

GRUM DEPOSIT

—

1982 SIMPSON/ADAMSON
Reserve Estimates

—

annotated copies

THE FOLLOWING DOCUMENTS AND SECTIONS CONCERNED WITH THE GRUM DEPOSIT SHOW THE RESULTS OF RESERVE ESTIMATES MADE BY GLENN SIMPSON AND TOM ADAMSON IN LATE 1982. THE ORIGINAL VERSIONS OF THESE MEMOS WERE ACCOMPANIED BY A SET OF COLORED CROSS SECTIONS AND COMPARABLY COLOR CODED DATA SHEETS WHICH SHOWED EXACTLY WHERE THE VARIOUS ORE PANELS WERE AND WHAT MINERALIZATION WAS INCLUDED. THESE SECTIONS AND DATA SHEETS DO NOT LEND THEMSELVES TO COPYING AND WITHOUT THEM IT IS NOT POSSIBLE TO FOLLOW THE LOGIC OF THESE CALCULATIONS. IN ORDER TO MAKE THESE DOCUMENTS MORE READILY USEABLE A SET OF SECTIONS WITH ASSAY BLOCK NUMBERS INDICATED WAS PREPARED AND DATA SHEETS WERE RECORDED IN A COPYABLE FORMAT. THE ORIGINAL MEMOS AND MANUSCRIPT SECTIONS AND CALCULATION SHEETS ARE ON FILE WITH THE EXPLORATION DEPARTMENT IN VANCOUVER.

BOTH AN OPEN PIT AND AN UNDERGROUND RESERVE ESTIMATE WERE PREPARED. THE UNDERGROUND ESTIMATE CONSIDERS ONLY THE LARGER AND MORE CONTINUOUS ORE PANELS THAT COMPRISE THE GRUM DEPOSIT WITH AN 8% COMBINED PB-ZN CUTOFF BEING APPLIED TO COMPOSITED ASSAYS. COMPOSITING WAS DONE ON THE BASIS OF ORE TYPE AND GRADE. THE OPEN PIT ESTIMATE USES A 4% COMBINED CUTOFF ON THE COMPOSITED ASSAYS. THE PIT OUTLINE WAS DESIGNED BY JIM CLK AND FOLLOWS FROM HIS KNOWLEDGE OF COSTS AND CONDITIONS AT THE FARO PIT. A MAP OF THIS PIT AND RAMPS IS INCLUDED AT THE BACK OF THIS REPORT AND THE PIT OUTLINE IS SHOWN ON THE ACCOMPANYING CROSS SECTIONS.

FOR THE PURPOSES OF CALCULATION THE AREA OF A GIVEN ASSAY BLOCK WAS PLANIMETERED TO DETERMINE ITS CROSS-SECTIONAL AREA AND STRIKE LENGTH WAS ONE HALF THE DISTANCE TO EACH OF THE ADJACENT CROSS-SECTIONS (I.E. 60.5M) OR 30M BEYOND THE LAST SECTIONS. NO CORRECTION WAS MADE FOR DEPOSIT PLUNGE. THE SPECIFIC GRAVITY USED WAS THE PULP S.G. REDUCED BY 5% TO ACCOUNT FOR POROSITY, THIS REDUCTION IS REASONABLE FOR QUARTZOSE ORE TYPES (4ABCC) BUT A REDUCTION OF 10% WOULD BE BETTER FOR MASSIVE ORE TYPES (4EGHK) AS DETERMINED BY STUDIES ON FARO AND DY ORES.

THE ASSAY BLOCKS AND COMPOSITES WERE LAID OUT BY GLENN SIMPSON, THE CALCULATIONS AND PLANIMETERING WERE DONE BY TOM ADAMSON. THE GEOLOGIC INTERPRETATION FOLLOWED IS LARGELY THE WORK OF DAVE JENNINGS WITH SOME MODIFICATIONS BY SIMPSON. MANUSCRIPT COPIES OF THE GEOLOGIC SECTIONS ARE ON FILE WITH THE EXPLORATION DEPARTMENT IN VANCOUVER. IT SHOULD BE NOTED THAT THE OUTLINE OF MINERALIZATION SHOWN ON THE ACCOMPANYING SECTIONS FOLLOWS AN APPROXIMATE 2% PB+ZN CUTOFF THUS ALL MINERALIZED ROCK IN THE DEPOSIT IS NOT SHOWN AND THIS IS THE MAJOR SOURCE OF DIFFERENCE BETWEEN THE ASSAY SECTIONS AND THE ORIGINAL GEOLOGIC SECTIONS.

THE ASSAY BLOCK DATA SHEETS FOR EACH CROSS-SECTION ARE INCLUDED IN THE FOLLOWING SECTION. THE DATA SHEETS ARE FOLLOWED BY THE ANNOTATED RESERVE ESTIMATES AND A FINAL SECTION IS INCLUDED THAT DESCRIBES THE ORE TYPES AND EXPLAINS THE CRYPTIC TERMINOLOGY USED ON THE DATA SHEETS.

THIS DATA HAS BEEN SUBSEQUENTLY "COMPUTERIZED" BY CCME IN CALGARY AND A LARGER OPEN PIT LAID OUT. THE READER SHOULD CONSULT THAT WORK FOR DETAILS.

DATA SHEETS

G R U M

SECTION 62W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	445.0	6.36	13.29	103	19.65	3.68	4ED
2	70.0	0.63	1.24	14	1.87	3.22	4AD
3	540.0	3.39	5.38	86	8.77	4.10	4EG
4	32.5	1.88	3.10	39	4.98	3.15	4A4
5	127.5	1.07	1.09	28	2.16	3.70	4EL
6	325.0	3.24	5.44	64	8.68	4.11	4EA
7	95.0	1.06	2.20	22	3.26	2.83	4AO
8	25.0	2.93	4.25	38	7.18	2.84	4AK
9	42.5	5.30	7.00	83	12.30	3.72	4G4
10	200.0	2.64	4.00	30	6.64	3.82	4GE/5D
11	602.5	2.80	3.16	42	5.96	3.43	4EA
12	257.5	2.46	4.28	42	6.74	3.11	4AC
13	320.0	2.60	2.42	41	5.02	3.80	4GE

G R U M

SECTION 64W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	1,087.5	1.95	2.72	28	4.67	3.16	4AO
2	515.0	6.05	12.43	104	18.48	3.81	4DE
3	117.5	6.29	7.80	95	14.09	3.29	4A4
4	585.0	1.61	2.23	32	3.84	3.65	4C8
5	137.5	2.93	6.64	51	9.57	3.03	4AL
6	75.0	2.81	6.59	45	9.40	2.95	5B9
7	272.5	5.39	8.73	92	14.12	4.28	4GE
8	205.0	3.12	3.79	53	6.91	3.87	4AGH
9	140.0	0.78	1.45	14	2.23	3.30	4A1
10	40.0	4.60	8.35	85	12.95	4.28	4E4
11	95.0	2.61	2.97	46	5.58	3.60	4HD
12	1,067.5	1.57	1.45	25	3.02	3.53	4EC
13	945.0	5.35	6.44	81	11.79	4.20	4GE
14	200.0	5.07	6.87	75	11.94	3.80	4GE
15	37.5	2.99	3.20	42	6.19	3.65	4GL
16	600.0	1.77	3.03	35	4.80	3.35	4A4
17	37.5	2.30	4.60	39	6.90	3.03	4A4
18	20.0	1.76	3.20	26	4.96	3.03	4A2
19	225.0	2.09	2.29	33	4.38	3.66	4CEG
20	27.5	3.22	4.42	56	7.64	3.34	4D4
21	425.0	2.10	1.73	35	3.83	3.94	4E*

G R U M

SECTION 66W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	410.0	10.55	9.52	173	20.07	4.00	4EGL
2	52.5	1.33	4.38	21	5.71	3.03	4A4
3	75.0	0.64	1.73	17	2.37	2.83	4A1
4	1,067.5	5.73	9.71	94	15.44	3.84	4GED
5	210.0	1.20	1.64	30	2.84	3.05	4A0
6	235.0	4.04	5.73	63	9.77	3.32	4A4
7	162.5	2.70	3.94	38	6.64	3.53	4AE
8	657.5	0.48	1.68	20	2.16	3.40	4CO
9	212.5	3.75	4.79	65	8.54	3.34	4CD
10	210.0	2.52	4.10	46	6.62	3.84	4EA
11	257.5	6.22	10.98	116	17.20	4.00	4EG
12	600.0	1.32	2.83	26	4.15	3.14	4A1
13	237.5	2.58	5.01	44	7.59	3.44	4EA
14	107.5	2.95	7.00	44	9.95	2.76	4L4
15	62.5	1.55	3.13	28	4.68	3.01	4A1
16	427.5	3.62	5.06	58	8.68	3.10	4A4
17	957.5	5.57	6.33	83	11.90	3.82	4GD
18	397.5	3.98	5.23	64	9.21	3.34	4D
19	707.5	4.07	4.97	67	9.04	4.10	4GE
20	275.0	0.98	1.64	27	2.62	2.95	4A0
21	372.5	0.97	1.16	22	2.13	4.10	4EO
22	310.0	2.50	3.83	46	6.33	3.79	4E8
23	805.0	2.69	2.36	34	5.05	3.36	4CE
24	32.5	1.52	1.41	40	2.93	3.60	4CE
25	95.0	4.60	6.08	87	10.68	3.99	4GE

G R U M

SECTION 68W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	175.0	8.37	6.78	111	15.15	3.64	4E4
2	172.5	6.03	6.91	88	12.94	3.22	4GKA
3	430.0	5.27	9.93	85	15.20	3.48	4BD4
4	102.5	2.86	5.48	54	8.34	3.29	4A4
5	30.0	5.13	7.81	73	12.94	3.23	4A4
6	1,885.0	0.86	1.69	14	2.55	2.93	4A0
7	437.5	5.08	9.18	84	14.26	4.18	4E4
8	390.0	1.80	2.52	33	4.32	3.61	4E0
9	357.5	5.11	10.25	89	15.36	3.88	4ED
10	142.5	3.56	4.98	63	8.54	3.40	4D4
11	377.5	4.87	9.08	83	13.95	3.43	4A4
12	295.0	5.26	12.27	86	17.53	3.98	4DE
13	192.5	2.01	3.56	34	5.57	3.55	4EC
14	127.5	7.55	6.63	96	14.18	3.34	4D6
15	492.5	4.38	3.68	66	8.06	4.15	4EK
16	165.0	5.25	8.96	106	14.21	4.17	4G4
17	47.5	1.74	3.06	36	4.80	3.27	4EA
18	122.5	2.46	5.28	44	7.74	3.12	4A4
19	22.5	5.17	10.26	87	15.43	3.90	4C4
20	555.0	5.79	7.19	82	12.98	4.06	4GE
21	725.0	3.03	3.91	53	6.94	3.77	4E
22	305.0	2.35	2.89	35	5.24	3.22	4ADC
23	1,977.5	1.19	1.20	21	2.39	3.42	4C0
24	495.0	6.08	10.10	101	16.18	3.74	4E4
25	125.0	3.69	3.24	50	6.93	3.62	4E8
26	52.5	4.23	8.45	67	12.68	3.30	4A0

G R U M

SECTION 70W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	57.5	7.39	8.53	123	15.92	4.06	4GK
2	62.5	6.22	7.14	96	13.36	4.00	4GD
3	482.5	2.41	5.88	44	8.29	3.03	4A4
4	1,087.5	2.18	4.30	38	6.48	3.32	4A4
4A	75.0	2.58	4.29	38	6.87	3.03	4L4
5	690.0	1.78	3.29	35	5.07	3.43	4AE
6	342.5	0.91	1.74	19	2.65	2.80	5B/4L
7	57.5	1.37	2.50	26	3.87	3.02	4L2
8	1,152.5	6.61	13.15	111	19.76	4.12	4ED
9	45.0	1.48	1.65	27	3.13	3.36	4AO
10	315.0	1.81	2.95	36	4.76	3.33	4AO
11	522.5	1.34	3.13	27	4.47	2.85	4L4
12	165.0	3.87	7.85	64	11.72	3.03	4A4
13	147.5	1.20	2.95	25	4.15	3.16	4AE
14	837.5	4.73	9.42	87	14.15	4.33	4EG
15	382.5	1.61	2.16	35	3.77	3.21	4AO
16	142.5	3.83	5.74	76	9.57	4.14	4EG
17	425.0	6.91	13.13	111	20.04	3.51	4DE
18	80.0	4.84	10.69	90	15.53	3.57	4D
19	237.5	5.30	10.70	96	16.00	4.04	4E4
20	57.5	0.25	0.91	17	1.16	3.03	4AE
21	222.5	1.94	2.92	37	4.86	3.52	4CA
22	710.0	5.63	5.98	88	11.61	4.27	4EG
23	437.5	1.36	1.13	25	2.49	3.42	4L
24	110.0	3.12	2.63	47	5.75	3.52	4LC
25	300.0	2.59	2.55	43	5.14	3.99	4AC
26	115.0	0.80	1.52	13	2.32	2.72	4A3
27	80.0	5.10	7.50	89	12.60	4.05	4G4
28	25.0	1.47	1.89	28	3.36	3.36	4C0
29	50.0	1.29	1.77	25	3.06	3.38	4AO
30	877.5	1.60	3.59	31	5.19	3.01	4AO
31	440.0	5.77	8.19	96	13.96	3.96	4GE
32	100.0	2.68	3.32	45	6.00	3.55	4DC
33	375.0	4.99	5.28	74	10.27	3.89	4GE
34	395.0	4.59	4.31	63	8.90	4.28	4GED
35	217.5	2.72	2.82	45	5.54	3.90	4E8
36	87.5	2.80	1.15	36	3.95	3.17	4AO
37	460.0	5.59	5.90	73	11.49	4.22	4GE
38	167.5	0.89	1.28	22	2.17	3.46	4C8

G R U M

SECTION 72W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	230.0	4.55	8.06	74	12.61	3.30	4DLA
2	417.5	2.07	3.75	37	5.82	3.30	4AD
3	2,277.5	2.42	4.78	44	7.20	3.15	4A4
4	280.0	1.46	2.79	22	4.25	2.97	4LO
5	77.5	0.72	1.82	11	2.54	2.95	4BA
6	282.5	3.80	7.42	71	11.22	3.52	4AD
7	775.0	3.30	4.28	47	7.58	3.18	4A4
8	130.0	4.50	8.46	78	12.96	3.10	4E4
9	1,125.0	3.35	5.66	50	9.01	3.07	4A4
10	192.5	7.48	14.50	132	21.98	3.95	4ED
11	30.0	9.35	17.70	143	27.05	4.11	4E4
12	205.0	1.14	2.32	21	3.46	2.85	4LA
13	95.0	1.39	1.94	35	3.33	3.49	4AO
14	517.5	4.86	8.28	83	13.14	4.08	4EG
15	187.5	1.61	2.20	25	3.81	3.15	4A4
16	92.5	3.25	6.23	71	9.48	3.94	4E4
17	490.0	1.56	1.36	22	2.92	3.03	4AL
18	262.5	6.69	5.25	97	11.94	4.19	4EG
19	180.0	2.64	2.31	40	4.95	3.27	4CL/5B9
20	80.0	1.60	1.77	24	3.37	3.23	4CL
21	177.5	6.28	7.02	101	13.30	4.23	4GE
22	147.5	5.17	5.31	85	10.48	4.06	4GE
23	50.0	2.73	2.16	53	4.89	3.89	4EC
24	212.5	6.63	8.22	110	14.85	4.11	4EG
25	1,147.5	4.41	6.81	77	11.22	4.81	4DE
26	725.0	3.29	6.07	65	9.36	4.03	4EG
27	265.0	0.69	1.06	15	1.75	3.07	4AO
28	77.5	6.36	12.73	102	19.09	3.60	4A4
29	915.0	0.96	2.34	23	3.30	3.28	4CO
30	25.0	1.97	2.94	34	4.91	2.75	4L4
31	155.0	4.42	9.25	80	13.67	3.90	4EK
32	305.0	0.88	1.31	18	2.19	2.95	4AO
33	175.0	3.38	5.98	77	9.36	3.48	4DK
34	557.5	4.68	8.07	80	12.75	3.94	4EG
35	147.5	2.69	4.49	53	7.18	3.03	4A4
36	72.5	2.19	4.11	39	6.30	3.59	4ADE
37	245.0	3.47	4.16	68	7.63	3.75	4CD
38	107.5	1.70	1.90	29	3.60	3.37	4E1
39	107.5	3.60	3.32	43	6.92	3.88	4EG
40	410.0	1.96	1.36	36	3.32	3.62	4EG

G R U M

SECTION 74W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	992.5	1.19	2.89	25	4.08	2.95	4AB
2	485.0	2.19	5.59	44	7.78	3.26	4AD
3	357.5	6.45	9.34	101	15.79	3.40	4DEA
4	665.0	4.02	6.91	65	10.93	3.10	4AC
5	617.5	3.10	5.32	50	8.42	3.18	4AD
6	195.0	2.16	3.66	37	5.82	2.87	4AL
7	1,127.5	2.20	3.91	35	6.11	3.06	4AC
8	570.0	1.31	2.47	21	3.78	2.92	4AC
9	305.0	7.37	14.35	125	21.72	3.94	4E4
10	225.0	2.91	4.67	46	7.58	3.19	4LC
11	420.0	3.16	5.38	49	8.54	3.06	4A4
12	645.0	1.20	1.54	18	2.74	2.83	4CA
13	357.5	6.12	10.97	103	17.09	3.83	4E
14	382.5	6.14	4.64	78	10.78	4.15	4EG
15	55.0	2.96	2.62	41	5.58	3.40	4EL
16	335.0	3.74	3.63	61	7.37	3.65	4EL
17	82.5	1.14	1.75	23	2.89	3.04	4A0
18	195.0	1.87	3.37	31	5.24	2.97	4LA
19	132.5	0.80	2.16	15	2.96	3.03	4A1
20	55.0	6.04	9.50	101	15.54	2.89	4A4
21	52.5	1.34	1.41	22	2.75	2.83	4A1
22	405.0	3.91	6.06	64	9.97	4.17	4EG
23	475.0	4.96	10.31	89	15.27	3.38	4D
24	222.5	2.65	4.03	42	6.68	3.39	4DA
25	545.0	3.29	5.02	49	8.31	2.97	4A4
26	452.5	1.13	1.26	18	2.39	2.76	4A1
27	365.0	1.52	3.25	29	4.77	2.80	4AL
28	1,132.5	2.75	5.80	51	8.55	3.14	4A4
29	165.0	3.79	3.91	63	7.70	3.03	4A4
30	192.5	5.10	9.50	88	14.60	4.14	4G4
31	100.0	3.40	5.85	48	9.25	3.50	4AG
32	45.0	3.80	5.00	67	8.80	2.75	4L4
33	87.5	4.37	4.90	74	9.27	3.80	4GC
34	75.0	4.20	4.04	58	8.24	3.84	4EL*
35	95.0	2.80	3.15	31	5.95	3.34	4D8
36	785.0	3.28	3.41	48	6.69	3.57	4EG
37	1,157.5	1.00	1.58	21	2.58	3.53	4EC
38	345.0	6.30	9.79	118	16.09	4.05	4GD
39	100.0	3.03	3.54	47	6.57	3.44	4EA
40	1,827.5	3.88	6.62	72	10.50	4.10	4EG
41	690.0	4.50	7.84	72	12.34	3.90	4ED
42	582.5	3.44	5.51	62	8.95	3.68	4ED
43	317.5	0.86	1.93	21	2.79	2.96	4AC
44	80.0	1.14	2.01	23	3.15	3.07	4LA
45	145.0	0.55	0.89	19	1.44	3.34	4CO
46	322.5	3.28	3.91	52	7.19	3.65	4DL

G R U M

SECTION 76W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	1,640.0	2.21	4.06	39	6.27	3.01	4A4
2	255.0	4.16	6.88	69	11.04	3.12	4AE
3	107.5	1.07	2.43	24	3.50	2.81	5A9
4	1,127.5	3.10	5.83	50	8.93	3.04	4AD
5	112.5	0.71	1.41	18	2.12	2.78	5A9
6	1,112.5	2.42	4.27	39	6.69	2.95	4ADL
7	1,305.0	1.62	2.64	27	4.26	2.98	4AL
7A	525.0	3.68	7.15	68	10.83	3.10	4A4
8	172.5	3.53	6.78	59	10.31	2.97	4AB
9	82.5	1.17	2.50	26	3.67	2.80	4L4
10	1,687.5	6.23	10.93	110	17.16	4.11	4E4
11	117.5	0.52	0.98	22	1.50	3.03	4AE
12	125.0	2.52	6.24	43	8.76	2.95	5B9/4E4
13	37.5	7.17	17.31	108	24.48	4.37	4EG
14	30.0	4.21	8.64	84	12.85	3.48	4KL
15	1,085.0	2.55	4.20	43	6.75	2.97	4A4
16	685.0	1.56	1.61	24	3.17	2.83	4AL
17	867.5	4.07	7.19	69	11.26	3.31	4AD
18	207.5	1.19	1.05	17	2.24	2.79	4AL
19	430.0	4.80	7.38	74	12.18	3.23	4AD
20	220.0	2.22	3.28	48	5.50	3.27	4AD
21	95.0	2.25	3.34	41	5.59	2.99	4AL
22	250.0	5.66	9.78	93	15.44	4.41	4G
23	17.5	1.98	2.05	36	4.03	3.38	4L4
24	300.0	6.72	6.47	102	13.19	4.05	4EG
25	385.0	1.99	1.50	36	3.49	3.86	4E
26	185.0	4.59	7.43	95	12.02	4.15	4E4
27	20.0	2.23	3.84	60	6.07	4.85	4L4
28	20.0	6.20	9.60	121	15.80	4.18	4G4
29	27.5	4.65	6.73	73	11.38	4.19	4EG
30	407.5	1.26	2.32	29	3.58	3.04	4A1
31	92.5	0.86	1.57	15	2.43	3.03	4A1
32	490.0	1.21	2.23	20	3.44	3.08	4AE
33	1,812.5	3.50	5.85	61	9.35	3.98	4GE
34	205.0	1.82	2.29	34	4.11	3.67	4EA
35	5.0	4.60	6.60	82	11.20	3.94	4E4
36	125.0	3.95	4.00	49	7.95	3.91	4E*4
37	272.5	2.16	2.65	35	4.81	3.13	4GL
38	335.0	3.13	4.03	47	7.16	3.37	4GE
39	250.0	3.85	5.62	60	9.47	3.46	4GE

G R U M

SECTION 78W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	1,362.5	1.91	3.52	32	5.43	2.90	4A0
2*	255.0	2.73	5.20	43	7.93	3.34	4D4
3	2,435.0	2.94	5.76	48	8.70	3.03	4A4
4	520.0	1.22	2.77	25	3.99	2.77	4AD
5	15.0	2.78	5.04	20	7.82	3.34	4D7
6	22.5	1.87	3.21	29	5.08	3.34	4D0
7	310.0	2.71	4.72	51	7.43	3.18	4DE
8	167.5	3.43	4.20	67	7.63	3.31	4A4
9	227.5	5.98	10.58	97	16.56	3.47	4ED
10	265.0	1.80	2.98	35	4.78	3.01	4CD
11	247.5	1.24	2.01	19	3.25	2.89	4L4
12	872.5	3.11	6.08	58	9.19	3.24	4AD
13	287.5	1.37	2.70	33	4.07	3.19	4A0
14	830.0	1.83	3.39	35	5.22	2.95	4ACD
15	312.5	1.15	1.61	21	2.76	2.76	4L4
16	517.5	2.24	4.60	47	6.84	3.04	4A4
17	375.0	4.37	9.02	81	13.39	3.41	4DAE
18	87.5	4.09	5.12	70	9.21	3.25	4A
19	185.0	1.01	2.12	22	3.13	2.81	4AL
20	67.5	2.02	3.00	37	5.02	3.07	4A4
21	182.5	2.51	4.51	43	7.02	3.00	4AE
22	100.0	8.31	16.38	113	24.69	3.52	4A4
23	545.0	1.12	2.10	21	3.22	3.05	4LA
24	190.0	2.10	4.22	35	6.32	2.87	4AL
25	287.5	1.26	2.00	23	3.26	2.85	4A1
26	1,042.5	5.68	11.73	98	17.41	3.81	4AE/4EG
27	1,047.5	2.78	4.27	43	7.05	3.15	4A4
27A	57.5	3.99	6.96	77	10.95	4.40	4E4
28	65.0	1.86	0.92	30	2.78	2.99	4A0
29	352.5	2.01	2.05	34	4.06	3.29	4A0
29A	250.0	0.94	1.16	13	2.10	2.87	4AL
30	890.0	4.17	6.92	84	11.09	4.18	4GE
31	335.0	1.17	1.78	24	2.95	2.93	4A0
32	102.5	2.16	3.74	39	5.90	3.32	4AE
33	932.5	3.65	5.19	63	8.84	3.56	4EA4
34	377.5	2.67	4.29	46	6.96	3.03	4A4
35	155.0	3.71	5.39	64	9.10	3.91	4EA
36	425.0	5.22	8.29	98	13.51	3.98	4E4/5B9
37	67.5	1.45	2.30	27	3.75	3.40	4EA
38	787.5	1.49	1.90	25	3.39	3.33	4EA
39	30.0	1.20	1.23	27	2.43	3.80	4E1
40	582.5	6.03	10.85	97	16.88	3.35	4DA
41	70.0	2.68	5.60	53	8.28	3.64	4AED
42	150.0	1.21	1.60	19	2.81	3.34	4C3
43	195.0	3.01	3.53	51	6.54	3.62	4EG
44	55.0	2.34	4.76	44	7.10	3.19	4AG
45	182.5	4.15	6.41	68	10.56	3.42	4AE
46	275.0	2.45	2.39	27	4.84	3.94	4E8
47	150.0	1.66	1.59	23	3.25	3.03	4A0
48*	530.0	1.86	3.27	30	5.13	3.03	4A
49*	455.0	2.72	4.09	42	6.81	3.30	4LG

* (Sheet 3)

G R U M

SECTION 80W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	1,060.0*	2.09	3.80	34	5.89	3.03	4A1
2	1,325.0*	2.79	5.53	52	8.32	3.39	4AE
3	560.0	2.70	4.96	49	7.66	3.03	4A4
4	422.5	0.95	1.76	19	2.71	3.00	4AB
5	762.5	2.89	4.74	47	7.63	3.03	4A4
6	310.0	1.65	4.57	38	6.22	2.86	4A2
7	92.5	2.15	4.24	38	6.39	2.99	4D4
8	122.5	1.00	1.34	19	2.34	2.77	4C0
9	350.0	3.12	5.83	57	8.95	2.89	4A4
10	162.5	1.54	3.90	26	5.44	2.85	4AC
11	250.0	1.27	2.23	22	3.50	2.85	4AC
12	585.0	2.43	4.53	40	6.96	3.22	4ADCB
13	175.0	3.18	5.03	46	8.21	2.95	4AD
14	2,252.5	1.78	3.38	33	5.16	2.88	4A0
15	2,482.5	1.27	1.92	22	3.19	2.97	4ALC
16	712.5	2.38	4.25	44	6.63	3.08	4AE
17	880.0	3.35	6.16	57	9.51	3.11	4A4
18	487.5	4.18	7.82	69	12.00	3.33	4A4
19	125.0	0.45	0.76	17	1.21	3.79	4EA
20	507.5	5.40	7.86	96	13.26	3.90	4EG
21	477.5	2.81	4.77	54	7.58	3.41	4AEL
22	210.0	4.38	3.61	63	7.99	3.46	4E
23	245.0	7.25	6.33	112	13.58	4.47	4EG
24	242.5	3.00	4.00	46	7.00	3.94	4E4
25	365.0	2.40	2.80	35	5.20	2.80	4L4
26	1,102.5	3.75	7.24	68	10.99	3.44	4AD
27	1,357.5	1.14	1.65	19	2.79	2.71	4AL
28	175.0	5.87	9.44	116	15.31	3.35	4AD
29	70.0	1.86	3.55	36	5.41	3.10	4AD
30	17.5	2.40	6.20	52	8.60	3.03	4A4
31	22.5	8.80	14.10	138	22.90	3.50	4A4
32	227.5	1.86	3.12	30	4.98	3.03	4A4
33	866.0	1.58	1.85	27	3.43	2.97	4A4
34	250.0	4.63	7.90	82	12.53	4.19	4E4
35	87.5	3.07	5.90	60	8.97	4.36	4G0
36	765.0	2.61	3.65	46	6.26	3.83	4EG
37	867.5	4.25	6.77	73	11.02	3.98	4EC
38	302.5	1.83	3.08	36	4.91	3.18	4A1
39	865.0	5.45	10.12	89	15.57	3.99	4ED
40	190.0	2.45	2.40	33	4.85	3.35	4L4
41	572.5	0.99	1.84	18	2.83	3.08	4AE
42	160.0	4.04	6.45	72	10.49	3.73	4AE
43	330.0	3.17	3.27	42	6.44	3.93	4EG
44	327.5	2.70	2.28	32	4.98	3.99	4GE
45	610.0	5.25	6.21	68	11.46	4.28	4G4
46	207.5	4.86	8.48	92	13.34	3.54	4EDA

* (Sheet 3)

G R U M

SECTION 82W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	795.0	2.35	4.91	42	7.26		4AD
2		0.64	2.28	20	2.92		4CA
3	75.0	1.66	5.42	29	7.08		4EO
4	95.0	7.64	13.50	134	21.14		4E4
5	42.5	3.90	5.30	58	9.20		4D4
6	160.0	2.72	3.92	59	6.64		4A4
7	117.5	1.00	3.13	20	4.13		4AO
8	110.0	3.91	8.29	62	12.20		4AD
9	87.5	4.67	7.14	94	11.81		4DA
10		1.34	1.58	19	2.92		4AL
11	142.5	1.56	2.87	27	4.43		4AGD
12	627.5	2.31	4.69	45	7.00		4A4
13	542.5	1.61	3.05	29	4.66		4AC
14	1,110.0	1.81	3.38	31	5.19		4A4
15	52.5	3.26	7.11	57	10.37		4D4
16	327.5	2.19	3.84	38	6.03		4AD
17	222.5	1.41	2.74	24	4.15		4AC
18	50.0	2.86	4.86	55	7.72		4A4
19	242.5	1.67	2.94	31	4.61		4EC
20	325.0	1.40	2.16	23	3.56		4LA
21	237.5	3.65	4.76	55	8.41		4A4
22	177.5	4.50	6.81	70	11.31		4D4
23	170.0	6.20	6.42	107	12.62		4G4
24		1.78	1.83	27	3.61		4CO
25	410.0	1.51	2.75	27	4.26		4AO
26	440.0	4.44	7.51	80	11.95	3.30	4A4
27	547.5	2.88	4.88	48	7.76		4A4
28		1.18	1.12	19	2.30		4AC
29	20.0	1.48	2.73	32	4.21		4A3
30	24.2	4.98	8.50	92	13.48		4E4
31	47.5	5.90	4.77	63	10.67		4A4
32	1,077.5	4.78	8.05	84	12.83	4.15	4G4
33	220.0	1.69	2.95	29	4.64		4AE
34	62.5	6.96	11.87	120	18.83		4E4
35	897.5	1.86	2.40	31	4.26		4AO
36	207.5	4.09	9.83	85	13.92	3.30	4A4
37	560.0	3.74	7.43	71	11.17		4A4
38	512.5	1.95	3.10	35	5.05	3.30	4CO
39	262.5	4.25	7.45	73	11.70		4A4
40		0.58	1.54	14	2.12		4AO
41	365.0	2.16	2.65	32	4.81		4CD
42	387.5	1.68	2.88	27	4.56		4CA
43	457.5	1.82	2.47	30	4.29		4AO
44	1,580.0	4.50	7.49	77	11.99	3.98	4GE

SECTION 82W - (Cont'd)

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
45	75.0	2.43	3.01	54	5.44	3.80	4E4
46		1.14	1.58	22	2.72		4L4
47	237.5	1.75	2.66	30	4.41		4CO
48	355.0	4.13	6.99	72	11.12		4GAE
49	195.0	2.40	4.15	42	6.55		4GO
50	340.0	2.90	4.70	58	7.60		4DE
51	105.0	1.95	3.25	44	5.20		4AEC
52	120.0	2.29	3.23	40	5.52		4AE
53	582.5	2.03	2.42	30	4.45		4ECA
54		0.77	1.54	15	2.31		4CO
55	10.5	7.33	14.54	112	21.87		4E4
56	60.0	3.45	6.30	69	9.75		4A4
57		0.92	1.74	19	2.66		4C
58	302.5	2.99	5.38	53	8.37		4D
59	375.0	5.03	9.50	73	14.53		4D4

G R U M

SECTION 84W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	45.0	4.79	13.65	83	18.44		4A4
2	310.0	2.29	5.17	38	7.46		4A4
3	307.5	3.34	5.30	55	8.64		4A4
4	302.5	4.33	6.37	72	10.70		4D4
5	37.5	2.98	7.66	59	10.64		4A4
6	35.0	7.20	12.10	133	19.30		4D4
7	70.0	4.78	7.27	108	12.05		4A4
8	77.5	1.95	4.37	38	6.32		4A0
9	57.5	2.23	6.51	47	8.74		4EA
10	2,550.0	2.44	4.62	40	7.06		4AD
11	815.0	1.81	3.54	34	5.35		4A0
12	1,625.0	1.50	2.77	25	4.27		4A4
13	702.5	1.79	2.72	28	4.51		4AC
14	477.5	3.56	5.73	62	9.29		4AD
15	425.0	3.23	5.11	53	8.34	3.30	4DA
16	250.0	4.37	7.60	78	11.97	3.50	4AK
17	342.5	3.15	4.88	55	8.03	3.30	4AK
18	345.0	2.61	4.32	41	6.93		4A4
19	231.5	2.86	5.21	54	8.07		4A4
20	75.0	5.43	6.07	84	11.50		4ED
21	112.5	4.45	1.39	77	5.84		4G0
22	135.0	4.56	6.70	76	11.26		4E4
23	375.0	3.28	6.24	62	9.52		4A4
24	352.5	5.45	9.76	96	15.21		4AGE
25	72.5	8.27	13.13	123	21.40		4E4/5A9
26	407.5	4.77	7.39	80	12.16		4AE
27	225.0	2.66	3.49	41	6.15		4GE
28	295.0	3.34	5.25	41	8.59		4GE
29	987.5	3.29	5.48	61	8.77		4EG
30	60.0	3.43	6.24	63	9.67		4A4
31	70.0	1.89	2.77	35	4.66		4A0
32	220.0	3.32	4.67	55	7.99		4EG
33	17.5	5.20	11.00	77	16.20		4E4
34	315.0	2.47	2.73	35	5.20		4E8

G R U M

SECTION 86W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1		1.71	1.71	23	3.42		4CD
2		1.24	2.60	26	3.84		4AO
3	965.0	2.26	6.82	49	9.08		4A4
4	85.0	2.05	4.32	40	6.37		4AE
5	1,805.0	1.68	3.85	33	5.53		4A4
6		1.01	2.57	20	3.58		4AO
7	3,870.0	2.31	4.49	40	6.80		4A4
8	850.0	2.56	4.64	40	7.20		4AD
9	1,357.5	1.77	3.47	36	5.24		4A4
10		1.56	1.47	24	3.03		4CE
11	177.5	2.74	2.94	60	5.68		4CG
12	102.5	6.40	18.60	117	25.00		4E4
13	362.5	3.03	6.94	78	9.97		4AE
14		1.36	1.98	24	3.34		4AO
15	357.5	3.35	6.32	66	9.67		4AE
16	57.5	2.11	4.04	33	6.15		4D5
17	47.5	1.87	3.36	27	5.23		4CO
18	857.5	4.37	7.57	72	11.94		4D4
19	770.0	2.40	3.60	30	6.00		4D4
20	435.0	2.41	3.68	38	6.09		4D0
21	272.5	2.17	2.93	33	5.10		4A4
22	380.0	2.20	3.92	38	6.12		4DL
23	797.5	4.10	5.26	65	9.36		4D0
24	550.0	6.61	12.68	102	19.29		4G4
25		1.09	1.26	24	2.35		4AO
26	45.0	2.82	4.94	45	7.76		4AE
27	37.5	3.02	5.05	40	8.07		4A4
28	230.0	6.00	10.11	98	16.11		4GA
29	200.0	2.21	3.33	31	5.54		4AG
30	447.5	4.03	5.36	58	9.39		4GL
31	242.5						
32	137.5	6.00	8.40	94	14.40		4E4
33		1.40	2.46	26	3.86		4AO
34	1,050.0	4.39	5.76	66	10.15		4EG
35	97.5	2.60	2.97	39	5.57		4A4
36		1.55	0.64	11	2.19		4L8

UNDERGROUND ESTIMATE

*file copy!**Gram - reserve estimates*

To J. G. Simpson

Copy to

From T. J. Adamson

Date December 1, 1982

Subject Gram Reserve Estimate - Underground Mining; Secs. 62W - 86W

Note: - Tonnage and grade are undiluted, with an 8% combined Pb+Zn mining cut-off grade and with 100% mining extraction.

- Assay blocks in the underground mining reserve are shown on the attached, coloured, section by section assay block/grade/S.G. tabulations and also on the corresponding coloured assay block cross-section maps.

- S.G.'s are estimated from ore facies for Sections 82W - 86W. Actual values will be available by year end.

- "Underground Reserve" and "Open Pit Reserve (Olk Pit)" are not additive. Much of the calculated underground minable reserve falls within the plotted limits of the "Olk Pit" (i.e. 4,900,000 tonnes @ 4.72% Pb, 8.62% Zn, 81 gms/MT Ag within pit limits).

	<u>Tonnes</u>	<u>Pb %</u>	<u>Zn %</u>	<u>Ag</u>
A. Upper Panel, Sec. 70-82W (yellow)	1,915,139	5.09	9.26	88
Lower Panel, Sec. 70-86W (green)	<u>4,186,130</u>	4.22	7.19	74
Upper + Lower Panels	6,101,259	4.49	7.84	78
B. Sec. 62-68 East Extension to Upper/Lower Panel (orange)	956,046	5.35	10.03	89
C. Section 70-86W (orange)	2,480,851	4.10	7.60	72
D. Section 64-70W "Upright Panel" (orange stripe)	<u>1,422,073</u>	5.09	6.37	78
TOTAL	10,960,239	4.55	7.79	78

If the highest grade "plums" (attached tabulation) are extracted first in the early mining years, as follows:

2,351,266	5.72	10.80	98
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then the tonnage/grade of the remaining underground reserve is:

8,608,973	4.23	6.97	73
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TJA/ck
Attach.

63107103

<u>Sec.</u>	<u>Pb %</u>	<u>Zn %</u>	<u>Ag</u>	<u>Tonnes</u>
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Section 70 - 82W Upper Panel (yellow) tonnage/grade

Sec. 70W	4.60	8.91	85	257,196
72	4.52	7.90	75	293,218
74	5.47	10.09	91	215,365
76	6.23	10.93	110	423,073
78	5.62	11.56	97	251,010
80	4.20	7.12	72	386,705
82	4.44	7.51	80	88,572

1,915,139

(★ indicates assay blocks included in this total on following pages)

5.09 9.26 88

Section 70 - 86W Lower Panel (green) tonnage/grade

Sec. 70W	6.91	13.13	111	93,234
72	4.10	6.75	74	545,014
74	3.94	6.69	70	770,459
76	3.50	5.85	61	391,781
78	4.33	7.09	78	577,880
80	4.75	8.27	80	515,140
82	4.56	7.64	79	738,650
84	3.81	6.56	69	401,960
86	3.43	7.48	75	152,012

4,186,130

(+ indicates assay blocks included in this total on following pages)

4.22 7.19 74

Section 70 - 86W Upper + Lower Panel

Upper (yel.)	5.09	9.26	89	1,915,139
Lower (gr.)	4.22	7.19	74	4,186,130

6,101,269

4.49 7.84 78

Section 62-68W East Extension to Upper/Lower Panel

Sec. 62W	6.36	13.29	103	99,894
64	5.41	10.59	91	182,183
66	5.46	9.07	89	297,643
68	4.96	9.66	84	376,326

956,046

(● indicates assay blocks included in this total)

5.35 10.03 89

Section 70-86W "Orange" Reserve tonnage/grade

Sec. 70W	6.61	13.15	111	142,449
72	4.04	7.17	71	338,779
74	3.55	6.92	63	417,874
76	4.38	7.63	74	426,410
78	3.89	7.58	69	289,264
80	3.93	7.44	72	276,156
82	3.94	7.92	74	207,339
84	3.50	5.67	60	207,873
86	4.37	7.57	72	174,707

2,480,851

(● indicates assay blocks included in this total.)

4.10 7.60 72

Section 64 - 70W "Upright Panel" (orange stripe) tonnage/grade

■ indicates assay
blocks included.

Sec. 64W	5.31	6.51	80	293,198
66	4.59	5.56	72	571,101
68	5.92	8.50	91	254,485
70	5.13	5.98	78	<u>303,289</u>

1,422,073	5.09	6.37	78
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Initial Mining Years High Grade Reserve

<u>Section</u>	<u>Blocks</u>	<u>Pb %</u>	<u>Zn %</u>	<u>Ag</u>	<u>Tonnes</u>	<u>Pb %</u>	<u>Zn %</u>	<u>Ag</u>
62W (orange) ●	1	6.36	13.29	103	99,894			
64W (orange) ●	2, 3	6.09	11.67	103	143,272			
66W (orange) ●	4	5.73	9.71	94	250,051			
68W (orange) ●	7, 9, 11, 12	5.08	10.06	85	346,771			
70W (orange) ●	8	6.61	13.15	111	142,449			
70W (green) +	17	6.91	13.13	111	93,234			
70W (yellow) ★	14	4.73	9.42	87	221,209			
72W (yellow) ★	10, 14	5.43	9.64	94	164,938			
74W (yellow) ★	9, 11, 13	5.47	10.09	91	215,365			
76W (yellow) ★	10	6.23	10.93	110	423,073			
78W (yellow) ★	26, 27A	5.62	11.56	97	<u>251,010</u>			
					2,351,266	5.72	10.80	98

G R U M

SECTION 62W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
● 1	445.0	6.36	13.29	103	19.65	3.68	4ED
2	70.0	0.63	1.24	14	1.87	3.22	4AD
3	540.0	3.39	5.38	86	8.77	4.10	4EG
4	32.5	1.88	3.10	39	4.98	3.15	4A4
5	127.5	1.07	1.09	28	2.16	3.70	4EL
6	325.0	3.24	5.44	64	8.68	4.11	4EA
7	95.0	1.06	2.20	22	3.26	2.83	4AO
8	25.0	2.93	4.25	38	7.18	2.84	4AK
9	42.5	5.30	7.00	83	12.30	3.72	4G4
10	200.0	2.64	4.00	30	6.64	3.82	4GE/5D
11	602.5	2.80	3.16	42	5.96	3.43	4EA
12	257.5	2.46	4.28	42	6.74	3.11	4AC
13	320.0	2.60	2.42	41	5.02	3.80	4GE

- ★ "upper panel" 70W-82W (= yellow)
- + "lower panel" 70W-86W (= green)
- east extension to upper and lower panels on
Sections 62W-68W and misc. are on sections 70-86W
(= orange)
- "upright panel" (= orange stripe)

G R U M

SECTION 64W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	1,087.5	1.95	2.72	28	4.67	3.16	4AO
● 2	515.0	6.05	12.43	104	18.48	3.81	4DE
● 3	117.5	6.29	7.80	95	14.09	3.29	4A4
4	585.0	1.61	2.23	32	3.84	3.65	4C8
● 5	137.5	2.93	6.64	51	9.57	3.03	4AL
● 6	75.0	2.81	6.59	45	9.40	2.95	5B9
7	272.5	5.39	8.73	92	14.12	4.28	4GE
8	205.0	3.12	3.79	53	6.91	3.87	4AGH
9	140.0	0.78	1.45	14	2.23	3.30	4A1
10	40.0	4.60	8.35	85	12.95	4.28	4E4
11	95.0	2.61	2.97	46	5.58	3.60	4HD
12	1,067.5	1.57	1.45	25	3.02	3.53	4EC
■ 13	945.0	5.35	6.44	81	11.79	4.20	4GE
■ 14	200.0	5.07	6.87	75	11.94	3.80	4GE
15	37.5	2.99	3.20	42	6.19	3.65	4GL
16	600.0	1.77	3.03	35	4.80	3.35	4A4
17	37.5	2.30	4.60	39	6.90	3.03	4A4
18	20.0	1.76	3.20	26	4.96	3.03	4A2
19	225.0	2.09	2.29	33	4.38	3.66	4CEG
20	27.5	3.22	4.42	56	7.64	3.34	4D4
21	425.0	2.10	1.73	35	3.83	3.94	4E*

G R U M

SECTION 66W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	410.0	10.55	9.52	173	20.07	4.00	4EGL
2	52.5	1.33	4.38	21	5.71	3.03	4A4
3	75.0	0.64	1.73	17	2.37	2.83	4A1
● 4	1,067.5	5.73	9.71	94	15.44	3.84	4GED
5	210.0	1.20	1.64	30	2.84	3.05	4A0
● 6	235.0	4.04	5.73	63	9.77	3.32	4A4
7	162.5	2.70	3.94	38	6.64	3.53	4AE
8	657.5	0.48	1.68	20	2.16	3.40	4CO
9	212.5	3.75	4.79	65	8.54	3.34	4CD
10	210.0	2.52	4.10	46	6.62	3.84	4EA
11	257.5	6.22	10.98	116	17.20	4.00	4EG
12	600.0	1.32	2.83	26	4.15	3.14	4A1
13	237.5	2.58	5.01	44	7.59	3.44	4EA
14	107.5	2.95	7.00	44	9.95	2.76	4L4
15	62.5	1.55	3.13	28	4.68	3.01	4A1
■ 16	427.5	3.62	5.06	58	8.68	3.10	4A4
■ 17	957.5	5.57	6.33	83	11.90	3.82	4GD
■ 18	397.5	3.98	5.23	64	9.21	3.34	4D
■ 19	707.5	4.07	4.97	67	9.04	4.10	4GE
20	275.0	0.98	1.64	27	2.62	2.95	4A0
21	372.5	0.97	1.16	22	2.13	4.10	4EO
22	310.0	2.50	3.83	46	6.33	3.79	4E8
23	805.0	2.69	2.36	34	5.05	3.36	4CE
24	32.5	1.52	1.41	40	2.93	3.60	4CE
25	95.0	4.60	6.08	87	10.68	3.99	4GE

G R U M

SECTION 68W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	175.0	8.37	6.78	111	15.15	3.64	4E4
2	172.5	6.03	6.91	88	12.94	3.22	4GKA
3	430.0	5.27	9.93	85	15.20	3.48	4BD4
4	102.5	2.86	5.48	54	8.34	3.29	4A4
5	30.0	5.13	7.81	73	12.94	3.23	4A4
6	1,885.0	0.86	1.69	14	2.55	2.93	4A0
● 7	437.5	5.08	9.18	84	14.26	4.18	4E4
8	390.0	1.80	2.52	33	4.32	3.61	4E0
● 9	357.5	5.11	10.25	89	15.36	3.88	4ED
● 10	142.5	3.56	4.98	63	8.54	3.40	4D4
● 11	377.5	4.87	9.08	83	13.95	3.43	4A4
● 12	295.0	5.26	12.27	86	17.53	3.98	4DE
13	192.5	2.01	3.56	34	5.57	3.55	4EC
14	127.5	7.55	6.63	96	14.18	3.34	4D6
15	492.5	4.38	3.68	66	8.06	4.15	4EK
16	165.0	5.25	8.96	106	14.21	4.17	4G4
17	47.5	1.74	3.06	36	4.80	3.27	4EA
18	122.5	2.46	5.28	44	7.74	3.12	4A4
19	22.5	5.17	10.26	87	15.43	3.90	4G4
■ 20	555.0	5.79	7.19	82	12.98	4.06	4GE
21	725.0	3.03	3.91	53	6.94	3.77	4E
22	305.0	2.35	2.89	35	5.24	3.22	4ADC
23	1,977.5	1.19	1.20	21	2.39	3.42	4C0
■ 24	495.0	6.08	10.10	101	16.18	3.74	4E4
25	125.0	3.69	3.24	50	6.93	3.62	4E8
26	52.5	4.23	8.45	67	12.68	3.30	4A0

G R U M

SECTION 70W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	57.5	7.39	8.53	123	15.92	4.06	4GK
2	62.5	6.22	7.14	96	13.36	4.00	4GD
3	482.5	2.41	5.88	44	8.29	3.03	4A4
4	1,087.5	2.18	4.30	38	6.48	3.32	4A4
4A	75.0	2.58	4.29	38	6.87	3.03	4L4
5	690.0	1.78	3.29	35	5.07	3.43	4AE
6	342.5	0.91	1.74	19	2.65	2.80	5B/4L
7	57.5	1.37	2.50	26	3.87	3.02	4L2
● 8	1,152.5	6.61	13.15	111	19.76	4.12	4ED
9	45.0	1.48	1.65	27	3.13	3.36	4AO
10	315.0	1.81	2.95	36	4.76	3.33	4AO
11	522.5	1.34	3.13	27	4.47	2.85	4L4
12	165.0	3.87	7.85	64	11.72	3.03	4A4
13	147.5	1.20	2.95	25	4.15	3.16	4AE
★ 14	837.5	4.73	9.42	87	14.15	4.33	4EG
15	382.5	1.61	2.16	35	3.77	3.21	4AO
★ 16	142.5	3.83	5.74	76	9.57	4.14	4EG
✦ 17	425.0	6.91	13.13	111	20.04	3.51	4DE
18	80.0	4.84	10.69	90	15.53	3.57	4D
19	237.5	5.30	10.70	96	16.00	4.04	4E4
20	57.5	0.25	0.91	17	1.16	3.03	4AE
21	222.5	1.94	2.92	37	4.86	3.52	4CA
22	710.0	5.63	5.98	88	11.61	4.27	4EG
23	437.5	1.36	1.13	25	2.49	3.42	4L
24	110.0	3.12	2.63	47	5.75	3.52	4LC
25	300.0	2.59	2.55	43	5.14	3.99	4AC
26	115.0	0.80	1.52	13	2.32	2.72	4A3
27	80.0	5.10	7.50	89	12.60	4.05	4G4
28	25.0	1.47	1.89	28	3.36	3.36	4CO
29	50.0	1.29	1.77	25	3.06	3.38	4AO
30	877.5	1.60	3.59	31	5.19	3.01	4AO
■ 31	440.0	5.77	8.19	96	13.96	3.96	4GE
32	100.0	2.68	3.32	45	6.00	3.55	4DC
■ 33	375.0	4.99	5.28	74	10.27	3.89	4GE
■ 34	395.0	4.59	4.31	63	8.90	4.28	4GED
35	217.5	2.72	2.82	45	5.54	3.90	4E8
36	87.5	2.80	1.15	36	3.95	3.17	4AO
37	460.0	5.59	5.90	73	11.49	4.22	4GE
38	167.5	0.89	1.28	22	2.17	3.46	4C8

G R U M

SECTION 72W .

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	230.0	4.55	8.06	74	12.61	3.30	4DLA
2	417.5	2.07	3.75	37	5.82	3.30	4AD
3	2,277.5	2.42	4.78	44	7.20	3.15	4A4
4	280.0	1.46	2.79	22	4.25	2.97	4LO
5	77.5	0.72	1.82	11	2.54	2.95	4BA
● 6	282.5	3.80	7.42	71	11.22	3.52	4AD
7	775.0	3.30	4.28	47	7.58	3.18	4A4
● 8	130.0	4.50	8.46	78	12.96	3.10	4E4
★ 9	1,125.0(685)	3.35	5.66	50	9.01	3.07	4A4
★ 10	192.5(150)	7.48	14.50	132	21.98	3.95	4ED
11	30.0	9.35	17.70	143	27.05	4.11	4E4
12	205.0	1.14	2.32	21	3.46	2.85	4LA
13	95.0	1.39	1.94	35	3.33	3.49	4AO
★ 14	517.5	4.86	8.28	83	13.14	4.08	4EG
15	187.5	1.61	2.20	25	3.81	3.15	4A4
16	92.5	3.25	6.23	71	9.48	3.94	4E4
17	490.0	1.56	1.36	22	2.92	3.03	4AL
18	262.5	6.69	5.25	97	11.94	4.19	4EG
19	180.0	2.64	2.31	40	4.95	3.27	4CL/5B9
20	80.0	1.60	1.77	24	3.37	3.23	4CL
21	177.5	6.28	7.02	101	13.30	4.23	4GE
22	147.5	5.17	5.31	85	10.48	4.06	4GE
23	50.0	2.73	2.16	53	4.89	3.89	4EC
24	212.5	6.63	8.22	110	14.85	4.11	4EG
+ 25	1,147.5	4.41	6.81	77	11.22	4.81	4DE
+ 26	725.0	3.29	6.07	65	9.36	4.03	4EG
27	265.0	0.69	1.06	15	1.75	3.07	4AO
+ 28	77.5	6.36	12.73	102	19.09	3.60	4A4
29	915.0	0.96	2.34	23	3.30	3.28	4CO
30	25.0	1.97	2.94	34	4.91	2.75	4L4
31	155.0	4.42	9.25	80	13.67	3.90	4EK
32	305.0	0.88	1.31	18	2.19	2.95	4AO
■ 33	175.0	3.38	5.98	77	9.36	3.48	4DK
■ 34	557.5	4.68	8.07	80	12.75	3.94	4EG
35	147.5	2.69	4.49	53	7.18	3.03	4A4
36	72.5	2.19	4.11	39	6.30	3.59	4ADE
37	245.0	3.47	4.16	68	7.63	3.75	4CD
38	107.5	1.70	1.90	29	3.60	3.37	4E1
39	107.5	3.60	3.32	43	6.92	3.88	4EG
40	410.0	1.96	1.36	36	3.32	3.62	4EG

() indicates a revised number actually used.

G R U M

SECTION 74W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	992.5	1.19	2.89	25	4.08	2.95	4AB
2	485.0	2.19	5.59	44	7.78	3.26	4AD
3	357.5	6.45	9.34	101	15.79	3.40	4DEA
4	665.0	4.02	6.91	65	10.93	3.10	4AC
5	617.5	3.10	5.32	50	8.42	3.18	4AD
6	195.0	2.16	3.66	37	5.82	2.87	4AL
7	1,127.5	2.20	3.91	35	6.11	3.06	4AC
8	570.0	1.31	2.47	21	3.78	2.92	4AC
★ 9	305.0	7.37	14.35	125	21.72	3.94	4E4
10	225.0	2.91	4.67	46	7.58	3.19	4LC
★ 11	420.0	3.16	5.38	49	8.54	3.06	4A4
12	645.0	1.20	1.54	18	2.74	2.83	4CA
★ 13	357.5 (272.5)	6.12	10.97	103	17.09	3.83	4E
14	382.5	6.14	4.64	78	10.78	4.15	4EG
15	55.0	2.96	2.62	41	5.58	3.40	4EL
16	335.0	3.74	3.63	61	7.37	3.65	4EL
17	82.5	1.14	1.75	23	2.89	3.04	4AO
18	195.0	1.87	3.37	31	5.24	2.97	4LA
19	132.5	0.80	2.16	15	2.96	3.03	4A1
20	55.0	6.04	9.50	101	15.54	2.89	4A4
21	52.5	1.34	1.41	22	2.75	2.83	4A1
● 22	405.0	3.91	6.06	64	9.97	4.17	4EG
● 23	475.0	4.96	10.31	89	15.27	3.38	4D
24	222.5	2.65	4.03	42	6.68	3.39	4DA
25	545.0	3.29	5.02	49	8.31	2.97	4A4
26	452.5	1.13	1.26	18	2.39	2.76	4A1
27	365.0	1.52	3.25	29	4.77	2.80	4AL
● 28	1,132.5	2.75	5.80	51	8.55	3.14	4A4
29	165.0	3.79	3.91	63	7.70	3.03	4A4
30	192.5	5.10	9.50	88	14.60	4.14	4G4
31	100.0	3.40	5.85	48	9.25	3.50	4AG
32	45.0	3.80	5.00	67	8.80	2.75	4L4
33	87.5	4.37	4.90	74	9.27	3.80	4GC
34	75.0	4.20	4.04	58	8.24	3.84	4EL*
35	95.0	2.80	3.15	31	5.95	3.34	4D8
36	785.0	3.28	3.41	48	6.69	3.57	4EG
37	1,157.5	1.00	1.58	21	2.58	3.53	4EC
38	345.0	6.30	9.79	118	16.09	4.05	4GD
39	100.0	3.03	3.54	47	6.57	3.44	4EA
+ 40	1,827.5	3.88	6.62	72	10.50	4.10	4EG
+ 41	690.0	4.50	7.84	72	12.34	3.90	4ED
+ 42	582.5	3.44	5.51	62	8.95	3.68	4ED
43	317.5	0.86	1.93	21	2.79	2.96	4AC
44	80.0	1.14	2.01	23	3.15	3.07	4LA
45	145.0	0.55	0.89	19	1.44	3.34	4CO
46	322.5	3.28	3.91	52	7.19	3.65	4DL

() revised number actually used in computation

G R U M

SECTION 76W

Assay Block#.	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	1,640.0	2.21	4.06	39	6.27	3.01	4A4
2	255.0	4.16	6.88	69	11.04	3.12	4AE
3	107.5	1.07	2.43	24	3.50	2.81	5A9
4	1,127.5	3.10	5.83	50	8.93	3.04	4AD
5	112.5	0.71	1.41	18	2.12	2.78	5A9
6	1,112.5	2.42	4.27	39	6.69	2.95	4ADL
7	1,305.0	1.62	2.64	27	4.26	2.98	4AL
● 7A	525.0	3.68	7.15	68	10.83	3.10	4A4
8	172.5	3.53	6.78	59	10.31	2.97	4AB
9	82.5	1.17	2.50	26	3.67	2.80	4L4
★ 10	1,687.5	6.23	10.93	110	17.16	4.11	4E4
11	117.5	0.52	0.98	22	1.50	3.03	4AE
12	125.0	2.52	6.24	43	8.76	2.95	5B9/4E4
13	37.5	7.17	17.31	108	24.48	4.37	4EG
14	30.0	4.21	8.64	84	12.85	3.48	4EL
15	1,085.0	2.55	4.20	43	6.75	2.97	4A4
16	685.0	1.56	1.61	24	3.17	2.83	4AL
● 17	867.5	4.07	7.19	69	11.26	3.31	4AD
18	207.5	1.19	1.05	17	2.24	2.79	4AL
● 19	430.0	4.80	7.38	74	12.18	3.23	4AD
20	220.0	2.22	3.28	48	5.50	3.27	4AD
21	95.0	2.25	3.34	41	5.59	2.99	4AL
● 22	250.0	5.66	9.78	93	15.44	4.41	4G
23	17.5	1.98	2.05	36	4.03	3.38	4L4
24	300.0	6.72	6.47	102	13.19	4.05	4EG
25	385.0	1.99	1.50	36	3.49	3.86	4E
26	185.0	4.59	7.43	95	12.02	4.15	4E4
27	20.0	2.23	3.84	60	6.07	4.85	4L4
28	20.0	6.20	9.60	121	15.80	4.18	4G4
29	27.5	4.65	6.73	73	11.38	4.19	4EG
30	407.5	1.26	2.32	29	3.58	3.04	4A1
31	92.5	0.86	1.57	15	2.43	3.03	4A1
32	490.0	1.21	2.23	20	3.44	3.08	4AE
+ 33	1,812.5 (1575.0)	3.50	5.85	61	9.35	3.98	4GE
34	205.0	1.82	2.29	34	4.11	3.67	4EA
35	5.0	4.60	6.60	82	11.20	3.94	4E4
36	125.0	3.95	4.00	49	7.95	3.91	4E*4
37	272.5	2.16	2.65	35	4.81	3.13	4GL
38	335.0	3.13	4.03	47	7.16	3.37	4GE
39	250.0	3.85	5.62	60	9.47	3.46	4GE

G R U M

SECTION 78W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	1,362.5	1.91	3.52	32	5.43	2.90	4AO
2*	255.0	2.73	5.20	43	7.93	3.34	4D4
3	2,435.0	2.94	5.76	48	8.70	3.03	4A4
4	520.0	1.22	2.77	25	3.99	2.77	4AD
5	15.0	2.78	5.04	20	7.82	3.34	4D7
6	22.5	1.87	3.21	29	5.08	3.34	4D0
7	310.0	2.71	4.72	51	7.43	3.18	4DE
8	167.5	3.43	4.20	67	7.63	3.31	4A4
9	227.5	5.98	10.58	97	16.56	3.47	4ED
10	265.0	1.80	2.98	35	4.78	3.01	4CD
11	247.5	1.24	2.01	19	3.25	2.89	4L4
● 12	872.5	3.11	6.08	58	9.19	3.24	4AD
13	287.5	1.37	2.70	33	4.07	3.19	4AO
14	830.0	1.83	3.39	35	5.22	2.95	4ACD
15	312.5	1.15	1.61	21	2.76	2.76	4L4
16	517.5	2.24	4.60	47	6.84	3.04	4A4
● 17	375.0	4.37	9.02	81	13.39	3.41	4DAE
● 18	87.5	4.09	5.12	70	9.21	3.25	4A
19	185.0	1.01	2.12	22	3.13	2.81	4AL
20	67.5	2.02	3.00	37	5.02	3.07	4A4
21	182.5	2.51	4.51	43	7.02	3.00	4AE
● 22	100.0	8.31	16.38	113	24.69	3.52	4A4
23	545.0	1.12	2.10	21	3.22	3.05	4LA
24	190.0	2.10	4.22	35	6.32	2.87	4AL
25	287.5	1.26	2.00	23	3.26	2.85	4A1
★ 26	1,042.5	5.68	11.73	98	17.41	3.81	4AE/4EG
27	1,047.5	2.78	4.27	43	7.05	3.15	4A4
★ 27A	57.5 (32.5)	3.99	6.96	77	10.95	4.40	4E4
28	65.0	1.86	0.92	30	2.78	2.99	4AO
29	352.5	2.01	2.05	34	4.06	3.29	4AO
29A	250.0	0.94	1.16	13	2.10	2.87	4AL
+ 30	890.0	4.17	6.92	84	11.09	4.18	4GE
31	335.0	1.17	1.78	24	2.95	2.93	4AO
32	102.5	2.16	3.74	39	5.90	3.32	4AE
+ 33	932.5	3.65	5.19	63	8.84	3.56	4EA4
34	377.5	2.67	4.29	46	6.96	3.03	4A4
35	155.0	3.71	5.39	64	9.10	3.91	4EA
36	425.0	5.22	8.29	98	13.51	3.98	4E4/5B9
37	67.5	1.45	2.30	27	3.75	3.40	4EA
38	787.5	1.49	1.90	25	3.39	3.33	4EA
39	30.0	1.20	1.23	27	2.43	3.80	4E1
+ 40	582.5	6.03	10.85	97	16.88	3.35	4DA
+ 41	70.0	2.68	5.60	53	8.28	3.64	4AED
42	150.0	1.21	1.60	19	2.81	3.34	4C3
43	195.0	3.01	3.53	51	6.54	3.62	4EG
44	55.0	2.34	4.76	44	7.10	3.19	4AG
45	182.5	4.15	6.41	68	10.56	3.42	4AE
46	275.0	2.45	2.39	27	4.84	3.94	4E8
47	150.0	1.66	1.59	23	3.25	3.03	4AO
48*	530.0	1.86	3.27	30	5.13	3.03	4A
49*	455.0	2.72	4.09	42	6.81	3.30	4LG

* (Sheet 3)

G R U M

SECTION 80W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	1,060.0*	2.09	3.80	34	5.89	3.03	4A1
2	1,325.0*	2.79	5.53	52	8.32	3.39	4AE
3	560.0	2.70	4.96	49	7.66	3.03	4A4
4	422.5	0.95	1.76	19	2.71	3.00	4AB
5	762.5	2.89	4.74	47	7.63	3.03	4A4
6	310.0	1.65	4.57	38	6.22	2.86	4A2
7	92.5	2.15	4.24	38	6.39	2.99	4D4
8	122.5	1.00	1.34	19	2.34	2.77	4C0
9	350.0	3.12	5.83	57	8.95	2.89	4A4
10	162.5	1.54	3.90	26	5.44	2.85	4AC
11	250.0	1.27	2.23	22	3.50	2.85	4AC
12	585.0	2.43	4.53	40	6.96	3.22	4ADCB
13	175.0	3.18	5.03	46	8.21	2.95	4AD
14	2,252.5	1.78	3.38	33	5.16	2.88	4A0
15	2,482.5	1.27	1.92	22	3.19	2.97	4ALC
16	712.5	2.38	4.25	44	6.63	3.08	4AE
★ 17	880.0	3.35	6.16	57	9.51	3.11	4A4
★ 18	487.5	4.18	7.82	69	12.00	3.33	4A4
19	125.0	0.45	0.76	17	1.21	3.79	4EA
★ 20	507.5	5.40	7.86	96	13.26	3.90	4EG
21	477.5	2.81	4.77	54	7.58	3.41	4AEL
22	210.0	4.38	3.61	63	7.99	3.46	4E
23	245.0	7.25	6.33	112	13.58	4.47	4EG
24	242.5	3.00	4.00	46	7.00	3.94	4E4
25	365.0	2.40	2.80	35	5.20	2.80	4L4
● 26	1,102.5	3.75	7.24	68	10.99	3.44	4AD
27	1,357.5	1.14	1.65	19	2.79	2.71	4AL'
28	175.0	5.87	9.44	116	15.31	3.35	4AD
29	70.0	1.86	3.55	36	5.41	3.10	4AD
30	17.5	2.40	6.20	52	8.60	3.03	4A4
31	22.5	8.80	14.10	138	22.90	3.50	4A4
32	227.5	1.86	3.12	30	4.98	3.03	4A4
33	866.0	1.58	1.85	27	3.43	2.97	4A4
+ 34	250.0(232.5)	4.63	7.90	82	12.53	4.19	4E4
+ 35	87.5(83.5)	3.07	5.90	60	8.97	4.36	4G0
36	765.0	2.61	3.65	46	6.26	3.83	4EG
+ 37	867.5	4.25	6.77	73	11.02	3.98	4EG
38	302.5	1.83	3.08	36	4.91	3.18	4A1
+ 39	865.0	5.45	10.12	89	15.57	3.99	4ED
40	190.0	2.45	2.40	33	4.85	3.35	4L4
41	572.5	0.99	1.84	18	2.83	3.08	4AE
42	160.0	4.04	6.45	72	10.49	3.73	4AE
43	330.0	3.17	3.27	42	6.44	3.93	4EG
44	327.5	2.70	2.28	32	4.98	3.99	4GE
45	610.0	5.25	6.21	68	11.46	4.28	4G4
● 46	207.5	4.86	8.48	92	13.34	3.54	4EDA

* (Sheet 3)

G R U M

SECTION 82W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	795.0	2.35	4.91	42	7.26		4AD
2		0.64	2.28	20	2.92		4CA
3	75.0	1.66	5.42	29	7.08		4EO
4	95.0	7.64	13.50	134	21.14		4E4
5	42.5	3.90	5.30	58	9.20		4D4
6	160.0	2.72	3.92	59	6.64		4A4
7	117.5	1.00	3.13	20	4.13		4AO
8	110.0	3.91	8.29	62	12.20		4AD
9	87.5	4.67	7.14	94	11.81		4DA
10		1.34	1.58	19	2.92		4AL
11	142.5	1.56	2.87	27	4.43		4AGD
12	627.5	2.31	4.69	45	7.00		4A4
13	542.5	1.61	3.05	29	4.66		4AC
14	1,110.0	1.81	3.38	31	5.19		4A4
15	52.5	3.26	7.11	57	10.37		4D4
16	327.5	2.19	3.84	38	6.03		4AD
17	222.5	1.41	2.74	24	4.15		4AC
18	50.0	2.86	4.86	55	7.72		4A4
19	242.5	1.67	2.94	31	4.61		4EC
20	325.0	1.40	2.16	23	3.56		4LA
21	237.5	3.65	4.76	55	8.41		4A4
22	177.5	4.50	6.81	70	11.31		4D4
23	170.0	6.20	6.42	107	12.62		4G4
24		1.78	1.83	27	3.61		4CO
25	410.0	1.51	2.75	27	4.26		4AO
26	440.0	4.44	7.51	80	11.95	3.30	4A4
27	547.5	2.88	4.88	48	7.76		4A4
28		1.18	1.12	19	2.30		4AC
29	20.0	1.48	2.73	32	4.21		4A3
30	24.2	4.98	8.50	92	13.48		4E4
31	47.5	5.90	4.77	63	10.67		4A4
32	1,077.5	4.78	8.05	84	12.83	4.15	4G4
33	220.0	1.69	2.95	29	4.64		4AE
34	62.5	6.96	11.87	120	18.83		4E4
35	897.5	1.86	2.40	31	4.26		4AO
36	207.5	4.09	9.83	85	13.92	3.30	4A4
37	560.0	3.74	7.43	71	11.17		4A4
38	512.5	1.95	3.10	35	5.05	3.30	4CO
39	262.5	4.25	7.45	73	11.70		4A4
40		0.58	1.54	14	2.12		4AO
41	365.0	2.16	2.65	32	4.81		4CD
42	387.5	1.68	2.88	27	4.56		4CA
43	457.5	1.82	2.47	30	4.29		4AO
44	1,580.0	4.50	7.49	77	11.99	3.98	4GE

SECTION 82W - (Cont'd)

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
45	75.0	2.43	3.01	54	5.44		4E4
46		1.14	1.58	22	2.72		4L4
47	237.5	1.75	2.66	30	4.41		4CO
+ 48	355.0	4.13	6.99	72	11.12	3.80	4GAE
49	195.0	2.40	4.15	42	6.55		4GO
50	340.0	2.90	4.70	58	7.60		4DE
51	105.0	1.95	3.25	44	5.20		4AEC
52	120.0	2.29	3.23	40	5.52		4AE
53	582.5	2.03	2.42	30	4.45		4ECA
54		0.77	1.54	15	2.31		4CO
55	10.5	7.33	14.54	112	21.87		4E4
56	60.0	3.45	6.30	69	9.75		4A4
57		0.92	1.74	19	2.66		4C
58	302.5	2.99	5.38	53	8.37		4D
59	375.0	5.03	9.50	73	14.53		4D4

G R U M

SECTION 84W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	45.0	4.79	13.65	83	18.44		4A4
2	310.0	2.29	5.17	38	7.46		4A4
3	307.5	3.34	5.30	55	8.64		4A4
4	302.5	4.33	6.37	72	10.70		4D4
5	37.5	2.98	7.66	59	10.64		4A4
6	35.0	7.20	12.10	133	19.30		4D4
7	70.0	4.78	7.27	108	12.05		4A4
8	77.5	1.95	4.37	38	6.32		4A0
9	57.5	2.23	6.51	47	8.74		4EA
10	2,550.0	2.44	4.62	40	7.06		4AD
11	815.0	1.81	3.54	34	5.35		4A0
12	1,625.0	1.50	2.77	25	4.27		4A4
13	702.5	1.79	2.72	28	4.51		4AC
14	477.5	3.56	5.73	62	9.29		4AD
● 15	425.0	3.23	5.11	53	8.34	3.30	4DA
● 16	250.0	4.37	7.60	78	11.97	3.50	4AK
● 17	342.5	3.15	4.88	55	8.03	3.30	4AK
18	345.0	2.61	4.32	41	6.93		4A4
19	231.5	2.86	5.21	54	8.07		4A4
20	75.0	5.43	6.07	84	11.50		4ED
21	112.5	4.45	1.39	77	5.84		4GO
+ 22	135.0	4.56	6.70	76	11.26		4E4
+ 23	375.0	3.28	6.24	62	9.52		4A4
+ 24	352.5	5.45	9.76	96	15.21		4AGE
25	72.5	8.27	13.13	123	21.40		4E4/5A9
26	407.5	4.77	7.39	80	12.16		4AE
27	225.0	2.66	3.49	41	6.15		4GE
28	295.0	3.34	5.25	41	8.59		4GE
+ 29	987.5 (Pro.)	3.29	5.48	61	8.77		4EG
+ 30	60.0	3.43	6.24	63	9.67		4A4
31	70.0	1.89	2.77	35	4.66		4A0
32	220.0	3.32	4.67	55	7.99		4EG
33	17.5	5.20	11.00	77	16.20		4E4
34	315.0	2.47	2.73	35	5.20		4E8

G R U M

SECTION 86W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1		1.71	1.71	23	3.42		4CD
2		1.24	2.60	26	3.84		4AO
3	965.0	2.26	6.82	49	9.08		4A4
4	85.0	2.05	4.32	40	6.37		4AE
5	1,805.0	1.68	3.85	33	5.53		4A4
6		1.01	2.57	20	3.58		4AO
7	3,870.0	2.31	4.49	40	6.80		4A4
8	850.0	2.56	4.64	40	7.20		4AD
9	1,357.5	1.77	3.47	36	5.24		4A4
10		1.56	1.47	24	3.03		4CE
11	177.5	2.74	2.94	60	5.68		4CG
+ 12	102.5 (400)	6.40	18.60	117	25.00		4E4
+ 13	362.5 (322.5)	3.03	6.94	78	9.97		4AE
14		1.36	1.98	24	3.34		4AO
+ 15	357.5	3.35	6.32	66	9.67		4AE
16	57.5	2.11	4.04	33	6.15		4D5
17	47.5	1.87	3.36	27	5.23		4CO
● 18	857.5	4.37	7.57	72	11.94		4D4
19	770.0	2.40	3.60	30	6.00		4D4
20	435.0	2.41	3.68	38	6.09		4D0
21	272.5	2.17	2.93	33	5.10		4A4
22	380.0	2.20	3.92	38	6.12		4DL
23	797.5	4.10	5.26	65	9.36		4D0
24	550.0	6.61	12.68	102	19.29		4G4
25		1.09	1.26	24	2.35		4AO
26	45.0	2.82	4.94	45	7.76		4AE
27	37.5	3.02	5.05	40	8.07		4A4
28	230.0	6.00	10.11	98	16.11		4GA
29	200.0	2.21	3.33	31	5.54		4AG
30	447.5	4.03	5.36	58	9.39		4GL
31	242.5						
32	137.5	6.00	8.40	94	14.40		4E4
33		1.40	2.46	26	3.86		4AO
34	1,050.0	4.39	5.76	66	10.15		4EG
35	97.5	2.60	2.97	39	5.57		4A4
36		1.55	0.64	11	2.19		4L8

OPEN PIT
ESTIMATE
(01k pit)

Cypress Hill Mining Corporation

interoffice Correspondence

File copy

To J. G. Simpson

Copy to

*Grum - Reserve
Estimates*

From T. J. Adamson

Date December 6, 1982

Subject Grum Reserve Estimate - "Old Pit" Reserve

Note: Tonnage and grade are undiluted, with a 4% Pb+Zn mining cut-off grade.

	<u>Tonnes</u>	<u>Pb %</u>	<u>Zn %</u>	<u>Ag</u>
Calculated: Sec. 62-80	14,092,994	3.66	6.24	62
Estimated: Sec. 82-86 (pending S.G.'s)	2,961,581	2.31	4.23	42
	<u>17,054,575</u>	3.43	5.89	59

$$\text{Stripping Ratio: } \frac{\text{Total waste vol. m}^3}{\text{tonnes ore}} = \frac{49,655,652}{17,054,575}$$

$$= 2.91 \text{ Bm}^3/\text{tonne}$$

T. J. Adamson

TJA/ck

CYPRUS

G R U M

SECTION 62W

Assay (TAMES) Block# pit Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
* 1 9483 445.0	6.36	13.29	103	19.65	3.68	4ED
2 70.0	0.63	1.24	14	1.87	3.22	4AD
* 3 85034 540.0	3.39	5.38	86	8.77	4.10	4EG
4 32.5	1.88	3.10	39	4.98	3.15	4A4
5 127.5	1.07	1.09	28	2.16	3.70	4EL
6 325.0	3.24	5.44	64	8.68	4.11	4EA
7 95.0	1.06	2.20	22	3.26	2.83	4AO
8 25.0	2.93	4.25	38	7.18	2.84	4AK
9 42.5	5.30	7.00	83	12.30	3.72	4G4
10 200.0	2.64	4.00	30	6.64	3.82	4GE/5D
11 602.5	2.80	3.16	42	5.96	3.43	4EA
12 257.5	2.46	4.28	42	6.74	3.11	4AC
13 320.0	2.60	2.42	41	5.02	3.80	4GE

* in 61k pit

G R U M

SECTION 64W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
* 1 71 321	1,087.5	1.95	2.72	28	4.67	3.16	4AO
* 2 119 691	515.0	6.05	12.43	104	18.48	3.81	4DE
* 3 22 076	117.5	6.29	7.80	95	14.09	3.29	4A4
4	585.0	1.61	2.23	32	3.84	3.65	4C8
* 5 25 414	137.5	2.93	6.64	51	9.57	3.03	4AL
* 6 13 496	75.0	2.81	6.59	45	9.40	2.95	5B9
* 7 41 354	272.5	5.39	8.73	92	14.12	4.28	4GE
* 8 21 246	205.0	3.12	3.79	53	6.91	3.87	4AGH
9	140.0	0.78	1.45	14	2.23	3.30	4A1
10	40.0	4.60	8.35	85	12.95	4.28	4E4
11	95.0	2.61	2.97	46	5.58	3.60	4HD
12	1,067.5	1.57	1.45	25	3.02	3.53	4EC
13	945.0	5.35	6.44	81	11.79	4.20	4GE
14	200.0	5.07	6.87	75	11.94	3.80	4CE
15	37.5	2.99	3.20	42	6.19	3.65	4GL
16	600.0	1.77	3.03	35	4.80	3.35	4A4
17	37.5	2.30	4.60	39	6.90	3.03	4A4
18	20.0	1.76	3.20	26	4.96	3.03	4A2
19	225.0	2.09	2.29	33	4.38	3.66	4CEG
20	27.5	3.22	4.42	56	7.64	3.34	4D4
21	425.0	2.10	1.73	35	3.83	3.94	4E*

* included in o/k pit

G R U M

SECTION 66W

Assay Block#	^{tonnes} in Pit	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
★ 1	74,420	410.0	10.55	9.52	173	20.07	4.00	4EGL
★ 2	9,704	52.5	1.33	4.38	21	5.71	3.03	4A4
3		75.0	0.64	1.73	17	2.37	2.83	4A1
★ 4	250,051	1,067.5	5.73	9.71	94	15.44	3.84	4GED
5		210.0	1.20	1.64	30	2.84	3.05	4AO
★ 6	47,592	235.0	4.04	5.73	63	9.77	3.32	4A4
★ 7	30,685	162.5	2.70	3.94	38	6.64	3.53	4AE
8		657.5	0.48	1.68	20	2.16	3.40	4CO
★ 9	6,622	212.5	3.75	4.79	65	8.54	3.34	4CD
10		210.0	2.52	4.10	46	6.62	3.84	4EA
★ 11	57,950	257.5	6.22	10.98	116	17.20	4.00	4EG
★ 12	114,924	600.0	1.32	2.83	26	4.15	3.14	4A1
★ 13	49,837	237.5	2.58	5.01	44	7.59	3.44	4EA
★ 14	15,499	107.5	2.95	7.00	44	9.95	2.76	4L4
15		62.5	1.55	3.13	28	4.68	3.01	4A1
16		427.5	3.62	5.06	58	8.68	3.10	4A4
17		957.5	5.57	6.33	83	11.90	3.82	4GD
18		397.5	3.98	5.23	64	9.21	3.34	4D
19		707.5	4.07	4.97	67	9.04	4.10	4GE
20		275.0	0.98	1.64	27	2.62	2.95	4AO
21		372.5	0.97	1.16	22	2.13	4.10	4EO
22		310.0	2.50	3.83	46	6.33	3.79	4E8
23		805.0	2.69	2.36	34	5.05	3.36	4CE
24		32.5	1.52	1.41	40	2.93	3.60	4CE
25		95.0	4.60	6.08	87	10.68	3.99	4GE

★ in old pit

G R U M

SECTION 68W

Assay Block#	^{100MS} P ⁺	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
★ 1	38,857	175.0	8.37	6.78	111	15.15	3.64	4E4
★ 2	33,882	172.5	6.03	6.91	88	12.94	3.22	4GKA
★ 3	91,280	430.0	5.27	9.93	85	15.20	3.48	4BD4
★ 4	20571	102.5	2.86	5.48	54	8.34	3.29	4A4
★ 5	5911	30.0	5.13	7.81	73	12.94	3.23	4A4
6		1,885.0	0.86	1.69	14	2.55	2.93	4A0
★ 7	111,554	437.5	5.08	9.18	84	14.26	4.18	4E4
★ 8	85,882	390.0	1.80	2.52	33	4.32	3.61	4E0
★ 9	84,613	357.5	5.11	10.25	89	15.36	3.88	4ED
★ 10	5704	142.5	3.56	4.98	63	8.54	3.40	4D4
★ 11	9520	377.5	4.87	9.08	83	13.95	3.43	4A4
12		295.0	5.26	12.27	86	17.53	3.98	4DE
13		192.5	2.01	3.56	34	5.57	3.55	4EC
★ 14	25,977	127.5	7.55	6.63	96	14.18	3.34	4D6
★ 15	124,676	492.5	4.38	3.68	66	8.06	4.15	4EK
★ 16	41,971	165.0	5.25	8.96	106	14.21	4.17	4G4
★ 17	1795	47.5	1.74	3.06	36	4.80	3.27	4EA
18		122.5	2.46	5.28	44	7.74	3.12	4A4
19		22.5	5.17	10.26	87	15.43	3.90	4G4
20		555.0	5.79	7.19	82	12.98	4.06	4GE
21		725.0	3.03	3.91	53	6.94	3.77	4E
22		305.0	2.35	2.89	35	5.24	3.22	4ADC
23		1,977.5	1.19	1.20	21	2.39	3.42	4C0
24		495.0	6.08	10.10	101	16.18	3.74	4E4
25		125.0	3.69	3.24	50	6.93	3.62	4E8
26		52.5	4.23	8.45	67	12.68	3.30	4A0

★ in old pit

G R U M

SECTION 70W

Assay Block#	^{ft} pit	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
★ 1	14240	57.5	7.39	8.53	123	15.92	4.06	4CK
★ 2	15250	62.5	6.22	7.14	96	13.36	4.00	4GD
★ 3	89180	482.5	2.41	5.88	44	8.29	3.03	4A4
★ 4	220241	1,087.5	2.18	4.30	38	6.48	3.32	4A4
★ 4A	13862	75.0	2.58	4.29	38	6.87	3.03	4L4
★ 5	144369	690.0	1.78	3.29	35	5.07	3.43	4AE
6		342.5	0.91	1.74	19	2.65	2.80	5B/4L
7		57.5	1.37	2.50	26	3.87	3.02	4L2
★ 8	289,646	1,152.5	6.61	13.15	111	19.76	4.12	4ED
9		45.0	1.48	1.65	27	3.13	3.36	4A0
★ 10	37,071	315.0	1.81	2.95	36	4.76	3.33	4A0
★ 11	90837	522.5	1.34	3.13	27	4.47	2.85	4L4
★ 12	30497	165.0	3.87	7.85	64	11.72	3.03	4A4
★ 13	28432	147.5	1.20	2.95	25	4.15	3.16	4AE
★ 14	22,209	837.5	4.73	9.42	87	14.15	4.33	4EG
15		382.5	1.61	2.16	35	3.77	3.21	4A0
★ 16	35987	142.5	3.83	5.74	76	9.57	4.14	4EG
★ 17	90997	425.0	6.91	13.13	111	20.04	3.51	4DE
★ 18	10889	80.0	4.84	10.69	90	15.53	3.57	4D
★ 19	58530	237.5	5.30	10.70	96	16.00	4.04	4E4
20		57.5	0.25	0.91	17	1.16	3.03	4AE
21		222.5	1.94	2.92	37	4.86	3.52	4CA
★ 22	184934	710.0	5.63	5.98	88	11.61	4.27	4EG
23		437.5	1.36	1.13	25	2.49	3.42	4L
★ 24	23619	110.0	3.12	2.63	47	5.75	3.52	4LC
★ 25	36509	300.0	2.59	2.55	43	5.14	3.99	4AC
26		115.0	0.80	1.52	13	2.32	2.72	4A3
★ 27	19764	80.0	5.10	7.50	89	12.60	4.05	4G4
28		25.0	1.47	1.89	28	3.36	3.36	4C0
29		50.0	1.29	1.77	25	3.06	3.38	4A0
30		877.5	1.60	3.59	31	5.19	3.01	4A0
31		440.0	5.77	8.19	96	13.96	3.96	4GE
32		100.0	2.68	3.32	45	6.00	3.55	4DC
33		375.0	4.99	5.28	74	10.27	3.89	4GE
34		395.0	4.59	4.31	63	8.90	4.28	4GED
35		217.5	2.72	2.82	45	5.54	3.90	4E8
36		87.5	2.80	1.15	36	3.95	3.17	4A0
37		460.0	5.59	5.90	73	11.49	4.22	4GE
38		167.5	0.89	1.28	22	2.17	3.46	4C8

★ in old pit

G R U M

SECTION 72W

Assay tonnes Block# Pit Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
* 1 46299 230.0	4.55	8.06	74	12.61	3.30	4DLA
* 2 84,043 417.5	2.07	3.75	37	5.82	3.30	4AD
* 3 437,622 2,277.5	2.42	4.78	44	7.20	3.15	4A4
* 4 50,728 280.0	1.46	2.79	22	4.25	2.97	4LO
5 77.5	0.72	1.82	11	2.54	2.95	4BA
* 6 41,870 282.5	3.80	7.42	71	11.22	3.52	4AD
* 7 144,515 775.0	3.30	4.28	47	7.58	3.18	4A4
* 8 24,583 130.0	4.50	8.46	78	12.96	3.10	4E4
* 9 210,679 1,125.0	3.35	5.66	50	9.01	3.07	4A4
* 10 46,383 192.5	7.48	14.50	132	21.98	3.95	4ED
* 11 7,521 30.0	9.35	17.70	143	27.05	4.11	4E4
12 205.0	1.14	2.32	21	3.46	2.85	4LA
13 95.0	1.39	1.94	35	3.33	3.49	4AO
* 14 128,795 517.5	4.86	8.28	83	13.14	4.08	4EG
15 187.5	1.61	2.20	25	3.81	3.15	4A4
* 16 22,231 92.5	3.25	6.23	71	9.48	3.94	4E4
17 490.0	1.56	1.36	22	2.92	3.03	4AL
* 18 67,092 262.5	6.69	5.25	97	11.94	4.19	4EG
* 19 35,945 180.0	2.64	2.31	40	4.95	3.27	4CL/5B9
20 80.0	1.60	1.77	24	3.37	3.23	4CL
* 21 45,800 177.5	6.28	7.02	101	13.30	4.23	4GE
* 22 36,530 147.5	5.17	5.31	85	10.48	4.06	4GE
* 23 11,865 50.0	2.73	2.16	53	4.89	3.89	4EC
* 24 53,276 212.5	6.63	8.22	110	14.85	4.11	4EG
* 25 267,737 1,147.5	4.41	6.81	77	11.22	4.81	4DE
* 26 178,227 725.0	3.29	6.07	65	9.36	4.03	4EG
27 265.0	0.69	1.06	15	1.75	3.07	4AO
* 28 17,619 77.5	6.36	12.73	102	19.09	3.60	4A4
29 915.0	0.96	2.34	23	3.30	3.28	4CO
* 30 33,555 25.0	1.97	2.94	34	4.91	2.75	4L4
* 31 5,353 155.0	4.42	9.25	80	13.67	3.90	4EK
32 305.0	0.88	1.31	18	2.19	2.95	4AO
33 175.0	3.38	5.98	77	9.36	3.48	4DK
34 557.5	4.68	8.07	80	12.75	3.94	4EG
35 147.5	2.69	4.49	53	7.18	3.03	4A4
36 72.5	2.19	4.11	39	6.30	3.59	4ADE
37 245.0	3.47	4.16	68	7.63	3.75	4CD
38 107.5	1.70	1.90	29	3.60	3.37	4E1
39 107.5	3.60	3.32	43	6.92	3.88	4EG
40 410.0	1.96	1.36	36	3.32	3.62	4EG

* in old pit

GRUM

SECTION 74W

Assay	¹⁹ Pit	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies	
★	1	178 600	992.5	1.19	2.89	25	4.08	2.95	4AB
★	2	96 447	485.0	2.19	5.59	44	7.78	3.26	4AD
★	3	74 146	357.5	6.45	9.34	101	15.79	3.40	4DEA
★	4	125 752	665.0	4.02	6.91	65	10.93	3.10	4AC
★	5	119 783	617.5	3.10	5.32	50	8.42	3.18	4AD
★	6	34 139	195.0	2.16	3.66	37	5.82	2.87	4AL
★	7	210 489	1,127.5	2.20	3.91	35	6.11	3.06	4AC
	8		570.0	1.31	2.47	21	3.78	2.92	4AC
★	9	73 304	305.0	7.37	14.35	125	21.72	3.94	4E4
★	10	43 783	225.0	2.91	4.67	46	7.58	3.19	4LC
★	11	78 397	420.0	3.16	5.38	49	8.54	3.06	4A4
	12		645.0	1.20	1.54	18	2.74	2.83	4CA
★	13	83 523	357.5	6.12	10.97	103	17.09	3.83	4E
★	14	96 830	382.5	6.14	4.64	78	10.78	4.15	4EG
★	15	11 407	55.0	2.96	2.62	41	5.58	3.40	4EL
★	16	74 588	335.0	3.74	3.63	61	7.37	3.65	4EL
	17		82.5	1.14	1.75	23	2.89	3.04	4AO
★	18	35 328	195.0	1.87	3.37	31	5.24	2.97	4LA
	19		132.5	0.80	2.16	15	2.96	3.03	4A1
★	20	96 946	55.0	6.04	9.50	101	15.54	2.89	4A4
	21		52.5	1.34	1.41	22	2.75	2.83	4A1
	22		405.0	3.91	6.06	64	9.97	4.17	4EG
★	23	97 936	475.0	4.96	10.31	89	15.27	3.38	4D
★	24	46 011	222.5	2.65	4.03	42	6.68	3.39	4DA
★	25	98 738	545.0	3.29	5.02	49	8.31	2.97	4A4
	26		452.5	1.13	1.26	18	2.39	2.76	4A1
★	27	62 342	365.0	1.52	3.25	29	4.77	2.80	4AL
★	28	210 494	1,132.5	2.75	5.80	51	8.55	3.14	4A4
	29		165.0	3.79	3.91	63	7.70	3.03	4A4
	30		192.5	5.10	9.50	88	14.60	4.14	4G4
	31		100.0	3.40	5.85	48	9.25	3.50	4AG
	32		45.0	3.80	5.00	67	8.80	2.75	4L4
	33		87.5	4.37	4.90	74	9.27	3.80	4GC
	34		75.0	4.20	4.04	58	8.24	3.84	4EL*
	35		95.0	2.80	3.15	31	5.95	3.34	4D8
	36		785.0	3.28	3.41	48	6.69	3.57	4EG
	37		1,157.5	1.00	1.58	21	2.58	3.53	4EC
★	38	25 940	345.0	6.30	9.79	118	16.09	4.05	4GD
	39		100.0	3.03	3.54	47	6.57	3.44	4EA
★	40	266 351	1,827.5	3.88	6.62	72	10.50	4.10	4EG
	41		690.0	4.50	7.84	72	12.34	3.90	4ED
	42		582.5	3.44	5.51	62	8.95	3.68	4ED
	43		317.5	0.86	1.93	21	2.79	2.96	4AC
	44		80.0	1.14	2.01	23	3.15	3.07	4LA
	45		145.0	0.55	0.89	19	1.44	3.34	4CO
	46		322.5	3.28	3.91	52	7.19	3.65	4DL

* in old pit

G R U M

SECTION 76W

Assay Block#	^{hunks} pit	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
* 1	301120	1,640.0	2.21	4.06	39	6.27	3.01	4A4
* 2	48532	255.0	4.16	6.88	69	11.04	3.12	4AE
3		107.5	1.07	2.43	24	3.50	2.81	5A9
* 4	209484	1,127.5	3.10	5.83	50	8.93	3.04	4AD
5		112.5	0.71	1.41	18	2.12	2.78	5A9
* 6	200194	1,112.5	2.42	4.27	39	6.69	2.95	4ADL
* 7	237223	1,305.0	1.62	2.64	27	4.26	2.98	4AL
* 7A	99278	525.0	3.68	7.15	68	10.83	3.10	4A4
* 8	31252	172.5	3.53	6.78	59	10.31	2.97	4AB
9		82.5	1.17	2.50	26	3.67	2.80	4L4
* 10	421073	1,687.5	6.23	10.93	110	17.16	4.11	4E4
11		117.5	0.52	0.98	22	1.50	3.03	4AE
* 12	22,494	125.0	2.52	6.24	43	8.76	2.95	5B9/4E4
* 13	9,996	37.5	7.17	17.31	108	24.48	4.37	4EG
* 14	6368	30.0	4.21	8.64	54	12.85	3.48	4KL
* 15	196569	1,085.0	2.55	4.20	43	6.75	2.97	4A4
16		685.0	1.56	1.61	24	3.17	2.83	4AL
* 17	134775	867.5	4.07	7.19	69	11.26	3.31	4AD
18		207.5	1.19	1.05	17	2.24	2.79	4AL
* 19	50243	430.0	4.80	7.38	74	12.18	3.23	4AD
* 20	93883	220.0	2.22	3.28	48	5.50	3.27	4AD
21		95.0	2.25	3.34	41	5.59	2.99	4AL
22		250.0	5.66	9.78	93	15.44	4.41	4G
* 23	3698	17.5	1.98	2.05	36	4.03	3.38	4L4
* 24	74115	300.0	6.72	6.47	102	13.19	4.05	4EG
25		385.0	1.99	1.50	36	3.49	3.86	4E
* 26	6329	185.0	4.59	7.43	95	12.02	4.15	4E4
27		20.0	2.23	3.84	60	6.07	4.85	4L4
28		20.0	6.20	9.60	121	15.80	4.18	4G4
29		27.5	4.65	6.73	73	11.38	4.19	4EG
30		407.5	1.26	2.32	29	3.58	3.04	4A1
31		92.5	0.86	1.57	15	2.43	3.03	4A1
32		490.0	1.21	2.23	20	3.44	3.08	4AE
33		1,812.5	3.50	5.85	61	9.35	3.98	4GE
34		205.0	1.82	2.29	34	4.11	3.67	4EA
35		5.0	4.60	6.60	82	11.20	3.94	4E4
36		125.0	3.95	4.00	49	7.95	3.91	4E*4
37		272.5	2.16	2.65	35	4.81	3.13	4GL
38		335.0	3.13	4.03	47	7.16	3.37	4GE
39		250.0	3.85	5.62	60	9.47	3.46	4GE

* in oil pit

G R U M

SECTION 78W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominar. Facies
★ 1 241026	1,362.5	1.91	3.52	32	5.43	2.90	4A0
★ 2* 51954	255.0	2.73	5.20	43	7.93	3.34	4D4
★ 3 450061	2,435.0	2.94	5.76	48	8.70	3.03	4A4
4	520.0	1.22	2.77	25	3.99	2.77	4AD
★ 5 3056	15.0	2.78	5.04	20	7.82	3.34	4D7
★ 6 4584	22.5	1.87	3.21	29	5.08	3.34	4D0
★ 7 60134	310.0	2.71	4.72	51	7.43	3.18	4DE
★ 8 33820	167.5	3.43	4.20	67	7.63	3.31	4A4
★ 9 48155	227.5	5.98	10.58	97	16.56	3.47	4ED
★ 10 48657	265.0	1.80	2.98	35	4.78	3.01	4CD
11	247.5	1.24	2.01	19	3.25	2.89	4L4
★ 12 165524	872.5	3.11	6.08	58	9.19	3.24	4AD
★ 13 55915	287.5	1.37	2.70	33	4.07	3.19	4A0
★ 14 125945	830.0	1.83	3.39	35	5.22	2.95	4ACD
15	312.5	1.15	1.61	21	2.76	2.76	4L4
★ 16 95965	517.5	2.24	4.60	47	6.84	3.04	4A4
★ 17 59803	375.0	4.37	9.02	81	13.39	3.41	4DAE
18	87.5	4.09	5.12	70	9.21	3.25	4A
19	185.0	1.01	2.12	22	3.13	2.81	4AL
20	67.5	2.02	3.00	37	5.02	3.07	4A4
★ 21 33398	182.5	2.51	4.51	43	7.02	3.00	4AE
★ 22 21472	100.0	8.31	16.38	113	24.69	3.52	4A4
23	545.0	1.12	2.10	21	3.22	3.05	4LA
★ 24 33263	190.0	2.10	4.22	35	6.32	2.87	4AL
25	287.5	1.26	2.00	23	3.26	2.85	4A1
★ 26243287	1,042.5	5.68	11.73	98	17.41	3.81	4AE/4EG
★ 27 201271	1,047.5	2.78	4.27	43	7.05	3.15	4A4
★ 27A 15473	57.5	3.99	6.96	77	10.95	4.40	4E4
28	65.0	1.86	0.92	30	2.78	2.99	4A0
★ 29 32612	352.5	2.01	2.05	34	4.06	3.29	4A0
29A	250.0	0.94	1.16	13	2.10	2.87	4AL
30	890.0	4.17	6.92	84	11.09	4.18	4GE
31	335.0	1.17	1.78	24	2.95	2.93	4A0
32	102.5	2.16	3.74	39	5.90	3.32	4AE
33	932.5	3.65	5.19	63	8.84	3.56	4EA4
★ 34 67001	377.5	2.67	4.29	46	6.96	3.03	4A4
35	155.0	3.71	5.39	64	9.10	3.91	4EA
36	425.0	5.22	8.29	98	13.51	3.98	4E4/5B9
37	67.5	1.45	2.30	27	3.75	3.40	4EA
38	787.5	1.49	1.90	25	3.39	3.33	4EA
39	30.0	1.20	1.23	27	2.43	3.80	4E1
40	582.5	6.03	10.85	97	16.88	3.35	4DA
41	70.0	2.68	5.60	53	8.28	3.64	4AED
42	150.0	1.21	1.60	19	2.81	3.34	4C3
43	195.0	3.01	3.53	51	6.54	3.62	4EG
44	55.0	2.34	4.76	44	7.10	3.19	4AG
45	182.5	4.15	6.41	68	10.56	3.42	4AE
46	275.0	2.45	2.39	27	4.84	3.94	4E8
47	150.0	1.66	1.59	23	3.25	3.03	4A0
48*	530.0	1.86	3.27	30	5.13	3.03	4A
49*	455.0	2.72	4.09	42	6.81	3.30	4LG

* (Sheet 3)

* in oil pit

G R U M

SECTION 80W

Assay (tonnes) Block# - pit	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
* 1 195,920	1,060.0*	2.09	3.80	34	5.89	3.03	4A1
* 2 273,597	1,325.0*	2.79	5.53	52	8.32	3.39	4AE
* 3 103,505	560.0	2.70	4.96	49	7.66	3.03	4A4
4	422.5	0.95	1.76	19	2.71	3.00	4AB
* 5 140,933	762.5	2.89	4.74	47	7.63	3.03	4A4
* 6 54,083	310.0	1.65	4.57	38	6.22	2.86	4A2
* 7 16,871	92.5	2.15	4.24	38	6.39	2.99	4D4
8	122.5	1.00	1.34	19	2.34	2.77	4CO
* 9 61,022	350.0	3.12	5.83	57	8.95	2.89	4A4
* 10 28,251	162.5	1.54	3.90	26	5.44	2.85	4AC
11	250.0	1.27	2.23	22	3.50	2.85	4AC
* 12 114,906	585.0	2.43	4.53	40	6.96	3.22	4ADCB
* 13 31,491	175.0	3.18	5.03	46	8.21	2.95	4AD
* 14 395,719	2,252.5	1.78	3.38	33	5.16	2.88	4AO
15	2,482.5	1.27	1.92	22	3.19	2.97	4ALC
* 16 133,865	712.5	2.38	4.25	44	6.63	3.08	4AE
* 17 166,945	880.0	3.35	6.16	57	9.51	3.11	4A4
* 18 95,471	487.5	4.18	7.82	69	12.00	3.33	4A4
19	125.0	0.45	0.76	17	1.21	3.79	4EA
* 20 98,134	507.5	5.40	7.86	96	13.26	3.90	4EG
21	477.5	2.81	4.77	54	7.58	3.41	4AEL
* 22 44,323	210.0	4.38	3.61	63	7.99	3.46	4E
* 23 66,804	245.0	7.25	6.33	112	13.58	4.47	4EG
* 24 18,026	242.5	3.00	4.00	46	7.00	3.94	4E4
* 25 60,292	365.0	2.40	2.80	35	5.20	2.80	4L4
* 26 126,429	1,102.5	3.75	7.24	68	10.99	3.44	4AD
27	1,357.5	1.14	1.65	19	2.79	2.71	4AL
28	175.0	5.87	9.44	116	15.31	3.35	4AD
29	70.0	1.86	3.55	36	5.41	3.10	4AD
30	17.5	2.40	6.20	52	8.60	3.03	4A4
31	22.5	8.80	14.10	138	22.90	3.50	4A4
32	227.5	1.86	3.12	30	4.98	3.03	4A4
33	866.0	1.58	1.85	27	3.43	2.97	4A4
34	250.0	4.63	7.90	82	12.53	4.19	4E4
35	87.5	3.07	5.90	60	8.97	4.36	4GO
36	765.0	2.61	3.65	46	6.26	3.83	4EG
37	867.5	4.25	6.77	73	11.02	3.98	4EG
38	302.5	1.83	3.08	36	4.91	3.18	4A1
39	865.0	5.45	10.12	89	15.57	3.99	4ED
40	190.0	2.45	2.40	33	4.85	3.35	4L4
41	572.5	0.99	1.84	18	2.83	3.08	4AE
42	160.0	4.04	6.45	72	10.49	3.73	4AE
43	330.0	3.17	3.27	42	6.44	3.93	4EG
44	327.5	2.70	2.28	32	4.98	3.99	4GE
45	610.0	5.25	6.21	68	11.46	4.28	4G4
* 46 4,368	207.5	4.86	8.48	92	13.34	3.54	4EDA

* (Sheet 3)

G R U M

SECTION 82W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
★ 1	795.0	2.35	4.91	42	7.26		4AD
2		0.64	2.28	20	2.92		4CA
★ 3	75.0	1.66	5.42	29	7.08		4EO
★ 4	95.0	7.64	13.50	134	21.14		4E4
★ 5	42.5	3.90	5.30	58	9.20		4D4
★ 6	160.0	2.72	3.92	59	6.64		4A4
7	117.5	1.00	3.13	20	4.13		4AO
★ 8	110.0	3.91	8.29	62	12.20		4AD
9	87.5	4.67	7.14	94	11.81		4DA
10		1.34	1.58	19	2.92		4AL
★ 11	142.5	1.56	2.87	27	4.43		4AGD
★ 12	627.5	2.31	4.69	45	7.00		4A4
★ 13	542.5	1.61	3.05	29	4.66		4AC
★ 14	1,110.0	1.81	3.38	31	5.19		4A4
★ 15	52.5	3.26	7.11	57	10.37		4D4
★ 16	327.5	2.19	3.84	38	6.03		4AD
★ 17	222.5	1.41	2.74	24	4.15		4AC
18	50.0	2.86	4.86	55	7.72		4A4
19	242.5	1.67	2.94	31	4.61		4EC
20	325.0	1.40	2.16	23	3.56		4LA
★ 21	237.5	3.65	4.76	55	8.41		4A4
★ 22	177.5	4.50	6.81	70	11.31		4D4
★ 23	170.0	6.20	6.42	107	12.62		4G4
24		1.78	1.83	27	3.61		4CO
★ 25	410.0	1.51	2.75	27	4.26		4AO
★ 26	440.0	4.44	7.51	80	11.95	3.30	4A4
27	547.5	2.88	4.88	48	7.76		4A4
28		1.18	1.12	19	2.30		4AC
★ 29	20.0	1.48	2.73	32	4.21		4A3
30	24.2	4.98	8.50	92	13.48		4E4
31	47.5	5.90	4.77	63	10.67		4A4
32	1,077.5	4.78	8.05	84	12.83	4.15	4G4
33	220.0	1.69	2.95	29	4.64		4AE
34	62.5	6.96	11.87	120	18.83		4E4
35	897.5	1.86	2.40	31	4.26		4AO
★ 36	207.5	4.09	9.83	85	13.92	3.30	4A4
★ 37	560.0	3.74	7.43	71	11.17		4A4
★ 38	512.5	1.95	3.10	35	5.05	3.30	4CO
★ 39	262.5	4.25	7.45	73	11.70		4A4
40		0.58	1.54	14	2.12		4AO
41	365.0	2.16	2.65	32	4.81		4CD
★ 42	387.5	1.68	2.88	27	4.56		4CA
43	457.5	1.82	2.47	30	4.29		4AO
44	1,580.0	4.50	7.49	77	11.99	3.98	4GE

★ in alk pit

SECTION 82W - (Cont'd)

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
45	75.0	2.43	3.01	54	5.44	3.80	4E4
46		1.14	1.58	22	2.72		4L4
47	237.5	1.75	2.66	30	4.41		4CO
48	355.0	4.13	6.99	72	11.12		4GAE
49	195.0	2.40	4.15	42	6.55		4GO
50	340.0	2.90	4.70	58	7.60		4DE
51	105.0	1.95	3.25	44	5.20		4AEC
52	120.0	2.29	3.23	40	5.52		4AE
53	582.5	2.03	2.42	30	4.45		4ECA
54		0.77	1.54	15	2.31		4CO
55	10.5	7.33	14.54	112	21.87		4E4
56	60.0	3.45	6.30	69	9.75		4A4
57		0.92	1.74	19	2.66		4C
58	302.5	2.99	5.38	53	8.37		4D
59	375.0	5.03	9.50	73	14.53		4D4

G R U M

SECTION 84W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1	45.0	4.79	13.65	83	18.44		4A4
* 2	310.0	2.29	5.17	38	7.46		4A4
* 3	307.5	3.34	5.30	55	8.64		4A4
* 4	302.5	4.33	6.37	72	10.70		4D4
5	37.5	2.98	7.66	59	10.64		4A4
6	35.0	7.20	12.10	133	19.30		4D4
7	70.0	4.78	7.27	108	12.05		4A4
8	77.5	1.95	4.37	38	6.32		4A0
9	57.5	2.23	6.51	47	8.74		4EA
* 10	2,550.0	2.44	4.62	40	7.06		4AD
* 11	815.0	1.81	3.54	34	5.35		4A0
* 12	1,625.0	1.50	2.77	25	4.27		4A4
13	702.5	1.79	2.72	28	4.51		4AC
14	477.5	3.56	5.73	62	9.29		4AD
15	425.0	3.23	5.11	53	8.34	3.30	4DA
16	250.0	4.37	7.60	78	11.97	3.50	4AK
17	342.5	3.15	4.88	55	8.03	3.30	4AK
18	345.0	2.61	4.32	41	6.93		4A4
19	231.5	2.86	5.21	54	8.07		4A4
20	75.0	5.43	6.07	84	11.50		4ED
21	112.5	4.45	1.39	77	5.84		4GO
22	135.0	4.56	6.70	76	11.26		4E4
23	375.0	3.28	6.24	62	9.52		4A4
24	352.5	5.45	9.76	96	15.21		4AGE
25	72.5	8.27	13.13	123	21.40		4E4/5A9
26	407.5	4.77	7.39	80	12.16		4AE
27	225.0	2.66	3.49	41	6.15		4GE
28	295.0	3.34	5.25	41	8.59		4GE
29	987.5	3.29	5.48	61	8.77		4EG
30	60.0	3.43	6.24	63	9.67		4A4
31	70.0	1.89	2.77	35	4.66		4A0
32	220.0	3.32	4.67	55	7.99		4EG
33	17.5	5.20	11.00	77	16.20		4E4
34	315.0	2.47	2.73	35	5.20		4E8

* in o/k p. 1

G R U M

SECTION 86W

Assay Block#	Area(m ²)	Pb %	Zn %	Ag	Pb+Zn %	S.G.	Dominant Facies
1		1.71	1.71	23	3.42		4CD
2		1.24	2.60	26	3.84		4AO
3	965.0	2.26	6.82	49	9.08		4A4
* 4	85.0	2.05	4.32	40	6.37		4AE
5	1,805.0	1.68	3.85	33	5.53		4A4
6		1.01	2.57	20	3.58		4AO
* 7	3,870.0	2.31	4.49	40	6.80		4A4
* 8	850.0	2.56	4.64	40	7.20		4AD
9	1,357.5	1.77	3.47	36	5.24		4A4
10		1.56	1.47	24	3.03		4CE
11	177.5	2.74	2.94	60	5.68		4CG
12	102.5	6.40	18.60	117	25.00		4E4
13	362.5	3.03	6.94	78	9.97		4AE
14		1.36	1.98	24	3.34		4AO
15	357.5	3.35	6.32	66	9.67		4AE
16	57.5	2.11	4.04	33	6.15		4D5
17	47.5	1.87	3.36	27	5.23		4CO
18	857.5	4.37	7.57	72	11.94		4D4
19	770.0	2.40	3.60	30	6.00		4D4
20	435.0	2.41	3.68	38	6.09		4D0
21	272.5	2.17	2.93	33	5.10		4A4
22	380.0	2.20	3.92	38	6.12		4DL
23	797.5	4.10	5.26	65	9.36		4D0
24	550.0	6.61	12.68	102	19.29		4G4
25		1.09	1.26	24	2.35		4AO
26	45.0	2.82	4.94	45	7.76		4AE
27	37.5	3.02	5.05	40	8.07		4A4
28	230.0	6.00	10.11	98	16.11		4GA
29	200.0	2.21	3.33	31	5.54		4AG
30	447.5	4.03	5.36	58	9.39		4GL
31	242.5						
32	137.5	6.00	8.40	94	14.40		4E4
33		1.40	2.46	26	3.86		4AO
34	1,050.0	4.39	5.76	66	10.15		4EG
35	97.5	2.60	2.97	39	5.57		4A4
36		1.55	0.64	11	2.19		4L8

* in o/lk pit

Pat. 1951 / 9.10.11

4th main cut. off

	Pb	Zn	As		Fe
1451	4.96	9.55	95		179.877
64	4.52	8.15	75		334.579
66	4.89	7.49	82		659.883
68	4.82	7.03	77		682.193
70	4.18	7.49	72		1.656.061
72	3.76	6.03	64		1.767.426
74	3.52	5.98	59		2.154.196
76	3.41	6.20	62		2.098.136
78	3.09	5.83	53		2.091.371
80	2.94	5.05	51		2.269.232

14 092.994

82	2.50	4.25	45		1.145.121
84	2.10	4.00	40		1.032.422
86	2.30	4.50	40		780.030
					2.961.581

17.9

17,054,515

Pb	Zn	As
829,110	1.717.825	17.080.515
1.512.387	2.726.982	25.094.725
3.224.828	4.992.534	59.110.406
3.298.170	4.795.817	52.520.861
6.922.325	12.403.896	118.236.372
7.347.521	11.863.576	125.915.264
7.581.767	12.882.092	127.097.564
7.574.270	13.008.993	130.084.432
6.442.378	12.192.807	110.843.723
6.671.542	11.459.621	115.738.832

51.530.410

87.993.586

87.730.714

3.66% 6.24% 62%

2.31 4.23 42

3.43% 5.89% 59

Doc 62 w
180,33

	Pb	Zn	Ag
1	6.36	13.29	105
3	3.9	5.10	26

m² x Sc = tonnes

25772.5	x	348
20310.0	x	9.10

94,843
85,034

179,807

Pb

603.201
298,265

891,461

4.96%

Zn

1,260,463
457,953

1,717,946

9.55%

Ag

9,108,829
7,312,924

17,081,753

95

1/6 m² 9357.5 m² x 61 m = 570,800 m³ ; SR 317 m³ / tonne

Doc 60

1/6 m² 3000 m² x 61 m = 231,800 m³

Doc 58 + 65.5

1/6 m² 575 m² x 20 m = 11500 m³

62-80
 19,092,754

Dec 64 v
Dist.

Dist.

Pb

Zn

Ag

n

SC

Time

Pb

Zn

Ag

1	1.85	272	38	22570	x	3.16
2	6.05	1243	104	31415	x	3.81
3	6.29	780	45	6710	x	3.29
5	2.93	6.64	51	0.3875	x	3.03
6	2.11	6.59	45	4.515	x	2.95
7	5.39	8.73	92	14.335	x	4.28
8	3.12	3.77	53	5490	x	3.87

71.321
119.691
22.076
25.414
13.496
61.354
21.246

139,076
724,131
188,958
74,463
37,924
330,690
46,708
193,993
1487,759
172,193
168,799
88,937
535,620
80,522

1,796,700
12,441,864
3,017,220
1,296,114
607,380
6,644,560
1,126,030

334,591

1,511,437

2,727,775

25,216,112

4.52%

0.15%

75

11/10/64

18,577.5 m³

x 4.1 m

1,133,220 m³

SR

3.29

22c 66 w
Shade

	<u>96</u>	<u>20</u>	<u>A₁</u>
1	10.85	9.82	113
2	1.33	4.30	21
4	5.73	9.71	94
6	4.04	5.73	63
7	2.70	3.94	30
9	3.75	4.71	65
11	6.22	10.80	116
12	1.32	2.83	26
13	2.58	5.01	44
14	2.95	7.00	44

<u>in</u>	<u>×</u>	<u>SG</u>	<u>stones</u>
18.605	×	4.00	74,420
322.5	×	5.03	9,704
65,117.5	×	3.84	250,051
14,335	×	3.52	47,592
0402.5	×	3.53	30,165
1982.5	×	2.54	6,422
14,407.5	×	4.00	57,950
30,400	×	3.14	114,924
44,802.5	×	3.46	47,837
65,725	×	2.76	18,099

<u>Ph</u>	<u>20</u>
785, 131	708, 470
12, 706	42, 504
1,432, 712	2,427, 995
152, 212	272, 702
82, 850	120, 877
24, 833	21, 717
360, 449	636, 291
151, 670	325, 235
128, 577	249, 682
53, 392	126, 693

<u>A₂</u>
12, 874, 660
203, 784
23, 504, 794
2, 998, 276
1, 164, 030
6, 722, 200
2, 988, 024
2, 172, 828
796, 556

657, 983

3, 224, 703

4, 942, 200

53, 877, 402

4.89^{1/2}

7.99^{1/2}

B2

116m 32,532.5 m² × 61 m

1, 984, 483 m²

5.2 3.01

Box 68 w
Bottle

	Pb	Zn	Ag	$\frac{S}{m^3}$	x	S.G.
1	8.37	6.78	111	10,675	x	3.64
2	6.03	6.91	80	10,522.5	x	3.22
3	5.27	9.93	85	2,230	x	2.46
4	2.86	5.48	54	62,525	x	3.29
5	5.13	7.81	73	1830.0	x	3.23
7	5.08	9.18	84	26,667.5	x	4.18
8	1.80	2.52	33	23,790	x	3.41
9	5.11	10.25	87	21,801.5	x	3.88
10	3.56	4.98	63	1,677.5	x	3.46
11	4.87	9.08	83	2,775.5	x	3.43
14	7.55	6.63	76	7,717.5	x	3.34
15	4.38	3.18	66	30,042.5	x	4.15
16	5.25	8.96	106	10,065	x	4.17
17	1.74	3.06	36	5.97	x	3.27

Box 68 w

	Pb	Zn	Ag
38,857	325 253	263 450	4 313 127
33,882	204 308	234 425	2 981 616
91 280	984 096	906 410	7,758,800
20 571	58 833	112 779	1,110 834
5 911	30 323	46 165	431 503
111 554	564 694	1 024 066	9 370 536
85,882	154 588	216 423	2 839 106
84 613	432 372	867 283	7,530 557
5 704	20 306	28,406	359 352
9 530	46 362	86 442	790 160
25 977	176 126	172 218	2 493 772
124 676	546 081	458 800	8 228 616
41 571	210 348	376 050	4 448 726
1 715	3 123	5 493	64 620

682 193

5 285 745

4 778 086

52,716,545

4.82%

7.03%

77

1/4000

50,138

m²

61 m

3,058

, 418

m³

S R

4.48

800 70 w

<u>Abz</u>	<u>Pb</u>	<u>Z+</u>	<u>Ag</u>	<u>m</u>	<u>x</u>	<u>56</u>
1	7.37	8.53	123	3 507.5	x	4 00
2	6.72	7.14	96	3 812.5	x	4 00
3	2.41	5.88	44	29 432.5	x	3 03
4	2.18	4.50	38	66 337.5	x	3.32
4A	2.58	4.21	38	4 515.0	x	3.03
5	1.70	3.29	35	42 090	x	3.43
8	6.61	13.15	111	70 302.5	x	4.12
10	1.81	2.95	34	11 132.5	x	3.33
11	1.39	3.13	27	31 872.5	x	2.85
12	3.81	7.85	64	10 865	x	3.03
13	1.20	2.95	25	5 997.5	x	3.16
14	4.73	9.42	87	51 087.5	x	4.33
16	3.83	5.14	76	8 692.5	x	4.14
17	6.91	13.13	111	25 925	x	3.51
18	4.84	10.81	90	3 050	x	3.57
19	5.30	10.70	96	14 481.5	x	4.04
22	5.43	5.98	80	43 310	x	4.27
24	3.12	2.43	43	6 710	x	3.52
25	2.59	2.55	47	9 150	x	3.17
27	5.10	7.50	89	4 880	x	4.45

tonnes
14, 240
15, 250
89 180
220, 244
13, 842
144 369
207, 646
37, 071
90 837
30 497
20, 432
221, 209
35, 987
90, 997
10, 889
58 530
184 934
23, 619
36, 509
19, 764

Pls

105	234
94	855
214	724
480	125
35	764
256	977
1914	560
67	099
121	722
118	023
34	118
1046	317
137	830
626	789
57	703
310	209
1041	178
73	691
54	558
100	776

Zn.

121 467
102 885
54 378
947 036
59 468
474 774
3,800,845
109 560
284 320
239 401
83 874
2,063,781
206 565
1194 791
116 403
626 771
1105 705
62 117
93 077
148 230

19

1	751	520
1	464	000
3	923	420
8	361	158
	536	756
5	052	715
3	150	700
1	334	550
2	452	599
1	951	806
	710	800
19	245	183
2	735	012
10	100	617
1	900	010
5	418	880
16	271	192
1	110	013
1	569	887
1	750	496

1 656,061

6 929 474

12 399. 176

4.18%

7.49%

72

17/6/54

$$59,682.5 \text{ m}^2 \times 61 \text{ m}$$

3.642 . 633

 $\mathcal{S} \mathcal{R}$

2.2.9

Dr. 72. w
Phosph.

	Pb	Zn	Ag	m	x	56
1	4.55	8.00	74	14030	x	320
2	2.07	3.25	37	25427.5	x	330
3	2.41	4.78	44	138937.5	x	315
4	1.46	2.71	22	17080	x	297
6	3.00	7.41	71	11895	x	350
7	3.30	4.18	47	45445	x	310
8	4.50	8.46	78	7930	x	310
9	3.25	5.66	50	68625	x	307
10	7.98	14.80	132	11742.5	x	345
11	9.35	17.70	141	1830	x	4.11
14	4.86	8.18	83	31527.5	x	4.08
16	3.25	6.23	71	5622.5	x	3.94
18	6.69	5.25	97	16012.5	x	4.17
19	2.64	2.31	40	10980	x	3.27
21	6.28	7.02	101	10807.5	x	4.23
22	5.17	5.31	85	8997.5	x	4.06
23	2.73	2.16	63	3050	x	3.67
24	6.63	8.22	110	12462.5	x	4.11
25	4.91	6.81	77	5562.5	x	4.81
26	3.29	6.07	65	44215	x	4.08
28	6.36	12.73	102	4727.5	x	3.60
30	1.97	2.94	34	1200	x	2.75
31	4.42	9.25	80	1372.5	x	3.90

46279	21060
84043	77419
437622	1059144
501728	74063
41870	159104
144515	470700
24583	110624
210679	705715
46383	346945
7521	70321
126715	625944
22231	22251
67072	498045
25705	94784
45800	267674
36530	188860
11865	32391
53276	353230
26737	180720
178227	586367
17019	108241
3355	6609
5353	23660

Pb	Zn	Ag
210660	375 170	3 426 126
772 149	315 161	3 109 591
1 089 142	2 091 833	19 255 368
74 063	141 554	1 116 016
159 106	310 675	2 912 770
476 900	618 584	6 792 205
110 624	207 972	1 917 474
705 715	1 192 443	10 583 950
346 945	672 554	6 122 556
70 321	133 122	1 075 503
625 944	1 066 423	10 689 985
72 251	138 499	1 578 401
498 845	352 233	6 507 914
94 789	82 941	1 416 200
287 624	321 516	4 625 800
188 860	193 974	3 105 050
32 391	28 628	628 885
353 220	437 939	5 860 360
1 180 720	1 803 289	80 415 749
586 367	1 061 837	11 584 755
108 241	216 651	1 735 138
6 604	9 863	1 114 070
23 660	49 515	438 240

1967406

7397025

11857286

125232876

61985 m² x 61 m

5,781,095 m³

SR 1.97

3.76%

6.03%

64

Ex. 74 w

Block

Pb

Zn

Ag

m³

x

SG

Amount

Pb

Zn

Ag

1	1.19	2.09	25	60 540.5	x	2.95	170 600	212 534	516 154	4 465 000
2	2.19	5.59	44	21 585	x	3.26	96 447	211 219	559 139	4 243 680
3	6.15	9.34	101	21 807.5	x	3.40	74 146	478 242	692 524	7 480 746
4	4.02	6.91	65	40 565.0	x	3.10	126 752	505 523	669 944	8 173 880
5	3.10	5.32	50	37 647.5	x	3.18	191 783	371 327	637 296	5 489 150
6	2.16	3.66	37	11 895	x	2.87	34 139	23 740	134 949	1 263 193
7	2.20	3.91	35	68 771.5	x	3.06	210 149	443 019	812 895	7 366 065
9	7.37	14.35	125	18 605	x	3.74	73 304	540 250	1 051 912	9 163 000
10	2.91	4.67	46	13 725	x	3.41	43 783	177 409	204 467	2 019 018
11	3.16	5.38	49	25 620	x	3.04	78 397	247 735	421 776	3 841 453
13	6.12	10.97	103	21 807.5	x	3.83	83 523	511 161	916 241	8 602 851
14	6.14	4.66	78	23 332.5	x	4.15	96 830	594 536	491 291	7 552 740
15	2.96	2.62	41	2 355	x	3.40	11 407	32 765	29 886	467 687
16	3.74	3.63	61	20 435	x	3.65	71 588	270 959	270 254	4 599 060
18	1.37	3.37	31	11 895	x	2.77	35 328	66 043	119 055	1 095 168
20	6.04	9.50	101	3 355	x	2.81	9 696	58 564	92 112	979 276
23	4.96	10.31	89	28 975	x	3.38	97 936	485 763	1 009 720	8 716 304
24	2.65	4.03	42	13 572.5	x	3.37	46 011	121 921	185 444	1 932 462
25	3.29	5.02	49	33 245	x	2.97	98 138	324 898	495 665	4 838 162
27	1.52	3.25	29	22 215	x	2.80	62 342	74 760	202 612	1 807 918
28	2.75	5.80	57	67 100	x	3.14	210 694	579 409	1 222 025	10 745 394
38	6.30	9.79	118	6 465	x	4.05	25 740	163 422	283 952	3 060 920
40	3.88	6.62	72	64 765	x	4.10	266 357	1 033 445	1 703 283	11 777 704

2,154,196

7577 631

12,840,033

127 534 615

60th 74992 c² x 61 w

11,570, 273 m³ ; SR 2 LR

3.52%

5.98%

59.

4 2 742 679

3 4 791 936

12 7 534 615

200 75 W

Block

	Ph	Zn	Ag	M	X	Su
1	2.21	4.06	391	100 040	X	3.01
2	4.16	6.00	69	15 555	X	3.12
4	3.10	5.83	50	600 777.5	X	3.04
6	2.42	4.27	39	67 062.5	X	2.95
7	1.62	2.67	27	77 605	X	2.98
7A	3.60	7.15	68	32 025	X	3.10
8	2.53	6.70	59	10 522.5	X	2.97
10	6.23	10.93	110	102 937.5	X	4.11
12	2.52	6.24	43	7625	X	2.95
13	7.17	11.31	108	2207.5	X	4.37
14	4.21	8.64	84	1 030	X	3.40
15	2.55	4.20	43	66 185	X	2.97
17	4.07	7.19	69	40 717.5	X	3.31
19	4.80	7.50	74	15 555	X	3.23
20	2.22	3.20	40	13 420	X	3.27
23	1.98	2.05	36	1 067.5	X	3.30
24	6.72	6.77	102	18 300	X	4.05
26	4.59	7.43	95	1 525	X	4.15

Block

Ph	Zn	Ag
301 120	665 475	1 222 547
48 532	201 073	338 900
209 004	640 160	1 210 960
202 194	404 467	854 820
237 223	304 301	626 267
99 270	365 343	707 030
31 252	110 520	211 089
423 073	2 635 745	4 624 100
22 474	56 605	140 363
9 976	71 671	173 031
6 368	26 009	55 019
176 567	501 251	825 507
134 775	540 524	969 032
50 243	241 166	370 773
43 003	97 420	145 936
3 600	7 144	7 396
74 115	478 053	477 574
6 327	27 050	97 024

2 098 136

7 573 440

3.61%

13 014 114

6.20%

129 370 000

62

13 28 7.5

11.00%

79 567.52 x 1.1 m

= 4853.618 m

2.2

2.31

30.79 v

Blank

	Pb	Zn	Ag	m ²	x	SV	tan
1	1.41	3.52	32	83.112.5	x	2.70	241.026
2	2.73	5.20	43	15.555	x	3.34	57.754
3	2.94	5.76	48	148.535	x	3.03	450.061
5	2.78	5.04	20	905	x	3.34	3056
6	1.67	3.21	27	1372.5	x	3.34	1584
7	2.71	4.72	51	18910	x	3.10	60.134
8	3.43	4.20	67	10217.5	x	3.31	23.920
9	5.98	10.58	97	13087.5	x	3.47	98.155
10	1.80	2.90	35	16.165	x	3.01	48.657
12	3.11	6.08	58	51.080	x	3.24	165.524
13	1.37	2.70	33	17.537.5	x	3.19	55.945
14	1.03	3.37	35	22.700	x	2.95	125.965
16	2.24	4.60	47	31.567.5	x	3.04	95.765
17	4.37	9.02	81	17.537.5	x	3.41	57.803
21	2.51	4.51	43	11.132.5	x	3.00	33.298
22	0.31	16.38	113	6.100	x	3.52	21.472
24	2.10	4.22	35	11.570	x	2.87	33.463
26	5.60	11.73	90	63.592.5	x	3.81	242.287
27	2.78	4.27	43	63.877.5	x	3.15	201.277
27H	3.99	6.96	77	3.507.5	x	4.40	15.433
29	2.01	2.05	34	9917.5	x	3.24	32.612
34	2.67	4.27	46	22.112.5	x	3.03	67.001

2091391

6461071

3.09%

Pb	Zn	Ag	
460.360	846.412	7772.832	
141.834	270.761	2234.022	
1323.179	2592.351	21602.728	
8496	15402	61120	
8572	14715	132.936	
162.963	283.832	3066.834	
116.003	142.044	2265.740	
287.967	509.460	4671.035	
87.583	144.998	1702.975	
514.780	1086.386	9600.392	
76.645	157.052	1046.185	
2305.165	427.621	4400.725	
214.962	441.439	4510.555	
261.389	529.473	4844.043	
83.827	150.625	1436.114	
178.432	357.711	2426.326	
49.852	140.370	1164.205	
1576.140	2442.027	23744.126	97 4 3 1 1
589.550	859.452	8059.911	
61.578	107.413	1188.341	
65.550	66.854	1108.820	
178.893	287.434	3082.046	14 0 3 4 1 0 6

12192600

111465279

5.83%

53

11/11/18

78765 m² x 61

4.774 165 m³

51 228

3.80

Pb

Pb

Zn

Ag

3

x

56

Form

Pb

Zn

Ag

1	2.01	3.00	34	64.60	x	3.03
2	2.79	6.53	52	80.825	x	3.39
3	2.70	4.96	49	34.110	x	3.03
5	2.89	4.74	47	46.572.5	x	3.03
6	1.65	4.57	38	18.910	x	2.86
7	2.15	4.28	38	5.642.5	x	2.79
9	3.12	5.83	57	21.350	x	2.89
10	1.54	3.90	26	7.712.5	x	2.85
12	2.43	4.53	40	35.685	x	3.22
13	3.18	5.03	46	10.675	x	2.95
14	1.78	3.38	23	137.402.5	x	2.88
16	2.38	4.25	44	43.442.5	x	3.08
17	3.35	6.16	57	53.480	x	3.11
18	4.18	7.82	69	28.670	x	3.33
20	5.40	7.86	96	25.162.5	x	3.70
22	4.38	3.61	63	12.810	x	3.46
23	7.25	6.53	112	14.945	x	4.47
24	3.00	4.00	46	4.575	x	3.74
25	2.40	2.80	35	21.533	x	2.80
26	3.25	7.24	68	36.752.5	x	3.44
46	4.86	8.48	92	11.747.5	x	3.54

2.269.232

2.14

409.473	744.496	6.661.280
764.452	1.515.203	14.747.844
279.464	513.385	5.071.745
407.296	668.022	8.623.851
89.237	247.157	2.055.154
36.273	71.533	641.078
192.512	359.723	3.577.014
43.501	110.179	734.526
279.272	520.524	4.596.240
100.141	158.400	1.498.586
704.380	1.337.530	13.058.787
218.599	568.926	5.870.060
557.866	1.038.381	9.515.865
399.081	746.583	6.587.499
589.924	771.533	9.420.864
194.135	160.006	2.792.349
184.329	422.870	7.482.048
54.078	72.104	829.196
146.701	168.517	2.110.220
474.109	915.345	8.971.172
202.020	352.496	3.814.256

6.666.181

2.94%

11.453.015

5.05%

115.705.594

51

9.0 0.7 0.3 5.3

2.5 6 3.5 2.4 1

1.1 5 7.0 5 5 9.4

11.6

0.1612

6.1

4,978,532

5.8

2.19

Sec 32 W

Block

Pb

Zn

Ag

m²

Se

Trace

Pb

Zn

Ag

(Don't)

1	235	491	42	48,495
3	166	542	29	3538
4	764	1350	134	5,185
5	390	630	50	2,592.5
6	270	392	59	9,760
8	241	624	62	5,185
11	156	247	87	8,692.5
12	231	469	45	15,311
13	161	305	29	33,092.5
14	181	338	31	67,710
15	326	711	57	3,202.5
16	211	304	38	19,977.5
17	141	274	24	5,185.0
21	365	476	55	14,487.5
22	450	601	70	10,827.5
23	620	642	107	2,725.5
25	151	215	27	25,010
26	444	751	80	19,977.5
27	140	273	32	5,490
36	409	783	65	1,982.5
37	374	743	71	8,692.5
38	195	310	35	19,825.0
39	425	745	73	2,135.0
42	168	285	27	14,030.0

348,418.5 x 33,004

1,149,121

25 (2nd)

415 (2nd)

45 (2nd)

11/10/01

800,719 m² x 6.1 m

= 5,411,859 m³

12.04

Block

2

3

4

10

11

12

Pb

2.21

3.21

4.23

2.14

1.81

1.50

Zn

5.17

5.30

6.31

4.62

3.54

2.77

Ag

30

55

72

40

34

25

$\frac{m^3}{m}$

2504

7503

8096

155,553

49,715

99,125

x

5.6

=

Zn

377,753

=

2.05

=

1,032,421

Pb

21 (out)

Zn

9.0 (out)

Ag

70 (out)

14/000

60,377 m²

x 61 m =

4,179,977 m²

dic 86 w

88h

8

7

8

Ph

205

20

256

Zn

932

877

848

Ag

40

40

40

m³

1525

234,817

15,250

56

tonne

86

Zn

16

257,625

x

31 (avg)

780,030

234 (net)

450 (net)

40 (net)

Woods

58,302.5

x

61

3,556,453 m³

LITHOLOGIC

NOMENCLATURE

Sulphide Lithofacies and Alteration Assemblages

There are numerous sulphide lithofacies which comprise all Anvil district deposits. The same facies in variable proportions form each deposit suggesting a consanguineous origin for all deposits. The appearance of sulphide facies in different deposits varies primarily as a function of metamorphic grade. Two principal subdivisions are recognized in the Anvil ores, massive and quartzose disseminated sulphides. Brief descriptions of the rock types in each of these major subdivisions are given below.

Massive Lithofacies

Massive Pyritic Sulphides: (Unit 2E/4E) banded (fig. 16A) to homogenous, (fig.16B) usually weakly foliated and/or lineated, massive pyrite with lesser sphalerite and galena. Total sulphide content is at least 80% and is commonly nearly 100%. Gangue consists of quartz and/or barite and/or carbonates (calcite, dolomite, ankerite). Accessory minerals include pyrrhotite, chalcopyrite, magnetite, arsenopyrite and marcasite. At amphibolite facies metamorphic grade, this rock type commonly develops a buckshot porphyroblastic texture of pyrite in a matrix of dark reddish brown to black base metal sulphides (fig. 16D). This texture usually is restricted to rocks with economic lead-zinc grades. (Unit 4F/2F)

The remaining massive lithofacies are essentially variants of massive

pyritic sulphides.

Baritic, Massive Pyritic Sulphides: (Unit 2G/4G) strongly and thinly banded (fig. 16E) massive sulphide/sulfate rock consisting of pyrite, galena, sphalerite and commonly magnetite in a gangue of off-white barite and lesser carbonates (calcite, dolomite, ankerite and probably barytocalcite). The amount of barite may be as high as 50%; non-sulfidic, massive barite does not occur in the Anvil deposits. There is a complete gradation between this and the above facies with 10% visible barite by volume being the dividing line. This facies is usually quite high grade (10-15% combined lead-zinc). Sphalerite is characteristically honey coloured to reddish brown. Pyrrhotite is not commonly seen in the baritic facies.

Carbonate-bearing, Massive Pyrite Sulphides: (Unit 2K/4K) similar to massive pyritic sulphides but contains 10% carbonate (calcite, dolomite, ankerite) either as interstitial gangue or as coarse patches and irregular blebs. This is a minor facies and is not known with certainty to always be an original composition variant. The most common occurrence of coarse beige to tan, ankerite patches may represent recrystallized original matrix carbonate or re-worked pre/syn-metamorphic veins.

Pyrrhotitic Massive Sulphides: (Unit 2H/4H) massive, finely crystalline, usually well foliated pyrrhotite with less than 50% pyrite

porphyroblasts and highly variable amounts of sphalerite and galena. Minor chalcopyrite is characteristic of this relatively copper-rich facies. Rounded to angular, rotated, foliated quartzite or quartz-vein clasts 2 cm or less in diameter are typical. This is a minor facies and is not known with certainty to be primary as some pyrite in the massive facies may invert to pyrrhotite during regional metamorphism.

Breccia textures are more common in the massive pyritic and pyrrhotitic facies than in the barite or carbonate-bearing facies. Pyritic breccias generally involve fragments of more quartzose or lower grade pyritic facies in a massive pyrite plus base metal sulphide matrix. Fragments can be angular to subrounded, poorly sorted and may be in either clast or matrix support. In some cases, margins of fragments can be fit back together. In all cases, the breccias are post-metamorphic since they involve variably oriented, foliated clasts. The origin of the breccias appears to relate to ductility contrasts between the affected lithologies during sulphide flowage induced by deformation and metamorphism. These are clearly not primary breccias related to feeder zones or paleoslumps prior to sulphide lithification.

Friable and porous massive sulphides are relatively common and when strongly developed often degenerate to pyrite sand. The porous massive sulphides are commonly carbonate or barite bearing and originate by post-metamorphic groundwater leaching especially near faults.

Quartzose Disseminated Lithofacies

Ribbon banded, graphitic, pyritic quartzite: (Unit 2A/4A) dark grey to black, well banded, sulphide-bearing quartzite (metamorphic usage). Bands are: (a) dark grey, very fine grained carbonaceous phyllitic quartzite to siliceous phyllite (presumed metachert), and (b) light grey, quartz-sulphide (pyrite-sphalerite-galena) bands (fig.17A). These bands are usually 2 mm to 2 cm thick with a total sulphide content usually between 10 to 30% and ranging from 2% to 60%. Pyrite is usually the dominant species but higher grade examples have sub-equal to base-metal dominant variants. Strong sulphide species differentiation between bands is common such that barren pyrite bands can be found, adjacent to or nearby sulphide-bearing bands rich in sphalerite or galena.

Pyritic quartzite: (Units 4B, C, D/2B, C, D) light grey, generally poorly banded, moderately to weakly foliated, micaceous quartzites (presumed metacherts) with highly variable base metal and pyrite contents; pyrite contents are generally 10% to 40% ranging between 5% and 80%. Although there is a complete gradation from massive to quartzose ores there is usually little problem in separating this facies from the massive pyritic sulphides as the vast majority of examples have less than 40% total sulphides. A minor variant of this facies (unit 2B/4B) shows low pyrite (5%) content with base metal sulphides predominant. Barite in major amounts is absent from this facies and carbonate species are not typical but locally are abundant. Chalcopyrite, pyrrhotite and magnetite-bearing varieties are

common. Sphalerite in the high grade examples is characteristically a vibrant reddish brown.

Post-metamorphic breccias are also common in the disseminated sulphide lithofacies. Pyritic quartzite breccias are often spectacularly developed in the sphalerite-rich high grade facies where again ductility contrasts between the heavily developed sulphides and quartzite bands dictate ductile flow in the sulphides and brittle failure, rotation and brecciation on the quartzite. Where less intensively developed the breccias grade into examples of sulphide mobilization into D_2 or later cleavages.

Alteration

Both wallrocks and certain ore facies of the Anvil deposits are overprinted by a prominent, easily recognized, light beige, white mica-dominant alteration assemblage (Unit 4L). This overprint facies is not a depositional unit and may form as a reaction product between wallrocks and deposit forming hydrothermal fluids, or as a metamorphic reaction envelope or as combination of these processes. In the multi-layered deposits, this alteration overprint appears discontinuous and often best developed in the footwall of a given lens or deposit as a whole (fig. 96). At Faro, a continuous envelope of this lithology encloses the entire deposit with local (especially Zone 1) best development in the hanging wall (fig. 9a).

Many mineralogical variants of the alteration facies are recognized including siliceous, carbonate-bearing, talcose, chloritic, pyritic,

pyrrhotitic, chalcopyrite-bearing, magnetite-bearing and base metal-bearing species. Careful attention has been paid to the distribution of these facies in an attempt to define feeder zones for all deposits. To date, little success has been had in this regard as no unequivocal feeder zones have been recognized. Several instances of suspected pre-D₁ quartz-chlorite-pyrrhotite-chalcopyrite veins or stringers have been observed in the altered stratigraphic footwalls of several horizons (Swim deposit in particular) but not in sufficient abundance to define a stringer or feeder zone comparable to volcanogenic deposits. Recognition of a feeder zone is considerably hampered in this terrane by the polydeformational overprint. It may be that Anvil deposit feeder zones are simply broad and diffuse, not focussed and funnel shaped as in volcanogenic massive sulphide deposits. Alternatively, the extensive strata bound nature of the alteration envelope may imply its formation by downward percolation of pooled hydrothermal brines or by lateral migration along a permeable horizon laterally from a feeder.

In the multi-layered deposits at greenschist facies grade, all mineralogical variants of the alteration facies are commonly recognized, often with best degree of development in the footwall of a mineralized horizon. The only amphibolite-grade example, the Faro deposit, shows a much less varied phase assemblage (muscovite, quartz, pyrite $\pm$ marcasite) in altered rocks with development of a substantial hanging wall as well as footwall alteration envelope. This simplified phase assemblage may be due to re-equilibration of the greenschist alteration assemblages at higher grades of metamorphism. The prominent hangingwall alteration may be due to continued post-depositional hydrothermal activity or to sulfurization

or other metasomatic reactions in the wallrocks during metamorphism perhaps caused by mobile sulfur from the inversion of pyrite to pyrrhotite in the deposit. It is interesting to note the development of massive pyrrhotitic facies is greatest in the Faro deposit which also shows the most well defined broadest and most symmetrically developed alteration envelope.

Numerous examples of alteration are seen particularly in the ribbon banded, graphitic, pyritic quartzites of the Anvil deposits. None of the other sulphide lithofacies show appreciable visible alteration. The ribbon banded graphitic quartzites however, are locally "bleached" to the same light beige colour as other altered rock types. Alteration fronts have been seen cutting across and preserving the typically well developed banding of this facies. Altered examples differ only in their absence of carbonaceous or graphitic material retaining textural identity to their unaltered counterparts. At Grum this bleaching of carbonaceous ore is commonly seen adjacent to carbonated metabasite bodies but no such association applies to the bleached rock as a whole. It is this preservation of texture which is the most diagnostic feature in the discrimination of altered ore facies from weakly disseminated base metal occurrences in altered wallrocks.

To _____ Copy to _____

From Gregg Jilson

Date November 17, 1983

Subject LITH CODES FOR COLUMN LABELED " ROCK UNIT"

This will help sort through the alphabet soup we use for rock names - Grum ore is called 4 rather than 2 as at Faro, everything else is basically the same:

4 designates an ore type as opposed to 3 or 5 which designates a host rock. A letter following indicates type of ore and any further numbers are modifiers as outlined below:

4A is ribbon banded graphitic quartzite.

common modifiers:

4A0 means less than 5% Pb + Zn

4A4 means more than 5% Pb + Zn

4A3 means more than 30% pyrite

4A34 means greater than 5% Pb + Zn and greater than 30% Pyrite

note: 1 occurs as a modifier commonly but does not mean anything much.

4B, 4C and 4D are quartzose ore types without graphite.

4B has less than 2% pyrite and is relatively rare

4C is pyrite bearing and less than 5% Pb + Zn

4D is pyrite bearing and more than 5% Pb + Zn

common modifiers:

4C0 means normal and less than 5% Pb + Zn

4C4 means 4D, therefore should not be used

4B4 means no pyrite but more than 5% Pb + Zn

4D4 means pyrite and more than 10% Pb + Zn

4D0 means normal and 5 - 10% Pb + Zn

5 means minor graphite

7 means pyrrhotite bearing

9 means chalcopryrite

3 means more than 30% pyrite

4E is massive sulphide (note 4F is a textural variant that simply means very high grade 4E and is not used at Grum due to metamorphic grade)

4E1 means siliceous (60 - 80% pyrite)

4E4 means more than 5% Pb + Zn

4E6 means has visible barite but less than 10%

4E0 means normal and less than 5% Pb + Zn

4E7 means pyrrhotite bearing

4E8 means magnetite bearing

4E9 means chalcopryrite bearing

*\$#@ means the rock contains carbonates of one sort or another

- 2 -

4G barite bearing massive sulphides

4G4 means greater than 10% Pb + Zn

4G8 means magnetite bearing

*\$# or @ are simply carbonate minerals

4H pyrrhotite bearing massive sulphides

4H1 means siliceous (greater than 20% quartz)

4H2 means also has pyrite

4H4 means more than 5% Pb + Zn

4H9 means chalcopyrite bearing

4K carbonate bearing massive sulphides

4K0 means less than 5% Pb + Zn

4K4 means greater than 5% Pb + Zn

4L is alteration in wallrock

4L0 means normal

4L1 means siliceous

4L2 means pyrite bearing

4L3 means talc bearing

4L4 Pb + Zn bearing (no cut-off)

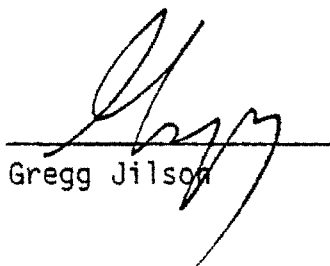
4L5 means carbonate bearing

4L6 means chlorite bearing

4L7 means pyrrhotite bearing

4L9 means chalcopyrite bearing

4CA, 4CE etc. mean both 4C and 4A or 4C and 4E are present



Gregg Jilson

MAIN DEPOSIT AREA

LITHOSTRATIGRAPHIC CODE

Intrusive Rocks

Unit 10	928	10-A	Granodiorite (kspars<plag, quartz>10%)
	929	B	Adamellite (qtz monzonite)
	939	C	Pegmatite
	956	D	Quartz diorite (kspars<<plag, qtz>10%)
	934	E	Diorite (kspars<<plag, qtz>10%)
	925	F	Monzonite (kspars<plag, qtz<10%)
	932	G	Pyroxenite
	937	H	Granite (kspars>plag, qtz>10%)
	930	I	Syenite (kspars>plag, qtz<10%)
	938	Q	Bull qtz veins/pods
			1 Foliated/lineated
			2 Porphyritic
			3 Aphanitic
			4 Smokey qtz-bearing
			5 Muscovite-bearing
			6 Kspar-bearing
			7 Biotite-bearing
			8 Amphibole-bearing
			9 Altered (kaolinite, montmorillonite)
			0 Normal (equigranular)

Vangorda Formation

Intrusive Contact

Unit 5	936	5-A	Variably calcareous, graphitic phyllite (hosts Unit 4; ± 1E, hosts Unit 2)
	920	B	Calcareous muscovite-chlorite:biotite phyllite (greenschist equivalent of 3D)
	908	C	Metabasite
	910	D	Chloritic phyllite
	904	E	Phyllitic marble and silicated marble
	910	F	Laminarily banded, variably calcareous, chloritic phyllite (associated with 5C)
	949	G	Variably calcareous, graphitic phyllite.
			1 Siliceous
			2 Carbonaceous
			3 Calcareous
			4 Altered, pyritic (white mica envelope)
			5 Banded/laminated
			6 Non-calcareous
			7 Chlorite laminations
			8 Chloritic
			9 Sulfide-bearing
			0 Normal
			* Carbonate-bearing

Faro, Grum, Vangorda, DY Deposits

Conformable Contact

Unit 2/4	922	2/4-A	Sulfide-bearing, ribbon-banded, graphitic quartzite
	915	B	Pyrite-free quartzite (may contain base metal sulfides)
	916	C	Base metal-poor, pyritic quartzite
	942	D	Base metal-bearing, pyritic quartzite
	918	E	Massive pyritic sulfides
	923	F	Buckshot facies, massive sulfides
	928	G	Baritic facies, massive sulfides/sulfates (>10% BaSO ₄)
	924	H	Pyrrhotitic facies, massive sulfides
	949	J	Non-pyritic, massive sulfides/oxides
	921	K	Carbonate-bearing, massive pyritic sulfides
	914	L	
			1 Siliceous
			2 Coarse, porphyroblastic pyrite-bearing
			3 Fine pyrite/marcasite-bearing
			4 Sphalerite and/or galena-bearing
			5 Carbonaceous
			6 Barite-bearing
			7 Pyrrhotite-bearing
			8 Magnetite-bearing
			9 Chalcopyrite-bearing
			0 Normal
			* Carbonate-bearing
		2/4L	Muscovite>qtz-chl-bio-phyllite (generally sulfide-bearing)
			1 Siliceous
			2 Pyrite-bearing
			3 Calc/kaolinite-bearing
			4 ZnS and/or PbS-bearing
			5 Carbonate-bearing
			6 Chl+bio>qtz-musc phyllite
			7 Pyrrhotite-bearing
			8 Magnetite-bearing
			9 Chalcopyrite-bearing
			0 Normal

Mt. Mye Formation

Conformable Contact

Unit 3	916	3-I	Graphitic quartzite in non-calcareous phyllite/schist
	913	H	Tuffaceous calc-silicate phyllite/schist (assoc. with 3D; identical to 5F)
	941	G	Non-calcareous muscovite-chlorite:biotite phyllite/schist (± 1C, 1D)
	906	F	Marble and silicated marble (± 1G)
	963	E	Graphitic phyllite/schist (± 5A)
	913	D	Calc-silicate phyllite/schist (u. greenschist to amphibolite facies equiv. of 5B)
	908	C	Metabasite
	946	B	Chloritic phyllite/schist (c.f. 5D)
	912	3-A	Transition zone with unit 1 (interbanded chloritic phyllite, graphitic phyllite and pelites of Vangorda and Mt. Mye Fms.)
			1 Siliceous
			2 Non-calcareous
			3 Calcareous
			4 Altered, pyritic (wme)*
			5 Banded/laminated
			6 Sulfide-bearing
			7 Chlorite laminations
			8 Chloritic
			9 Carbonaceous
			0 Normal
	902	1-B	Tactite and silicated marble (± 3F)
	943	C	Quartz-feldspathic, biotite-muscovite gneiss/schist (± 3G)
	947	D	Carbonaceous biotite-muscovite-andalusite schist (± 3G)
	967	E	Graphitic schist (± 5A)
	908	F	Metabasite (± 3C)
	901	G	Marble and silicated marble (± 3F)
Unit 1	910	1-H	Chloritic schist (c.f. 5D)
			1 Siliceous
			2 Carbonaceous
			3 Calcareous
			4 Altered, pyritic (wme)*
			5 Banded
			6 Clotted
			7 Staurolitic
			8 Chloritic
			9 Sulfide-bearing
			0 Normal

*(wme) White mica envelope