



## DRILL HOLE LOG - FERROUS

LAT. + 14,276.2		ANGLE -60°		MINE		Sunrise, Wyoming	
DEP. + 4,302.3		BEARING North		LOCATION		Emanuel #5	
ELEV. 5272.5		LEVEL Surface		HOLE NO.		405	
DATE	DRILLED		CORE		MATERIAL	REMARKS	
	FROM	TO	FEET	FT.			
	231	241	10	10	Same as 221-231.		
	241	248	7	7	Same as above.		
	248	252	4	4	Same as above.		
	252	262	10	10	Same as above.		
	262	272	10	10	Same as above; maroon clay with quartzite breccia 263-269; 269-272 light gray-buff dolomite.	Guernsey form. @ 269 ft.	
	272	282	10	10	Light gray-buff dolomite with maroon clay bands.		
	282	292	10	10	Same as above.		
	292	302	10	10	Same as above; sandy 300-302.		
12-14-71	302	312	10	10	Light gray-buff dolomite breccia recemented with pink dolomite.		
12-15-71	312	322	10	10	Same as above; dark maroon hematite clay fracture filling 315-318.		
	322	332	10	10	Mottled maroon and buff sandy dolomite; cross-bedded with compression fractures.		
	332	342	10	10	332-335 same as above; 335-342 light gray quartzite breccia cemented with pink sandy dolomite.		
	342	352	10	10	342-344 same as above; 344-352 maroon banded sandy dolomite with some light gray quartzite breccia and tan clay breccia.		
	352	362	10	10	Same as above.		
	362	372	10	10	Same as above; vuggy zone at 371-373 with limonite and calcite in vugs.		
	372	382	10	10	372-381 same as above; 381-382 yellow-buff dolomite with occasional maroon bands; fine grained.		
	382	392	10	10	Same as 381-382.		
	392	402	10	10	Same as 381-382; calcite filled vugs 395-400.		
	402	412	10	10	Buff light gray dolomite with some maroon banding; occasional soft clay bands.		
12-17-71	412	422	10	10	Same as above.		
	422	432	10	10	Same as above; sandy 422-423.		
	432	442	10	10	Same as above; siliceous with some white chert breccia 440-442.		
	442	444	2	1.7	442-443 medium gray siliceous dolomite with white and maroon bands.		
	444	454	10	10	444-445 Same as 442-444; 445-454 Precambrian contact - altered red and greenish gray sericite schist; some white breccia & banding.	Precambrian @ 445 ft.	

DRILL HOLE LOG - FERROUS

DATE	DRILLED		TO FEET	ANGLE BEARING LEVEL	CORE SURFACE	MINE LOCATION HOLE NO.	MATERIAL	REMARKS
	FROM	TO						
12-18-71	451	462	8	8	-600	Surprise, Wyoming Emanuel #5	Same as 444-454.	Banding 40°
	462	472	10	10	North Surface		Reddish brown sericite schist with white quartz bands; somewhat contorted.	
	472	482	10	10			Greenish gray sericite schist with white quartz bands.	
	482	492	10	10			Same as above; some limonite stain 488-490.	
	492	502	10	10			Green-gray sericite schist with white quartz bands.	
12-20-71	502	512	10	10			Same as above; slight hematite stain contorted banding 504-510.	
	512	522	10	10			Same as 502-512.	55°
	522	532	10	10			Same as 502-512.	50°
	532	542	10	10			Same as 502-512; highly contorted.	
	542	552	10	10			Same as above.	
	552	562	10	10			Same as above; hematite stained fractures at 556 and 560.	
	562	572	10	10			Same as above; hematite stained fracture at 569. 4" quartz bands.	
	572	582	10	10			Greenish gray chloritic quartz sericite schist; 6" quartz bands; contorted banding.	
12-21-71	582	592	10	10			Green-gray chloritic sericite schist with quartz bands; bands up to 4" thick; slight hematite stain on fractures.	Schistosity 0°-15°
	592	602	10	10			Same as above.	Schistosity 50°
	602	612	10	10			Same as above; slight hematite stain on fractures; contorted quartz bands up to 3" thick.	
12-22-71	612	622	10	10			Contorted black graphite schist with numerous lenses of quartz; slightly talcose in places.	
	622	632	10	10			Similar to 612-622; crenulations of fracture surfaces.	
	632	642	10	10			Similar to 612-622; highly contorted with more quartz lenses.	
	642	652	10	10			Highly contorted sericitic graphite schist with numerous quartz lenses.	
12-23-71	652	662	10	10			Moderately-highly contorted siliceous graphite schist; sericitic locally with numerous quartz lenses.	
	662	672	10	10			Similar to 652-662; scattered pyrite in fractures.	
	672	682	10	10			Precipitated chlorite schist with contorted quartz lenses; slightly decomposed.	

FORM NO. 1 (1-1951)

DRILL HOLE LOG - FERROUS

DATE	DRILLED		FEET	ANGLE	BEARING	MINE	LOCATION	MATERIAL	REMARKS
	FROM	TO							
	682	692	10	10	North	Sunrise, Wyoming	Emanuel #5		
					Surface		405		
	692	702	10	10				Soft intensely contorted chlorite schist with numerous contorted quartz lenses; very light hematite stain locally.	
								Similar to 682-692; thin deposits of hematite and pyrite on fractures.	
1-4-72	702	712	10	10				Same as 692-702; not decomposed.	
	712	722	10	10				Same as 692-702; not decomposed.	
	722	732	10	10				Highly contorted graphitic chlorite schist with contorted quartz lenses; minute crenulations and sparsely scattered pyrite.	
	732	742	10	10				Same as 722-732.	
								HOLE TO BE CONTINUED AT LATER DATE.	
								HOLE SURVEYS (Corr.)	
								100' 60°	
								200' 61°	
								300' 63°	
								400' 64°	
								500' 64°	
								600' 65°	
								700' 63°	
								742' 67°	
								SUMMARY	
	0	171	171					Hartville formation; medium gray limestone with maroon clay seams.	
	171	269	98					Basal Hartville formation; light gray quartzite with some maroon clay bands.	
	269	445	176					Guernsey formation; light gray-buff and pink dolomite. Some light gray quartzite breccia and occasional maroon bands. Dolomite is siliceous from 422-445 ft.	
	445	742	297					Precambrian graphitic-chloritic-sericitic schist with numerous quartz bands and lenses. Slight hematite stain on fractures. Scattered pyrite in fractures from 662-742 ft.	

4690  
4690 E 100



DRILL SAMPLE ANALYSIS - FERROUS

MINE SUNDTREC, Wyoming  
DATE 7/10/73-8/21/1973

CORE IDENTIFIED BY England and Lynch  
ANALYSIS BY CF&I

CODE HEADLINE 100%

DEPTH J301 JL  
FROM TO

LONGYEAR (Rush)  
PH STG AL2O3

LONGYEAR 38

SAMPLE NO 405-1  
CORE 405-1

DRILLER

P2O

CaO

S

F

Fe

802 822 405-1

Composite. Pyrite flotation.

/// 26

SiO2

Fe

Mn

STG

AL2O3

S

CaO

P2O

Wt % H2O

Wt % H2O

Wt % H2O

Wt % H2O

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CaO

P2

DRILL HOLE LOG - FERROUS

DATE	DRILLED		ANGLE BEARING LEVEL	-60° North Surface	MINE LOCATION	HOLE NO.	REMARKS
	FROM	TO					
7-24	1121	1131	10	0	Sunrise Mine, Platte County, Wyoming Emanuel No. 5 E 1/4 SW 1/4, sec. 29, T. 28 N., R. 65 W.		
	1131	1141	10	0		Very little quartz. Nonmagnetic. 1121-1141	
	1141	1151	10	0		Quite graphitic and pyritic 1140-1171, Non-magnetic.	
7-25	1151	1161	10	0		Quite pyritic, nonmagnetic 1151-1161.	
	1161	1171	10	0		Quite graphitic and pyritic, nonmagnetic	
	1171	1181	10	0		Fifty percent quartz in wide bands, nonmagnetic	
	1181	1191	10	0		Pyritic 1171-1201, nonmagnetic.	
7-26	1191	1201	10	0		Quite graphitic and pyritic 1201-1231, non-magnetic.	
	1201	1211	10	0			
	1211	1221	10	0			
	1221	1231	10	0			
	1231	1241	10	0		1231-1391 Pyritic, graphitic, quartz, sericite schist.	
7-27	1251	1251	10	0		60° at 1251	
	1251	1261	10	0		Thirty to fifty percent quartz bands, ranging from lamina to bands up to one-half ft wide.	
	1261	1271	10	0		Two to five percent pyrite. Schistosity is mostly contorted.	
7-28	1271	1281	10	0		80° at 1285	
	1281	1291	10	0			
	1291	1301	10	0			
	1301	1311	10	0		80° at 1311	
7-30	1311	1321	10	0		80° at 1325	
	1321	1331	10	0			
	1331	1341	10	0			
	1341	1351	10	0		90° at 1370	
8-1	1351	1361	10	0		35° at 1378	
	1361	1371	10	0		60° at 1389	
	1371	1381	10	0			
	1381	1391	10	0			
8-2	Pulling casing. Left 15 ft						
	NX casing standpipe in hole. Nonradioactive.						
	END OF HOLE at 1391						
	Acid hole survey at 950 ft; 70° uncorrected, 61° corrected.						
	Acid hole survey at 1161 ft; 67° uncorrected, 60° corrected.						
	Acid hole survey at 1350 ft; 66° uncorrected, 59° corrected.						

*Driller: hydrogen chloride / hydrogen to core recovery 100%*

*Cur. It England and Greek E*

*with sample*

DRILL HOLE LOG - FERROUS

DATE 1973	FROM	TO	CORRECTION FEET	ANGLE BEARING LEVEL	CORE SURFACE	MINE LOCATION HOLE NO.	MATERIAL	REMARKS
						Sunrise Mine, Platte County, Wyoming Emanuel No. 5 E 1/2 NW 1/4 SW 1/4, sec. 29, T. 28 N.. R. 65 W.		
								Banding to axis of core.
							SUMMARY	
	742	1161					Pyritic, graphitic, quartz, sericite schist.	
	7-25	1161					Core orientation at 1161-1163 ft.	
							Hole inclination is 50° corrected.	
							Reference etch is 85°/195° clockwise from top side of hole.	
							Lower apex of banding is 45° clockwise from reference line.	
							Banding to axis of core is 50° at 1161 ft.	
							Estimated Strike N60E Dip 60°SE	
							Stereogram N56°E 64°SE	
							Note: Acid tube slipped in core barrel and orientation may be erroneous.	

XXXX QUALITATIVE  
 XXXX SEMI-QUANTITATIVE  
 \_\_\_\_\_ QUANTITATIVE

ANALYTICAL REPORT

Job Number 15873  
 Page 20 of 20 Pages  
 Date 6 Aug 1973

TO: C.F. & I. Steel Corp

SAMPLE: 715-26 DDH 405 Sulfides  
 222 - 222-F7

NOTE: The values listed on this report are based on the analysis of the sample as received. If the sample has been treated in any way, the values may not be representative of the original material.

Copper	0.16	Iron	11.	Lanthanum	_____
Silver	_____	Cobalt	0.004	Cerium	_____
Gold	_____	Nickel	0.037	Praseodymium	_____
Zinc	0.043	Cesium	_____	Neodymium	_____
Cadmium	_____	Rubidium	0.023	Samarium	_____
Mercury	_____	Barium	0.078	Europium	_____
Gallium	_____	Strontium	0.006	Gadolinium	_____
Indium	_____	Titanium	0.30	Terbium	_____
Thallium	_____	Zirconium	0.073	Dysprosium	_____
Germanium	_____	Hafnium	_____	Holmium	_____
Tin	_____	Thorium	_____	Erbium	_____
Lead	0.079	Vanadium	0.024	Thulium	_____
Arsenic	0.007	Columbium	_____	Ytterbium	_____
Antimony	_____	Tantalum	_____	Lutetium	_____
Bismuth	_____	Chromium	_____	Yttrium	0.007
Selenium	_____	Molybdenum	0.013	_____	_____
Tellurium	_____	Tungsten	_____	_____	_____
Bromine	_____	Uranium	_____	_____	_____
Iodine	_____	Manganese	0.043	_____	_____

By Merlyn E. Sullivan

NOTE: A PORTION OF THE REPORTED SAMPLES WILL BE RETAINED ON FILE FOR A PERIOD OF FIVE YEARS FROM THE ABOVE DATE. THE REMAINDER OF THE SAMPLES WILL BE RETAINED FOR THIRTY DAYS PENDING RECEIPT OF WRITTEN INSTRUCTIONS FOR DISPOSAL FROM THE ADDRESSER ABOVE.

SKYLINE LABS, INC.

SPECIALISTS IN EXPLORATION GEOCHEMISTRY

12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL: (303) 424-7718

REPORT OF ANALYSIS

Job No. 72007  
P.O. No. 31227  
August 24, 1973

Mr. David G. Ellingwood  
C. F. & I. Steel Corporation  
Mining Department  
Pueblo, Colorado 81002

Analysis of 28 Pulp Samples

Item	Sample No.	CaO (%)	MgO (%)	K <sub>2</sub> O (%)	Na <sub>2</sub> O (%)	S (%)	P (%)	Au (ppm)	Ag (ppm)
1.	715 - 1	1.6	.94	.31	.027	.042	.030	*	*
2.	2	6.8	.20	.25	.040	.029	.030	*	*
3.	3	1.6	.032	.50	.040	.021	.16	*	*
4.	4	1.3	.032	1.3	.040	.046	.16	*	*
5.	5	1.8	.026	.048	.014	.021	.23	*	*
6.	6	1.7	.036	1.3	.027	.021	.16	*	*
7.	7	7.8	.094	3.0	.027	.025	.60	*	*
8.	8	1.5	.12	.57	.027	.021	.020	*	*
9.	9	1.9	1.3	1.4	.054	.025	.075	*	*
10.	10	5.0	.060	3.7	.027	.025	.15	*	*
11.	11	1.9	.036	.84	.027	.025	.020	*	*
12.	12	.46	.043	.26	.027	.025	.075	*	*
13.	13	2.4	.31	3.2	.054	.038	.11	*	*
14.	14	.87	.21	1.7	.054	.038	.15	*	*
15.	15	.34	.018	.036	.054	.017	.040	*	*
16.	16	1.6	.065	.72	.027	.025	.030	*	*
17.	17	.68	.065	.88	.027	.021	.030	*	*
18.	18	7.4	.046	2.3	.040	.021	.23	*	*
19.	19	8.0	.10	1.4	.027	.025	.11	*	*
20.	20	.023	.031	2.3	1.5	.025	15.	*	*
21.	21	.048	.038	2.8	1.6	.034	15.	*	*
22.	22	1.2	.45	2.3	.054	.046	.058	*	*
23.	23	.52	.24	1.1	.081	.046	.058	*	*
24.	24	.76	.33	1.1	.094	.071	.058	*	*
25.	25	.094	.18	.20	.027	42.6	.040	.03	1.8
26.	26	.24	2.5	3.6	.16	5.65	.058	.05	.6
27.	27	3.2	1.8	.48	.040	9.57	.030	<.02	1.0
28.	28	.18	.76	1.2	.088	30.2	.020	.62	1.6

\*Analysis not requested

*Charles E. Thompson*  
Charles E. Thompson  
Chief Chemist

## DRILL HOLE LOG - FERROUS

DATE 1973	DRILLED		FEET	CORE		MATERIAL	REMARKS
	FROM	TO		FT.	.0		
LAT. +14,307.0N	ANGLE -60°	MINE Sunrise, Platte County, Wyoming					
DEP. +4233.4E	BEARING North	LOCATION Emanuel No. 5 E½ NW¼ SW¼, sec. 29,					
ELEV. 5309.5	LEVEL Surface	HOLE NO. DDH 405 Re-Enter T. 28 N., R. 65 W.					
							Banding to axis of core.
							CORE ORIENTATION
7-25	1161	1163					Acid tube slipped to bottom of core barrel.
							Hole inclination -60° corrected.
							Reference file mark from top axis of tube: 85° clockwise (strong etch) 195° clockwise (weak etch)
							Banding is contorted.
							Lower apex of banding 45° clockwise of reference line.
							Average schistosity 50° to axis of core at 1161 ft.
							Estimated Stereonet
							Strike Dip Strike Dip
							N60E 60°SE N55°E 64° S34°E Strong etch
							E-W Vertical N50°W 60° S40°W Weak etch
							Hole appears to be crossing, bedding about perpendicular, which indicates E-W strike and 30°S dip.

DRILL HOLE LOG - FERROUS

DATE	L.A.T.	D.E.P.	ELEV.	+14,307.0 +4,233.4E 5,309.5	ANGLE BEARING LEVEL	DRILLED		CORE		MATERIAL	REMARKS
						FROM	TO	FEET	FT.		
11/2	1391	1401	10	10	0	Graphite sericite schist, with quartz bands	80				
11/3	1401	1411	10	10	0	up to 1 inch pyritic to 1.431' Bedding					Angle bad w/core 70°
	1411	1421	10	10	0	generally contorted, occasional calcite from					
	1421	1431	10	3	5	1.501-1.531'					
11/6	1431	1441	10	10	0						
	1441	1451	10	10	0						
	1451	1461	10	10	0						
	1461	1471	10	10	0						
11/7	1471	1481	10	10	0						
	1481	1491	10	10	0						
	1491	1501	10	10	0						
	1501	1511	10	10	0						
11/8	1511	1521	10	10	0						
	1521	1531	10	10	0						
	1531	1541	10	10	0						
11/9	1541	1551	10	10	0						
	1551	1561	10	10	0						
	1561	1571	10	10	0						
11/10	1571	1581	10	10	0						
	1581	1591	10	10	0						
11/14	1591	1601	10	10	0						
	1601	1611	10	10	0						
11/15	1611	1621	10	10	0						
	1621	1631	10	10	0						
	1631	1641	10	10	0						
	1641	1651	10	10	0						
11/16	1651	1661	10	10	0						
	1661	1671	10	10	0						
	1671	1675	10	10	0						

No further information

no analyzer

1.675 - END OF HOLE.