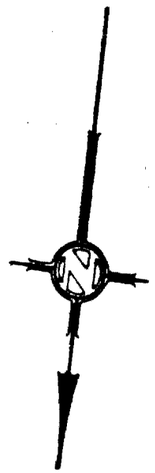
FIELD EXPLORATION — IRONTON-UTAH

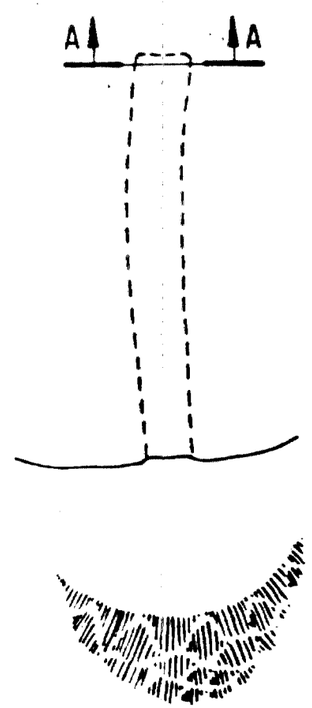
DRAWN	B.J.M.	10-23-61	6B-696
TRACED	J.O.	10-21-62	
CHECKED	M.D.D.	10-21-62	
APPROVED	C.A.M.	10-21-62	
FIELD WORK	F.E.D.	1961	



SECTION A-A
Looking SOUTH'erly
Scale 1" = 10'

BED M-10





ADIT No. 33
(M-14)
— PLAN —
Scale 1" = 20'

BULK SAMPLE No. 31

Net weight 8547 Lbs.

296 (50)

COLUMBIA IRON MINING COMPANY
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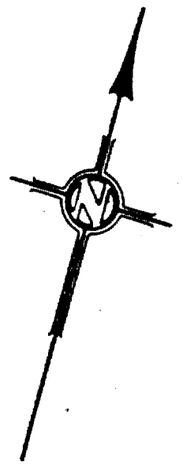
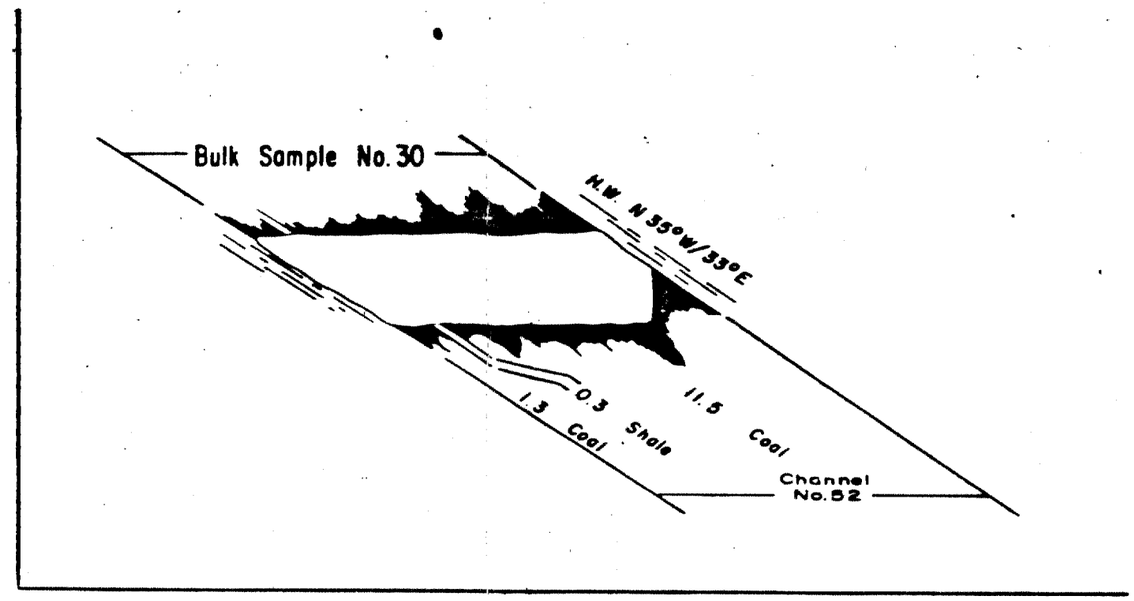
UNITED STATES USS STEEL CORPORATION

PLAN and SECTION
ADIT No. 33 (M-14)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	B.J.M.	10-23-61	6B-697
TRACED	J.O.	[illegible]	
CHECKED	W.D.D.	3-21-62	
APPROVED	C.A.M.	3-21-62	
FIELD WORK	F.E.D.	1961	



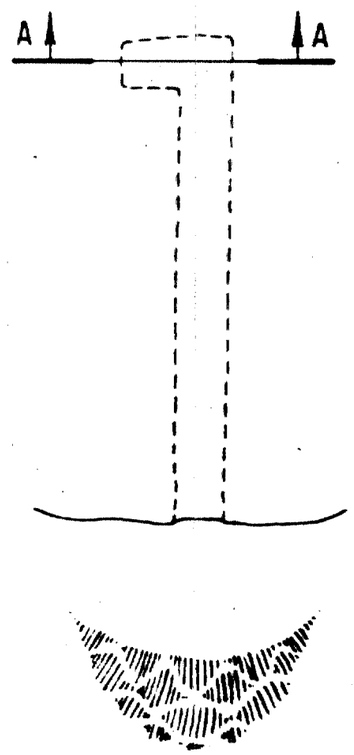


SECTION A-A
Looking NORTH'erly
Scale 1" = 10'

BED M-6

BULK SAMPLE No. 30

Net weight 8934 Lbs.



ADIT No. 34
(M-4)
— PLAN —
Scale 1" = 20'

296 (51)

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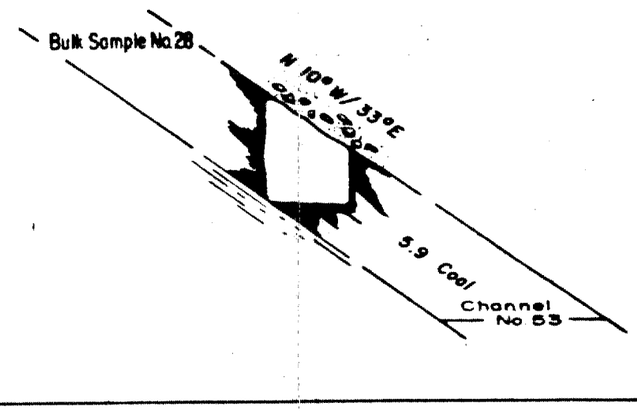
UNITED STATES STEEL CORPORATION

PLAN and SECTION
ADIT No. 34 (M-4)
CROPCO '61 PR
BRITISH COLUMBIA —

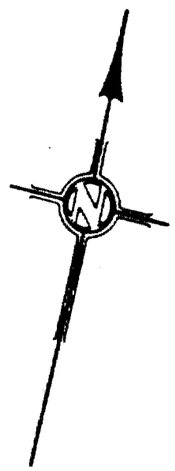
FIELD EXPLORATION

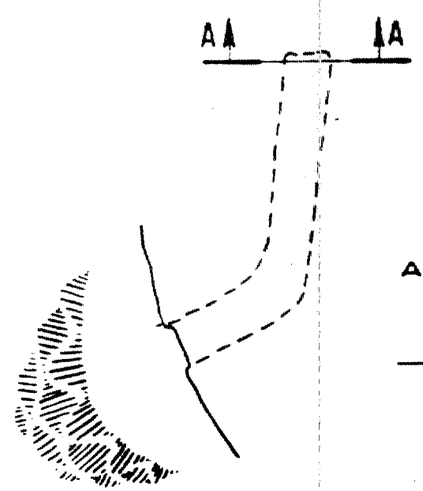
DRAWN	BJM	11-5-61	6B-698
TRACED	VG	15-12-61	
CHECKED	WDD	4-1-62	
APPROVED	CAM	5-1-62	
FIELD WORK	FED	1961	



SECTION A-A
Looking NORTHerly
Scale 1" = 10'

BED M-9





ADIT No 35
(M-4)
— PLAN —
Scale 1" = 20'

BULK SAMPLE No.28

Net weight 8786 Lbs.

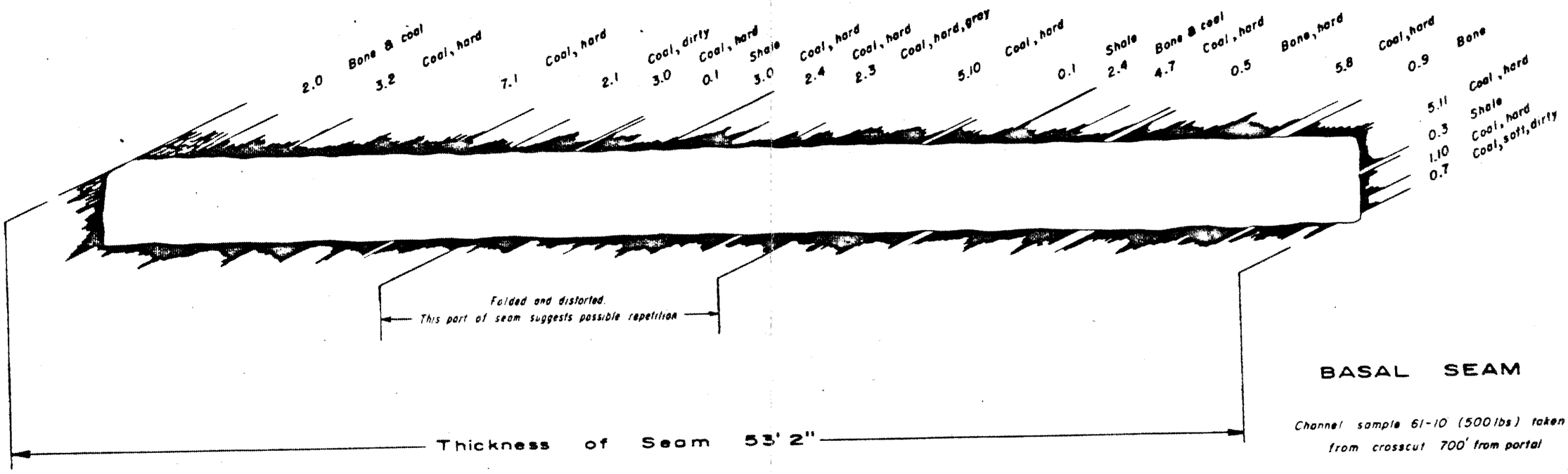
296 (52)

COLUMBIA IRON MINING COMPANY
ASSOCIATE SUBSIDIARY
UNITED STATES USS STEEL CORPORATION

PLAN and SECTION
ADIT No. 35 (M-4)
CROPCO '61 PROJECT
BRITISH COLUMBIA — CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	11-5-61	6B-699
TRACED	JO	12-5-61	
CHECKED	MDO	12-20-61	
APPROVED	CAM	12-26-61	
FIELD WORK	FED	1961	



BASAL SEAM

Channel sample 61-10 (500 lbs) taken from crosscut 700' from portal

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MC-Seam B (53)

VERTICAL SECTION ALONG BALMER SEAM CROSS-CUT

Scale 1" = 10'

COLUMBIA IRON MINING COMPANY
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UNITED STATES USS STEEL CORPORATION

SECTION
Balmer Seam – Michel Colliery
CROPCO '61 PROJECT
BRITISH COLUMBIA – CANADA

FIELD EXPLORATION — IRONTON-UTAH

DRAWN	BJM	8-2-61	6B-703
TRACED	JO	4-2-62	
CHECKED	MDO	4-2-62	
APPROVED	CAM	4-2-62	
FIELD WORK	FED	1961	