

GEOLOGICAL SURVEY OF CANADA
 ECONOMIC GEOLOGY AND MINERALOGY DIVISION
 ANALYTICAL CHEMISTRY SECTION
 ICP - EMISSION SPECTROMETRY LABORATORY

695-790

 * REPORT OF ANALYSIS *

R. V. KIRKHAM

Sulphurets
 803862

DATE: 10 FEB. 88
 REPORT NO. 152-87
 SUBMITTED BY: BALLANTYNE B.
 PROJECT NO. 790003
 METHOD: DISSOLUTION F-HCl-10 ; ICP-TR1 , Ag & Pb BY AA.

ESTIMATE OF VALIDITY OF RESULTS

ELEMENT	+/-	(ABSOLUTE	+	RELATIVE)
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Be	+/-	(0.5 PPM	+	5% OF CONC.)
Co	+/-	(5 PPM	+	5% OF CONC.)
Cr	+/-	(10 PPM	+	5% OF CONC.)
Cu	+/-	(10 PPM	+	5% OF CONC.)
La	+/-	(10 PPM	+	5% OF CONC.)
Ni	+/-	(10 PPM	+	5% OF CONC.)
Pb	+/-	(20 PPM	+	10% OF CONC.)
V	+/-	(5 PPM	+	5% OF CONC.)
Yb	+/-	(0.5 PPM	+	5% OF CONC.)
Zn	+/-	(5 PPM	+	5% OF CONC.)

ANALYST(S).....

VERIFIED..... *hly*

REPORT OF ANALYSIS

NAME: BALLANTYNE B.

PROJECT: 790003

REQN. NO: 152-87

LAB. NO.	82 ₁	83A ₂	5506 ₃	83B ₄	83C ₅	KQ-87-84 ₆	<u> </u> ₇	85A ₈
SAMPLE NO:	104B-879 695	104B-879 696	104B-879 697	104B-879 698	104B-879 699	104B-879 700	104B-879 701	104B-879 702
BE ppm :	1.4	1.2	6.0	1.6	1.8	2.7	0.9	1.4
CO ppm :	9	5	43	6	16	13	16	36
CR ppm :	12	11	380	8	18	40	67	70
CU ppm :	10	12	68	4	26	36	17	85
LA ppm :	21	29	36	37	35	45	20	25
NI ppm :	16	5	330	1	3	17	26	67
V ppm :	55	8	130	8	75	78	54	200
YB ppm :	3.5	4.5	3.8	4.3	9.4	6.8	1.7	1.8
ZN ppm :	240	110	160	130	130	150	47	82

COMMENTS:

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

BE	ppm :	1.3	0.7	1.3	1.1	6.2	1.5	1.6	1.0
CO	ppm :	32	32	31	33	43	42	43	17
CR	ppm :	100	95	110	130	390	190	200	70
CU	ppm :	51	100	73	60	74	60	60	22
LA	ppm :	22	23	28	26	36	32	32	22
NI	ppm :	71	68	80	90	350	130	130	26
V	ppm :	160	170	190	180	140	220	260	54
YB	ppm :	1.5	1.9	1.7	1.6	3.9	1.5	1.3	1.8
ZN	ppm :	67	61	72	87	150	78	75	46

COMMENTS:
 * ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
 DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ICP-ES LABORATORY
 LAB. NO. *87B* 17 *87C* 18 *88A* 19 *KQ-87-88B* 20 *88C* 21 *SS06* 22 *88D* 23 *89A* 24
 SAMPLE NO: 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879
 712 713 714 715 716 717 718 719

	17	18	19	20	21	22	23	24
BE ppm :	1.4	1.1	2.4	1.7	1.6	6.1	1.3	1.2
CD ppm :	18	14	14	26	24	43	30	16
CR ppm :	51	71	19	28	19	400	26	30
CU ppm :	42	20	18	25	62	75	100	230
LA ppm :	21	25	34	30	32	37	18	22
NI ppm :	22	21	9	18	7	320	14	18
V ppm :	120	65	87	200	160	140	200	110
YB ppm :	2.4	2.1	2.5	2.0	2.1	4.1	1.3	2.3
ZN ppm :	77	44	66	86	76	160	83	140

COMMENTS:

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
 DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ICP-ES LABORATORY
 LAB. NO. 89B 25 26 89C 27 KQ-87-90 28 91 29 91A 30 92 31 4506 32
 SAMPLE NO: 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879
 720 721 722 723 724 725 726 727

	25	26	27	28	29	30	31	32
BE ppm :	0.8	1.0	1.1	0.8	1.3	0.9	1.2	6.1
CD ppm :	9	10	14	14	15	6	13	39
CR ppm :	29	56	33	18	18	14	21	360
CU ppm :	110	13	190	19	16	8	13	71
LA ppm :	9	10	15	10	11	22	17	33
NI ppm :	0	0	0	0	0	2	0	310
V ppm :	87	110	190	230	170	220	190	130
YB ppm :	0.3	0.9	1.3	1.0	1.5	1.2	1.2	4.0
ZN ppm :	38	11	120	19	4	4	75	160

COMMENTS:

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
 DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION
 ICP-ES LABORATORY
 LAB. NO. 92A 33 92B 34 92C 35 92D 36 93 37 KQ-87-94 38 95 39 95A 40
 SAMPLE NO: 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879
 728 729 730 732 733 734 735 736

	728	729	730	732	733	734	735	736
BE ppm :	0.9	1.1	0.9	0.9	1.8	1.3	1.4	1.9
CO ppm :	7	7	10	19	46	10	9	14
CR ppm :	51	33	49	37	320	18	56	53
CU ppm :	8	46	21	160	150	29	68	130
LA ppm :	6	10	21	14	19	19	10	13
NI ppm :	0	0	0	0	110	0	2	0
V ppm :	100	77	120	70	230	160	160	130
YB ppm :	0.6	0.8	1.4	0.9	2.2	2.1	1.2	1.6
ZN ppm :	7	18	27	120	180	110	48	31

COMMENTS:
 * ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
 DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION
 ICP-ES LABORATORY
 LAB. NO. *75010* *95B* 42 *95C* 43 *95D* 44 *—* 45 *KQ-87-95E* 46 *96* 47 *96A* 48
 SAMPLE NO: 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879
 737 738 739 740 741 742 743 744

	737	738	739	740	741	742	743	744
BE ppm :	6.3	1.2	0.1	0.4	1.3	0.3	0.9	1.3
CD ppm :	41	14	5	18	38	20	17	37
CR ppm :	380	57	5	31	46	15	20	46
CU ppm :	67	48	33	25	120	440	55	120
LA ppm :	32	9	2	6	15	6	9	14
NI ppm :	310	0	0	10	18	15	10	18
V ppm :	130	110	6	80	240	74	130	240
YB ppm :	3.8	0.9	0.1	0.5	1.8	0.3	1.5	1.8
ZN ppm :	160	61	3600	3400	92	35000	94	87

COMMENTS:
 * ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
 DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ANALYTICAL CHEMISTRY SECTION
 ICP-ES LABORATORY
 LAB. NO. 96B 49 96C 50 51 52 53 54 55 56
 SAMPLE NO: 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879 104B-879
 745 746 747 748 749 750 752 753

SS06 KQ-87-96D 97 97A 97B 97C

	745	746	747	748	749	750	752	753
BE ppm :	0.8	0.6	6.0	0.9	0.8	1.0	0.9	0.8
CO ppm :	16	25	38	38	34	39	39	32
CR ppm :	18	50	330	80	59	60	79	26
CU ppm :	24	170	69	120	140	150	100	120
LA ppm :	7	7	31	8	8	8	7	6
NI ppm :	7	4	320	0	22	32	5	2
V ppm :	180	160	140	300	280	270	290	230
YB ppm :	0.6	0.9	4.0	1.4	1.5	1.6	1.3	1.3
ZN ppm :	89	74	150	83	57	76	140	110

COMMENTS:
 * ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
 DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

Element	754	755	756	757	758	759	760	761
BE ppm :	0.7	0.8	0.8	6.1	0.9	0.7	1.2	1.9
CO ppm :	40	36	29	40	34	37	32	38
CR ppm :	61	48	27	390	44	100	66	30
CU ppm :	130	110	87	69	93	150	190	130
LA ppm :	7	6	8	33	8	7	7	12
NI ppm :	19	0	9	320	0	33	23	0
V ppm :	270	270	220	140	290	270	260	420
YB ppm :	1.2	1.3	1.6	4.2	1.2	1.1	1.1	1.2
ZN ppm :	60	79	81	160	79	82	73	96

COMMENTS:
 * ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
 DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

Element	762	763	764	765	766	767	768	769
BE ppm :	0.9	0.9	0.8	1.8	2.2	6.5	2.0	1.9
CD ppm :	40	21	37	23	13	40	38	38
CR ppm :	100	35	30	130	19	400	29	40
CU ppm :	93	67	150	52	210	65	130	32
LA ppm :	6	8	10	19	26	32	12	14
NI ppm :	17	13	10	32	0	310	0	33
V ppm :	270	190	390	230	170	130	430	320
YB ppm :	1.2	1.4	0.9	1.1	1.4	3.9	1.3	1.4
ZN ppm :	83	78	100	95	66	160	100	65

COMMENTS:
 * ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
 DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ICP-ES LABORATORY
 LAB. NO. 105 73
 SAMPLE NO: 104B-879
 770

105A 74
 104B-879
 772

105B 75
 104B-879
 773

KQ-87-106 76
 104B-879
 774

106A 77
 104B-879
 775

106B 78
 104B-879
 776

SS04 79
 104B-879
 777

106C 80
 104B-879
 778

	105 73	105A 74	105B 75	KQ-87-106 76	106A 77	106B 78	SS04 79	106C 80
BE ppm :	1.4	1.3	1.2	0.8	1.6	3.1	6.2	2.4
CO ppm :	17	27	35	5	7	29	40	4
CR ppm :	69	25	100	9	14	28	370	12
CU ppm :	69	100	970	180	430	2300	69	370
LA ppm :	8	11	6	0	3	6	33	2
NI ppm :	22	8	0	0	0	0	320	0
V ppm :	190	290	280	160	220	2200	140	370
YB ppm :	0.6	1.1	0.8	0.1	0.6	0.0	4.2	0.1
ZN ppm :	48	77	53	15	40	45	160	14

COMMENTS:

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
 DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

	81	82	83	84	85	86	87	88
BE ppm :	1.7	1.8	1.6	2.8	1.7	3.9	9.3	3.9
CO ppm :	14	1	13	8	13	3	2	1
CR ppm :	21	5	12	25	25	6	8	4
CU ppm :	640	75	740	550	210	290	220	400
LA ppm :	3	0	17	2	3	3	2	0
NI ppm :	1	0	0	2	0	0	2	0
V ppm :	340	210	180	560	490	250	230	42
YB ppm :	0.7	0.0	1.8	0.0	0.4	0.1	0.3	0.0
ZN ppm :	52	0	29	58	54	41	36	11

COMMENTS:
 * ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
 DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ICP-ES LABORATORY

LAB. NO. *5306* *108* *108A KQ-87-108B*

	90	91	92	93	94	95	96
SAMPLE NO:	104B-879	104B-879	104B-879	104B-879	152-87-9	152-87-9	152-87-9
	787	788	789	790	3 #16	4 #33	5 #46
							6 #60

BE	ppm :	6.2	1.6	1.5	1.7	0.9	0.9	0.3	6.5
CO	ppm :	39	14	34	10	12	6	20	40
CR	ppm :	360	13	91	13	59	53	16	420
CU	ppm :	65	760	42	140	10	2	450	68
LA	ppm :	30	18	16	20	14	3	4	30
NI	ppm :	310	0	45	0	16	0	14	320
V	ppm :	130	180	120	180	54	110	81	140
YB	ppm :	3.9	1.8	1.0	1.7	1.5	0.5	0.2	4.2
ZN	ppm :	150	35	84	44	48	8	34000	170

COMMENTS:

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.

ICP-ES LABORATORY

LAB. NO. 97

SAMPLE NO: 152-87-9

7 #84

BE	ppm :	2.9
CO	ppm :	9
CR	ppm :	27
CU	ppm :	560
LA	ppm :	2
NI	ppm :	3
V	ppm :	580
YB	ppm :	0.0
ZN	ppm :	64

COMMENTS:

* ICP-TR1 DATA ARE OBTAINED ON 1.0 G OF SAMPLE (ACID + FUSION OF RESIDUE)
DISSOLVED IN 10% HCL AND DILUTED TO 100 ML.