APPENDIX A: DIAMOND DRILL LOGS AND CERTIFICATES OF ANALYSIS
PART II: J91-13 to J91-21

To Accompany
1991 SUMMARY REPORT

on the

UNUK RIVER PROJECT
(Unuk and Coul Claim Groups)

SKEENA MINING DIVISION
NTS 104B/9 and 104B/16

Owners:
Malcolm Bell, Clive Ashworth, Granges Inc.

Operator:
GRANGES INC.
2300 - 885 WEST GEORGIA STREET
VANCOUVER, BC
V6C 3E8

FEBRUARY 3, 1991

A.J. O'DONNELL

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

UNUK RIVER PROJECT

HOLE No.
J91-13

COOL 3 CLAIM

PURPOSE

1 - TO TEST STRATIGRAPHY

2 - TO TEST RESISTIVITY LOW AND CHARGEABILITY HIGH

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
JEFF GRID; 3+84E, 12+97N	501m	270.	135.33
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-45	NONE	95.69	95.69
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED / DATE COMPLETED**
G. ALLEN SEPT. 29-30	J. T. THOMAS	B.Q.	SEPT. 28

SUMMARY LOG

0 - 2.74	CASING
2.74 - 12.37	INTERMEDIATE TO FELSIC FLOW? (LAPILLI TUFF TO FINE-GRAINED TUFF?)
12.37 - 15.90	INTERMEDIATE AMYGDALOIDAL LAPILLI TUFF TO TUFF BRECCIA
15.90 - 16.45	INTERMEDIATE MEDIUM-GRAINED TUFF
16.45 - 16.89	INTERMEDIATE LAPILLI TUFF
16.89 - 27.27	INTERMEDIATE TO FELSIC FINE-GRAINED TUFF TO TUFF BRECCIA OR AMYGDALOIDAL FLOW
27.27 - 32.87	INTERMEDIATE AMYGDALOIDAL COARSE-GRAINED TO LAPILLI TUFF
32.87 - 36.58	SANDSTONE, FINE-GRAINED TUFFACEOUS SEDIMENT
36.58 - 42.02	ARGILLITE, SILTSTONE, STRINGER ZONE
42.02 - 43.20	INTERMEDIATE FINE TO MEDIUM-GRAINED TUFF
43.20 - 66.00	INTERMEDIATE TO FELSIC AMYGDALOIDAL LAPILLI TUFF TO TUFF BRECCIA
66.00 - 70.60	INTERMEDIATE TO FELSIC FINE-GRAINED TUFF
70.60 - 85.40	INTERMEDIATE TO FELSIC AMYGDALOIDAL LAPILLI TUFF TO TUFF BRECCIA
85.40 - 87.65	INTERMEDIATE TO FELSIC LAPILLI TUFF TO TUFF BRECCIA
87.65 - 93.27	INTERMEDIATE (?) FINE TO COARSE-GRAINED TUFF OR TUFFACEOUS SEDIMENT

(CONTINUED ON NEXT PAGE)

SIGNIFICANT MINERALIZED INTERVALS

86.6 - 87.25 - 3-4% pyrite and ½% pinkish-brown sphalerite in quartz-carbonate stringers to 3mm wide.

87.65 - 94.45 - 7-8% pyrite in irregular stringers and masses to 2cm. Trace pinkish-brown sphalerite.

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J 91 - 13

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
0 - 2.74		CASING		CASING			
2.74 - 12.37		INTERMEDIATE TO FELSIC FLOW (?) (LAPILLI TUFF TO FINE-GRAINED TUFF.?) medium blue-grey relatively soft aphanitic volcanic rock with rare amygdules up to 5 mm. The rock has a fragmental appearance in several intervals but these may be brecciated flow. Matrix to these breccia intervals is fine-grained chlorite rimming fragments with later flooding by blue-grey calcite and pyrite.		2/3 Gv(a), bx / 2/3 A-D		2-3% py	
		2.53 - 9.8 - white quartz - carbonate stringer zone				Qtz stringers	
12.37 - 15.90		INTERMEDIATE (?) AMYGDALOIDAL LAPILLI TUFF TO TUFF BRECCIA. Black angular aphanitic fragments (argillite ?) up to 1 cm and medium blue-grey to black amygdaloidal fragments up to 30 cm in a finer grained clastic groundmass. Some parts groundmass is flooded with chlorite, calcite and pyrite. Amygdules clear, average 2-3 mm, calcite and chlorite.		2D-E		1-5% py	
15.90 - 16.45		INTERMEDIATE MEDIUM-GRAINED TUFF Dark grey chloritic (?) fine to medium-grained tuff		2/3 A, Gv(a)		1-2% py	
16.45 - 16.89		INTERMEDIATE LAPILLI TUFF Dark greenish-grey to black fragments in a chlorite-calcite matrix. Some colliform chlorite developed.				3-5% py	CHLORITE, CALCITE, PYRITE STRINGER ZONE

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DIAMOND DRILL LOG

HOLE No.

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MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
2.74 - 12.37 - Sporadic 2-3% pyrite predominantly in matrix in weak breccia zones.	J91-13-1	3.53	5.00	1.47	5		12	4
	2	5.00	6.47	1.47	5		10	4
	3	6.47	8.02	1.55	6		18	8
	4	8.02	9.45	1.43	5		19	6
	5	9.45	10.0	0.55	7		14	6
	6	10.00	11.26	1.26	5	0.2	19	10
	7	11.26	12.37	1.11	5	0.1	15	7
	8	12.37	13.37	1.00	5	0.1	30	10
	9	13.37	14.40	1.03	4	0.2	33	7
12.37 - 15.90 - 4-5% pyrite predominantly along stringers to 1cm at 60° CA and in breccia matrix.	10	14.40	15.90	1.50	4	0.2	07	7
	11	15.90	16.89	0.99	7	0.2	06	2
	12	16.89	17.58	0.69	5	0.2	07	4
15.90 - 16.45 - <1% pyrite	13	17.58	18.60	1.02	5	0.3		5
16.45 - 16.89 - 2-3% fracture-related pyrite	14	18.60	19.66	1.06	5	0.1	07	2
16.89 - 17.58 - 7-8% fine-grained pyrite along fractures and stringers associated with chlorite and calcite.	15	19.66	20.53	0.87	4	0.3	23	10
17.58 - 18.29 - 1-2% disseminated pyrite.								
18.29 - 19.66 - 3-5% pyrite along chlorite calcite stringers.								
19.66 - 20.53 - 7-8% in breccia filling along with calcite and chlorite.								

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DIAMOND DRILL LOG

HOLE No. J91-13

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
16.89-27.27		INTERMEDIATE TO FELSIC FINE-GRAINED TUFF TO TUFF BRECCIA OR AMYGDALOIDAL FLOW Medium blue-grey soft fine-grained massive fine-grained tuff with a distinct clastic texture grading into blue-grey massive aphanitic volcanic with sporadic zones of amygdules up to 1 cm. Could be intercalated tuff and flow or possibly a tuff breccia.		2/3 A, G(?)		7-8% PY; 2-4% PY; 1-1	
*		16.89-20.5 - Chlorite, calcite pyrite stringer zone. White calcite stringers to 1 cm; 60° to subparallel to core axis. Stringer selvages commonly lined with 1 mm - 1 cm black chlorite and pyrite in bands to 5 mm. Chlorite-pyrite-calcite sequence.					
		Some parts of unit have an appearance of a coarse-grained clastic with irregular shaped 'corroded' light grey amygdaloidal fragments up to 10 cm with dark grey rims or matrix. Could be an alteration texture.		2C, Da		5-7% PY	C1-2
27.27-32.87		AMYGDALOIDAL INTERMEDIATE, COARSE-GRAINED TO LAPILLI TUFF 50% medium blue-grey aphanitic subrounded to angular fragments up to 20 cm but average <1 cm-5 cm. Smaller fragments commonly have <1 mm chlorite amygdules. Larger fragments have amygdules to 5 mm. Matrix to the lapilli is a dark green fine-grained chloritic(?) material.		7X, 7T		1% PY; 5-8% PY; 1-2% PY	
32.87-36.58		SANDSTONE, FINE-GRAINED TUFFACEOUS SEDIMENT Medium blue-grey to black fine-grained sandstone (massive) grading into dark grey siltstone or argillaceous sediment (tuff?). Minor dark grey lithic fragments to 1 cm. Gradational contact with argillite down hole.		7S, K, 9CT		3-5% PY; 5-8% PY	
36.58-42.02		ARGILLITE SILTSTONE — STRINGER ZONE Intermixed black argillite and blue-grey siltstone. Poorly bedded. Two sets of stringers both 30° CA. 36.58-38.4 - Quartz, carbonate, pyrite stringers 38.4-40.9 - Predominantly quartz and minor carb. stringers	50°/50	9X		<1% PY	

Depth scale (right margin): 20, 25, 30, 35, 40

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DIAMOND DRILL LOG

HOLE No.
J91-13

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	16	20.53	22.00	1.47	3	0.2	12	4
20.53 - 26.60 - Sporadic 2-4% pyrite in irregular masses to 1 cm, generally along calcite flooded brecciated intervals.	17	22.00	22.98	0.98	17	0.3	16	2
	18	22.98	23.48	0.50	3	0.4	33	6
	19	23.48	24.76	1.28	2	0.2	09	2
	20	24.76	25.65	0.89	6	0.2	06	3
	21	25.65	26.60	0.95	3	0.2	19	7
26.60 - 29.53 - 5-7% pyrite as above and disseminated in chloritic groundmass in lapilli tuff.	22	26.60	27.27	0.67	4	0.3	50	8
	23	27.27	28.40	1.13	3	0.3	58	13
29.53 - 31.46 - 1% disseminated pyrite.	24	28.40	29.53	1.13	4	0.2	43	7
31.46 - 32.87 - 5-8% pyrite in irregular stringers to 2 cm and irregular masses to 1 cm.	25	29.53	30.60	1.07	4	0.1	15	2
	26	30.60	31.46	0.86	8	0.1	30	5
32.87 - 35.95 - 1-2% pyrite; disseminated and along fractures.	27	31.46	32.06	0.60	2	0.4	306	7
	28	32.06	32.87	0.81	3	0.1	120	6
35.95 - 36.58 - 3-4% fine-grained pyrite as above.	29	32.87	34.37	1.50	4	0.2	27	2
36.58 - 38.4 5-8% pyrite in crackle breccia / stringer zone. Calcite-pyrite stringers to 5 mm at all angles to core axis.	30	34.37	34.97	0.60	7	0.2	58	4
	31	34.97	35.95	0.98	4	0.1	32	2
	32	35.95	36.58	0.63	2	0.2	51	6
	33	36.58	37.53	0.95	2	0.2	65	4
38.4 - 41.18 - <1% pyrite.	34	37.53	39.15	1.62	3	0.2	17	9
	35	39.15	40.62	1.47	5	0.2	16	2

HOLE No. J91-13

INTERVAL	C. LOSS	LITHOLOGY	∠ to C	L	S	M	A	Depth
		40.62 - 40.90 - Broken core, minor gouge. FAULT Orientation unclear.		75) K	Broken Core	<1% PY; 8-10% PY		40
42.02 - 43.20		INTERMEDIATE FINE TO MEDIUM-GRAINED TUFF. Medium grey fine-grained sericitic (?) weakly foliated tuff with 10-15% dark grey grains to 2 mm.		2A,B		<1% PY	Se-2; Si-2	
43.20 - 66.0		INTERMEDIATE TO FELSIC AMYGDALOIDAL LAPILLI TUFF TO TUFF BRECCIA. Mottled medium blue-grey to black lapilli tuff to tuff breccia. Fragments range from <1 mm to 20 cm +, from black to medium blue-grey and from massive aphanitic to amygdaloidal. Rock is very inhomogeneous. Moderately siliceous		2/3 (Dx)		5-7% PY		45
		43.2 - 50.43 - Fragments are predominantly black				QCV; 6-8% PY		
		47.0 - 47.8 - Quartz - carbonate stringer zone.				2-3% PY		
		50.43 - 66.0 - Fragments predominantly medium blue-grey. Open spaces in matrix filled with black chlorite and white quartz. Distinctive black rims of chlorite in filled voids.			60°) Minor Breccia			50
								55
						2-4% PY		
								60

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DIAMOND DRILL LOG

HOLE No.

J91-15

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
40.90 - 41.80 - 8-10% pyrite in bands and veins to 2cm wide at 60° CA. Associated with calcite	36	40.62	40.90	0.28	2	0.3	28	07
	37	40.90	42.02	1.12	16	0.1	92	08
41.80 - 43.3 < 1% pyrite	38	42.02	43.20	1.18	4	0.1	52	21
43.3 - 47.0 - 5-7% pyrite; fracture-filling with calcite + disseminated in matrix.	39	43.20	44.20	1.0	16	0.5	840	11
	40	44.20	45.20	1.0	8	0.4	521	14
	41	45.20	46.20	1.0	4	0.4	260	13
47.0 - 47.8 - 6-8% pyrite in host rock to stringers.	42	46.20	47.00	0.8	5		304	7
	43	47.00	47.80	0.8	4		123	4
47.8 - 55.5 - 2-3% fine-grained pyrite in matrix.	44	47.80	49.18	1.38	4		62	5
	45	49.18	50.43	1.25	1	0.3	46	11
	46	50.43	51.82	1.39	1	0.5	37	8
	47	51.82	53.33	1.51	5	0.4	35	7
	48	53.33	54.78	1.45	1	0.3	34	12
	49	54.78	55.53	0.75	3	0.5	55	4
	50	55.53	56.60	1.07	1	0.3	23	2
55.5 - 65.6 - Sporadic 2-4% pyrite in fractures and disseminated in the groundmass. Local concentrations up to 7-8% across 20cm.	51	56.60	57.62	1.02	1	0.2	20	4
	52	57.62	58.74	1.12	17	0.3	26	6
	53	58.74	59.92	1.18	5	0.5	27	9
	54	59.92	61.42	1.50	3	0.3	27	2

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DIAMOND DRILL LOG

HOLE No.

J91-13

INTERVAL	C. LOSS	LITHOLOGY	± C	L	S	M	A
				2/3 D(a)		2-4%	Si-2
		62.18 - 62.4 - FAULT. Broken core. Minor gouge. 60° CA.			60° Broken		
		62.7 - Flattened amygdules. Si ? So?	Si/So ?				
		65.60 - 66.0 - Pulverized rock. Compact gouge. FAULT 70° CA.			FAULT Gouge	1% Py	
66.0 - 70.6		INTERMEDIATE TO FELSIC FINE-GRAINED TUFF Medium grey to blue-grey relatively soft massive tuff. Cut by 2-3% white carbonate stringers to 1 cm at 30° CA.		2/3 A			
70.6 - 85.40		INTERMEDIATE TO FELSIC AMYGDALOIDAL LAPILLI TUFF TO TUFF BRECCIA Dark blue-grey to black moderately siliceous amygdaloidal (20-25%, <1mm - 1cm) fragments up to 20cm in a fine-grained tuffaceous, rarely bedded matrix. Amygdaloidal fragments make up roughly 50% of the rock. Amygdules calcite, quartz and minor chlorite.		2-3 D-Fa		1% Py	Si-2
		76.5 - 88.4 - Broken Core					
		78.85 - 79.07 - Pulverized rock. Gouge. FAULT. 60° CA.	So/73		Broken Core		

60 65 70 75 80

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

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MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
60								
	55	61.42	62.96	1.54	1	0.3	29	5
	56	62.96	64.28	1.32	5	0.3	25	6
	57	64.28	65.60	1.32	3	0.4	25	2
	58	65.60	66.00	0.40	1	0.2	11	2
	59	66.00	67.4	1.4	1	0.2	6	2
65								
65.6 - 69.34 1% pyrite.	60	67.4	68.56	1.16	1	0.2	4	2
	61	68.56	69.34	0.78	4	0.2	3	4
69.34 - 69.80 - 5% pyrite in chalcedony and calcite flooded breccia.	62	69.34	69.80	0.46	4	0.3	6	2
	63	69.80	70.60	0.80	4	0.1	4	2
69.8 - 85.9 <1% pyrite.	64	70.60	71.96	1.36	2	0.2	9	3
70								
75								
80								

HOLE No. J91-13

INTERVAL	C. LOSS	LITHOLOGY	∠ CA	L	S	M	A	Depth
				2-3 D-E?		<1% PY	Si-2	80
85.40 - 87.65		INTERMEDIATE TO FELSIC LAPILLI TUFF TO TUFF BRECCIA Medium grey to blue-grey moderately soft aphanitic massive volcanic fragments to 15 cm. Some with calcite amygdules to 5 mm. Unit distinct from unit above by grey colour and general lack of amygdules.		2-3 D-E(?)	Q-CV STRINGER ZONE	4% PY; 3% PY	3-4% SL PY	85 *
87.65 - 95.27		INTERMEDIATE (?) FINE TO COARSE-GRAINED TUFF OR TUFFACEOUS SEDIMENT Mottled black to medium grey moderately siliceous fine grained tuff with intervals of coarse-grained tuff. Rare amygdaloidal fragments to 3 cm. Faulted along lower contact.		2-3 A-C		7-8% PY	Si-2	90
		94.45 - 95.27 - FAULT. Broken core. Sheared 20-45° CA. Quartz - carbonate stringers subparallel CA.			45°	1-2% PY		95
95.27 - 115.63		INTERMEDIATE TO FELSIC AMYGDALOIDAL FLOW Medium blue-grey aphanitic massive to vaguely thinly banded massive volcanic rock. Moderately soft. 95.27 - 106.8 - Amygdules rare. Could be a fine-grained tuff. 106.8 - 115.63 - 5-15% <1 mm to 1 cm calcite ± chlorite amygdules.		2-3 C-P		2-4% PY		100

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DIAMOND DRILL LOG

HOLE No.
J91-13

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
	65	84.4	85.9	1.50	2	0.4	7	5		
85.9 - 86.6 - 4% pyrite in veels calcite - chlorite flooded breccia.	66	85.9	86.6	0.70	1	0.4	36	5		
86.6 - 87.25 - 3-4% pyrite. Trace to ½% pinkish - brown sphalerite in quartz - carbonate chlorite stringers up to 3 mm wide.	67	86.6	87.25	0.65	4	0.2	40	4		
	68	87.25	87.65	0.40	1	0.2	20	6		
	69	87.65	88.60	0.95	2	0.5	82	2		
87.25 - 87.65 - 3% disseminated pyrite.	70	88.60	89.53	0.93	2	0.4	44	3		
87.65 - 94.45 - 7-8% pyrite in irregular stringers and masses to 2 cm associated with calcite. some disseminated pyrite. Traces pinkish - brown sphalerite.	71	89.53	90.59	1.06	1	0.3	29	3		
	72	90.59	91.60	1.01	1	0.2	60	15		
	73	91.60	92.60	1.00	7		114	5		
	74	92.60	93.60	1.00	8		104	8		
94.45 - 95.27 - 1-2% pyrite.	75	93.60	94.45	0.85	6		223	4		
95.27 - 124.7 - Sporadic 2-4% fine-grained pyrite along fractures, disseminated in amygdules and rare irregular masses to 4 cm.	76	94.45	95.27	0.82	5		26	4		
	77	95.27	96.82	1.55	7	0.1	07	2		
	78	96.82	98.06	1.24	4	0.1	28	5		
	79	98.06	99.48	1.42	5	0.2	14	3		
	80	99.48	100.90	1.42	5	0.2	08	2		

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DIAMOND DRILL LOG

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591-13

INTERVAL	C. LOSS	LITHOLOGY	CK	L	S	M	A
				2/3 Cp		2-4% PY	
115.63 - 126.7		INTERMEDIATE TO FELSIC FINE TO COARSE-GRAINED TUFF Medium to dark blue-grey relatively soft fine-grained to coarse-grained tuff 115.63-118.75 - Crudely bedded 40° ct. Looks like bedded tuff but grades into amygdaloidal part. Could be flows. 118.75-126.7 - Fine to coarse-grained tuff with obvious clastic texture. Heterogeneous. Fragments to 1 cm.	2		50° 40		

100 105 110 115 120

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DIAMOND DRILL LOG

HOLE No.
591-13

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
100										
	B1	100.90	102.35	1.45	3	0.1	07	3		
	B2	102.35	103.68	1.33	5	0.4	04	2		
	B3	103.68	105.23	1.55	4		10	3		
	B4	105.23	106.68	1.45	5	0.1	05	2		
	B5	106.68	108.20	1.52	2	0.1	08	3		
105	B6	108.20	109.73	1.53	4	0.2	10	2		
	B7	109.73	111.30	1.57	6	0.1	10	5		
	B8	111.30	112.78	1.48	4	0.3	14	7		
	B9	112.78	114.30	1.52	4	0.2	12	4		
	90	114.30	115.63	1.33	4	0.2	12	3		
110	91	115.63	117.20	1.57	6	0.3	14	5		
	92	117.20	118.75	1.55	2	0.2	16	5		
	93	118.75	120.07	1.32	5	0.2	41	7		
115										
120										

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DIAMOND DRILL LOG

HOLE No.
J91-13

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
				2/3 A-C		2-4% PY	
		126.7 - Gradational contact.					
126.7-131.74		ARGILLITE, SILTSTONE, TUFFACEOUS SEDIMENT Thinly interbedded black argillite and medium blue-grey siltstone. Upper contact is gradational across 1-2 m metres and may be tuffaceous sediment.		75%	BROKEN	1-2% PY 1% PY	
		130 - Graded beds and load casts suggest tops down hole.	Sa: 65 / Sa: 70			1% PY	
*		127.6-128.9 - Clastic sediment with coarse-grained fragments to 1 cm flattened (?) (rip-up clasts?) in bedding plane. Fragments composed of 15-20% very fine-grained pyrite (replacement?) Could be sulphide-rich fragments.		75%	FAULT, BROKEN CORE		
131.74-135.53		FAULT ZONE, ARGILLITE Black thinly laminated argillite. Broken core. Rubble. Minor gouge.	Sa: 60 / Contact				
				E.O.H.		135.53	

120 125 130 135

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DIAMOND DRILL LOG

HOLE No.

I91-13

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
120								
	94	120.07	121.58	1.51	3	0.1		6
	95	121.58	123.06	1.48	4	0.4	22	6
	96	123.06	124.60	1.54	2	0.3	52	7
	97	124.60	125.52	0.92	7	0.2	56	7
	98	125.52	126.7	1.18	4	0.2	50	8
125								
	99	126.7	127.6	0.90	3		40	6
126.7 - 127.6 - 2-3% diss. and fracture-related pyrite.	100	127.6	128.20	0.60	9		94	13
127.6 - 128.9 - 7-8% very fine-grained pyrite predominantly on fragments. Possible sulphide fragments.	101	128.20	128.90	0.70	3	0.1	107	17
	102	128.90	130.40	1.50	5	0.2	43	3
128.9 - 135.53 - 1% pyrite	103	130.40	131.90	1.50	7	0.3	119	4
130								
	104	131.90	133.40	1.50	9	0.3	118	2
	105	133.40	134.80	1.40	2	0.3	16	2
	106	134.80	135.53	0.73	2	0.1	10	2
135								

ACME ANALYTICAL

Granges Inc. PROJECT UNUK RIVER 134 FILE # 91-4906

ACME ANALYTICAL

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb
J91-13-1	3	8	6	143	.1	1	9	1078	4.35	12	5	ND	1	227	.4	4	2	22	12.48	.135	5	8	2.35	91	.01	2	1.15	.05	.10	1	5
J91-13-2	1	8	8	104	.1	2	9	1104	4.57	10	5	ND	1	221	.4	4	2	25	12.55	.138	6	6	2.46	99	.01	2	1.40	.04	.10	1	5
J91-13-3	1	6	7	98	.1	1	8	1154	3.96	12	5	ND	1	280	.4	8	2	20	16.45	.114	5	4	2.30	82	.01	2	1.06	.03	.07	1	6
J91-13-5	1	7	9	30	.1	3	6	1400	3.15	14	5	ND	1	303	.4	6	2	16	11.93	.148	6	3	3.81	95	.01	2	.82	.03	.09	1	5
J91-13-6	1	8	11	65	.2	3	12	1250	5.11	19	5	ND	1	224	.4	10	2	18	11.95	.117	5	4	3.11	75	.01	2	.78	.03	.07	1	5
J91-13-7	1	42	13	78	.1	4	14	1090	4.07	15	5	ND	1	256	.4	7	2	23	12.98	.138	6	7	2.19	84	.01	2	1.21	.03	.07	1	5
J91-13-8	5	7	9	65	.3	5	22	856	7.59	30	5	ND	1	174	.5	10	2	23	8.73	.117	4	9	1.43	60	.01	3	1.16	.03	.06	1	5
J91-13-9	7	9	6	56	.2	4	19	697	7.75	33	5	ND	1	136	.2	7	2	23	6.96	.131	4	8	1.57	55	.01	4	1.24	.03	.06	1	4
J91-13-10	4	11	6	85	.2	4	15	840	6.78	17	5	ND	1	158	.3	7	2	32	7.39	.159	5	9	3.76	72	.01	2	2.08	.03	.06	1	4
J91-13-11	1	1	6	24	.2	1	3	1933	3.15	6	5	ND	1	374	.2	2	2	13	18.13	.056	4	1	5.57	114	.01	2	.90	.02	.02	1	7
J91-13-12	1	6	7	55	.2	3	5	817	7.29	7	5	ND	1	145	.3	4	2	14	6.46	.111	3	7	2.13	58	.01	3	1.00	.02	.05	1	5
J91-13-13	3	11	5	143	.3	1	8	592	6.57	8	5	ND	1	110	.3	5	2	31	4.04	.231	9	13	1.42	147	.04	3	1.79	.11	.13	1	5
J91-13-14	2	10	3	158	.1	2	9	1101	6.29	7	5	ND	1	148	.3	2	2	25	5.82	.177	7	10	.75	174	.03	2	1.60	.09	.15	1	5
J91-13-15	11	10	9	156	.3	6	15	947	9.31	23	5	ND	1	133	.4	10	2	14	6.18	.134	5	8	.60	69	.01	2	.78	.04	.07	1	4
J91-13-16	3	10	4	263	.2	3	9	1112	6.71	10	5	ND	1	151	.4	4	2	23	6.60	.207	8	12	.87	186	.04	4	1.70	.10	.17	1	3
J91-13-17	1	11	7	135	.3	1	10	1136	6.97	6	5	ND	1	152	.2	2	2	29	6.66	.237	9	11	.98	198	.04	4	2.31	.11	.18	1	17
J91-13-18	6	9	9	464	.4	4	10	1114	9.08	33	5	ND	1	135	.4	6	2	13	6.80	.133	4	7	.50	78	.01	3	.76	.04	.08	2	3
J91-13-19	3	6	11	161	.2	2	7	679	5.35	9	5	ND	1	108	.2	2	2	18	5.05	.225	8	11	.86	125	.02	2	1.21	.08	.15	1	2
J91-13-20	1	7	4	111	.2	1	6	1916	4.61	6	5	ND	1	250	.3	3	2	11	14.45	.177	6	4	2.29	106	.01	2	1.09	.03	.10	1	6
J91-13-21	2	6	9	135	.2	2	8	1691	5.39	19	5	ND	1	180	.3	7	2	16	10.34	.160	5	5	3.03	75	.01	2	1.36	.03	.06	1	3
J91-13-22	7	4	2	131	.3	4	12	1742	12.61	58	5	ND	1	156	.4	8	2	12	9.55	.108	4	10	2.63	49	.01	2	.99	.03	.04	1	4
J91-13-23	4	18	6	51	.3	5	13	1573	9.75	58	5	ND	1	143	.3	13	2	13	8.65	.104	4	6	3.12	43	.01	2	.81	.02	.03	1	3
J91-13-24	4	3	9	91	.2	3	8	1504	6.27	43	5	ND	1	149	.5	7	2	11	9.30	.094	4	3	3.71	53	.01	2	.69	.02	.03	1	4
J91-13-25	3	2	8	60	.1	2	5	1751	3.03	15	5	ND	1	232	.4	2	2	12	14.43	.066	4	4	3.59	65	.01	2	.65	.02	.03	1	4
J91-13-26	4	4	4	71	.1	4	11	1813	3.86	30	5	ND	1	247	.4	5	2	10	14.65	.113	5	1	4.66	97	.01	2	.79	.02	.05	1	8
J91-13-27	14	6	10	1757	.4	22	59	1387	13.83	306	5	ND	1	178	16.4	7	2	16	9.67	.125	4	7	4.50	35	.01	3	.95	.03	.03	8	2
J91-13-28	4	3	6	163	.1	15	39	1277	5.51	120	5	ND	1	166	1.3	6	2	12	7.50	.070	2	7	3.42	50	.01	2	.60	.02	.02	1	3
J91-13-29	1	4	8	81	.2	2	6	1058	3.46	27	5	ND	1	249	.4	2	2	16	7.86	.051	2	5	4.12	79	.01	2	1.60	.01	.05	1	4
J91-13-30	1	9	6	58	.2	7	13	213	6.96	58	5	ND	1	16	.5	4	2	18	.40	.016	3	22	2.10	144	.03	4	1.81	.04	.17	1	7
J91-13-31	2	6	6	27	.1	7	8	315	4.13	32	5	ND	1	53	.2	2	2	9	1.92	.008	2	14	1.34	41	.01	3	.95	.01	.05	1	4
J91-13-32	2	3	4	96	.2	13	12	1491	5.69	51	5	ND	1	210	.5	6	2	9	10.06	.014	2	7	1.96	61	.01	2	.39	.01	.05	1	2
J91-13-33	4	1	11	19	.2	6	3	2213	9.80	45	5	ND	1	262	.2	4	2	6	16.94	.022	2	4	3.62	52	.01	3	.18	.01	.02	1	2
J91-13-34	1	3	5	38	.2	3	1	1704	4.01	17	5	ND	1	245	.3	9	2	4	13.12	.021	2	1	5.02	133	.01	2	.18	.01	.02	1	3
RE J91-13-30	1	10	7	60	.2	7	13	208	7.26	60	5	ND	1	16	.3	5	2	14	.46	.014	2	15	2.17	58	.01	3	1.67	.02	.08	1	5
J91-13-35	1	2	5	140	.2	4	3	1539	2.52	16	5	ND	1	228	.6	2	2	4	17.28	.020	2	1	7.46	138	.01	2	.39	.01	.04	1	5
J91-13-36	4	6	7	248	.3	12	3	1216	4.06	28	5	ND	1	203	1.3	7	2	10	9.13	.029	2	8	3.92	52	.01	2	.33	.01	.05	2	2
STANDARD C/AU-R	19	64	36	138	7.3	73	32	1088	3.98	39	19	8	39	53	17.6	17	19	55	.50	.094	39	61	.91	184	.10	33	1.85	.07	.17	11	490

Samples beginning 'RE' are duplicate samples.

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb
J91-13-37	16	4	17	38	.1	17	17	285	10.75	92	5	ND	1	48	.2	13	2	5	1.12	.066	2	18	.55	20	.01	4	.34	.01	.07	1	16
J91-13-38	2	6	5	118	.1	5	18	467	5.45	52	5	ND	2	78	.2	8	2	19	2.23	.096	2	7	1.99	59	.01	3	1.64	.01	.11	1	4
J91-13-39	25	11	10	72	.5	40	108	626	18.60	848	5	ND	1	61	.3	21	2	19	1.66	.072	2	15	1.18	11	.01	6	.48	.03	.04	1	16
J91-13-40	16	9	15	83	.4	21	50	696	12.87	321	5	ND	1	90	.2	11	2	27	3.08	.094	2	17	1.25	20	.01	2	.90	.03	.04	1	8
J91-13-41	14	9	10	885	.4	20	49	1012	10.54	258	5	ND	1	83	3.9	14	2	29	3.81	.124	2	10	1.17	25	.01	5	.76	.03	.03	4	4
J91-13-42	12	10	9	247	.4	18	52	1195	10.67	304	5	ND	1	81	.8	13	2	31	3.89	.198	2	9	1.35	25	.01	4	.78	.02	.03	1	5
J91-13-43	3	13	8	80	.3	16	40	752	6.80	123	5	ND	1	221	.2	7	2	16	5.20	.139	4	20	1.27	29	.01	2	.83	.02	.04	1	4
J91-13-44	1	10	9	69	.3	13	28	410	5.33	62	5	ND	2	76	.2	4	2	22	2.15	.157	4	10	1.03	44	.01	3	.86	.03	.07	1	4
RE J91-13-49	8	7	3	40	.4	6	12	534	8.51	53	5	ND	1	99	.2	11	2	12	3.34	.137	4	14	.45	24	.01	5	.58	.03	.06	1	2
J91-13-45	5	9	11	113	.3	8	20	386	4.01	46	5	ND	2	73	.2	5	2	17	2.13	.173	4	9	.80	49	.01	3	.68	.04	.07	1	1
J91-13-46	4	10	6	80	.5	7	19	479	9.04	37	5	ND	2	75	.2	11	2	11	2.10	.215	4	13	.64	32	.01	6	.50	.03	.12	1	1
J91-13-47	6	9	7	50	.4	8	19	409	6.53	35	5	ND	2	73	.2	8	2	13	2.24	.195	5	8	.56	40	.01	5	.67	.04	.11	1	5
J91-13-48	3	11	6	113	.3	10	24	460	6.94	34	5	ND	2	98	.2	7	2	16	3.02	.208	5	7	.61	36	.01	3	.75	.03	.09	1	1
J91-13-49	9	8	3	41	.5	6	13	555	8.92	55	5	ND	1	99	.2	12	2	13	3.28	.141	4	16	.46	23	.01	3	.60	.03	.06	1	3
J91-13-50	3	5	4	67	.3	4	11	907	4.10	23	5	ND	1	148	.2	4	2	19	4.07	.189	7	7	.74	80	.01	5	1.00	.04	.09	1	1
J91-13-51	3	8	4	93	.2	8	18	787	3.96	28	5	ND	1	113	.2	2	2	24	3.75	.185	7	7	1.00	86	.01	3	1.29	.03	.09	1	1
J91-13-52	2	5	2	89	.3	4	12	667	5.03	26	5	ND	1	181	.2	4	2	34	5.35	.167	5	14	1.36	59	.01	3	1.35	.03	.06	1	17
J91-13-53	1	10	6	81	.5	3	11	852	7.16	27	5	ND	1	180	.2	6	2	29	5.33	.138	3	7	1.27	40	.01	3	1.31	.03	.05	1	5
J91-13-54	3	9	6	89	.3	5	13	984	5.41	47	5	ND	1	145	.2	4	2	23	4.14	.166	6	6	.93	63	.01	2	1.15	.03	.08	1	3
J91-13-55	3	8	4	147	.3	4	15	925	5.46	25	5	ND	1	126	.2	2	2	32	3.62	.149	5	13	1.03	62	.01	3	1.52	.02	.07	1	1
J91-13-56	2	5	4	75	.3	2	9	1038	5.17	25	5	ND	1	227	.2	5	2	20	7.69	.109	3	5	1.22	52	.01	2	.91	.02	.04	1	5
J91-13-57	3	7	9	142	.4	3	10	1217	5.18	25	5	ND	1	236	.2	6	2	11	8.31	.130	4	6	1.39	68	.01	4	.50	.02	.07	1	3
J91-13-58	1	7	5	119	.2	3	8	844	5.24	11	5	ND	2	150	.2	2	2	25	3.89	.153	5	14	1.32	48	.01	2	1.46	.02	.08	1	1
J91-13-59	1	11	8	139	.2	2	11	879	5.18	6	5	ND	1	136	.2	2	2	21	4.50	.149	5	6	1.01	62	.01	4	.81	.03	.11	1	1
J91-13-60	1	11	5	131	.2	2	13	1488	5.48	4	5	ND	1	248	.2	2	2	50	7.81	.167	5	6	2.47	88	.01	4	2.15	.03	.08	1	1
J91-13-61	1	4	3	137	.2	1	11	1489	5.04	3	5	ND	1	233	.2	2	2	54	7.81	.162	6	7	2.59	100	.01	5	2.25	.03	.08	1	4
J91-13-62	1	17	13	152	.3	3	18	1270	8.03	6	5	ND	1	132	.2	4	2	35	5.50	.129	3	8	1.95	44	.01	5	1.25	.03	.06	1	4
J91-13-63	1	7	2	89	.1	2	12	1267	3.99	4	5	ND	2	182	.2	2	2	63	7.26	.176	7	6	2.52	77	.01	2	1.83	.04	.04	1	4
J91-13-64	1	9	5	94	.2	3	20	1177	2.69	9	5	ND	1	282	.2	2	2	38	9.27	.055	3	8	1.97	99	.01	2	.91	.03	.03	1	2
J91-13-65	1	8	7	245	.4	5	14	658	3.04	17	5	ND	2	174	1.3	3	2	22	5.84	.120	4	8	1.35	75	.01	6	.45	.03	.07	2	2
J91-13-66	7	8	10	475	.4	7	19	729	7.26	36	5	ND	1	104	2.6	5	2	16	4.45	.161	3	5	2.03	32	.01	4	.31	.03	.08	2	1
J91-13-67	3	6	5	942	.2	6	18	865	5.48	40	5	ND	1	172	4.4	5	2	21	6.62	.131	3	9	2.17	34	.01	3	.40	.03	.05	5	4
J91-13-68	2	6	8	208	.2	2	10	956	6.21	20	5	ND	1	151	.8	4	2	29	5.89	.134	3	5	2.56	33	.01	3	.63	.03	.05	1	1
J91-13-69	3	5	6	250	.5	7	21	643	13.27	82	5	ND	1	89	.3	6	2	26	2.83	.104	2	8	1.74	12	.01	6	1.07	.02	.02	1	2
J91-13-70	1	3	2	54	.4	6	14	713	7.65	44	5	ND	1	100	.2	2	2	34	4.00	.073	2	11	1.94	21	.01	4	1.39	.02	.02	1	2
J91-13-71	1	5	3	65	.3	5	16	567	4.73	29	5	ND	2	154	.2	3	2	44	3.98	.155	4	7	2.44	34	.01	4	1.30	.03	.03	1	1
J91-13-72	6	5	9	244	.2	11	25	562	7.15	60	5	ND	1	124	1.3	3	2	26	3.87	.101	2	8	1.57	20	.01	2	.52	.02	.03	1	1
STANDARD C/AU-R	18	63	38	138	7.3	74	32	1078	4.04	41	17	8	40	53	18.9	15	19	60	.49	.096	39	59	.88	182	.10	34	1.92	.07	.16	11	450

Samples beginning 'RE' are duplicate samples.

ACME ANALYTICAL

Granges Inc. PROJECT UNUK RIVER 134 FILE # 91-4906

ACME ANALYTICAL

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb
J91-13-73	1	6	12	156	.2	13	28	456	9.83	114	5	ND	1	140	.2	5	2	27	3.89	.118	3	15	1.54	22	.01	2	.42	.03	.04	1	7
J91-13-74	3	7	9	95	.3	10	24	405	7.64	104	5	ND	1	193	.5	8	2	47	4.79	.070	3	8	1.65	27	.01	2	.82	.03	.03	1	8
J91-13-75	11	5	14	233	.1	28	52	352	10.85	223	5	ND	1	122	1.0	4	2	42	3.50	.071	3	13	1.30	19	.01	2	1.00	.03	.03	1	6
J91-13-76	2	6	8	194	.3	6	14	664	3.40	26	5	ND	1	211	.4	4	2	18	5.20	.068	2	16	1.58	50	.01	2	.71	.02	.06	1	5
J91-13-77	1	9	4	94	.1	2	13	1292	4.30	7	5	ND	1	205	.2	2	2	16	7.46	.114	4	7	1.89	59	.01	2	.42	.03	.12	1	7
J91-13-78	1	14	2	111	.1	2	14	892	5.05	28	5	ND	1	141	.3	5	2	29	4.45	.162	5	6	1.56	115	.01	2	.46	.03	.11	1	4
J91-13-79	1	9	2	85	.2	3	12	1473	5.10	14	5	ND	1	267	.4	3	2	26	9.47	.122	4	9	2.33	100	.01	3	1.16	.03	.11	1	5
J91-13-80	1	9	6	82	.2	2	12	1335	5.60	8	5	ND	1	221	.4	2	2	21	8.96	.123	4	5	2.15	74	.01	2	.85	.03	.12	1	5
J91-13-81	1	9	4	87	.1	2	12	1246	5.23	7	5	ND	1	191	.3	3	2	25	7.35	.126	4	7	1.94	89	.01	3	1.07	.04	.14	1	3
J91-13-82	1	10	20	109	.4	1	13	1274	5.39	4	5	ND	1	198	.5	2	2	34	7.87	.130	5	8	2.02	89	.01	2	1.30	.04	.13	1	5
J91-13-83	1	9	227	390	.9	3	13	1162	4.95	10	5	ND	1	170	3.2	3	2	19	7.35	.138	4	5	2.15	61	.01	5	.59	.03	.14	2	4
J91-13-84	1	9	8	98	.1	2	14	959	4.31	5	5	ND	1	205	.2	2	2	38	7.76	.147	5	6	2.40	80	.01	2	1.72	.04	.08	1	5
J91-13-85	1	10	2	131	.1	4	14	755	3.94	8	5	ND	1	170	.2	3	2	38	6.54	.148	5	11	2.15	71	.01	2	1.63	.04	.08	1	2
J91-13-86	1	9	2	146	.2	5	16	745	3.19	10	5	ND	1	195	.2	2	2	37	7.84	.139	5	8	2.47	86	.01	2	1.71	.03	.07	1	4
J91-13-87	1	11	3	159	.1	4	17	727	3.10	10	5	ND	1	206	.3	5	2	39	8.39	.195	6	7	2.49	106	.01	2	1.81	.04	.08	2	6
J91-13-88	1	13	3	120	.3	4	17	589	3.54	14	5	ND	1	175	.2	7	2	48	6.18	.208	6	8	2.60	97	.01	2	2.03	.04	.07	1	4
J91-13-89	1	10	4	152	.2	5	20	472	2.79	12	5	ND	1	175	.2	4	2	52	5.90	.164	5	7	2.38	91	.01	2	1.98	.04	.06	1	4
J91-13-90	1	6	3	90	.2	6	17	511	3.77	12	5	ND	1	137	.2	3	2	46	4.77	.092	4	9	2.11	62	.01	2	1.89	.03	.04	1	4
J91-13-91	3	9	8	79	.3	5	16	494	3.70	14	5	ND	1	95	.2	5	2	18	3.56	.213	7	12	.71	89	.01	3	1.01	.05	.10	1	6
J91-13-92	2	10	4	74	.2	5	17	419	3.93	16	5	ND	1	82	.2	5	2	19	2.07	.233	8	7	.59	93	.01	2	.90	.06	.09	1	2
J91-13-93	4	11	6	84	.2	9	31	591	5.25	41	5	ND	1	102	.2	7	2	30	3.74	.210	6	9	.71	72	.01	2	.94	.06	.07	1	5
J91-13-94	2	9	7	88	.1	7	23	451	6.22	33	5	ND	1	61	.3	6	2	26	2.11	.230	6	15	.66	65	.01	2	.88	.06	.09	1	3
J91-13-95	2	9	4	73	.4	4	14	795	6.41	22	5	ND	1	138	.2	6	2	31	4.81	.255	7	8	1.36	75	.01	2	1.36	.07	.10	1	4
J91-13-96	3	9	8	113	.3	6	18	601	5.34	32	5	ND	1	153	.4	7	2	43	4.63	.242	7	9	1.92	55	.01	2	1.81	.06	.05	1	2
J91-13-97	2	6	5	146	.2	9	31	638	4.91	56	5	ND	1	285	.6	7	2	48	7.27	.167	6	11	2.05	47	.01	2	2.01	.04	.03	1	7
J91-13-98	2	7	8	94	.2	8	20	329	5.08	50	5	ND	1	60	.3	8	2	30	1.65	.105	4	12	1.75	64	.01	2	1.74	.03	.06	1	4
J91-13-99	2	9	5	54	.1	7	11	194	4.63	40	5	ND	1	9	.2	6	2	20	.14	.010	3	13	1.67	55	.01	2	1.63	.02	.05	1	3
J91-13-100	6	10	5	89	.2	12	13	313	8.53	94	5	ND	1	46	.3	13	2	16	1.14	.081	3	17	1.00	36	.01	2	1.15	.02	.09	1	9
J91-13-101	10	14	6	178	.1	29	13	341	11.40	107	5	ND	1	18	1.4	17	2	20	.41	.137	3	13	1.09	25	.01	2	1.21	.02	.10	1	3
J91-13-102	10	11	16	148	.2	18	6	1558	3.79	43	5	ND	1	194	1.4	3	2	42	10.08	.064	4	7	3.64	61	.01	2	1.70	.01	.06	1	3
RE J91-13-100	7	11	5	94	.3	14	14	325	9.08	103	5	ND	1	48	.3	14	2	16	1.20	.088	2	20	1.06	35	.01	2	1.21	.02	.09	1	9
J91-13-103	10	19	17	144	.3	16	8	680	3.99	39	5	ND	1	155	1.2	4	2	23	7.57	.060	3	10	1.56	57	.01	2	1.08	.02	.09	1	7
J91-13-104	14	20	15	197	.3	24	6	907	3.57	18	5	ND	1	159	1.7	2	2	26	6.74	.056	2	7	1.69	65	.01	2	.60	.02	.08	2	9
J91-13-105	21	24	14	200	.3	34	7	701	3.63	16	5	ND	1	123	1.8	2	2	22	5.84	.057	2	8	1.34	55	.01	2	.54	.03	.08	1	2
J91-13-106	15	14	8	93	.1	14	8	1090	3.52	10	5	ND	1	199	.5	2	2	21	12.78	.107	4	10	2.07	93	.01	2	.92	.04	.10	1	2
STANDARD C/AU-R	19	58	42	138	7.1	74	32	1082	4.01	43	18	7	36	52	18.6	16	20	57	.49	.094	36	59	.92	185	.09	31	1.91	.06	.16	11	480

Samples beginning 'RE' are duplicate samples.

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

UNUK RIVER PROJECT

COUL 3 CLAIM

HOLE No.

J91-14

PURPOSE

1 - STRATIGRAPHIC

2 - TO TEST MINERALIZED ZONES INTERSECTED IN HOLE J91-13 (FROM SAME SETUP)

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
JEFF GRID; 3+84E, 12+97N	501 m	270	313.94 m
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-70	106.68 - 71° 219.46 - 65.5° 313.94 - 50°	268.10 m	163.34 m
LOGGED BY / DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED / DATE COMPLETED**
G. ALLEN SEPT. 30 - OCT. 2	J.T. THOMAS	B.Q.	SEPT. 28 / OCT. 1/91

SUMMARY LOG

0-2.13 CASING

2.30-27.43 INTERMEDIATE TO FELSIC INTERMIXED FINE-GRAINED TUFF TO AMYGDALOIDAL TUFF BRECCIA (+ FLOW ?)

27.43-40.35 INTERMEDIATE COARSE-GRAINED TO LAPILLI TUFF (TUFF BRECCIA?)

40.35-45.86 ARGILLITE, SILTSTONE, FINE-GRAINED SANDSTONE

45.86-47.20 INTERMEDIATE FINE-GRAINED TUFF

47.20-48.22 ARGILLITE, TUFFACEOUS SEDIMENT, LAPILLI TUFF, SULPHIDE ZONE

48.22-50.0 INTERBEDDED FINE-GRAINED INTERMEDIATE TUFF AND ARGILLITE

50.0-66.50 INTERMEDIATE TO FELSIC AMYGDALOIDAL TUFF BRECCIA, LAPILLI TUFF, FINE-GRAINED TUFF (PLUS MINOR FLOWS?)

66.50-89.37 INTERMEDIATE (TO FELSIC?) FINE-GRAINED TUFF TO LAPILLI TUFF

89.37-113.04 INTERMEDIATE TO FELSIC AMYGDALOIDAL TUFF BRECCIA OR FLOW

113.04-118.60 INTERMEDIATE AMYGDALOIDAL LAPILLI TUFF

118.60-127.52 INTERMEDIATE TO FELSIC AMYGDALOIDAL TUFF BRECCIA OR FLOW

127.52-138.80 INTERMEDIATE TO FELSIC AMYGDALOIDAL TUFF BRECCIA

138.80-140.87 INTERMEDIATE FINE-GRAINED TUFF

(CONTINUED ON NEXT PAGE)

SIGNIFICANT MINERALIZED INTERVALS (LAST SAMPLE: J91-14-151)

47.20 - 48.22 - 25% pyrite in felsite - sediment contact zone. Could be syngenetic sulphides.

176.35 - 177.70 - 25% pyrite at felsite - argillite contact. As above.

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
591-14

INTERVAL	C. LOSS	LITHOLOGY	J.W.	L	S	M	A
0 - 2.13		CASING		CASING			
2.30 - 27.43		INTERMEDIATE TO FELSIC INTERMIXED FINE-GRAINED TUFF TO AMYGDALOIDAL TUFF BRECCIA (FLOW ?) Medium blue-grey relatively soft phanitic somewhat heterogeneous volcanic rock. Textures range from massive (with amygdaloidal sections to 1m; 1-5mm, calcite) to brecciated to coarse-grained fragmental. Some apparently fragmental zones may in fact be brecciated more massive rock. Brecciated intervals flooded by fine-grained black chlorite and pyrite. The rock could be intermixed fine-grained tuff to tuff breccia or possibly a flow with tuffaceous sections 12.22 - 13.10 - Black sheared argillite with 30% quartz carbonate stringers at 30°CA. Contacts 45°		2-3 A-E(a) / 2-3 C(a)		1-3% PY	
		15.5 - Possible bedding 45°CA.	? 50° / 45	75° / 2-3 A-E(a) / 2-3C(a)		3% ?! 2-4% PY	
			50° / 45				

0 5 10 15 20

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	J91-14-1	2.30	3.95	1.65	4	0.1		2
2.13 - 12.22 - 1-3% sporadic pyrite; disseminated, in irregular masses to 1 cm and irregular stringers associated with calcite.	2	3.95	5.49	1.54	3			2
	3	5.49	6.95	1.46	3			2
	4	6.95	8.53	1.58	1	0.2		2
	5	8.53	9.90	1.37	15	0.4		2
	6	9.90	11.44	1.54	1	0.1	12	2
	7	11.44	12.24	0.80	1	0.1	11	2
	8	12.24	13.10	0.86	4	0.1	5	2
	9	13.10	14.52	1.42	3	0.4	19	2
12.22 - 13.10 - 3-4% fine-grained pyrite disseminated in argillite.	10	14.52	16.00	1.48	2	0.3	12	2
	11	16.00	17.27	1.27	4	0.2	11	2
13.10 - 17.27 - 3-4% pyrite in fractures and breccia matrix (lapilli matrix?) associated with calcite.	12	17.27	18.29	1.02	1	0.2	5	2
	13	18.29	18.94	0.65	3	0.1	19	3
	14	18.94	20.52	1.58	3	0.1	6	2
17.27 - 18.94 - 8-10% pyrite in irregular masses to 5 cm in breccia matrix and stringers.								
18.94 - 27.43 - 2-4% sporadic pyrite predominantly in fractures up to 5 mm assoc. with calcite. Some masses to 7 cm.								

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
J 91-14

INTERVAL	C. LOSS	LITHOLOGY	✱	L	S	M	A
				2-3A-E(a)		2-12 Py	
		Gradational contact					
37.43 - 40.35		INTERMEDIATE COARSE-GRAINED TO LAPILLI TUFF (TUFF BRECCIA ?) Dark to medium blue-grey mottled inhomogeneous coarse-grained tuff to tuff breccia. Unit is distinct from one above. Distinct subangular to subrounded medium blue-grey aphanitic lithic fragments averaging 5mm to 1cm. Fragments are commonly amygdaloidal with ≤1mm amygdules of calcite and chlorite. Some probable fragments of coarse-grained tuff to 30cm. Matrix is generally dark grey (chloritic ?) and contains disseminated pyrite and irregular masses of pyrite to 1cm. 29.52 - 30.37 - White to blue-grey quartz veins to 5cm 90°+60° CA. Thinly laminated veins light to dark blue-grey. Polygonal bands of quartz. 15% pyrite in long masses to 2cm x 2mm. Trace pyrobitumen ?		2-3C-D(E)		2-3% Py 5-8% Py 1-3	

20 25 30 35 40

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	15	20.52	22.00	1.48	2	0.1	14	2
	16	22.00	23.43	1.43	4		15	2
	17	23.43	24.95	1.52	3		16	2
	18	24.95	26.15	1.20	1	0.1	11	2
	19	26.15	27.43	1.28	2	0.1	13	2
	20	27.43	28.57	1.14	3	0.1	15	3
27.43 - 28.57 - 2-3% pyrite sporadically disturbuted in lapilli-tuff matrix.	21	28.57	29.52	0.95	11	0.5	23	4
	22	29.52	30.37	0.85	4		16	5
28.57 - 29.52 - 7-8% pyrite in stringers and breccia filling with calcite and chlorite.	23	30.37	31.10	0.73	4		20	6
	24	31.10	32.32	1.22	7	0.3	32	4
29.52 - 33.64 - sporadic 2-3% pyrite in stringers and irregular masses to 1 cm.	25	32.32	32.95	0.63	8	0.2	33	2
	26	32.95	33.64	0.69	2	0.1	55	4
33.64 - 39.83 - 5-8% pyrite in stringers to 5mm associated with calcite and in irregular masses to 1 cm in the lapilli matrix.	27	33.64	34.64	1.00	5	0.1	107	3
	28	34.64	35.64	1.00	8	0.1	249	4
	29	35.64	36.64	1.00	9	0.2	195	6
	30	36.64	37.64	1.00	7	0.1	120	4
	31	37.64	38.64	1.00	11	0.3	298	10
	32	38.64	39.83	1.19	3	2.9	385	28
	33	39.83	40.35	0.52	9	0.2	10	2
39.83 - 40.35 - 1-2% pyrite								

HOLE No.
J91-14

INTERVAL	C. LOSS	LITHOLOGY	∠ CA	L	S	M	A
40.35 - 45.86		ARGILLITE, SILTSTONE, FINE-GRAINED SANDSTONE Black to dark grey argillite grading into siltstone fine-grained sandstone and back into argillite across interval. Massive. No bedding. Upper contact sharp at 70°CA. 42.14 - 5cm argillite fragment in siltstone. 42.06 - 44.88 - 5% white quartz stringers at 45° & 45° to CA X 44.70 - 44.88 - white quartz vein 45-60°CA. Traces pyrite. 1cm gouge on uphole selvage.	So° 70; Py banding 61°	7S; 7K; 7LX; 7K; 7S	45°; 1cm gouge	<1% PY; 5-6% PY; <1% PY; QV; 60° 3RD 20% PY	
45.86-47.20		INTERMEDIATE FINE-GRAINED TUFF Dark to medium blue-grey fine-grained massive tuff 47.0-47.2 - 50% white quartz stringers to 1cm 60-70°CA	So? 70; zone	2A; 2A,7ST; sulphide zone		2-5% PY; QV; STG zone 25% PY	
47.2 - 48.22		ARGILLITE, TUFFACEOUS SEDIMENT, LAPILLI TUFF SULPHIDE ZONE Black fine-grained argillaceous tuff or sediment. 47.8 - 48.22 - 20% black amygdaloidal fragments to 1cm. Interval contains 25% fine-grained pyrite (50% over 30cm intervals) associated with calcite in lapilli matrix and in stringers in tuffaceous intervals.	So° 62	2A,7ST		5% PY; Qv STG	
48.22 - 50.0		INTERBEDDED FINE-GRAINED INTERMEDIATE TUFF AND ARGILLITE Fine-grained medium blue-grey relatively soft tuff interbedded with 20% black argillaceous sediment or tuff 49.6 - 50.0 - White quartz stringer-shear zone.		1/3 (E+D-A) (CA?)		2-4% PY	
50.0 - 66.50		INTERMEDIATE TO FELSIC AMYGDALOIDAL TUFF BRECCIA, LAPILLI TUFF, FINE-GRAINED TUFF (PLUS MINOR FLOWS?) Medium blue-grey coarse fragmental volcanic rock. Intervals to 1m of apparently massive aphanitic relatively soft material with up to 15% blue-grey chalcedony amygdules to 1cm. Zones between amygdaloidal sections range from fine-grained blue-grey tuff to lapilli tuff with aphanitic frags to 5cm.	So° 45				

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
40.35 - 40.77 - 1% disseminated pyrite	34	40.35	41.35	1.00	7	0.1	94	.8
40.77 - 42.14 - 5-6% along irregular stringers up to 5mm and filling 1-2 mm fracture in cockle breccia. Some colliform masses of pyrite to 6 mm.	35	41.35	42.14	0.79	3	0.1	95	21
	36	42.14	43.60	1.46	3	0.1	13	3
42.14 - 44.88 - <1% pyrite.	37	43.60	44.88	1.28	4	0.1	15	2
44.88 - 45.47 - 3% pyrite; disseminated and along hairline fractures.	38	44.88	45.86	0.98	3	0.4	99	19
	39	45.86	47.20	1.34	5	0.2	43	3
* 45.47 - 45.86 - 20% pyrite concentrated in a 20cm interval with 60% pyrite. Thinly banded at 70°CA. Associated with calcite. Flooding along foliation plane? Syngenetic?	40	47.20	48.22	1.02	1	0.4	413	16
	41	48.22	49.22	1.00	1	0.1	115	4
	42	49.22	50.0	0.78	4	0.2	171	2
45.86 - 47.2 - 2-3% sporadic pyrite. Disseminated and in irregular masses to 5mm.	43	50.0	51.42	1.42	1	0.2	25	2
* 47.2 - 48.22 - 25% pyrite in masses (stringers? replacement? syngenetic?) to 30cm associated with calcite. Also in lapilli matrix	44	51.42	52.80	1.38	3	0.2	23	2
	45	52.80	54.28	1.48	15	0.2	15	2
* 48.22 - 50.0 - 5% fine-grained pyrite in crude bands parallel to bedding. Possibly syngenetic.	46	54.28	55.70	1.42	3	0.3	23	2
	47	55.70	57.14	1.44	6	0.3	11	3
50.0 - 65.50 - sporadic 2-4% pyrite; in irregular masses to 1 cm in matrix of fine-grained intervals, and in irregular stringers to 1 cm associated with calcite.	48	57.14	58.52	1.38	7	0.2	7	2
	49	58.52	60.0	1.48	6	0.3	4	2

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.
J91-14

INTERVAL	C. LOSS	LITHOLOGY	% C.	L	S	M	A
		Fine-grained intervals crudely banded or bedded 45°-60° CA.		2/3 E, D-A (<2cm)	2-4% py		
66.50 - 89.37		INTERMEDIATE (TO FELSIC ?) FINE-GRAINED TUFF TO LAPILLI TUFF Medium to dark blue-grey fine-grained tuff with intervals to 50cm of fragmental rock with angular aphanitic fragments to 2cm. Fine-grained intervals commonly thinly banded or bedded ~50°CA. Some vague fragments to 10cm, rarely amygdaloidal. Contacts with adjacent units gradational, marked by finer-grained nature and (marked) absence of obvious amygdaloidal sections.	50°/50	2 (<3%) A-D	2-4% py		
			50°/50				
			50°/35				

60 65 70 75 80

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

591-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
60								
	50	60.0	61.43	1.43	7	0.3	5	2
	51	61.43	62.88	1.45	16	0.3	12	3
	52	62.88	64.33	1.45	3	0.3	17	3
	53	64.33	65.50	1.17	1	0.3	14	2
	54	65.50	67.06	1.56	4	0.2	2	2
65								
65.5 - 89.37	55	67.06	68.58	1.52	12	0.3	2	2
- 2-4% pyrite along 1-4mm bedding - small bands and stringers associated with calcite.	56	68.58	70.04	1.46	6	0.3	2	2
	57	70.04	71.50	1.46	4	0.3	2	2
	58	71.50	72.88	1.38	7	0.4	5	2
	59	72.88	74.30	1.42	13	0.3	2	2
70								
	60	74.30	75.83	1.53	14	0.4	5	2
	61	75.83	77.29	1.46	4	0.3	3	2
	62	77.29	78.74	1.45	3	0.4	5	2
	63	78.74	80.14	1.40	11	0.4	2	2
75								
80								

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No.
I91-14

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A
				2 A-D		2-4% PY	
89.37 - 113.04		INTERMEDIATE TO FELSIC AMYGDALOIDAL TUFF BRECCIA OR FLOW	S₁ 40	2-3 B? / Ca		2-3% PY	
		medium blue-grey massive aphanitic relatively soft volcanic rock with 15% <1 - 10 mm calcite, chlorite and/or chalcedony amygdules. Some intervals to 30 cm appear to be coarse-grained tuff with a chloritic groundmass (breccia ?). This rock could be a coarse-grained tuff breccia or flow. Amygdules flattened in a weakly developed foliation plane					
			T S₀=S₁ 48				

80
85
90
95
100

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
80	64	80.14	81.53	1.39	1	0.4	3	2		
	65	81.53	82.95	1.42	8	0.4	7	3		
	66	82.95	84.40	1.45	4	0.3	4	2		
	67	84.40	85.76	1.36	19	0.3	8	2		
	68	85.76	87.30	1.54	10	0.3	5	2		
85	69	87.30	88.20	0.90	4	0.5	6	3		
	70	88.20	89.37	1.17	9	0.3	3	3		
	71	89.37	90.83	1.46	6	0.4	7	2		
	72	90.83	92.24	1.41	8	0.6	7	4		
89.37 - 113.04 - Sporadic 2-3% pyrite along fractures and stringers to 2 cm generally parallel to foliation. Some pyrite in amygdules.	73	92.24	93.78	1.54	8	0.4	5	2		
90	74	93.78	95.21	1.43	4	0.1	12	2		
	75	95.21	96.81	1.60	4	0.1	18	2		
	76	96.81	98.31	1.50	3	0.1	20	2		
	77	98.31	99.78	1.47	3	0.1	18	2		
	78	99.78	101.30	1.52	4	0.1	14	2		
95										
100										

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

INTERVAL	C. LOSS	LITHOLOGY	MC	L	S	M	A
				2-3 pp / Cpy		2-3% py	
113.04-118.60		INTERMEDIATE AMYGDALOIDAL LAPILLI TUFF Black aphyric amygdaloidal fragments to 10cm (average 3-5cm) in a pale to dark coarse-grained tuffaceous groundmass. Amygdules composed predominantly of calcite with lesser amounts of chlorite and quartz; 1-2mm, up to 15% of fragments.		Xc-Dx		5-7% py	
		118.40-118.60 - 20cm gouge along fault at 45° CA. Fault contact.				2-5% py	

100 105 110 115 120

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	79	101.30	102.75	1.45	4	0.1	5	2
	80	102.75	104.07	1.32	5	0.2	7	2
	81	104.07	105.52	1.45	3	0.1	10	2
	82	105.52	106.83	1.31	4	0.2	13	2
	83	106.83	108.36	1.53	4	0.2	17	2
	84	108.36	109.73	1.37	3	0.1	37	0.3
	85	109.73	110.90	1.17	3	0.2	25	2
	86	110.90	112.40	1.50	1	0.1	54	2
	87	112.40	113.04	0.64	4	0.2	64	3
	88	113.04	113.95	0.91	1	0.1	87	5
	89	113.95	114.87	0.92	3	0.1	107	2
	90	114.87	115.82	0.95	1	0.1	64	3
	91	115.82	116.73	0.91	1	0.1	136	3
113.04 - 118.60 - 5-7% fine-grained pyrite; predominantly in irregular masses to 1 cm in lapilli matrix, associated with calcite flooding.	92	116.73	117.96	1.23	3	0.3	261	6
	93	117.96	118.60	0.64	4	0.8	652	16
	94	118.60	120.0	1.40	4	0.1	28	5
118.60 - 127.52 - 3-4% sporadic pyrite in irregular stringers to 5 mm and masses to 4 cm (replacement?).								

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
J91-14

INTERVAL	C. LOSS	LITHOLOGY	MJ	L	S	M	A
118.60-		INTERMEDIATE TO FELSIC AMYGDALOIDAL TUFF		2-3 Ea/Cpa		3-5% PY	
127.52		BRECCIA OR FLOW					
		Medium blue-grey to black massive aphanitic volcanic rock with chalcedonic quartz, calcite and/or chlorite amygdules - to 1cm. The rock is mottled black and grey in places and is somewhat inhomogeneous. Some parts are thinly banded and amygdaloidal; flow banded? Some pyrite masses to 4cm occur adjacent to thinly banded quartz - chlorite filled spaces and amygdules. In places amygdules are partially enveloped by pyrite suggesting replacement of rock by pyrite.					
127.52-		INTERMEDIATE TO FELSIC AMYGDALOIDAL TUFF		2-3 Ea		3-5% PY	
138.80		BRECCIA					
		mottled blue-grey to black inhomogeneous tuff breccia. Black and blue-grey amygdaloids (5-20% <1mm - 1cm, predominantly calcite) and/or siliceous fragments or zones to 1m with a finer-grained tuff matrix. This unit differentiated from unit above on the basis of its predominantly black colour and inhomogeneous nature.					
138.80-		INTERMEDIATE FINE-GRAINED TUFF		2A-B			
140.87		Medium to dark blue-grey fine to medium-grained tuff. Grades into argillaceous tuff or argillite down hole.					

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
I91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
120								
	95	120.0	121.54	1.54	3	0.3	19	2
	96	121.54	123.05	1.51	6	0.5	24	4
	97	123.09	124.4	1.35	1	0.4	18	3
	98	124.4	125.83	1.43	1	0.2	28	2
	99	125.83	127.52	1.69	2	0.2	14	2
125								
	100	127.52	128.97	1.45	2	0.2	17	2
127.52 - 138.80 - 3-5% pyrite; irregular masses to 1 cm in breccia matrix and along fractures.	101	128.97	130.4	1.43	1	0.3	44	3
	102	130.4	131.88	1.48	2	0.3	43	4
	103	131.88	133.40	1.52	1	0.2	174	4
	104	133.40	134.80	1.40	1	0.2	148	2
130								
	105	134.80	136.36	1.56	1	0.1	142	3
	106	136.36	137.76	1.40	2	0.4	233	10
	107	137.76	138.80	1.04	1	0.4	250	9
	108	138.80	140.21	1.41	1	0.1	76	2
135								
138.80 - 140.87 - 1-2% disseminated pyrite								
140								

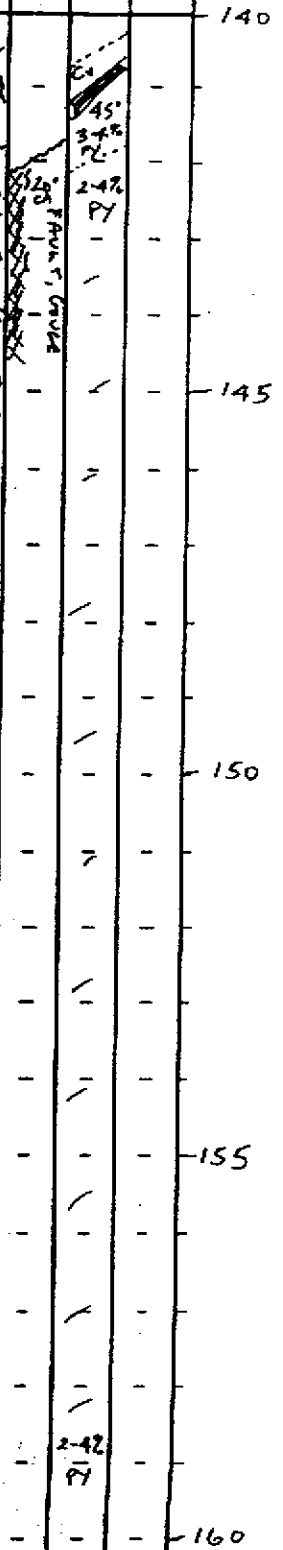
GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

J91-14

INTERVAL	C. LOSS	LITHOLOGY
140.87 - 142.05		ARGILLITE Black massive argillite. Cut by 15 cm carbonate vein/stringer zone at 45° CA (141.2-141.9). Lower contact along a fault. Shear contact 35° CA.
142.05 - 166.00		INTERMEDIATE TO FELSIC AMYGDALOIDAL TUFF BRECCIA (FLOW?) TO FINE-GRAINED TUFF Medium blue-grey relatively massive aphanitic soft amygdaloidal (2% to 20%, <1mm to >1cm, blue-grey chalcedony, calcite and minor chlorite) zones to 2m interbedded or interacalated with fine-grained to lapilli tuff. Massive amygdaloidal parts may be large fragments, comparted tuff breccia or possibly flows. Weakly foliated.
		142.05 - 144.6 - FAULT ZONE. Broken core. Gouge. Pulverized rock. Sheared 30° to subparallel to core axis. Average 20° CA.
		156.14 - 156.50 - Sheared argillite. Upper contact with lapilli tuff at 30° CA. Sheared.



GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
140.87 - 142.05 - 3-4% pyrite along hairline fractures and in discontinuous bands to 2 cm.	109	140.21	140.87	0.66	1	0.1	70	6
	110	140.87	142.05	1.18	1	0.4	105	15
166.0								
142.05 - 2-4% sporadic pyrite in irregular foliation - parallel bands up to 5 mm wide, disseminated in amygdules and in calcite flooded fracture.	111	142.05	142.95	0.90	1	0.1	12	2
	112	142.95	144.48	1.53	4	0.1	13	2
	113	144.48	145.92	1.44	2	0.1	9	2
	114	145.92	147.32	1.40	3	0.1	10	2
	115	147.32	148.70	1.38	3	0.1	12	2
	116	148.70	150.14	1.44	4	0.1	6	2
	117	150.14	151.60	1.46	2	0.1	9	2
	118	151.60	152.94	1.34	3	0.1	5	2
	119	152.94	154.57	1.63	3	0.1	9	2
	120	154.57	155.60	1.03	3	0.1	6	2
	121	155.60	156.14	0.54	3	0.1	8	2
	122	156.14	156.50	0.36	1	0.1	13	2
	123	156.50	157.95	1.45	5	0.1	12	2
	124	157.95	159.35	1.45	4	0.1	19	2
	125	159.35	161.00	1.65	2	0.1	39	2

HOLE No. J91-14

INTERVAL	C. LOSS	LITHOLOGY	∠ to C	L	S	M	A	Depth
				2/3 FP/Cr, B, A		2-4% PY		160
								165
166.0-177.70		INTERMEDIATE TO FELSIC FINE-GRAINED TO LAPILLI (± AMYGDALOIDAL) TUFF / SULPHIDE ZONE Gradational contact with unit above. Medium blue-grey fine-grained to lapilli tuff. Some fragments to 5 cm, generally aphanitic. A few amygdaloidal fragments.		2/3 A-D				
								170
	*	172.2-177.7 - SULPHIDE-RICH ZONE. Pyrite in matrix to lapilli tuff and, near contact with argillite, massive. Some banding in massive parts suggest possible syngenetic sulphides.				3-5% PY 15-20% PY 1-3% PY 7-8% PY		
								175
		177.7 - minor shear and quartz-carbonate stringers along contact. Banding in sulphides parallels contact and bedding in argillite.	S1= S0= 77		BROKEN	25% PY		
177.7-182.88		ARGILLITE, SILTSTONE Black argillite with 5-10% blue-grey siltstone beds to 1 cm. Bedding parallels cleavage.	S1= S0= 67	73, Kp		2-3% PY		
								180

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-14

MINERALIZATION ALTERATION

160

165

166.0 - 171.33 - 2-4% sporadic pyrite predominantly in lapilli matrix.

170

171.33 - 172.20 - 3-5% pyrite in irregular masses to 1 cm in calcite flooded zones.

* 172.2 - 173.46 - 15-20% pyrite in breccia (lapilli ?) matrix with calcite.

173.46 - 175.18 - 1-3% pyrite in lapilli tuff matrix as above.

175

175.18 - 176.35 - 7-8% pyrite in irregular masses to 1 cm in lapilli matrix.

* 176.35 - 177.70 - 25% pyrite (massive across 20 cm) in irregular masses to 20 cm in ~~blue~~ siliceous to coarse-grained grey tuff. Assoc. with calcite. Some banding. Syngenetic?

177.7 - 182.88 - 2-3% pyrite concentrated along 1 mm to 1 cm wide siltstone beds

180

SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
126	161.00	162.50	1.50	1	0.1	13	2
127	162.50	164.0	1.50	3	0.2	12	2
128	164.0	165.10	1.10	3	0.1	19	2
129	165.1	166.0	0.90	3	0.1	39	3
130	166.0	167.45	1.45	3	0.2	27	2
131	167.45	168.90	1.45	4	0.1	27	2
132	168.90	170.38	1.48	1	0.1	68	2
133	170.38	171.33	0.95	2	0.1	25	2
134	171.33	172.20	0.87	2	0.3	75	2
135	172.20	173.46	1.26	4	0.3	224	2
136	173.46	174.22	0.76	3	0.2	91	2
137	174.22	175.18	0.96	4	0.2	126	5
138	175.18	176.35	1.17	2	0.3	475	7
139	176.35	177.20	0.85	4	0.3	781	2
140	177.20	177.70	0.50	4	6.4	484	3
141	177.70	179.10	1.40	5	0.3	38	3
142	179.10	180.55	1.45	5	0.2	30	3

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
182.88-188.98		INTERMEDIATE AMYGDALOIDAL LAPILLI TUFF Black moderately soft to siliceous aphanitic volcanic fragments with ≤20% <1-2mm predominantly quartz and/or chlorite amygdules. 50-80% blue-grey tuffaceous groundmass. 182.88-183.18 - Quartz-carbonate vein-breccia. 60-70° CA. 184.2-184.7 - Broken core. Sheared. Gouge to 5mm on shears 20° CA.					
188.98		188.98 - Shear along lower contact at 60° CA.					
188.98-201.17		INTERMEDIATE TO FELSIC SERICITIC PHYLLITIC LAPILLI TUFF TO FINE-GRAINED TUFF Medium blue-grey sericitic phyllitic (weakly foliated to moderately foliated) rock with vaguely lithic fragments to 5 cm. Some fragments are mostly darker grey ghosts flattened in the plane of foliation. Some parts of the unit are vaguely amygdaloidal without distinct fragment boundaries. 194.2-194.45 - FAULT. Gouge. Sheared 60° CA.	S.2 60 S.2 55 S.2 65				

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
180										
	143	180.55	181.80	1.25	9	0.3	34	4		
	144	181.80	182.88	1.08	5	0.2	38	7		
182.88 - 188.98 - Sporadic <1% pyrite; disseminated and in irregular masses and bands to 5mm.	145	182.88	183.18	0.30	5	0.1	11	2		
	146	183.18	184.50	1.32	11	0.1	7	2		
	147	184.50	186.00	1.50	10	0.1	32	2		
185										
188.98 - 213.16 Banner. <1% pyrite. Unusually devoid of sulphides.										
190										
195										
200										

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-14

INTERVAL	C. LOSS	LITHOLOGY	CA	L	S	M	A
				2-3A-ADT		<1% PY	Se-1
201.17 - 215.25		INTERMEDIATE PHYLLITIC LAPILLI TUFF Mottled medium greenish-grey to dark green lapilli tuff. Distinct dark green dark green 'patches' or fragments to 5cm with a dark fine-grained groundmass and 15% - 25% 1-2mm light green specs with fuzzy boundaries. In some places these 'specs' look like amygdules. Some dark green patches appear to grade into the lighter green groundmass and the texture may be a product of alteration. The light green-grey groundmass is a sericitic weakly foliated lapilli tuff with vague flattened lithic fragments to 3cm. Gradational contact with unit above based on presence of dark green 'fragments'.	S1: 30 S1: 55	2DT			
215.25 - 216.25		INTERMEDIATE FINE-GRAINED ARGILLACEOUS (?) TUFF Dark green to black fine-grained phyllitic tuff. 215.8 - 216.25 - Sheared. Quartz vein to 20cm 52° CA.	S1: 60		30%	5-6% PY Q7 52°	Se-2
216.25 - 240.31		INTERMEDIATE TO FELSIC PHYLLITIC FINE-GRAINED TUFF TO LAPILLI TUFF Light to medium greenish to bluish-grey sericitic fine-grained to lapilli tuff with vague flattened lithic fragments to 2cm. Fragments close to same colour as matrix. Very uniform homogeneous rock. Moderately foliated.	S1: 60	2-3A-DT			

Depth scale (right margin): 200, 205, 210, 215, 220

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
213.16-214.28 - 5-6% pyrite in irregular masses to 1 cm associated with calcite flooding. Some stringers to 2 mm.	148	213.16	214.28	1.12	2	0.4	97	2		
213.16-239.0 Barren. << 1% sulphides (pyrite) in rare foliation-parallel bands to 2 mm.										

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

INTERVAL	C. LOSS	LITHOLOGY	CA	L	S	M	A
				2-3 A-Dt		<1% PY	Sc 2
			51° / 54				
		234-240.31 · sericitic phyllitic medium to light greenish-grey fine-grained tuff. Lithic fragments not apparent.					
			51° / 57				
			51° / 55			1-3% PY	

220 225 230 235 240

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
220										
225										
230										
235										
239.0 - 240.31 - 1-3% sporadic fine-grained pyrite concentrated along 1-3 mm foliation-parallel bands	149	239.0	240.31	1.31	2	0.3	11	2		
240										

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-14

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	Depth
240.31 - 241.64		INTERBEDDED FINE TO COARSE-GRAINED INTERMEDIATE TUFF AND ARGILLITE Medium greenish-grey fine to coarse-grained tuff with 1-3 cm beds of black fine-grained argillite or argillaceous tuff.	S_0 = 65	ZA-C.77			Se-2	240
241.64 - 313.94		INTERMEDIATE PHYLLITIC FINE-GRAINED TO LAPILLI TUFF Medium to dark greenish-grey, soft fine-grained to lapilli tuff. Phyllitic. Moderately foliated	S_1 = 55	ZA-D+.54				245
		241.64 - 247.43 - Zones to 30cm with obvious flattened light grey to black aphanitic lithic fragments to 2cm.			Schist 30-40° CA	Qtz		
		247.43 - 255 - Medium to dark greenish-grey fine-grained phyllitic moderately foliated sericitic tuff.	S_1 = 60					250
		255 - 260 - Sporadic zones to 5 cm with calcite amygdules to 1 cm. Could be Tuff breccia although no fragment boundaries apparent. Possibly a flow (?). Metamorphism has obliterated original textures. Rock is relatively homogeneous. Barren. Groundmass as 247.43-255	S_1 = 53					255
		260 - 266 As 247.43 - 255						
		266 - 275.56 - As above with rounded grey siliceous 'augens'. Could be amygdules or fragments. Possibly a tuff breccia.	S_1 = 58					260

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
240.31 - 241.64 - 1 - 2% pyrite.	150	240.31	241.64	1.33	2	0.3	11	2
241.64 - 246.43 - <1% pyrite								
246.43 - 247.43 - 1 - 2% pyrite in foliation - parallel bands to 1 cm.								
247.43 - 313.94 <1% pyrite.								
	151	246.43	247.43	1.00	2	0.1	9	2

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

INTERVAL	C. LOSS	LITHOLOGY	C.A	L	S	M	A
		270.3 - 'z' limb folded foliation → DOWN HOLE					
		275.6 - 276.05 - Black argillaceous interval.					

260 265 270 275 280

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

J91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au g/t	Ag g/t	As ppm	Sb ppm		
260										
265										
270										
275										
280										

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-14

INTERVAL	C. LOSS	LITHOLOGY	STRUCTURE	L	S	M	A
		281.85- 282.05- Bedded argillite - siltstone interval	S_0 70	2A-D+	-	-	-
		289.0 - 289.4 - Argillite interval.	S_1 60				
			S_1 45	2A-D+			
			S_1 40	2C)			
		295.25- 296.6 - Dark grey interval. Argillaceous coarse-grained tuff. Mildly contorted foliation. 'Z' kink fold (foliation bottom left to top right)					
		299.67- 300.4 - Dark grey argillaceous interval.	S_1 50	2C)			

280 285 290 295 300

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au g/t	Ag g/t	As ppm	Sb ppm		

280

285

290

295

300

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-14

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	Depth
								300
			51° / 50					
								305
		310.7 - 310.95 - Argillaceous interval						310
		310.95 - 313.94 - Phyllitic medium to dark green phyllitic intermediate lapilli tuff with obvious lithic fragments (medium green grey to dark grey, fine-grained) to 3cm flattened in plane of foliation.	51° / 58					
				313.94		E.O.H.		
								315
								320

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

I91-14

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au g/t	Ag g/t	As ppm	Sb ppm		
300										
305										
310										
315										
320										

ACME ANALYTICAL

Granges Inc. PROJECT UNUK RIVER 134 FILE # 91-4906

ACME ANALYTICAL

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb
J91-14-1	4	15	5	96	.1	5	9	1065	3.02	3	5	ND	5	239	.7	2	2	30	11.67	.148	8	5	3.37	124	.02	3	1.61	.04	.09	1	4
J91-14-2	5	15	5	133	.3	3	9	1104	4.90	7	5	ND	3	169	.9	2	2	27	10.31	.125	6	6	2.54	108	.02	2	1.39	.05	.09	1	3
J91-14-3	2	13	4	111	.1	2	8	1312	3.27	5	5	ND	4	233	.2	2	2	27	12.62	.125	8	6	3.12	124	.01	2	1.59	.05	.11	1	3
J91-14-4	1	16	4	121	.2	2	14	986	4.62	4	5	ND	4	175	.7	2	2	44	9.90	.158	8	8	3.49	114	.02	2	2.31	.06	.11	1	1
J91-14-5	1	15	11	104	.3	2	11	1212	4.46	8	5	ND	4	213	1.0	2	2	28	12.62	.149	8	6	3.20	107	.01	3	1.51	.04	.12	1	15
J91-14-6	1	13	5	80	.1	2	10	937	3.26	12	5	ND	4	240	.5	2	2	30	12.66	.164	8	6	3.01	132	.02	3	1.58	.04	.13	1	1
RE J91-14-11	7	22	7	158	.2	4	15	673	7.63	11	5	ND	2	140	1.0	2	2	41	6.35	.162	6	10	2.41	109	.03	3	1.86	.07	.14	1	2
J91-14-7	2	11	11	59	.1	3	12	946	2.92	21	5	ND	4	209	.6	2	2	26	11.50	.191	9	4	4.26	126	.01	3	1.50	.03	.12	1	1
J91-14-8	1	9	7	141	.1	4	8	1013	3.78	13	5	ND	4	315	.5	2	2	17	11.68	.106	7	4	4.21	102	.01	2	.78	.01	.12	1	4
J91-14-9	5	12	16	120	.4	4	16	1047	5.71	21	5	ND	1	160	1.0	2	4	17	8.16	.159	5	7	2.92	93	.02	2	.70	.03	.18	1	3
J91-14-10	4	10	15	136	.3	3	11	992	5.10	12	5	ND	3	177	.5	2	3	20	10.30	.121	6	4	3.86	80	.01	2	.88	.02	.11	1	2
J91-14-11	6	20	11	153	.2	4	15	639	7.17	11	5	ND	2	107	.7	2	2	38	5.40	.156	5	8	2.31	85	.02	2	1.66	.05	.14	1	4
J91-14-12	16	17	19	163	.2	4	13	1031	9.81	5	5	ND	1	97	.9	2	2	34	5.21	.126	4	8	2.17	71	.02	2	1.33	.05	.12	1	1
J91-14-13	8	14	7	145	.1	4	16	695	8.51	19	5	ND	1	80	.6	3	2	32	4.10	.130	2	7	2.57	69	.02	2	1.71	.04	.11	1	3
J91-14-14	3	13	4	129	.1	2	12	1061	4.41	6	5	ND	2	180	.7	2	2	29	10.14	.136	6	5	3.19	94	.01	3	1.51	.03	.11	1	3
J91-14-15	1	14	9	122	.1	3	11	900	4.72	4	5	ND	3	149	.5	2	4	32	8.91	.156	6	7	2.93	99	.01	3	1.57	.04	.13	1	2
J91-14-16	3	12	11	106	.1	2	11	1059	4.43	5	5	ND	2	154	.7	2	3	26	10.40	.158	7	5	2.83	89	.01	3	1.29	.03	.11	1	4
J91-14-17	2	12	10	123	.1	4	13	925	4.87	9	6	ND	2	141	.3	2	6	30	10.34	.141	6	5	2.36	71	.01	2	1.38	.03	.09	1	3
J91-14-18	3	10	7	77	.1	2	12	983	4.44	11	6	ND	1	123	.2	2	3	22	8.85	.129	5	5	2.50	86	.01	2	1.12	.03	.12	1	1
J91-14-19	2	11	12	64	.1	3	11	1177	4.09	13	5	ND	3	173	.3	2	4	29	13.14	.142	7	4	2.69	84	.01	2	1.36	.03	.10	1	2
J91-14-20	3	8	9	59	.1	2	8	1503	3.92	15	5	ND	3	258	.5	3	3	23	16.08	.098	7	4	4.75	81	.01	2	1.17	.02	.05	1	3
J91-14-21	10	13	19	138	.5	4	8	863	9.03	23	5	ND	1	94	.6	4	2	19	5.88	.141	5	8	2.10	53	.01	3	1.04	.04	.10	1	11
J91-14-22	5	13	11	197	.1	3	4	239	5.20	16	5	ND	1	61	.9	5	2	33	2.96	.204	9	8	1.44	72	.03	4	1.41	.10	.12	1	4
J91-14-23	9	11	9	69	.1	3	9	766	6.62	28	5	ND	1	106	.6	6	2	19	6.41	.176	6	5	1.92	60	.01	4	1.12	.04	.11	1	4
J91-14-24	6	7	5	42	.3	3	8	1699	4.72	32	5	ND	4	186	.3	4	2	15	15.07	.102	5	4	4.12	72	.01	3	1.19	.01	.08	1	7
J91-14-25	7	8	7	51	.2	3	7	1316	5.07	33	5	ND	3	185	.7	2	2	22	12.90	.117	5	3	5.12	76	.01	3	1.27	.02	.07	1	8
J91-14-26	8	6	6	23	.1	3	7	998	6.39	55	5	ND	1	111	.3	4	2	17	9.12	.082	2	3	4.94	48	.01	2	.85	.01	.04	1	2
J91-14-27	21	8	4	26	.1	7	15	1135	10.74	147	5	ND	1	119	.6	3	2	24	6.85	.100	2	4	4.32	35	.01	2	1.00	.02	.04	1	5
J91-14-28	17	9	10	115	.1	15	30	997	10.62	249	5	ND	1	141	.9	4	2	22	7.71	.058	3	8	4.46	30	.01	2	1.02	.02	.03	1	2
J91-14-29	16	9	9	47	.2	11	23	980	10.26	195	8	ND	1	92	.3	6	2	17	6.46	.110	2	5	4.16	32	.01	2	.82	.02	.06	1	9
J91-14-30	5	8	7	12	.1	5	11	1240	7.90	120	6	ND	2	122	.5	4	2	22	8.55	.100	3	5	4.74	49	.01	2	.99	.02	.05	1	7
J91-14-31	14	11	8	30	.3	8	17	903	13.64	298	6	ND	2	97	.3	10	8	21	4.73	.100	2	3	3.70	21	.01	2	1.03	.02	.06	1	11
J91-14-32	23	16	7	49	2.9	11	26	696	12.17	385	7	ND	20	116	2.1	28	2	26	4.32	.065	10	7	3.05	19	.01	2	1.06	.01	.05	1	3
J91-14-33	1	5	2	13	.2	1	2	523	1.39	10	5	ND	1	277	1.4	2	2	6	4.74	.014	2	2	2.71	103	.01	2	1.48	.05	.07	1	9
J91-14-34	6	9	9	48	.1	13	12	691	6.17	94	5	ND	1	122	.7	8	2	16	4.26	.048	2	5	1.69	39	.01	2	.91	.01	.06	1	7
J91-14-35	8	10	4	62	.1	13	5	888	7.30	95	5	ND	1	135	1.2	21	2	12	5.15	.026	2	5	2.15	36	.01	2	.61	.01	.05	1	3
J91-14-36	2	4	4	24	.1	5	1	1555	1.61	13	5	ND	2	279	.4	3	2	3	15.87	.026	4	3	6.49	116	.01	3	.14	.01	.03	1	3
J91-14-37	2	3	2	16	.1	6	1	1763	1.59	15	5	ND	1	226	.3	2	2	3	13.29	.027	5	3	4.91	96	.01	2	.16	.01	.04	1	4
STANDARD C/AU-R	19	63	41	132	7.0	76	34	1073	4.00	43	15	6	41	53	17.6	14	19	59	.49	.097	39	57	.90	183	.09	33	1.92	.06	.15	13	510

Samples beginning 'RE' are duplicate samples.

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

Granges Inc. PROJECT UNUK RIVER 134 File # 91-4926 Page 1 OCT 10 1991

2300 - 885 W. Georgia St., Vancouver BC V6C 3E8 Submitted by: R.L. WRIGHT

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
J91-14-38	15	11	22	46	.4	19	11	359	9.72	99	5	ND	1	51	.2	19	2	10	1.01	.042	2	10	.84	33	.01	2	.63	.02	.12	1	3	1050
J91-14-39	3	9	9	39	.2	7	10	242	4.51	43	5	ND	1	38	.2	3	2	10	.71	.013	2	12	.99	63	.01	2	1.04	.03	.13	1	5	240
J91-14-40	13	5	11	102	.4	12	34	891	21.79	413	5	ND	1	85	.2	16	2	25	2.26	.053	2	13	1.29	17	.01	4	1.20	.02	.04	1	1	895
J91-14-41	5	7	8	23	.1	10	17	373	10.45	115	5	ND	1	25	.2	4	2	13	.65	.008	2	14	1.28	33	.01	2	1.32	.03	.06	1	1	845
J91-14-42	4	9	10	56	.2	13	28	407	9.04	171	5	ND	1	89	.2	2	2	19	2.01	.084	2	11	1.04	29	.01	2	.97	.02	.06	1	4	640
J91-14-43	7	9	8	54	.2	10	28	464	5.61	25	5	ND	1	96	.2	2	2	16	2.64	.173	5	19	.84	62	.01	5	.76	.06	.12	1	1	260
J91-14-44	9	7	9	41	.2	11	29	455	6.67	23	5	ND	1	75	.2	2	2	16	2.33	.187	6	11	.60	93	.02	3	.99	.08	.17	1	3	285
RE J91-14-49	1	11	7	223	.3	2	16	1134	7.97	2	5	ND	1	165	.2	2	2	38	5.94	.114	2	12	1.97	98	.03	2	1.65	.07	.13	1	7	300
J91-14-45	3	9	3	118	.2	8	23	766	6.68	15	5	ND	1	115	.2	2	2	34	2.94	.217	7	12	.92	128	.04	3	1.48	.11	.17	1	15	245
J91-14-46	7	9	12	105	.3	8	30	1027	9.76	23	5	ND	1	114	.2	2	2	24	3.54	.135	5	15	.61	56	.02	3	.91	.06	.08	1	3	545
J91-14-47	1	12	6	135	.3	3	15	968	6.27	11	5	ND	1	138	.2	3	2	41	4.78	.133	5	11	1.33	116	.04	2	1.64	.09	.13	2	6	255
J91-14-48	1	11	10	103	.2	3	16	1034	6.24	7	5	ND	1	198	.2	2	2	45	6.32	.133	5	12	1.73	107	.04	3	1.95	.09	.13	1	7	220
J91-14-49	1	11	5	213	.3	2	16	1111	7.83	4	5	ND	1	170	.2	2	2	38	6.06	.113	3	12	1.94	100	.03	4	1.62	.08	.13	1	6	285
J91-14-50	1	10	3	132	.3	2	15	997	6.43	5	5	ND	1	199	.2	2	2	58	6.07	.120	4	10	2.40	81	.03	2	2.32	.07	.09	1	7	215
J91-14-51	4	10	10	115	.3	4	15	630	7.94	12	5	ND	1	135	.2	3	2	31	4.07	.090	3	11	1.32	66	.02	2	1.38	.05	.09	1	16	485
J91-14-52	3	9	3	77	.3	4	23	612	6.02	17	5	ND	1	179	.2	3	2	38	5.78	.090	2	14	1.09	44	.02	2	.97	.06	.04	1	3	800
J91-14-53	1	9	5	68	.3	3	18	894	4.24	14	5	ND	1	217	.2	2	3	43	7.32	.157	5	10	2.31	105	.03	3	1.81	.07	.09	1	1	455
J91-14-54	1	12	4	85	.2	1	12	1084	5.48	2	5	ND	1	179	.2	2	2	42	6.57	.164	4	9	2.55	131	.04	2	1.99	.07	.14	1	4	250
J91-14-55	1	11	7	92	.3	1	10	1222	5.56	2	5	ND	1	194	.2	2	2	43	7.09	.162	4	10	2.44	121	.04	4	1.98	.07	.13	1	12	270
J91-14-56	1	12	6	95	.3	1	12	1306	4.90	2	5	ND	1	260	.2	2	2	43	8.61	.138	5	9	2.12	157	.04	4	2.08	.08	.16	1	6	205
J91-14-57	1	11	4	93	.3	2	11	1230	4.93	2	5	ND	1	234	.2	2	2	49	7.73	.130	4	9	2.46	125	.03	2	2.29	.07	.12	1	4	170
J91-14-58	1	16	9	100	.4	1	19	1399	6.16	5	5	ND	1	274	.2	2	2	48	8.91	.149	4	10	2.61	134	.04	3	2.18	.07	.15	2	7	225
J91-14-59	1	13	6	111	.3	1	14	1235	6.08	2	5	ND	1	219	.2	2	2	44	7.23	.174	4	9	2.34	147	.04	4	2.12	.08	.17	1	13	250
J91-14-60	1	11	4	112	.4	3	11	1278	5.43	5	5	ND	1	244	.2	2	2	48	8.16	.160	4	10	2.25	114	.04	2	1.98	.07	.11	2	14	240
J91-14-61	1	12	3	106	.3	2	11	1239	5.44	3	5	ND	1	240	.2	2	2	43	8.06	.163	5	11	2.43	154	.04	2	1.91	.07	.16	1	4	260
J91-14-62	1	14	7	92	.4	2	14	1126	6.87	5	5	ND	1	227	.2	2	2	47	7.46	.161	4	11	2.10	147	.05	4	2.04	.09	.15	1	3	245
J91-14-63	1	14	5	106	.4	3	13	1162	5.67	2	5	ND	1	244	.2	2	2	47	8.35	.177	5	10	2.26	176	.04	5	2.27	.09	.18	1	11	250
J91-14-64	1	13	7	128	.4	2	15	904	6.12	3	5	ND	1	195	.2	2	2	63	5.97	.188	5	11	2.66	159	.04	3	2.60	.08	.16	1	1	210
J91-14-65	1	11	5	101	.4	2	11	1256	5.48	7	5	ND	1	290	.2	3	2	44	10.58	.109	4	9	2.30	122	.03	3	2.05	.05	.10	3	8	175
J91-14-66	1	11	6	74	.3	2	13	1089	4.54	4	5	ND	1	228	.2	2	2	37	7.66	.149	4	9	2.31	101	.03	3	1.45	.06	.12	1	4	235
J91-14-67	1	12	3	87	.3	3	13	1423	5.30	8	5	ND	1	263	.2	2	2	48	9.40	.158	4	10	2.67	127	.04	2	2.09	.07	.11	2	19	230
J91-14-68	1	14	2	84	.3	2	12	1258	5.85	5	5	ND	1	278	.2	2	2	45	7.72	.141	5	10	2.05	130	.04	2	1.84	.09	.12	1	10	230
J91-14-69	1	16	5	96	.5	2	13	950	5.34	6	5	ND	1	244	.3	3	2	43	6.38	.175	6	10	1.90	159	.04	3	1.86	.11	.17	1	4	240
J91-14-70	1	10	3	73	.3	1	10	1482	4.93	3	5	ND	1	334	.2	3	2	32	10.25	.103	4	7	2.94	127	.02	2	1.55	.06	.13	1	9	205
J91-14-71	1	15	7	93	.4	3	15	1181	6.68	7	5	ND	1	200	.2	2	2	42	6.20	.143	4	10	2.29	146	.03	3	2.00	.09	.15	1	6	330
J91-14-72	4	17	8	95	.6	2	15	1050	9.37	7	5	ND	1	158	.2	4	2	38	5.09	.114	3	9	1.89	107	.02	3	1.70	.08	.12	1	8	615
J91-14-73	1	13	10	91	.4	3	14	853	4.95	5	5	ND	1	228	.2	2	2	42	7.05	.131	5	11	2.04	133	.03	2	1.88	.08	.13	1	8	215
STANDARD C/AU-R	17	56	40	133	7.1	71	32	1041	3.97	42	18	6	37	51	19.0	16	18	57	.48	.090	40	58	.88	177	.09	33	1.89	.06	.15	11	490	1600

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM. ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB

- SAMPLE TYPE: CORE AU* ANALYSIS BY ACID LEACH/AA FROM 10 GM SAMPLE. HG ANALYSIS BY FLAMELESS AA.

Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: OCT 6 1991 DATE REPORT MAILED: Oct 9/91. SIGNED BY .....D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
J91-14-74	9	14	5	102	.1	3	15	1424	6.48	12	5	ND	1	218	.4	2	2	37	12.00	.104	2	5	1.94	84	.01	2	1.56	.04	.05	1	4	425
J91-14-75	3	19	9	131	.1	6	22	715	4.92	18	5	ND	1	190	.2	2	2	36	5.84	.180	6	7	1.59	91	.02	2	1.45	.06	.11	1	4	290
J91-14-76	2	23	8	196	.1	6	26	519	5.65	20	5	ND	1	162	.5	2	2	29	4.11	.200	5	9	1.32	77	.01	2	1.15	.05	.14	1	3	330
J91-14-77	1	18	7	155	.1	4	19	449	3.37	18	5	ND	1	152	.3	2	2	37	4.66	.213	6	8	1.36	134	.02	3	1.62	.07	.15	1	3	260
J91-14-78	1	17	10	128	.1	6	20	534	4.25	14	5	ND	1	218	.4	2	2	49	6.22	.127	5	8	2.15	84	.02	2	2.02	.04	.07	1	4	230
J91-14-79	2	14	6	119	.1	3	9	726	3.53	5	5	ND	1	192	.4	2	2	34	6.81	.179	8	9	1.60	120	.02	2	1.71	.07	.10	1	4	155
J91-14-80	2	15	7	142	.2	5	13	838	4.86	7	5	ND	1	169	.7	2	2	30	6.47	.190	8	6	1.53	105	.02	2	1.53	.07	.10	1	5	225
J91-14-81	1	15	6	188	.1	4	14	958	6.97	10	5	ND	1	143	.8	2	2	34	4.81	.184	5	5	1.78	79	.02	2	1.74	.07	.09	1	3	320
J91-14-82	1	16	4	153	.2	4	19	794	6.53	13	5	ND	2	181	1.1	2	2	43	6.03	.188	7	9	2.38	81	.03	2	2.19	.07	.07	1	4	305
J91-14-83	2	14	3	181	.2	8	24	689	4.51	17	5	ND	1	273	.7	2	2	50	7.17	.193	6	7	2.65	81	.03	2	2.56	.07	.05	1	4	300
J91-14-84	2	16	14	245	.1	13	36	992	6.61	37	5	ND	1	233	1.1	3	2	58	7.22	.186	5	6	3.36	41	.02	2	2.03	.05	.01	1	3	455
J91-14-85	2	15	6	141	.2	13	42	845	5.32	25	5	ND	2	219	.8	2	2	55	7.02	.202	8	10	2.63	60	.03	2	2.52	.08	.03	1	3	495
J91-14-86	2	15	9	128	.1	14	41	707	4.82	34	5	ND	1	204	.9	2	2	43	6.55	.193	7	8	2.15	57	.01	2	1.56	.05	.04	1	1	440
J91-14-87	2	14	10	162	.2	26	76	356	3.99	64	5	ND	1	133	.7	3	2	41	3.24	.185	5	10	1.90	71	.01	2	1.59	.05	.05	1	4	550
J91-14-88	5	10	6	99	.1	24	62	527	6.12	87	5	ND	1	222	.9	5	2	53	6.05	.136	3	12	2.16	36	.01	2	1.18	.04	.01	1	1	640
J91-14-89	3	11	13	89	.1	16	40	564	8.56	107	5	ND	1	203	.9	2	3	51	5.72	.107	2	5	2.46	28	.01	2	1.45	.03	.01	1	3	780
J91-14-90	4	11	11	160	.1	14	30	534	5.41	64	5	ND	1	245	1.2	3	2	62	6.61	.100	4	6	2.32	34	.01	2	1.27	.03	.01	1	1	360
J91-14-91	5	10	10	80	.1	15	38	395	5.66	136	5	ND	1	210	1.3	3	2	50	5.25	.105	4	14	1.64	29	.01	2	1.16	.04	.01	1	1	500
J91-14-92	6	13	19	100	.3	25	68	674	6.66	261	5	ND	1	207	1.1	6	2	49	6.02	.138	3	9	2.42	30	.01	2	.98	.04	.01	1	3	860
J91-14-93	8	17	30	223	.8	37	128	525	11.43	652	5	ND	2	123	2.5	16	7	39	3.23	.227	3	11	2.05	17	.01	2	1.79	.02	.01	1	4	2300
J91-14-94	2	13	15	202	.1	5	17	1000	5.03	28	5	ND	1	280	1.2	5	2	36	8.24	.112	6	8	2.97	54	.01	2	1.20	.03	.06	1	4	260
J91-14-95	4	18	12	154	.3	7	17	561	6.67	19	5	ND	1	132	.4	2	2	23	3.66	.198	7	5	1.15	52	.01	2	1.26	.04	.11	1	3	290
J91-14-96	7	19	15	149	.5	7	17	492	6.65	24	5	ND	1	114	.3	4	2	22	3.21	.168	5	5	.60	42	.01	2	.96	.04	.10	1	6	280
J91-14-97	5	17	11	104	.4	6	15	619	3.68	18	5	ND	2	145	.5	3	2	18	3.92	.188	8	11	.53	65	.01	3	.56	.04	.11	1	1	195
J91-14-98	2	15	10	120	.2	6	16	620	5.82	28	5	ND	1	193	.7	2	2	24	4.37	.161	6	5	.95	52	.01	2	1.01	.04	.09	1	1	305
J91-14-99	1	13	4	115	.2	4	13	901	5.09	14	5	ND	1	227	.6	2	2	41	7.51	.155	7	5	2.19	51	.01	2	1.92	.04	.04	1	2	270
J91-14-100	2	11	13	91	.2	3	10	1052	6.02	17	5	ND	2	233	.9	2	2	38	7.89	.136	7	4	2.20	43	.01	2	1.59	.03	.02	1	2	295
J91-14-101	3	11	14	185	.3	4	13	795	5.97	44	5	ND	2	202	.8	3	2	39	6.78	.169	5	4	1.98	35	.01	2	1.32	.03	.01	1	1	315
J91-14-102	2	12	17	113	.3	4	12	917	6.41	43	5	ND	2	237	1.1	4	2	54	7.08	.190	6	5	3.06	33	.01	2	2.57	.03	.01	1	2	350
J91-14-103	6	19	13	145	.2	20	46	774	5.32	174	5	ND	2	285	1.1	4	2	51	7.64	.149	6	10	2.82	44	.01	2	1.73	.03	.01	1	1	660
J91-14-104	4	19	11	181	.2	10	29	1057	6.20	148	5	ND	1	229	1.3	2	2	35	7.79	.143	5	5	2.45	42	.01	2	1.32	.03	.04	1	1	395
J91-14-105	4	24	25	168	.1	24	64	744	7.79	142	5	ND	2	138	.9	3	4	43	4.52	.192	4	8	2.15	28	.01	2	1.47	.04	.02	1	1	685
RE J91-14-101	3	11	14	180	.3	5	13	727	5.54	43	5	ND	2	183	1.0	2	2	35	5.94	.157	6	4	1.76	31	.01	2	1.21	.03	.02	1	1	355
J91-14-106	6	22	36	145	.4	32	114	701	6.37	233	5	ND	3	151	1.4	10	2	44	5.22	.183	6	13	1.93	32	.01	2	1.42	.03	.01	1	2	1800
J91-14-107	7	23	34	248	.4	34	112	645	10.41	250	7	ND	3	182	1.8	9	6	36	4.41	.161	4	11	1.41	24	.01	2	.96	.04	.03	1	1	2150
J91-14-108	4	12	14	79	.1	12	25	181	7.76	76	5	ND	1	128	1.0	2	2	27	1.46	.029	2	7	1.90	31	.01	2	1.56	.02	.04	1	1	430
J91-14-109	5	11	32	41	.1	13	18	187	6.88	70	5	ND	2	50	.8	6	2	17	.39	.029	2	14	1.11	31	.01	2	1.18	.02	.05	1	1	980
STANDARD C/AU-R	21	62	42	133	7.4	74	32	1057	4.02	42	19	8	41	52	17.7	17	20	60	.49	.092	39	61	.89	177	.09	32	1.90	.07	.16	11	480	1600

Sample type: CORE. Samples beginning 'RE' are duplicate samples.

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
J91-14-110	10	17	85	112	.4	27	6	656	7.51	105	5	ND	1	126	.2	15	2	17	3.60	.077	2	12	1.18	36	.01	3	.81	.01	.08	1	1	1750
J91-14-111	2	16	5	143	.1	5	14	994	4.69	12	5	ND	1	222	.3	2	2	34	6.93	.111	4	8	1.54	65	.01	2	1.48	.02	.07	1	1	200
J91-14-112	1	21	7	154	.1	2	15	741	6.89	13	5	ND	1	147	.7	2	2	34	3.99	.138	4	10	1.75	85	.01	3	2.07	.02	.12	1	4	195
J91-14-113	1	13	3	112	.1	2	10	880	3.96	9	5	ND	1	216	.3	2	2	29	5.46	.116	4	6	1.76	69	.01	2	1.56	.02	.08	1	2	165
J91-14-114	1	13	3	103	.1	3	11	1019	3.42	10	5	ND	1	247	.4	2	2	40	7.57	.127	4	6	2.01	72	.01	2	1.76	.03	.06	1	3	140
J91-14-115	1	17	5	124	.1	2	13	993	4.96	8	5	ND	1	203	1.8	2	2	37	6.08	.125	4	8	2.42	95	.01	2	2.12	.03	.10	1	3	140
J91-14-116	1	17	7	107	.1	3	14	986	5.22	13	6	ND	1	185	1.0	2	2	39	7.03	.140	5	6	2.30	115	.02	2	2.17	.04	.11	1	4	210
J91-14-117	1	15	8	131	.1	1	13	977	4.99	9	5	ND	1	188	1.1	2	2	48	7.46	.117	4	7	2.77	85	.02	3	2.26	.04	.08	1	2	155
J91-14-118	1	15	6	143	.1	2	12	704	4.16	10	5	ND	1	171	.3	2	2	47	7.00	.131	5	9	2.64	104	.02	2	2.22	.04	.08	1	3	175
J91-14-119	2	13	6	210	.1	4	15	447	2.38	12	5	ND	1	176	.4	2	2	37	5.19	.152	4	10	1.43	114	.02	3	1.46	.04	.09	1	3	210
J91-14-120	1	10	3	68	.1	2	4	588	3.31	6	5	ND	1	197	.3	2	2	28	6.06	.030	2	5	3.09	54	.01	2	2.31	.01	.03	1	3	55
J91-14-121	1	15	9	199	.1	2	12	427	4.33	9	5	ND	1	185	.7	2	2	40	4.13	.153	4	13	2.82	90	.03	3	2.31	.03	.08	1	3	160
J91-14-122	1	14	7	122	.1	2	5	263	3.12	5	5	ND	1	197	.3	2	2	10	3.12	.086	2	7	1.17	72	.01	3	.82	.02	.18	1	1	100
J91-14-123	1	13	3	134	.1	2	14	715	3.80	9	5	ND	1	205	.6	2	2	33	5.31	.132	4	7	2.06	58	.01	2	1.29	.03	.08	1	5	190
J91-14-124	1	13	2	126	.1	3	11	661	3.28	6	5	ND	1	131	.2	2	2	45	5.10	.099	4	10	2.27	84	.01	2	2.04	.02	.06	1	4	155
J91-14-125	2	11	4	145	.1	4	10	476	3.08	8	5	ND	1	130	.5	2	2	37	4.08	.075	3	8	1.75	94	.01	2	1.75	.03	.07	1	2	135
J91-14-126	1	17	4	172	.1	4	14	760	3.59	13	5	ND	1	128	.7	2	2	35	4.53	.149	4	9	1.56	115	.02	4	1.58	.06	.14	1	1	195
J91-14-127	1	16	6	146	.2	3	16	964	4.89	12	6	ND	1	146	.9	2	2	38	5.74	.162	5	9	1.07	112	.02	2	1.89	.06	.13	1	3	225
J91-14-128	2	13	5	149	.1	5	20	598	3.20	19	5	ND	1	123	.7	2	2	37	4.32	.162	5	8	1.29	137	.02	3	1.50	.07	.13	1	3	230
J91-14-129	2	15	7	106	.1	9	33	354	3.33	39	5	ND	1	82	.3	3	2	44	2.56	.144	4	7	1.45	115	.03	2	1.68	.05	.10	1	3	350
J91-14-130	2	13	5	101	.2	9	27	827	3.38	27	5	ND	1	158	.7	2	2	39	6.63	.122	4	11	1.12	60	.02	2	1.09	.05	.03	1	3	565
J91-14-131	2	11	7	144	.1	4	17	861	4.53	27	5	ND	1	137	.6	2	2	29	5.03	.159	5	7	1.54	100	.02	3	1.69	.06	.09	1	4	225
J91-14-132	1	11	10	152	.1	5	16	759	6.26	68	5	ND	1	76	.2	2	2	21	3.61	.134	2	8	1.35	63	.03	2	1.14	.04	.07	1	1	250
J91-14-133	1	8	5	125	.1	2	9	562	4.66	25	5	ND	1	129	1.3	2	2	21	4.50	.141	4	8	1.16	86	.02	2	1.19	.06	.13	2	2	270
J91-14-134	1	14	2	199	.3	6	18	836	9.53	75	8	ND	1	163	3.5	2	2	33	4.76	.140	4	10	1.79	57	.04	2	1.88	.08	.07	1	2	270
J91-14-135	2	12	2	133	.3	10	31	725	17.45	224	5	ND	1	90	2.3	2	2	27	2.52	.122	2	5	1.44	29	.02	2	1.35	.03	.03	1	4	680
J91-14-136	2	15	2	94	.2	11	34	892	7.19	91	5	ND	1	163	2.4	2	2	45	4.40	.171	4	8	2.16	57	.03	2	2.30	.05	.04	1	3	530
J91-14-137	3	9	7	76	.2	20	52	625	5.50	126	5	ND	1	120	.8	5	2	58	3.83	.138	4	7	1.45	34	.02	2	1.43	.06	.01	1	4	595
J91-14-138	4	9	2	42	.3	16	47	365	12.23	475	5	ND	1	55	.6	7	2	30	1.62	.078	2	5	.98	21	.02	2	.97	.04	.02	1	2	1050
J91-14-139	11	3	9	165	.3	19	47	455	14.40	781	5	ND	2	66	3.9	2	2	20	1.71	.032	2	14	1.00	12	.01	2	.73	.02	.02	1	4	1550
RE J91-14-135	1	14	2	136	.3	8	31	740	17.92	234	5	ND	1	98	3.0	2	2	29	3.15	.130	2	5	1.45	48	.04	2	1.48	.06	.04	1	2	630
J91-14-140	15	15	27	209	.4	14	34	1131	14.25	484	12	ND	1	248	8.0	3	2	26	5.13	.088	2	9	2.87	14	.01	2	1.65	.01	.01	1	4	1600
J91-14-141	18	28	33	402	.3	29	8	510	3.88	38	5	ND	1	131	3.7	3	2	15	2.73	.053	2	17	1.17	46	.01	2	.80	.02	.11	1	5	540
J91-14-142	25	31	19	271	.2	41	7	639	3.96	30	5	ND	1	152	2.7	3	2	30	4.65	.065	2	18	1.48	45	.01	2	.96	.02	.09	1	5	685
J91-14-143	33	37	23	317	.3	45	7	471	3.75	34	5	ND	1	139	2.6	4	2	23	3.53	.058	2	14	1.07	58	.01	2	.73	.02	.11	1	4	455
J91-14-144	36	41	21	339	.2	50	8	697	3.54	38	5	ND	1	147	2.8	7	2	18	4.74	.058	2	14	.82	68	.01	2	.64	.02	.12	1	5	425
J91-14-145	4	14	2	84	.1	8	6	697	4.47	11	5	ND	1	124	.7	2	2	41	3.29	.051	2	33	1.68	91	.01	2	2.17	.02	.05	1	5	40
J91-14-146	1	15	7	139	.1	3	15	542	7.46	7	5	ND	1	83	.2	2	2	99	1.16	.142	7	11	1.99	63	.02	2	3.41	.04	.07	1	11	65
J91-14-147	4	14	7	181	.1	5	16	772	5.23	32	5	ND	1	137	.2	2	2	47	3.46	.262	9	9	.73	67	.01	2	1.58	.06	.06	1	10	110
J91-14-148	5	16	15	1099	.4	6	25	696	7.15	97	5	ND	1	99	1.3	2	2	20	2.70	.172	7	16	.35	65	.01	3	1.19	.06	.12	5	2	955
J91-14-149	1	20	7	109	.3	20	26	1343	8.28	32	5	ND	1	239	.2	2	2	71	5.70	.093	4	25	1.75	93	.02	2	1.91	.07	.10	1	2	135
J91-14-150	6	8	14	102	.3	8	30	899	9.35	11	5	ND	1	132	.2	2	2	79	2.29	.077	3	10	1.50	70	.01	3	2.61	.03	.08	1	2	105
J91-14-151	4	13	7	133	.1	8	36	932	6.51	9	5	ND	1	190	.3	2	2	57	3.41	.205	5	13	1.12	94	.01	2	.65	.06	.15	1	2	35

GRANGES EXPLORATION LTD. [redacted]

DIAMOND DRILL LOG

UNUK RIVER PROJECT

HOLE No. J91-15 (JEFF GRID) COUL-3

PURPOSE: STRATIGRAPHIC

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
13+00N / 2+50E	455 m (ALTIM.)	270°	210.31 m
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-45	210.31 - 40°		
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED 01/10/91**
JEFF TESAR OCT. 02, 1991	J.T. THOMAS	B.Q.	**DATE COMPLETED 02/10/91**

SUMMARY LOG (m)

00 - 6.20 OVERBURDEN
6.20 - 31.88 FELSIC TO INTERMEDIATE MEDIUM TO COARSE PHYLLITIC TUFF
31.88 - 63.80 INTERMEDIATE MEDIUM TO COARSE PHYLLITIC TUFF
63.80 - 80.00 INTERMEDIATE MEDIUM TO LAPILLI PHYLLITIC TUFF
80.00 - 97.00 INTERMEDIATE TO FELSIC MEDIUM TO COARSE PHYLLITIC TUFF
97.00 - 100.90 BRECCIA / FAULT
100.90 - 112.55 INTERMEDIATE TO FELSIC MEDIUM TO COARSE PHYLLITIC TUFF
112.55 - 118.40 BRECCIA / FAULT
118.40 - 130.50 INTERMEDIATE TO FELSIC LAPILLI PHYLLITIC TUFF
130.50 - 131.80 FELSIC TO INTERMEDIATE LAPILLI TUFF (WITH MINOR FINE TO MEDIUM SANDSTONE)
131.80 - 139.50 FELSIC TO INTERMEDIATE LAPILLI TUFF WITH MINOR MUDSTONE AND SANDSTONE
139.50 - 156.20 COARSE GRAINED SANDSTONE
156.20 - 165.40 MUDSTONE + MEDIUM TO COARSE SANDSTONE + MINOR FINE TUFF
165.40 - 192.30 COARSE GRAINED SANDSTONE
192.30 - 210.31 FINE TO COARSE GRAINED SANDSTONE
210.31 END OF THE HOLE

SIGNIFICANT MINERALIZED INTERVALS (m)

93.90 - 94.10 6~7% Py ; bands, specks, disem.

HOLE No. J91-15

INTERVAL	C. LOSS	LITHOLOGY	C∠	L	S	M	A
00 - 6.20		OVERBURDEN (00 - 6.10 CASING)					
6.20 - 31.88		FELSIC TO INTERMEDIATE MEDIUM TO COARSE PHYLLITIC TUFF H.-wall contact not discernable. F-wall contact: gradational (bands). Grey in colour, granular texture with medium to coarse grain size. Phyllitic structure. Altered by silica and carbonated. In places intensely limonitic (secondary from pyrite?). Mineralized by traces of pyrite. Intensely phyllitic, in places wavey, in places contorted. Intensely ankeritic throughout the interval.	S1 40 S1 40 S1 40 S1 40 S1	3-2 BLC			Si-1 Cb-3
		11.80 - 12.25 Breccia / Fault? / H-wall contact 40° sharp. F-wall contact 30° sharp.		Bx-1			Li-3 Si-2 Cb-2
		12.25 - 21.00 Distinct change in the foliation pattern. Wavey foliation directions/planes, marked by quartz-carbonate stringers parallel to the foliation planes. Also presence of quartz-carbonate specks throughout the interval.	40 S1 35 S1 35 S1 35 S1	3-2 BLC 4 (av)			Cb-3 Si-1

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-15

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm	
1-2% Py narrow band and disseminated J91-	15-1	6.20	6.80	0.60	7	3.3	70	6	
Traces. Py. sampled as wall.	2	6.80	7.40	0.60	2	2.3	10	7	

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-15

INTERVAL	C. LOSS	LITHOLOGY
		23.10-24.38 Felsic to intermediate lapilli tuff, phyllitic. H-wall contact gradational. F-wall contact 25° sharp.
		26.80-27.00 Swarm of Quartz-carbon. stringers at all angles to the C.A.
31.88-63.80		INTERMEDIATE MEDIUM TO COARSE PHYLLITIC TUFF Grey in colour. Granular texture with medium to coarse grain size. Phyllitic texture. In places anasto-=mosing quartz-carbon. stringers / veinlets. In places minor Bands of fine grained tuff. Intensely altered by ankeritic narrow stringers parallel to the folia-=tion planes (regional alteration?) Foot-wall and Hang.-wall contact gradational.
		39.40 - 40.00 Breccia (core Broken up) flooded with quartz-carbonated matrix.

C.A. | L | S | M | A

3-2 B-C ± Qv

3-2 B-C ± Qv

2 B-C ±

Cb-3 Si-1

Cb-3 Si-1

Cb-3 Si-1

20 25 30 35 40

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-15

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm	
tr Py ; sampled as wall	3	31.88	32.53	0.65	1	0.1	2	2	
tr ~ 1% Py ; narrow stringers	4	32.53	33.23	0.70	2	0.3	5	2	
tr Py ; sampled as wall	5	33.23	33.85	0.62	1	0.1	2	2	
tr Py ; sampled as wall	6	33.85	34.80	0.95	1	0.6	9	2	
tr ~ 1% Py ; two narrow parallel bands	7	34.80	35.80	1.00	3	0.7	9	2	
tr Py ; sampled as wall.	8	35.80	36.58	0.78	2	0.1	2	2	

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91 - 15

INTERVAL	C. LOSS	LITHOLOGY	C	L	S	M	A
			20°				
			Si				
			Si 30				
			Si 35				Cb-3 Si-2
			Si 40				
			Si 45				
			Si 50				
			Si 55				
			Si 60				
			Si 45				
			Si 45				
			Si	2B-Ct			
			40 Si			Py	
			Si 50				
			Si 55				Cb-3 Si-2
			Si 35				
			Si 60				

40 45 50 55 60

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-15

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
tr Py; sampled as wall	9	50.20	50.70	0.50	1	0.1	2	2
tr Py; one narrow band	10	50.70	51.50	0.80	3	0.2	5	2
tr Py; sampled as wall	11	51.70	52.12	0.42	1	0.1	2	2
tr - 1% Py; disseminated	12	52.12	53.12	1.00	2	0.1	3	2
tr - 1% Py; narrow stringers	13	53.12	54.17	1.05	3	0.3	6	2
tr Py; sampled as wall	14	54.17	54.86	0.59	1	0.1	2	2

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-15

INTERVAL	C. LOSS	LITHOLOGY
63.80-80.00		INTERMEDIATE MEDIUM TO LAPILLI TUFF, PHYLLITIC H-wall contact gradational. Interval predominantly medium-grained with lapilli or coarse grained in places. Grey in colour. Granular texture with medium to coarse grain size. In places lapilli up to 2.5 cm. Foot wall contact gradational Intensely phyllitic. 68.80-69.00 Swarm of quartz-carbonate veinlets (up 10 cm in true thickness) Veinlets at 60° to C.A. at 69.90 Contorted foliation planes at 71.60 Contorted foliation planes

C.A. L S M A

2B-C± 2B-D± 2B-D²Q± 2B-D± 2B-C/b

Cb-3 Si-1 Si-3 Cb-2 Cb-3 Si-1

60 65 70 75 80

E.O.S.S.

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

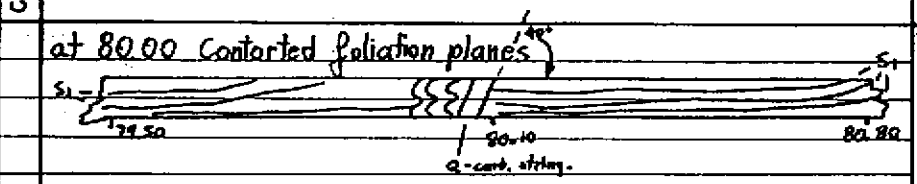
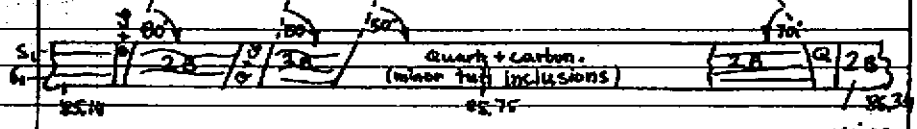
HOLE No. J91-15

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
1% Py; dissem, narrow bands, associated with quartz-carbonated stringers.	15	74.30	75.00	0.70	2	0.4	15	3		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J 91 - 15

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		at 80.00 Contorted foliation planes. 					C6-2 Si-1
80.00 - 97.00		INTERMEDIATE TO FELSIC MEDIUM TO COARSE PHYLLITIC TUFF Both contact walls gradational. In places wavey or contorted foliation planes. Ligh-grey in colour.					
		85.50 - 86.00 Quartz-carbonated vein at 50° to the C.A. 					
97.00-100.90		BRECCIA / FAULT Zone of crushed medium grained intermediate tuff flooded with quartz-carbonated matrix. Core Broken up. In places weakly chloritic / 20% core recovery from the interval. /					C6-3 Q-1 Si-1

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-15

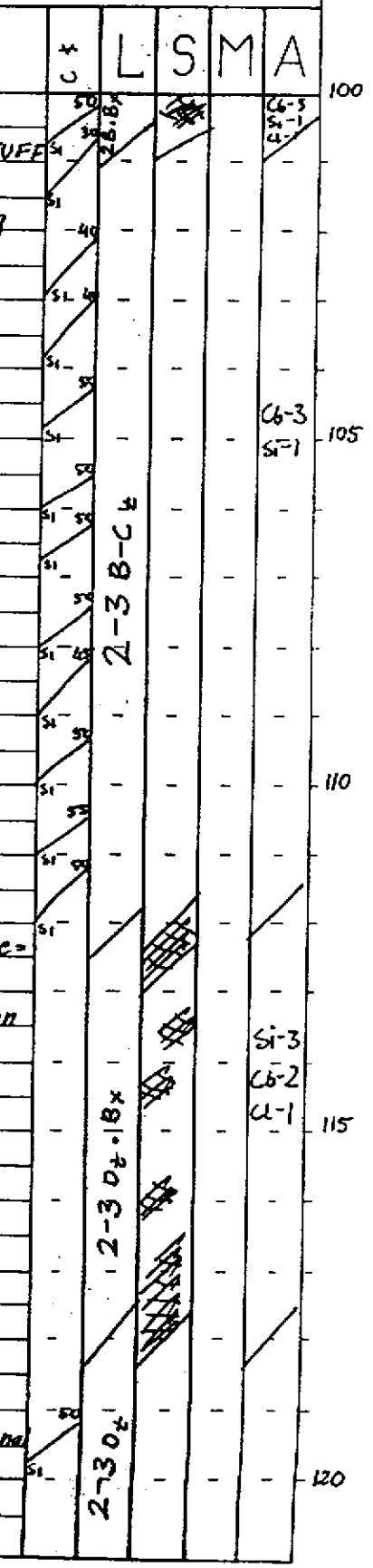
MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
tr Py; sampled as wall	16	89.35	90.15	0.80	2	0.2	10	2
1% Py; disseminated	17	90.15	91.00	0.85	4	0.5	13	4
tr Py; sampled as wall	18	91.00	91.60	0.60	1	0.2	16	8
tr Py; sampled as wall	19	93.40	93.90	0.50	1	0.3	30	8
6~7% Py; bands, stringers, specks, dissem.	20	93.90	94.10	0.20	83	2.8	328	13
tr Py; sampled as wall	21	94.10	95.00	0.90	2	0.2	34	4
tr ~1% Py; disseminated	22	95.00	96.50	1.50	1	0.4	38	6
— 11 —	23	96.50	97.80	1.30	2	0.3	52	6

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-15

INTERVAL	C. LOSS	LITHOLOGY
100.90 - 112.55		INTERMEDIATE TO FELSIC MEDIUM TO COARSE PHYLLITIC TUFF H-wall contact not discernable (core broken up) F-wall contact 45°, Ankeritic alteration along foliation planes throughout the interval.
112.55 - 118.40		BRECCA (FAULT) Bands or/and fragments of intermediate to felsic lapilli tuff flooded with quartz-carbonated matrix. Core broken up heavily, in places weakly chloritic. H-wall contact 45° F-wall contact 40° In places bands of gougy tuff (fault evidence)
118.40 - 130.50		INTERMEDIATE TO FELSIC LAPILLI TUFF PHYLLITIC H-wall contact 40°, F-wall contact gradational Grey in colour. Fragmental texture with lapilli fragments up 3 cm. In places phyllitic.



GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-15

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
tr Py	24	100.90	102.60	1.70	2	0.2	52	10
1% Py ; dissem.	25	102.60	104.10	1.50	3	0.3	8	6
1% Py ; dissem.	26	104.10	105.60	1.50	13	0.1	9	3
— " —	27	105.60	106.60	1.00	5	0.1	22	9
1% Py ; narrow bands, dissem.	28	106.60	108.10	1.50	2	0.2	33	6
— " —	29	108.10	109.60	1.50	6	0.2	96	4
— " —	30	109.60	111.10	1.50	6	0.2	50	4
— " —	31	111.10	112.84	1.14	14	0.2	39	2
tr Py ;	56	112.4	113.43	1.29				
— " —	57	113.43	114.43	1.0				
— " —	58	114.43	115.82	1.39				
— " —	59	115.82	116.75	0.93				
— " —	60	116.75	117.75	1.0				
— " —	61	117.75	118.40	0.65				
1-2% Py ; narrow string., dissem.	32	118.40	119.90	1.50	1390	24.6	675	25

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-15

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
			50 S1	-	-	/	-
				-	-	-	-
				-	-	/	-
			50 S1	-	-	B	-
				2-3 D_t	-	/	-
				-	-	-	-
				-	-	/	-
			50 S1	-	-	-	-
130.50 – 131.80		FELSIC TO INTERMEDIATE LAPILLI TUFF (WITH MINOR FINE TO MEDIUM GRAINED SANDSTONE) Light-grey tuff with dark-grey bands or/and inclusions of fine to medium grained sandstone. H-wall gradational contact (but 60°) foot-wall contact 60°, sharp.	60 S1	2-3 D_t (7L)	-	/	-
131.80 – 135.80		FINE TO MEDIUM GRAINED SANDSTONE (dark-grey in colour) with minor INTERMEDIATE TO FELSIC LAPILLI TUFF. H-wall contact 60° sharp. F-wall contact 75°. Predominantly sandstone, with clastic texture of fine to medium grain size. In places bands or inclusions of lapilli tuff (light-grey in colour)		1 7L1X-Y (2-3 D_t)	-	.	-
135.80 – 139.50		FELSIC TO INTERMEDIATE LAPILLI TUFF WITH MINOR MUDSTONE AND SANDSTONE H-wall contact 70°. Foot-wall contact 70°. Light grey to green-grey lapilli tuff with minor bands or inclusions of dark grey sandstone or Black mudstone. Phyllitic	70 S1	3-2 D_t • (7H, 7L)	-	.	-
				7L 2	-	.	-

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
1-2 % Py ; narrow string. dissem	33	119.90	121.40	1.50	1480	11.1	432	14
— " —	34	121.40	122.90	1.50	1820	98.9	279	45
— " —	35	122.90	124.40	1.50	90	4.0	42	3
— " —	36	124.40	125.90	1.50	15	1.4	26	2
— " —	37	125.90	127.50	1.60	9	0.6	26	2
— " —	38	127.50	129.00	1.50	8	0.5	25	2
— " —	39	129.00	130.50	1.50	43	1.4	56	2
tr ~ 1% Py ; dissem.	40	130.50	131.80	1.30	730	3.7	156	2
— " —	41	131.80	134.00	2.20	13	0.4	7	2
tr Py	42	134.00	135.60	1.60	3	0.1	2	2
— " —	43	135.60	137.10	1.50	2	0.2	2	2
— " —	44	137.10	138.60	1.50	4	0.2	7	2
— " —	45	138.60	140.00	1.40	3	0.1	14	2
— " —	46	140.00	141.41	1.41	4	0.1	12	2

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-15

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
139.50-156.20		COARSE GRAINED SANDSTONE Dark-grey in colour. Clastic texture with coarse grain size. Massive structure. H-wall contact 70° marked by narrow bands of mudstone. Foot-wall contact 50°. In places bands of mudstone					
		151.20-151.25 Light grey tuffaceous band at 50° to C.A.					
		151.40-152.30 Black mudstone intercalated with minor dark-grey sandstone. H-wall contact 50°. F-wall contact 55°. Both sharp. Mineralized By Py.					
156.20-165.40		MUDSTONE + MEDIUM TO COARSE SANDSTONE + MINOR FINE TUFF. Black mudstone of very fine grain size with dark-grey medium to coarse grained sandstone + minor light-grey fine tuff. H-wall contact 50°. F-wall contact gradational. In places phyllitic					

140 145 150 155 160

ZTL ZTL ZTL (23A)

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-15

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm	
tr Py; sampled wall	47	150.70	151.20	0.50	8	0.1	13	2	
1% Py; specks, dissem.	48	151.20	152.30	1.10	7	0.3	21	6	
tr Py; wall sample	49	152.30	152.80	0.50	4	0.2	30	4	
tr - 1% Py; dissem.	50	156.20	157.70	1.50	3	0.2	25	2	
— " —	51	157.70	159.20	1.50	3	0.1	18	2	
— " —	52	159.20	160.70	1.50	6	0.3	29	2	

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-15

INTERVAL	C. LOSS	LITHOLOGY
		163.20 - 163.95 Coarse grained sandstone. H-wall contact 30° F-wall contact 40° sharp.
165.40 - 192.30		COARSE GRAINED SANDSTONE. (In places narrow Black bands or inclusions of mudstone) H-wall gradational. F-wall contact gradational. Clastic texture with coarse grain size. Massive texture. Dark-grey in colour.
		168.15 - 168.60 Black mudstone with minor grey (in colour) coarse sandstone. H-wall contact 75°. Foot-wall contact 70°. Both contacts sharp.
		169.50 - 169.60 Band of Black mudstone at 70° to C.A.
		169.80 - 170.00 Band of Black mudstone at 75° to C.A.

C.A. | L | S | M | A

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-15

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm	
tr ~1% Py ; dissem.	53	160.70	162.20	1.50	11	0.3	33	2	
tr Py, sampled as wall	54	162.20	163.70	1.50	3	0.2	31	3	
— 11 —	55	163.70	165.40	1.70	5	0.3	47	6	

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J 91-15

INTERVAL	C. LOSS	LITHOLOGY	c.t.	L	S	M	A
		180.90 - 183.40 Black mudstone. H-wall contact gradational F-wall contact 50°. With minor sandstone bands (grey), and quartz-carbonate stringers. Weakly sericitic.					
		191.10 - 192.50 Black bands of mudstone poorly interbedded with minor grey coarse sandstone. Both walls contacts 65°. Sharp.					
192.50-210.31		FINE TO COARSE GRAINED SANDSTONE. (in places poorly interbedded/intercalated with minor mudstone) Clastic texture with fine to coarse grain size. Massive structure. In places quartz-carbonate stringers at all angles to the core axis.					

180 185 190 195 200

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91-15

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au g/t	Ag g/t	As ppm	Sb ppm		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J 91-15

INTERVAL	C. LOSS	LITHOLOGY	C ∡	L	S	M	A	
								200
				Z-Y-17				205
								210
210.31		END OF D.D.H.						
								215
								220

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-15

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au g/t	Ag g/t	As ppm	Sb ppm		

Sample J-91-15 91.0 m — **Fine Ankeritic Andesite Tuff (Unit 1/2A.cb); Early Ankerite-Quartz-Pyrite Veins; Late Ankerite-(Quartz) Veins**

Minor relic grains of plagioclase averaging 0.05-0.1 mm in size are set in a well foliated groundmass dominated by sericite with less abundant plagioclase, chlorite and opaque. Ankerite (20%) forms irregular patches and replacement lenses parallel to foliation.

Two early veins up to 2 mm wide parallel to foliation are dominated by ankerite, pyrite and quartz. Quartz commonly is recrystallized in comb-textured aggregates against pyrite grains.

A late vein up to 2.5 mm wide and a few small veinlets up to 0.2 mm wide are of very fine to fine grained ankerite with much less quartz. These are truncated or offset slightly along foliation, suggesting that later movement occurred along shear zones along the muscovite-rich layers.

Sample J-91-15 157.3 m — **Carbonate Altered Fine Latite Tuff (Unit 2B.cb): Ankerite Replacement Patches and Lenses; Calcite Veinlets**
(Note: no offcut block)

The largest fragments is of strongly altered porphyritic andesite. It contains 5-7% phenocrysts of plagioclase from 0.3-1 mm in size altered completely to ankerite, 1-2% hornblende phenocrysts altered to pale yellow chlorite-ankerite, and a few euhedral grains of apatite up to 0.12 mm long. The groundmass is an extremely fine grained aggregate of plagioclase altered moderately to strongly to ankerite, with wispy patches and seams dominated by sericite.

Several fragments up to 2 mm long are dominated by extremely fine grained chlorite oriented parallel to foliation. Some of these contain lensy inclusions of chlorite-opaque and of sericite oriented parallel to foliation. Textures in some suggest that they represent original pumice fragments.

One fragment 2 mm long is of carbonaceous argillite.

One layer about 1 mm wide contains moderately abundant fragments of quartz averaging 0.1-0.5 mm in size.

Minor original plagioclase crystals? averaging 0.3-1 mm in size are replaced completely by very fine to fine grained aggregates of ankerite.

The groundmass is dominated by extremely fine grained plagioclase altered strongly to ankerite, and sericite-rich seams and lenses parallel to foliation. Pyrite (0.3%) forms disseminated grains averaging 0.05-0.1 mm in size, and a few lenses up to 0.3 mm long.

A few patches up to a few mm across are replaced by very fine to fine grained ankerite.

Late veinlets up to 0.15 mm wide of calcite cut the foliation and the ankerite-alteration patches at a high angle.

Sample J-91-15 162.6 m Pebbly Siltstone (Unit 7K/L.9Y,zu)

The large fragment is of hypabyssal quartz diorite dominated by plagioclase with interstitial quartz. Plagioclase is altered slightly to patches of ankerite. Pyrite is common in a veinlike lens along one side of the large fragment; it forms subhedral to euhedral grains averaging 0.05-0.15 mm in size. Another fragment 1.7 mm across is of medium grained leucocratic diorite, in which plagioclase is altered moderately to sericite.

One fragment 4 mm long is of cherty quartz.

One fragment 2.5 mm across is of extremely fine grained latite, in which plagioclase is altered slightly to moderately to sericite.

One fragment 1.7 mm across is of slightly porphyritic latite.

One elongate fragment 1.7 mm long is of carbonaceous argillite containing abundant opaque.

Several fragments form 0.3-0.7 mm in size are of quartz or plagioclase aggregates and single grains. Most fragments are from 0.07-0.2 mm in size and are dominated by single grains of quartz and plagioclase.

The groundmass is dominated by sericite with minor wispy seams of Ti-oxide/opaque. Foliation is warped moderately to strongly in small folds.

A few tension fractures up to a few mm long and 2 mm across are of undeformed, fine grained quartz and minor ankerite.

Sample J-91-16 129.15 m Amygdaloidal Andesite Flow (Unit 1/2GaK); Quartz-Pyrite-Ankerite Replacement Patches and Veinlets

The rock is an extremely fine grained andesite flow containing a very few phenocrysts of plagioclase up to 0.5 mm in size and , minor lathy plagioclase grains averaging 0.03-0.05 mm in size in a groundmass of equant plagioclase and much less ankerite and chlorite, and minor opaque. A light yellow stain on the offcut block suggests moderate K-feldspar in the groundmass.

Amygdules (20%) average 0.3-1.5 mm in size and are of two main types, one dominated by extremely fine grained sericite with a thin rim of chlorite, and the other of single grains of calcite with commonly a thin rim of sericite. A few sericite-rich amygdules have a rim of very fine grained quartz.

Replacement patches and veinlets (8-10%) are of extremely fine to fine grained quartz, pyrite, and calcite. Interstitial to pyrite grains quartz was recrystallized to comb-textured aggregates.

SAMPLE	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Hg ppb	Au ppb	ppb
J91-15-1	6	21	35	35	373	5	41	1104	6.03	770	5	ND	1	56	92	6	2	14	2.14	228	6	7	.95	135	01	17	.58	.06	.23	61	7	40
J91-15-2	1	11	4	41	283	2	12	1329	5.85	10	5	ND	1	74	5	7	2	15	3.02	254	5	5	1.40	143	01	16	.57	.05	.25	1	2	20
J91-15-3	2	11	7	120	1	1	9	1255	5.29	2	5	ND	1	151	3	2	2	31	4.13	243	13	11	1.12	223	09	2	2.81	.10	.24	1	1	30
J91-15-4	6	17	10	120	3	1	12	1725	6.75	5	5	ND	1	198	2	2	2	33	4.64	168	10	7	1.30	184	04	6	2.12	.08	.17	1	2	25
J91-15-5	2	8	2	105	1	3	10	1329	4.22	2	5	ND	1	260	5	2	2	21	5.45	109	10	9	.90	210	05	2	1.97	.10	.21	1	1	35
J91-15-6	1	14	20	121	6	3	36	1305	6.65	9	5	ND	1	207	2	2	2	31	4.82	256	8	10	1.33	175	04	6	2.93	.08	.18	1	1	125
J91-15-7	2	14	16	107	7	3	21	1304	5.95	9	5	ND	1	239	8	2	2	27	5.43	237	7	9	1.00	198	05	3	2.46	.11	.22	1	3	60
J91-15-8	2	14	4	119	1	2	10	1245	5.56	2	5	ND	1	278	2	2	2	28	6.75	264	11	8	1.10	202	06	2	2.80	.09	.24	1	1	30
J91-15-9	1	29	5	77	1	26	25	1610	5.80	2	5	ND	1	236	2	2	2	100	10.09	043	4	56	1.37	86	01	2	3.03	.14	.08	1	1	10
J91-15-10	1	35	3	75	2	34	39	1424	6.64	5	5	ND	1	192	2	2	2	116	8.47	046	4	59	1.42	102	01	2	3.10	.13	.07	1	3	55
J91-15-11	1	29	2	71	1	32	31	1626	6.11	2	5	ND	1	247	2	2	2	101	10.90	047	4	56	1.43	174	01	2	3.01	.12	.06	1	1	85
J91-15-12	1	33	5	68	1	34	35	1392	5.73	3	5	ND	1	210	2	2	2	104	8.88	047	4	57	1.39	97	01	2	2.97	.14	.08	1	2	25
J91-15-13	1	30	6	69	3	27	25	1651	6.32	6	5	ND	1	263	2	2	2	104	10.47	043	4	54	1.53	117	01	3	2.97	.13	.08	1	3	15
J91-15-14	1	33	4	70	1	28	26	1413	5.96	2	5	ND	1	228	2	2	2	115	8.45	044	4	64	1.57	102	01	2	3.24	.16	.08	1	1	20
J91-15-15	1	32	6	73	4	32	35	1306	6.46	15	5	ND	1	227	2	3	2	92	7.47	048	3	51	1.86	95	01	4	2.78	.09	.22	1	2	60
J91-15-16	1	24	2	52	2	20	21	1919	4.98	10	5	ND	1	210	2	2	2	48	9.81	041	3	31	2.39	78	01	6	1.59	.06	.28	1	2	65
J91-15-17	1	29	5	60	5	24	27	1982	6.11	13	5	ND	1	347	2	4	2	46	12.39	037	3	29	2.45	61	01	4	1.61	.04	.22	1	4	40
J91-15-18	1	41	2	60	2	27	28	1492	6.43	10	5	ND	1	197	2	8	2	70	6.87	027	3	39	2.17	83	01	2	2.60	.07	.29	1	1	10
J91-15-19	1	18	2	53	3	26	25	1391	6.18	30	5	ND	1	244	2	8	2	61	6.37	040	3	37	2.30	88	01	4	2.32	.05	.34	1	1	25
J91-15-20	1	60	41	67	238	40	55	1617	13.18	328	5	ND	1	108	93	13	2	44	4.80	032	2	24	2.50	50	01	7	1.29	.03	.22	1	83	65
J91-15-21	1	32	9	171	2	27	29	1593	6.91	34	5	ND	1	152	110	4	2	71	6.28	045	3	38	2.46	92	02	3	2.49	.06	.30	1	2	50
J91-15-22	1	25	34	146	4	27	28	1615	6.46	18	5	ND	1	162	9	6	2	73	5.83	042	3	38	2.73	73	02	5	2.56	.06	.33	1	1	55
J91-15-23	1	24	11	63	3	24	28	2168	5.98	52	5	ND	1	201	6	6	2	38	8.48	036	2	23	3.47	52	01	2	1.37	.03	.23	1	2	35
J91-15-24	1	33	14	124	2	35	40	1329	6.62	52	5	ND	1	146	9	10	2	79	4.77	036	3	41	2.24	80	03	2	2.44	.07	.33	1	2	40
J91-15-25	1	28	12	82	3	30	32	1581	6.51	8	5	ND	1	155	4	6	2	64	6.71	034	3	38	2.74	79	02	5	2.27	.06	.33	1	3	30
J91-15-26	12	22	6	72	1	21	25	2169	5.70	9	5	ND	1	171	76	3	2	34	9.98	031	2	20	3.47	65	01	2	1.18	.03	.22	1	13	55
J91-15-27	1	26	8	85	1	25	32	1845	5.69	22	5	ND	1	157	9	9	2	34	9.28	035	2	19	3.22	53	01	2	.94	.03	.27	1	5	50
J91-15-28	1	28	12	104	2	28	35	1630	5.53	33	5	ND	1	150	8	6	2	43	8.04	038	3	24	2.90	75	01	2	1.29	.05	.31	1	2	65
J91-15-29	1	27	5	67	2	29	35	1575	6.16	42	5	ND	1	172	15	4	2	50	7.57	039	3	31	2.70	65	01	2	1.80	.04	.30	1	6	30
J91-15-30	1	26	5	62	2	27	32	1707	5.97	50	5	ND	1	216	3	4	2	55	7.38	035	3	34	2.63	61	01	2	2.07	.04	.34	1	6	25
J91-15-31	1	31	2	62	2	27	26	1744	5.51	39	5	ND	1	155	210	2	2	48	7.23	041	2	31	2.90	106	02	3	2.41	.05	.40	1	14	25
J91-15-32	12	24	58	159	2416	10	26	2521	4.17	675	5	ND	1	130	216	25	2	37	2.97	053	2	15	1.75	81	01	3	.88	.01	.21	1	1390	320
J91-15-33	5	16	30	109	1041	5	21	3055	4.42	432	5	ND	1	115	18	14	2	62	2.80	061	2	24	3.23	97	02	2	2.20	.01	.29	1	1480	205
J91-15-34	6	44	233	230	98.9	8	25	2529	4.16	279	5	3	1	94	11	45	2	77	2.02	058	3	34	3.21	119	02	2	2.44	.01	.34	1	1820	2500
J91-15-35	1	15	14	83	4.0	6	25	2538	4.81	42	5	ND	1	82	112	3	2	83	1.86	057	3	35	3.82	103	02	2	3.33	.01	.29	1	90	65
J91-15-36	1	11	2	74	1.4	7	22	1920	4.96	26	5	ND	1	92	2.5	2	2	67	1.86	053	2	30	3.45	104	02	2	3.38	.01	.36	1	15	35
J91-15-37	1	13	28	143	6	6	27	1634	5.94	26	5	ND	1	89	1.9	2	2	94	2.27	057	3	40	3.91	92	03	2	3.79	.04	.23	1	9	30
J91-15-38	1	13	3	156	5	5	22	1668	5.48	25	5	ND	1	90	2.9	2	2	115	2.26	054	3	41	3.91	67	03	2	3.97	.09	.19	1	8	40
J91-15-39	1	14	31	115	1.4	10	24	1946	5.06	156	5	ND	1	71	1.7	2	2	92	1.44	042	3	25	3.30	105	03	2	3.21	.02	.29	1	43	60
J91-15-40	2	24	54	241	3.7	9	23	2846	7.26	156	5	ND	1	72	1.8	2	2	98	1.41	049	3	23	4.01	113	04	2	4.16	.01	.22	1	730	105
J91-15-41	1	32	2	74	4	16	17	970	4.92	2	5	ND	2	141	110	2	2	57	2.40	076	9	26	1.60	102	03	2	2.67	.05	.37	1	13	15
J91-15-42	1	12	2	60	1	13	14	1068	4.45	2	5	ND	2	192	1.6	2	2	50	3.41	073	9	23	1.11	115	03	2	2.38	.06	.44	1	3	15
J91-15-43	1	79	5	98	2	11	16	1403	4.96	2	5	ND	1	144	1.0	2	2	38	2.95	122	8	11	1.69	258	02	3	2.50	.02	.51	1	2	20
J91-15-44	1	73	4	105	2	9	18	1418	6.08	7	5	ND	1	126	2.1	2	2	47	2.48	117	7	9	1.83	151	03	3	2.89	.04	.45	1	4	30
J91-15-45	1	69	6	104	1	10	17	1067	4.44	14	5	ND	1	118	6	2	2	27	2.33	081	4	6	1.08	172	01	2	1.35	.01	.36	1	3	40
J91-15-46	2	26	12	41	1	11	9	421	2.19	12	5	ND	1	114	5	2	2	7	1.68	048	3	5	.30	122	01	2	.52	.03	.36	1	4	25
J91-15-47	1	34	7	38	1	12	10	333	2.70	15	5	ND	1	121	6	2	2	9	1.60	090	3	4	.40	95	01	3	.82	.03	.37	1	8	35
J91-15-48	1	99	11	73	3	20	13	271	3.23	21	5	ND	2	81	2	6	2	11	.66	065	4	5	.41	93	01	3	.86	.02	.30	1	7	45
J91-15-49	1	23	9	42	2	9	7	2115	2.75	30	5	ND	1	532	9	4	2	9	10.05	032	2	3	3.47	68	01	2	.40	.03	.22	1	4	20
J91-15-50	1	85	5	86	2	12	16	1020	4.86	25	5	ND	1	204	4	2	2	32	3.97	101	4	6	.97	119	01	2	1.13	.01	.29	1	3	35
J91-15-51	1	100	3	108	1	10	18	644	5.51	18	5	ND	1	165	1.2	2	2	35	2.17	064	4	8	.95	194	02	2	2.34	.02	.37	1	3	25
J91-15-52	1	92	8	98	3	14	20	679	4.54	29	5	ND	2	130	7	2	2	22	1.94	103	4	5	.81	197	01	2	1.91	.01	.33	1	6	40
J91-15-53	1	220	6	87	3	13	18	1091	4.96	33	5	ND	3	167	1.6	2	2	22	2.79	123	4	6	1.17	143	01	3	1.35	.02	.46	1	11	35
J91-15-54	1	57	13	84	2	16	13	713	3.44	31	5	ND	2	146	3	3	2	12	2.33	090	3	4	1.04	94	01	4	1.18	.02	.36	1	3	110
J91-15-55	1	66	18	106	3	31	16	541	4.01	17	5	ND	2	97	2	6	2	11	1.62	074	2	5	.62	106	01	2	1.02	.02	.28	1	5	50
J91-15-56	1	12	5	59	3	19	23	1782	5.72	64	5	ND	1	209	2	2	2	30	5.80	057	2	13	3.33	30	01	2	1.84	.01	.12	1	2	90
J91-15-57	1	11	6	62	2	10	27	920	5.07	42	5	ND	1	96	2	2	2	29	2.10	145	3	9	1.65	55	01	2	1.91	.01	.17	1	11	40
J91-15-58	1	32	2	217	1	9	31	726	8.65	48	5	ND	1	98	2	2	2	75	1.79	088	3	10	2.06	47	01	5	2.84	.01	.20	1	18	110
RE 8366	1	116	22	142	11	44	14	667	3.92	18	5	ND	1	413	2	2	2	23	5.36	066	4	28	1.29	57	01	2	1.81	.02	.17	1	1	200
J91-15-59	1	14	2	28	1	7	13	1018	4.21	19	5	ND	1	121	2	2	2	29	3.20	052	2	23	1.42	28	01	7	.95	.01	.14	1	3	30
J91-15-60	1	12	8	87	1	7	20	947	4.79	36	5	ND	1	124	2	2	2	27	2.81	063	2	8	1.46	39	01	6	1.20	.01	.15	1	12	60
J91-15-61	1	20	9	114	1	8	26	1289	5.37	89	5	ND	1	169	2	2	2	28	3.76	075	2	8	1.84	78	01	4	1.28	.01	.15	1	15	100

Sample J-91-15 162.6 m **Pebbly Siltstone (Unit 7K/L.9Y,Zu)**

The large fragment is of hypabyssal quartz diorite dominated by plagioclase with interstitial quartz. Plagioclase is altered slightly to patches of ankerite. Pyrite is common in a veinlike lens along one side of the large fragment; it forms subhedral to euhedral grains averaging 0.05-0.15 mm in size. Another fragment 1.7 mm across is of medium grained leucocratic diorite, in which plagioclase is altered moderately to sericite.

One fragment 4 mm long is of cherty quartz.

One fragment 2.5 mm across is of extremely fine grained latite, in which plagioclase is altered slightly to moderately to sericite.

One fragment 1.7 mm across is of slightly porphyritic latite.

One elongate fragment 1.7 mm long is of carbonaceous argillite containing abundant opaque.

Several fragments form 0.3-0.7 mm in size are of quartz or plagioclase aggregates and single grains. Most fragments are from 0.07-0.2 mm in size and are dominated by single grains of quartz and plagioclase.

The groundmass is dominated by sericite with minor wispy seams of Ti-oxide/opaque. Foliation is warped moderately to strongly in small folds.

A few tension fractures up to a few mm long and 2 mm across are of undeformed, fine grained quartz and minor ankerite.

Sample J-91-16 129.15 m **Amygdaloidal Andesite Flow (Unit 1/2GaK); Quartz-Pyrite-Ankerite Replacement Patches and Veinlets**

The rock is an extremely fine grained andesite flow containing a very few phenocrysts of plagioclase up to 0.5 mm in size and , minor lathy plagioclase grains averaging 0.03-0.05 mm in size in a groundmass of equant plagioclase and much less ankerite and chlorite, and minor opaque. A light yellow stain on the offcut block suggests moderate K-feldspar in the groundmass.

Amygdules (20%) average 0.3-1.5 mm in size and are of two main types, one dominated by extremely fine grained sericite with a thin rim of chlorite, and the other of single grains of calcite with commonly a thin rim of sericite. A few sericite-rich amygdules have a rim of very fine grained quartz.

Replacement patches and veinlets (8-10%) are of extremely fine to fine grained quartz, pyrite, and calcite. Interstitial to pyrite grains quartz was recrystallized to comb-textured aggregates.

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WHOLE ROCK ICP ANALYSIS

Granges Inc. PROJECT: JNUK RIVER File # 91-5479 Page 1

2300 - 885 W. Georgia St., Vancouver, B.C. V6C 3E8

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	La ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
J91-2-21.2	72.05	11.60	3.88	.77	.70	.05	6.54	1.98	.03	.01	.007	1106	25	26	122	24	20	2.9	100.01
J91-3-15.5	65.00	9.95	8.69	.35	.70	.12	7.90	1.76	.59	.01	.003	2249	87	18	131	41	23	4.5	99.99
J91-7-35.0	37.49	13.50	6.85	4.77	15.74	4.54	.83	1.18	.18	.26	.015	387	623	10	194	23	20	14.6	100.33
J91-7-39.0	38.34	12.43	7.71	3.09	17.06	5.83	.20	1.36	.25	.47	.012	789	860	10	105	25	20	13.4	100.29
J91-8-65.2	63.84	13.75	5.44	1.62	1.80	.09	8.28	1.54	.26	.06	.005	1722	101	14	172	25	20	4.0	100.06
J91-10-69.0	69.41	11.33	4.44	.37	.76	.11	7.79	1.95	.57	.01	.004	2136	88	10	126	31	20	2.9	100.02
J91-11-88.0	54.61	15.27	4.72	2.17	5.68	5.42	1.84	1.32	.22	.19	.019	1373	233	10	59	7	61	8.4	100.14
J91-12-166.5	53.85	14.26	9.63	2.72	5.32	1.62	3.66	1.80	.60	.25	.002	784	243	13	113	26	48	6.0	100.10
J91-12-175.6	56.93	13.43	7.78	3.63	3.87	.66	5.03	.77	.26	.35	.006	1046	147	12	86	9	24	7.2	100.13
J91-15-91.0	29.07	13.20	11.60	6.70	6.67	1.57	2.72	1.08	.19	.54	.012	707	246	10	45	16	44	16.9	100.42
J91-16-129.15	46.04	15.77	9.14	4.43	7.04	1.89	5.52	1.53	.31	.27	.007	1010	141	10	72	18	87	8.0	100.16
J91-17-89.6	59.10	13.03	8.62	3.16	4.53	4.09	.66	1.52	.29	.16	.002	288	247	25	154	37	79	5.0	100.08
J91-17-149.0	65.12	12.13	6.33	2.70	1.77	.08	7.63	1.31	.35	.18	.003	2173	130	17	115	22	76	3.0	100.02
J91-17-172.0	57.65	12.90	11.38	5.32	1.92	.09	5.52	1.39	.44	.33	.002	1518	75	22	166	56	66	3.8	100.05
J91-18-76.1	59.22	15.23	7.64	3.94	1.93	2.01	4.22	2.01	.45	.11	.002	1891	109	21	163	50	60	3.9	100.03
J91-18-77.3	59.74	16.41	4.76	3.19	1.25	.28	5.96	1.42	.07	.06	.010	897	37	24	161	51	41	7.8	100.14
J91-18-89.0	60.81	10.80	10.64	3.04	2.22	.06	5.67	1.18	.29	.25	.005	3724	247	15	148	42	24	4.4	100.06
J91-18-94.7	62.99	12.76	8.13	2.02	.87	1.45	7.23	1.40	.36	.10	.002	3086	126	20	166	35	77	2.1	99.99
J91-18-123.4	62.26	11.54	9.78	2.93	.51	.18	7.14	1.23	.34	.23	.002	1350	80	18	91	39	30	3.6	100.00
J91-20-74.8	49.69	10.77	14.85	6.84	6.50	.43	.70	.98	.32	.62	.002	123	150	21	94	32	26	8.4	100.16
J91-21-49.0	46.62	14.41	15.25	1.76	2.21	4.99	1.55	2.04	.62	.07	.002	877	289	23	168	28	59	10.5	100.24
J91-22-45.0	62.61	10.92	9.01	2.19	1.036	.39	1.93	1.59	.39	.09	.002	1113	81	16	113	28	20	9.5	100.20
J91-22-130.2	46.62	15.29	16.18	4.12	2.17	4.21	.95	3.27	.65	.15	.002	203	109	23	181	44	46	6.4	100.10
J91-22-177.1	55.90	18.36	6.80	2.60	.93	.09	8.93	2.00	.53	.12	.002	1314	99	28	166	36	90	3.5	100.04
J91-22-183.0	68.23	14.40	3.44	2.42	.49	.05	6.92	.66	.14	.08	.002	1035	63	33	206	31	79	3.0	100.04
J91-22-208.5	70.20	13.65	3.76	2.55	.71	.05	5.78	.94	.10	.10	.002	1119	38	26	152	15	53	2.6	100.02
J91-22-211.5	54.36	15.48	10.93	8.35	.25	.05	3.38	1.51	.23	.33	.005	609	40	10	85	21	28	5.1	100.05
J91-24-164.7	44.84	16.27	14.50	5.09	5.21	.07	4.42	1.60	.49	.28	.002	1213	665	21	176	20	86	6.5	100.08
RE J91-22-177.1	55.80	18.19	6.84	2.66	.97	.05	9.13	1.97	.53	.12	.002	1296	100	30	167	35	77	3.5	100.02
J91-24-207.3	54.95	12.97	11.80	3.86	4.71	.06	4.27	1.55	.40	.25	.002	1694	250	19	133	28	47	4.7	100.07
J91-25-26.9	51.21	15.96	7.89	2.11	7.49	3.81	2.90	2.43	.57	.26	.002	1247	335	21	140	27	108	5.1	100.04
J91-25-45.4	50.89	15.41	8.40	1.83	7.44	3.94	2.88	2.43	.54	.19	.002	974	246	23	141	25	70	5.9	100.08
J91-26-42.4	51.52	16.07	10.06	2.73	7.08	.16	4.72	1.38	.35	.23	.002	1876	237	33	183	45	79	5.4	100.09
J91-26-105.2	57.90	12.68	8.98	3.31	4.84	.05	4.55	1.63	.48	.41	.002	1228	129	23	117	29	62	5.0	100.08
J91-27-32.65	54.73	16.02	6.47	3.42	5.71	4.09	1.85	2.35	.60	.15	.002	1756	339	14	134	26	20	4.3	100.05
J91-27-60.5	74.21	9.88	3.60	.88	1.98	4.12	.73	1.79	.47	.06	.002	800	166	14	103	18	24	2.1	100.00
J91-27-68.0	57.38	14.99	8.47	3.90	3.52	1.92	2.53	2.39	.62	.07	.002	2205	162	20	164	36	29	5.9	100.11
STANDARD SO-4	67.81	10.29	3.56	.98	1.61	1.33	2.05	.57	.23	.13	.005	795	207	29	321	23	20	11.2	99.98

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3.
- SAMPLE TYPE: CORE Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: NOV 15 1991 DATE REPORT MAILED: Nov 30/91. SIGNED BY: D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

J91-16

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
A001	7	49	113	419	1.9	18	11	1220	4.23	31	5	ND	1	194	3.1	7	2	14	4.47	.077	3	5	1.36	109	.01	4	.92	.01	.30	1	2	215
A002	23	30	220	2215	5.1	30	6	1995	5.23	36	6	ND	1	124	17.1	19	2	7	5.85	.066	4	5	1.63	58	.01	3	.43	.01	.26	1	4	1650
A003	25	31	506	2696	3.8	30	7	1053	4.20	32	5	ND	1	124	19.9	18	2	6	4.14	.070	4	6	1.23	61	.01	3	.42	.01	.29	1	10	1500
A004	29	29	198	977	3.8	36	7	1553	4.82	41	5	ND	1	87	7.2	19	2	9	3.80	.081	4	3	1.04	60	.01	3	.39	.01	.31	1	19	715
A005	33	37	78	642	2.6	41	7	758	3.95	39	5	ND	1	186	4.5	19	2	10	5.72	.069	2	3	1.19	69	.01	2	.39	.01	.23	1	2	470
A006	25	33	45	126	1.7	32	7	579	3.60	33	5	ND	1	158	1.3	14	2	6	4.70	.060	3	2	.88	66	.01	2	.35	.01	.24	1	6	305
A007	19	35	71	888	2.7	24	6	822	3.97	32	5	ND	1	170	6.5	10	2	8	4.99	.071	3	4	1.31	54	.01	2	.40	.02	.19	1	15	715
RE A003	25	35	510	2725	4.0	29	7	1053	4.23	35	5	ND	1	128	19.8	16	2	6	4.19	.070	4	6	1.25	56	.01	3	.42	.01	.29	1	7	1700
A008	12	25	17	180	.5	19	9	1064	3.55	21	5	ND	1	258	1.6	6	2	24	8.26	.085	2	3	1.70	71	.01	2	.90	.01	.17	1	4	420
A009	7	24	11	169	.3	18	7	242	4.00	15	5	ND	1	84	.8	2	2	8	1.30	.050	2	4	.99	69	.01	2	.98	.02	.19	1	2	825
A010	8	22	14	177	.3	15	6	407	4.17	15	5	ND	1	133	1.1	2	2	10	3.06	.075	2	2	1.33	62	.01	2	.68	.03	.22	1	2	680
A011	12	25	10	200	.2	22	7	483	4.34	16	5	ND	2	147	1.5	2	2	13	3.94	.073	2	2	1.52	53	.01	2	.51	.02	.18	1	4	770
A012	8	42	18	140	.3	17	6	421	4.31	13	5	ND	3	100	.6	2	2	11	2.89	.072	2	6	1.20	48	.01	5	.56	.03	.18	1	7	690
A013	8	27	15	152	.2	20	8	263	4.70	17	5	ND	2	94	.8	2	2	12	1.94	.067	2	5	.92	43	.01	3	.76	.04	.22	1	7	775
A014	27	32	14	156	.3	35	6	845	4.63	29	5	ND	1	142	1.1	12	2	14	4.55	.077	3	6	1.55	54	.01	3	.41	.02	.20	1	3	585
A015	31	32	17	201	.3	44	7	587	3.88	43	5	ND	1	182	1.5	11	2	14	6.11	.052	2	5	.98	64	.01	3	.34	.03	.16	1	3	1150
A016	35	42	16	218	.4	49	8	587	3.83	47	5	ND	1	131	1.8	10	2	19	6.56	.075	2	7	1.17	71	.01	4	.33	.03	.15	1	2	1600
A017	37	40	18	223	.3	50	7	628	3.88	45	5	ND	1	133	1.7	10	2	17	6.55	.073	3	6	1.13	71	.01	5	.35	.03	.14	1	3	1500
A018	25	38	19	277	.4	37	6	505	3.21	35	5	ND	1	180	2.2	7	2	12	6.25	.063	3	5	1.19	92	.01	2	.39	.03	.14	1	6	830
A019	15	22	13	148	.2	23	5	936	3.26	21	5	ND	1	362	1.0	4	2	16	13.14	.064	3	4	1.01	94	.01	2	.77	.02	.08	1	1	285
A020	10	10	17	120	.1	4	10	531	5.89	5	5	ND	1	79	.2	2	2	30	1.31	.079	10	7	1.41	113	.02	2	2.77	.04	.18	1	3	50
A021	14	11	34	707	.5	7	24	638	6.15	52	5	ND	2	104	5.3	6	2	42	1.63	.089	6	8	1.38	140	.01	4	2.09	.02	.20	2	4	255
A022	2	8	13	127	.3	3	14	1172	5.92	16	5	ND	1	212	.2	5	2	41	4.06	.087	7	9	1.67	97	.03	3	2.38	.05	.20	1	2	55
A023	4	8	12	133	.2	3	16	982	5.99	23	5	ND	1	150	.2	8	2	50	3.48	.088	6	13	1.73	82	.03	5	2.70	.04	.21	1	5	75
A024	1	8	8	106	.2	6	23	929	6.86	44	5	ND	1	125	.2	9	2	55	3.53	.059	3	19	2.04	78	.02	4	3.08	.01	.19	1	3	115
A025	1	7	11	102	.1	5	24	1195	6.06	23	5	ND	1	164	.2	8	2	57	3.79	.062	4	20	2.33	97	.03	2	3.11	.01	.22	1	3	80
A026	2	8	11	106	.1	6	24	995	6.33	29	5	ND	1	136	.2	9	2	52	3.02	.053	5	18	2.25	94	.02	4	3.09	.02	.21	1	1	80
A027	1	8	4	99	.2	6	25	1340	5.55	18	5	ND	1	238	.2	5	2	55	5.76	.054	2	20	2.30	114	.02	3	2.42	.02	.20	1	1	80
A028	1	9	10	70	.1	6	25	1506	6.44	16	5	ND	1	232	.2	6	2	96	5.72	.054	2	26	3.02	76	.03	4	2.80	.05	.20	1	1	75
A029	1	11	9	114	.1	9	29	1054	6.57	25	5	ND	1	140	.2	9	2	94	3.75	.036	3	23	2.47	69	.02	2	2.71	.03	.20	1	1	95
A030	1	10	10	68	.2	8	30	1188	6.52	27	5	ND	1	163	.2	10	2	86	4.67	.053	2	22	2.34	63	.01	3	1.99	.04	.11	1	3	125
A031	1	6	7	67	.1	7	19	1588	4.62	30	5	ND	1	189	.2	9	2	37	7.23	.029	2	9	2.52	58	.01	2	.83	.01	.13	1	3	100
A032	4	9	11	140	.1	9	32	774	4.49	53	5	ND	1	115	.2	7	2	40	3.30	.047	3	12	1.80	103	.01	2	1.60	.01	.19	1	2	185
A033	5	8	2	55	.3	7	26	2363	4.85	130	5	ND	1	161	.2	13	2	17	7.66	.057	2	9	2.00	68	.01	2	.33	.02	.17	1	2	690
A034	31	6	5	92	1.0	5	21	1810	12.54	313	5	ND	1	130	.2	14	2	17	5.14	.055	2	6	1.58	31	.01	2	.52	.02	.22	1	5	240
A035	2	8	7	78	2.2	7	30	1683	6.17	56	5	ND	1	132	.2	12	2	13	3.93	.073	2	6	1.35	47	.01	3	.41	.02	.25	1	7	180
RE A031	1	6	9	69	.2	6	20	1622	4.81	30	5	ND	1	195	.2	10	2	37	7.16	.029	2	9	2.51	60	.01	2	.82	.02	.14	1	4	100
A036	1	9	6	168	1.6	8	35	769	3.76	31	5	ND	1	133	.2	9	2	15	3.04	.084	2	7	.39	64	.01	2	.40	.03	.28	1	1	185
A037	1	9	5	125	1.2	7	29	1043	2.95	31	5	ND	1	175	.2	8	2	16	4.75	.079	3	6	.53	109	.01	2	.47	.02	.33	1	1	190
A038	1	6	5	102	.5	4	23	1102	5.16	16	5	ND	1	197	.2	2	2	44	5.42	.063	3	11	1.26	135	.01	2	1.05	.03	.27	1	1	75
A039	1	6	5	88	1.1	5	21	1592	4.24	27	5	ND	1	221	.2	8	2	23	7.00	.057	3	7	1.73	95	.01	2	.51	.02	.25	1	1	210
A040	1	5	5	99	.5	4	21	1204	4.97	17	5	ND	1	189	.2	3	2	48	5.89	.059	3	15	1.30	73	.02	2	1.68	.03	.29	1	3	95
A041	1	3	3	91	.3	3	21	1440	5.66	35	5	ND	1	202	.2	2	2	64	6.63	.060	3	11	1.68	78	.02	2	2.12	.03	.24	1	3	95
A042	1	5	6	101	.3	3	20	1084	4.92	20	5	ND	1	170	.2	2	2	62	5.17	.065	3	15	1.39	82	.02	3	2.21	.04	.27	1	3	50
A043	1	7	5	73	.1	4	20	1164	5.26	17	5	ND	1	197	.2	2	2	63	5.33	.052	2	25	1.95	64	.02	2	2.54	.04	.22	1	2	10
A044	1	6	3	74	.2	5	27	1073	6.04	27	5	ND	1	195	.2	7	2	68	5.11	.055	2	24	2.10	74	.02	2	2.69	.04	.24	1	1	25
A045	1	7	4	77	.3	5	24	1162	5.92	40	5	ND	1	204	.2	5	2	55	5.56	.053	3	23	1.82	72	.02	2	2.25	.03	.25	1	3	110
A046	1	5	7	83	.2	4	23	944	5.90	18	5	ND	1	168	.2	4	2	64	4.36	.058	3	24	2.00	78	.02	2	2.71	.03	.30	1	5	25
A047	1	5	7	73	.6	5	24	964	6.39	24	5	ND	1	123	.2	9	2	40	3.66	.059	3	17	1.34	54	.01	2	1.52	.02	.34	1	6	45

	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppb	ppb
A048	8	25	47	429	6.9	8	26	1239	11.81	143	5	ND	2	82	2.5	10	2	26	2.66	.053	2	8	1.38	28	.01	2	.97	.01	.28	1	120	270
A049	1	10	2	110	.6	7	29	1272	5.63	32	5	ND	1	220	1.1	2	2	58	6.33	.062	2	20	2.05	73	.01	2	2.65	.02	.32	1	14	45
A050	1	10	2	92	.1	6	26	1012	5.90	32	5	ND	1	209	.6	2	2	77	6.00	.061	3	24	2.09	52	.02	2	3.33	.02	.27	1	5	25
A051	1	12	2	93	.1	5	25	1305	6.66	51	5	ND	1	256	1.0	2	2	75	7.62	.059	3	25	2.04	47	.02	2	3.28	.03	.26	1	2	50
A052	1	8	3	129	.4	6	27	1277	6.83	32	5	ND	1	140	.9	2	2	95	4.22	.071	3	24	2.10	88	.02	3	3.28	.03	.27	1	10	60
A053	1	11	3	74	.7	8	32	1538	5.28	45	5	ND	1	112	.2	6	2	68	3.86	.079	2	21	1.78	49	.01	2	2.14	.02	.28	1	2	60
A054	2	8	2	109	.3	7	19	1642	5.17	22	5	ND	1	75	.5	2	2	70	3.27	.048	2	18	2.78	38	.01	2	2.89	.01	.19	1	4	110
A055	4	7	3	170	.6	9	26	1323	5.32	34	5	ND	1	54	1.0	3	2	60	2.67	.055	4	15	2.89	31	.01	2	3.04	.01	.24	1	17	60
A056	5	10	12	149	1.2	6	22	1100	5.91	58	5	ND	1	55	.3	5	2	59	1.46	.064	3	16	2.48	37	.01	2	3.06	.01	.23	1	12	165
A057	6	12	32	171	1.2	8	24	1962	5.47	83	5	ND	1	100	.6	3	2	50	2.42	.075	2	12	2.12	39	.01	2	2.30	.01	.30	1	3	225
A058	7	13	42	363	1.3	23	38	1004	6.81	204	5	ND	1	30	1.2	10	2	77	.37	.089	4	22	2.17	46	.02	3	3.28	.01	.32	1	2	205
A059	7	9	58	448	1.0	28	45	1309	7.18	107	5	ND	1	33	1.6	8	6	85	.52	.070	4	23	2.54	44	.02	2	3.74	.01	.31	1	1	175
A060	7	13	32	68	.8	5	13	1024	4.35	104	5	ND	1	45	.2	8	2	25	.89	.120	7	5	1.01	57	.01	3	1.46	.01	.37	1	2	60
A061	3	17	42	219	.8	3	15	755	6.65	39	5	ND	1	38	.6	7	2	28	.59	.121	4	4	1.01	55	.01	3	1.66	.01	.37	1	1	140
A062	8	17	61	293	1.3	5	18	830	6.58	97	10	ND	1	41	.6	13	2	26	.68	.136	5	6	.88	49	.01	2	1.54	.01	.40	1	14	155
A063	5	14	45	139	.9	3	15	880	6.76	40	5	ND	1	35	.2	7	2	37	.48	.121	6	6	1.12	78	.02	3	2.18	.01	.42	1	3	100
A064	6	12	17	359	.8	3	12	1453	5.33	49	5	ND	2	42	.5	6	2	33	.95	.096	7	5	1.25	53	.01	3	2.03	.01	.34	1	1	220
A065	6	21	27	104	1.6	5	12	1130	6.32	25	5	ND	2	39	.6	7	2	15	.65	.077	6	3	.53	46	.01	3	1.05	.01	.32	1	44	225
A066	10	24	39	97	1.5	3	10	1483	5.52	45	5	ND	1	49	.3	8	2	22	.86	.106	3	2	.62	56	.01	3	.92	.01	.25	1	28	110
A067	12	91	98	661	2.3	4	13	2335	10.65	210	5	ND	1	40	2.4	7	2	54	1.09	.075	4	7	1.75	57	.02	2	3.01	.01	.17	1	112	440
A068	5	45	48	412	1.2	6	14	1529	8.68	61	5	ND	1	38	1.6	2	2	65	.76	.102	8	21	2.01	57	.02	2	3.72	.01	.26	1	152	240
A069	2	11	10	123	.4	3	8	791	5.28	14	5	ND	2	31	.5	4	2	53	.41	.109	8	9	1.19	76	.01	3	2.20	.01	.23	1	21	120
A070	2	10	13	131	.2	3	6	1455	6.17	17	5	ND	1	51	.3	2	2	41	.87	.098	7	5	1.54	60	.01	2	2.43	.01	.22	1	18	75
A071	2	28	14	112	1.0	2	6	1372	4.88	30	5	ND	2	53	.6	11	2	17	.99	.095	12	3	1.33	43	.01	3	1.75	.01	.33	1	22	35
A072	2	8	4	136	.1	2	5	896	5.65	14	5	ND	3	36	.6	3	2	21	.44	.064	17	5	1.45	42	.02	3	2.71	.01	.34	1	14	75
A073	1	10	2	147	.3	1	4	1200	6.97	5	5	ND	1	53	.4	3	3	45	.56	.108	10	2	1.35	40	.04	4	2.69	.03	.17	1	19	75
A074	1	6	5	126	.2	1	4	1151	5.96	4	5	ND	1	30	.3	4	2	33	.48	.115	9	2	1.29	42	.04	2	2.36	.02	.21	1	11	95
A075	1	13	13	94	.6	1	4	1128	6.88	90	5	ND	1	34	.5	4	2	33	.51	.100	7	3	.95	59	.03	2	1.94	.03	.23	1	31	70
A076	1	9	3	93	.3	2	4	940	5.97	8	5	ND	1	33	.3	2	2	30	.50	.107	8	4	1.09	52	.04	2	2.29	.04	.26	1	20	50
A077	4	13	7	123	.6	1	5	1230	6.39	31	5	ND	2	46	.3	3	2	33	.85	.104	7	3	1.31	60	.03	2	2.34	.03	.26	1	39	110
A078	2	16	11	92	.5	1	5	878	6.00	18	5	ND	1	33	.4	5	2	31	.51	.123	10	5	1.21	54	.05	2	2.42	.04	.33	1	5	205
A079	1	9	5	143	.2	1	5	997	6.37	7	5	ND	2	29	.2	2	2	33	.38	.122	12	5	1.35	52	.05	3	2.82	.03	.31	1	9	80
A080	1	11	5	138	.2	2	5	1906	7.03	6	5	ND	1	55	.6	2	4	40	1.49	.106	13	5	2.03	48	.03	2	3.29	.01	.28	1	8	100
A081	1	15	10	102	.6	1	6	1022	6.71	80	5	ND	2	29	.2	2	2	55	.47	.100	8	4	1.57	59	.02	2	2.66	.01	.19	1	5	205
A082	1	12	5	122	.4	2	5	1035	6.79	6	5	ND	2	26	.2	2	2	50	.28	.096	9	7	1.27	77	.02	3	2.30	.01	.21	1	1	145
A083	13	49	23	36	1.6	3	7	885	4.45	194	5	ND	2	33	.2	12	2	35	.47	.073	6	3	.93	49	.01	5	1.27	.01	.15	1	37	695
A084	37	39	68	1662	6.0	4	9	1062	5.98	379	5	ND	1	57	7.3	43	2	22	1.44	.052	3	5	1.05	38	.01	2	.73	.01	.12	1	64	4800
A085	12	30	16	376	1.4	1	7	1227	4.89	28	5	ND	2	46	.7	8	2	45	1.43	.075	6	4	1.61	48	.01	2	1.47	.01	.11	1	24	880
A086	1	12	2	120	.3	2	9	2168	7.59	6	5	ND	1	50	.2	2	2	47	1.34	.078	5	6	1.96	43	.03	2	2.52	.01	.10	1	56	145
A087	4	24	5	183	.6	3	6	1631	6.42	13	5	ND	1	47	.2	4	2	53	2.21	.089	6	6	2.18	42	.01	2	1.91	.01	.10	1	21	305
A088	2	27	18	245	.9	2	7	796	7.64	9	5	ND	1	24	.2	7	2	53	.55	.108	7	4	1.50	52	.01	2	1.87	.01	.14	1	38	245
A089	9	11	4	126	.3	3	8	1298	7.18	9	5	ND	1	24	.2	2	2	61	.49	.111	7	5	2.07	49	.01	2	2.77	.01	.11	1	33	90
A090	1	13	2	108	.1	1	9	1080	7.32	7	5	ND	1	22	.2	2	2	70	.37	.156	7	3	1.81	51	.02	4	2.49	.01	.14	1	44	35
A091	3	23	8	104	.4	3	7	910	8.49	20	5	ND	1	17	.2	4	2	78	.32	.111	7	5	1.44	55	.01	4	2.11	.01	.17	1	44	50
A092	4	29	22	100	.9	2	10	1179	8.92	35	9	ND	1	36	.2	8	2	72	1.18	.112	6	5	1.48	45	.01	3	2.07	.01	.15	1	64	60
A093	3	20	8	88	.4	2	7	1481	6.97	21	5	ND	1	70	.2	2	2	62	1.57	.104	7	3	1.39	52	.01	2	2.02	.01	.15	1	40	35
A094	2	12	14	86	.4	1	9	1118	7.19	14	5	ND	1	20	.2	4	2	73	.39	.113	8	4	1.63	51	.01	2	2.21	.01	.15	1	81	55
A095	1	9	5	86	.4	2	7	3377	5.84	20	5	ND	1	137	.2	2	2	50	4.39	.089	4	3	1.45	42	.01	2	1.56	.01	.11	2	79	110
A096	1	17	19	68	.9	1	7	2057	7.07	6	5	ND	1	108	.2	2	2	46	4.21	.103	6	4	.86	41	.01	2	1.11	.01	.12	1	22	40
A097	1	10	11	52	.9	4	6	2194	6.46	10	5	ND	1	124	.2	4	2	64	4.41	.106	7	5	1.13	41	.01	5	1.40	.01	.14	1	31	80
A098	2	11	59	67	1.4	3	8	1414	8.10	30	5	ND	1	87	.2	5	2	43	2.43	.108	7	6	1.07	41	.01	2	1.26	.01	.14	1	16	105
A099	1	9	11	108	.4	1	7	1601	6.53	17	5	ND	1	65	.2	2	2	59	1.64	.125	8	4	1.83	45	.01	2	2.16	.01	.15	1	29	55
A100	3	15	25	105	.7	2	8	1065	8.24	27	5	ND	1	26	.2	7	2	57	.68	.112	8	4	1.64	52	.01	2	2.00	.01	.17	1	23	95
A101	16	14	10	695	.8	4	9	2011	6.78	46	5	ND	1	50	1.5	6	2	51	2.11	.082	5	6	2.28	38	.01	6	2.52	.01	.08	1	30	455
A102	8	18	17	99	.5	3	9	2175	8.73	51	5	ND	1	33	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No. J91-16 | Jeff Grid | Unuk River Project | COUL-3 | 900 ZONE

PURPOSE To test deepdip extension of 900zone below holes J91-4 and 7

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
L9+00N / 0+63W	~417m	276°	216.4 m.
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT** N13W
-60°	106.7 - ~~58°~~ 59° 216.4 - ~~59°~~ 58°	220 m.	N 1+80W
LOGGED BY DATE Oct 4th	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED** Oct 3/91 **DATE COMPLETED** Oct 4/91
GF McARTHUR	J.T. Thomas	BQ	

SUMMARY LOG

0 - 6.1 Casing

6.1 - 77.7 Interbedded turbiditic mudstone, siltstone, sandstone (Bowser Clastics?)

77.7 - 95.7 Black argillite with minor tuff bands. (FDAR)

95.7 - 130.3 Black to green argillaceous tuff to lapilli tuff - strong FABRIC (vol. turbidites) (FDDD)

130.3 - 150.7 Black to green argillaceous tuff to lapilli (graded debris flows) (FDLT)

150.7 - 216.4 Green Lithic tuff to coarse tuff - chloritic (FDLT)

EOH 216.4 m.

SIGNIFICANT MINERALIZED INTERVALS

83.3 Trace sphalerite - Pale brown

110.2 - 110.65 massive pyrite 50%

124.4 - 124.6 massive pyrite 40%

163 - 164 Pyrite stringers + dissemination 5% Red brown sphalerite 1%, Trace Pb

199.7 Trace sphalerite, pyrite Trace

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91#16

INTERVAL	C. LOSS	LITHOLOGY
C - 6.1		CASING
		oxidized fractured · ltgy feldspathic sandstone
6.1 -		ltgy Feldspathic sandstone, siltstone, mudstone 7J/7K mudchip. Tr disseminated py - qtz + qtz carb v. - unit Possibly Bowser?
		8.25 - 9.14 broken rubbly core. - FAULT BX
		9.26 Tr py diss 9.36 mudchip (rip up clast.
		9.7 qtz v 70° 9.9 qtz v 75° 10.0 Tr py diss.
		10.15 qtz v 70°
		12.1 qtz v 85° fibers trace chlorite in fibers.
		12.18 fibrous qtz v 2° to CA stepped up hole
		14.67 - 14.75 argillic. 14.8 bedding? 35°
		15.3 fold in sandstone 15.55 Bedding 40° Tr py. Bedding 15°
		15.8 - 16.0 qtz v Bx 15.92 polished slip Fe.
		16.0 - 16.1 Argillic.
		16.6 to 18.0 silty mudstone
		18.65 - 19.0 mudchips
		20.2 - 20.4 mudstone.

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J-91-16

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		21.84-21.95 argillite			FeSS		
		21.8 FR with Fibrous qtz — 35° CA			FeSS	–	–
		22.2-22.3 mud chips	50/45		–	–	–
			–	–	–	–	–
			–	TL		–	–
		24.0 fault gouge 1cm	–			–	–
		mud chips.	–	TJ	–	–	–
			–	TL		–	–
		Broken rubbly core.	–			–	–
		qtz carb flooding Brenfell + Veining 30°	–	TJ		–	–
		argillite sections above + below fault zone	–	TJ		–	–
			–	TL	–	–	–
		mud chips	–			–	–
			–	TL		–	–
		fault & qtz carb veins	–			–	–
			–	TJ	–	–	–
			–	Arg			
			–			–	–
			50/50	TL			
			50/45		FR 26	–	–
			–	TJ		–	–
			–	–	–	–	–
			–	–		–	–
			50/45	TL	FR 20	–	–
			–			–	–
			–	–		–	–
			–	–	FR 45	–	–
			–	–	FR 60	–	–
			–	–	–	–	–

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16

INTERVAL	C. LOSS	LITHOLOGY	U	L	S	M	A
		10cm gouge 42.5					
		Fault gouge 43.0 to 43.6					
		Argillite at 43.2 to 43.6					
		pyritic argillite fragments, minor dissemination 48.3 - 48.5					
		argillite at 51.2 - 51.7					
		52.8 - 53.1 qtz carb veined fault Bx					
		Fault gouge 54 - 54.5 argillite 54.9 - 55.3					
		55.3 - 55.5					
		56.1 - 63.1 argillaceous siltstone interval.					
		58.9. 0.5cm qtz - carb vein filling sear fault 50°					
		58.9 - 59.13 fault gouge 20°					
		62.6. fault gouge 10cm qtz carb vein filling					

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16

INTERVAL	C. LOSS	LITHOLOGY	V C	L	S	M	A
		63.1 Lt gy sandstone.					
		65.7 fault gouge - qtz - carb filling	50/35				
		67.2 fault gouge + qtz - carb v filling					
		74.6 fault gouge - qtz - carb filling	50/40				
		77.6 - 77.8 gouge - qtz carb vein flooding - broken qtz v. frags. 40°	50/5°				
		77.7 Black argillite with minor pale greenish tuff bands, strongly contorted, qtz + qtz carb veins, bands py + dissemenations, graphitic slips cherty base - wispy carbonate alteration multigenerations of veins + vein fragments small Z folds - high strain	50/55				
		* (FDAR - Footwall marker argillite at Calpine top of Dacite unit)	50/20				
		83 - 85 strongly contorted abundant graphitic slips - irregular qtz veins					
		83.3 Tr sphalerite in bluish qtz veinlet.					
		95.7					

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
pyrite diss 1-2%	A001	77	78		2	1.9	31	7		
"	A002	78	79		4	5.1	36	19		
"	A003	79	80		10	3.8	32	18		
"	A004	80	81		19	3.8	41	19		
"	A005	81	82		2	2.6	39	19		
"	A006	82	83		6	1.7	33	14		
Trace sphalerite	A007	83	84		15	2.7	32	10		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		Tuff band at 55° offset by fr at 85°					
95.7		pale green to black argillaceous tuff to					
130.3		lapilli tuff - strong flattening fabric 70-80°					
		later kink banding 35°, trace pyrite					
		boudinaged qtz veins in foliation					
		minor isoclinally folded qtz veins ∥ + pytgmatic					
		qtz veins (flattening 4 on 5 to 1 elongation)					
		argillaceous from 95.7 to 113.2 tuffs					
		paleogreenish 113.2 to 130.3 tuff					
		very pale (possible qtzeyes 119.15-119.32 + 120.8-121.1					
		121.9-122 dendritic like alteration soaking out along					
		foliation from irregular pyritic vein					
		qtz vein pulled apart fragments starting to rotate					

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
		A008	84	85		4	0.5	21	6
		A009	85	86		2	0.3	15	2
		A010	86	87		2	0.3	15	2
		A011	87	88		4	0.2	16	2
		A012	88	89		7	0.3	13	2
		A013	89	90		7	0.4	17	2
		A014	90	91		3	0.2	29	12
		A015	91	92		3	0.1	43	11
		A016	92	93		2	0.5	47	10
		A017	93	94		3	0.3	45	7
		A018	94	95		6	0.2	35	4
		A019	95	96		1	0.2	21	2
		A020	96	97		3	0.1	5	6
		A021	97	98		4	0.1	52	5
		A022	98	99		2	0.2	16	8
		A023	99	100		5	0.2	23	9
		A024	100	101		3	0.1	44	8
		A025	101	102		3	0.1	23	9
		A026	102	103		1	0.1	29	5
		A027	103	104		1	0.2	19	6
		A028	104	105		1	0.1	16	9

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-16

INTERVAL	C. LOSS	LITHOLOGY	C	L	S	M	A
		110.2 - 110.65 massive pyrite 50-60%					
		113.2 - 130.3 chloritic greenish tuff and lapilli tuff					
		119.2 - 119.35 RHy - qtz eyes?					
		120.8 - 121.1 RHyolite? qtz eyes?					
		124.4 - 124.6 massive py 40-50%					

qtz-cb 65°

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. S91-16

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
	A029	105	106		1	0.1	25	9		
	A030	106	107		3	0.2	27	10		
	A031	107	108		3	0.1	30	9		
	A032	108	109		2	0.1	53	7		
	A033	109	110		2	0.3	130	13		
massive pyrite 50%	A034	110	111		5	1.0	313	14		
	A035	111	112		7	2.2	56	12		
	A036	112	113		1	1.6	31	9		
	A037	113	114		1	1.2	31	8		
	A038	114	115		1	0.5	16	2		
	A039	115	116		1	1.1	27	8		
	A040	116	117		3	0.5	17	3		
	A041	117	118		3	0.3	35	2		
	A042	118	119		3	0.3	20	2		
	A043	119	120		2	0.2	17	2		
	A044	120	121		1	0.1	27	7		
	A045	121	122		3	0.3	40	5		
	A046	122	123		5	0.2	18	4		
	A047	123	124		6	0.6	24	9		
massive pyrite 40%	A048	124	125		100	6.9	143	10		
	A049	125	126		14	0.6	32	2		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16

INTERVAL	C. LOSS	LITHOLOGY
		129-130.3 Large vesicular fragments · cal-chl infilling fabric appears to be lava
		130.3-150.7 Sequence of volcanic debris flows with coarse ash to lapilli base grading uphole to fine argillaceous ash. - a variety of fragment types, large fragments subrounded and have chilled + bleached margins - abundant py disseminated in fine ash matrix 3-5% - matrix supported. - weak to moderate foliation
		130.8 - 133.6 argillaceous tuff with some red ash intervals
		133.6 - 134 Coarse Ash to Lapilli
		134 - 136.1 fine ash - argillaceous to 134.8 tuffaceous lapilli 134.8 - 135.2 mottled argillaceous tuff 135.2 - 136.1
		136.1 Lapilli to 137.9.
		137.9 - 138.4 fine Ash 138.4 - 139.9 Lapilli 139.9 Contact wavery at 75 to 80° 139.9 - 140.2 fine ash 140.2 - 140.9 Lapilli 140.9 - 141.2 fine Ash 141.2 - 147.2 Lapilli 147.2 - 150.7 fine tuff.

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
		A050	126	127		5	0.1	32	2
		A051	127	128		2	0.1	51	2
		A052	128	129		10	0.4	32	2
		A053	129	130		2	0.7	45	6
		A054	130	131		4	0.3	22	2
		A055	131	132		17	0.6	34	3
		A056	132	133		12	1.2	58	5
		A057	133	134		3	1.2	83	3
		A058	134	135		2	1.3	204	10
		A059	135	136		1	1.0	107	8
		A060	136	137		2	0.8	104	8
		A061	137	138		1	0.8	39	7
		A062	138	139		14	1.3	97	13
		A063	139	140		3	0.9	40	7
		A064	140	141		1	0.8	49	6
		A065	141	142		44	1.6	25	7
		A066	142	143		28	1.5	45	8
		A067	143	144		112	2.3	210	7
		A068	144	145		152	1.2	61	2
		A069	145	146		21	0.4	14	4
		A070	146	147		18	0.2	17	2

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-16

INTERVAL	C. LOSS	LITHOLOGY	U	L	S	M	A
			50/70	20/2ab		Ka 30	
		147.2. Fine tuff.	51/50	-	-	Po	-
			50/70	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			50/70				
		150.7 green chloritic feldspathic tuff to coarse	-	-	-	-	-
		216.4 tuff intermediate composition (Andesite)	51/60	2A-C			
		- coarse fragments occasionally have bleached rims	-	K	-	-	-
		- matrix supported, dk green chloritic mafic frags with py.	51/40		Fg/30		
		- debris flows coarse to fining up at tops.	-	-	-	-	-
		- qtz-py veins 1-2%					qv20
		- Fr steep 20° CA.	-	-	-	-	-
		- py- and PO disseminations, veinlets, blebs 2-3%			Fg/35	Py	qv25
		- variety of fragment types	-	-	-	-	-
			51/65				
		Green lithic tuff sequence	-	-	-	-	-
						Py	qv20
			-	-	-	-	-
					Fg/30		qv25
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-		Py.	qv
		163-164 stringers and disseminations of py 5%, Trace Po	-	-	-	Py.	-
		qtz veining 5%				Sp.	qv10
		red brown sphalerite w py bands 163.5-163.6	-	-	-	Po	-
			51/50				qtz.
			-	-	-	Py	-
			-	-	-	-	-
		166.0-166.1 qtz blotchy-carb. carb. then qtz open space	-	-	-	Py.	qtz-carb
		infilling Ti py					
			-	-	-	-	-

147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	A071	147	148		22	1.0	30	11
	A072	148	149		14	0.1	14	3
	A073	149	150		19	0.3	5	3
	A074	150	151		11	0.2	4	4
	A075	151	152		31	0.6	90	4
	A076	152	153		20	0.3	8	2
	A077	153	154		39	0.6	31	3
	A078	154	155		5	0.3	18	5
	A079	155	156		9	0.6	7	2
	A080	156	157		8	0.5	6	2
	A081	157	158		<5	0.2	80	2
	A082	161	162		1	0.2	6	2
	A083	162	163		37	1.6	184	12
Pyrite stringers 5% sphalerite 1%	A084	163	164		64	6.0	379	43
	A085	164	165		24	1.4	28	8
	A086	165	166		56	0.3	6	2

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No. J91-16

INTERVAL	C. LOSS	LITHOLOGY	+ C	L	S	M	A
		Andesitic lithic tuff minor coarse tuff, pale green				Py Po	
		Tr blebs po + py, minor qtz + qtz carb blebs + veins			FR 35	Po	
		Locally dk green chlorite					
		Locally bleached - silica alt'n			FR 30	Po	Si
		Locally bleached - silica? Alt'n			FR 30	Py	Si

168 qtz T. 169 170 qtz carb 171 qtz carb 172 qtz carb Py A87 173 A88 174 A89 175 176 chl blebs 177 178 179 180 qtz v. 181 182 183 184 185 186 187 A90 188 A91 189

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
	A087	172	173		21	0.6	13	4		
Pyrite 1-3%	A088	173	174		38	0.9	9	7		
	A089	174	175		33	0.3	9	2		
	A090	187	188		44	0.1	7	2		
	A091	188	189		44	0.4	20	4		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-16

INTERVAL	C. LOSS	LITHOLOGY
		199.6. chalk wh K-spar + qtz v.
		Intermediate (Andesite) fine to medium tuff, chloritic feldspathic in places, weak to mod fabric pale green, qtz + qtz carb veins possibly some feldspar Trace to 1% pyrite + pyrrhotite
		199.7 speck of red brown sphalerite Tr py + po.
		Fault 208 - 209.6 qtz-carb veining

189 A92 qtz v/Kspar?
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191 A93
A94
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A95
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A96
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A97
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197
A99
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A100
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A101
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A102
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A103
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GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
		A092	189	190		64	0.9	35	8		
		A093	190	191		40	0.4	21	2		
		A094	191	192		81	0.4	14	4		
		~~A095~~									
		A095	193	194		79	0.4	20	2		
		A096	194	195		22	0.9	6	2		
		A097	195	196		31	0.9	10	4		
		A098	196	197		16	0.4	30	5		
		A099	197	198		29	0.4	17	2		
		A100	198	199		23	0.7	27	7		
		A101	199	200		30	0.8	46	6		
		A102	200	201		47	0.5	51	5		
		A103	201	202		75	0.8	84	2		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-16.

INTERVAL	C. LOSS	LITHOLOGY	C	L	S	M	A
		Intermediate (Andesite) medium to fine tuff, chloritic pale green, trace pyrite / pyrrhotite.		28K	FR/10	Py	
					FR/30	Py	
						Po	9+30
			30/~~50~~			Py	
					FR/10	Py	
		EOH 216.4 m.					

210 211 212 213 214 215 216 216.4 EOH 218 220

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.		
J91-17	JEFF GRID UNUK RIVER PROJECT	COUL-3 900 ZONE

PURPOSE

TO TEST DOWNDIP EXTENSION OFF 900 ZONE INTERSECTED IN HOLES J91-4 AND J91-7

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
9+00 N / 0+63 W	417 m (ALTIM)	270°	177.39 m
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-45°	73.15 m -49° 30'		
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED** OCT. 04. 1991 **DATE COMPLETED** OCT 06.
JEFF TESAR OCT. 06. 1991	J.T. THOMAS	B.Q.	

SUMMARY LOG (m)

00 - 4.57 OVERBURDEN
4.57 - 76.80 INTERBEDDED SANDSTONE, MUDSTONE AND SILTSTONE
76.80 - 88.80 BLACK MUDSTONE (H-WALL BRECCIATED, FAULT ZONE) WITH MINOR BANDS OF FINE TUFF
88.80 - 95.80 TUFFACEOUS MUDSTONE INTERBEDDED WITH ARGILLACEOUS TUFF, IN PLACES TUFF BRECCIA
95.80 - 106.82 FELSIC TO INTERMEDIATE TUFF WITH MINOR ARGILLITE
106.82 - 110.90 INTERMEDIATE ARGILLACEOUS TUFF
110.90 - 117.20 INTERMEDIATE LAPILLI TUFF
117.20 - 119.50 TUFFACEOUS ARGILLITE
119.50 - 126.20 INTERMEDIATE COARSE TO LAPILLI TUFF
126.20 - 129.30 FAULT ZONE
129.30 - 136.56 INTERMEDIATE FINE TUFF WITHIN DARK ARGILLACEOUS MATRIX
136.56 - 146.52 FELSIC TO INTERMEDIATE LAPILLI TUFF
146.52 - 156.50 INTERMEDIATE LAPILLI TUFF WITHIN DARK ARGILLACEOUS MATRIX
156.50 - 169.20 INTERMEDIATE MEDIUM TO LAPILLI TUFF
169.20 - 177.39 INTERMEDIATE MEDIUM - TUFF
177.39 E.O.D.H.

SIGNIFICANT MINERALIZED INTERVALS (m)

113.50 - 119.20 5~6% Py ; stringers, specks, disseminated
119.50 - 121.00 6~7% Py ; bands, stringers, specks, disseminated.
124.00 - 125.00 4-5% Py, tr~1% Po ; narrow stringers, specks.
*137.25 - 138.45 40% Py, 2% SL, 1% GL ; anastomosing massive sulphides veins, bands, stringers.
138.45 - 146.52 5% Py, tr SL ; narrow stringers, specks, disseminated
146.52 - 156.50 1% Py, 1% Po, tr SL ; narrow stringers, specks

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-17

INTERVAL	C. LOSS	LITHOLOGY	C ∠	L	S	M	A
00 - 4.57		OVERBURDEN		OVERBURDEN			
4.57 - 76.80		INTERBEDDED SANDSTONE, MUDSTONE AND SILTSTONE Light-grey to grey in colour feldspathic sandstone. Clastic texture with fine to coarse-grain size, interbedded (in places poorly) with black mudstone and grey siltstone. Unit in places brecciated / faulted. Mineralized by traces to ½% Pyrite. 5-10% white quartz-carbonate stringers at all angles to the core axis. In places weakly chloritic.	60 S₁ 55 S₁				Li-1
		4.57 - 15.44 Grey, medium to coarse-grained sandstone with fracture-planes controlled limonitic alteration. F-wall contact sharp, 55°	55 S₁ 60 S₁	7LIY-Z, L?			
		15.44 - 17.40 Black and dark-grey interbedded mudstone and siltstone with minor sandstone. H-wall contact 55°, sharp. Foot-wall contact 45°, sharp.	45 S₀	7J, 7K, (7L)			
		17.40 - 22.60 Grey, coarse to medium-grained feldspathic sandstone with minor bands or inclusions of argillite. H-wall contact 45° sharp. F-wall contact 60°, sharp	60 S₁	7LY-Z, (7J, 7Z-Y, 7L)			

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-17

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
tr Py; sampled as wall	H-001	15.00	15.44	0.44	31	0.1	16	2		
tr~1% Py; Blobs, specks and dissem	H-002	15.44	16.44	1.00	8	0.1	21	2		
— " —	H-003	16.44	17.40	0.96	5	0.1	16	6		
tr Py; sampled as wall	H-004	17.40	17.95	0.55	6	0.1	24	4		

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91 - 17

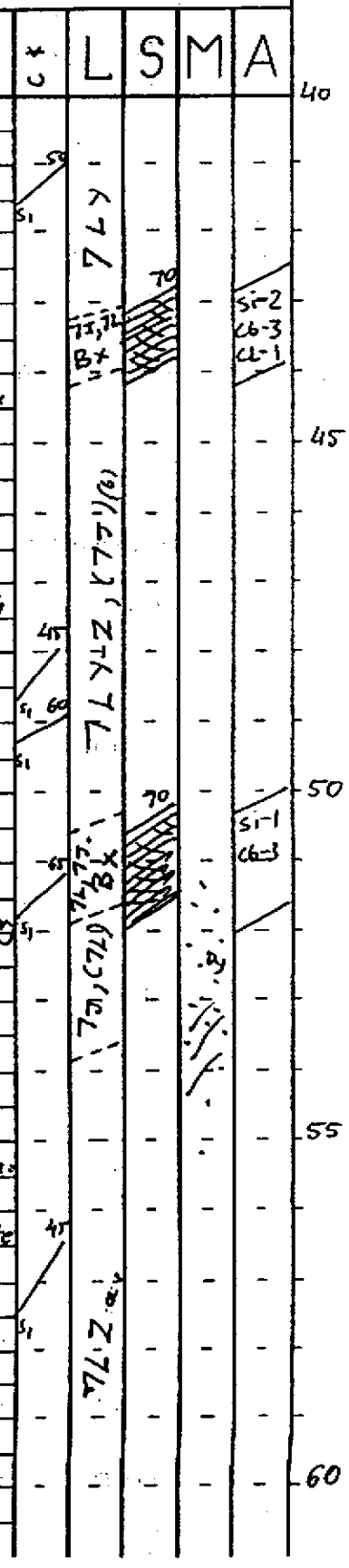
INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A
22.60 - 23.80		Black and grey, interbedded mudstone and siltstone. H.-wall contact 60°, sharp. F-wall contact 55° (23.30 - 23.80 Brecciated, Fault) F-wall contact flooded with quartz-carbonate matrix	65 55 55	Bt	55		Si-2 C6-2
23.80 - 25.75		Grey, medium-grained feldspathic sandstone with minor mudstone inclusions. H-wall contact 55°, sharp. F-wall contact 55°, sharp.	55				
25.75 - 27.25		Black and grey interbedded (poorly) mudstone and siltstone. H-wall contact 55°, sharp. F.wall contact 75°, sharp	70				
27.25 - 29.25		Light-grey (tuffaceous ?) medium grained sandstone. Weakly phyllitic with the network of narrow quartz-carbonate stringers. H-wall contact 75°, sharp. F-wall contact 70°, sharp. Foot-wall is marked by pyritic stringers and quartz-carbon veinlet on the contact.					
29.25 - 32.65		Grey, medium to coarse grained sandstone. H-wall contact 70° sharp. F-wall contact gradational. In places minor mudstone inclusions.					
32.65 - 40.03		Grey, medium grained feldspathic sandstone with black mudstone. H-wall contact gradational. F-wall contact 75° (35.30 - 36.20 Breccia, fault, flooded with quartz-carbonate matrix contact walls not discernable, poor core recovery.)	50 50	Bt			Si-2 C6-2

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91-17

INTERVAL	C. LOSS	LITHOLOGY
		40.03 – 43.40 Grey, medium grained sandstone. H-wall contact 75°. F wall contact 60° sharp.
		43.40 – 44.10 Breccia / Fault. Mudstone and sandstone fragments flooded with carbonate-quartz matrix. H-wall contact 60° sharp. F-wall contact 70°. Interval graphitic and weakly chloritic.
		44.10 – 50.70 Grey, medium to coarse-grained sandstone interbedded with bands of argillite. F-wall contact 70°. H-wall contact 70°, both sharp.
		50.70 – 51.80 Breccia / Fault. Fragments of mudstone and sandstone within anteritic matrix. Core broken up heavily with poor core recovery. H-wall contact 70° F-wall contact not discernable.
		51.80 – 53.60 Black argillite with minor bands or inclusions of sandstone. F-wall gradational
		53.60 – 61.60 Grey, medium to coarse-grained feldspathic sandstone. H-wall contact gradational. F-wall contact 90°. In places quartz-carbonate stringers



GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-17

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
tr-1% Py, specks, dissem. H -	013	53.35	53.85	0.50	7	0.2	23	3		
2-3% Py, narrow string, blobs, dissem, Q-10% H -	014	53.85	54.86	1.01	173	0.8	2531	104		
tr Py; sampled as wall H -	015	54.86	55.35	0.50	25	0.3	261	10		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-17

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
tr~1% Py ; sampled on wall	H	016	70.30	70.80	0.50	12	0.2	35	3	
3 % Py ; stringers, blobs, specks.	H	017	70.80	71.63	0.83	9	0.4	96	4	
1% Py ; blobs, disseminated	H	018	71.63	72.70	0.97	7	0.4	77	2	
1% Py ; blobs, specks, dissem.	H	019	72.70	73.50	0.80	1	0.2	20	2	
1-2% Py ; narrow string specks, dissem.	H	020	73.50	75.29	1.79	3	0.5	61	4	
— " —	H	021	75.21	76.81	1.60	8	0.6	40	3	
1% Py, Tr-1% SL ; specks, dissem.	H	022	76.81	77.80	0.99	3	4.7	40	11	
— " —	H	023	77.80	78.80	1.00	5	3.7	33	12	
— " —	H	024	78.80	79.80	1.00	9	2.4	30	11	
— " —	H	025	79.80	80.80	1.00	2	0.9	24	3	
— " —	H	026	80.80	82.30	1.50	7	0.4	21	2	

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-17

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		carbonate stringers at all angles to C.A. interbedded with narrow (1mm - 1cm thick) bands of pale green fine tuff. In places weakly phyllitic. In places weakly sericitic.	45 S1	7Tg (2A)(C)Qv·Bx			Se-1 C-2 Si-2
		76.80 - 83 Crush breccia / Fault zone. Foot-wall contact sharp 45°. Fragments of mudstone, in places sheared, flooded with quartz-carbonated matrix. In places gouge. Core broken up heavily with poor core recovery in places. In places phyllitic traces to 2% Pyrite; narrow bands. Tr of sphalerite (pink sphalerite) on specks.	30 S0 70 S0			P3 SL	
				7Tg, 2A6			
88.80 - 95.80		BLACK TO GREENISH, INTERBEDDED TUFFACEOUS MUDSTONE ARGILLACEOUS TUFF, IN PLACES TUFF BRECCIA H-wall contact 80°, sharp. Foot-wall contact 70° Predominantly argillaceous tuff to tuff breccia of greenish-grey colour, with blackish bands of argillite or argillaceous tuff (tuff with argillite inclusions.) In places intermediate fine to medium-grained tuff. Py; disseminated and on stringers 1-2% throughout the interval.					
		94.60 - 95.80 Intermediate fine to coarse-grained argillaceous tuff					
95.80 - 106.82		LIGHT-GREY, FELSIC TO INTERMEDIATE TUFF WITH MINOR ARGILLITE H-wall contact 70°. F-wall contact 35° Predominantly fine to lapilli tuff with isolated bands of dark grey to black argillaceous tuff. Interval weakly chloritic, mineralized by pyritic stringers and narrow bands. Py: 2-3% throughout the interval. 3-5% quartz-carbonate stringers.	90 S1	2A(B)j 2.E 1½(2A+B)½(Tj) 3r2A+D(j) 3-2A-0.7p			C-1
		98.80 - 100.30 light-grey felsic to intermediate tuff interbedded (in places poorly) with black argillite.					

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91 - 17

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
1-2% Py, tr-1% Sl, blebs, specks, dissem.		H-027	82.30	83.60	1.30	14	0.3	19	2
1-2% Py, tr Sl, narrow bands, specks.		H-028	83.60	84.60	1.00	5	0.5	24	2
— " —		H-029	84.60	86.10	1.50	8	0.4	32	2
— " —		H-030	86.10	88.00	1.90	2	0.2	27	2
H-wall: 2-3% Py, F wall 1% Py; string.		H-031	88.00	89.60	1.60	1	0.1	4	2
1-2% Py; narrow stringers, specks, dissem.		H-032	89.60	91.10	1.50	17	0.1	11	2
— " —		H-033	91.10	92.60	1.50	10	0.2	25	2
— " —		H-034	92.60	94.10	1.50	2	0.1	13	2
— " —		H-035	94.10	95.80	1.70	1	0.1	32	2
— " —		H-036	95.80	97.30	1.50	1	0.1	10	2
2% Py	— " —	H-037	97.30	98.80	1.50	2	0.1	16	2
2-3% Py	— " —	H-038	98.80	100.30	1.50	1	0.1	47	4

HOLE No. J91-17

INTERVAL	C. LOSS	LITHOLOGY	C∠	L	S	M	A
			75 S₁	3-2A-D(j)			
104.70 – 105.00		Breccia / Fault. Fragments of argillite and tuff flooded with quartz-carbonate groundmass. H-wall contact 80°, F-wall: 80°, Both sharp.	85 S₁	13.2A Bx		80	Si-3 Cb-2
106.82 – 110.90		BLACKISH TO DARK GREY, INTERMEDIATE ARGILLACEOUS TUFF. H-wall contact 35°, sharp marked by quartz-carbon. stringers. F-wall contact gradational. Predominantly intermediate medium-grained to lapilli tuff with argillite bands and inclusions. 3%-5% quartz-carbonate stringers. Locally brecciated.	60 S₁	2 B-Dj Qv			
110.90 – 117.20		LIGHT-GREY INTERMEDIATE LAPILLI TUFF. H-wall contact gradational. F-wall contact 55°. Locally amygdaloidal fragments predominant. 5% narrow quartz-carbonate stringers at all angles to C.A. Mineralized by py 5% throughout the interval.	55 S₁	12D(a) Qv		B. SL	
117.20 – 119.50		TUFFACEOUS ARGILLITE. Black to dark grey in colour. H-wall contact 55°. F-wall contact 70°. Predominantly argillite with minor bands and inclusions of medium grained intermediate tuff.	60 S₁	7J.K			
119.50 – 126.20		INTERMEDIATE COARSE TO LAPILLI TUFF. H-wall contact 70°. F-wall contact 50°. With minor argillite inclusions.	65 S₁	2C-D(j)			a-1

100
105
80
115
120

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91 - 17

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm	
tr - 1% Py	H039	100.30	101.50	1.20	5	0.1	11	2	
Py 2-3% ; narrow stringers, specks, dissem.	H-040	101.50	103.00	1.50	9	0.1	43	7	
1% Py ; specks, dissem.	H-041	103.00	104.50	1.50	2	0.1	13	2	
2% Py ; narrow stringers, specks, dissem.	H-042	104.50	106.00	1.50	3	0.2	20	5	
1-2% Py ; specks, dissem.	H-043	106.00	107.50	1.50	4	0.1	22	5	
2-3% Py — " — , stringers	H-044	107.50	109.00	1.50	2	0.1	85	8	
1-2% Py ; speck , disseminated	H-045	109.00	110.50	1.50	2	0.4	28	3	
— " —	H-046	110.50	112.00	1.50	1	0.4	19	2	
2-3% Py ; — " —	H047	112.00	113.50	1.50	8	1.1	26	5	
5-6% Py ; stringers, specks, disseminated,	*H-048	113.50	115.00	1.50	310	183.5	748	59	
5-6% Py ; — " — ,	*H-049	115.00	116.50	1.50	620	17.5	1627	127	
6-7% Py ; — " — ,	*H050	116.50	117.20	0.70	1350	15.7	1334	94	*
1-2% Py ; specks, dissem.	H-051	117.20	118.50	1.30	132	10	75	8	
— " —	H-052	118.50	119.50	1.00	143	22.	83	8	

GRANGESBERG EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-17

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		Dark-grey to green-grey in colour. Granular texture with coarse-grain size, grading in places to fragmental (lapilli). In places chloritic. Intervall is locally argillaceous by inclusions of black argillite. In places argillite interbedded with tuff especially within the foot-wall of the interval. Occurence of pyrite seems to be associated with lapilli tuff. The more tuff is argillaceous, the less pyrite it contents. However pyrite seems to be epigenetic (within lapilli tuff intervals)		2 C-D.(j)			CL-1
126.20 - 129.30		FAULT ZONE. Quartz vein and breccia → quartz flooded minor fragments of argillite or/and intermediate tuff. Core in places broken up. H-wall contact 50° F-wall contact 75°. Zone is pyritic, with pyrrhotite and weakly chloritic.		Q.(7a,2A).Bx			Sc3 CL-2
129.30 - 136.56		INTERMEDIATE FINE TUFF WITHIN DARKER ARGILLACEOUS MATRIX. IN PLACES LAPILLI TUFF. Predominantly fine-grained tuff, locally grading into lapilli or tuff breccia. H-wall contact 75°, F-wall contact gradational. Interval mineralized by bands of pyrite, pyrrhotite and in places minor galena and sphalerite. In places quartz-carbonate veinlets mineralized by specks of pyrrhotite.		2 A(D-E)(j)			
136.56 - 146.52		FELSIC TO INTERMEDIATE LAPILLI TUFF. H-wall contact and F-wall contact gradational. Grey in colour. Fragmental texture with lapilli up 4 cm. within fine to medium-grained matrix. Massive structure. Mineralized by veins, veinlets and stringers of massive sulphides: pyrite, sphalerite, galena. Isolated quartz stringers throughout the interval at all angles to C.A.		3-2 D.			Sc3

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-17

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm	
6-7% Py ; bands, stringers, specks, dissem. *	H-053	119.50	121.00	1.50	1060	15.4	357	32	*
3-4% Py ; narrow stringers, specks, dissem.	H-054	121.00	122.50	1.50	220	4.9	155	12	
3 % Py ; — " —	H-055	123.50	124.00	1.50	78	1.3	97	9	
4-5% Py, tr-1% Po ; narrow stringers, specks *	H-056	124.00	125.00	1.00	101	5.9	253	8	
1-2% Py, 1-2% Po ; — " — in places pyrrhotite crystals up 0.5 cm in diameter.	H-057	125.00	126.20	1.20	14	1.0	55	8	
1-2% Py, tr Po ; specks, disem.	H-058	126.20	127.10	0.90	12	0.8	17	3	
1% Py ; specks	H-059	127.0	128.15	1.05	8	1.7	12	3	
2-3% Py ; narrow stringers, specks.	H 060	128.15	129.30	1.15	15	1.4	35	3	
2% Po, 1% Py, narrow stringers, specks.	H 061	129.30	130.80	1.50	20	3.1	51	7	
— " —	H 062	130.80	132.30	1.50	18	1.4	36	7	
— " —	H 063	132.30	133.80	1.50	41	1.2	70	10	
— " —	H-064	133.80	135.30	1.50	16	2.4	44	7	
1% Py, Tr Po ; specks, disseminated	H-065	135.30	136.56	1.26	13	20.5	33	5	
1-2% Py, narrow string., specks, dissem.	H-066	136.56	137.25	0.69	31	4.1	145	7	
* 40% Py ; 2% SL, 1% GL ; anastomosing * massive Sx veins, veinlets, stringers, bands, bx in (SL and GL form a halo adjacent / sharp contact)	H-067	137.25	138.45	1.20	760	6.0	655	50	

DIAMOND DRILL LOG

HOLE No. J91-17

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
146.52 – 156.50		INTERMEDIATE LAPILLI TUFF WITHIN DARK-GREY TO BLACK ARGILLACEOUS MATRIX. Hang-wall contact gradational but marked by change in colour. F-wall contact 67° Fragmental texture with lapilli within dark argillaceous matrix. Locally fine-grained bands. In places tuff breccia. 3-5% quartz veinlets or stringers at all angles to C.A. Interval mineralized by Py and specks of sphalerite (pink, sphalerite)		3-2D			CL-2 SI-3
150.90 – 151.10		Breccia / Fault. Lapilli tuff fragments flooded with quartz-pyritic matrix chloritic. F-wall contact 70°		2D(j)			
156.50 – 169.20		GREY, INTERMEDIATE MEDIUM-GRAINED TO LAPILLI TUFF. H-wall contact 67°. F-wall contact (gradat.) Interval in places green-grey due to weak chloritization. Granular texture, grading from medium to lapilli. Frequent bands of brecciated rock (angular fragments of tuff flooded with quartz-carbonate matrix). Ubiquitous quartz stringers throughout the interval, at all angles to the C.A. Mineralized by pyritic stringers and specks		2B-D(Ks)			CL-1

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-17

MINERALIZATION ALTERATION		SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
5-6 % Py, tr SL ; narrow string, speck, disem (core loss)	*	H-068	138.45	139.45	1.00	65	4.1	226	13
4-5 % Py, tr SL ; narrow string, specks, disem.	*	H-069	139.45	140.00	0.65	149	6.0	680	22
4-5 % Py, tr SL ; — " —	*	H-070	140.00	141.00	1.00	151	6.8	880	20
5 % Py, tr SL ; — " —	*	H-071	141.00	142.30	1.30	260	4.9	345	16
5-6 % Py, tr-1 % SL ; — " — anastom. bands.	*	H-072	142.30	143.15	0.85	99	3.7	411	13
4-5 % Py, tr SL, narrow stringers, specks, disem.	*	H-073	143.15	144.65	1.50	49	1.4	56	7
— " —	*	H-074	144.65	146.52	1.87	160	1.5	125	8
1-2 % Py, 1 % Po, Tr SL ; narrow string. specks	*	H-075	146.52	148.00	1.48	38	3.1	132	9
1 % Py, 2 % Po, tr SL ; " — (pink sphalerite)	*	H 076	148.00	149.50	1.50	39	1.1	74	9
— " —	*	H 077	149.50	150.88	1.38	22	1.5	61	6
— " —	*	H 078	150.88	152.40	1.52	33	1.4	83	12
1 % Py, 1 % Po, tr SL, specks, disem.	*	H 079	152.40	153.90	1.50	50	1.3	67	9
— " —	*	H 080	153.90	155.45	1.55	36	0.6	114	3
— " —	*	H 081	155.45	156.50	1.05	125	2.2	425	18
1-2 % Py, 1 % Po. specks, disem.		H 082	156.50	158.00	1.50	28	0.3	23	2
— " —		H 083	158.00	159.50	1.50	120	0.6	77	3

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-17

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		158.00-159.72 In places amygdaloidal fragments predominant.					
		164.00-166.40 Brecciated. Angular fragments of tuff flooded with quartzy, vuggy matrix. Core loss.		2B-Dqv-(Bx)		Py Po	
		167.50-168.40 Brecciated. Angular fragments of tuff flooded with quartzy, vuggy matrix. Poor core recovery.					
169.20-177.39		GREY INTERMEDIATE MEDIUM-GRAINED TUFF Hi-wall gradational. Granular texture with medium grain size. Massive structure. Weakly chloritic, thus greenish in places. In places grades to coarse-grained.					CL-I
177.39		END. D.D.H					

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-17

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
1% Py, 1% Po ; specks, disseminated	H084	159.50	161.00	1.50	106	1.3	84	10
— " —	H085	161.00	162.50	1.50	280	1.9	166	3
— " —	H086	162.50	164.00	1.50	48	1.0	218	9
— " — (poor core recovery)	H087	164.00	166.42	2.48	13	1.0	592	11
— " —	H088	166.42	167.64	1.22				
— " — (poor core recovery)	H089	167.64	169.00	1.36				
tr~1% Py, tr~1% Po ; specks, disseminated	H090	169.00	170.50	1.50				
— " —	H091	170.50	172.00	1.50				
— " —	H092	172.00	173.50	1.50				
— " —	H093	173.50	175.00	1.50				
— " —	H094	175.00	176.50	1.50				
tr~1% Py, 1% Po ; narrow string. specks, disem	H095	176.50	177.39	0.89				

Sample J-91-17 73.5 m **Conglomerate (Unit 7M.7Ku.9Xu.7Ne?u.7J)**

One fragment up to 2 mm across is of a moderately foliated, metamorphosed siltstone with patches and lenses of plagioclase and quartz (after original detrital grains?) surrounded by extremely fine grained sericite, which is slightly to moderately concentrated in subparallel seams.

One fragment several mm across and a few much smaller ones are of hypabyssal, leucocratic quartz diorite dominated by fine to very fine grained plagioclase with interstitial quartz. The larger fragment contains irregular patches and seams of extremely fine grained rock, whose texture suggests that it was formed by cataclastic deformation and granulation of the coarser grained rock.

One fragment of cherty silica has an unusual texture, with elongate (up to 0.4 mm) and spheroidal (up to 0.1 mm) patches (fossils?) of clear cherty silica, enclosed in a groundmass of cherty silica with moderately abundant dusty opaque inclusions. It is cut by a few ankerite veinlets.

One dark grey fragment up to 1 cm long is of argillite containing 50% ankerite and cut by a veinlet up to 0.2 mm wide of chlorite.

Several fragments up to 2 mm long are aggregates of fine to medium grained vein quartz, which were recrystallized to an interlocking aggregate of very fine to fine subgrains.

One fragment 2.5 mm long is of plagioclase-rich mudstone with much less sericite. A few fragments up to 1 mm long are of sericite-rich mudstone.

One fragment 1.7 mm across is of a slightly porphyritic, hypabyssal latite dominated by plagioclase.

Smaller fragments averaging 0.5-1 mm in size are dominated by single grains of quartz and of plagioclase.

The groundmass is dominated by extremely fine grained plagioclase and sericite, moderately replaced by very fine grained ankerite.

Sample J-91-17 89.6 m **Andesite Lapilli Tuff (Unit 2/1D.1Gu)**

Fragments up to 2 cm in size are dominated by non-porphyritic to slightly porphyritic andesite to basaltic andesite flows, generally containing plagioclase laths in an aphanitic groundmass. Plagioclase phenocrysts in some are replaced moderately to strongly by ankerite.

Several, commonly elongate fragments from 0.7-1.7 mm in size contain ellipsoidal lenses of chlorite, suggesting that they are pumice.

A few elongate fragments up to 1.7 mm long are of argillite.

A few elongate fragments of uncertain origin are aphanitic and contain abundant opaque; they may be a basaltic tuff.

Most smaller fragments are of a variety of andesite flows and tuffs. Plagioclase forms a few grains up to 0.4 mm across. Quartz forms a few grains up to 0.2 mm in size.

The groundmass (15%) contains patches of cherty silica which contain cuspate to irregular patches of chlorite (0.5%). A few larger chlorite patches contain cores of cherty, strongly interlocking quartz. A few other interstitial patches up to 1 mm in size are of similar cherty quartz. Ankerite (4-5%) forms fine to coarse grained patches up to 2.5 mm in size.

Minor wispy veinlets are of cherty quartz as in the cores of interstitial patches in the groundmass.

Sample J-91-149.0 m — **Andesite/Latite Lapilli Tuff (1/2D.1/2GKu.1/2GKau.5Gu): Replacement Patches of Quartz-(Ankerite-Pyrite-Chlorite)**

Several slightly porphyritic andesite fragments contain minor plagioclase phenocrysts up to 0.5 mm in size in a groundmass which ranges between fragments from extremely fine to very fine grained. K-feldspar is common in the groundmass of most. One fragment is amygdaloidal, with equant to elongate amygdules up to 2 mm in size dominated by cores of quartz with patches of very fine grained chlorite and minor sericite concentrated mainly along borders.

One large latite(?) fragment contains a few phenocrysts of plagioclase and abundant tiny amygdules 0.05-0.2 mm in size of cherty quartz in a slightly devitrified volcanic glass groundmass.

Several fragments up to several mm across are of aphanitic trachy-latite with scattered K-feldspar phenocrysts up to 0.5 mm across and abundant dusty to extremely fine grained opaque.

The groundmass is dominated by extremely fine grained plagioclase with scattered patches of extremely fine grained sericite up to 1 mm in size, and minor cuspate patches of chlorite averaging 0.1-0.2 mm in size.

Replacement patches (10-15%) are dominated by fine to medium grained quartz, which was recrystallized strongly in patches to much finer grained aggregates, in part with a strongly preferred orientation. Ankerite is concentrated in a few patches of very fine to medium grains. Pyrite forms a few patches up to 1.3 mm in size. Chlorite forms minor patches of very fine grains.

Sample J-91-17 172.0 m — **Amygdaloidal Potassic Andesite Lapilli Tuff (Unit 2CK.2Gau)**

Diffuse fragments are mainly of aphanitic, amygdaloidal potassic andesite dominated by equant plagioclase grains averaging 0.01 mm in size set in a groundmass of chlorite, plagioclase, and K-feldspar, with minor pyrite.

Irregular amygdules (8-10%) generally have a thin rim of plagioclase or quartz and a core of chlorite. A few have a core of coarser grained quartz inside the zone of chlorite.

The groundmass is in part difficult to distinguish from the fragments. It contains more plagioclase and less chlorite than the fragments. K-feldspar is concentrated in some fragments, but elsewhere in the rock its distribution between fragments and groundmass is unclear. Pyrite forms scattered grains averaging 0.1-0.2 mm in size, and much more abundant ones averaging 0.02-0.03 mm in size.

Dark orange-brown sphalerite (0.1%) forms an irregular patch 0.5 mm across and a few smaller ones in one fragment of andesite.

AA LL

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WHOLE ROCK ICP ANALYSIS

Granges Inc. PROJECT UNUK RIVER File # 91-5479 Page 1

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	La ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
J91-2-21.2	72.05	11.60	3.88	.77	.01	.05	6.54	1.98	.03	.01	.007	1106	25	26	122	24	20	2.9	100.01
J91-3-15.5	65.00	9.95	8.69	.35	.70	.12	7.90	1.76	.59	.01	.003	2249	87	18	131	41	23	4.5	99.99
J91-7-35.0	37.49	13.50	6.85	4.77	15.74	4.54	.83	1.18	.18	.48	.015	387	623	10	194	23	20	14.6	100.33
J91-7-39.0	38.34	12.43	7.71	3.09	7.05	5.83	.20	1.36	.25	.47	.012	189	860	10	106	25	20	13.4	100.29
J91-8-65.2	63.84	13.75	5.44	1.62	1.54	.09	8.28	1.54	.26	.06	.005	1722	101	14	172	25	20	4.0	100.06
J91-10-69.0	69.41	11.33	4.44	.37	.76	.11	7.79	1.95	.57	.01	.004	2136	88	10	124	31	20	2.9	100.02
J91-11-88.0	54.61	15.27	4.72	2.17	5.68	5.42	1.84	1.32	.22	.19	.019	1373	233	10	159	7	61	8.4	100.14
J91-12-166.5	53.85	14.26	9.63	2.72	5.32	1.62	3.66	1.80	.60	.25	.002	784	243	13	114	26	48	6.0	100.10
J91-12-175.6	56.93	13.43	7.78	3.63	3.87	.66	5.03	.77	.26	.35	.006	1046	147	12	86	9	24	7.2	100.13
J91-15-91.0	29.07	13.20	11.60	6.70	16.67	1.57	2.72	1.08	.19	.54	.012	707	246	10	45	16	44	16.9	100.42
J91-16-129.15	46.04	15.77	9.14	4.43	7.04	1.89	5.52	1.53	.31	.27	.007	1010	141	10	73	18	87	8.0	100.16
J91-17-89.6	59.10	13.03	8.62	3.16	4.53	4.09	.66	1.52	.29	.16	.002	288	247	25	158	37	79	5.0	100.08
J91-17-149.0	65.12	12.13	6.33	2.70	1.77	.08	7.63	1.31	.35	.18	.003	2173	130	17	115	22	76	3.0	100.02
J91-17-172.0	57.65	12.90	11.38	5.32	1.92	.09	5.52	1.39	.44	.33	.002	1518	75	22	166	56	66	3.8	100.05
J91-18-76.1	59.22	15.23	7.64	3.94	1.94	2.01	4.22	2.01	.45	.11	.002	1891	109	21	163	50	60	3.9	100.03
J91-18-77.3	59.74	16.41	4.76	3.19	3.12	.28	5.96	1.42	.07	.06	.010	897	37	24	131	51	41	7.8	100.14
J91-18-89.0	60.81	10.80	10.64	3.04	3.12	.06	5.67	1.18	.29	.25	.005	3724	247	15	148	42	24	4.4	100.06
J91-18-94.7	62.99	12.76	8.13	2.02	1.07	1.45	7.23	1.40	.36	.10	.002	3086	126	20	166	35	77	2.1	99.99
J91-18-123.4	62.26	11.54	9.78	2.93	1.51	.18	7.14	1.23	.34	.23	.002	1350	80	18	191	39	30	3.6	100.00
J91-20-74.8	49.69	10.77	14.85	6.84	6.50	.43	.70	.98	.32	.62	.002	123	150	21	194	32	26	8.4	100.16
J91-21-49.0	46.62	14.41	15.25	1.76	2.21	4.99	1.55	2.04	.62	.07	.002	877	289	23	168	28	59	10.5	100.24
J91-22-45.0	62.61	10.92	9.01	2.19	1.36	.39	1.93	1.59	.39	.09	.002	1113	81	16	113	28	20	9.5	100.20
J91-22-130.2	46.62	15.29	16.18	4.12	2.17	4.21	.95	3.27	.65	.15	.002	203	109	23	181	44	46	6.4	100.10
J91-22-177.1	55.90	18.36	6.80	2.60	1.93	.09	8.93	2.00	.53	.12	.002	1314	99	28	166	36	90	3.5	100.04
J91-22-183.0	68.23	14.40	3.44	2.42	.49	.05	6.92	.66	.14	.08	.002	1035	63	33	206	31	79	3.0	100.04
J91-22-208.5	70.20	13.65	3.76	2.55	.71	.05	5.78	.94	.10	.10	.002	1119	38	26	142	15	53	2.6	100.02
J91-22-211.5	54.36	15.48	10.93	8.35	1.25	.05	3.38	1.51	.23	.33	.005	609	40	10	85	21	28	5.1	100.05
J91-24-164.7	44.84	16.27	14.50	5.09	5.21	.07	4.42	1.60	.49	.178	.002	1213	665	21	176	20	86	6.5	100.08
RE J91-22-177.1	55.80	18.19	6.84	2.66	1.97	.05	9.13	1.97	.53	.12	.002	1296	100	30	167	35	77	3.5	100.02
J91-24-207.3	54.95	12.97	11.80	3.86	4.71	.06	4.27	1.55	.40	.145	.002	1694	250	19	133	28	47	4.7	100.07
J91-25-26.9	51.21	15.96	7.89	2.11	7.49	3.81	2.90	2.43	.57	.128	.002	1247	335	21	140	27	108	5.1	100.04
J91-25-45.4	50.89	15.41	8.40	1.83	7.44	3.94	2.88	2.43	.54	.119	.002	974	246	23	141	25	70	5.9	100.08
J91-26-42.4	51.52	16.07	10.06	2.73	7.08	.16	4.72	1.38	.35	.123	.002	1876	237	33	183	45	79	5.4	100.09
J91-26-105.2	57.90	12.68	8.98	3.31	4.84	.05	4.55	1.63	.48	.141	.002	1228	129	23	117	29	62	5.0	100.08
J91-27-32.65	54.73	16.02	6.47	3.42	5.71	4.09	1.85	2.35	.60	.115	.002	1756	339	14	134	26	20	4.3	100.05
J91-27-60.8	74.21	9.88	3.60	.88	1.98	4.12	.73	1.79	.47	.06	.002	800	166	14	103	18	24	2.1	100.00
J91-27-68.0	57.38	14.99	8.47	3.90	2.52	1.92	2.53	2.39	.62	.107	.002	2205	162	20	144	36	29	5.9	100.11
STANDARD SD-4	67.81	10.29	3.56	.98	1.61	1.33	2.05	.57	.23	.113	.005	795	207	29	321	23	20	11.2	99.98

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3.
- SAMPLE TYPE: CORE Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: NOV 15 1991 DATE REPORT MAILED: Nov 30/91. SIGNED BY: D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

SAMPLE# J91-17	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au ppb	Hg ppb
H001	1	28	2	73	.1	17	14	1261	4.47	20	5	ND	2	217	.2	2	2	45	4.94	.070	6	23	1.85	62	.01	3	1.54	.02	.19	1	31	80
H002	1	71	11	67	.1	25	15	559	4.16	18	5	ND	1	172	.2	2	2	24	2.58	.075	9	15	1.01	67	.01	2	1.79	.01	.22	1	8	20
H003	1	69	9	65	.1	28	15	434	4.06	21	5	ND	4	83	.2	3	2	17	1.45	.079	20	13	1.27	90	.01	4	1.88	.01	.32	1	5	15
H004	1	27	10	54	.1	16	13	1416	3.27	16	5	ND	1	309	.2	2	2	20	7.25	.054	6	13	1.36	81	.01	3	1.33	.02	.25	1	6	25
H005	1	111	8	95	.1	20	19	352	5.02	24	5	ND	1	71	.2	2	2	35	1.06	.110	10	14	1.27	63	.01	3	2.21	.02	.24	1	8	20
H006	1	25	8	103	.1	12	14	1606	4.10	17	5	ND	1	322	.3	2	2	34	7.83	.069	7	15	2.05	68	.01	2	1.70	.02	.22	1	3	25
H007	1	20	8	74	.1	9	10	2568	3.59	34	5	ND	1	441	.2	2	2	22	12.08	.046	5	7	2.96	58	.01	2	.60	.02	.19	1	3	20
H008	1	47	8	105	.2	14	15	956	4.81	25	5	ND	2	194	.3	6	2	42	4.91	.093	7	17	1.52	73	.01	5	2.25	.02	.25	1	7	30
H009	6	50	13	89	.1	19	16	965	3.62	44	5	ND	1	124	.2	4	2	25	2.36	.085	5	13	1.26	106	.01	4	1.54	.02	.29	1	9	25
H010	2	109	20	338	.6	30	22	283	4.41	157	5	ND	1	40	1.6	10	2	22	.78	.120	6	11	.81	79	.01	4	1.46	.02	.32	1	11	95
H011	1	105	22	129	.1	22	18	790	4.38	41	6	ND	1	108	.2	8	2	26	2.91	.116	6	11	1.11	122	.01	5	1.80	.02	.31	2	3	45
H012	1	108	19	130	.1	23	21	617	4.42	44	5	ND	1	119	.3	5	4	26	2.33	.122	6	13	.97	98	.01	6	1.87	.02	.32	1	6	35
H013	1	24	7	65	.2	13	12	832	3.05	23	5	ND	1	104	.2	3	2	14	2.23	.094	4	7	1.04	53	.01	4	1.12	.01	.42	1	7	45
H014	1	32	15	320	.8	11	11	613	2.64	2531	5	ND	1	189	1.9	104	2	6	2.84	.053	3	4	.30	62	.01	2	.51	.01	.29	1	173	145
H015	1	16	7	51	.3	10	9	1778	1.69	261	5	ND	1	355	.2	10	2	9	6.76	.032	3	4	2.49	56	.01	2	.27	.01	.26	1	25	45
H016	2	52	15	94	.2	19	15	683	4.17	35	6	ND	1	110	.4	3	2	24	1.80	.070	4	11	1.08	66	.01	3	1.70	.02	.34	1	12	70
H017	2	55	15	85	.4	19	13	716	3.07	96	5	ND	1	134	.2	4	2	11	2.66	.053	3	4	1.03	52	.01	3	.76	.01	.34	1	9	75
H018	1	86	16	133	.4	20	13	846	3.11	77	5	ND	1	151	.5	2	2	13	3.75	.068	3	6	1.38	118	.01	4	1.04	.01	.35	1	7	70
RE H023	26	26	367	2476	3.9	31	8	911	4.68	36	5	ND	1	137	25.3	14	2	8	3.60	.055	2	3	1.01	42	.01	7	.48	.01	.21	1	4	2850
H019	1	44	10	249	.2	12	10	1358	3.88	20	5	ND	1	146	1.1	2	2	11	4.43	.067	3	5	1.62	87	.01	2	1.24	.02	.23	1	1	115
H020	2	67	16	101	.5	28	16	499	3.86	61	5	ND	1	95	.4	4	2	13	1.65	.083	3	9	.93	100	.01	5	1.55	.01	.31	1	3	55
H021	2	55	18	329	.6	17	10	516	2.99	40	5	ND	1	71	2.1	3	2	10	1.34	.059	3	10	.72	64	.01	5	1.28	.02	.27	1	8	170
H022	8	32	1025	2301	4.7	17	8	1028	3.62	48	5	ND	1	163	23.6	11	2	8	3.93	.067	2	6	1.04	56	.01	5	.52	.01	.20	1	3	2600
H023	25	24	347	2384	3.7	30	7	875	4.48	33	5	ND	1	131	24.3	12	2	8	3.44	.054	2	3	.97	39	.01	8	.48	.01	.21	1	5	2750
H024	20	29	205	280	2.4	29	8	933	3.51	30	5	ND	1	144	2.1	11	2	9	4.46	.066	2	6	1.03	75	.01	3	.65	.02	.19	1	9	470
H025	16	23	25	95	.9	23	8	1048	3.87	24	7	ND	1	131	.8	3	2	14	5.13	.066	3	9	1.97	71	.01	2	.86	.02	.15	1	2	460
H026	15	27	24	175	.4	24	12	702	3.83	21	8	ND	1	140	1.2	2	2	25	4.45	.085	3	8	1.59	60	.01	3	1.48	.01	.13	1	7	1100
H027	27	30	11	202	.3	34	9	877	3.83	19	5	ND	1	188	1.8	2	2	17	5.98	.096	3	4	1.67	50	.01	4	.52	.02	.16	1	14	1200
H028	32	52	20	430	.5	59	9	319	3.61	24	9	ND	1	115	4.3	2	2	18	3.40	.052	3	5	1.02	37	.01	6	.71	.03	.19	1	5	1650
H029	35	61	27	593	.4	78	10	351	3.64	32	5	ND	1	96	5.6	2	2	18	3.91	.053	2	5	.98	46	.01	6	.48	.03	.16	1	8	1850
H030	29	50	21	203	.2	38	8	458	3.49	27	9	ND	1	143	1.7	2	2	15	4.70	.064	2	8	1.19	57	.01	2	1.08	.02	.14	1	2	1100
H031	1	14	6	129	.1	2	9	556	6.35	4	5	ND	1	59	.5	2	3	41	1.45	.075	7	6	1.75	42	.01	5	3.27	.03	.06	1	1	40
H032	2	10	2	119	.1	5	13	776	5.72	11	5	ND	1	132	.2	2	2	50	3.05	.111	9	6	1.71	40	.01	2	3.03	.02	.08	1	17	55
H033	1	11	7	138	.2	4	11	644	4.92	25	5	ND	1	113	.6	2	2	41	2.27	.079	7	8	1.48	55	.01	2	2.60	.03	.07	1	10	80
H034	2	9	2	111	.1	2	17	750	5.26	13	5	ND	1	118	.3	2	2	64	2.69	.127	8	9	1.76	57	.01	2	2.90	.03	.10	1	2	55
H035	2	12	9	117	.1	4	20	972	5.12	32	5	ND	1	139	.2	2	2	52	3.26	.067	5	14	1.78	55	.01	6	2.89	.02	.12	1	1	85
H036	1	6	4	112	.1	6	25	1500	3.89	10	5	ND	1	295	.4	2	2	115	6.62	.074	3	28	1.69	36	.01	2	2.26	.03	.05	1	1	80
H037	1	13	2	90	.1	8	30	1559	4.90	16	5	ND	1	293	.2	2	2	113	6.33	.077	3	26	1.89	48	.01	2	2.64	.04	.10	1	2	65
H038	3	13	2	80	.1	12	48	1444	6.47	47	5	ND	1	246	.2	4	3	95	5.87	.056	3	23	2.10	61	.01	2	2.63	.02	.11	1	1	125
H039	1	12	5	120	.1	7	31	967	3.00	11	5	ND	1	175	.2	2	2	75	4.46	.085	4	23	1.44	72	.01	2	1.87	.04	.17	1	5	85
H040	1	12	2	97	.1	9	34	1450	4.57	43	5	ND	1	211	.5	7	2	67	6.83	.072	3	20	1.59	39	.01	2	1.58	.03	.09	1	9	220
H041	1	9	5	54	.1	6	20	1360	2.32	13	5	ND	1	187	.2	2	2	46	5.98	.064	3	15	1.37	57	.01	2	.74	.04	.11	1	2	65
H042	1	15	6	69	.2	7	28	1324	2.85	20	5	ND	1	185	.2	5	2	37	6.39	.079	3	15	1.77	69	.01	2	1.04	.04	.14	1	3	100
H043	2	8	8	207	.1	11	37	527	5.07	22	5	ND	1	93	.4	5	2	55	2.33	.032	4	21	2.27	95	.01	2	2.46	.02	.15	1	4	130
H044	5	12	9	247	.1	20	56	875	3.35	85	5	ND	1	119	.6	8	2	29	3.73	.038	2	11	1.17	85	.01	3	.91	.02	.18	1	2	320
H045	2	12	10	102	.3	9	41	1358	2.86	28	9	ND	1	150	.2	3	2	29	6.40	.055	3	9	1.48	95	.01	3	.96	.02	.22	1	2	110
H046	1	11	4	146	.4	6	27	1359	3.18	19	5	ND	1	166	.4	2	2	27	5.68	.072	3	15	1.77	164	.01	2	1.39	.01	.28	1	1	150
H047	1	13	4	118	.1	6	25	1381	2.72	26	5	ND	1	116	.2	5	2	19	3.99	.073	3	8	1.32	150	.01	2	.73	.01	.30	1	8	230
H048	11	76	205	466	183.5	7	22	1594	5.06	746	5	ND	1	119	1.0	59	2	13	4.39	.026	2	6	1.47	51	.01	3	.47	.01	.16	1	310	11500
H049	32	17	139	149	17.5	8	23	525	8.04	1627	5	ND	1	79	.4	127	3	9	1.93	.034	2	5	.27	19	.01	2	.28	.01	.21	1	620	16000

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE (604) 253-3158 FAX (604) 253-1716

H050	20	35	264	274	15.7	9	20	394	8.39	1334	5	ND	1	14	.7	94	4	8	2.08	.023	2	22	.22	14	.01	2	.89	.01	.25	1	1350	12500
H051	2	9	10	97	1.0	5	17	260	3.47	75	5	ND	1	29	.2	8	2	30	.57	.047	8	6	1.09	97	.01	2	1.52	.01	.22	1	132	195
H052	2	8	10	77	2.2	5	15	233	3.02	83	6	ND	1	18	.2	8	2	21	.38	.018	7	5	.82	71	.01	2	1.07	.01	.20	1	143	145
H053	7	29	90	197	15.1	9	28	639	6.53	357	5	ND	1	86	.4	32	2	13	2.08	.039	2	5	.48	30	.01	2	.30	.01	.20	1	1060	2500

SAMPLE# J91-17	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
H054	3	12	37	156	4.9	7	18	459	3.40	155	5	ND	1	54	.2	12	2	16	1.31	.047	4	16	.54	68	.01	2	.72	.01	.29	1	220	580
H055	1	12	15	148	1.3	6	19	385	5.91	97	5	ND	1	22	.2	9	2	29	.30	.040	7	9	1.61	63	.01	2	1.56	.01	.27	1	78	240
H056	13	12	24	131	5.9	7	18	825	6.69	253	5	ND	1	48	.2	8	2	11	1.81	.020	2	9	.94	30	.01	2	.37	.01	.21	1	101	515
H057	1	6	10	100	1.0	8	23	653	5.29	55	5	ND	1	62	.2	8	2	30	1.40	.043	3	13	1.99	35	.01	2	1.43	.01	.22	1	14	140
H058	2	7	7	39	.8	7	14	1126	3.36	17	5	ND	1	83	.2	3	2	23	2.31	.022	2	29	1.54	26	.01	2	1.03	.01	.11	1	12	65
H059	2	9	5	96	.6	8	10	746	2.68	12	5	ND	1	66	.2	3	2	16	1.55	.019	2	15	.89	21	.01	2	.68	.01	.12	1	8	115
H060	1	7	8	151	.8	7	16	2295	4.95	35	5	ND	1	106	.2	3	2	26	2.92	.022	2	14	2.10	22	.01	2	1.27	.01	.14	1	15	115
H061	1	18	22	197	1.7	9	36	662	7.59	51	5	ND	1	21	.2	7	2	58	.38	.042	2	24	2.54	28	.01	2	2.76	.01	.21	1	20	95
H062	1	13	11	80	1.4	8	22	337	4.42	36	5	ND	1	14	.2	7	2	36	.21	.032	2	26	1.37	33	.01	2	1.64	.01	.25	1	18	60
H063	4	15	48	331	3.1	14	37	143	4.87	70	5	ND	1	11	.9	10	2	16	.16	.031	2	14	.39	25	.01	2	.69	.01	.22	1	41	265
H064	2	13	53	337	1.4	8	26	1271	5.35	44	5	ND	1	46	.6	7	2	50	1.44	.039	2	23	2.28	22	.01	2	2.02	.01	.14	1	16	205
H065	1	30	101	224	1.2	5	22	1871	6.46	33	5	ND	1	62	.2	5	2	66	2.08	.045	2	25	2.99	23	.01	2	2.64	.01	.17	1	13	160
H066	3	14	66	126	2.4	7	11	503	3.95	145	5	ND	1	54	.2	7	2	14	1.19	.004	2	29	.34	41	.01	2	.34	.01	.14	1	31	140
H067	3	42	2149	10483	20.5	4	7	1095	14.98	655	5	ND	1	55	31.7	50	2	12	2.27	.004	2	5	1.54	7	.01	2	.12	.01	.03	1	760	8150
H068	4	16	60	444	4.1	14	38	166	6.16	226	5	ND	1	25	.9	13	2	17	.54	.071	2	12	.18	31	.01	2	.28	.01	.15	1	65	320
H069	3	21	60	1069	6.0	7	20	440	9.68	680	5	ND	1	52	2.9	22	2	17	1.38	.104	2	9	.45	20	.01	2	.30	.01	.19	1	149	1150
H070	4	21	77	167	6.8	9	28	171	13.80	880	5	ND	1	25	.4	20	2	13	.50	.050	2	18	.09	10	.01	2	.19	.01	.17	1	151	285
H071	2	30	325	1007	4.9	14	42	644	7.07	345	5	ND	1	51	2.7	16	2	19	1.50	.070	2	15	.54	24	.01	2	.27	.01	.20	1	260	670
H072	5	19	438	1394	3.7	11	37	324	8.24	411	5	ND	1	41	4.0	13	2	22	.81	.073	3	11	.27	18	.01	2	.35	.01	.21	1	99	875
H073	1	11	68	276	1.4	6	30	979	6.44	56	5	ND	1	47	.3	7	2	99	1.08	.090	4	16	1.93	35	.01	2	1.75	.01	.18	1	49	225
H074	3	11	77	280	1.5	10	30	882	6.00	125	5	ND	1	47	.6	8	2	63	.99	.070	3	30	.98	39	.01	2	.82	.01	.18	1	160	245
H075	11	63	403	760	3.1	14	27	762	6.69	132	5	ND	1	20	2.6	9	2	49	.31	.040	2	18	1.11	31	.01	2	1.35	.01	.20	1	38	465
H076	6	13	48	226	1.1	8	23	1204	5.88	74	5	ND	1	42	.5	9	2	64	.74	.096	4	15	1.80	29	.01	2	1.96	.01	.11	1	39	220
H077	9	11	22	973	1.5	13	21	1085	6.23	61	5	ND	1	27	4.7	6	2	61	.36	.047	4	17	2.18	20	.01	2	2.36	.01	.14	1	22	710
H078	8	13	26	88	1.4	7	15	1511	4.90	83	5	ND	1	70	.2	10	2	42	1.94	.053	3	20	1.94	29	.01	2	1.91	.01	.14	1	33	150
RE H074	3	11	77	288	1.5	10	31	897	6.15	132	5	ND	1	49	.5	7	2	64	1.01	.072	3	30	1.00	38	.01	2	.83	.01	.19	1	194	260
H079	4	11	24	41	1.3	7	11	1159	4.08	67	5	ND	1	95	.2	9	2	39	2.15	.080	5	12	1.19	34	.01	2	1.25	.01	.12	1	50	290
H080	2	7	13	143	.6	5	6	794	4.18	14	5	ND	1	37	.3	3	2	16	.60	.030	7	9	1.23	24	.01	2	1.60	.01	.20	1	36	115
H081	8	37	32	278	2.2	6	16	1854	6.52	425	5	ND	1	61	.5	18	2	46	1.77	.058	3	14	1.94	27	.01	2	1.90	.01	.15	1	125	445
H082	1	5	8	82	.3	2	4	854	4.88	23	5	ND	1	20	.2	2	2	14	.31	.072	10	13	1.07	36	.01	2	1.83	.01	.27	1	28	60
H083	3	13	11	87	.6	4	4	1276	4.35	77	5	ND	1	48	.2	3	2	33	.59	.075	8	9	.75	34	.01	2	1.21	.01	.14	1	120	135
H084	54	14	38	1167	1.3	6	4	973	1.92	84	5	ND	1	49	5.9	10	2	13	.87	.062	7	9	.41	38	.01	2	.52	.01	.14	1	106	1700
H085	1	18	12	161	1.9	2	6	1328	6.75	166	5	ND	1	25	.2	3	2	47	.42	.088	5	6	1.17	37	.01	2	1.81	.01	.11	1	280	210
H086	7	9	27	32	1.0	4	5	606	3.94	218	5	ND	1	17	.2	9	2	38	.25	.082	9	20	.66	42	.01	2	1.12	.01	.14	1	48	375
H087	12	13	38	22	1.0	6	7	610	3.16	592	5	ND	1	37	.2	11	2	38	.45	.065	7	10	.60	35	.01	2	.83	.01	.11	1	13	330
H088	2	5	18	97	.5	2	5	2187	5.44	110	5	ND	1	57	.2	5	2	44	1.66	.089	6	6	2.15	29	.01	2	2.08	.01	.09	1	15	245
H089	1	5	8	63	.5	2	3	1083	5.33	24	5	ND	1	25	.2	3	2	41	.48	.090	8	6	1.42	39	.01	2	1.79	.01	.10	1	13	25
H090	2	10	7	93	.1	3	7	1607	6.80	25	5	ND	1	17	.9	2	2	49	.30	.082	6	4	2.42	34	.01	2	3.09	.01	.07	1	17	135
RE A262	5	163	24	106	15.8	7	12	385	7.52	1010	5	ND	1	20	.4	33	2	18	.33	.109	3	9	.14	17	.01	2	.46	.01	.19	1	410	235
H091	1	8	5	131	.1	3	6	1671	7.57	22	5	ND	1	25	.8	2	2	50	.56	.092	6	10	3.04	32	.01	2	3.69	.01	.05	1	27	100
H092	1	10	2	149	.1	2	9	1765	8.79	17	5	ND	1	32	1.0	3	2	65	.48	.120	7	4	3.61	36	.01	2	4.41	.01	.08	1	21	105
H093	2	14	11	91	.1	2	8	1521	8.01	28	5	ND	1	23	1.2	2	2	76	.46	.139	5	3	3.36	35	.01	2	3.83	.01	.07	1	25	170
H094	3	10	10	78	.1	3	4	1506	6.47	64	5	ND	1	28	.6	2	2	59	.79	.106	5	10	2.82	31	.01	2	2.86	.01	.08	1	21	380
H095	5	11	10	150	.4	3	6	2283	6.42	63	7	ND	1	56	1.1	6	2	56	2.32	.104	4	5	3.52	35	.01	2	2.74	.01	.06	1	33	470

DATE RECEIVED: OCT 30 1991 DATE REPORT MAILED: Nov 21/91 SIGNED BY: ..... D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-18*

PURPOSE To check north extension of 900 zone

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
10+00N - 2+00W	388.963	270°	243.84m
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-45°	134.11 Test -45° 243.84 test -46°		
LOGGED BY / DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED / DATE COMPLETED**
GFM Oct 7/91	J.T. Thomas	BQ	Oct 6/91 Oct 8/91

SUMMARY LOG

0-3.6 CASING
3.0-24.8 Clastic turbidites, grading up sequences from basal sandstone → siltstone - mudstone top.
24.8-32.5 Tuffaceous silty sequence, argillaceous wispy greenish grey.
32.5-54.5 Black Argillite, Lt grey silty intervals
54.5-60.0 FAULT
54.5-68.9 Black graphitic argillite, Lt grey calcareous, silty, tuff intervals, foliated
68.9-164.1 Fine ash to Lapilli, intermediate to felsic, strongly altered silicification + sulphides 1-5%. Volcanic turbidites coarse base to fine tops. - weak foliation
164.1-194.5 Intermediate volcanic turbidites graded sequences chlorite altered foliated
194.5-198.7 pale yellowish green chloritic phyllite (rot tuff?) strong foliation
198.7-243.87 Black argillite, Lt grey silty beds 5%, strong foliation. (possibly upside down)
198.7-202 FAULT

SIGNIFICANT MINERALIZED INTERVALS

13.1, 13.5, 14.0 Trace sphalerite
20.1 pyrite 3-5% sphalerite ½%
25.7 Trace sphalerite
26.7 Trace sphalerite
30.0 Trace sphalerite
30.45 Trace sphalerite
31.1 Trace sphalerite
115.7-123.0 py+po dis 5%
118.3-118.5 <20% py-po-cpy(5%)
125.6-125.9 50% py-po

HOLE No. J91-#18

INTERVAL	C. LOSS	LITHOLOGY	∠	L	S	M	A
		0-3.6 CASING					
		3.0 - 27.8: Sandstone, siltstone, mudstone - turbidites, qtz-qtz-carb V, Py diss, Po, sphalerite, Lt gy to dk gy					
		Lt gy siltstone, limonite stained fractures, qtz-carb V. Tr pyrite	50/65		Fe/45	Py	Li/Fe
		Lt gy sandstone, Limonite stained Fe., qtz-yellow carbonate, Tr py. qtz V. Bx				Py	Li
		pale green (chlorite) in qtz carb V Bx)	60/65			Py	Li qV 45
		0.3 black mudstone, mud chips in sandstone				Py Po	Li qcV
		Silica flooding Tr py, Limonite Fe. Tr py.			Fe/30	Py	Li Si
		Lt gy sandstone mottled alteration			Fe/40	Py	Li Si qV 20
		green mineral (chlorite) in carbonate (yellow) vein Tr Py	50/80			Py	Si/Li
			50/50		Fe/45	Py	Li qV
		qtz - yellow carb. V Bx, Tr py, wall Rx fragments in Bx			Fe/40		Li
		small band argillite, stylolite bk carbon residue, qtz V	51/55			Py	Li stylolite qtz
		qtz veins irregular. Trace py - reddish sphalerite, stylolites blk carbon residue, limonitic gouge 13.9	50/70		Fe/60	Py Sp	Li qV stylolite
		Trace sphalerite, pyrite, Po, irregular qtz veins minor qtz-carb V.				Sp Po Py	qV
		qtz - carb - py V 5%, sequence from mudstone, siltstone, sandstone graded up hole, fining up sequences, turbidites			Fe/20	Py	qV 30 Li
		qtz carb - chl - py V, stylolite with blk carbon residue py d. V 1-2%				Py	qtz cb chl V
		qtz carb - chl - py V, stylolite, py V d 1-2%	30/80		Fe	Py	qtz-cb-chl V
		siltstone, mudstone siltstone, sandstone, feldspathic SS with tuff	40/80			Py	qcV
		dk gy siltstone, qtz py V 50°, py d, qtz - carb V 45				Py	qtz py V, qtz carb V
		qtz - carb - chl - py - Tr red brown sphalerite, qtz V 30° Sandstone Lt gy, stylolite blk residue					qV 30

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-*18

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
Tr to 1% py. v. d.	A104	3	4		70	0.6	38	210
		*	*					
"	A105	*	5		15	1.6	28	71
"								
	A106	5	6		20	10.0	53	155
"	A107	6	7		30	3.4	93	94
	A108	7	8		26	2.6	77	17
	A109	8	9		18	0.8	100	36
	A110	9	10		11	0.7	54	35
	A111	10	11		10	0.8	66	13
	A112	11	12		27	9.2	158	19
	A113	12	13		12	1.5	36	21
Sphalerite 13.1, 13.5 with py Trace.	A114	13	14		6	1.9	42	17
Sphalerite 14.0 with py Trace, Pb	A115	14	15		3	1.4	28	9
Trace to 1% py	A116	15	16		6	1.7	20	11
1-2% py	A117	16	17		11	3.2	172	10
1-2% py	A118	17	18		13	2.4	151	7
Tr py	A119	18	19		72	1.9	82	7
1% py	A120	19	20		25	1.4	45	7
20.1 py 3-5% red brown sphalerite Trace to 1%	A121	20	21		30	7.5	102	6

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No. J-91-#18

INTERVAL	C. LOSS	LITHOLOGY
		qtz py v 60°, qtz-cb-chl cuts qtz py v, stylolite
		Lt gy siltstone wispy bedding, Lt gy fine grained sandstone or intermediate intrusion (dyke)? clasts of Arg. - qtz veining. tr py incipient fol or bedding 40°, qv-cb v 65:55°, py v 30, Fe 35-45 Py 3% v.d.
		carb v 70, py irregular to 35° 1-2%, lower contact sheared
		qtz carb py v 50°, greenish grey tuffaceous siltstone 24.8
		green gy tuffaceous siltstone, qv, py v.d., 25.5 Trace sphalerite wispy black argillite, stylolites blk. qv 10-20°, q-cb v 30-50°
		py v.d., carbonate v. with sphalerite 40°, wispy bk arg. 27.7 stylolites blk, 27.8 more tuffaceous than silty.
		more tuffaceous greener in colour, wispy argillite, qtz py v carb v. py v.d. blebs 3%
		wispy argillite, py v.d. qtz-carb v., Trace red brn sphalerite 30.00
		more argillaceous. qtz v 30-40°, qtz py irregular v, py v.d. Py-po bleb Tr. Tr sphalerite 30.45
		31.1 Tr sphalerite, qv 35, bleb py-po 31.6 Fe 40 becoming more tuffaceous. chloritic
		chloritic tuff, po-py v.d. qtz v. 32.5 60° contact
32.5 - 34.5		Black Argillite, well bedded. Lt grey silty and tuffaceous interbeds. laminated py. qtz + qtz carb v.,
		35.3 qtz-cb-chl v. Bx
		carb v Bx
		stylolite, bedding steeper locally down CA. + contorted (slump?)

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

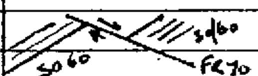
J91-#18

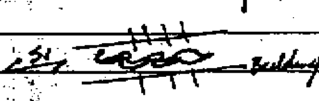
MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
1% py	A122	21	22		14	2.0	88	2
1% py	A123	22	23		27	3.0	87	2
3% py	A124	23	24		25	0.4	36	5
Tr py	A125	24	25		27	1.8	420	9
~~Trace sphalerite~~ 25.7 py 2%	A126	25	26		36	1.3	152	3
Trace sphalerite 26.7 py 2%	A127	26	27		49	1.8	115	2
	A128	27	27.7		28	1.2	103	3
3% py	A129	27.7	29		54	1.6	87	2
Trace sphalerite 30.00 1% py	A130	29	30		65	3.2	235	2
Trace sphalerite 30.45 2% py	A131	30	31		30	2.0	92	2
Trace sphalerite 31.1 2% py	A132	31	32		25	1.6	72	3
po+py 2%	A133	32	32.4		47	7.4	394	2
	A134	32.4	33		34	1.7	104	18
1-2% py	A135	33	34		5	1.0	55	
Tr-1% py	A136	34	35		8	0.9	54	9
1% py	A137	35	36		11	0.9	45	3
"	A138	36	37		6	0.9	38	2
"	A139	37	38		10	0.7	51	2
"	A140	38	39		10	0.6	44	9
"	A141	39	40		11	0.7	46	5
"	A142	40	41		26	0.5	44	3
"	A143	41	42		4	0.6	44	6

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-#18

INTERVAL	C. LOSS	LITHOLOGY	C/A	L	S	M	A
		irregular carbonate v. Tr py , py lam. Tr,	50/50				
		bedding offset along Fr.	50/60				
		graphite slips 75-80° So 80 ⊥ Fr 70	50/75				
		graphite fault. v 80°	50/75				
		FAULT GOUGE - Core loss 54.5 - 60.0					
54.5 – 68.9		Black graphite argillite - lam. py. Lt grey calcareous tuff or siltstone bands. calcite v with py. strong foliation minor folds boudined veins rotated vein calcite fragments. Trowelling fabric in Compositional plane fabric ⊥ to bedding CA in argillite bands. ∥ to CA.					
		Bedding					
		Nodules + boudins of calcite, py lam.					





GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-48

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
Tr-1% py	A145	42	43		16	0.6	42	7		
"	A145	43	44		7	0.5	37	5		
"	A146	44	45		8	0.7	44	5		
"	A147	45	46		10	0.4	32	2		
"	A148	46	47		4	0.4	48	5		
"	A149	47	48		12	0.5	43	3		
"	A150	48	49		12	0.5	39	4		
"	A151	49	50		7	0.7	57	5		
"	A152	50	51		7	0.8	58	4		
"	A153	51	52		4	0.4	39	4		
"	A154	52	53		3	0.3	29	3		
"	A155	53	54		11	0.1	21	2		
"	A156	54	55		7	1.0	26	9		
Core loss: ~1m core gauge	A157	55	57.3		7	0.6	17	2		
					-					
Core loss: ~1m core gauge	A158	57.3	60.0		3	0.1	22	5		
1% py	A159	60	61		4	0.3	26	3		
"	A160	61	62		6	0.2	32	6		
"	A161	62	63		4	0.2	30	4		

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No. J91-#18

INTERVAL	C. LOSS	LITHOLOGY
		Black argillite locally siliceous (cherty), foliated.
		Lt gy cal lam - boudins. graphitic slips
		Cal Fe ⊥ to fol.
		Fe pll and ⊥ to fol.
		pyritic lam.
		- grey patchy carbonate
68.9 – 164.1		volcanic grey to green foliated.
		fine ash to lapilli, lt gy calcite lam.
		strong flattening fabric, locally chloritic, py diss
		gouge at 70.1.
		large bx-vol frags in argillaceous sheared fabric
		coarse to fine ash fragment flattened in foliation 2 fol. fabric
		locally argillaceous.
		flattened greenish ash. some rotation on fragments.
		locally argillaceous and finer grained, possibly argillaceous
		top of volcanic debris flows with coarser ash bases fining
		uphole : calcite rimming py bleb.
		upper section predominantly fine grained varies from
		Blk argillaceous to chloritic green in colour
		locally calcareous, minor qtz veins, strong fabric S_1
		minor diss py
		lt gy siliceous lapilli in grn chloritic ash matrix
		fragments rounded to semi rounded, fabric slightly weaker
		py streaks 1-2% in fol. S_1 50°

L column: 75Ksctcb; 3+2AD⊂x cbj; 3+2A(c.kj cb.; 3+2 A ctk cb.; 3+2D cs

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-#18

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
	A163	63	64		3	0.2	26	7		
	A164	64	65		6	0.2	27	11		
	A165	65	66		3	0.2	27	11		
	A165	66	67		4	0.2	30	12		
	A166	67	68		3	0.2	29	12		
	A167	68	69		2	0.2	32	12		
	A168	69	70		1	0.2	22	4		
	A169	70	71		19	1.6	200	28		
	A170	71	72		9	0.8	43	10		
	A171	72	73		11	0.8	41	11		
	A172	73	74		5	0.8	23	12		
	A173	74	75		6	1.0	20	11		
	A174	75	76		4	0.8	14	7		
	A175	76	77		15	1.2	19	10		
	A176	77	78		20	0.7	25	8		
	A177	78	79		16	0.8	27	6		
	A178	79	80		21	0.9	31	6		
	A179	80	81		31	1.0	49	5		
	A180	81	82		7	0.7	7	4		
	A181	82	83		15	0.8	17	6		
	A182	83	84.		12	0.5	8	3		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-#18

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		Intermediate to felsic fine ash matrix to lapilli fragments, Silicification becoming pervasive not only in fragments but matrix with only local patchy chloritic, silicified section being brittally fractured and cut by white silica veins with some pyrite going way down section to more pyrrhotite, sulphides also disseminated; local vein qtz bx infilling, more pervasive crackle Bx down section - White qtz crackle Bx with blk (pyrobitumen) diss. 88.4 - Stylolite with carbon + po. 88.8 po specks diss in Bx 90.3-91. 89-91 patchy silica + chl. diss 3-5% sulphides patchy silica + chl to 93.0 93-98 pervasive lt gy silica with white silica crackle Bx and black pyrobitumen, diss po + v. 3-5% locally where silica patchy shears fr 30-40° 98-99 Chlorite 99-103 patchy Si + local wh silica Bx with Blk pyrobitumen eg 99.3 local patchy po 100.8-101 almost no fabric is now discernable in this altered equivalent of tuffs, and very little of the original textures		2-3% sulf.				84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-#18

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
		A183	84	85		15	0.8	06	3
		A184	85	86		82	06	6	2
		A185	86	87		9	0.6	6	2
		A186	87	88		13	0.8	8	2
		A187	88	89		6	1.0	108	2
		A188	89	90		27	0.9	119	3
		A189	90	91		23	0.7	19	4
		A190	91	92		62	0.4	47	3
		A191	92	93		65	0.9	46	6
		A192	93	94		14	0.2	17	2
		A193	94	95		8	0.3	86	4
		A194	95	96		5	0.4	78	3
		A195	96	97		12	0.4	52	4
		A196	97	98		27	0.5	60	7
		A197	98	99		10	0.3	21	7
		A198	99	100		43	0.9	87	10
		A199	100	101		3	0.4	11	7
		A200	101	102		5	0.8	43	6
		A201	102	103		14	0.9	46	5
		A202	103	104		2	0.5	25	3
		A203	104	105		3	0.9	42	7

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

J91-#18

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		Pervasive silicification local patchy sulphide disseminations, blebs, irregular veins py + po 5% Local wispy dark chlorite with pyrite					Si
		107-108 strong sulphides 20% porphyry mottled with qtz.					Si
		108.4 - 110.5 wispy dk chlorite + pyrite 5%					chl wispy
		110.5 - 112 blebby + patchy sulphides 5%					
		112-115.7 very fine grained blebby po 3% 2% qtz irregular veins					qtz v.
		115.7 - 123. py dis. ✓ 5%					
		118.3 - 118.5 20% sulphides py-po-cpy (5%)					
		122. blotchy ch dk grn with py-po 3%					chl.
		123.2 Lithic tuff 1-2 cm. frags. 50-55					
		124.5 py 1-2% v.d.					
		125.8-125.9 50% py + po wht qtz					qtz

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-#18

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au	Ag g/t	As ppm	Sb ppm		
	A204	105	106		7	1.0	112	7		
	A205	106	107		2	0.6	27	4		
20% py+po	A206	107	108		45	2.7	204	28		
	A207	108	109		51	1.9	125	19		
	A208	109	110		96	2.4	130	15		
	A209	110	111		74	1.4	62	8		
	A210	111	112		60	1.3	74	11		
	A211	112	113		46	1.0	65	6		
	A212	113	114		69	0.9	27	7		
	A213	114	115		31	1.2	36	7		
	A214	115	116		200	3.0	235	13		
	A215	116	117		560	11.7	315	32		
	A216	117	118		440	5.7	289	21		
20% py-po-cpy(5%).	A217	118	119		2590	52.8	1101	107		
	A218	119	120		640	4.6	139	16		
	A219	120	121		89	1.2	97	4		
	A220	121	122		240	4.1	174	12		
	A221	122	123		178	2.0	136	12		
	A222	123	124		1350	2.3	139	9		
	A223	124	125		250	3.3	341	12		
	A224	125	126		2660	17.2	711	47		

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91 # 18

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		green, brown, grey colour fine to coarse ash size vesicular fragments silica alta, diss + v py po, wsh qtz v + blebs, wispy chlorite.					
		destructive Alta out from py-qtz v. + in crackle Fx. fine Ash remnant texture					
		wht fgm remnant texture					
		destructive Alta out from py-silica v.					
		vesicules filled with chl + py remnant texture ash with reaction rims Traces of wispy chlorite					
		vesicles or mixed ash					
		mottled colour					

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-#18

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
		A225	126	127		180	2.6	153	19
		A226	127	128		114	1.4	66	11
		A227	128	129		390	2.0	109	7
		A228	129	130		174	2.2	111	9
		A229	130	131		48	1.6	199	8
		A230	131	132		590	4.5	249	7
		A231	132	133		200	1.7	175	7
		A232	133	134		260	2.3	166	8
		A233	134	135		880	2.4	209	10
		A234	135	136		200	1.6	350	6
		A235	136	137		109	1.1	76	2
		A236	137	138		64	1.6	142	3
		A237	138	139		280	3.2	193	9
		A238	139	140		470	4.1	197	2
		A239	140	141		390	2.8	281	8
		A240	141	142		200	2.8	150	3
		A241	142	143		250	2.5	168	2
		A242	143	144		290	2.4	231	2
		A243	144	145		270	2.6	228	2
		A244	145	146		310	2.0	239	3
		A245	146	147		200	1.8	98	2

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No. J91-18

INTERVAL	C. LOSS	LITHOLOGY	C ∠	L	S	M	A	
		vesicular or rimmed fragments with qtz-chl infilling				py	Si	147 qtz-cal qv
								148
			51/60			py		
								149
		wispy shear 70° chl + py			ws/70		Si	chl-py
								150
				2-2AB's x-t		py	Si/	chl.
								151
						py	Si/	chl
								152
		little black speck disseminated, fps or fine ash				py		qv 50
								153
		wispy chl-py 2% lithic fragments					Si	chl
					50	py		154
		wispy chl-py 2%, irregular wh qtz					Si	qv
		banded 50° patchy black with qtz				py po		155
		qv 60° irregular qtz with po-py 3%						qv irregular
						py po		156
		irregular qtz py-po 3-5%						qv irregular
						py po		157
		irregular qtz py-po 3-5%						irregular qtz
						py po		158
								159
		streaky qtz-py-po 5% Ash with reaction rims	51/60			py po		qtz
								160
								qv
		irregular qtz py-po						161
		irregular bluish qtz with black spots cut by later						qtz-blk qv
		white qtz with py-po 3-5%				py po		162
		irregular wh qtz with py-po 3-5%					Si	qv
								163
		lithic fragments, irregular qtz py-po 3-5%						qv
		mottled textures						164
			75					
		164.1 - 194.5						165
		fine tuff mottled brn-grn - siliceous weak patchy	51/60	1-2.1 A2bx		py	Si	streaky
		streaky dk grn chl with py 5%						166
								167 chl streaks with py
								168

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-18

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au	Ag g/t	As ppm	Sb ppm
		A246	147	148		290	2.1	227	2
		A247	148	149		101	1.5	178	2
		A248	149	150		210	1.4	134	2
		A249	150	151		260	1.8	137	2
		A250	151	152		195	2.7	311	5
		A251	152	153		230	2.3	778	11
		A252	153	154		300	2.3	1151	8
		A253	154	155		127	2.6	496	4
		A254	155	156		87	1.1	321	2
		A255	156	157		107	1.4	211	2
		A256	157	158		126	1.8	157	2
		A257	158	159		730	4.2	1675	22
		A258	159	160		117	2.8	252	2
		A259	160	161		72	2.0	292	2
		A260	161	162		187	7.2	519	14
		A261	162	163		88	1.7	276	2
		A262	163	164		420	15.5	997	34
		A263	164	165		270	11.6	770	32
		A264	165	166		117	1.8	436	12

HOLE No. J91-#18

INTERVAL	C. LOSS	LITHOLOGY	C ∢	L	S	M	A	
		164.1 – 194.5						168
		sequence of volcanic turbidites from vol SS to mudstone-tuff graded up hole, mottled blk-green, chloritic, argillaceous vol ss feldspathic, wispy chlorite dk green with dissg blk argillaceous tops, wispy shears, foliated. minor py Tr–1% qtz v minor Tr–1%. locally calcareous cement in ss.	50/60, 50/70, 50/70	1-2 Alt Tcb	Fe 70, w.s 60	py	chl, chl	169, 170, 171, 172
		Fault gouge 172.5, 173.5						173
		fault goug 173.0			Fe	py		174
			50/70		Fe 30	py		175, 176
		176 – 177.3 calcareous cement in vol sandstone			Fe 40		Calcareous	177
		177.7 fault gouge						178, 179
			30/51			py, py		180, 181
					Fe 65		60	182
		182.7 – 182.9 fault gouge						183
		pebbly vol fps SS calcareous						184
		Limestone bed 0.1 cm.						
		pebbly vol fps ss calcareous	SLC 65					185 wispy chl
		pebbly vol fps ss calcareous						186, 187
						py 70		wispy chl, 188, 189

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-#18

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		fault 194.3 - 194.5 gtz veined					
		194.5 - 198.7 pale yellowish green chloritic phyllite vol tuff, strong deformation, kink bands small folds, boudined qtz v. 1-2% pyrite locally					
		198.7 - fault gouge 202.					
		198.7 - 243.84. Black argillite (mudstone) w/ gy silty beds 5% Strongly foliated, 5% qtz veins + boudins minor py laminations 1%, small folds.					

187 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-#18

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		Black argillite (mudstone), Lt gy siltstone, 3%, qtz < 5% small folds, bounded qtz. Strong fabric owing py bnd. 3%					
		Lt gy cal band.					
		cal band with pyrrhotite					

210 211 212 213 214 215 216 217 218 cal. 219 220 221 qtz. 222 223 224 225 226 227 228 229 230 231

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		Black argillite (mudstone) well banded Lt gy siltstone bands, qtz v. 5% py v 3%, Lam. Strong fabric	51/70		70/	X	231 qv 232 233 234 235 236 qtz 237 qv/qtz 238 239 cut. 240 qv 241 242 243
		KA 10° counter.	51/55			70/ py	
						py	
			51/66	TUFF		py	
		Tops possibly down hole? overturned?				py	
			51/65			10/ py	
					65/70		
			51/70				
		EOH 243.84m (800ft).					

Sample J-91-18 76.1 m Andesite Lapilli Tuff (Unit 2D.2Gu); Replacement Patches of Quartz-Chlorite-Calcite-Pyrite

Fragments are mainly of aphanitic to very fine grained andesite flows, commonly containing lathy plagioclase up to 0.1 mm long an aphanitic groundmass of plagioclase and chlorite. Pyrite forms disseminated clusters up to 0.5 mm in size.

Replacement patches contain: coarse grained quartz (17-20%), calcite (3-4%), and pyrite (1-2%); patches of very fine grained chlorite (10-12%); very fine to medium grained intergrowths of K-feldspar (4-5%) and quartz, and scattered grains of apatite up to 0.4 mm across.

Sample J-91-18-77.3 m Contact: Very Amygdaloidal Basaltic Andesite (Unit 1Ga), Argillite (Unit 7J.7J/3Au.3Cu)

The amygdaloidal basaltic andesite contains lathy plagioclase grains up to 0.03 mm long in an aphanitic groundmass containing abundant semiopaque and opaque. It contains very abundant (50%) amygdules dominated by zeolite(?), carbonate, chlorite, and quartz. A few contain patches of sphalerite intergrown with chlorite and cherty quartz, mainly in cores, and others contain patches of subhedral to euhedral pyrite.

The argillite is dominated by sericite and chlorite, with moderately abundant dusty to extremely fine grained opaque, commonly concentrated in wispy seams parallel to foliation. Pyrite (5-7%) forms dense lenses and patches up to 0.5 mm wide commonly oriented parallel to foliation. Fragments up to a few mm long are dominated by sericite/muscovite without opaque. Some of these contain abundant tiny lenses of chlorite parallel to foliation; the texture suggests that the fragments are altered pumice.
Quartz forms minor detrital grains up to 0.07 mm in size.

Wispy seams of opaque parallel to foliation in the argillite may represent zones of later shearing parallel to foliation.

Sample J-91-18 89.0 m Brecciated Latite/Trachy-latite Flow (Unit 4/5Gf); Matrix of Quartz-Calcite-Pyrite-Chlorite

The fragments (65%) are of a few textural types of latite to trachy-latite, and possibly potassic-altered andesite. A few contain phenocrysts of K-feldspar up to 1 mm in size. Some phenocrysts (plagioclase or K-feldspar) are replaced partly by interlocking intergrowths of K-feldspar and quartz. The groundmass is very fine to extremely fine grained plagioclase and K-feldspar, with much less abundant disseminated patches of chlorite (possibly after hornblende) and opaque (pyrite).

A few fragments are dominated by lathy plagioclase averaging 0.07-0.12 mm long in subparallel orientation defining a flow-foliation. These contain interstitial K-feldspar and chlorite, minor prismatic apatite crystals up to 0.12 mm long and equant grains up to 0.1 mm across, and disseminated, extremely fine grained opaque.

Fragments are set in a sparse to abundant matrix (35%) of very fine to medium grained quartz, fine to coarse grained calcite, and extremely fine to fine grained pyrite. Some calcite-rich patches contain disseminated, euhedral quartz grains averaging 0.07-0.12 mm in size. Chlorite (0.5%) forms a few foliated lenses up to 1.7 mm long along borders of some quartz-calcite replacement patches.

Irregular wispy seams and patches (1-2%) are dominated by sericite/muscovite.

Sample J-91-18 94.7 m Trachy-Latite Flow (Unit 5G); Zoned Replacement Patch/Vein of Quartz-Calcite-Pyrite-(Chlorite-Ankerite)

Subhedral to euhedral phenocrysts (1-2%) up to 1.2 mm in size of plagioclase(?) are replaced completely by aggregates of extremely fine grained chlorite with less abundant interstitial patches of quartz and calcite. A few phenocryst up to 0.4 mm in size may be of altered hornblende; they consist of aggregates of quartz and chlorite with scattered original(?) grains of apatite.

The groundmass is dominated by lathy plagioclase and interstitial K-feldspar with a weak flow-foliation. Much less abundant are extremely fine grained chlorite, ankerite, and Ti-oxide. Apatite forms acicular grains up to 0.4 mm long. Pyrite forms disseminated grains averaging 0.02-0.03 mm in size, and replacement patches up to 1 mm across of very fine to fine grained aggregates.

A few wispy seams up to 0.1 mm wide are of foliated chlorite. A similar chlorite-rich fragment 1.5 mm long occurs in the quartz-rich border zone of the replacement patch.

A replacement patch/vein (35%) at one end is zoned strongly. Along the margin is a zone of quartz in which patches averaging 0.07-0.12 mm in size consist of extremely fine grained, interlocking aggregates in approximately parallel optical orientation are set in a groundmass of similar extremely fine grained quartz. In places, this zone contains irregular patches of extremely fine grained chlorite and elsewhere it contains fragments up to 1 mm in size of the host rock. Interior to this is a zone of ankerite averaging 0.05 mm wide. Interior to this is a zone up to 2 mm wide in which cryptocrystalline quartz occurs in patches with subradiating extinction. In the core of some of the patches is coarse grained calcite. In this calcite are a few patches of very fine grained quartz and subhedral grains of ankerite averaging 0.1-0.15 mm in size. Pyrite forms scattered grains and clusters up to 1.5 mm in size.

Sample J-91-18 123.4 m Trachy-latite Tuff (Unit 5C); Replacement Patches of Pyrite-Pyrrhotite-Sericite-Quartz-(K-feldspar)

Fragments are up to several mm across.

Most fragments are of aphanitic to very fine grained trachyte and trachy-latite. A few patches contain minor K-feldspar or plagioclase phenocrysts averaging 0.5-1 mm in size. Some fragments have a prominent flow-foliation. Sericite forms irregular replacement patches up to 1.5 mm in size, commonly with diffuse borders.

A few fragments of hypabyssal latite contain plagioclase phenocrysts in a groundmass of lathy plagioclase, K-feldspar, and minor ankerite.

The groundmass is dominated by extremely fine grained quartz/plagioclase with minor sericite and disseminated patches of Ti-oxide.

In the groundmass, pyrrhotite (1%) forms elongate lenses and irregular patches up to 1 mm in size of granular aggregates averaging 0.03-0.05 mm in grain size. Pyrite forms disseminated grains averaging 0.02-0.03 mm in size.

A few fragments up to 0.2 mm across are of quartz grains (possibly small phenocrysts).

Replacement patches are of pyrite, pyrrhotite, sericite, quartz, and K-feldspar. Pyrite and pyrrhotite form patches up to several mm across. Pyrite forms subhedral to euhedral grains and aggregates averaging 0.03-0.5 mm in grain size. Pyrrhotite forms anhedral patches of grains averaging 0.07-0.2 mm in size, and irregular interstitial patches between pyrite grains. Chalcopyrite forms minor patches up to 0.1 mm in size on pyrrhotite-pyrite contacts. Sulfide-rich patches contain clusters of Ti-oxide grains averaging 0.01-0.02 mm in size.

Sericite forms patches up to 2 mm across of extremely fine grains. Quartz and sericite form extremely fine grained patches. K-feldspar is intergrown with quartz in some very fine grained patches.

Medium to dark orangish brown sphalerite forms a few patches up to 0.1 mm in size on borders of pyrrhotite-rich patches.

No gold-bearing phases were recognized.

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WHOLE ROCK ICP ANALYSIS

Grandes Inc. PROJECT UNUK RIVER File # 91-5479 Page 1

2200 - 885 W. Georgia St., Vancouver BC V6C 3E8

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	La ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
J91-2-21.2	72.05	11.60	3.88	.77	1.70	.05	6.54	1.98	.03	.01	.007	1106	25	26	122	24	20	2.9	100.01
J91-3-15.5	65.00	9.95	8.69	.35	1.70	.12	7.90	1.76	.59	.01	.003	2249	87	18	131	41	23	4.5	99.99
J91-7-35.0	37.49	13.50	6.85	4.77	19.74	4.54	.83	1.18	.18	.18	.015	387	623	10	194	23	20	14.6	100.33
J91-7-39.0	38.34	12.43	7.71	3.09	17.05	5.83	.20	1.36	.25	.17	.012	189	860	10	105	25	20	13.4	100.29
J91-8-65.2	63.84	13.75	5.44	1.62	1.69	.09	8.28	1.54	.26	.06	.005	1722	101	14	172	25	20	4.0	100.06
J91-10-69.0	69.41	11.33	4.44	.37	1.76	.11	7.79	1.95	.57	.01	.004	2136	88	10	124	31	20	2.9	100.02
J91-11-88.0	54.61	15.27	4.72	2.17	5.68	5.42	1.84	1.32	.22	.19	.019	1373	233	10	159	7	61	8.4	100.14
J91-12-166.5	53.85	14.26	9.63	2.72	5.52	1.62	3.66	1.80	.60	.25	.002	784	243	13	113	26	48	6.0	100.10
J91-12-175.6	56.93	13.43	7.78	3.63	3.87	.66	5.03	.77	.26	.135	.006	1046	147	12	166	9	24	7.2	100.13
J91-15-91.0	29.07	13.20	11.60	6.70	16.67	1.57	2.72	1.08	.19	.54	.012	707	246	10	45	16	44	16.9	100.42
J91-16-129.15	46.04	15.77	9.14	4.43	7.04	1.89	5.52	1.53	.31	.27	.007	1010	141	10	173	18	87	8.0	100.16
J91-17-89.6	59.10	13.03	8.62	3.16	4.53	4.09	.66	1.52	.29	.16	.002	288	247	25	154	37	79	5.0	100.08
J91-17-149.0	65.12	12.13	6.33	2.70	1.77	.08	7.63	1.31	.35	.18	.003	2173	130	17	115	22	76	3.0	100.02
J91-17-172.0	57.65	12.90	11.38	5.32	1.92	.09	5.52	1.39	.44	.33	.002	1518	75	22	166	56	66	3.8	100.05
J91-18-76.1	59.22	15.23	7.64	3.94	1.93	2.01	4.22	2.01	.45	.14	.002	1891	109	21	163	50	60	3.9	100.03
J91-18-77.3	59.74	16.41	4.76	3.19	6.23	.28	5.96	1.42	.07	.06	.010	897	37	24	161	51	41	7.8	100.14
J91-18-89.0	60.81	10.80	10.64	3.04	2.23	.06	5.67	1.18	.29	.25	.005	3724	247	15	148	42	24	4.4	100.06
J91-18-94.7	62.99	12.76	8.13	2.02	1.67	1.45	7.23	1.40	.36	.10	.002	3086	126	20	166	35	77	2.1	99.99
J91-18-123.4	62.26	11.54	9.78	2.93	1.61	.18	7.14	1.23	.34	.23	.002	1350	80	18	91	39	30	3.6	100.00
J91-20-74.8	49.69	10.77	14.85	6.84	6.50	.43	.70	.98	.32	.62	.002	123	150	21	94	32	26	8.4	100.16
J91-21-49.0	46.62	14.41	15.25	1.76	2.21	4.99	1.55	2.04	.62	.07	.002	877	289	23	166	28	59	10.5	100.24
J91-22-45.0	62.61	10.92	9.01	2.19	1.36	.39	1.93	1.59	.39	.09	.002	1113	81	16	113	28	20	9.5	100.20
J91-22-130.2	46.62	15.29	16.18	4.12	2.17	4.21	.95	3.27	.65	.16	.002	203	109	23	181	44	46	6.4	100.10
J91-22-177.1	55.90	18.36	6.80	2.60	1.93	.09	8.93	2.00	.53	.12	.002	1314	99	28	166	36	90	3.5	100.04
J91-22-183.0	68.23	14.40	3.44	2.42	1.49	.05	6.92	.66	.14	.08	.002	1035	63	33	206	31	79	3.0	100.04
J91-22-208.5	70.20	13.65	3.76	2.55	1.11	.05	5.78	.94	.10	.10	.002	1119	38	26	142	15	53	2.6	100.02
J91-22-211.5	54.36	15.48	10.93	8.35	1.25	.05	3.38	1.51	.23	.33	.005	609	40	10	85	21	28	5.1	100.05
J91-24-164.7	44.84	16.27	14.50	5.09	5.21	.07	4.42	1.60	.49	.178	.002	1213	665	21	176	20	86	6.5	100.08
RE J91-22-177.1	55.80	18.19	6.84	2.66	1.97	.05	9.13	1.97	.53	.112	.002	1296	100	30	167	35	77	3.5	100.02
J91-24-207.3	54.95	12.97	11.80	3.86	4.71	.06	4.27	1.55	.40	.145	.002	1694	250	19	133	28	47	4.7	100.07
J91-25-26.9	51.21	15.96	7.89	2.11	7.49	3.81	2.90	2.43	.57	.28	.002	1247	335	21	140	27	108	5.1	100.04
J91-25-45.4	50.89	15.41	8.40	1.83	7.44	3.94	2.88	2.43	.54	.19	.002	974	246	23	141	25	70	5.9	100.08
J91-26-42.4	51.52	16.07	10.06	2.73	7.08	.16	4.72	1.38	.35	.23	.002	1876	237	33	183	45	79	5.4	100.09
J91-26-105.2	57.90	12.68	8.98	3.31	4.84	.05	4.55	1.63	.48	.41	.002	1228	129	23	117	29	62	5.0	100.08
J91-27-32.65	54.73	16.02	6.47	3.42	5.71	4.09	1.85	2.35	.60	.15	.002	1756	339	14	134	26	20	4.3	100.05
J91-27-60.8	74.21	9.88	3.60	.88	1.98	4.12	.73	1.79	.47	.06	.002	800	166	14	103	18	24	2.1	100.00
J91-27-68.0	57.38	14.99	8.47	3.90	1.52	1.92	2.53	2.39	.62	.07	.002	2205	162	20	144	36	29	5.9	100.11
STANDARD SO-4	67.81	10.29	3.56	.98	1.61	1.33	2.05	.57	.23	.13	.005	795	207	29	321	23	20	11.2	99.98

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3.

• SAMPLE TYPE: CORE Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: NOV 15 1991 DATE REPORT MAILED: Nov 30/91. SIGNED BY: D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

Granges Inc. PROJECT UNUK RIVER 134 File # 91-5084 Page 1

2300-885 W. Georgia St., Vancouver BC V6C 3E8 Submitted by: R.L. WRIGHT

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Au*	Hg
J91-18	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppb	ppb
A104	1	58	14	181	.6	26	12	1512	4.30	38	5	ND	1	74	1.1	210	2	34	1.56	.085	7	17	.98	114	.01	2	1.79	.02	.17	1	70	40
A105	1	50	74	627	1.6	18	9	2121	3.36	28	5	ND	1	163	5.5	71	2	16	2.94	.055	3	10	1.17	56	.01	3	.82	.04	.09	1	15	250
A106	1	67	75	502	10.0	33	16	1718	4.25	53	5	ND	1	162	4.2	155	2	11	2.57	.078	3	7	1.15	54	.01	3	1.08	.02	.21	1	20	970
A107	1	134	138	856	3.4	39	22	620	6.48	93	5	ND	2	43	6.2	94	2	12	.72	.101	3	6	1.01	41	.01	3	1.90	.01	.22	1	30	435
A108	2	68	141	733	2.6	26	18	873	4.45	77	5	ND	2	46	5.6	17	2	36	.78	.082	4	32	.99	50	.01	3	1.54	.02	.14	1	26	880
A109	1	57	84	419	.8	29	15	928	5.05	100	5	ND	1	27	3.2	36	2	68	.39	.067	4	65	1.43	35	.01	2	1.87	.03	.13	1	18	790
A110	1	50	41	213	.7	37	17	1539	4.66	54	5	ND	1	97	1.2	35	2	34	1.19	.092	6	20	1.53	77	.01	3	2.05	.01	.23	1	11	380
A111	1	41	16	131	.8	27	15	1293	4.70	66	5	ND	1	54	.4	13	2	36	.80	.083	5	25	1.36	87	.01	3	1.93	.02	.18	1	10	325
A112	1	63	36	371	9.2	27	15	1723	4.79	158	5	ND	1	262	2.8	19	2	19	2.75	.072	2	10	1.53	68	.01	4	.99	.01	.21	1	27	750
A113	1	67	242	575	1.5	18	9	1238	4.28	36	5	ND	2	61	3.3	21	2	41	.72	.063	4	22	1.11	68	.01	2	1.46	.01	.14	1	12	250
A114	3	65	272	3562	1.9	22	9	1250	4.99	42	5	ND	2	29	20.1	17	2	36	.35	.059	4	24	1.20	63	.01	2	1.27	.01	.14	1	6	1950
A115	2	99	164	3066	1.4	18	12	1513	5.74	28	5	ND	1	31	17.3	9	2	44	.37	.071	4	24	1.26	57	.01	3	1.49	.01	.18	1	3	1750
A116	2	46	100	611	1.7	12	9	1129	3.71	20	5	ND	2	61	4.2	11	2	11	.69	.072	5	6	.67	58	.01	4	.68	.01	.24	1	6	270
RE A121	2	202	643	9663	8.0	28	13	1388	7.49	100	5	ND	2	55	53.4	5	7	21	.70	.053	3	19	.80	17	.01	2	1.10	.01	.20	1	18	4400
A117	3	52	170	1054	3.2	22	14	344	3.63	72	5	ND	2	26	7.4	10	2	6	.44	.084	4	5	.17	42	.01	4	.50	.01	.32	1	11	965
A118	1	50	244	1393	2.4	20	13	1053	4.99	151	5	ND	1	47	10.1	7	6	12	.51	.046	2	7	.53	44	.01	2	.87	.01	.20	1	13	475
A119	1	42	138	2143	1.9	19	10	1088	4.22	82	5	ND	1	32	14.6	7	2	14	.43	.062	4	7	.56	59	.01	4	.93	.01	.23	1	72	505
A120	1	46	214	534	1.4	25	11	1288	4.28	45	5	ND	1	32	3.6	7	3	8	.44	.075	4	4	.50	62	.01	5	.61	.01	.33	1	25	195
A121	2	188	613	9164	7.5	26	13	1303	7.03	102	5	ND	2	52	50.0	6	8	20	.66	.052	3	18	.75	17	.01	2	1.03	.01	.20	1	30	4000
A122	1	52	225	922	2.0	17	11	1161	5.11	88	5	ND	1	41	5.8	2	2	16	.58	.074	3	9	.80	42	.01	3	1.20	.01	.22	1	14	320
A123	4	38	425	1163	3.0	18	10	643	3.72	87	5	ND	2	38	7.7	2	6	4	.51	.044	2	8	.50	52	.01	4	.86	.01	.18	1	27	420
A124	4	10	33	87	.4	11	6	193	1.11	36	5	ND	1	17	.4	5	2	3	.21	.040	4	5	.08	66	.01	4	.29	.01	.22	1	25	110
A125	9	41	152	674	1.8	23	22	361	5.63	420	5	ND	2	21	5.1	9	2	4	.25	.035	3	3	.15	27	.01	3	.36	.01	.25	1	27	605
A126	4	26	214	1426	1.3	12	8	821	3.10	152	5	ND	1	9	11.1	3	3	14	.14	.033	3	10	.34	56	.01	2	.54	.01	.18	1	36	545
A127	2	54	298	1601	1.8	14	12	1269	5.15	115	5	ND	1	10	12.3	2	4	31	.21	.066	3	18	.75	56	.01	2	.84	.01	.15	1	49	495
A128	1	26	98	1648	1.2	11	14	1382	5.80	103	5	ND	2	40	11.8	3	5	21	.38	.048	3	12	.83	54	.01	2	.67	.01	.16	1	28	470
A129	2	39	58	1413	1.6	16	14	1061	5.31	87	5	ND	2	12	9.7	2	5	41	.32	.056	3	25	.82	57	.01	2	1.15	.01	.16	1	54	425
A130	4	109	105	721	3.2	18	31	1590	9.69	235	5	ND	1	8	4.3	2	12	50	.17	.051	2	26	1.05	36	.01	2	2.02	.01	.13	1	65	180
A131	1	79	230	1679	2.0	13	15	1627	6.77	92	5	ND	2	27	12.9	2	6	48	.40	.058	3	22	.88	50	.01	2	1.57	.01	.14	1	30	460
A132	2	39	103	774	1.6	17	12	1468	5.67	72	5	ND	1	12	5.6	3	3	40	.35	.067	3	22	.80	61	.01	2	1.49	.01	.17	1	25	290
A133	4	612	560	5181	7.4	17	23	2245	10.03	394	5	ND	2	28	34.2	2	6	50	.65	.056	3	32	1.76	37	.01	2	2.82	.01	.13	1	47	2100
A134	1	138	127	1046	1.7	48	17	1770	4.91	104	5	ND	2	95	6.4	18	2	15	1.89	.109	5	12	1.35	67	.01	4	1.09	.01	.27	1	34	230
A135	1	96	25	190	1.0	54	18	1893	4.68	55	5	ND	1	154	1.0	9	2	24	3.09	.118	6	20	1.56	71	.01	3	2.04	.01	.27	1	5	50
A136	1	84	37	367	.9	50	17	1978	4.84	54	5	ND	1	149	2.2	3	2	24	3.47	.118	6	21	1.69	66	.01	3	2.12	.01	.26	1	8	110
A137	1	114	44	234	.9	47	16	1358	4.35	45	5	ND	1	262	1.3	2	2	25	3.78	.101	4	21	1.45	93	.01	3	2.09	.01	.27	1	11	120
A138	1	75	19	172	.9	38	15	1527	3.74	38	5	ND	1	291	1.0	2	2	19	6.18	.090	5	17	1.06	59	.01	2	1.70	.01	.24	1	6	260
A139	1	110	27	334	.7	49	17	998	4.64	51	5	ND	1	125	1.9	3	2	23	2.92	.098	4	23	1.33	70	.01	2	1.96	.02	.27	1	10	155
STANDARD C/AU-R	19	59	37	139	7.2	72	33	1065	4.06	42	19	7	40	52	18.5	15	18	55	.50	.092	39	60	.88	181	.09	32	1.92	.06	.15	12	480	1800

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE AU* ANALYSIS BY ACID LEACH/AA FROM 10 GM SAMPLE. HG ANALYSIS BY FLAMELESS AA.
Samples beginning 'RE' are duplicate samples.

COPY

DATE RECEIVED: OCT 16 1991 DATE REPORT MAILED: Oct 21/91. SIGNED BY: ..... D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
↓91-1B																																
A140	1	106	11	285	.6	39	15	1627	4.67	44	5	ND	1	75	1.7	9	2	11	3.25	.089	5	14	1.31	79	.01	2	1.11	.01	.23	1	10	295
A141	1	125	29	124	.7	54	18	1061	4.32	46	5	ND	1	174	.5	5	2	27	3.32	.111	6	28	1.50	57	.01	2	1.91	.01	.23	1	11	100
A142	1	94	10	83	.5	48	16	1618	4.25	44	5	ND	1	300	.2	3	2	28	4.91	.102	6	29	1.51	48	.01	2	2.00	.01	.21	1	26	85
A143	1	125	11	120	.6	57	18	631	4.70	44	5	ND	1	107	.3	6	2	31	2.32	.115	6	31	1.62	55	.01	2	2.24	.01	.24	1	4	130
A144	1	122	14	96	.6	49	17	839	4.38	42	5	ND	1	163	.3	7	2	27	4.07	.102	5	26	1.39	56	.01	3	1.94	.01	.23	1	16	150
A145	1	114	11	93	.5	48	16	915	4.37	37	5	ND	1	182	.2	5	2	27	4.05	.107	5	26	1.33	56	.01	2	1.89	.01	.26	1	7	130
A146	1	100	12	92	.7	46	19	898	4.97	44	5	ND	1	145	.2	5	2	26	4.06	.092	5	25	1.36	53	.01	3	1.86	.01	.23	1	8	190
A147	1	115	11	88	.4	38	15	659	4.13	32	5	ND	1	98	.2	2	2	24	2.73	.103	6	23	1.23	68	.01	2	1.78	.01	.25	1	10	160
A148	1	95	25	117	.4	40	16	1175	4.45	48	5	ND	1	212	.3	5	2	23	6.56	.078	5	22	1.39	69	.01	2	1.77	.01	.21	1	4	265
A149	1	94	15	103	.5	44	16	808	4.04	43	5	ND	1	184	.4	3	2	22	3.91	.094	5	22	1.15	59	.01	2	1.64	.01	.23	1	12	130
A150	1	87	13	108	.5	39	15	1026	3.92	39	5	ND	1	225	.4	4	2	20	4.93	.090	5	22	1.07	59	.01	3	1.55	.01	.24	1	12	305
A151	1	98	35	122	.7	45	17	1142	4.06	57	5	ND	1	231	.6	5	2	18	4.42	.113	5	19	1.05	74	.01	2	1.42	.01	.32	1	7	135
A152	1	127	20	110	.8	56	19	777	5.02	58	5	ND	1	126	.2	4	2	22	3.04	.104	5	26	1.13	32	.01	4	1.71	.01	.25	1	7	130
A153	1	66	23	111	.4	40	13	1480	3.94	39	5	ND	1	232	.5	4	2	19	6.63	.078	6	23	1.46	102	.01	2	1.13	.01	.24	1	4	205
A154	1	143	8	106	.3	26	16	507	4.00	29	5	ND	1	161	.3	3	2	17	2.16	.110	8	10	1.06	124	.01	2	1.64	.01	.26	1	3	65
A155	1	128	7	105	.1	28	16	420	3.83	21	5	ND	1	139	.2	2	2	18	1.71	.111	6	11	.95	116	.01	3	1.38	.02	.29	1	11	75
A156	9	19	67	134	1.0	25	8	1661	4.49	26	5	ND	1	319	.9	9	2	14	8.28	.077	3	9	2.09	54	.01	2	.61	.01	.18	1	7	300
A157	5	10	13	122	.6	11	4	1140	3.07	17	5	ND	1	312	.7	2	2	7	10.08	.040	2	5	2.37	51	.01	2	.42	.01	.12	1	7	475
A158	17	22	13	142	.1	25	6	676	3.70	22	5	ND	1	239	1.1	5	2	9	6.16	.049	3	7	1.28	52	.01	2	.68	.01	.17	1	3	700
A159	26	28	11	157	.1	36	7	438	3.78	26	5	ND	1	137	1.0	3	2	8	5.16	.060	4	8	.82	44	.01	3	.93	.01	.17	1	4	900
A160	37	41	21	312	.3	57	9	298	4.16	32	5	ND	1	98	2.2	6	2	9	2.76	.036	3	7	.85	41	.01	2	.45	.01	.19	1	6	815
A161	38	37	16	215	.2	54	8	365	4.12	30	5	ND	1	80	1.3	4	2	9	2.94	.045	4	7	.81	40	.01	2	.90	.01	.17	1	4	1150
A162	33	34	16	138	.2	45	8	746	4.12	26	5	ND	1	146	.6	7	2	9	6.49	.049	4	6	.76	38	.01	2	.94	.01	.16	1	3	860
A163	25	34	15	166	.2	33	9	670	4.14	27	5	ND	1	121	1.0	11	2	9	5.31	.056	6	7	.75	47	.01	2	.99	.01	.19	1	6	570
A164	24	32	14	199	.2	31	8	611	4.00	27	5	ND	1	128	1.3	11	2	9	5.86	.055	6	6	.68	53	.01	2	.98	.01	.19	1	3	595
A165	30	32	11	180	.2	39	8	528	4.34	30	5	ND	1	120	1.4	12	2	10	4.78	.078	5	7	.73	49	.01	2	1.09	.01	.19	1	4	485
A166	21	24	8	227	.2	33	6	1114	3.53	29	5	ND	1	203	1.8	12	2	11	10.97	.067	5	5	.66	47	.01	2	.98	.01	.16	1	3	450
RE A162	35	35	16	147	.2	50	9	786	4.25	30	5	ND	1	148	.8	7	2	10	7.02	.054	4	8	.81	44	.01	2	1.00	.01	.16	1	3	940
A167	26	25	15	222	.2	40	7	509	4.37	32	5	ND	1	116	1.9	12	2	16	3.03	.062	5	10	1.03	47	.01	2	1.40	.01	.17	1	2	355
A168	1	12	9	127	.2	6	9	1576	4.34	22	5	ND	1	289	.2	4	2	10	7.19	.244	6	7	2.44	53	.01	2	2.15	.01	.19	1	1	215
A169	3	17	10	125	.6	22	29	1904	6.39	200	5	ND	1	289	.2	28	2	25	8.15	.124	4	12	1.77	45	.01	2	1.58	.01	.19	1	19	4100
A170	1	4	6	84	.8	4	23	1614	4.56	43	5	ND	1	110	.2	10	2	26	3.57	.092	6	9	1.65	80	.01	4	1.73	.01	.29	1	9	235
A171	1	4	6	76	.8	7	27	1948	4.82	41	5	ND	1	147	.2	11	2	36	3.85	.054	3	17	2.26	60	.01	2	1.84	.01	.25	1	11	155
A172	1	1	2	87	.8	5	22	822	7.03	23	5	ND	1	62	.2	12	2	65	.92	.060	4	20	3.29	43	.01	2	3.56	.01	.17	1	5	100
A173	1	1	4	128	1.0	5	22	735	8.31	20	5	ND	1	44	.2	11	2	80	.54	.077	3	21	3.64	40	.01	2	4.13	.01	.15	1	6	60
A174	2	5	6	152	.8	4	13	765	5.99	14	5	ND	1	81	.5	7	2	42	1.18	.082	7	9	2.23	66	.01	2	2.77	.01	.21	1	4	120
A175	3	12	12	120	1.2	6	16	741	5.80	19	5	ND	1	75	.4	10	2	39	1.23	.102	8	7	2.02	64	.01	2	2.58	.01	.18	1	15	120
STANDARD C/AU-R	19	60	40	132	6.9	70	33	1036	3.95	39	18	6	36	52	18.5	16	19	57	.47	.090	37	58	.87	176	.09	34	1.88	.06	.15	11	490	1650

Sample type: CORE. Samples beginning 'RE' are duplicate samples.

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
J91-18																																
A176	7	12	12	191	.7	11	16	527	5.38	25	5	ND	1	42	.3	8	2	46	.47	.057	9	16	2.04	48	.01	2	2.58	.01	.22	1	20	115
A177	9	42	8	154	.8	10	20	837	5.85	27	5	ND	1	36	.3	6	2	47	.60	.035	8	22	2.56	41	.01	2	2.90	.01	.22	1	16	75
A178	8	5	12	187	.9	7	15	643	5.10	31	5	ND	1	53	.4	6	2	29	.75	.074	5	10	1.67	39	.01	2	2.13	.01	.20	1	21	150
A179	4	26	14	139	1.0	4	7	712	4.54	49	5	ND	1	63	.2	5	2	28	.91	.066	7	17	1.57	43	.01	2	1.95	.01	.21	1	31	80
A180	1	2	5	119	.7	4	9	691	4.85	7	5	ND	1	47	.2	4	2	41	.84	.097	6	11	1.63	49	.01	2	1.98	.01	.15	1	7	80
A181	1	5	13	201	.8	2	7	1575	7.01	17	5	ND	1	120	.2	6	2	55	2.41	.078	4	11	2.32	29	.01	2	2.66	.01	.07	1	15	130
A182	1	2	7	97	.5	4	9	852	5.39	8	5	ND	1	60	.2	3	2	47	.91	.106	7	19	1.47	49	.01	2	2.15	.02	.15	1	12	40
A183	2	9	17	123	.8	2	6	1151	6.11	6	5	ND	1	62	.2	3	2	27	.92	.076	5	9	1.79	35	.01	2	2.33	.01	.18	1	15	65
A184	2	7	8	80	.6	4	2	634	5.45	6	5	ND	1	31	.2	2	2	35	.46	.091	6	9	1.10	43	.01	2	1.55	.01	.11	1	82	65
A185	2	1	10	124	.6	2	3	715	6.72	6	5	ND	1	35	.2	2	2	54	.49	.109	8	12	1.37	54	.01	2	2.07	.01	.10	1	9	85
A186	6	3	28	191	.8	2	3	743	6.19	8	5	ND	1	51	.2	2	2	50	.68	.108	7	6	1.35	58	.01	2	1.94	.01	.13	1	13	125
A187	6	9	29	190	1.0	2	3	688	6.69	108	5	ND	1	43	.4	2	2	43	.64	.091	6	8	1.05	38	.01	2	1.47	.01	.07	1	6	125
A188	14	14	21	175	.9	2	4	1238	6.17	119	5	ND	1	168	.3	3	2	42	1.91	.086	5	14	1.22	52	.01	2	1.58	.01	.10	1	27	140
A189	3	9	10	119	.7	3	4	1582	7.08	19	5	ND	1	144	.2	4	2	40	1.78	.094	5	8	1.61	46	.01	2	2.05	.01	.12	1	23	70
A190	1	8	15	117	.4	3	3	1326	5.34	47	5	ND	1	92	.2	3	2	36	1.47	.089	6	7	1.68	45	.01	2	1.89	.01	.11	1	62	95
A191	6	46	21	108	.9	1	4	2158	6.19	46	5	ND	1	91	.2	6	2	37	2.27	.090	5	10	2.07	43	.01	2	2.05	.01	.11	1	65	90
A192	2	1	8	50	.2	3	2	601	4.61	17	5	ND	1	44	.2	2	2	37	.72	.087	8	6	.83	52	.01	2	1.17	.01	.12	1	14	30
A193	3	2	7	65	.3	3	2	498	5.68	86	5	ND	1	52	.2	4	2	40	.80	.003	7	8	.85	39	.01	2	1.26	.01	.08	1	8	40
A194	4	14	30	113	.4	3	2	492	6.04	78	5	ND	1	33	.2	3	2	40	.50	.096	8	18	.95	48	.01	2	1.43	.01	.12	1	5	65
A195	2	6	8	82	.4	3	3	605	5.82	52	5	ND	1	35	.2	4	2	40	.67	.090	8	7	1.06	42	.01	2	1.50	.01	.12	1	12	75
A196	3	6	13	64	.5	4	4	711	3.98	60	5	ND	1	76	.2	7	2	23	3.46	.060	4	7	.44	45	.01	2	.61	.01	.10	1	27	250
A197	1	1	11	109	.3	2	5	1011	7.03	21	5	ND	1	22	.2	7	2	31	.30	.088	7	14	1.77	44	.01	3	2.59	.01	.17	1	10	75
A198	4	9	13	139	.9	2	6	1310	7.79	87	5	ND	1	49	.2	10	2	45	.76	.101	6	7	1.69	41	.01	2	2.25	.01	.14	1	43	455
A199	1	7	8	77	.4	2	5	1465	7.00	11	5	ND	1	51	.2	7	2	47	.85	.136	6	8	1.76	37	.01	2	2.28	.01	.10	1	3	70
A200	3	6	11	73	.8	3	4	607	5.91	43	5	ND	1	16	.2	6	2	33	.33	.123	8	15	1.03	46	.01	2	1.37	.01	.16	1	5	65
A201	3	5	9	74	.9	2	4	695	6.58	46	5	ND	1	21	.2	5	2	31	.38	.106	8	7	1.18	40	.01	2	1.45	.01	.14	1	14	105
A202	2	8	8	79	.5	5	3	679	5.64	25	5	ND	1	22	.2	3	2	42	.41	.113	8	11	1.19	38	.01	2	1.44	.01	.11	1	2	65
A203	4	23	10	81	.9	3	4	620	7.09	42	5	ND	1	20	.2	7	2	40	.41	.133	10	21	1.18	42	.01	2	1.43	.01	.15	1	3	75
A204	3	19	12	62	1.0	2	4	483	7.21	112	5	ND	1	21	.2	7	2	29	.42	.128	9	5	.82	43	.01	2	1.07	.01	.18	1	7	105
A205	2	18	8	65	.6	3	3	709	6.05	27	5	ND	1	42	.2	4	2	33	.69	.112	7	9	.96	30	.01	2	1.09	.01	.11	1	2	95
A206	9	23	21	35	2.7	4	8	648	9.45	204	5	ND	1	38	.2	28	2	25	.68	.068	4	20	1.02	18	.01	3	1.06	.01	.14	1	45	2250
A207	22	12	20	45	1.9	4	10	1618	9.31	125	5	ND	1	37	.2	19	2	42	.68	.077	3	7	3.68	15	.01	2	2.80	.01	.10	1	51	1500
A208	40	11	29	65	2.4	2	9	2477	11.49	130	5	ND	1	121	.2	15	2	60	1.86	.096	3	2	4.78	11	.01	3	3.61	.01	.08	1	96	985
A209	8	9	35	74	1.4	2	5	2123	7.49	62	5	ND	1	70	.2	8	2	56	1.33	.092	4	13	3.77	22	.01	2	2.70	.01	.06	1	74	575
A210	19	33	18	44	1.3	2	6	1237	7.89	74	5	ND	1	28	.2	11	2	57	.46	.118	6	7	2.87	24	.01	2	2.50	.01	.10	1	60	735
RE A206	9	21	23	33	2.6	4	7	617	8.75	182	5	ND	1	35	.2	28	2	23	.65	.062	3	18	.98	19	.01	2	1.01	.01	.13	1	36	2350
A211	5	75	12	43	1.0	3	5	736	6.77	65	5	ND	1	14	.2	6	2	43	.28	.105	4	9	1.52	21	.01	2	1.53	.01	.09	1	46	85
STANDARD C/AU-R	18	60	41	133	6.7	70	32	1043	3.98	39	19	7	35	52	18.2	17	19	56	.48	.091	35	58	.88	179	.09	34	1.89	.06	.15	12	480	1450

Sample type: CORE. Samples beginning 'RE' are duplicate samples.

SAMPLE — JJ91-18

	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au p.	Hg ppb
A212	1	37	16	62	.9	2	6	976	5.73	27	5	ND	1	25	.2	7	2	68	.41	.138	6	1	2.13	33	.01	2	2.12	.01	.13	1	69	65
A213	2	90	15	40	1.2	3	6	754	7.16	36	5	ND	2	18	.2	7	2	56	.34	.134	5	2	1.49	34	.01	2	1.63	.01	.12	1	31	35
RE A218	2	121	34	42	4.4	1	5	679	7.02	123	5	ND	1	16	.2	14	2	48	.36	.123	7	1	.80	30	.01	2	.92	.01	.11	1	590	210
A214	3	168	33	31	3.0	3	8	337	8.31	235	5	ND	1	16	.2	13	2	40	.29	.110	6	3	.54	26	.01	2	.74	.01	.16	1	200	150
A215	5	100	89	227	11.7	2	5	243	7.94	315	5	ND	2	12	.2	32	2	20	.26	.084	5	1	.21	17	.01	2	.35	.01	.12	1	560	730
A216	3	124	38	41	5.7	5	9	287	9.81	289	5	ND	2	19	.2	21	2	24	.36	.099	5	4	.24	16	.01	2	.38	.01	.14	1	440	420
A217	14	2175	1542	939	52.8	3	5	419	9.83	1101	5	ND	2	24	2.5	107	2	26	.45	.095	5	4	.39	14	.01	2	.51	.01	.12	1	2590	2250
A218	2	132	38	49	4.6	1	5	696	7.31	139	5	ND	1	17	.2	16	2	50	.38	.127	7	1	.83	30	.01	2	.94	.01	.12	1	640	215
A219	3	77	8	44	1.2	4	5	936	8.17	97	5	ND	2	17	.2	4	2	55	.35	.120	7	3	1.18	33	.01	2	1.37	.01	.13	1	89	50
A220	3	183	24	32	4.1	3	6	946	9.75	174	5	ND	2	15	.2	12	2	61	.38	.116	7	2	1.11	25	.01	2	1.25	.01	.14	1	240	270
A221	1	61	14	38	2.0	1	5	923	8.78	136	5	ND	1	14	.2	12	2	54	.31	.119	7	1	1.32	28	.01	2	1.55	.01	.12	1	178	75
A222	3	65	35	81	2.3	5	5	1093	7.34	139	5	ND	1	13	.2	9	2	38	.25	.083	6	6	1.19	31	.01	2	1.45	.01	.13	1	1350	165
A223	4	100	134	110	3.3	3	6	924	7.69	341	5	ND	1	23	.2	12	2	40	.36	.088	5	4	1.05	32	.01	2	1.16	.01	.13	1	250	380
A224	5	875	139	238	17.2	1	6	803	12.13	711	5	ND	2	49	.3	47	2	43	.89	.097	6	2	.74	14	.01	2	.81	.01	.12	1	2660	1400
A225	3	50	23	33	2.6	3	4	458	9.00	153	5	ND	2	32	.2	19	2	52	.55	.120	7	3	.42	18	.01	2	.54	.01	.14	1	186	285
A226	2	15	13	46	1.4	3	5	550	5.94	66	5	ND	1	29	.2	11	2	30	.45	.109	6	3	.54	34	.01	2	.72	.01	.16	1	114	60
A227	1	29	14	107	2.0	1	7	992	7.66	109	5	ND	1	17	.2	7	2	41	.31	.118	6	1	1.48	34	.01	2	1.71	.01	.15	1	390	145
A228	2	23	12	93	2.2	4	5	719	7.45	111	5	ND	1	16	.2	9	2	37	.31	.103	5	4	.97	35	.01	2	1.11	.01	.13	1	174	60
A229	2	50	8	60	1.6	3	5	692	8.21	199	5	ND	1	29	.2	8	2	36	.54	.106	5	2	.90	43	.01	2	1.05	.01	.14	1	48	55
A230	1	15	18	130	4.5	1	6	917	9.18	249	5	ND	1	17	.2	7	2	43	.31	.120	5	2	1.53	26	.01	2	1.70	.01	.14	1	590	110
A231	4	15	14	88	1.7	4	5	767	8.03	175	5	ND	1	20	.2	7	2	62	.39	.114	7	5	1.03	33	.01	2	1.13	.01	.13	1	200	100
A232	2	23	18	89	2.3	2	6	923	7.95	166	5	ND	2	17	.2	8	2	59	.32	.120	6	2	1.49	34	.01	2	1.68	.01	.14	1	260	70
A233	1	10	16	78	2.4	1	6	1007	7.84	209	5	ND	1	22	.2	10	2	43	.34	.127	5	1	1.75	35	.01	2	1.88	.01	.15	1	880	200
A234	5	5	12	106	1.6	3	6	1164	8.01	350	5	ND	1	20	.2	6	2	62	.40	.135	5	3	1.73	36	.01	2	1.96	.01	.11	1	200	80
A235	1	15	8	91	1.1	1	7	1394	8.38	76	5	ND	1	20	.3	2	2	65	.38	.147	8	2	1.84	40	.01	2	2.28	.01	.12	1	109	80
A236	1	25	21	110	1.6	1	7	1278	8.14	142	5	ND	1	19	.2	3	2	64	.35	.140	6	1	1.89	36	.01	2	2.20	.01	.10	1	64	90
A237	10	22	58	109	3.2	2	7	1416	8.68	193	5	ND	1	21	.2	9	2	57	.31	.113	5	2	3.25	32	.01	2	3.20	.01	.11	1	280	180
A238	4	31	37	131	4.1	3	7	1367	9.46	197	5	ND	3	24	.7	2	2	56	.36	.126	5	4	2.82	32	.01	2	2.97	.01	.11	1	470	160
A239	2	51	18	95	2.8	1	6	1210	8.79	281	5	ND	1	16	.3	8	2	61	.30	.116	4	2	2.22	28	.01	2	2.32	.01	.09	1	390	115
A240	1	96	13	132	2.8	2	7	1560	8.12	150	5	ND	1	19	.3	3	2	71	.35	.140	7	1	2.53	35	.01	2	2.76	.01	.10	1	200	90
A241	2	26	10	105	2.5	2	7	1444	9.02	168	5	ND	1	22	.5	2	2	66	.35	.137	6	2	2.27	34	.01	2	2.60	.01	.13	1	250	100
A242	3	22	11	91	2.4	2	6	1522	8.09	231	5	ND	1	23	.2	2	2	64	.38	.113	5	7	2.18	33	.01	2	2.31	.01	.10	1	290	75
A243	2	10	9	93	2.6	1	6	1350	7.72	228	5	ND	1	18	.2	2	2	66	.30	.110	5	1	2.34	37	.01	2	2.43	.01	.09	1	270	65
A244	2	9	12	116	2.0	2	6	1296	7.65	239	5	ND	1	20	.3	3	2	64	.33	.125	4	2	2.22	34	.01	2	2.23	.01	.10	1	310	105
A245	3	9	6	88	1.8	1	5	1458	6.83	98	5	ND	1	24	.2	2	2	51	.36	.127	5	8	2.62	39	.01	2	2.54	.01	.15	1	200	80
A246	2	7	9	73	2.1	1	6	1260	7.44	227	5	ND	1	27	.2	5	2	67	.36	.111	4	2	1.96	33	.01	2	1.91	.01	.08	1	290	130
A247	2	8	8	75	1.5	4	6	1071	7.22	178	5	ND	1	26	.3	5	2	55	.36	.130	5	4	1.91	43	.01	2	2.02	.01	.15	1	101	70
A248	1	6	9	116	1.4	3	6	1352	7.36	134	5	ND	1	17	.3	2	2	61	.34	.114	3	7	2.33	40	.01	2	2.47	.01	.10	1	210	120
A249	1	7	9	148	1.8	2	7	1438	7.84	137	5	ND	1	15	.9	2	2	70	.28	.105	3	3	2.78	38	.01	2	2.80	.01	.07	1	260	135
A250	3	10	14	101	2.7	3	6	776	7.40	311	5	ND	1	14	.3	5	2	66	.31	.115	2	5	1.31	31	.01	2	1.39	.01	.08	1	195	110
A251	4	19	19	109	2.3	4	6	452	6.08	778	5	ND	1	24	.4	11	2	19	.45	.102	3	17	.11	31	.01	2	.27	.01	.13	1	230	95
A252	18	18	14	105	2.3	3	5	1130	6.55	1151	8	ND	1	29	.16	8	2	42	.52	.092	2	4	1.69	32	.01	2	1.53	.01	.06	1	300	90
A253	5	82	27	84	2.6	4	5	774	7.59	496	9	ND	1	29	.7	4	2	62	.47	.114	3	5	.96	34	.01	2	1.09	.01	.11	1	127	125
A254	5	53	23	41	1.1	3	5	988	7.25	321	6	ND	1	36	.3	2	2	56	.55	.115	2	14	.90	41	.01	2	1.00	.01	.10	1	87	120
A255	3	47	24	83	1.4	3	6	893	6.47	211	5	ND	1	32	.2	2	2	26	.51	.107	2	5	.28	36	.01	2	.54	.01	.13	1	107	75
A256	1	28	21	104	1.8	3	7	1068	7.65	157	5	ND	1	36	.10	2	2	64	.44	.144	2	5	1.39	32	.01	2	1.72	.01	.10	1	126	105
A257	4	39	42	157	4.2	3	6	495	7.64	1675	5	ND	1	36	.5	22	2	45	.41	.140	3	13	.33	28	.01	2	.77	.01	.18	1	730	265
A258	3	39	24	91	2.8	3	8	807	8.14	252	5	ND	1	23	.2	2	2	38	.41	.136	3	4	.87	30	.01	2	1.19	.01	.19	1	117	75
A259	4	34	15	131	2.0	4	6	1110	6.85	292	5	ND	1	24	.5	2	2	49	.39	.135	4	5	1.12	37	.01	2	1.41	.01	.15	1	72	90
A260	6	103	18	82	7.2	4	4	514	6.71	519	5	ND	1	19	.5	14	2	39	.35	.117	4	19	.31	36	.01	2	.65	.01	.12	1	187	90
A261	4	80	18	42	1.7	3	6	683	7.58	276	5	ND	1	25	.9	2	2	52	.44	.138	3	5	.63	34	.01	2	.96	.01	.18	1	88	140
A262	5	161	30	109	15.5	7	12	369	7.52	997	5	ND	1	20	.6	34	2	19	.34	.111	3	7	.13	20	.01	2	.43	.01	.19	1	420	230
A263	3	207	21	76	11.6	13	19	99	6.43	770	5	ND	1	31	.4	32	2	13	.45	.144	3	15	.04	15	.01	2	.45	.01	.11	1	220	75

GBRANGES EXPLORATION [redacted]

DIAMOND DRILL LOG

UNUK RIVER PROJECT

HOLE No. J91-19

COUL 3 CLAIM

PURPOSE

TO TEST SOUTHERN STRIKE EXTENSION OF MINERALIZED ZONE INTERSECTED IN HOLE J91-7.

LOCATION JEFF GRID	GROUND ELEV.	BEARING	TOTAL LENGTH
8+50N, 1+44W	400.7 m	272°	233.17 m
DIP (COLLAR)	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-63°	115.82 m -61.5° 167.64 -63° 231.65 -61°	206.22 m	108.82 m
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED OCT. 8** **DATE COMPLETED OCT. 10**
G. ALLEN OCT 9 -	J. T. THOMAS	B.Q	

SUMMARY LOG

0 - 6.3 OVERBURDEN

6.3 - 11.6 ARGILLITE

11.6 - 14.96 INTERMEDIATE FINE TO MEDIUM-GRAINED TUFF

14.96 - 16.20 ARGILLITE, ARGILLACEOUS TUFFACEOUS SEDIMENT

16.20 - 29.80 INTERMEDIATE FINE-GRAINED TUFF TO LAPILLI TUFF (DEBRIS FLOW?)

29.80 - 53.57 INTERMIXED INTERMEDIATE FINE-GRAINED TUFF AND SILTSTONE/DEBRIS FLOW

53.57 - 76.10 INTERMEDIATE FINE-GRAINED TO LAPILLI TUFF

76.10 - 88.80 INTERMIXED INTERMEDIATE FINE-GRAINED TUFF TO LAPILLI TUFF AND FINE TO COARSE-GRAINED TUFFACEOUS SEDIMENT (ARGILLACEOUS)

88.80 - 91.65 INTERMEDIATE TO FELSIC LAPILLI TUFF

91.65 - 98.15 INTERMIXED FINE TO COARSE-GRAINED INTERMEDIATE TUFF AND TUFFACEOUS SEDIMENT

* 98.15 - 113.30 INTERMEDIATE TO FELSIC SILICIFIED TUFF, LAPILLI TUFF

113.30 - 144.84 INTERMEDIATE TUFF TO LAPILLI TUFF

144.84 - 156.81 INTERMEDIATE TUFF TO AMYGDALOIDAL LAPILLI TUFF

156.81 - 167.10 INTERMEDIATE FINE-GRAINED TUFF TO LAPILLI TUFF

167.10 - 170.27 COARSE-GRAINED PHYLLITIC INTERMEDIATE TUFF TO TUFFACEOUS SEDIMENT (LAST SAMPLE S-107)

SIGNIFICANT MINERALIZED INTERVALS

88.80 - 91.65 - 5-8% PYRITE IN LAPILLI MATRIX - TRACES SPHALERITE IN STRINGERS

* 103.0 - 113.95 - 4-6% PYRITE IN STRINGERS IN SILICIFIED ZONE, 1-2% PYRRHOTITE, <1% SPHALERITE.

* 103.7 - 104.65 - TRACES TO 0.5% EUHEDRAL ARSENOPYRITE DISSEMINATED IN SILICIFIED TUFF

NOTE: 103 - 113.95 PROBABLY CORRELATIVE WITH GOLD-BEARING MINERALIZED ZONE IN J91-7.

174.12 - 175.09 - 3-5% PYRITE. TRACES RED-BROWN SPHALERITE AND GALENA IN QUARTZ STRINGERS.

HOLE No. J91-19

INTERVAL	C. LOSS	LITHOLOGY	C^	L	S	M	A
0 - 6.3		OVERBURDEN 0-6.1 - CASING 6.1-6.3 - Rubble of sandstone and felsic volcanic rock.		CASING			
6.3 - 11.6		ARGILLITE Black massive to thinly bedded argillite. Dark brownish to bluish-grey siltstone beds to 5mm (5%). 10.3-11.0 - 60% white calcite and minor quartz vein subparallel to core axis. 11.5-11.65 - Quartz-carbonate vein breccia 70° CA.	50° / 54 30° / 63	O.B. 7A		2% PY QCV	
11.60 - 14.96		INTERMEDIATE FINE TO MEDIUM-GRAINED TUFF Medium blue-grey fine to medium-grained (fragments to 2mm) massive to poorly bedded tuff. 12.4-16.2 - Blocky core. Fractured 60° and 20° CA.	50° / 56	2A-8		≤1% PY	
14.96 - 16.20		ARGILLITE, ARGILLACEOUS TUFFACEOUS SEDIMENT Fine-grained black argillaceous groundmass with 20% <1mm - 5mm angular dark brown to medium grey fine-grained lithic fragments. Could be tuffaceous or possibly a debris flow.		2C3			
16.20 - 29.80		INTERMEDIATE FINE-GRAINED TUFF TO LAPILLI TUFF (BRECCIATED?) OR DEBRIS FLOW 60% angular medium to dark blue-grey aphanitic tuff (?) fragments and 20% dark grey to black angular siltstone (?) fragments to 3cm in a		2A-D/2D-7A			

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

391-19

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
6.3 - 11.6 - Average 2% fine-grained pyrite concentrated in siltstone lode to 1 cm.	S-001	6.30	7.75	1.45	19	0.6	50	19
	S-002	7.75	9.20	1.45	13	04	45	13
	S-003	9.20	10.30	1.10	9	0.7	41	9
	S-004	10.30	11.60	1.30	6	0.4	29	6
	S-005	11.60	13.10	1.50	2	0.1	9	2
11.6 - 38.2 ≤ 1% pyrite.								

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

391-19

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		blue-grey shaledong. Fragments appear to have been broken up in the groundmass and the unit may be a debris flow.		2A-D/20, 1K, 2Av		±1% PY	
29.80-53.57		INTERMIXED INTERMEDIATE FINE-GRAINED TUFF AND SILTSTONE / DEBRIS FLOW 50% dark greenish-grey to black soft siltstone or tuffaceous sediment in zones to 30 cm and in clear angular fragments to 5 cm in a fine-grained medium greenish-grey fine-grained tuff groundmass. Bedding is generally not preserved but rarely evident at 50°CA. Some darker parts appear to be brecciated and invaded by lighter green-grey matrix. Possibly a debris flow. Some of the breccia texture may be pseudobreccia caused by alteration.		2A, 1K / 70, 20			
		33.3-35 - Blocky core. Fractured 60° + 30°CA.					
			POOR 30/50				
						1% PY	

20 25 30 35 40

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

391-19

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
38.2-38.95- 3-5% pyrite in breccia matrix. Along stringers to 5mm associated with blue-grey chalcedony and calcite. Minor pyrrhotite.	S-006	38.2	38.95	0.75	2	0.2	38	3		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No.

J91-19

INTERVAL	C. LOSS	LITHOLOGY	C∠	L	S	M	A	Depth
				2A, 7K / 20,70		1% PY		40
						2-4% PY		
								45
		47.13 - 47.5 - Quartz - carbonate - flooded breccia zone. 5% pyrite				QC(?)	5% PY	
						1-2% PY		
		50.3 - 50.7 - Lapilli tuff. Flattened medium grey aphanitic lithic fragments up to 2 cm long in a dark argillaceous groundmass.	S1? 72					50
53.57 - 76.10		INTERMEDIATE FINE-GRAINED TO LAPILLI TUFF						
		Mottled medium to dark greenish-grey fine-grained soft intermediate tuff with rare vague lithic fragments up to 2 cm. The mottled nature of the unit suggests that lithic fragments may be a significant component. The unit is quite massive.		2A (?)	1 cm gouge	<1% PY Trace (?)	Se-1 Cl-1	55
		54.40 - 1 cm calcite stringer and 1 cm gouge 75° CA						
						20% (?)		
						CY <1% (?)		60

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-19

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
38.95 - 43.10 - 1% pyrite.										
43.10 - 47.50 - sporadic 2-4% pyrite along irregular stringers and masses to 1cm, generally associated with calcite.	S-007	43.10	44.61	1.51	59	0.3	28	14		
	S-008	44.61	46.04	1.43	10	0.3	26	4		
47.13 - 47.5 - Quartz - carbonate flooded breccia. 5% pyrite.	S-009	46.04	47.50	1.46	8	0.2	83	5		
	S-010	47.50	48.90	1.40	9	0.4	17	2		
47.50 - 53.57 - 1 - 2% pyrite, predominantly disseminated.	S-011	48.90	50.44	1.54	16	0.1	37	11		
	S-012	50.44	51.92	1.48	2	0.1	20	2		
	S-013	51.92	53.57	1.65	3	0.3	25	9		
53.57 - 58.89 - <1% PY										
58.89 - 59.0 - 20% pyrrhotite, 5% pyrite associated with calcite stringers 80°CA.	S-014	58.17	58.89	0.71	3	1.6	6	2		
	S-015	58.89	59.00	0.11	3	0.1	10	2		
	S-016	59.00	59.82	0.82	3	3.5	7	19		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

391-19

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
				ZA(D)		<1% PY	SC-1 CI-1
76.10 - 88.80		INTERMIXED INTERMEDIATE FINE-GRAINED TUFF TO LAPILLI TUFF AND FINE TO COARSE-GRAINED TUFFACEOUS SEDIMENT (ARGILLACEOUS) Heterogeneous interval with 60% medium greenish-grey intervals up to 1.5m interbedded with dark blue-grey to black argillaceous tuffaceous sediment. Lighter intervals range from fine-grained tuffs to coarse-grained sandy tuff to lapilli tuff with medium grey aphanitic fragments	50-85	ZA-D, ZT-C		1% PY 1% PY	SC-1 CI-1

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
J91-19

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
59.0-76.1- < 1% pyrite.										
	S-017	76.10	76.82	0.72	18	3.5	81	19		
76.1-76.82- 1% pyrite										
	S-018	76.82	77.41	0.59	20	1.9	102	5		
* 76.82-77.41- Quartz vein and brecciated quartz vein. 2-3% pyrite, trace red-brown sphalerite.	S-019	77.41	78.41	1.00	4	1.0	22	3		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-19

INTERVAL	C. LOSS	LITHOLOGY	C ∠	L	S	M	A	
		to 2 cm. The darker intervals appear to be predominantly argillite/siltstone with 20% fine-grained sedimentary lithic fragments up to 1 cm (tuffaceous?)		2A-D, 7Ti		12 PY		80
			50°/55			2-4% PY		85
			50°/40, 50°/60					
88.8-91.65		INTERMEDIATE TO FELSIC LAPILLI TUFF 50-60% medium blue-grey soft aphanitic angular to subrounded lithic fragments to 4cm in a fine-grained tuffaceous groundmass. Fragments are commonly amygdaloidal (10%, ≤1mm). Groundmass of lapilli tuff typically flooded by blue-grey calcite and 5-8% pyrite		2-3 D(?)		5-8% PY, Ca, Si		90
91.65-98.15		INTERMIXED FINE TO COARSE-GRAINED INTERMEDIATE TUFF AND TUFFACEOUS SEDIMENT Medium to dark blue-grey soft fine-grained (argillaceous) to coarse-grained sandy tuff or tuffaceous sediment with dark to light grey aphanitic felsic volcanic fragments to 1cm. Most of unit is blocky, broken.	60°?, Si=65	2A-C, 7Ti	FAULT GOUGE	Qz, 1% PY		95
		92.80-92.9 - Pulverized core. Gouge. FAULT. Orientation unclear but probably ~80° CA.						
		92.9-93.27 - 70% white quartz vein / stringers.	50°/53			4-6% PY	Si-2	
		98.0-98.15 - Foliated, phyllitic, sheared along contact.		2-3 A-D1/G1				100

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-19

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
84.5 - 88.8 - 2-4% pyrite; disseminated along fractures to 2mm crosscutting bedding, and in irregular masses and bands to 5mm parallel to bedding. Minor pyrrhotite.	S-020	84.5	85.90	1.40	31	1.4	62	8
	S-021	85.90	87.35	1.45	64	2.6	53	15
	S-022	87.35	88.80	1.45	63	1.4	38	11
88.8 - 91.65 - 5-8% fine-grained to medium-grained pyrite in the lapilli tuff matrix.	S023	88.80	90.06	1.26	94	3.4	112	20
	S-024	90.06	90.84	0.78	111	3.6	188	18
* 90.06 - 90.84 - quartz stringers to 2cm subparallel to foliation. Iron red-brown sphalerite.	S-025	90.84	91.65	0.81	886	5.0	951	34
	S-026	91.65	92.80	1.15	19	0.7	40	7
	S-027	92.80	93.27	0.47	5	0.2	21	2
91.65 - 98.15 - 1% pyrite; disseminated and along fractures.	S-028	93.27	95.50	2.23	25	0.7	111	4
	S-029	95.50	96.60	1.10	12	0.1	39	2
	S030	96.60	98.15	1.55	48	0.7	65	3
	S-031	98.15	99.15	1.00	180	2.7	124	11
	S-032	99.15	100.00	0.85	460	2.9	92	11

HOLE No. J91-19

INTERVAL	C. LOSS	LITHOLOGY	∠ CA	L	S	M	A
98.15 - 113.3		INTERMEDIATE TO FELSIC SILICIFIED TUFF, LAPILLI TUFF medium blue-grey siliceous aphanitic volcanic rock with intervals containing distinct aphanitic lithic fragments and locally abundant amygdaloidal fragments. The unit has a vague clastic texture throughout but this may be from weak brecciation and silicification. Could be in part flow. Textures obscured by silicification. 98.15-106.5 - 5% white quartz stringers to 2cm generally 20-45°CA. Some flooding of brecciated parts by blue-grey chalcedonic quartz. 106.5-108.5 - 10% white quartz stringers. Breccia filling predominantly 20° to subparallel to CA.		2-3A-D(a)s		4-6% PY 1-2% Py 4-5% PY 2% Po TRACE SL	Si-2
113.3 - 144.84		INTERMEDIATE TUFF TO LAPILLI TUFF Mottled medium greenish-grey to blue-grey fine-grained tuff to lapilli tuff with amygdaloidal fragments to 3 cm. Sporadically silicified. Amygdules generally ≤ 1mm in diameter, but range up to 3mm. Gradational contact with unit above. This unit is probably a less altered equivalent of the unit above. Minor blue-grey chalcedony stringers in silicified intervals.		2A-Da(s)		1-2% PY 2-4% Po *Sl?	Si-2 SPORADIC

Margin notes: * TRACES As; 10% QZ STRS

Depth marks: 100, 105, 110, 115, 120

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-19

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
98.15 - 113.30 4-6% pyrite; predominantly along fractures to 5mm. Accessory 1-2% pyrrhotite.	S-033	100.00	101.0	1.00	330	6.0	525	44
	S-034	101.0	102.0	1.00	87	1.9	140	8
* 103.7 - 104.65 - Traces to 0.5% subvidal arsenopyrite disseminated in silicified tuff.	S-035	102.0	103.0	1.00	70	1.9	119	10
	S-036	103.0	103.7	0.70	78	1.9	227	11
* 103 - 113.30 - Traces red-brown sphalerite in quartz stringers.	S-037	103.7	104.65	0.95	58	3.3	1604	34
* 107.6 - 107.8 - 1% sphalerite in masses to 5mm. Red-brown rim with pale yellow core. (Mercury rich?)	S-038	104.65	105.44	0.79	98	3.5	717	25
	S-039	105.44	106.5	1.06	190	2.8	297	15
	S-040	106.5	107.5	1.00	280	3.4	331	
	S-041	107.5	108.5	1.00	710	3.7	373	25
	S-042	108.5	109.5	1.00	81	1.9	199	26
	S-043	109.5	110.5	1.00	43	1.6	154	17
	S-044	110.5	111.5	1.00	320	2.9	241	13
	S-045	111.5	112.5	1.00	210	1.4	44	15
	S-046	112.5	113.30	0.80	82	2.9	69	6
	S-047	113.30	114.44	1.14	86	1.3	74	7
113.30 - 144.84 - Sporadic 1-2% pyrite and 2-4% pyrrhotite. Distinct decrease in Py/Po ratios from unit above.	S-048	114.44	115.26	0.62	6	1.2	144	2
	S-049	115.26	116.18	0.92	27	0.5	13	13
* 115.67 - Trace dark grey acicular mineral (stibnite?) in quartz stringer.	S-050	116.18	117.69	1.51	5	0.5	15	2
	S-051	117.69	119.0	1.31	35	1.1	75	2
	S-052	119.0	120.53	1.53	49	1.2	94	8

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-19

INTERVAL	C. LOSS	LITHOLOGY	CA	L	S	M	A
				24-Dacs)		1-2% Py 2-4% Po 5% Qz stgr	Si-2 sporadic
		131.5 - 133.4 - 5% quartz stringers and gash veins to 1cm at 20° CA					

120
125
130
135
140

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-19

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
120	S-053	120.53	121.92	1.39	120	1.3	151	5
	S-054	121.92	123.43	1.51	67	1.4	150	15
	S-055	123.43	124.96	1.53	68	1.0	81	2
	S-056	124.96	126.47	1.51	170	1.2	66	2
	S-057	126.47	128.01	1.54	500	1.8	174	8
125	S-058	128.01	129.52	1.51	17	0.6	37	4
	S-059	129.52	131.06	1.54	160	1.0	32	2
127.86- 1 cm zone with 20% red-brown sphalerite adjacent quartz stringer.	S-060	131.06	132.54	1.48	44	1.3	51	8
	S-061	132.54	134.11	1.57	210	1.2	94	3
	S-062	134.11	135.70	1.59	220	1.2	126	2
130	S-063	135.70	137.16	1.46	300	1.3	75	4
	S-064	137.16	138.72	1.56	370	1.2	88	5
	S-065	138.72	140.21	1.49	170	0.8	52	5
133.0- Trace black specular metallic mineral in quartz stringer at 20° CA.								
135								
140								

HOLE No. J91-19

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	Depth
				IA-Da(s)		1-2% Py; 2-4% Po	Si-2 sporadic	140
		144.13-144.84 - FAULT - Broken core. 10cm pulverized rock and gouge at 70° CA.			70°			
						3-4% Po	Cl-2	145
144.84-156.81		INTERMEDIATE TUFF TO AMYGDALOIDAL LAPILLI TUFF Medium greenish-grey fine-grained groundmass with lighter greenish-grey aphanitic fragments and vaguely bounded patches up to 5cm. These fragments and patches contain up to 20% < 1mm-5mm chloritic masses which in many cases appear to be amygdules. In some places they may be mafic phenocrysts or mafic fragments. The unit has a distinctive dark green spotted appearance.		IA-Da		1-2% Py		
						1-2% each Py, Po		150
								155
156.81-167.10		INTERMEDIATE FINE-GRAINED TUFF TO LAPILLI TUFF Mottled medium to dark greenish-grey fine-grained tuff with vague lithic fragments to 2cm. Distinguished from unit above by absence of chloritic masses.		IA-D		1-2% Po; ≤1% Py		
								160

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
J91-19

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
140								
	S-066	140.21	141.75	1.54	160	0.9	90	2
	S-067	141.75	143.25	1.50	63	0.7	98	4
	S-068	143.25	144.13	0.88	65	0.9	91	2
	S-069	144.13	144.84	0.71	98	0.6	38	2
144.84 - 147.72 - 3-4% pyrrhotite in	S-070	144.84	146.30	1.46	67	0.7	43	2
145 veins to 1cm, 1-2% pyrite. Disseminated	S-071	146.30	147.72	1.42	46	0.9	63	2
156.81								
147.72 - , 1-2% each of pyrite and pyrrhotite.								
150								
155								
156.81 - 167.1 - 1-2% pyrrhotite, ≤ 1%								
pyrite; predominantly in irregular								
veins to 5mm and disseminated.								
160								

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No.
J91-19

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	
				2A-D		1-2% Po <1% Py	Se-1	160
								165
167.10-170.27		**COARSE-GRAINED PHYLLITIC INTERMEDIATE TUFF TO TUFFACEOUS SEDIMENT** Medium greenish-grey fine-grained sericitic phyllitic groundmass with 15% <1-5mm dark green flattened lithic fragments. Green interval grades in and out of dark blue-grey argillaceous sediment with a coarse-grained sandy component.	S1 ∠ 76, S1 = 84	2CT, 7T+		<1% Py	Se-2	
				2B,C		1% Py <1% Po	Se-1	170
170.27-172.10		**INTERMEDIATE COARSE-GRAINED TO MEDIUM-GRAINED TUFF OR FELDSPAR PHYRIC DYKE** Medium greenish-grey fine-grained sericitic groundmass with 15-20% <1 to 3mm white anhedral to euhedral vaguely bounded stubbly feldspar phenocrysts. Could be a crystal tuff or possibly a dyke	S1=S0 ∠ 70	2A,B,6		2% Py		
				2A-D		[illegible] Tr Gl Sl *		175
172.10-173.73		**INTERMEDIATE FINE TO MEDIUM-GRAINED BEDDED TUFF** Light to dark greenish-grey thinly banded to massive fine to medium-grained phyllitic tuff. Dark green flattened lithic fragments to 5mm (average ~1-2mm)				2% Py + Tr		
173.73-180.45		**INTERMEDIATE TUFF TO LAPILLI TUFF** mottled medium to light greenish-grey soft fine-grained tuff with rare vague to distinct aphanitic fragments to 2cm.						180

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-19

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
160								
165								
167.1-170.27 - <1% disseminated pyrite.								
170								
170.27-172.10 - 1-2% fine-grained pyrite; disseminated and in irregular masses to 5mm. <1% pyrrhotite.								
172.10-173.73 - 2% very fine-grained disseminated pyrite.								
	S-072	173.73	174.12	0.39	1810	5.6	273	2
173.73-174.12 - 4% pyrrhotite, 2% pyrite disseminated and in irregular masses to 5mm.	S-073	174.12	175.09	0.97	470	4.5	182	5
175	S-074	175.09	176.20	1.11	58	0.5	41	3
174.12-175.09 - 3-5% pyrite. Trace sphalerite and galena concentrated in blue-grey quartz stringers and breccia filling. 1-2% pyrrhotite *	S-075	176.20	177.56	1.36	112	0.4	23	2
	S-076	177.56	179.06	1.50	55	0.9	36	6
	S-077	179.06	180.34	1.20	32	0.1	37	3
175.09-184.60 - 2% each of pyrite and pyrrhotite. Disseminated and along fractures.								
180								

↑ assay interval above? ↓ 1.8 g/t [illegible]

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No. J91-19

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	Depth
			50° S1 60	2A-D	–	2% EACH PY ± PO; 1-2% PY <1% PO	–	180; 185
188.45-190.86		INTERMEDIATE PHYLLITIC COARSE-GRAINED TUFF TO LAPILLI TUFF Light to medium-greenish grey fine-grained sericitic phyllitic groundmass with 15% dark grey to green flattened aphanitic lithic fragments up to 2cm long. Distinctive unit similar to dark green fragmental unit in J91-12.	S1 66	2Dt, 2c green; 7J, K	–	<1% PY; <1% @ PY PO TRACE SL	–	190
190.86-195.40		ARGILLITE, SILTSTONE Thinly interbedded black argillite and medium bluish-grey siltstone. Cut by 5% quartz-carbonate stringers to 1cm parallel to bedding (predom.)	S0 74; S0 60	–	–	–	–	195
195.40-201.95		INTERMEDIATE PHYLLITIC FINE-GRAINED TO LAPILLI TUFF Light to dark greenish-grey crudely banded fine-grained sericitic phyllitic tuff with a few zones to 0.5m with flattened lithic fragments (aphanitic, rarely amygdaloidal) to 2cm. 199-201.95 - Distinctive yellowish-green colour.	S1 45; S1 74	2A-Dt	–	<1% each PY, PO	–	200

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-19

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	S-078	180.34	181.50	1.16	18	0.1	23	2
	S-079	181.50	182.53	1.03	17	0.1	16	5
	S-080	182.53	183.50	0.97	19	0.2	11	2
	S-081	183.50	184.60	1.10	15	0.4	14	3
184.60 - 188.45 - 1-2% disseminated pyrite <1% pyrrhotite								
188.45 - 190.86 - <1% pyrite.								
					15			
190.86 - 195.40 - <1% each of pyrite and pyrrhotite. Trace red-brown sphalerite in quartz-carbonate stringers.	S-082	190.86	192.43	1.57	10	0.3	17	7
					10			
	S-083	192.43	193.82	1.39	8	0.6	22	5
					8			
	S-084	193.82	195.40	1.58	4	0.8	26	4
195.40 - 201.95 - <1% each of pyrite and pyrrhotite, predominantly along <1mm stringers subparallel to foliation.								

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No.
J91-19

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
201.95- 233.17		ARGILLITE, SILTSTONE Thinly interlaminated black argillite and medium grey siltstone. Fault along upper contact, 5 cm gouge, 70° CA. Unit cut by 5% white quartz-carbonate stringers and veins generally parallel to bedding.	So: 80		gouge	1% Py <1% Po traces cp, sl	
		206.2- Contorted siltstone bed. Soft sediment slumping?					
		212.0- As above.	So 55				
			So: 60				
			So 67				

Depth scale (right margin): 200, 205, 210, 215, 220

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
201.95 - 233.17 1% pyrite predom along fractures and in quartz - carbonate stringers. <1% pyrrhotite, trace chalcopyrite and sphalerite throughout.	S-085	201.95	203.70	1.75	4	0.2	16	2		
*	S-086	203.70	205.16	1.46	3	0.2	10	2		
	S-087	205.16	206.58	1.42	3	0.2	10	3		
	S-088	206.58	208.0	1.42	5	0.2	10	2		
	S-089	208.0	209.50	1.50	5	0.2	9	3		
	S-090	209.50	210.93	1.43	5	0.2	13	2		
	S-091	210.93	212.0	1.07	7	0.3	11	2		
	S-092	212.0	213.5	1.50	1	0.3	13	4		
	S-093	213.5	215.80	2.30	6	0.2	18	2		
	S-094	215.8	217.20	1.40	5	0.1	18	3		
	S-095	217.2	218.60	1.40	8	0.2	12	3		
	S-096	218.6	220.05	1.45	6	0.3	14	2		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-19

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
			So/Go 65	V-F	-	12.0% <1% Py TRACE Cp, Sl. 5% QCv	-
		223.87 - 224.17 - Ultra carbonate min. Barren				C.v	
		224.17 - 225.05 - 20% white carbonate stringers to 2cm parallel to bedding.				<5% QCv	
			So = S1 65				
		233.17 E.O.H.		233.17		E.O.H.	

220

225

230

235

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
		S-097	220.05	221.73	1.68	2	0.1	11	2		
		S-098	221.73	222.86	1.13	3	0.2	13	2		
		S-099	222.86	223.87	1.01	3	0.2	11	2		
		S-000	223.87	224.20	0.33	2	0.4	2	2		
		S-101	224.20	225.05	0.85	1	0.1	13	2		
		S-102	225.05	226.5	1.45	7	0.2	18	4		
		S103	226.5	227.96	1.46	3	0.1	17	2		
		S-104	227.96	228.95	0.99	3	0.1	16	2		
		S-105	228.95	231.30	2.35	3	0.1	23	2		
		S-106	231.30	232.4	1.10	3	0.2	19	2		
		S-107	232.4	233.17	0.77	6	0.1	22	3		

SAMPLE# J91-19	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
S001	39	50	34	434	.6	78	8	341	2.91	50	5	ND	2	120	3.8	13	2	21	7.10	.059	2	7	.78	37	.01	2	.29	.02	.12	1	19	1350
S002	39	49	20	358	.4	74	7	324	3.30	45	5	ND	1	102	3.2	7	2	16	5.73	.053	2	3	.76	31	.01	2	.25	.02	.11	1	13	1600
S003	33	64	25	462	.7	65	10	280	4.22	41	5	ND	1	70	5.1	7	2	16	2.82	.056	2	5	.75	22	.01	3	.42	.02	.13	1	9	1200
S004	24	35	15	366	.4	37	5	527	2.23	29	5	ND	1	437	3.5	6	2	14	11.39	.031	2	6	1.32	65	.01	2	.40	.01	.09	1	6	290
S005	1	11	3	117	.1	7	24	662	6.27	9	5	ND	1	62	.7	2	2	105	1.61	.061	4	31	2.54	51	.01	2	3.68	.02	.08	1	2	100
S006	5	6	2	91	.2	6	18	1704	6.66	38	5	ND	1	150	.7	3	2	58	5.24	.101	4	3	1.46	38	.01	2	2.02	.02	.10	1	2	275
S007	5	5	10	102	.3	8	18	1078	7.77	28	5	ND	1	103	1.3	14	2	19	3.13	.126	4	3	.61	26	.01	4	1.30	.01	.11	1	59	1900
S008	1	4	4	95	.3	9	20	1725	5.96	26	5	ND	1	195	1.0	4	2	67	7.01	.088	4	3	1.86	32	.01	2	1.96	.01	.10	2	10	330
S009	3	3	4	69	.2	4	15	2052	6.18	83	5	ND	1	240	1.3	5	2	56	9.46	.064	3	6	2.68	24	.01	2	1.70	.01	.06	2	8	240
S010	1	4	2	147	.4	3	22	1274	6.92	17	5	ND	1	155	1.1	2	2	105	4.08	.118	5	2	1.27	30	.01	4	2.91	.02	.11	1	9	205
RE S015	9	70	47	80	1.5	16	50	2071	15.39	10	5	ND	1	195	2.3	2	3	34	6.90	.036	2	3	.95	30	.01	2	.93	.01	.13	1	2	155
S011	5	6	9	91	.1	19	39	1383	6.11	37	5	ND	1	220	.8	11	2	62	4.87	.123	3	3	1.07	25	.01	4	2.15	.02	.08	1	16	295
S012	1	6	4	101	.1	9	23	1613	5.04	20	5	ND	1	161	.7	2	2	55	5.76	.150	4	2	1.08	32	.01	3	2.12	.02	.10	1	2	250
S013	3	8	20	139	.3	16	32	1514	5.01	25	5	ND	1	157	1.4	9	2	50	5.51	.111	4	5	.90	28	.01	3	1.86	.01	.10	1	3	305
S014	1	2	8	122	.1	4	20	1315	6.31	6	5	ND	1	225	.8	2	2	97	5.02	.107	6	2	1.11	41	.01	2	2.75	.02	.12	1	3	80
S015	9	69	42	78	1.6	17	50	2062	15.16	10	5	ND	1	142	2.3	2	2	33	5.54	.034	2	3	.94	38	.01	2	.83	.01	.13	1	3	135
S016	1	3	2	125	.1	4	22	1098	6.36	7	5	ND	1	180	.7	2	2	98	4.33	.114	5	3	1.12	50	.01	4	2.66	.02	.12	2	3	105
S017	27	13	30	142	3.5	19	29	376	4.27	81	5	ND	1	43	1.1	19	2	16	.70	.065	4	10	.80	35	.01	4	.34	.01	.26	1	18	170
S018	6	8	10	256	1.9	9	15	716	3.54	102	5	ND	1	127	2.1	5	2	15	2.16	.038	4	3	1.11	59	.01	5	.36	.01	.21	1	20	305
S019	1	11	13	130	1.0	3	18	761	6.13	22	5	ND	1	48	.9	3	2	29	1.17	.085	9	3	2.20	73	.01	5	1.27	.01	.22	1	4	75
S020	2	12	17	115	1.4	4	18	807	3.98	62	5	ND	1	42	.5	8	2	26	1.54	.062	4	6	1.21	38	.01	3	1.20	.01	.32	1	31	140
S021	2	11	7	72	2.6	9	30	2154	5.19	53	5	ND	1	82	.7	15	2	24	3.25	.058	3	15	1.59	34	.01	2	.90	.01	.30	1	64	130
S022	1	8	6	76	1.4	6	25	1531	5.12	38	5	ND	1	64	.7	11	2	38	2.37	.042	2	13	1.84	33	.01	3	1.45	.01	.28	1	63	95
S023	5	14	11	80	3.4	8	34	430	9.55	112	5	ND	1	49	1.0	20	2	12	.95	.055	2	7	.18	18	.01	7	.37	.01	.27	1	94	165
S024	5	16	17	99	3.6	9	31	1117	8.15	188	5	ND	1	130	1.2	18	2	16	2.49	.028	2	8	.20	22	.01	4	.33	.01	.21	1	111	230
S025	8	25	35	265	5.0	7	31	679	8.14	951	5	ND	1	64	1.5	34	2	17	1.47	.066	2	12	.33	16	.01	3	.58	.01	.34	1	880	350
S026	1	10	8	96	.7	6	25	1437	4.74	40	5	ND	1	57	.5	7	3	44	2.44	.048	3	16	2.72	24	.01	2	2.39	.01	.25	2	19	65
S027	1	5	2	92	.2	6	19	1118	4.61	21	5	ND	1	104	.2	2	2	52	2.06	.032	3	14	2.61	23	.01	2	2.61	.01	.16	1	5	155
S028	1	9	16	113	.7	5	28	1047	6.61	111	5	ND	1	30	.7	4	2	81	.61	.059	4	23	3.85	22	.01	5	4.13	.01	.18	2	25	70
S029	4	5	7	128	.1	6	19	784	4.06	39	5	ND	1	31	.6	2	2	48	.40	.051	10	15	2.27	46	.01	3	2.60	.01	.25	1	12	80
S030	5	6	10	64	.7	3	6	209	1.99	65	5	ND	1	19	.2	3	2	3	.14	.025	15	4	.48	52	.01	2	.85	.01	.33	1	48	65
S031	11	18	33	39	2.7	2	6	480	3.41	124	5	ND	1	54	.2	11	2	7	.85	.079	4	6	.32	29	.01	2	.37	.01	.22	1	180	360
S032	8	30	39	28	2.9	7	8	785	4.17	92	5	ND	1	65	.4	11	2	17	1.11	.071	5	8	.64	24	.01	2	.76	.01	.35	2	460	205
S033	6	27	54	39	6.0	1	9	1273	6.75	525	5	ND	1	121	.7	44	2	8	2.10	.079	2	8	1.23	22	.01	3	.74	.01	.21	2	330	3100
S034	2	18	23	49	1.9	3	6	1158	5.52	140	5	ND	1	79	.9	8	2	15	1.35	.079	4	2	.95	27	.01	3	.87	.01	.19	2	87	185
S035	6	13	24	28	1.9	3	6	1211	4.32	119	5	ND	1	90	.5	10	2	7	1.49	.070	4	5	.64	27	.01	2	.40	.01	.19	2	70	160
S036	4	28	30	24	1.9	4	7	354	4.89	227	5	ND	1	21	.7	11	2	8	.48	.068	6	6	.21	23	.01	3	.34	.01	.17	2	78	340
STANDARD C/AU-R	17	55	36	122	7.0	65	32	972	3.99	39	16	7	37	52	17.4	16	19	56	.47	.083	36	57	.86	172	.08	31	1.83	.06	.14	11	480	1600

Sample type: CORE. Samples beginning 'RE' are duplicate samples.

SAMPLE# J91-19	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
S037	22	44	103	295	3.3	6	5	126	5.54	1604	5	ND	2	12	1.3	34	2	4	.20	.061	7	24	.04	27	.01	2	.19	.01	.13	1	58	1650
S038	28	36	52	80	3.5	5	8	75	5.06	717	5	ND	2	11	.2	25	2	4	.18	.063	7	4	.03	27	.01	2	.20	.01	.13	1	98	1550
S039	9	25	34	766	2.8	5	6	86	4.65	297	5	ND	1	13	5.8	15	2	4	.25	.089	8	7	.03	26	.01	4	.24	.01	.19	1	190	1500
S040	10	13	53	212	3.4	6	4	37	4.24	331	5	ND	1	19	.9	25	2	4	.24	.085	7	7	.02	31	.01	3	.18	.02	.14	1	280	1950
S041	11	21	73	708	3.7	6	4	44	4.83	273	5	ND	2	12	3.6	26	2	5	.20	.074	8	23	.02	25	.01	2	.20	.01	.16	1	710	2100
S042	9	20	57	68	1.9	4	4	85	4.53	199	5	ND	1	14	.2	17	2	4	.25	.093	10	3	.04	29	.01	2	.29	.01	.20	1	81	930
S043	8	19	48	126	1.6	7	3	104	3.56	154	5	ND	2	14	.6	13	2	4	.23	.076	9	9	.04	40	.01	2	.22	.01	.15	1	43	890
S044	5	24	47	215	2.9	6	3	209	5.39	241	5	ND	1	17	.8	15	2	6	.28	.101	9	7	.14	22	.01	2	.34	.01	.24	1	320	300
S045	5	35	25	158	1.4	4	2	728	6.54	44	5	ND	1	20	.4	6	2	17	.25	.085	8	16	.63	39	.01	2	.84	.01	.17	1	210	165
S046	7	36	35	217	2.9	3	6	1053	10.10	69	5	ND	1	25	.6	7	2	11	.24	.078	6	3	.65	17	.01	2	.65	.01	.20	1	82	250
S047	2	16	14	86	1.3	4	6	1742	9.56	76	5	ND	1	48	.2	2	2	21	.26	.081	4	7	1.36	24	.01	2	1.20	.01	.16	1	86	90
S048	14	13	23	12	1.2	7	5	371	2.59	144	5	ND	1	16	.2	13	2	6	.23	.069	6	8	.13	41	.01	2	.21	.01	.10	2	6	340
S049	3	7	6	107	.5	5	3	937	5.47	13	5	ND	1	23	.2	2	2	25	.26	.091	11	17	.98	57	.01	2	1.29	.01	.15	1	27	80
S050	2	12	10	79	.5	3	3	962	5.10	15	5	ND	1	31	.2	2	2	30	.33	.096	10	4	.87	64	.01	2	1.25	.01	.14	1	5	80
S051	7	22	20	63	1.1	4	10	1833	4.49	75	5	ND	1	51	.2	8	2	37	.83	.099	7	3	1.34	54	.01	3	1.32	.01	.11	1	35	1200
S052	6	26	26	96	1.2	5	6	1191	6.72	94	5	ND	1	26	.2	2	2	43	.33	.109	8	6	1.59	37	.01	2	1.95	.01	.12	1	49	290
S053	11	23	22	84	1.3	3	6	1061	6.44	151	5	ND	1	22	.2	5	2	48	.38	.107	8	13	1.32	33	.01	2	1.61	.01	.10	1	120	575
S054	12	21	34	107	1.4	4	6	639	4.44	150	5	ND	1	36	.2	15	2	24	.85	.087	6	3	.75	37	.01	2	.79	.01	.13	1	67	880
S055	5	18	16	81	1.0	2	6	1484	7.14	81	5	ND	1	33	.2	2	2	45	.71	.093	5	3	1.43	32	.01	2	1.82	.01	.09	1	68	365
RE S051	7	27	21	65	1.0	4	10	1876	4.57	76	5	ND	1	53	.2	7	2	39	.85	.090	7	4	1.39	55	.01	2	1.35	.01	.12	1	39	1050
S056	1	26	25	195	1.2	2	10	2154	10.07	66	5	ND	2	34	.5	2	2	52	.40	.105	6	3	2.05	35	.01	2	2.78	.01	.12	1	170	340
S057	7	29	26	424	1.8	3	8	1001	7.72	174	5	ND	1	22	1.1	8	2	45	.47	.093	5	13	1.03	30	.01	2	1.25	.01	.12	1	500	445
S058	1	14	11	90	.6	3	5	803	6.33	37	5	ND	1	18	.2	4	2	41	.34	.118	7	2	.91	36	.01	2	1.31	.01	.14	1	17	160
S059	1	16	7	123	1.0	3	6	1482	7.88	32	5	ND	1	73	.2	2	2	55	.60	.103	7	4	1.44	32	.01	3	2.15	.01	.11	1	160	110
S060	2	28	14	99	1.3	5	5	1093	5.21	51	5	ND	1	36	.2	8	2	51	.78	.111	8	7	.87	38	.01	2	.99	.01	.12	1	44	145
S061	3	51	14	149	1.2	3	4	766	6.62	94	5	ND	1	30	.2	3	2	43	.53	.124	7	12	.67	30	.01	2	.90	.01	.13	1	210	155
S062	2	60	17	209	1.2	2	4	1220	7.13	126	5	ND	1	31	.7	2	2	44	.64	.114	7	2	.99	30	.01	2	1.21	.01	.14	1	220	275
S063	2	21	17	112	1.3	2	6	1288	7.88	75	5	ND	2	26	.3	4	2	42	.57	.095	6	3	1.35	28	.01	2	1.61	.01	.13	1	300	195
S064	1	30	12	60	1.2	4	5	1546	7.26	88	5	ND	1	44	.3	5	2	54	.91	.107	6	6	1.43	31	.01	2	1.56	.01	.12	1	370	140
S065	3	14	16	83	.8	3	3	952	6.74	52	5	ND	1	26	.2	5	2	52	.49	.123	9	12	1.15	35	.01	2	1.36	.01	.13	1	170	130
S066	2	17	18	48	.9	2	4	1312	7.23	90	5	ND	1	29	.3	2	2	58	.63	.110	8	2	1.87	33	.01	2	1.99	.01	.11	1	160	230
S067	2	21	14	38	.7	3	4	1225	6.46	98	5	ND	1	30	.2	4	2	53	.74	.110	9	3	1.66	35	.01	2	1.75	.01	.12	1	63	175
S068	4	21	16	326	.9	3	5	2648	6.95	81	7	ND	1	48	1.1	2	2	43	1.87	.085	5	3	2.79	27	.01	2	2.48	.01	.08	1	65	285
S069	3	21	6	77	.6	2	7	2758	7.01	38	5	ND	1	55	.6	2	2	59	2.05	.100	6	7	3.20	36	.01	2	3.25	.01	.10	1	98	110
S070	1	19	8	62	.7	1	5	1442	7.22	43	5	ND	1	26	.2	2	2	65	.57	.126	9	1	1.85	40	.01	2	2.35	.01	.12	1	67	85
S071	5	18	14	83	.9	6	8	1276	7.39	63	5	ND	1	21	.2	2	2	53	.33	.089	8	5	2.07	40	.01	2	2.74	.01	.18	1	46	110
S072	22	394	193	692	5.6	5	9	780	12.65	273	5	ND	1	41	1.9	2	2	36	.55	.048	3	5	1.32	29	.01	2	1.74	.01	.19	1	1810	895
STANDARD C/AU-R	18	58	36	130	7.0	70	32	1032	3.90	41	21	6	39	51	18.9	15	20	56	.48	.089	38	57	.86	174	.09	34	1.90	.06	.15	11	480	1500

Sample type: CORE. Samples beginning 'RE' are duplicate samples.

SAMPLE# J91-19	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
S073	3	96	486	417	4.5	3	7	1207	7.12	182	5	ND	1	41	2.1	5	2	63	.92	.092	3	8	1.99	32	.01	2	2.10	.01	.06	1	470	285
RE S077	1	8	9	136	.2	1	6	1111	8.42	40	6	ND	1	50	1.4	3	2	83	1.17	.136	5	5	2.61	40	.02	2	3.40	.01	.05	1	32	90
S074	1	7	8	117	.5	2	6	1101	7.24	41	5	ND	1	59	1.2	3	2	73	1.34	.140	6	4	1.75	53	.03	2	2.46	.01	.10	1	58	100
S075	2	16	17	120	.4	3	6	1239	7.22	23	5	ND	1	41	1.3	2	2	69	.94	.132	4	3	1.70	47	.02	2	2.25	.01	.09	1	112	90
S076	2	13	19	113	.9	2	7	1043	8.09	36	5	ND	1	52	.9	6	2	65	1.10	.134	4	4	2.07	39	.01	2	2.62	.01	.09	1	55	90
S077	1	8	7	141	.1	1	7	1115	8.45	37	5	ND	1	50	1.5	3	2	82	1.21	.136	5	5	2.63	41	.02	2	3.37	.01	.05	1	32	75
S078	1	9	5	150	.1	4	7	1144	8.48	23	5	ND	1	84	1.4	2	2	83	1.84	.139	3	8	2.09	48	.04	2	3.12	.02	.07	1	18	95
S079	1	6	8	123	.1	3	8	1039	6.23	10	5	ND	1	75	1.0	5	2	74	2.48	.137	5	5	1.31	46	.01	2	1.68	.02	.07	1	17	160
S080	1	5	11	92	.2	2	7	1575	7.20	11	8	ND	1	70	1.4	2	2	58	3.14	.130	3	4	1.66	42	.01	2	1.88	.02	.09	1	19	75
S081	2	14	17	100	.4	3	8	1320	7.37	14	8	ND	1	78	1.2	3	2	51	2.61	.126	3	8	1.43	51	.01	2	1.80	.01	.12	1	15	70
S082	1	59	14	96	.3	16	19	1410	5.31	17	5	ND	1	196	1.2	7	2	33	4.67	.109	4	11	1.31	98	.01	2	2.41	.02	.35	1	15	180
S083	1	69	11	93	.6	16	18	1558	4.61	22	5	ND	1	201	1.0	5	2	38	2.96	.107	4	11	1.48	82	.01	2	2.33	.01	.29	1	10	185
S084	1	81	11	89	.8	15	21	1009	5.32	26	5	ND	1	78	.7	4	2	47	.90	.099	5	16	1.36	90	.01	2	2.50	.01	.35	1	8	65
S085	1	112	14	122	.2	26	17	699	5.02	16	5	ND	2	220	1.1	2	2	36	5.72	.122	4	19	1.31	83	.01	2	2.30	.02	.15	1	4	155
S086	1	103	14	120	.2	35	17	657	4.82	10	5	ND	2	199	1.7	2	2	48	5.34	.125	7	19	1.51	77	.01	2	2.33	.02	.15	1	3	250
S087	2	115	18	120	.2	45	17	621	4.69	10	7	ND	3	198	1.4	3	2	46	4.90	.116	8	20	1.58	94	.01	2	2.45	.02	.15	1	3	190
S088	1	99	17	118	.2	43	17	605	4.55	10	5	ND	1	207	1.5	2	3	44	4.72	.112	6	20	1.62	98	.01	2	2.46	.02	.15	1	5	205
S089	1	105	16	116	.2	47	15	634	4.45	9	8	ND	1	217	.5	3	2	38	4.62	.111	6	23	1.50	81	.01	3	2.34	.02	.12	1	5	195
S090	1	105	15	115	.2	47	17	564	4.36	13	5	ND	1	176	1.2	2	2	36	4.02	.109	6	19	1.50	72	.01	2	2.29	.02	.12	1	5	150
S091	2	113	14	109	.3	48	16	521	4.36	11	5	ND	2	174	.9	2	2	31	3.94	.088	7	19	1.39	70	.02	2	2.20	.02	.13	1	7	180
S092	2	92	14	116	.3	30	15	642	4.60	13	5	ND	1	211	.8	4	2	31	5.30	.119	7	22	1.32	65	.01	2	2.09	.02	.13	1	1	180
S093	3	117	23	111	.2	45	16	553	4.58	18	5	ND	1	230	.7	2	2	31	4.50	.103	4	18	1.34	63	.01	2	2.11	.02	.13	1	6	230
S094	2	109	14	121	.1	34	15	564	4.40	18	5	ND	1	200	1.0	3	2	34	4.77	.113	8	17	1.37	80	.01	2	2.30	.02	.14	1	5	215
S095	1	90	12	111	.2	27	13	697	4.18	12	5	ND	1	309	.7	3	2	36	6.32	.114	6	19	1.40	71	.01	2	2.24	.02	.10	1	8	190
S096	2	117	16	126	.3	37	19	699	4.83	14	9	ND	1	236	1.2	2	3	40	5.00	.144	9	21	1.62	81	.01	2	2.51	.02	.12	1	6	225
S097	1	94	13	111	.1	33	15	693	4.11	11	5	ND	1	253	1.0	2	2	32	5.19	.102	7	18	1.39	70	.01	2	2.23	.02	.13	1	2	125
S098	1	110	12	117	.2	34	16	670	4.30	13	9	ND	2	259	.8	2	2	40	5.30	.123	10	21	1.58	100	.01	2	2.42	.02	.14	1	3	210
S099	1	92	11	103	.2	21	15	680	4.24	11	5	ND	1	314	1.4	2	2	42	5.94	.116	8	16	1.54	75	.01	2	2.33	.02	.11	1	3	170
S100	1	32	4	31	.4	8	5	1328	1.27	2	5	ND	5	2115	.4	2	2	13	27.78	.043	8	6	.30	32	.01	2	.66	.01	.05	1	2	50
S101	2	73	9	83	.1	27	15	739	3.79	13	5	ND	1	667	.9	2	2	33	8.79	.095	4	18	1.35	63	.01	2	2.05	.01	.12	1	1	110
S102	3	110	12	110	.2	30	18	606	4.82	18	5	ND	1	268	1.1	4	2	40	4.03	.116	3	17	1.91	74	.01	2	2.64	.02	.13	1	7	250
S103	2	104	9	120	.1	30	17	630	5.25	17	8	ND	1	253	1.5	2	2	44	4.82	.157	3	23	1.63	63	.01	2	2.47	.02	.10	1	3	295
S104	3	94	13	111	.1	25	18	603	4.69	16	5	ND	1	243	.9	2	2	46	4.74	.128	3	17	1.74	72	.01	2	2.50	.02	.12	1	3	240
S105	5	111	15	118	.1	36	17	514	4.84	23	5	ND	1	211	1.3	2	2	45	4.23	.113	2	21	1.62	67	.01	2	2.40	.02	.12	1	3	320
S106	1	90	13	111	.2	23	13	515	4.48	19	5	ND	1	222	1.0	3	2	39	5.31	.107	3	21	1.28	93	.01	2	2.21	.02	.14	1	3	325
S107	1	105	15	111	.1	24	14	531	4.58	22	5	ND	2	219	1.1	3	2	41	5.43	.115	3	21	1.29	79	.01	2	2.22	.02	.11	1	6	335
STANDARD C/AU-R	20	62	44	133	7.2	72	32	1050	3.98	43	18	8	39	53	17.6	15	18	61	.47	.090	38	56	.88	180	.09	34	1.91	.06	.13	11	470	1400

Sample type: CORE. Samples beginning 'RE' are duplicate samples.

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No. J91-20 (JEFF GRID) COUL-3 750 ZONE

PURPOSE

TO CHECK ROCK AND SOIL GEOCHEM ANOMALY (Au, Ag, As) NORTH OF THE FAULTED CONTACT (?) OF FELSIC TO INTERMEDIATE VOLCANICS AND SEDIMENTS OF SALMON RIVER(?) FORMATION.

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
7+00 N/0+81E	460 m (ALTIM.)	-270°	118.87m
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-45°	RIG HEAD ANGLE -46		
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED** OCT 10/1991
JEFF TESAR	J.T. THOMAS	B.Q.	**DATE COMPLETED** OCT 11/1991

SUMMARY LOG

00 - 4.57 OVERBURDEN
4.57 - 11.20 INTERMEDIATE MEDIUM-GRAINED TO LAPILLI TUFF
11.20 - 17.90 MIXTURE OF INTERMEDIATE FINE TO LAPILLI TUFF WITH CARBONACEOUS CHERT
17.90 - 30.50 INTERMEDIATE MEDIUM TO LAPILLI TUFF
30.50 - 40.80 CHERTY INTERMEDIATE FINE TO LAPILLI TUFF
40.80 - 62.00 MUDSTONE INTERBEDDED WITH SILTSTONE
62.00 - 64.00 ARGILLACEOUS INTERMEDIATE FINE-GRAINED TO AMYGDALOIDAL PHYLLITIC TUFF
64.00 - 69.20 FELSIC TO INTERMEDIATE LAPILLI TUFF TO TUFF BRECCIA
69.20 - 70.20 BRECCIA / FAULT
70.20 - 82.30 INTERMEDIATE LAPILLI PHYLLITIC TUFF
82.30 - 118.87 MUDSTONE INTERBEDDED WITH SILTSTONE
- 118.87 END OF THE HOLE

SIGNIFICANT MINERALIZED INTERVALS

14.10 - 20.90 3-4% Pyrite ; narrow stringers, specks, dissem.
39.85 - 40.95 7-8% Pyrite ; 6cm (25cm) and network of stringers
62.00 - 64.00 4-5% Pyrite ; narrow concordant stringers, specks
* 64.00 - 69.20 * ZONE OF MASSIVE SULPHIDES * 6-7% Pyrite as anastomosing bands, stringers, specks, dissem.
also traces of: cinnabar, arsenopyrite, chalcopyrite, stibnite, silver-rich electrum.

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-20

INTERVAL	C. LOSS	LITHOLOGY	C &	L	S	M	A
00 - 4.57		OVERBURDEN / CASING		1 OVERBURDEN			
4.57 - 11.20		INTERMEDIATE MEDIUM-GRAINED TO LAPILLI TUFF. In places tuff breccia (slump breccia) with angular grey medium-grained fragments of tuff within black cherty fine-grained groundmass. H-wall contact not discernable. F-wall contact gradational. Moderately to intensely siliceous. Mineralized by minor pyrite: isolated narrow bands, specks and disseminated		1 2B+Ds (2Es)		Py	Si-2
11.20 - 17.90		~~GREY~~ MIXTURE OF INTERMEDIATE FINE TO LAPILLI TUFF WITH CARBONACEOUS BLACK CHERT. Predominantly black carbonaceous chert with grey fine to lapilli tuff (in places amygdaloidal fragments predominant). In places slump breccia with angular or subangular fragments of chert within fine-grained tuffaceous matrix. In places tuff breccia with angular and subangular fragments of fine tuff within black cherty groundmass. Mineralized by narrow anastomosing bands or stringers of pyrite which occur within tuff. Intensely siliceous.		1 2A=Ds; NTI		Py	Si-3
17.90 - 30.50		GREY INTERMEDIATE MEDIUM-GRAINED TO LAPILLI TUFF In places phyllitic. Granular texture with medium to coarse grain size, grading to fragmental with lapilli up 3 cm. Phyllitic structure, in places wavey. Locally brecciated. Quartz stringers (with minor carbonate) 1-2% of the interval. Mineralized by pyrite: 3-4% as narrow stringers		2B-De		Py	

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-20

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
tr-1% Py; specks and disseminated	H096	10.30	11.20	0.90	2	0.1	11	2		
1-2% Py; specks and disseminated	H097	11.20	12.70	1.50	5	0.1	23	2		
— " —	H098	12.70	14.10	1.40	2	0.1	22	2		
3-4% Py; narrow anastom. stringers, specks, dissem	H099	14.10	15.52	1.42	2	0.1	59	2		
2% Py; narrow stringers, speck, dissem.	H100	15.52	17.90	2.38	1	0.1	37	2		
4-5% Py; narrow stringers, specks, dissem.	H101	17.90	19.40	1.50	6	0.1	62	2		
2-3% Py; narrow stringers, specks, dissem.	H102	19.40	20.90	1.50	4	0.1	50	2		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-20

INTERVAL	C. LOSS	LITHOLOGY	C.A	L	S	M	A
		specks and disseminated within fine-grained matrix of the lapilli tuff.					
		21.34 – 27.00 Interval with markedly wavey to contorted foliation planes locally narrow brecciated bands					
		28.60 – 29.00 Interval with amygdaloidal fragments predominant. (vesicular structure of lapilli tuff)					
30.50-40.80		GREY TO DARK GREY CHERTY INTERMEDIATE FINE TO LAPILLI TUFF. Predominantly tuff. In places bands or/and inclusions of carbonaceous chert or siliceous argillite, In places slump breccia with subangular fragments of tuff within cherty (siliceous) fine-grained matrix. Locally narrow bands of perlitic and vesicular structures. Mineralized by network of narrow pyritic stringers. Overall pyrite content 3-4% Quartz stringers tr-1% of the interval at all angles to C.A. H-wall contact gradational. F-wall contact: 55° sharp					
		36.15 – 36.35 Interval with perlitic fragments predominant					
		37.55 – 39.40 Amygdaloidal fragments predominant					
		39.85 – 40.80 Mixture of grey intermediate lapilli tuff with black chert or cherty argillite. Interval intensely siliceous.					

GRANGES EXPLORATION [redacted]

DIAMOND DRILL LOG

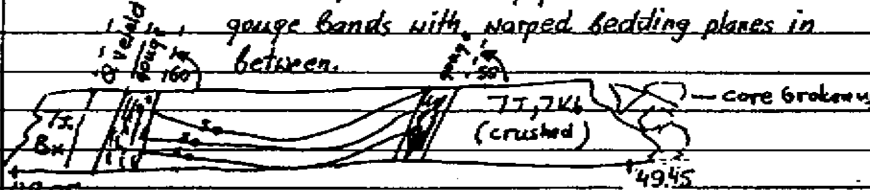
HOLE No. J91-20

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
1~2 % Py ; narrow stringers, specks, disem.	H103	20.90	22.40	1.50	1	0.1	18	2
2 % Py ; — " —	H104	22.40	23.90	1.50	1	0.1	49	2
2~3 % Py ; — " —	H105	23.90	25.40	1.50	4	0.1	95	2
— " —	H106	25.40	26.90	1.50	3	0.1	17	2
1~2 % Py ; specks, narrow string. disem.	H107	26.90	28.50	1.60	5	0.1	63	2
— " —	H108	28.50	29.65	1.15	1	0.1	71	2
— " —	H109	29.65	30.50	0.85	4	0.2	54	2
2~3 % Py ; narrow stringers	H110	30.50	32.00	1.50	2	0.2	175	4
3~4 % Py ; network of narrow pyritic stringers.	H111	32.00	33.50	1.50	4	0.2	219	7
2~3 % Py ; — " —	H112	33.50	35.00	1.50	1	0.1	276	8
2~3 % Py — " —	H113	35.00	36.50	1.50	4	0.1	88	5
4~5 % Py — " —	H114	36.50	38.00	1.50	2	0.2	160	10
2~3 % Py — " —	H115	38.00	39.85	1.85	7	0.1	342	2
7~8 % Py ; network of narrow pyritic stringers and band (25cm true width) of pyrite filling the matrix of the interval.	H116	39.85	40.95	1.10	3	0.4	370	6

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91 - 20

INTERVAL	C. LOSS	LITHOLOGY	C∠	L	S	M	A
40.80 - 62.00		BLACK MUDSTONE INTERBEDDED WITH GREY SILTSTONE Clastic texture with very fine grain size. Bedding: tops downhole 55 ~ 60°. Frequent quartz-carbonate stringers parallel to the bedding planes. In places wavey pattern of bedding. In places narrow bands of gouge (drag faults?). Mineralized by pyritic concordant bands (up to 1cm in true width). Also as specks and weakly disseminated. In places limonitic (secondary from pyrite). In places graphitic. H-wall contact 55°, sharp.		7K, 7J 6 (av) (9)		Py	
		46.92 - 47.10 Narrow band of brecciated rock. Gouge band at 40° to C.A.		7J, 7K 6			
		48.85 - 49.45 Breccia / Fault. Drag fault(?). Two distinct gouge bands with warped bedding planes in between.		Bx			
		52.00 ~ 52.10 Quartz vein at 45° to the core axis.		7K, 7J 6			
				7K, 7J 6 (av, 9)		Py	



40 — 45 — 50 — Si-3 — 55 — 60

GRANGES EXPLORATION [redacted]

DIAMOND DRILL LOG

HOLE No. J91-20

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
tr-1% Py, concordant bands, specks, diss'm.	H117	40.95	42.67	1.72	12	0.3	84	15
— " —	H118	42.67	44.48	1.81	6	0.1	26	2
— " —	H119	44.48	46.00	1.52	7	0.2	29	2
— " —	H120	46.00	47.50	1.50	5	0.1	29	2
— " —	H121	47.50	49.00	1.50	6	0.1	24	2
— " —	H122	49.00	50.50	1.50	11	0.1	27	2
— " —	H123	50.50	52.00	1.50	8	0.1	22	2
— " —	H124	52.00	53.50	1.50	11	0.3	25	2
— " —	H125	53.50	55.00	1.50	3	0.1	31	2
— " —	H126	55.00	56.50	1.50	5	0.1	25	2
— " —	H127	56.50	58.00	1.50	3	0.7	79	5
— " —	H128	58.00	59.50	1.50	10	0.6	129	11
— " —	H129	59.50	61.00	1.50	5	0.1	199	19
— " —	H130	61.00	62.00	1.00	16	1.2	168	35

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J 91-20

INTERVAL	C. LOSS	LITHOLOGY
		61.46 - 61.55 Minor fault. Band of gouge at 70° to the core axis. Contorted bedding planes on both adjacent walls.
62.00 - 64.00		ARGILLACEOUS INTERMEDIATE FINE-GRAINED TO AMYGDALOIDAL PHYLLITIC TUFF. Dark-grey in colour. Predominantly tuff. In places bands of argillaceous tuff, tuffaceous argillite or inclusions of blackish carbonaceous chert. H-wall contact 70°, sharp to gradational F-wall contact 40°, marked by contorted foliation planes. Interval grades from fine-grained argillaceous tuff on the upper wall through medium-grained tuff to amygdaloidal tuff on the lower wall.
*64.00 - 69.20		FELSIC TO INTERMEDIATE LAPILLI TUFF TO TUFF BRECCIA H-wall contact 40° marked by minor fault indicated by narrow gouge band. F-wall contact 40° Phyllitic with frequent brittle fractures through the interval. Also strong flattening fabric throughout the whole interval. Quartz veins and stringers (predeformed?) up to 25% of the rock. Major deformation occured prior to mineralization, then (after mineralization) minor deformation followed. Rock is light-grey in colour, fragmental texture (which in places grades into tuff breccia) with lapilli fragments within medium-grained siliceous matrix, in places carbonaceous cherty matrix. Foot-wall of the interval is brecciated (hanging wall of fault) cut off by the fault downhole.
		68.50 - 69.20 Breccia / Fault. Hanging wall of the fault. Mineralization intensity decreases down the interval. Angular fragments of tuff flooded with quartz matrix. Intensely phyllitic on the foot-wall of the interval.

GRANGES EXPLORATION INC.

DIAMOND DRILL LOG

HOLE No. J 91 - 20

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
4-5 % Py ; narrow concordant stringers, specks	H131	62.00	63.00	1.00	44	4.5	243	18
— " —	H132	63.00	64.00	1.00	75	10.2	421	28
* 64.00 - 69.20 ZONE OF MASSIVE SULPHIDES *	H133	64.00	65.00	1.00	2090	335.7	4122	181
Mineralized by 6-7 % Pyrite (locally 10 %) as anastomosing bands, stringers specks and disse. *	H134	65.00	66.00	1.00	3240	129.4	6618	203
Also traces of cinnabar (stringers and specks throughout the whole interval), arsenopyrite, *	H135	66.00	67.00	1.00	250	15.2	795	37
chalcopyrite, stibnite and the wire of silver-rich electrum *	H136	67.00	68.00	1.00	165	9.9	533	23
— " — *	H137	68.00	69.20	1.20	182	5.2	445	11
traces of pyrite, extensive core loss.	H138	69.20	70.20	1.00	30	1.1	56	3
2 % Py ; disseminated, narrow stringers specks	H139	70.20	71.70	1.50	23	2.0	70	4
tr-1 % Py ; disseminated, specks	H140	71.70	73.15	1.45	13	0.5	22	2
— " —	H141	73.15	74.85	1.70	14	6.4	29	2
— " —	H142	74.85	76.35	1.50	13	0.3	19	2
— " —	H143	76.35	77.85	1.50	13	0.4	18	2
— " —	H144	77.85	79.35	1.50	10	0.3	13	2
— " —	H145	79.35	81.25	1.90	9	0.2	21	2

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J 91 - 20

INTERVAL	C. LOSS	LITHOLOGY	CX	L	S	M	A
68.20 - 70.20		BRECCIA/FAULT. This unit is a foot-wall of the fault zone that starts at 68.50 m. H-wall contact 40°. F-wall contact not discernable core broken up. Over 70% core loss. Core broken up. Intensely phyllitic intermediate lapilli tuff. Chloritic.	-	-	-	-	-
70.20 - 82.30		GREY INTERMEDIATE LAPILLI PHYLLITIC TUFF. In places amygdaloidal fragments dominant. Strong flattening fabric throughout the interval with the rotation of lapillis fragments along the planes of foliation. In places lithic fragments predominant. Often wavey or contorted foliation planes near-by deformation (fault) associated	-	-	-	-	-
		71.10 - 71.70 Breccia. Angular fragments of lapilli tuff flooded with quartz groundmass. Weakly chloritic. Core broken up. Both walls adjacent to the brecciated one show contorted foliation planes, indicating breccia-fault	-	-	-	-	-
		80.85 - 81.25 Breccia / Fault: Angular fragments of lapilli tuff flooded with quartz matrix. Chloritic. F-wall contact 75°, sharp.	-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-20

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au g/t	Ag g/t	As ppm	Sb ppm		

GRANGES EXPLORATION [redacted]

DIAMOND DRILL LOG

HOLE No. J 91 – 20

INTERVAL	C. LOSS	LITHOLOGY
		80.85 - 81.25 Breccia (Fault?) Angular fragments of lapilli tuff flooded with quartz matrix. Chloritic. F-wall contact sharp. 75°
82.30 - 118.87		BLACK MUDSTONE INTERBEDDED WITH GREY SILTSTONE Contact: Marked by zone of brecciated tuff (upper wall) and brecciated mudstone (lower wall) both flooded with quartz-carbonate matrix in places vuggy. Predominant angle 70° Interbedded mudstone with siltstone, tops downhole. In places bedding planes contorted to heavily. In places brecciated with dense network of quartz - carbonate stringers (at all angles to C.A) throughout the interval. In places graphitic.
		89.40 – 92.44 Fault zone H-wall contact 50° Foot-wall contact not discernable. Core broken up, sheared, in places presence of gouge, with dense swarm of quartz stringers at all angle to the core axis
		92.40 – 92.85 Breccia, fault H-wall contact not discernable (core broken up) F-wall 50° fuzzy.
		98.25 – 100.10 Breccia, fault zone. H-wall contact 35° F-wall contact 40°

C.A. L S M A

CL-1 Si-3 Si-2 Si-2

80 85 90 95 100

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-20

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
tr-1% Py; disseminated, specks	H146	81.25	82.30	1.05	41	0.4	27	2		
tr-1% Py; narrow pyritic concordant bands	H147	82.30	83.80	1.50	10	0.5	22	5		
— " —	H148	83.80	85.35	1.55	4	0.2	27	2		
— " —	H149	85.35	86.85	1.50	6	0.3	27	3		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J 91-20

INTERVAL	C. LOSS	LITHOLOGY
102.60 - 103.00		Breccia / Fault. Both contacts broken up thus not discernable. Crushed rock with dense network of quartz-carbonate stringers at all angle C.A.
108.85 - 114.60		Fault zone. H-wall contact 65°. Foot-wall contact 65°, marked by band of gouge. Rock crushed, brecciated, in places gouge narrow bands with dense network of narrow quartz-carbonate stringers at all angles to C.A. Mineralized by narrow concordant pyritic stringers 1% overall content.
- 118.87		END OF THE HOLE

C.A. L S M A

100 105 110 115 120

Si-2 Ch-1

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-20

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au g/t	Ag g/t	As ppm	Sb ppm		

Sample J-91-20 65.35 m Sericite-rich Argillite, Minor Cherty Layers (Unit 7J, 7N); Replacement Lenses of Pyrite-Arsenopyrite; Replacement Vein of Quartz-K-feldspar-(Ankerite); Late Veinlets of Mineral A

The rock is a well foliated argillite dominated by sericite with moderately abundant, disseminated, extremely fine grained pyrite. Some layers are dominated by extremely fine grained, slightly interlocking quartz grains.

Replacement veins (35-40%) are dominated by quartz with 3-4% patches of K-feldspar. Quartz commonly is strained moderately. One lens 1 mm long in a quartz-rich patch is of extremely fine grained Mineral A. A late veinlet 0.2 mm wide is of extremely fine grained Mineral A. Mineral A has a very low R.I. and very low birefringence, and is soft. Ankerite forms a few irregular patches of very fine grains intergrown with quartz.

Other replacement seams parallel to foliation are dominated by extremely fine to fine grained pyrite (15-17%). Some pyrite aggregates were brecciated very finely. Arsenopyrite (3-4%) forms grains averaging 0.05-0.1 mm in size on borders of pyrite-rich patches and clusters of grains averaging 0.01-0.02 mm in size in the adjacent host rock. Sphalerite (trace) forms lenses up to 0.4 mm in length parallel to foliation. Interstitial to sulfides are extremely fine grained aggregates of sericite

One larger pyrite grain contains an irregular inclusion 0.02 mm across of pale yellow electrum. A veinlet of electrum 0.04 mm long and 0.005 mm wide occurs between two pyrite grains.

Sample J-91-20 74.8 m Altered Andesite Lapilli Tuff (2D.1Bu)

The large fragment a few cm across is of andesite/basalt tuff(?) dominated by aphanitic plagioclase/chlorite with wispy seams of chlorite parallel to foliation and abundant, irregular, lensy patches of sericite and/or ankerite and minor ones of quartz.

Along one side of this fragment is a 1.5-to-2-cm-wide band containing moderately abundant crystal fragments of plagioclase and quartz in a groundmass dominated by sericite/plagioclase and ankerite (probably secondary). Adjacent to this layer are a few fragments up to 2.5 mm across of very fine grained latite/andesite, with lathy plagioclase grains up to 0.07 mm long in a groundmass of plagioclase, ankerite, and minor opaque.

Several pumice fragments up to 1.5 mm long are dominated by lensy intergrowths of sericite and chlorite.

A fragment 1.7 cm long is of argillite containing patches of sericite, possibly after plagioclase crystals.

Scattered fragments averaging 0.5-1 mm in size are of quartz aggregates and plagioclase phenocrysts. Some plagioclase phenocrysts are altered slightly to moderately to ankerite.

The groundmass is dominated by extremely fine grained sericite, chlorite, and plagioclase, and is contorted moderately to strongly.

WHOLE ROCK CP ANALYSIS

Granges Inc. PROJECT UNUK RIVER File # 91-5479 Page 1

2300 - 885 W. Georgia St., Vancouver, BC V6C 3E8

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	La ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
J91-2-21.2	72.05	11.60	3.88	.77	.01	.05	6.54	1.98	.03	.01	.007	1106	25	26	122	24	20	2.9	100.01
J91-3-15.5	65.00	9.95	8.69	.35	.70	.12	7.90	1.76	.59	.01	.003	2249	87	18	151	41	23	4.5	99.99
J91-7-35.0	37.49	13.50	6.85	4.77	15.74	4.54	.83	1.18	.18	.18	.015	387	623	10	94	23	20	14.6	100.33
J91-7-39.0	38.34	12.43	7.71	3.09	17.05	5.83	.20	1.36	.25	.17	.012	189	860	10	105	25	20	13.4	100.29
J91-8-65.2	63.84	13.75	5.44	1.62	1.50	.09	8.28	1.54	.26	.06	.005	1722	101	14	172	25	20	4.0	100.06
J91-10-69.0	69.41	11.33	4.44	.37	1.26	.11	7.79	1.95	.57	.01	.004	2136	88	10	124	31	20	2.9	100.02
J91-11-88.0	54.61	15.27	4.72	2.17	5.14	5.42	1.84	1.32	.22	.19	.019	1373	233	10	159	7	61	8.4	100.14
J91-12-166.5	53.85	14.26	9.63	2.72	5.52	1.62	3.66	1.80	.60	.25	.002	784	243	13	116	26	48	6.0	100.10
J91-12-175.6	56.93	13.43	7.78	3.63	3.87	.66	5.03	.77	.26	.155	.006	1046	147	12	86	9	24	7.2	100.13
J91-15-91.0	29.07	13.20	11.60	6.70	16.67	1.57	2.72	1.08	.19	.54	.012	707	246	10	45	16	44	16.9	100.42
J91-16-129.15	46.04	15.77	9.14	4.43	7.04	1.89	5.52	1.53	.31	.27	.007	1010	141	10	73	18	87	8.0	100.16
J91-17-89.6	59.10	13.03	8.62	3.16	4.53	4.09	.66	1.52	.29	.16	.002	288	247	25	154	37	79	5.0	100.08
J91-17-149.0	65.12	12.13	6.33	2.70	1.77	.08	7.63	1.31	.35	.18	.003	2173	130	17	115	22	76	3.0	100.02
J91-17-172.0	57.65	12.90	11.38	5.32	1.92	.09	5.52	1.39	.44	.33	.002	1518	75	22	166	56	66	3.8	100.05
J91-18-76.1	59.22	15.23	7.64	3.94	1.93	2.01	4.22	2.01	.45	.11	.002	1891	109	21	163	50	60	3.9	100.03
J91-18-77.3	59.74	16.41	4.76	3.19	2.23	.28	5.96	1.42	.07	.06	.010	897	37	24	161	51	41	7.8	100.14
J91-18-89.0	60.81	10.80	10.64	3.04	2.22	.06	5.67	1.18	.29	.25	.005	3724	247	15	148	42	24	4.4	100.06
J91-18-94.7	62.99	12.76	8.13	2.02	1.07	1.45	7.23	1.40	.36	.10	.002	3086	126	20	166	35	77	2.1	99.99
J91-18-123.4	62.26	11.54	9.78	2.93	.51	.18	7.14	1.23	.34	.23	.002	1350	80	18	91	39	30	3.6	100.00
J91-20-74.8	49.69	10.77	14.85	6.84	6.50	.43	.70	.98	.32	.62	.002	123	150	21	194	32	26	8.4	100.16
J91-21-49.0	46.62	14.41	15.25	1.76	2.21	4.99	1.55	2.04	.62	.07	.002	877	289	23	168	28	59	10.5	100.24
J91-22-45.0	62.61	10.92	9.01	2.19	1.36	.39	1.93	1.59	.39	.09	.002	1113	81	16	113	28	20	9.5	100.20
J91-22-130.2	46.62	15.29	16.18	4.12	2.17	4.21	.95	3.27	.65	.15	.002	203	109	23	181	44	46	6.4	100.10
J91-22-177.1	55.90	18.36	6.80	2.60	1.93	.09	8.93	2.00	.53	.12	.002	1314	99	28	166	36	90	3.5	100.04
J91-22-183.0	68.23	14.40	3.44	2.42	.49	.05	6.92	.66	.14	.08	.002	1035	63	33	206	31	79	3.0	100.04
J91-22-208.5	70.20	13.65	3.76	2.55	1.01	.05	5.78	.94	.10	.10	.002	1119	38	26	142	15	53	2.6	100.02
J91-22-211.5	54.36	15.48	10.93	8.35	5.25	.05	3.38	1.51	.23	.33	.005	609	40	10	85	21	28	5.1	100.05
J91-24-164.7	44.84	16.27	14.50	5.09	5.21	.07	4.42	1.60	.49	.78	.002	1213	665	21	76	20	86	6.5	100.08
RE J91-22-177.1	55.80	18.19	6.84	2.66	1.97	.05	9.13	1.97	.53	.12	.002	1296	100	30	167	35	77	3.5	100.02
J91-24-207.3	54.95	12.97	11.80	3.86	4.71	.06	4.27	1.55	.40	.045	.002	1694	250	19	133	28	47	4.7	100.07
J91-25-26.9	51.21	15.96	7.89	2.11	7.49	3.81	2.90	2.43	.57	.28	.002	1247	335	21	140	27	108	5.1	100.04
J91-25-45.4	50.89	15.41	8.40	1.83	7.44	3.94	2.88	2.43	.54	.19	.002	974	246	23	141	25	70	5.9	100.08
J91-26-42.4	51.52	16.07	10.06	2.73	7.08	.16	4.72	1.38	.35	.23	.002	1876	237	33	183	45	79	5.4	100.09
J91-26-105.2	57.90	12.68	8.98	3.31	7.84	.05	4.55	1.63	.48	.41	.002	1228	129	23	117	29	62	5.0	100.08
J91-27-32.65	54.73	16.02	6.47	3.42	5.17	4.09	1.85	2.35	.60	.15	.002	1756	339	14	134	26	20	4.3	100.05
J91-27-60.5	74.21	9.88	3.60	.88	1.98	4.12	.73	1.79	.47	.06	.002	800	166	14	103	18	24	2.1	100.00
J91-27-68.0	57.38	14.99	8.47	3.90	3.52	1.92	2.53	2.39	.62	.07	.002	2205	162	20	144	36	29	5.9	100.11
STANDARD SO-4	67.81	10.29	3.56	.98	1.61	1.33	2.05	.57	.23	.13	.005	795	207	29	321	23	20	11.2	99.98

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3.
- SAMPLE TYPE: CORE Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: NOV 15 1991 DATE REPORT MAILED: Nov 30/91. SIGNED BY: D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

SAMPLE#	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Au*	Hg
J91-20	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppb	ppb
H096	2	13	8	82	.1	4	9	845	4.35	11	5	ND	1	82	.5	2	2	19	2.76	.163	9	4	.91	69	.01	3	1.91	.03	.08	1	2	250
H097	1	13	10	90	.1	4	9	1019	4.63	23	5	ND	1	91	.5	2	2	24	3.62	.159	11	5	.92	63	.01	3	2.06	.03	.08	1	5	180
RE A315	13	16	13	98	.1	13	5	1161	3.71	40	5	ND	1	237	.5	4	2	17	8.45	.083	6	4	2.24	56	.01	2	1.56	.01	.15	1	2	895
H098	2	17	7	104	.1	4	12	1105	6.14	22	5	ND	1	103	.8	2	2	26	4.72	.175	11	4	1.12	64	.01	2	2.39	.03	.08	1	2	310
H099	2	19	10	129	.1	5	14	1143	6.88	59	5	ND	1	153	1.1	2	2	30	5.81	.169	11	5	1.11	47	.01	2	2.17	.04	.06	1	2	565
H100	2	16	8	90	.1	6	15	810	5.92	37	5	ND	1	99	.6	2	2	23	4.52	.193	11	6	1.12	43	.01	3	2.09	.04	.10	1	1	375
H101	3	20	18	75	.1	6	21	1412	5.70	62	5	ND	1	339	.8	2	2	16	9.68	.165	10	6	.89	49	.01	5	1.48	.03	.13	1	6	445
H102	1	27	12	237	.1	6	21	995	7.51	50	5	ND	1	123	.8	2	2	48	5.26	.230	7	6	1.31	41	.01	2	2.44	.04	.16	1	4	3400
H103	1	19	6	180	.1	4	13	702	4.76	18	5	ND	1	100	.5	2	2	41	3.51	.250	10	3	1.14	100	.01	3	2.25	.04	.17	1	1	140
H104	2	26	10	146	.1	4	20	806	6.46	49	5	ND	1	139	.6	2	2	40	4.23	.239	8	5	1.20	55	.01	2	2.21	.04	.17	1	1	275
H105	2	30	19	143	.1	6	24	966	8.34	95	5	ND	1	137	.8	2	2	35	5.15	.195	6	5	1.26	30	.01	2	1.93	.03	.12	1	4	275
H106	1	15	10	160	.1	3	14	709	5.17	17	5	ND	1	111	.5	2	2	47	3.82	.242	11	5	1.36	109	.01	3	2.47	.04	.17	1	3	145
H107	1	23	12	115	.1	4	22	747	6.22	63	5	ND	1	130	.6	2	2	39	4.57	.253	9	4	1.22	52	.01	3	2.15	.04	.19	1	5	175
H108	1	26	12	103	.1	3	16	1196	6.14	71	5	ND	1	302	.9	2	2	42	7.61	.200	11	5	1.30	75	.01	4	2.28	.03	.12	1	1	155
H109	5	29	13	155	.2	3	18	666	7.89	54	5	ND	1	104	.8	2	2	42	3.05	.221	7	5	1.54	31	.01	3	2.78	.04	.14	1	4	190
H110	5	19	14	144	.2	3	15	798	6.91	175	5	ND	1	128	.9	4	2	23	4.39	.224	9	4	1.22	40	.01	2	1.99	.04	.17	1	2	1550
H111	7	18	10	44	.2	4	12	397	5.48	219	5	ND	1	96	.5	7	2	12	2.89	.175	8	3	.64	30	.01	2	1.18	.04	.18	1	4	1700
H112	10	20	11	36	.1	4	25	236	7.94	276	5	ND	1	49	.9	8	2	15	1.45	.214	7	3	.59	17	.01	4	1.14	.04	.20	1	1	1600
H113	3	17	15	109	.1	4	22	699	6.23	88	5	ND	1	145	.6	5	2	33	3.28	.200	8	6	1.94	43	.01	2	2.37	.04	.12	1	4	845
H114	5	16	8	61	.2	5	11	1406	7.60	160	5	ND	1	325	1.1	10	2	29	5.22	.132	7	5	2.14	38	.01	2	2.28	.03	.05	1	2	1900
STANDARD C/AU-R	19	61	42	131	7.1	76	34	1034	3.93	40	16	8	41	53	17.8	16	19	58	.47	.089	38	57	.87	177	.09	32	1.93	.06	.15	11	490	1750

Sample type: CORE. Samples beginning 'RE' are duplicate samples.

SAMPLE# J91-20	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
H115	10	15	15	74	.1	2	10	1200	7.94	342	5	ND	1	283	1.7	2	2	30	4.04	.175	3	1	2.09	28	.01	3	2.01	.03	.04	1	7	375
H116	21	18	15	248	.4	6	17	225	14.46	370	5	ND	1	53	2.7	6	6	19	.95	.112	3	9	.99	12	.01	7	1.19	.03	.11	1	3	585
RE H121	28	28	8	230	.2	41	9	495	4.45	26	5	ND	1	74	2.3	2	2	28	2.06	.083	2	4	1.46	16	.01	9	.91	.01	.13	1	8	1350
H117	14	27	10	127	.3	30	8	281	6.51	84	8	ND	1	40	1.5	15	2	16	.66	.060	3	7	.63	13	.01	11	.80	.01	.19	1	12	1300
H118	25	19	7	128	.1	28	7	1126	3.54	26	7	ND	1	288	1.7	2	2	27	6.52	.075	4	5	2.35	48	.01	8	1.60	.01	.11	1	6	710
H119	28	23	7	196	.2	39	8	435	4.31	29	9	ND	1	119	2.4	2	2	23	2.72	.073	3	4	1.07	24	.01	10	1.08	.01	.15	1	7	975
H120	26	21	9	158	.1	31	8	1025	4.03	29	5	ND	1	330	1.8	2	2	54	7.28	.100	4	7	2.71	40	.01	9	1.72	.01	.09	1	5	1100
H121	28	30	11	223	.1	42	9	508	4.47	24	5	ND	1	78	2.3	2	2	29	2.15	.084	2	4	1.52	21	.01	10	.94	.01	.14	1	6	1350
H122	15	26	10	172	.1	25	10	837	4.41	27	5	ND	1	234	2.3	2	2	32	5.35	.089	3	4	2.12	33	.01	8	1.24	.01	.11	1	11	980
H123	20	27	13	147	.1	28	7	680	3.71	22	7	ND	1	176	1.7	2	2	18	5.82	.076	3	3	1.32	41	.01	6	1.20	.01	.17	1	8	950
H124	26	29	16	177	.3	33	7	699	3.71	25	5	ND	1	134	1.5	2	2	14	5.51	.066	4	4	1.08	46	.01	4	1.11	.01	.17	1	11	685
H125	25	29	14	169	.1	35	7	647	3.62	31	5	ND	1	111	1.6	2	2	14	5.00	.064	3	4	1.02	46	.01	3	.91	.01	.18	1	3	1100
H126	10	16	8	106	.1	17	7	547	3.85	25	5	ND	1	105	1.0	2	2	13	3.37	.078	2	4	1.38	38	.01	3	1.28	.01	.16	1	5	595
H127	28	30	50	281	.7	39	9	271	4.45	79	8	ND	1	39	1.8	5	2	14	1.19	.079	2	4	.73	27	.01	4	.82	.01	.21	1	3	1750
H128	27	30	43	331	.6	36	10	240	5.41	129	5	ND	1	38	2.7	11	2	14	1.04	.090	2	4	.65	17	.01	3	.70	.01	.23	1	10	1400
H129	14	23	12	153	.1	24	8	1352	4.51	199	5	ND	1	177	1.4	19	2	18	6.77	.088	3	4	1.17	31	.01	2	.72	.01	.16	1	5	950
H130	24	23	11	137	1.2	32	9	356	5.27	168	5	ND	1	61	1.0	35	2	13	1.52	.090	2	3	.57	26	.01	2	.47	.01	.24	1	16	775
H131	5	10	12	99	4.5	6	16	119	4.28	243	7	ND	1	67	.4	18	3	4	1.02	.060	2	4	.08	32	.01	2	.33	.01	.24	1	44	295
H132	16	14	18	57	10.2	12	12	120	8.26	421	6	ND	1	110	.5	28	2	7	1.53	.082	2	11	.05	22	.01	2	.29	.01	.19	1	75	680
H133	17	41	206	374	335.7	10	17	102	15.21	4122	5	ND	1	97	1.8	181	2	7	1.01	.080	2	6	.03	12	.01	2	.47	.01	.27	1	2090	15000
H134	26	49	117	525	127.4	12	15	44	11.04	6618	5	3	1	41	1.7	203	2	5	.43	.091	2	6	.02	8	.01	2	.32	.01	.18	1	3240	11000
H135	14	21	44	387	15.2	15	15	43	7.19	795	5	ND	1	39	.6	37	2	6	.51	.148	2	8	.02	11	.01	2	.36	.01	.26	1	250	1050
H136	8	25	65	488	9.8	8	14	80	6.84	533	5	ND	1	48	1.1	23	2	7	.80	.160	2	15	.05	13	.01	2	.42	.01	.29	1	163	1050
H137	4	17	59	263	5.2	6	10	272	5.21	445	5	ND	1	84	.9	11	2	8	.93	.145	2	7	.30	22	.01	2	.65	.01	.23	1	182	565
H138	3	25	11	86	1.1	9	22	390	5.09	56	5	ND	1	54	.3	3	2	26	.69	.156	5	7	1.94	51	.01	2	2.62	.01	.36	1	30	230
H139	3	16	33	197	2.0	6	12	979	5.11	70	5	ND	1	69	1.2	4	2	22	1.81	.104	4	4	2.22	59	.01	2	2.29	.01	.26	1	23	240
H140	3	18	13	137	.5	7	17	752	6.50	22	5	ND	1	32	.5	2	2	38	.74	.153	11	7	2.83	74	.01	2	3.60	.01	.27	1	13	85
H141	2	17	10	176	.4	8	18	1067	6.25	29	10	ND	1	43	1.3	2	2	33	1.13	.124	8	5	2.61	47	.01	2	3.34	.01	.27	1	14	150
H142	4	19	9	122	.3	5	14	1772	6.79	19	5	ND	1	88	.8	2	2	33	2.88	.123	10	6	2.58	32	.01	2	3.72	.01	.23	1	13	70
H143	4	17	9	124	.4	3	14	866	5.81	18	8	ND	1	63	1.1	2	2	18	1.58	.150	13	4	1.79	43	.01	2	3.01	.01	.32	1	13	50
H144	4	15	3	110	.3	3	12	843	5.76	13	5	ND	1	55	.6	2	2	18	1.34	.141	17	4	1.91	45	.01	2	3.09	.01	.31	1	10	35
H145	4	12	6	138	.2	3	11	945	6.12	21	7	ND	1	68	1.5	2	2	19	1.40	.105	9	3	2.46	41	.01	2	3.35	.01	.26	1	9	55
H146	6	18	5	127	.4	5	15	945	6.17	27	5	ND	1	95	.2	2	2	19	1.45	.136	8	6	2.18	63	.01	2	3.04	.01	.30	1	41	70
H147	5	16	16	100	.5	11	7	717	3.36	22	5	ND	1	91	.2	5	3	7	2.45	.049	3	3	.81	51	.01	2	.77	.01	.26	1	10	405
H148	5	18	17	91	.2	11	8	634	4.35	27	5	ND	1	119	1.0	2	2	8	4.03	.084	2	4	.99	41	.01	2	.68	.01	.23	1	4	680
H149	5	17	17	121	.3	12	7	302	3.63	27	9	ND	1	50	.2	3	7	7	1.36	.058	4	3	.57	47	.01	2	.76	.01	.26	1	6	900
STANDARD C/AU-R	20	63	43	138	7.3	75	33	1115	4.05	43	21	7	40	51	18.0	15	20	60	.49	.095	39	58	.90	182	.09	33	1.90	.07	.15	13	450	1400

Sample type: CORE. Samples beginning 'RE' are duplicate samples.

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J-91-21

PURPOSE to drill down dip from Hole 20

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
L7+00N - 0+81 E	~ 460m	270°	152.4 m.
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-70°	100.8 m -70° 152.4m -69½°		
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED Oct 11/91** **DATE COMPLETED Oct 12/91**
GFM. Oct 12/91	J.T. Thomas.	BQ	

SUMMARY LOG

0-5.2 CASING
5.2-6.1 Black argillite with tuff bands & minor pyrite
6.1-51.7 Intermediate fine to lapilli tuff. grey-green., py v.d. 2-5%
local patchy black silica alteration & stringers bleached.
51.7-152.4 Black Mudstone with minor tuff interbeds at top decreasing with depth and syngenetic pyrite laminations
several strong fault zones and graphitic slips usually strongly sheared
Fault 62-64.
Fault 73-76
Fault 82-86
Fault 100.6-107.5
Fault 112-121
Fault 124-127

Fossils - belemnite 131.45. : lower part of mudstone interval may be Stuart River Formation (Below fault)
upper part possibly Bowser Lake Fm. (above fault)

SIGNIFICANT MINERALIZED INTERVALS

11-13m py v.d. 3-4%
45-47m py v.d 3-5%
50-51.7m py v.d. 10-20%

HOLE No. J91-21

INTERVAL	C. LOSS	LITHOLOGY
0 - 5.2		CASING.
5.2 - 6.1		Black Argillite minor ltgreen-grey tuff. wispy pyrite diss, veins 1%. ribbon qtz v 5:5 graphitic slips, Lower contact graphitic slip 35°
6.1 - 51.7		Intermediate fine tuff to Lapilli tuff, grey-green, anastamosing pyrite veins + diss 2%. qtz patches + veins 1-2%, local Blk silica alteration patches, fragments? Tr. carbonate patches Tr. foliated 30-40°
		Black silica altn + fragments
		slip shear fabric 10/20°
		Patchy Black silica, 2-3% irregular py v locally.
		Tuff sequence less less coarse fragments, stronger foliation 17-30 ... qtz v 2-3%
		Carbonate patches

C/A: Si/35, Si/35, Si/40, Si/30, Si/40, Si/35

L: 7Jig, 2/3AD+(x), [illegible]

Depth scale: 0, 5.2, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-21

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
py 1%	A265	5.2	6.1		16	0.5	19	2		
py v.d 2-3%.	A266	6.1	7.0		4	1.2	21	2		
py v.d 1-2%.	A267	7.0	8		5	0.5	9	2		
py v.d. Tr-1%	A268	8	9		4	0.2	3	2		
py v.d Tr-1%	A269	9	10		2	0.8	3	2		
py v.d 2-3%.	A270	10	11		3	0.1	14	2		
py v.d 3-4%.	A271	11	12		1	0.3	41	2		
py v.d 4-5%.	A272	12	13		1	0.4	21	2		
py v.d. 1-2%.	A273	13	14		7	0.1	25	2		
py v.d Tr-1%.	A274	14	15		3	0.1	5	2		
py v.d. Tr-1%.	A275	15	16		3	0.1	11	2		
py v.d 1-2%.	A276	16	17		2	0.1	17	2		
py v.d Tr-1%.	A277	17	18		4	0.1	7	2		
py v.d Tr-1%.	A278	18	19		4	0.1	5	2		
py v.d Tr-1%.	A279	19	20		2	0.3	11	2		
py v.d Tr-1%.	A280	20	21		1	0.1	7	2		
py v.d Tr-1%.	A281	21	22		4	0.2	16	2		
py v.d. Tr-1%.	A282	22	23		4	0.3	32	2		
py v.d Tr-1%.	A283	23	24		2	0.1	23	2		
py v.d 1%.	A284	24	25		1	0.1	13	2		

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

J91-21

INTERVAL	C. LOSS	LITHOLOGY	U	L	S	M	A
		Tuffs and lapilli, greyish green, foliated minor py, rare qtz vr.					
		Black silica alteration patchy alta					
		py vr.					
		alta py vr					
		Kink in S1/35° fol at 80°, stylolites blk.					
		Broken core.					
		36.5 - 39.5 pyrite veins 2%.					
		39.5 - 51.7 coarser tuffs and lapilli fragments, occasional vesicular fragments.					
		Coarse Ash - Lapilli - fine ash matrix					
		Black silica alta, wispy pyr 3%.					
		Black silica, wispy pyr - 3%.					
		Vesicular fragments					

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

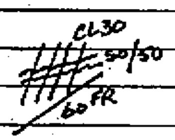
HOLE No. J91-21

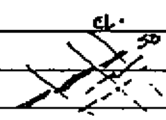
MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
py v.d. 1-2%	A285	25	26		2	0.1	38	2		
py v.d. 1%	A286	26	27		3	0.1	17	2		
py v.d. Tr-1%	A287	27	28		1	0.1	17	2		
py v Tr-1%	A288	28	29		6	0.1	13	2		
py v Tr	A289	29	30		4	0.1	22	2		
py v Tr	A290	30	31		4	0.1	18	2		
py v Tr	A291	31	32		4	0.1	15	2		
py v-d. 2-3%	A292	32	33		4	0.2	21	2		
py v-d 2-3%	A293	33	34		1	0.1	43	2		
py v. 1-2%	A294	34	35		1	0.1	53	3		
py v 1-2%	A295	35	36		4	0.1	35	2		
py v. Tr	A296	36	37		3	0.3	85	2		
py v.d Tr	A297	37	38		2	0.4	84	4		
py v.d. 1%	A298	38	39		2	0.5	58	4		
py v.d. 1%	A299	39	40		1	0.4	45	2		
py v.d 1-2%	A300	40	41		2	0.5	25	3		
py v-d. 3%	A301	41	42		64	0.9	86	2		
py v. d 2%	A302	42	43		5	0.2	34	2		
py v.d 2-3%	A303	43	44		2	0.1	72	2		
py v.d 3%	A304	44	45		2	0.2	72	2		
py v.d. 3-5%	A305	45	46		9	0.1	76	2		

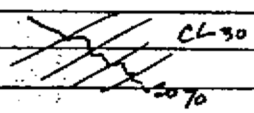
GRANGES EXPLORATION [redacted]
DIAMOND DRILL LOG

HOLE No. J91-21

INTERVAL	C. LOSS	LITHOLOGY	C/A	L	S	M	A
		Lapilli fragments some vesicular	S1/35	2D-A4 1(a)	Fe/40		
		Black silica arspy altn & fragments anastomosing pyr.					
		2 intersecting fabrics 30°-35° + 40-50°	35/50				
		pyritic matrix to lapilli tuff 70%					
		pyrite matrix to lapilli tuff 20%					
		basal contact sharp 65° - graphitic slip		65	Fe 70	Py	
51.7-152.4		Black argillite with light grey ash fragments and silty beds, strong foliation S1, cleavage qtz veins 10% py laminations 2-3% less ash downhole, small scale folds, faults.	S0/40, S1/50, S1/46, S1/60	7 JA6g	Fe 60, S1 30		
			S1/70				
			S1/50		a 30		
		Fault 30°; 70°		7 JA(j)e2			
		strong cleavage starting to transpose bedding	S1/70, S0/80				







Depth scale (right margin): 46, 47, 48 (cb 60), 49 (Black Si), 50 (qv Si), 51, 52, 53, 54 (qv 60), 55 (Cae 60), 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-21

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
py v.d. 5%	A306	46	47		4	0.1	41	2		
py v.d 3%	A307	47	48		2	0.1	32	2		
py v d 5%	A308	48	49		2	0.1	77	2		
py v.d. 3%	A309	49	50		5	0.1	83	2		
py v.d 10%	A310	50	51		3	0.2	143	6		
py v.d. 20%	A311	51	51.7		2	0.3	176	2		
py v.d. 2%	A312	51.7	53		1	0.1	66	11		
py v.d 3%	A313	53	54		4	0.1	58	8		
py v.d. 1%	A314	54	55		6	0.1	65	10		
py v.d 1-2%	A315	55	56		1	0.1	39	6		
py v.d 1%	A316	56	57		5	0.1	60	9		
py.d. Tr	A317	64	65		12	0.1	27	2		
py d Tr	A318	65	66		7	0.1	35	2		
py.d. Tr	A319	66	67		3	0.1	28	2		

GRANGES EXPLORATION [redacted]

DIAMOND DRILL LOG

HOLE No. J91-21

INTERVAL	C. LOSS	LITHOLOGY	U C S	L	S	M	A
		Black mudstone, silty-tuffaceous, minor pyrite, strong cleavage. fault gouge 68-68.5 qtz v 10%.					
		CL. 45					
		minor fault 69.8-70.1 ribbon qtz veins					
		30/50 CL 15° qv 60					
		Black Argillite - pale grey silty & tuff beds minor fault. qtz v. 10%. (pale pinkish qtz v.) 73.0 fault 74-74.1					
		20° 30 20/30					
		fault 76-76.2					
		CL 50. small fld. strong cleavage.					
		Mudstone less silty tuff bands below faulted section					
		Faults, broken core, graphitic gouge & slips qtz vns 82-85 (core loss.					
		40 50					

67 68 qv. 69 70 qv 30 71 qv. 72 73 74 75 76 77 78 79 80 qv 15/10° 81 82 83 84 qv 85 86 87 qv 88

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
Py v. d. Tr	A320	67	68		7	0.2	35	8		
"	A321	68	69		5	0.3	48	8		
"	A322	69	70		2	0.1	78	10		
"	A323	70	71		5	0.3	157	11		
"	A324	71	72		3	0.3	117	16		
"	A325	72	73		2	0.2	102	15		
Py Tr	A326	80	81		4	0.2	124	12		
"	A327	81	82		1	0.1	173	27		
"	A328	82	86		19	0.6	218	45		
Py Tr	A329	86	87		2	0.2	44	9		
"	A330	87	88		3	0.1	50	8		

GRANGES EXPLORATION
DIAMOND DRILL LOG

HOLE No. J91-21

INTERVAL	C. LOSS	LITHOLOGY
		Black mudstone, minor py lam 1-2%, tuff-silty bands strong cleavage, spotted occasional beds
		Lt grey lime stone beds, nodules + fracture lining (possibly Salmon River Fm)
		Py diss 7%.
		graphitic slip 10-15°
		Fault 100.6-107.5, graphite gouge, qtz veined 10-15%.
		100.6-103.6 qtz v 20%.
		ribbon qtz v. 30°
		103.6-107 fault zone, qtz v 30%.
		Strong qtz veining 35°, irregular
		106. lineations 30° fault at 20° TCA
		Pyrite bands.

Depth markers (right margin): 88, 89 cal grey, 90, ls/cal., 91, 92, qv 30, 93, qv, 94, 95, 96, 97 cal., 98, 99, 100, qtz v. 101, 102, 103, 35, 104, 105, 106, qv, 107, 108, 109

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
Py Tr	A331	88	89		3	0.1	29	2		
"	A332	89	90		5	0.1	17	2		
"	A333	90	91		2	0.2	20	2		
"	A334	91	92		3	0.1	19	2		
"	A335	92	93		1	0.1	23	2		
"	A336	93	94		3	0.1	35	5		
Py Tr	A337	97	98		4	0.1	92	7		
"	A338	98	99		1	0.1	44	5		
"	A339	99	100		5	0.2	38	10		
"	A340	100	101		3	1.4	37	16		
"	A341	101	102		4	1.1	39	12		
"	A342	102	105		6	1.6	31	10		
Py Tr	A343	105	106		3	1.1	17	5		

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No. J91-21

INTERVAL	C. LOSS	LITHOLOGY	C∠	L	S	M	A	
		Black argillite mudstone; pyritic lam. graphitic slips, weak fabric	9/40	–	Fr 10	–	–	109 110
			–	–	–	Py	60 –	qv 111
		Fault graphitic gouge to° graphitic gouge, qtz veining 25% 112 - 121, core loss.	50/60					112 qv 113 30qv 114 115 50qv 116 117 118 119 120
			50/70	–			30	121
			–	–			35 qv	122 123
			50/80	–		Py		124
		FAult zone graphitic gouge - qtz veining 20% 124 - 127 pyritic lam.	5/50			Py		125 qv 126
		argillite (mudstone poorly defined bedding, rare pyrite nodules and laminations almost no silty intervals or tuff, thicker bedded, poorly foliated a cleaved. (similar to Salmon River Formation	3/30		Fr	Py		127 128
			30/20		Fr	Py		129 130

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
Py Tr	A344	112.8	115.8		4	1.7	17	3		
Py Tr	A345	115.8	118.9		4	2.1	26	9		
Py Tr	A346	118.9	121.9		4	1.4	26	9		
Py Tr	A347	121.9	123		3	1.8	28	8		
Py Tr	A348	123	124		5	1.1	18	5		
	A349	124	126.5		4	2.4	39	8		
Py Tr	A350	126.5	128.3		2	2.1	31	12		

HOLE No. J91-21

INTERVAL	C. LOSS	LITHOLOGY	C^	L	S	M	A	
		fold in pyrite layer, 131.45 Fossils (belemnites)		(F)		Py		130
		Black argillite-mudstone with pyritic layers 2-3%	-	-	-	-	-	131
		very minor pale grey silty layers, graphite slips	-	-	-	Py		40 qv 132
		minor qtz veining 1%, weak fabric	50/70					40 qv
			-	-	-	-	-	133
		minor faults, graphite slips	-	-			-	134
			50/60	-		-	-	135
			-	-	-			136
		Pyrite layers pull apart infilled with qtz	50/70	-	-		-	40 qv 137
		137-152.4 broken core, qtz veining 10%	-	-			-	138
			-	-	-			50 qv 139
			-	-			-	140
			50/70	-	-			50 qv 141
			-	-			-	40 qv 142
			-	-	-			143
			-	-	-		-	144
			50/70	-	-	-	-	35 qv 145
			-	-		-	-	146
			-	-	-	-	-	147
			-	-	-	Py	qv 30	148
			50/70	-		-		149
			-	-	-	-	qv 30	150
								151

GRANGES EXPLORATION
DIAMOND DRILL LOG

HOLE No. J91-21

INTERVAL	C. LOSS	LITHOLOGY	C ∢	L	S	M	A	
		black mudstone, pyrite lami, 2-3%	50/70	-	Fe / 35	=:/ Py	-	151 / 152
		152.40 EOH						

Sample J-91-21 49.0 m Basaltic/Andesite Tuff (Unit 1C/D); Replacement Patches of Quartz-Pyrite-Ankerite

Fragments up to several mm across are of slightly porphyritic basaltic andesite, containing 3-7% lathy to prismatic phenocrysts of plagioclase averaging 0.15-0.3 mm long, and locally up to 1 mm long in a groundmass of extremely fine grained slightly lathy, plagioclase, minor to abundant opaque, and minor sericite and replacement patches of ankerite. The variation in color in the hand sample is caused by variation in abundance of disseminated opaque. A few phenocrysts up to 0.3 mm long are of apatite.

Wispy seams between and cutting fragments are of opaque.

Replacement and interstitial patches and seams are dominated by very fine grained pyrite (4-5%) and quartz (2-3%) with much less abundant ankerite. Quartz commonly was recrystallized in comb-textured aggregates surrounding pyrite grains.

A few replacement patches up to 2 mm across are of very fine to fine grained ankerite (3-4%).

Sample J-91-22 45.0 m Argillite (Unit 7J), Latite Tuff (Unit 2B); Ankerite Veinlets and Replacement Patches

At one end of the sample is an argillite dominated by plagioclase/quartz aggregates averaging 0.002-0.005 mm in grain size, with wispy seams parallel to foliation of semiopaque/opaque (2-3%), and irregular patches of ankerite (1-2%). A few irregular lenses and layers up to 0.2 mm wide contain much more abundant, extremely fine grained opaque. Pyrite (1%) forms disseminated cubic grains averaging 0.05-0.1 mm in size. Ankerite (3-4%) forms a few replacement patches up to a few mm across and veinlets up to 0.3 mm across. One veinlet was offset by shearing along closely spaced planes parallel to foliation. A few replacement bands parallel to foliation up to 0.4 mm wide are of very fine grained pyrite, quartz, and ankerite.

At the other end of the sample, the latite tuff contains scattered crystal fragments and crystals of plagioclase, quartz, and apatite up to 0.2 mm in size in a well foliated groundmass dominated by plagioclase and sericite, with disseminated patches averaging 0.02-0.03 mm in size of ankerite. Ankerite forms patches up to 0.5 mm in size, which may represent completely altered fragments of uncertain original composition.

A few fragments up to 1 mm long are of argillite containing moderately abundant carbonaceous opaque.

Wispy, opaque-rich seams up to 0.05 mm wide cut across foliation irregularly at a moderate angle.

AA LL

WHOLE ROCK ICP ANALYSIS

Grances Inc. PROJECT: JUNK RIVER File # 91-5479 Page 1

2300 - 885 W. Georgia St. Vancouver BC V6C 3E8

AA LL

SAMPLE#	SiO2 %	Al2O3 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	TiO2 %	P2O5 %	MnO %	Cr2O3 %	Ba ppm	Sr ppm	La ppm	Zr ppm	Y ppm	Nb ppm	LOI %	SUM %
J91-2-21.2	72.05	11.60	3.88	.77	.01	.05	6.54	1.98	.03	.01	.007	1106	25	26	122	24	20	2.9	100.01
J91-3-15.5	65.00	9.95	8.69	.35	.70	.12	7.90	1.76	.59	.01	.003	2249	87	18	131	41	23	4.5	99.99
J91-7-35.0	37.49	13.50	6.85	4.77	15.76	4.54	.83	1.18	.18	.28	.015	387	623	10	94	23	20	14.6	100.33
J91-7-39.0	38.34	12.43	7.71	3.09	17.05	5.83	.20	1.36	.25	.47	.012	189	860	10	105	25	20	13.4	100.29
J91-8-65.2	63.84	13.75	5.44	1.62	1.84	.09	8.28	1.54	.26	.06	.005	1722	101	14	172	25	20	4.0	100.06
J91-10-69.0	69.41	11.33	4.44	.37	2.76	.11	7.79	1.95	.57	.01	.004	2136	88	10	124	31	20	2.9	100.02
J91-11-88.0	54.61	15.27	4.72	2.17	5.68	5.42	1.84	1.32	.22	.19	.019	1373	233	10	59	7	61	8.4	100.14
J91-12-166.5	53.85	14.26	9.63	2.72	5.52	1.62	3.66	1.80	.60	.25	.002	784	243	13	114	26	48	6.0	100.10
J91-12-175.6	56.93	13.43	7.78	3.65	7.87	.66	5.03	.77	.26	.35	.006	1046	147	12	86	9	24	7.2	100.13
J91-15-91.0	29.07	13.20	11.60	6.70	16.67	1.57	2.72	1.08	.19	.54	.012	707	246	10	45	16	44	16.9	100.42
J91-16-129.15	46.04	15.77	9.14	4.43	7.04	1.89	5.52	1.53	.31	.27	.007	1010	141	10	73	18	87	8.0	100.16
J91-17-89.6	59.10	13.03	8.62	3.16	4.33	4.09	.66	1.52	.29	.16	.002	288	247	25	154	37	79	5.0	100.08
J91-17-149.0	65.12	12.13	6.33	2.70	1.77	.08	7.63	1.31	.35	.18	.003	2173	130	17	115	22	76	3.0	100.02
J91-17-172.0	57.65	12.90	11.38	5.32	1.92	.09	5.52	1.39	.44	.33	.002	1518	75	22	166	56	66	3.8	100.05
J91-18-76.1	59.22	15.23	7.64	3.94	1.91	2.01	4.22	2.01	.45	.11	.002	1891	109	21	163	50	60	3.9	100.03
J91-18-77.3	59.74	16.41	4.76	3.19	6.25	.28	5.96	1.42	.07	.06	.010	897	37	24	161	51	41	7.8	100.14
J91-18-89.0	60.81	10.80	10.64	3.04	5.22	.06	5.67	1.18	.29	.25	.005	3724	247	15	148	42	24	4.4	100.06
J91-18-94.7	62.99	12.76	8.13	2.02	1.87	1.45	7.23	1.40	.36	.10	.002	3086	126	20	166	35	77	2.1	99.99
J91-18-123.4	62.26	11.54	9.78	2.93	1.51	.18	7.14	1.23	.34	.23	.002	1350	80	18	91	39	30	3.6	100.00
J91-20-74.8	49.69	10.77	14.85	6.84	6.51	.43	.70	.98	.32	.62	.002	123	150	21	94	32	26	8.4	100.16
J91-21-49.0	46.62	14.41	15.25	1.76	2.21	4.99	1.55	2.04	.62	.07	.002	877	289	23	168	28	59	10.5	100.24
J91-22-45.0	62.61	10.92	9.01	2.19	1.36	.39	1.93	1.59	.39	.09	.002	1113	81	16	113	28	20	9.5	100.20
J91-22-130.2	46.62	15.29	16.18	4.12	2.17	4.21	.95	3.27	.65	.15	.002	203	109	23	181	44	46	6.4	100.10
J91-22-177.1	55.90	18.36	6.80	2.60	1.93	.09	8.93	2.00	.53	.12	.002	1314	99	28	166	36	90	3.5	100.04
J91-22-183.0	68.23	14.40	3.44	2.42	.49	.05	6.92	.66	.14	.08	.002	1035	63	33	206	31	79	3.0	100.04
J91-22-208.5	70.20	13.65	3.76	2.55	.11	.05	5.78	.94	.10	.10	.002	1119	38	26	142	15	53	2.6	100.02
J91-22-211.5	54.36	15.48	10.93	8.35	.25	.05	3.38	1.51	.23	.33	.005	609	40	10	85	21	28	5.1	100.05
J91-24-164.7	44.84	16.27	14.50	5.09	6.21	.07	4.42	1.60	.49	.78	.002	1213	665	21	76	20	86	6.5	100.08
RE J91-22-177.1	55.80	18.19	6.84	2.66	1.97	.05	9.13	1.97	.53	.12	.002	1296	100	30	167	35	77	3.5	100.02
J91-24-207.3	54.95	12.97	11.80	3.86	4.71	.06	4.27	1.55	.40	.45	.002	1694	250	19	133	28	47	4.7	100.07
J91-25-26.9	51.21	15.96	7.89	2.11	7.49	3.81	2.90	2.43	.57	.28	.002	1247	335	21	160	27	108	5.1	100.04
J91-25-45.4	50.89	15.41	8.40	1.83	7.44	3.94	2.88	2.43	.54	.19	.002	974	246	23	141	25	70	5.9	100.08
J91-26-42.4	51.52	16.07	10.06	2.73	7.08	.16	4.72	1.38	.35	.23	.002	1876	237	33	183	45	79	5.4	100.09
J91-26-105.2	57.90	12.68	8.98	3.31	4.84	.05	4.55	1.63	.48	.41	.002	1228	129	23	117	29	62	5.0	100.08
J91-27-32.65	54.73	16.02	6.47	3.42	5.71	4.09	1.85	2.35	.60	.15	.002	1756	339	14	134	26	20	4.3	100.05
J91-27-60.5	74.21	9.88	3.60	.88	1.98	4.12	.73	1.79	.47	.06	.002	800	166	14	103	18	24	2.1	100.00
J91-27-68.0	57.38	14.99	8.47	3.90	1.52	1.92	2.53	2.39	.62	.07	.002	2205	162	20	164	36	29	5.9	100.11
STANDARD SO-4	67.81	10.29	3.56	.98	1.61	1.33	2.05	.57	.23	.13	.005	795	207	29	321	23	20	11.2	99.98

.200 GRAM SAMPLES ARE FUSED WITH 1.2 GRAM OF LIBO2 AND ARE DISSOLVED IN 100 MLS 5% HNO3.
- SAMPLE TYPE: CORE Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: NOV 15 1991 DATE REPORT MAILED: Nov 30/91. SIGNED BY: D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

J91-21

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
A265	20	18	55	156	.5	22	5	1823	3.11	19	5	ND	3	404	1.0	2	2	34	12.22	.048	6	7	1.83	71	.01	2	1.83	.01	.07	1	16	755
A266	3	27	140	432	1.2	3	8	1692	6.41	21	5	ND	1	154	1.2	2	2	25	7.05	.195	4	4	1.80	43	.01	3	2.00	.04	.10	1	4	620
A267	1	19	41	190	.5	2	10	1711	5.25	9	5	ND	4	343	.7	2	2	42	10.77	.173	9	3	1.65	35	.01	2	2.36	.03	.03	1	5	145
A268	1	23	24	203	.2	2	7	1021	4.54	3	5	ND	2	117	.8	2	2	35	5.69	.232	13	3	1.46	81	.01	2	2.52	.04	.09	1	4	120
A269	1	24	58	258	.8	1	7	1913	4.72	3	5	ND	2	285	.8	2	2	38	12.93	.181	13	2	1.43	72	.01	2	2.47	.03	.05	1	2	255
A270	1	22	39	193	.7	3	11	1454	5.67	14	5	ND	2	164	.7	2	2	36	9.42	.182	10	3	1.22	70	.01	3	2.10	.04	.08	1	3	240
A271	1	27	23	186	.3	3	14	1240	8.34	41	5	ND	3	132	.5	2	2	34	5.15	.203	7	3	1.57	41	.01	6	3.01	.03	.10	1	1	270
A272	1	23	71	222	.4	2	12	1062	6.86	21	5	ND	1	131	.9	2	2	62	5.52	.192	10	4	1.57	51	.01	4	3.20	.03	.06	1	1	280
A273	1	19	18	156	.1	3	14	1455	6.15	25	5	ND	2	187	.4	2	2	51	7.81	.203	10	5	1.44	100	.01	3	2.89	.03	.13	1	7	250
A274	1	20	14	159	.1	4	14	1225	5.58	5	5	ND	2	125	.3	2	2	51	5.28	.224	12	4	1.32	109	.01	3	3.04	.03	.15	1	3	195
A275	1	21	27	202	.1	4	15	1661	5.79	11	5	ND	1	181	.4	2	2	53	9.08	.191	10	4	1.34	65	.01	3	2.83	.02	.07	1	3	245
A276	1	16	17	164	.1	3	13	1649	7.10	17	5	ND	2	185	.7	2	2	76	9.06	.166	10	4	1.59	43	.01	4	3.20	.03	.04	1	2	160
A277	1	23	10	161	.1	3	15	1229	7.67	7	5	ND	1	141	.7	2	2	65	5.40	.213	10	5	1.87	106	.01	5	4.09	.03	.10	1	4	165
RE A281	1	22	38	162	.3	3	15	1532	6.03	15	5	ND	2	196	.7	2	2	54	8.98	.209	12	6	1.34	81	.01	4	2.97	.03	.10	1	3	170
A278	1	23	21	144	.1	2	14	1234	7.93	5	6	ND	1	133	.6	2	3	72	5.36	.220	12	4	1.92	66	.01	5	4.47	.03	.08	1	4	110
A279	1	20	14	119	.3	3	14	1870	5.81	11	5	ND	3	209	.6	2	2	46	10.40	.195	12	4	1.75	75	.01	4	2.89	.04	.09	1	2	130
A280	1	21	10	138	.1	2	10	1304	5.75	7	5	ND	1	159	.4	2	2	50	7.13	.208	12	3	1.35	71	.01	3	3.07	.03	.09	1	1	105
A281	1	22	39	165	.2	2	14	1521	5.98	16	5	ND	1	195	.9	2	2	53	8.89	.208	12	3	1.33	81	.01	5	2.95	.03	.10	1	4	170
A282	1	18	10	111	.3	3	15	1402	5.38	32	5	ND	3	182	.7	2	2	38	10.63	.200	12	4	1.05	86	.01	3	2.40	.03	.11	1	4	200
A283	1	21	12	164	.1	3	15	1167	6.75	23	5	ND	1	146	.3	2	2	58	6.45	.222	10	4	1.37	79	.01	4	3.41	.03	.11	1	2	155
A284	1	20	14	134	.1	2	14	1127	6.70	13	5	ND	1	133	.5	2	2	56	5.92	.226	11	4	1.38	76	.01	4	3.37	.03	.10	1	1	150
A285	1	22	14	140	.1	4	18	1338	6.96	38	5	ND	1	168	.7	2	2	46	7.34	.207	10	4	1.57	75	.01	3	2.88	.03	.10	1	2	240
A286	1	18	10	162	.1	3	13	934	6.19	17	6	ND	1	127	.6	2	2	54	4.90	.235	13	5	1.32	80	.01	4	3.08	.03	.11	1	3	210
A287	1	19	10	132	.1	2	13	1035	6.03	17	5	ND	1	139	.3	2	2	49	6.06	.226	11	2	1.32	80	.01	3	2.98	.03	.11	1	1	155
A288	1	23	11	159	.1	3	13	1537	6.96	13	5	ND	1	226	.5	2	2	72	9.77	.194	12	3	1.97	68	.01	4	3.68	.03	.07	1	6	160
A289	1	22	9	160	.1	3	15	1056	7.56	22	5	ND	1	129	.7	2	2	59	4.76	.215	10	4	1.58	72	.01	4	3.86	.03	.09	1	4	140
A290	1	24	14	150	.1	1	15	1198	7.01	18	5	ND	3	137	.7	2	2	58	5.51	.218	12	4	1.34	86	.01	4	3.57	.03	.11	1	4	145
A291	1	20	6	176	.1	2	15	842	6.96	15	5	ND	1	86	.7	2	2	52	3.38	.237	9	5	1.31	87	.01	5	3.40	.03	.11	1	4	100
A292	1	30	10	132	.2	3	16	994	7.54	21	5	ND	2	127	.6	2	2	50	4.94	.221	10	4	1.30	78	.01	5	3.15	.03	.11	1	4	200
A293	1	22	15	125	.1	2	18	1134	7.62	43	5	ND	1	151	.8	2	2	49	6.20	.204	9	4	1.29	65	.01	6	2.80	.03	.09	1	1	275
A294	1	23	15	202	.1	2	17	1032	7.81	53	5	ND	2	144	.9	3	2	47	5.93	.234	10	3	1.34	68	.01	6	3.08	.04	.15	1	1	1950
A295	1	20	14	179	.1	2	13	632	6.29	35	5	ND	1	97	1.1	2	2	41	3.48	.244	9	3	1.19	68	.01	6	2.60	.03	.16	1	4	550
A296	1	26	45	232	.3	3	16	816	7.59	85	5	ND	1	108	.9	2	2	36	4.94	.238	9	4	1.34	48	.01	6	2.62	.03	.17	1	3	400
A297	5	19	16	51	.4	4	14	526	4.68	84	5	ND	1	108	.2	4	2	14	4.29	.197	11	4	.79	49	.01	5	1.50	.04	.17	1	2	350
A298	5	16	10	36	.5	5	11	252	3.27	58	5	ND	1	69	.2	4	2	11	2.40	.211	10	8	.74	47	.01	4	1.33	.04	.17	1	2	265
A299	5	21	35	112	.4	2	15	309	4.75	45	5	ND	1	71	.4	2	2	13	2.47	.221	7	1	1.25	40	.01	3	1.78	.03	.16	1	1	240
A300	3	22	15	67	.5	2	15	408	4.07	25	5	ND	1	101	.5	3	2	15	3.52	.237	11	4	1.24	51	.01	4	1.80	.03	.20	1	2	180
A301	20	20	23	37	.9	6	30	792	10.08	86	5	ND	1	116	1.0	2	2	16	3.06	.173	3	4	1.23	23	.01	4	1.62	.04	.20	1	64	600
A302	4	15	8	53	.2	3	14	1011	6.47	34	5	ND	1	194	.7	2	2	23	4.80	.181	7	2	1.80	26	.01	2	2.09	.03	.16	1	5	235
A303	6	15	13	89	.1	3	14	709	6.23	72	5	ND	1	142	.6	2	2	25	3.23	.187	6	2	1.64	33	.01	2	1.92	.03	.12	1	2	220
A304	8	16	11	108	.2	4	13	602	6.66	72	5	ND	1	118	.8	2	2	23	3.19	.165	4	5	1.49	28	.01	2	1.69	.03	.10	1	2	255
A305	10	18	13	78	.1	4	9	729	8.45	76	5	ND	1	121	.8	2	2	15	3.27	.169	2	2	1.24	21	.01	2	1.44	.03	.09	1	9	315
A306	7	17	11	63	.1	2	9	294	6.75	41	5	ND	1	65	.7	2	2	24	1.35	.173	2	4	1.57	28	.01	3	1.93	.03	.11	1	4	185
A307	4	14	7	92	.1	1	7	937	5.10	32	5	ND	1	260	.7	2	2	25	6.43	.152	9	2	1.76	49	.01	2	1.67	.03	.06	1	2	140
A308	5	21	13	52	.1	4	10	582	8.25	77	5	ND	1	109	.8	2	2	15	2.58	.182	4	3	1.35	18	.01	2	1.23	.03	.11	1	2	310
A309	5	16	9	88	.1	4	15	533	7.16	83	5	ND	1	107	.7	2	2	12	2.83	.165	4	3	1.21	16	.01	2	.84	.04	.12	1	5	260
A310	12	.17	12	83	.2	6	24	293	8.72	143	5	ND	1	76	1.2	6	2	16	1.64	.173	4	5	1.04	20	.01	4	1.24	.04	.14	1	3	870
A311	13	17	10	50	.3	3	19	481	10.38	176	5	ND	1	101	1.0	2	2	15	2.06	.141	2	4	1.48	18	.01	2	1.33	.03	.15	1	2	565
A312	19	23	12	200	.1	33	7	472	4.84	66	5	ND	1	99	1.4	11	2	12	2.04	.068	2	6	1.23	18	.01	3	1.03	.01	.14	1	1	1250
A313	15	17	10	171	.1	22	10	358	4.67	58	5	ND	1	73	.8	8	2	9	1.24	.042	3	4	.60	19	.01	3	.60	.01	.19	1	4	1050
A314	26	24	8	205	.1	32	8	321	4.40	65	5	ND	1	134	1.1	10	2	15	1.44	.063	2	6	.50	19	.01	3	.77	.01	.19	1	6	1050

ACME ANALYTICAL LABORATORIES LTD. 852 E. HASTINGS ST. VANCOUVER B.C. V6A 1R6 PHONE (604) 253-3158 FAX (604) 253-1716

GEOCHEMICAL ANALYSIS CERTIFICATE

CONFIDENTIAL

SAMPLE#	Mo ppm	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ni ppm	Co ppm	Mn ppm	Fe %	As ppm	U ppm	Au ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	V ppm	Ca %	P %	La ppm	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Au* ppb	Hg ppb
J91-21																																
A316	19	25	18	184	.1	31	8	459	5.09	60	5	ND	1	74	2.0	9	2	17	1.79	.070	4	6	1.69	20	.01	3	1.44	.01	.18	1	8	1350
A317	10	21	14	124	.1	20	7	493	3.94	27	5	ND	1	106	.6	2	2	8	2.68	.053	2	3	1.01	24	.01	2	.58	.01	.21	1	12	680
A318	15	23	4	151	.1	19	6	1145	2.92	35	5	ND	1	202	1.0	2	2	11	8.71	.056	3	4	.98	50	.01	2	.77	.01	.15	1	7	665
A319	14	21	3	178	.1	26	5	889	2.86	28	5	ND	1	187	1.2	2	2	15	6.57	.077	3	3	1.20	46	.01	2	.99	.01	.12	1	3	690
A320	12	24	7	98	.2	22	7	816	3.33	35	5	ND	1	143	.5	8	2	9	5.08	.072	2	5	.91	52	.01	3	.80	.01	.18	1	7	610
A321	8	19	5	99	.3	16	9	445	3.74	48	5	ND	1	135	.7	8	2	8	2.69	.065	2	4	.89	35	.01	2	.76	.01	.14	1	5	680
A322	6	19	11	114	.1	15	13	657	4.42	78	5	ND	1	121	.5	10	2	26	2.48	.082	3	5	1.78	37	.01	2	1.50	.01	.16	1	2	900
A323	17	22	4	157	.3	20	8	1657	3.90	157	5	ND	1	390	1.3	11	2	37	8.53	.052	3	8	2.69	38	.01	2	1.70	.01	.09	1	5	715
RE A328	18	21	6	175	.4	25	8	726	5.63	202	5	ND	1	106	1.3	38	4	17	2.57	.072	2	4	1.33	28	.01	2	1.19	.01	.20	1	17	1450
A324	18	24	5	159	.3	24	8	1770	3.54	117	5	ND	1	418	1.6	16	2	25	8.93	.048	3	5	1.87	41	.01	2	1.38	.01	.13	1	3	910
A325	24	23	12	243	.2	35	10	947	4.12	102	5	ND	1	127	2.1	15	2	14	3.85	.070	3	3	1.29	43	.01	2	.69	.01	.18	1	2	1100
A326	22	23	7	201	.2	31	9	1254	3.85	124	5	ND	1	292	1.7	12	2	41	5.92	.065	3	7	2.52	41	.01	4	1.59	.01	.13	1	4	1000
A327	24	23	4	178	.1	33	10	875	4.81	173	5	ND	1	104	1.6	27	2	21	3.24	.052	2	6	1.40	35	.01	2	1.11	.01	.18	1	1	965
A328	19	22	13	178	.6	28	9	763	5.99	218	5	ND	1	107	1.2	45	4	18	2.70	.077	3	4	1.40	31	.01	4	1.23	.01	.21	1	19	1250
A329	20	24	12	173	.2	30	8	560	3.94	44	5	ND	1	175	1.4	9	2	10	4.35	.061	4	4	1.07	48	.01	2	.69	.01	.18	1	2	1100
A330	23	27	12	163	.1	31	11	356	4.92	50	5	ND	1	90	1.0	8	2	8	2.05	.053	3	3	.78	35	.01	5	.40	.01	.21	1	3	1500
A331	8	23	11	114	.1	16	11	805	4.79	29	5	ND	1	134	.4	2	2	17	4.97	.116	4	3	1.69	46	.01	2	1.16	.01	.17	1	3	1200
A332	6	15	9	104	.1	12	8	569	3.84	17	5	ND	1	138	.4	2	2	7	4.80	.071	4	3	1.13	58	.01	2	.62	.01	.19	1	5	1050
A333	3	14	6	92	.2	9	9	843	4.11	20	5	ND	1	172	.4	2	2	8	7.56	.084	4	3	1.17	64	.01	6	.70	.01	.24	1	2	1150
A334	4	18	10	148	.1	12	8	408	3.43	19	5	ND	1	76	.6	2	2	8	2.59	.058	5	3	1.01	49	.01	4	.84	.01	.19	1	3	975
A335	4	16	9	103	.1	10	8	621	3.73	23	5	ND	1	112	.6	2	2	9	4.31	.059	4	4	1.10	54	.01	2	.84	.01	.19	1	1	1150
A336	5	19	8	142	.1	14	16	577	4.37	35	5	ND	1	103	.9	5	3	25	3.81	.106	4	4	1.61	57	.01	3	1.03	.01	.21	1	3	1000
A337	15	15	4	167	.1	15	6	1853	3.71	92	5	ND	1	403	1.5	7	2	35	11.62	.048	4	6	3.21	68	.01	2	1.13	.01	.08	1	4	895
A338	8	17	11	103	.1	14	7	2095	3.51	44	5	ND	1	536	.6	5	2	34	13.65	.053	5	6	3.51	79	.01	3	1.51	.01	.11	1	1	1050
A339	21	29	17	155	.2	30	9	490	3.62	38	5	ND	1	148	.9	10	3	9	3.89	.058	4	3	1.16	49	.01	2	.36	.02	.19	1	5	1250
A340	28	38	37	131	1.4	30	11	422	4.49	37	6	ND	1	138	1.6	16	2	7	2.94	.059	3	2	.89	45	.01	6	.31	.02	.20	1	3	740
A341	26	28	32	227	1.1	35	10	747	4.32	39	5	ND	1	213	1.5	12	2	16	4.94	.082	4	8	1.66	43	.01	7	.33	.02	.18	1	4	1000
A342	17	23	26	222	1.6	29	6	1416	3.31	31	5	ND	1	283	2.0	10	2	26	11.14	.067	4	3	2.13	66	.01	4	.27	.02	.15	1	6	935
A343	7	35	23	566	1.1	16	6	1872	2.70	17	5	ND	1	373	5.1	5	2	40	13.52	.047	2	5	2.85	110	.01	2	.25	.02	.08	1	3	655
A344	7	37	25	350	1.7	25	6	414	2.80	17	5	ND	1	54	4.6	3	2	29	1.32	.069	4	18	1.24	100	.01	3	1.06	.02	.12	1	4	635
A345	13	38	37	417	2.1	27	8	962	2.79	26	5	ND	1	78	3.9	9	3	18	3.28	.043	2	6	1.20	91	.01	2	.28	.02	.14	1	4	675
A346	13	40	44	453	1.4	26	7	530	3.14	26	5	ND	1	89	5.3	9	2	24	2.32	.033	2	5	1.16	83	.01	3	.31	.03	.12	1	4	700
A347	9	48	45	1021	1.8	21	7	1221	3.02	25	5	ND	1	234	9.6	8	2	37	5.35	.114	2	13	2.03	101	.01	6	.40	.02	.11	1	3	1100
A348	8	22	21	1210	1.1	16	5	2011	3.02	18	5	ND	1	323	11.7	5	2	32	10.61	.080	3	6	3.81	111	.01	2	.27	.02	.08	1	5	1100
A349	14	58	48	1439	2.4	37	9	413	3.81	39	5	ND	1	106	14.8	8	2	18	1.93	.040	2	5	.79	35	.01	3	.26	.02	.13	1	4	1300
A350	30	52	56	1330	2.1	53	8	1042	3.36	31	7	ND	1	138	13.1	12	2	57	6.05	.082	2	14	2.16	96	.01	2	.23	.03	.11	1	2	1700
STANDARD C/AU-R	19	61	38	132	7.2	71	32	1061	3.99	42	22	8	40	52	18.7	16	22	57	.48	.089	39	59	.88	178	.09	35	1.89	.06	.15	11	490	1600

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER.
THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
ASSAY RECOMMENDED FOR ROCK AND CORE SAMPLES IF CU PB ZN AS > 1%, AG > 30 PPM & AU > 1000 PPB
- SAMPLE TYPE: CORE AU* ANALYSIS BY ACID LEACH/AA FROM 10 GM SAMPLE. HG ANALYSIS BY FLAMELESS AA.
Samples beginning 'RE' are duplicate samples.

DATE RECEIVED: OCT 17 1991 DATE REPORT MAILED: Oct 22/91. SIGNED BY: D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS