APPENDIX A: DIAMOND DRILL LOGS AND CERTIFICATES OF ANALYSIS
PART III: J91-22 to J91-30, T91-1

To Accompany
1991 SUMMARY REPORT

on the

UNUK RIVER PROJECT
(Unuk and Coul Claim Groups)

SKEENA MINING DIVISION
NTS 104B/9 and 104B/10

Owners:
Malcolm Bell, Clive Ashworth, Granges Inc.

Operator:
GRANGES INC.
2300 - 885 WEST GEORGIA STREET
VANCOUVER, BC
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FEBRUARY 3, 1991

A.J. O'DONNELL

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

UNUK RIVER PROJECT

HOLE No. J91-22

COVL 3 CLAIM

PURPOSE

TO TEST A SOUTHERN STRIKE EXTENSION OF THE '900 ZONE' (GOLD-BEARING ZONE INTERSECTED IN HOLES J91-4 AND 7).

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
JEFF GRID; B+00 N, 0+59 W	~424 m	272	246.89 m
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-47.5°	51.8 m — 53° 155.45 m — 55° 243.84 m — 55°	198.56 m	146.72 m
LOGGED BY / DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED / DATE COMPLETED**
G. ALLEN, OCT. 13-14	J. T. THOMAS	B.Q.	DATE STARTED OCT. 12/91 DATE COMPLETED OCT. 14/91

SUMMARY LOG

0 - 3.05	CASING
3.05 - 5.80	ARGILLITE, SANDSTONE, TUFFACEOUS SEDIMENT
5.80 - 8.55	INTERMEDIATE LAPILLI TUFF
8.55 - 9.25	ARGILLITE, TUFFACEOUS SEDIMENT
9.25 - 10.70	INTERMEDIATE LAPILLI TUFF, TUFFACEOUS SEDIMENT
10.70 - 13.25	ARGILLACEOUS SANDSTONE (TUFFACEOUS ?), SANDSTONE, CONGLOMERATE
13.25 - 14.17	ARGILLACEOUS SILTSTONE (TUFFACEOUS ?)
14.17 - 14.93	DEBRIS FLOW (?)
14.93 - 21.34	SANDSTONE, SILTSTONE, AND MINOR INTERMEDIATE TUFF TO COARSE-GRAINED TUFF
21.34 - 31.45	SANDSTONE, SILTSTONE
31.45 - 35.80	GRAPHITIC ARGILLITE
35.80 - 42.88	INTERMEDIATE FINE-GRAINED TUFF WITH MINOR LAPILLI TUFF
42.88 - 46.46	INTERBEDDED ARGILLITE AND FINE-GRAINED INTERMEDIATE TUFF
46.46 - 48.40	GRAPHITIC ARGILLITE
48.40 - 83.95	INTERMEDIATE FINE-GRAINED TUFF AND MINOR LAPILLI TUFF
83.95 - 89.75	INTERMEDIATE AMYGDALOIDAL FLOW OR TUFF BRECCIA

SIGNIFICANT MINERALIZED INTERVALS

177.5 - 180.22 - SILICIFIED INTERVAL WITH QUARTZ STRINGERS. 3-4% pyrrhotite, 1% PYRITE, < 1% RED-BROWN SPHALERITE ASSOCIATED WITH QUARTZ STRINGERS. POSSIBLY CORRELATIVE WITH '900 ZONE'.

188.98 - 1 cm QUARTZ-CARBONATE STRINGER AT 30° CA WITH 7-10% PYRITE, 10% SPHALERITE, 5% GALENA.

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INTERVAL	C.LOSS	LITHOLOGY	C.A.	L	S	M	A
0-3.05		CASING No recovery		CASING			
3.05-5.80		ARGILLITE, SANDSTONE, TUFFACEOUS SEDIMENT Dark blue-grey to black argillite and fine to coarse-grained sandstone (argillaceous?) with gradational contacts. Minor greenish tuff intervals and flattened medium green lithic fragments to 2 cm.	S_0 85 S_1 70	T3, Lj, T 2Pt			Se-2 Cl-1
5.80-8.55		INTERMEDIATE LAPILLI TUFF Light to medium greenish-grey fine-grained soft (sericitic?) weakly foliated groundmass with 20% medium to dark green aphanitic lithic fragments to 2 cm flattened in the plane of foliation.		T3, T 2Pt, T6P			
8.55-9.25		ARGILLITE, TUFFACEOUS SEDIMENT Dark blue-grey to black argillite grading into fine-grained phyllitic tuff or tuffaceous sediment with a fine-grained clastic component.	S_0 75	T4j, L, M, LT			
9.25-10.70		INTERMEDIATE LAPILLI TUFF, TUFFACEOUS SEDIMENT Mottled light to medium greenish-grey soft lapilli tuff (as 5.80-8.55) interbedded with dark blue-grey fine to coarse-grained sandstone or tuffaceous sandstone with flattened light green and black (argillite) fragments up to 1 cm. Gradational lower contact.	S_0 20	7KUT 70/20			
10.70-13.25		ARGILLACEOUS SANDSTONE (TUFFACEOUS?), SANDSTONE, CONGLOMERATE Interbedded dark grey argillaceous siltstone and sandstone, medium-grained [illegible] sandstone, greenish-grey tuffaceous sandstone and conglomerate composed of 20% black to medium greenish-grey flattened lithic fragments in a sandstone matrix	S_0 50 $S_{0/1}$ 75	T4(j), K, T4A-E	Biotite		

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DIAMOND DRILL LOG

HOLE No. J91-22

INTERVAL	C. LOSS	LITHOLOGY	CU	L	S	M	A
13.25-14.17		ARGILLACEOUS SILTSTONE (TUFFACEOUS ?) Dark blue-grey fine-grained phyllitic rock					
14.17-14.93		DEBRIS FLOW (?) Dark blue-grey argillaceous to sandy groundmass with 20% rounded to subangular flattened dark green and medium greenish-grey aphanitic volcanic and/or fine-grained sedimentary fragments up to 2cm in diameter. Sharp lower contact.					
14.93-21.34		SANDSTONE, SILTSTONE, AND MINOR INTERMEDIATE TUFF TO COARSE-GRAINED TUFF Interbedded medium to dark blue-grey fine-grained to medium-grained sandstone (massive to poorly bedded), argillaceous siltstone, and greenish-grey fine to coarse-grained tuff. Subtle difference from unit below based on minor tuff component. No distinct contact.					

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DIAMOND DRILL LOG

HOLE No. J91-22

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au g/t	Ag g/t	As ppm	Sb ppm		
3.05- 29.0 Barren										

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DIAMOND DRILL LOG

HOLE No.

J91-22

INTERVAL	C. LOSS	LITHOLOGY
21.34-31.45		SANDSTONE, SILTSTONE Interbedded massive medium blue-grey coarse to fine-grained sandstone and dark blue-grey siltstone and argillaceous siltstone. Indistinct upper contact 14.93-27.45 - Coarse-grained sandstone and tuff grading into argillaceous siltstone. 27.45-31.45 - Coarse-grained sandstone grading into fine-grained sandstone. Both intervals above are graded indicating possible tops down hole. 23.36-23.55 - quartz-carbonate vein / stringer zone 70° CA. Trace pyrite. Lower contact sharp and conformable at 35° CA.
31.45-35.80		GRAPHITIC ARGILLITE Black massive sheared graphitic argillite with minor siltstone beds to 3mm. Unit is cut by 5% quartz-carbonate stringers to 5cm wide at 60° CA. Whole unit is blocky and sheared 33.53-35.80 - FAULT Gouge, rubble. Sheared 60° CA. Quartz vein broken up into graphitic argillite groundmass
35.80-42.88		INTERMEDIATE FINE-GRAINED TUFF WITH MINOR LAPILLI TUFF Medium grey fine-grained massive, soft fine-grained tuff (?). Minor intervals with distinct lithic fragments (grey, aphanitic, rarely amygdaloidal) to 1cm. Unit cut by 5% quartz and minor carbonate stringers to 5cm, 30-60° CA. Unit may be composed largely

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MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
29.0-31.45 - 3-4% very fine-grained pyrite in irregular masses to 3cm and one bedding-parallel band to 5mm	S-108	29.0	30.48	1.48	11	0.5	299	10
	S-109	30.48	31.45	0.97	5	0.7	67	2
	S-110	31.45	32.85	1.40	3	0.8	30	2
31.45-35.60 - 1% disseminated pyrite	S-111	32.85	33.53	0.68	1	1.0	25	2
	S-112	33.53	35.10	1.57	2	0.4	33	2
	S-113	35.10	35.60	0.50	4	0.6	47	18
	S-114	35.60	36.0	0.40	12	0.5	50	2
35.60-36.0 - Quartz-carbonate stringer, breccia zone across argillite-tuff contact. Stringers at 60°CA. 4-5% pyrite in host rock adjacent veining. Trace red-brown sphalerite in quartz.	S-115	36.0	36.58	0.58	4	0.4	23	2
	S-116	36.58	38.05	1.47	8	0.2	20	2
	S-117	38.05	39.62	1.57	1	0.1	26	2
36.0-41.12 - 1-2% pyrite; disseminated, along stringers to 1mm and in irregular masses to 5mm. Pyrite associated with weak carbonate flooding	S-118	39.62	41.12	1.50	4	0.3	22	2

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INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A
		41.12 - 41.73 - 10-20% 1-2cm white quartz-carbonate stringers 30-80° CA. 3-4% PY		2A(-D)		1-2% PY	10% QCV 3-4% PY
42.88 - 46.46		INTERBEDDED ARGILLITE AND FINE-GRAINED INTERMEDIATE TUFF Interbedded black argillite and medium grey fine-grained to coarse-grained phyllitic tuff in 5-20cm beds. Tuffaceous parts are largely fine-grained sericite with flattened fragments to 1cm in some intervals.	S1 ∠ S0 75	2A-Ct, 75	50° 70° FAULT GOUGE	2% PY; 1-2% PY	
46.46 - 48.40		GRAPHITIC ARGILLITE Massive black argillite with minor thin beds of grey siltstone. 46.46 - 47.0 - FAULT. Gouge, pulverized core. Two sets of shearing 70° and 0° CA.	S ∠ S0 75	2A(+)(-D)		2-3% PY	
48.40 - 83.95		INTERMEDIATE FINE-GRAINED TUFF AND MINOR LAPILLI TUFF Medium greenish-grey fine-grained soft massive to phyllitic tuff with minor intervals of lapilli tuff. Unit is quite uniform, homogeneous, massive. 48.40 - 50.26 - Vague, grey aphyric lithic fragments to 3cm. Some amygdaloidal (≤2mm, quartz). 52.4 - 53.26 - Lapilli tuff as above. Flattened aphanitic grey fragments to 2cm. 55.94 - 56.53 - Grades from lapilli tuff to graphitic argillite 10-15% quartz stringers and flooding. Sheared 80° CA. Unit cut by minor blue-grey chalcedonic stringers and white calcite in 1-2mm stringers.	Sp= 80; Bd? 80	2Af(-D)		1% PY; 3-4% PY; ≤1% PY; 80°	

Depth scale (right margin): 40, 45, 50, 55, 60

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HOLE No.
J91-22

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	S-119	41.12	41.73	0.61	23	0.3	45	2
41.12 - 41.73 - 3-4% pyrite predominantly along the margin of stringers.	S-120	41.73	42.88	1.15	4	0.2	26	2
	S-121	42.88	44.33	1.45	6	0.2	22	2
41.73 - 42.88 - 1-2% pyrite.	S-122	44.33	45.72	1.39	5	0.3	33	4
42.88 - 46.46 - 2% pyrite; predominantly in foliation - parallel bands and lenses to 2 mm wide.	S-123	45.72	46.46	0.74	1	0.3	40	3
	S-124	46.46	47.0	0.54	4	0.5	60	12
46.46 - 48.40 - 1-2% pyrite; disseminated and along foliation - parallel bands to 1 mm. Syngenetic?	S-125	47.0	48.40	1.40	6	0.7	53	16
	S-126	48.40	49.83	1.43	5	0.1	24	2
	S-127	49.83	51.32	1.49	4	0.5	95	8
48.40 - 50.26 - 2-3% pyrite; disseminated and in 1-2 mm bands parallel to foliation associated with calcite.	S-128	51.32	52.40	1.08	8	0.2	31	2
	S-129	52.40	52.80	0.40	10	0.7	47	7
50.26 - 52.40 - 1% pyrite	S-130	52.80	54.34	1.54	4	0.3	27	9
52.40 - 52.80 - 3-4% pyrite; disseminated and in foliation parallel bands to 5 mm								
52.80 - 55.84 ≤ 1% pyrite								
55.84 - 56.53 - Lapilli tuff to argillite. Sheared. Quartz flooded	S-131	55.84	56.53	0.69	8	0.6	57	14
56.53 - 128.2 ≤ 1% pyrite.								

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DIAMOND DRILL LOG

HOLE No.
T91-22

INTERVAL	C. LOSS	LITHOLOGY	MU	L	S	M	A
		56.53 - 83.95 - Fine-grained massive to phyllitic intermediate tuff or possibly a flow?		2A,+		≤1% PY	
			S1= 66				
			S1= 71				

60
65
70
75
80

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DIAMOND DRILL LOG

HOLE No.
J91-22

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au g/t	Ag g/t	As ppm	Sb ppm		
60										
65										
70										
75										
80										

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DIAMOND DRILL LOG

HOLE No. J91-22

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A
			S_1 = 84	2A+		≤1% PY	
		83-83.95 - A few rounded chalcedonic quartz and calcite amygdules (?) to 1 cm. Unit could be a flow.					
83.95-89.75		INTERMEDIATE AMYGDALOIDAL FLOW OR TUFF BRECCIA Medium to dark greenish-grey fine-grained soft massive (soft) groundmass with 15% 1 mm to 1 cm (average 1-3 mm) sporadically distributed calcite, epidote and minor blue-grey chalcedonic amygdules. Concentrations of amygdules up to 20 cm may be lithic fragments but no distinct selvages are apparent. The largest amygdules occur near the bottom of the unit - flow top? Gradational upper and lower contacts.	S_1 = 80	2Ca/Ea	SHEAR 70° CA		
89.75-113.20		INTERMEDIATE FINE GRAINED TUFF (FLOW?) Medium to dark greenish-grey to black fine-grained soft massive tuff or possibly flow. Weakly foliated. Original textures obscure. Rock appears to be composed largely of sericite and chlorite.	S_1 = 76	2A/G?			SE-1 CI-1

Depth scale: 80, 85, 90, 95, 100

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

391-22

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

80

85

90

95

100

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-22

INTERVAL	% LOSS	LITHOLOGY	% C	L	S	M	A	
				2A/G.1		±1% PY	Se-1 Cl-1	100
		105.7 - 106.2 - Vague dark green patches may be flattened lithic fragments (to 5cm).						105
		108 - 113.2 - Several intervals to 20cm with distinct lithic fragments to 1cm flattened in plane of foliation.		2A-D				110
113.20 - 116.50		AMYGDALOIDAL ARGILLACEOUS TUFF BRECCIA (?) Dark grey to black fine-grained argillaceous groundmass with sporadically distributed calcite, chlorite and chalcedonic amygdules to 8mm (average 1-2 mm). The amygdules occur in a fine-grained groundmass and it appears that the amygdules are hosted in argillite but the unit is probably a tuff breccia with an argillite matrix. Gradational contacts.		2Ea,				115
116.50 - 134.70		INTERMIXED INTERMEDIATE FINE-GRAINED TUFF TO AMYGDALOIDAL TUFF BRECCIA Mottled medium to dark greenish-grey, soft fine-grained massive tuff with 5% amygdaloidal sections up to 2cm long. Amygdaloidal parts		4A, 2Ea			Se-1 Cl-1	120

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DIAMOND DRILL LOG

HOLE No.
591-22

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

100

105

110

115

120

HOLE No. I91-22

INTERVAL	C. LOSS	LITHOLOGY	Cu	L	S	M	A	
		chalcedonic, and chlorite amygdules. No distinct lithic fragment boundaries but probably a tuff breccia.	–	2A, 2Ep	–	5% Py	–	120
		120	–	–	–	–	–	
			–	–	–	–	–	125
			–	–	–	QCV, BX	–	
		128.2 – 136.62 – Quartz – calcite stringer / breccia zone. 15% white to blue-grey quartz and calcite stringers to 5cm predominantly 60-70° CA and in breccia filling.	–	–	–	1-2% Py	–	130
134.70 – 163.56		INTERMIXED INTERMEDIATE FINE (TO COARSE-) GRAINED TUFF, FINE-GRAINED TUFFACEOUS SEDIMENT AND MINOR DEBRIS FLOWS OR SEDIMENTARY BRECCIA INTERVALS	–	2A(-D), 7T, 7-20	–		–	135
		Interbedded medium greenish-grey intermediate (tuff) (~50%) dark green to black fine-grained tuffaceous sediment and 15-20% debris flow or breccia intervals with angular, equidimensional to flat dark green lithic fragments in a medium greenish-grey fine-grained groundmass. The greenish-grey intervals are probably intermediate tuffs. They are generally fine-grained but include some greenish-grey	–		–	2-3% Py	–	140

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DIAMOND DRILL LOG

HOLE No.

391-22

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
120								
125								
128.2 - 136.62 - Quartz - calcite stringer breccia zone - 1-2% disseminated pyrite generally in host rock.	S-132	128.3	129.85	1.55	5	0.9	156	14
	S-133	129.85	131.27	1.42	3	0.2	40	2
130	S-134	131.27	132.80	1.53	5	0.4	30	4
	S-135	132.80	133.77	0.97	4	0.4	41	4
	S-136	133.77	134.70	0.93	6	0.5	26	7
	S-137	134.70	135.82	1.12	4	0.3	12	2
	S-138	135.82	136.62	0.80	4	0.1	11	2
135	S-139	136.62	138.16	1.54	5	0.7	31	12
136.62 - 142.46 - 2-5% pyrite fracture fillings in 1-2 mm fractures at all angles to core axis and in 1-2 mm bedding parallel bands.	S-140	138.16	139.54	1.38	4	0.2	69	15
	S-141	139.54	140.92	1.38	4	0.3	60	7
140								

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DIAMOND DRILL LOG

HOLE No. J91-22

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	Depth
		lithic fragments to 1cm. The dark green intervals are probably a tuffaceous sediment, possibly argillaceous. The breccia intervals consist of fragments of tuffaceous sediment in a tuff matrix.		2A(-0), 7T3, 7-20		2-3% PY		140
			So = 84					145
			So = 90					
								150
			S1 = 70					
			So = 90					155
								160

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DIAMOND DRILL LOG

HOLE No.

DDH-91-22

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	S-142	140.92	142.46	1.54	3	0.3	25	3
	S-143	142.46	144.06	1.60	5	0.6	28	13
142.46 - 144.06 - 1% disseminated pyrite.	S-144	144.06	145.57	1.51	7	0.4	21	8
	S-145	145.57	146.87	1.30	4	0.3	5	2
144.06 - 162.3 <1% pyrite.								

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DIAMOND DRILL LOG

HOLE No.

391-22

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		160.55-161.54 - Fine-grained medium grey tuff with 5% dark grey lithic fragments to 2mm (average 1mm).					
		162.7-162.9 - Sheared @ 20° CA. Irregular white quartz veins to 5 cm associated.					
163.56-166.56		INTERMEDIATE COARSE-GRAINED TUFF Medium to dark greenish-grey coarse-grained tuff with a foliated sericitic groundmass and lithic fragments consisting of: - dark greenish-grey chloritic material - black argillite(?) chips to 4mm - medium grey f-g feldspar phyric fragments - feldspar crystal fragments (?) - possibly flattened pumice fragments HETEROLITHIC	30/70				
166.56-180.43		INTERMEDIATE LAPILLI TUFF					
		166.56-174.25 - Medium greenish-grey fine-grained sericitic and chloritic groundmass with 30-50% angular to subrounded lithic fragments up to 3 cm (average 5mm-1cm). Fragments consist of: - Dark to light aphanitic volcanic fragments - Medium-grey fine-grained feldspar phyric - Light green to grey flattened fragments with a delicate streaky texture. Could be flattened pumice fragments - Medium grey tuffaceous fragments.	30/60				
		174.25-177.5 - Sporadically weakly to moderately silicified. Overall medium to light blue-grey colour. Minor blue-grey quartz flooding. Texture still clear.					
*		177.5-180.22 - Moderately to strongly silicified. 5-8% white to blue-grey quartz stringers to 1 cm 45% subparallel to C.A.					
		** PROBABLY CORRELATIVE TO '900 ZONE'					

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DIAMOND DRILL LOG

HOLE No.

J91-22

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
160								
162.3 - 163.56 - 2% pyrite in argillaceous intervals and in grey tuff adjacent quartz vein.	S-146	162.3	163.56	1.26	4	0.9	49	8
163.56 - 170.5 - <1% pyrite								
165								
170								
170.5 - 173 - 1% pyrrhotite, <1% pyrite.	S-147	170.5	171.95	1.45	30	1.0	19	4
	S-148	171.95	173.10	1.15	20	1.5	27	4
	S-149	173.10	174.25	1.15	51	1.2	5	2
173 - 177.5 - 2% pyrrhotite, <1% pyrite, disseminated.	S-150	174.25	175.25	1.0	45	1.3	18	6
	S-151	175.25	176.25	1.0	26	1.7	28	7
175	S-152	176.25	177.5	1.25	58	1.1	26	2
	S-153	177.5	178.5	1.0	121	1.2	83	6
177.5 - 180.22 - 3-4% pyrrhotite in massive str 1cm in quartz stringers. 1% pyrite in quartz (predominantly) Trace red-brown sphalerite in stringers throughout. Possible trace stibnite(?).	S-154	178.5	179.5	1.0	16	0.9	47	4
	S-155	179.5	180.43	0.97	63	2.0	106	14
180								

* PROBABLY CORRELATIVE WITH '900 ZONE'

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DIAMOND DRILL LOG

HOLE No. J91-22

INTERVAL	C. LOSS	LITHOLOGY	C.V.	L	S	M	A	Depth
		180.22 - 180.43 - FAULT. Gouge. Sheared 60° CA.		F	60°		Se-1	180
180.43 - 181.60		HETEROLITHIC INTERMEDIATE COARSE-GRAINED TO LAPILLI TUFF. Medium grey to greenish-grey sericitic fine-grained groundmass with light grey, dark grey and dark greenish-grey fragments as 166.56 - 174.25. Some fragments to 2cm but average 4mm - 1cm.		2C-D.s		2% Py, 2-5% Po, Sh; <1% diss. Py	Se-1 * ; Cu-1	
181.60 - 188.10		COARSE-GRAINED INTERMEDIATE TUFF. Medium greenish-grey fine-grained sericitic groundmass with 20% 1mm to 3mm dark grey to greenish-grey subangular chloritic or sericitic soft fragments, 10% vague white fragments to 5mm, 1-2% black argillaceous (?) fragments. Unit is relatively massive, homogeneous.		2C; 2C-D		2% Py/Sph Po	Si-1, Se-1 *	185
188.10 - 189.70		INTERMEDIATE COARSE-GRAINED TO LAPILLI TUFF. Medium greenish-grey sericitic fine-grained groundmass with 40-50% 1mm to 5cm lithic fragments. Fragments are light grey to dark grey, aphanitic, and rarely feldspar phyric and amygdaloidal. Unit cut by blue-grey chalcedonic stringers to 2mm, commonly truncated and offset suggesting that sericitic alteration occurred after stringers. Fragments siliceous.		2B-A; 2C-D		<1% Py, Po; <1% Py, Po	Se-1	190
189.70 - 192.02		INTERMEDIATE FINE TO MEDIUM-GRAINED TUFF. Medium to dark green tuff with vague grains <0.5mm to 1mm in a sericitic groundmass.						195
192.02 - 197.24		HETEROLITHIC INTERMEDIATE COARSE-GRAINED TO LAPILLI TUFF. Dark greenish-grey, grey, light grey aphanitic fragments, light grey feldspar phyric fragments to 1cm and flattened yellowish-green pumice (?) fragments up to 1cm in a medium grey sericitic groundmass.		2D-2C				200

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DIAMOND DRILL LOG

HOLE No.

J91-22

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
180.22 - 180.43 - 3-4%. disseminated pyrite.	S-156	180.43	181.40	0.97	123	1.2	163	9
	S-157	181.40	182.6	1.20	62	0.6	95	5
180.43 - 181.40 - 2% pyrite, 2-3% pyrrhotite disseminated and along fractures in masses to 5 mm wide. Trace red-brown sphalerite associated with pyrite along fracture.	S-158	182.6	184.10	1.50	28	1.2	85	7
	S-159	184.10	185.62	1.52	18	0.8	10	2
	S-160	185.62	187.07	1.45	25	1.0	30	4
181.40 - 188.10 - <1% disseminated pyrite.	S-161	187.07	188.10	1.03	120	0.7	108	4
	S-162	188.10	188.77	0.67	320	1.2	364	7
	S-163	188.77	189.17	0.40	2980	86	177	12
	S-164	189.17	189.70	0.53	390	1.0	38	3
188.1 - 189.7 - 2% @ pyrite and pyrrhotite, disseminated and along fractures and stringers associated with quartz.	S-165	189.70	191.00	1.30	72	0.6	10	3
188.98 - 1 cm quartz - carbonate stringer at 30° CA with 10% @ pyrite and sphalerite and 5% galena.	S-166	191.00	192.02	1.02	77	1.2	15	2
	S-167	192.02	193.5	1.48	16	0.5	16	4
	S-168	193.50	194.96	1.46	10	0.4	2	10
189.7 - 192.02 <1% pyrrhotite. Trace Py.	S-169	194.96	196.47	1.51	36	0.7	2	8
192.02 - 197.24 - <1% each pyrite, pyrrhotite. Disseminated.	S-170	196.47	197.24	0.77	29	0.9	11	11
	S-171	197.24	198.5	1.26	67	0.9	7	9
197.24 - 201.90 1% pyrrhotite, <1% pyrite	S-172	198.5	200.0	1.50	22	0.7	2	7
199.85 - 1 mm crystal of red-brown sphalerite in matrix of large amygdaloidal fragment.								

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

J91-22

INTERVAL	C. LOSS	LITHOLOGY	MU	L	S	M	A
197.24 - 203.86		INTERMEDIATE AMYGDALOIDAL LAPILLI TUFF TO TUFF BRECCIA Coarse-grained lithic-lithic sericitic medium greenish-grey intermediate tuff groundmass with medium grey siliceous aphanitic amygdaloidal fragments to 20cm. The longer fragments appear to be laminated - Feldspar phyric (trachytic) with quartz and chlorite amygdules to 2mm. - Aphyric with 20% 1mm to 1cm blue-grey chalcedonic amygdules. Very distinctive. Some of these fragments have darker grey alteration rims. Unit cut by minor blue-grey chalcedonic stringers.	S1=60	2D-FP 2C-DT		<1% PY 1% Po 3-4% Py 2-3% Py Tr Cp <1% Py, Bo 1	Sc-1
		HETEROLITHIC					
203.86 - 210.44		INTERMEDIATE & COARSE-GRAINED TUFF TO LAPILLI TUFF Medium grey fine-grained sericitic groundmass with up to 40% angular to subrounded lithic fragments up to 2cm (average 5mm to 1cm). Fragments: - Light to dark grey aphanitic - Dark green fine-grained chlorite (?) - Black argillite(?) stringers. - Dark brownish-grey fine-grained feldspar phyric.	S1=55 Sec 55	2A 2C-DT (C.L.T.)		3-4% Py 3-4% Py <1% Py Tr Bo	
210.44 - 211.7		FINE-GRAINED INTERMEDIATE TUFF Medium grey fine-grained massive to poorly bedded tuff. 210.44 - 210.70 - Argillaceous.	S1=55				
		HETEROLITHIC					
211.7 - 221.42		INTERMEDIATE & COARSE-GRAINED TUFF TO LAPILLI TUFF to light 211.7 - 215.5 - 'C.L.T.' - Distinctive unit. Medium greenish-grey sericitic groundmass with 50% lithic fragments: - Rounded greenish grey aphanitic to 3cm. - Dark green to 2cm flattened in plane of foliation. - Black argillite rip-up clasts ≤ 5 Unit moderately chloritic.	S1=62	2C-DT			

200 205 210 215 220

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

391-22

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	S-173	200.0	201.10	1.10	9	1.1	6	8
201.90 - 203.86 - 3-4% pyrrhotite in irregular masses to 3 cm in lapilli matrix. Sporadic. 2-3% disseminated fine-grained pyrite. Trace chalcopyrite.	S-174	201.10	201.90	0.80	19	1.2	3	12
	S-175	201.90	203.05	1.15	18	2.1	2	13
*	S-176	203.05	203.86	0.81	24	2.9	21	19
203.86 - 209.0 - <1% red pyrite, pyrrhotite.	S-177	203.86	204.53	0.67	16	1.4	23	12
	S-178	204.53	206.0	1.47	10	0.4	6	5
	S-179	206.0	207.54	1.54	172	0.8	26	6
	S-180	207.54	209.0	1.46	58	1.0	21	5
	S-181	209.0	210.44	1.44	21	1.5	26	7
209.0 - 210.44 - 3-4% fine-grained disseminated pyrite.	S-182	210.44	210.7	0.26	130	4.9	391	18
210.44 - 210.7 - 5% pyrite concentrated along bede to 3 cm with 25% pyrite.	S-183	210.7	211.7	1.00	31	0.8	63	13
	S-184	211.7	213.22	1.52	52	0.8	74	10
210.7 - 221.42 ≤ 1% pyrite, Trace po.	S-185	213.22	214.77	1.55	27	0.6	2	9
	S-186	214.77	215.50	0.73	25	0.6	2	2
	S-187	215.50	217.0	1.50	13	0.2	4	2
	S-188	217.0	218.44	1.44	7	0.3	2	2
	S-189	218.44	219.92	1.48	7	0.8	5	2
	S-190	219.92	221.42	1.50	4	0.4	5	2

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-22

INTERVAL	C. LOSS	LITHOLOGY		L	S	M	A
		215.5 - 215.7 - Fine-grained tuff	70			<1% Py Tr Po	
		215.7 - 221.42 - Coarse-grained to lapilli tuff. Medium to dark blue-grey fine-grained sericitic groundmass with 30% flattened lithic fragments; – Black (argillite ?) – Dark green, grey to light grey aphanitic	50	7? , K6		20% QCV <1% Py Po Trace CP	1% Py <1% Po
221.42 - 233.9		ARGILLITE SILTSTONE Black argillite thinly interlaminated with blue-grey siltstone (~ 20%) in beds to 2 cm (average 2-3 mm). Unit cut by 5% white quartz-carbonate stringers to 2 cm wide generally subparallel to bedding. 221.42 - 222.9 - 20% quartz-carbonate veins and stringers to 15 cm wide. Parallel to and crosscutting bedding.	57, 65, 30				
233.9 - 234.4		FINE-GRAINED INTERMEDIATE TUFF Light to medium greenish-grey ('creamy' green) fine-grained soft (sericitic ?) phyllitic tuff. Probably correlative with phyllitic tuff within argillite intersected near the end of J91-19. Possible vague lithic fragments to 2 cm.	35, 35	7? K6		<1% Py <1% Po Trace CP	
234.4 - 246.89		ARGILLITE SILTSTONE Interbedded / laminated argillite and siltstone as 221.42 - 233.9. 235.91 - 236.60 - 10% quartz-carbonate veins and stringers to 3 cm predominantly subparallel to bedding. 236.6 - 246.89 - 1-2% stringers.	35				

Depth scale (right margin): 220, 225, 230, 235, 240

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-22

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
220								
	S-191	221.42	222.90	1.48	6	0.6	19	3
221.42 - 222.9 - 1% pyrite, < 1% pyrrhotite associated with quartz stringers. Trace chalcopyrite.	S-192	222.90	224.5	1.60	7	0.6	19	5
	S-193	224.5	226.16	1.66	7	0.3	21	7
222.9 - 233.9 - < 1% each of pyrite and pyrrhotite.	S-194	226.16	227.84	1.68	4	0.3	10	2
	S-195	227.84	230.28	2.44	4	0.3	14	3
225	S-196	230.28	231.73	1.45	4	0.3	24	2
	S-197	231.73	233.30	1.57	9	0.4	30	6
	S-198	233.30	233.9	0.60	17	0.5	36	8
	S-199	233.9	234.4	0.50	6	0.1	6	2
	S-200	234.4	235.91	1.51	12	0.4	19	4
230	S-201	235.91	237.0	1.09	16	0.4	29	3
233.9 - 234.4 - 1% disseminated pyrite	S-202	237.0	238.42	1.42	8	0.3	23	2
	S-203	238.42	240.40	1.98	5	0.3	22	2
234.4 - 240.89 - < 1% pyrite Traces chalcopyrite, sphalerite in stringers.								
235								
240								

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-22

INTERVAL	C. LOSS	LITHOLOGY	C*	L	S	M	A
				5ASA7		418.0 / 54 / CP	
		243.4 - Graded sandstone bed suggesting tops down hole					
			50 / 55				
				246.89			E.O.H.

240

245

250

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

91-22

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
		S-204	240.40	241.0	1.40	8	0.2	12	2
		S-205	241.8	243.3	1.50	12	0.4	15	2
		S-206	243.3	244.7	1.40	7	0.4	14	2
		S-207	244.7	246.0	1.30	7	0.4	41	505
		S-208	246.0	246.89	0.89	3	0.3	12	2

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.

Sample J-91-22 130.2 m **Amygdaloidal Andesitic Basalt (Unit 1Ga); Chlorite-Quartz Vein, Opaque-Rich Seams**

The rock contains lathy plagioclase grains averaging 0.05-0.08 mm long in a groundmass of finer grained plagioclase, chlorite, and opaque, with disseminated patches of carbonate.

The pale green end (in hand sample) contains much less opaque. It also contains amygdules (8-10%) of quartz-(ankerite) with diffuse borders. Quartz forms extremely fine grained aggregates with patches up to 0.1 mm in size showing approximate optical continuity. Ankerite forms skeletal grains averaging 0.05-0.15 mm in size. A few amygdules also contain patches of extremely fine grained sericite (0.5%).

The dark green end (in hand sample) contains much more abundant disseminated opaque and opaque-rich seams. It also contains larger and more abundant amygdules (25%, up to a few mm across) of quartz-ankerite-(chlorite-sericite-pyrite). A few of these contain patches of quartz and/or calcite with spheroidal textures. Pyrite forms disseminated grains up to 0.5 mm in size in cores of a few amygdules. Bordering the largest one, quartz is recrystallized to a comb-textured aggregate.

A few discontinuous veinlets up to 0.3 mm wide are of very fine grained plagioclase. Some of these grade into slightly coarser grained veinlets of calcite-quartz. A few discontinuous veinlets up to 0.3 mm wide are of carbonate.

The main vein 3-4 cm wide in the center of the section is dominated by chlorite flakes averaging 0.02 mm in size, with a few patches of fine to coarse grained quartz and minor wispy patches and veinlets of calcite in quartz. A few patches up to 1.5 mm long near one end of the section (in the darker green rock) are of similar chlorite.

Sample J-91-22 177.1 m Heterolithic Andesite/Latite Lapilli Tuff (Unit 2D)

One fragment 1.2 cm in size is of slightly porphyritic trachy-latite. It contains 2-3% phenocrysts of K-feldspar in a cherty groundmass of K-feldspar and plagioclase with 1-2% disseminated grains up to 0.5 mm in size of opaque, and minor skeletal patches of sericite.

A few fragments up to a few mm across are of andesite/latite, containing lathy plagioclase in a groundmass of plagioclase, chlorite, K-feldspar, and minor opaque. One of these has a well developed flow-foliation defined by parallel orientation of plagioclase laths.

A fragment 2.5 mm across and a few smaller ones are of slightly porphyritic (K-feldspar), flow-banded trachyte. It contains patches with moderately abundant disseminated pyrite grains averaging 0.01 mm in size. A few fragments are similar but without flow-foliation. Most of these have a semiopaque groundmass caused by the extremely fine grain size. Some have cuspate patches averaging 0.05-0.1 mm in size of extremely fine grained sericite.

A few fragments up to 1.5 mm in size are of very fine to fine grained latite tuff. Coarser tuff fragments contain moderately abundant crystal fragments of plagioclase averaging 0.1-0.2 mm in size.

One fragment a few mm across is of a latite tuff containing fragments up to 0.8 mm in size in a groundmass dominated by aphanitic, equant plagioclase.

Some patches up to 1.5 mm long of pyrite-(quartz) may be fragments.

Smaller fragments averaging 0.3-0.8 mm in size are mainly of aphanitic to very fine grained tuffs, flows, and pumice.

Several fragments averaging 0.2-0.5 mm in size are of quartz grains.

The groundmass is dominated by very fine to extremely fine grained sericite showing a moderate foliation.

A few replacement patches up to 1.5 mm in size are of very fine to fine grained pyrite and quartz.

Sample J-91-22 183.0 m Latite Coarse Tuff (Unit 3C)

Fragments (17-20%) up to a few mm across are mainly of trachy-andesite; containing scattered K-feldspar phenocrysts and minor ones of apatite in a groundmass dominated by slightly lathy plagioclase and opaque. The groundmass in some shows a delicate flow banding.

K-feldspar (3-4%) of similar origin forms fragments up to 0.8 mm in size. A few K-feldspar grains contain an inclusion of acicular to prismatic apatite.

A few wispy fragments up to 1.5 mm in size are of argillite containing moderately abundant wispy opaque rich seams parallel to foliation.

The groundmass is of equant, plagioclase (50%) averaging 0.002-0.005 mm in size. It is replaced(?) by irregular patches up to a few mm long of extremely fine grained sericite (30%). Pyrite (0.2%) forms scattered patches up to 0.3 mm in size.

Sample J-91-22 208.5 m Fine Trachy-Latite (Crystal) Tuff (Unit 3/2B) (note: no offcut block)

K-feldspar (2-3%) and quartz (0.5%) form crystal fragments averaging 0.3-0.7 mm in size. A few K-feldspar grains contain an inclusion of acicular to prismatic apatite.

A few patches up to 0.8 mm in size are aggregates of fine grained quartz and plagioclase.

A few fragments up to 1.3 mm long are of trachy-andesite as in Sample J-91-22 183.0 m.

The groundmass is dominated by extremely fine grained sericite and less plagioclase. Foliation is moderate to strong, and is outlined by discontinuous, wispy semiopaque seams, which are warped around lenses 0.1-0.3 mm long of sericite-plagioclase. Several lenses up to 2 mm long parallel to foliation are of sericite. Pyrite forms scattered anhedral grains up to 0.2 mm in size.

Sample J-91-22 211.5 m Latite Tuff (Unit 2A/B)

A few wispy fragments (4-5%) up to 1 cm long contain moderately abundant chlorite intergrown with sericite and lenses of Ti-oxide. In one of these the texture is suggestive of pumice.

A few fragments (0.1%) up to 0.7 mm in size are of very fine grained latite.

The groundmass is mainly an extremely fine grained aggregate of plagioclase and sericite (65-70%) in moderately varying proportions. Lenses and irregular patches (20-25%) up to a few mm long and 1 mm wide are dominated by sericite/muscovite oriented parallel to foliation. Some of these contain several fragments of latite and trachyte flows.

Irregular patches and lenses up to 1.5 mm in size contain abundant opaque intergrown with plagioclase/quartz (5-7%).

Replacement seams and lenses (2%) up to 0.3 mm wide are of extremely fine to very fine grained pyrite and much less abundant quartz. A few lenses up to 0.8 mm long are of slightly coarser grained quartz and calcite (0.3%).

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WHOLE ROCK ICP ANALYSIS

Grances Inc.: PROJECT UNUK 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	15.72	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	1.84	.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	1.74	.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	5.82	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	8.87	.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	4.33	4.09	.66	1.52	.29	.16	.002	288	247	25	159	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	1.74	.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	4.23	.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	1.87	1.45	7.23	1.40	.36	.10	.002	3086	126	20	160	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	6.50	.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	12.21	4.99	1.55	2.04	.62	.107	.002	877	289	23	160	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	5.21	.07	4.42	1.60	.49	.78	.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	4.91	.06	4.27	1.55	.40	.245	.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	9.44	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	103	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	.21	.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	157	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	4.52	1.92	2.53	2.39	.62	.07	.002	2205	162	20	162	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	182	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# J91-22	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
S108	10	38	24	31	.5	19	11	379	3.69	299	9	ND	1	95	.2	10	2	5	1.83	.037	2	4	.56	43	.01	3	.28	.01	.21	1	11	265
S109	2	23	17	124	.7	11	8	1437	2.58	67	5	ND	2	317	.5	2	2	9	7.58	.035	2	4	2.41	88	.01	4	.31	.01	.22	1	5	180
S110	32	47	25	300	.8	52	8	415	3.06	30	5	ND	2	185	1.8	2	2	13	7.01	.056	3	3	.92	46	.01	5	.30	.03	.15	1	3	1050
S111	39	54	18	444	1.0	80	8	365	2.42	25	5	ND	3	193	3.6	2	2	18	8.07	.069	4	6	.89	63	.01	3	.32	.03	.15	1	1	1700
S112	34	39	23	316	.4	68	6	418	2.47	33	5	ND	1	269	2.5	2	2	13	9.69	.072	2	4	.71	70	.01	2	.27	.02	.14	1	2	495
S113	40	4060	26	3187	.6	1423	26	435	3.33	47	5	ND	3	216	2.2	10	26	19	8.15	.041	2	6	1.11	55	.01	44	.25	.02	.11	273	4	790
RE S118	1	31	6	112	.2	25	27	2210	5.58	22	5	ND	1	219	.2	2	2	108	7.71	.040	2	49	2.08	37	.01	2	2.90	.02	.03	1	4	75
S114	12	26	11	452	.5	37	19	725	3.57	50	5	ND	1	275	3.1	2	2	18	7.97	.050	3	9	1.32	56	.01	2	.26	.02	.09	2	12	510
S115	1	23	2	119	.4	19	17	1802	5.62	23	5	ND	1	173	.3	2	2	95	5.85	.045	3	50	2.47	58	.01	2	3.03	.03	.05	3	4	65
S116	1	35	2	74	.2	27	22	1864	5.07	20	5	ND	1	225	.2	2	2	82	6.99	.039	2	46	1.98	52	.01	2	2.91	.03	.05	21	8	50
S117	2	34	8	96	.1	44	41	1694	6.19	26	5	ND	1	160	.2	2	2	109	4.97	.057	2	48	1.86	50	.01	2	3.02	.03	.05	2	1	125
S118	1	30	8	113	.3	25	27	2247	5.71	22	5	ND	1	224	.2	2	2	111	7.75	.044	2	51	2.12	40	.01	2	2.95	.03	.03	1	4	80
S119	10	26	7	130	.3	35	39	1371	6.07	45	5	ND	1	228	.2	2	2	82	5.82	.068	2	10	1.41	51	.01	2	1.04	.02	.05	4	23	180
S120	1	10	6	125	.2	11	26	1441	6.04	26	5	ND	1	114	.2	2	2	107	4.00	.147	5	3	1.50	53	.01	2	2.25	.04	.06	2	4	135
S121	1	5	4	122	.2	9	23	1201	5.46	22	5	ND	1	123	.2	2	2	127	3.81	.122	6	2	1.44	44	.01	2	2.07	.03	.04	1	6	85
S122	1	9	7	141	.3	4	25	953	6.12	33	5	ND	1	91	.2	4	2	45	3.30	.065	3	2	1.52	75	.01	2	.39	.01	.11	1	5	260
S123	2	11	11	144	.3	4	28	944	6.45	40	5	ND	1	97	.2	3	2	61	3.28	.084	3	2	1.39	106	.01	2	.94	.02	.13	1	1	255
S124	24	30	20	370	.5	55	15	703	3.51	60	5	ND	1	120	.2	12	2	35	4.68	.056	2	3	.81	50	.01	3	.40	.01	.10	1	4	500
S125	28	45	23	373	.7	53	9	540	3.17	53	5	ND	1	117	3.3	16	2	16	4.89	.053	2	2	.57	55	.01	2	.33	.02	.14	1	6	500
S126	3	27	6	89	.1	27	26	1224	5.02	24	5	ND	1	147	.2	2	2	73	5.49	.063	2	35	1.81	60	.01	2	2.27	.03	.07	1	5	140
S127	3	37	3	69	.5	63	58	1470	6.91	45	5	ND	1	113	.2	8	2	89	4.46	.037	2	50	1.51	42	.01	2	2.62	.04	.05	1	4	225
S128	1	34	6	78	.2	28	29	2124	5.68	31	5	ND	1	198	.2	2	2	87	7.72	.042	2	50	1.81	54	.01	2	3.15	.03	.04	2	8	70
S129	1	24	11	82	.7	43	37	3046	7.10	47	5	ND	2	305	.2	7	2	81	11.83	.063	3	32	1.74	36	.01	2	2.86	.02	.02	3	10	145
S130	1	29	2	96	.3	27	25	2514	5.89	27	5	ND	1	267	.2	2	2	94	9.34	.079	3	37	1.92	50	.01	2	3.33	.03	.04	2	4	50
S131	10	32	12	92	.6	38	51	1000	5.87	57	5	ND	1	117	.2	9	2	87	3.37	.060	2	24	1.66	65	.01	2	2.70	.02	.09	2	8	165
S132	8	23	4	349	.9	78	76	1846	6.60	156	5	ND	1	239	1.3	14	2	82	8.04	.032	2	29	2.27	41	.01	2	2.72	.01	.09	1	5	425
S133	1	7	7	105	.2	21	26	1636	7.40	30	5	ND	1	184	.2	2	2	92	5.64	.115	5	11	1.97	21	.01	2	3.30	.02	.04	2	3	155
S134	1	7	6	102	.4	16	29	1978	7.22	46	5	ND	1	195	.2	4	2	88	7.27	.147	5	1	2.25	21	.01	2	3.23	.02	.04	2	5	300
S135	1	4	9	88	.4	15	26	1926	5.64	41	5	ND	1	219	.2	4	2	66	7.75	.097	4	1	2.07	21	.01	2	2.49	.01	.05	1	4	320
S136	1	4	23	108	.5	13	20	1815	5.24	26	6	ND	2	230	.6	7	2	51	9.06	.105	4	3	1.65	24	.01	2	2.31	.01	.04	2	6	305
S137	1	6	4	108	.3	7	17	1715	5.45	12	5	ND	1	173	.2	2	2	40	7.46	.163	6	1	1.46	44	.01	2	2.28	.02	.10	1	4	140
S138	1	5	2	91	.1	4	14	1488	4.04	11	5	ND	1	165	.2	2	2	32	6.98	.157	6	1	.91	30	.01	2	1.80	.02	.11	1	4	175
S139	3	8	2	101	.7	17	30	1441	6.71	31	5	ND	3	176	.4	12	2	80	5.39	.171	6	2	1.81	23	.01	2	3.03	.02	.05	3	5	200
S140	8	7	10	147	.2	37	56	1347	6.06	69	5	ND	1	134	.2	15	2	50	4.71	.198	3	1	1.60	35	.01	2	2.32	.02	.16	1	4	360
S141	2	6	4	92	.3	9	22	1657	6.89	60	5	ND	1	169	.2	7	2	47	7.06	.156	5	1	1.97	30	.01	2	1.97	.02	.12	1	4	405
S142	3	4	6	99	.3	7	20	1696	7.16	25	5	ND	2	222	.2	3	2	63	6.77	.156	5	1	2.07	28	.01	2	2.34	.02	.09	1	3	170
S143	1	9	56	330	.6	11	26	1586	6.77	28	5	ND	2	207	2.1	13	2	60	5.77	.186	5	1	1.83	26	.01	2	2.61	.02	.10	1	5	295
STANDARD C/AU-R	19	60	40	132	7.3	69	31	1054	3.97	41	20	7	38	52	18.3	15	22	56	.48	.090	39	58	.88	177	.09	32	1.89	.06	.15	11	510	1800

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

J91-22

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
S144	4	7	16	97	.4	12	27	1390	5.53	21	5	ND	2	168	.2	8	3	58	3.96	.165	5	5	1.22	.32	.01	2	2.28	.02	.09	2	.7	95
RE S149	2	13	73	814	1.1	1	12	870	6.33	3	5	ND	1	38	.7	2	3	29	.51	.178	6	5	1.20	49	.01	2	1.96	.01	.28	1	62	370
S145	1	7	6	113	.3	3	16	1477	4.60	5	5	ND	1	189	.2	2	2	53	4.64	.161	7	3	.89	32	.01	2	2.01	.02	.15	1	4	70
S146	3	10	15	89	.9	7	27	554	2.49	49	5	ND	1	123	.3	8	2	11	1.58	.054	6	4	.71	45	.01	3	.54	.01	.24	1	4	120
S147	3	16	34	132	1.0	3	16	1120	6.53	19	5	ND	1	57	.2	4	2	39	.73	.214	8	8	1.42	66	.01	2	2.54	.01	.26	2	30	55
S148	3	14	73	337	1.5	5	13	631	5.47	27	5	ND	1	40	2.8	4	2	26	.51	.203	6	5	.83	60	.01	2	1.35	.01	.28	1	20	190
S149	1	13	70	825	1.2	2	12	859	6.44	5	5	ND	1	37	7.9	2	2	29	.47	.176	6	5	1.21	51	.01	2	1.98	.01	.30	1	51	335
S150	2	15	36	162	1.3	3	17	893	6.80	18	5	ND	1	49	.3	6	3	29	.53	.161	5	8	1.23	51	.01	2	1.99	.01	.26	2	45	75
S151	3	18	34	152	1.7	4	16	753	6.47	28	5	ND	2	36	.6	7	2	23	.47	.168	5	4	.95	53	.01	2	1.45	.01	.27	1	26	105
S152	2	14	21	142	1.1	3	14	619	5.18	26	5	ND	1	55	.4	2	2	23	.56	.188	7	3	.91	63	.01	2	1.65	.01	.37	1	58	70
S153	3	29	41	85	1.2	3	8	346	4.55	83	5	ND	1	36	.6	6	2	12	.55	.212	6	13	.28	52	.01	5	.60	.01	.24	1	121	80
S154	3	43	42	76	.9	5	11	441	4.53	47	5	ND	1	39	.2	4	2	18	.67	.220	5	6	.43	53	.01	2	.66	.01	.20	1	16	100
S155	8	48	120	1075	2.0	5	17	813	5.40	106	5	ND	1	65	9.1	14	2	13	.62	.227	5	2	.42	49	.01	2	.84	.01	.32	1	63	360
S156	3	39	26	255	1.2	5	18	849	7.39	163	5	ND	1	43	1.1	9	8	25	.59	.216	6	7	1.41	51	.01	2	2.12	.01	.28	1	123	105
S157	2	23	11	110	.6	4	11	757	5.94	95	5	ND	1	44	.2	5	2	32	.55	.233	8	5	1.79	58	.01	2	2.60	.01	.31	1	62	40
S158	2	18	21	104	1.2	3	12	504	2.75	85	5	ND	2	32	.4	7	2	6	.34	.089	17	2	1.16	49	.01	2	1.45	.01	.30	2	28	55
S159	2	9	24	81	.8	2	6	430	2.08	10	5	ND	1	34	.4	2	2	1	.33	.024	16	7	.88	47	.01	2	1.19	.01	.32	1	18	35
S160	2	10	38	120	1.0	2	6	715	2.43	30	5	ND	1	45	.3	4	2	2	.55	.029	16	3	1.15	51	.01	3	1.35	.01	.31	2	25	60
S161	4	12	28	90	.7	3	9	453	2.29	108	5	ND	1	32	.2	4	2	4	.35	.033	18	3	.95	63	.01	2	1.25	.01	.29	1	120	70
S162	10	14	45	179	1.2	2	9	787	6.57	364	6	ND	1	23	.9	7	5	30	.42	.113	8	8	1.42	48	.01	2	1.89	.01	.19	2	320	115
S163	10	45	2115	4470	8.6	2	8	1801	7.28	177	5	3	1	103	15.5	12	2	39	1.71	.083	6	4	1.58	41	.01	2	1.92	.01	.12	1	2980	2700
S164	5	10	167	323	1.0	2	10	1437	5.32	38	5	ND	1	57	.0	3	2	35	.96	.112	6	4	1.48	43	.01	3	1.92	.01	.13	1	390	220
S165	2	20	23	189	1.6	1	18	2223	13.45	10	5	ND	1	45	.2	3	2	79	.60	.197	8	1	3.60	39	.02	2	5.58	.01	.10	1	72	1100
S166	2	62	27	224	1.2	1	23	2041	13.32	15	5	ND	2	36	.7	2	7	80	.40	.166	8	1	3.18	39	.02	2	5.57	.01	.06	2	77	80
S167	1	7	14	110	.5	4	13	1163	6.10	16	5	ND	1	55	.2	4	2	39	.66	.151	9	5	1.97	42	.01	2	2.98	.01	.27	2	16	90
S 168	1	7	6	124	.4	3	8	947	6.63	2	5	ND	1	41	.3	10	2	47	.62	.162	9	8	2.04	43	.01	5	3.14	.01	.16	1	10	45
S 169	1	8	12	200	.7	1	4	1585	10.57	2	5	ND	1	31	.2	8	2	67	.63	.145	7	10	2.93	32	.01	5	4.39	.01	.06	1	36	75
S 170	1	6	9	179	.7	1	6	1599	10.03	11	5	ND	1	25	.3	11	2	73	.46	.131	7	6	3.14	40	.01	6	4.64	.01	.06	1	29	60
S 171	1	14	11	195	.9	2	6	920	5.42	7	5	ND	1	38	.2	9	2	48	.49	.101	8	8	1.39	48	.01	4	1.92	.01	.07	1	67	145
S 172	1	20	4	98	.9	3	6	943	4.79	2	5	ND	1	50	.3	7	2	40	.69	.112	8	8	1.26	47	.01	2	1.70	.02	.07	1	22	70
S 173	1	38	12	106	1.1	3	13	981	4.53	6	5	ND	1	50	.3	8	2	31	.82	.149	8	11	1.59	50	.01	2	2.14	.01	.14	1	9	80
S 174	1	23	14	95	1.2	4	20	860	6.13	3	5	ND	1	32	.2	12	2	38	.52	.160	8	7	1.98	56	.01	3	2.73	.01	.16	1	19	45
S 175	1	52	24	107	2.1	6	27	765	9.69	2	5	ND	1	34	.2	13	2	45	.47	.200	5	9	2.14	56	.01	4	3.03	.01	.17	1	18	40
S 176	1	127	40	117	2.9	7	35	793	11.07	21	5	ND	1	38	.2	19	2	61	.59	.186	4	9	2.14	58	.01	7	3.32	.01	.26	1	24	80
S 177	1	53	26	85	1.4	6	18	588	5.05	23	5	ND	1	36	.5	12	2	13	.35	.084	6	9	1.26	80	.01	3	1.77	.01	.26	1	16	60
S 178	1	6	2	95	.4	1	3	686	2.52	6	5	ND	1	31	.2	5	2	4	.23	.021	21	6	1.42	86	.01	2	1.66	.01	.24	1	10	25
S 179	1	11	7	99	.8	3	4	590	2.61	26	5	ND	1	29	.2	6	2	5	.21	.029	19	6	1.11	85	.01	2	1.44	.01	.21	1	172	45
S 180	1	5	8	71	1.0	2	5	584	2.30	21	5	ND	1	30	.2	5	2	4	.25	.030	18	7	1.23	83	.01	2	1.44	.01	.25	1	58	65
RE S 176	1	122	33	103	2.6	5	32	703	10.12	19	5	ND	1	36	.2	15	2	55	.55	.186	3	9	1.97	59	.01	6	2.90	.01	.23	1	26	75
S 181	1	9	19	66	1.5	3	8	463	4.65	26	5	ND	1	34	.2	7	2	3	.31	.019	9	6	.96	48	.01	3	1.26	.01	.28	1	21	75
S 182	1	26	28	274	4.9	6	25	1493	11.23	391	5	ND	1	35	.2	18	2	70	.59	.048	2	19	2.82	20	.01	8	3.56	.01	.18	1	138	160
S 183	1	6	15	118	1.8	6	33	1441	7.64	63	5	ND	1	27	.2	13	2	88	.19	.064	2	28	3.83	61	.01	5	4.51	.01	.12	1	31	40
S 184	1	12	15	112	.8	4	10	1286	8.32	74	5	ND	1	39	.2	10	2	41	.55	.131	5	10	2.45	54	.01	4	3.78	.01	.18	1	52	40
S 185	1	12	18	151	.6	3	9	1239	8.40	2	5	ND	1	50	.2	9	2	42	.63	.152	7	10	2.27	55	.01	4	3.72	.01	.18	1	27	40

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
J91-22																																
S 186	1	6	18	159	.6	3	8	1728	9.99	2	5	ND	1	36	.2	2	2	49	.36	.132	7	11	2.12	46	.01	3	4.41	.01	.12	1	25	40
S 187	1	4	2	126	.2	4	9	1358	7.20	2	5	ND	1	65	.2	2	2	41	1.16	.220	14	16	1.96	70	.01	4	3.84	.01	.22	1	13	30
S 188	1	4	6	104	.3	6	10	1341	6.48	2	5	ND	1	81	.2	2	2	40	1.65	.106	14	14	1.73	69	.01	3	3.37	.01	.20	1	7	10
S 189	1	25	100	291	.8	4	11	1580	8.97	5	5	ND	1	48	.2	2	2	57	.83	.169	8	12	2.04	62	.01	3	4.02	.01	.15	1	7	130
S 190	1	30	10	131	.4	11	12	1210	7.12	5	5	ND	1	54	.2	2	2	39	1.16	.110	6	16	1.89	72	.01	4	3.33	.01	.17	1	4	80
S 191	1	63	8	87	.6	24	13	827	4.26	19	5	ND	1	228	.2	3	2	24	5.57	.115	4	25	1.17	82	.01	3	2.01	.01	.14	1	6	80
S 192	1	132	13	128	.6	38	19	937	5.61	19	5	ND	1	242	.2	5	2	40	7.49	.136	3	28	1.47	60	.01	4	2.53	.01	.11	1	7	155
S 193	1	114	18	116	.3	39	19	897	5.31	21	5	ND	1	260	.2	7	2	36	8.20	.152	3	26	1.40	60	.01	4	2.26	.01	.13	1	7	250
S 194	1	126	15	135	.5	53	19	922	5.44	10	5	ND	1	272	.2	2	2	44	7.99	.140	3	34	1.55	73	.01	3	2.56	.01	.07	1	4	125
S 195	1	137	17	126	.3	60	19	755	5.22	14	5	ND	1	229	.3	3	2	37	5.86	.121	3	35	1.53	66	.01	6	2.45	.01	.10	1	4	160
S 196	1	128	11	132	.5	55	21	835	6.31	24	5	ND	1	194	.2	2	2	41	5.42	.161	3	33	1.69	54	.01	5	2.89	.01	.12	1	4	245
S 197	1	111	11	123	.4	30	22	931	6.90	30	5	ND	1	211	.2	6	2	40	5.07	.198	4	28	1.79	55	.01	6	3.07	.01	.14	1	9	235
S 198	1	90	25	115	.5	28	23	845	5.79	36	5	ND	1	281	.2	8	2	32	6.31	.186	4	24	1.42	57	.01	5	2.35	.01	.10	1	17	225
S 199	2	62	10	276	.1	7	4	862	2.08	5	5	ND	1	333	.2	2	2	4	8.96	.024	6	15	.75	83	.01	2	1.12	.01	.10	1	6	115
S 200	1	119	10	152	.4	43	16	937	5.70	19	5	ND	1	282	.2	4	2	40	6.73	.131	4	34	1.65	73	.01	5	2.70	.01	.09	1	12	175
S 201	1	95	20	115	.4	37	18	1031	5.65	29	5	ND	1	420	.2	3	2	35	8.72	.151	4	25	1.61	76	.01	4	2.65	.01	.09	1	16	150
S 202	1	117	10	129	.3	56	21	844	5.62	23	5	ND	1	219	.2	2	2	38	5.85	.127	5	33	1.64	89	.01	5	2.80	.01	.10	1	8	175
S 203	1	144	23	134	.3	63	25	974	5.87	22	5	ND	1	231	.2	2	2	39	7.14	.131	3	33	1.60	60	.01	4	2.75	.01	.09	1	5	255
S 204	1	120	13	126	.2	38	20	783	5.53	12	5	ND	1	216	.2	2	2	50	6.65	.149	2	32	1.53	64	.01	5	2.46	.01	.07	1	8	225
S 205	1	114	12	123	.3	36	22	752	5.03	13	5	ND	1	217	.2	2	2	51	6.15	.156	3	35	1.51	54	.01	5	2.59	.01	.11	1	14	250
S 206	1	122	16	123	.4	46	19	704	5.14	17	5	ND	1	216	.3	2	2	53	5.41	.137	3	34	1.86	72	.01	5	2.78	.01	.09	1	7	185
S 207	1	121	17	125	.4	46	21	924	5.60	21	5	ND	1	208	.2	505	2	54	4.79	.142	3	37	2.15	65	.01	6	3.17	.01	.09	1	7	175
RE S 203	1	134	15	130	.3	60	25	914	5.58	22	5	ND	1	224	.2	5	2	38	6.65	.123	3	30	1.57	64	.01	4	2.61	.01	.10	1	6	220
S 208	1	129	16	129	.3	38	20	841	5.59	12	5	ND	1	194	.2	2	2	57	3.95	.155	4	34	2.21	64	.01	4	3.29	.01	.09	1	3	110
STANDARD C/AU-R	17	62	41	134	7.5	71	32	1045	3.96	40	18	7	36	52	6.7	16	23	60	.48	.090	36	58	.89	177	.09	35	1.91	.06	.13	11	462	1850

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

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

UNUK RIVER PROJECT

COUL - 3

HOLE No. J91 - 23 (JEFF GRID)

PURPOSE

TO TEST EASTERN EXTENSION OF 900 ZONE

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
8+50N / 0+57N	418 m	270°	256.95
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-60°	65.53m - 58° 213.36 m - 56 256.95 m - 61°	217.34 m	137.07 m
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED** 14/10/1991
JEFF TESAR	J.T. THOMAS	B.Q.	**DATE COMPLETED** 16/10/1991

SUMMARY LOG (m)

00- 4.80 OVERBURDEN	230.60 - 238.50 INTERMEDIATE LAPILLI TO COARSE TUFF
4.80 - 10.50 MEDIUM TO COARSE SANDSTONE WITH MINOR ARGILLITE	238.50 - 240.66 ARGILLACEOUS FINE TUFF
10.50 - 31.70 INTERMEDIATE LAPILLI TUFF	240.66 - 247.72 INTERMEDIATE FINE TUFF TO TUFFACEOUS
31.70 - 35.50 FINE (IN PLACES LAPILLI TUFF WITH ARGILLITE	SEDIMENT
35.50 - 36.60 INTERMEDIATE LAPILLI TUFF TO BRECCIA	247.72 - 253.80 FINE TO MEDIUM TUFFACEOUS SANDSTONE
36.60 - 58.65 SANDSTONE, ARGILLITE AND MINOR SILTSTONE	253.80 - 256.95 BLACK ARGILLITE
58.65 - 66.80 FAULT ZONE / BRECCIATED ARGILLITE	- 256.95 END OF THE HOLE
66.80 - 83.70 ARGILLITE INTERBEDDED WITH SILTSTONE	
83.70 - 92.70 INTERMEDIATE FINE TO LAPILLI TUFF	
92.70 - 101.20 INTERMEDIATE FINE TO MEDIUM AND LAPILLI TUFF	
101.20 - 128.55 INTERMEDIATE TUFF WITH ARGILLITE	
128.55 150.40 INTERMEDIATE LAPILLI TO FRAGMENTAL TUFF	
150.40 - 180.40 INTERMEDIATE SILICEOUS LAPILLI TUFF	
180.40 - 195.40 COARSE INTERMEDIATE TUFF	
195.40 - 221.17 INTERMEDIATE LAPILLI TO COARSE TUFF	
221.17 - 223.81 INTERMEDIATE LAPILLI TUFF (ARGILLACEOUS)	
223.81 - 230.60 INTERMEDIATE FINE TO LAPILLI SANDY TUFF	

SIGNIFICANT MINERALIZED INTERVALS (m)

87.70 - 88.05 10-12% Pyrite ; anastomosing band.
92.70 - 94.50 1-2% Py, traces of sphalerite.
106.70 - 108.50 from 35% Py to 3-4% Py with Pyrrhotite
150.40 - 157.90 3-4% Py+Po and traces of sphalerite ; stringers, specks
165.40 - 166.90 3% Py+Po and traces of sphalerite ; stringers, specks.
195.40 - 253.80 2% Py+Po : in places traces of sphalerite
253.80 - 256.00 tr Sl, tr-1% Py, tr Po ; specks, disseminated.

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY	C/A	L	S	M	A
00 – 4.80		OVERBURDEN (00 - 457 Casing)		OV.			
4.80 – 10.50		DARK-GREY MEDIUM TO COARSE-GRAINED SANDSTONE INTERBEDDED WITH MINOR ARGILLITE (BRECCIATED) Frequent quartz-carbonate stringers at all angles to the core axis. Mineralized by disseminated pyrite. In places limonitic. (Simillar to the 3.05-5.80 Interval of J91-22 hole) F-wall contact 55°	50, S1, 30	7L(7J)(6)			
		9.15 - 9.75 Breccia / fault. Angular fragments of argillite flooded with quartz matrix. Dominant direction 35° H-wall contact 50°, F-wall contact 55°. Core loss	50, 55	7J.8			Si-3
10.50 – 31.70		INTERMEDIATE LAPILLI TUFF H-wall contact 55°, sharp. F-wall contact gradational. Green-grey in colour with white, pale-grey and grey ash fragments within fine-grained chloritic matrix. Some of the fragments are flattened, some are rotated. In places phyllitic, with wavey pattern of foliation planes. Weakly sericitic. In places clasts of sulphides and dark ash or argillite clasts. Also Micro-quartz veinlets and stringers intersecting foliation planes. Starts to be interbedded with black argillite near the bottom of the interval. Sporadic bands or fragments of heterolitic tuff (off different composition) In places amygdaloidal fragments dominant. In places bands of fine-grained tuff (similar to 5.80-8.55 interval of J91-22 Hole)	S1, 40, S1, S1	2D(4)k 2D+(J)			Se-1 Cl-1 Cl-2
		15.80 — 17.30 H-wall contact 40°, marked by vuggy quartz-carbonate veinlet. F-wall contact 40° Tuff; dark in colour due to increase in chloritic alteration as well inclusions of organic? · material. Common wavey pattern of foliation planes	40, S1	2D(t)k			Se-1 Cl-1

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91-23

MINERALIZATION ALTERATION		SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
tr Py ; sampled as wall	H	146-A	9.15	10.50	1.35	16	6.7	41	10		
tr Py - 1% Py ; disseminated, specks	H	147-A	10.50	12.00	1.50	3	0.4	21	2		
— " —	H	148-A	12.00	13.50	1.50	8	0.1	17	2		
— " —	H	149-A	13.50	14.80	1.30	4	0.2	33	5		
— " —	H	150	14.80	15.80	1.00	12	0.3	50	6		
2% Py ; disseminated, narrow stringers, specks	H	151	15.80	17.30	1.50	12	0.8	45	7		
tr - 1% Py ; disseminated, specks.	H	152	17.30	18.80	1.50	9	0.4	36	4		

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY	C∡	L	S	M	A
			40	20 tk	-	-	se-1 ct-1
		22.87 – 29.10 Pale-green-grey intermediate lapilli tuff grading to Tuff breccia. Lithic fragments within fine-grained minor siliceous pyritic matrix. H-wall contact 40°. F-wall contact 65°, siliceous, with minor porphyritic fragments scattered throughout the interval.	40, 40, 40	2DI-(2E) ±SK	-		
		(22.87 – 23.63) Tuff Breccia. H-wall contact 40° F-wall -35°.	45		-		ct-1
			70	20 ± Qv k	-		Si-3
		29.10 – 30.48 Swarm of quartz-carbonate stringers within intermediate lapilli tuff. F-wall contact 65°. H-wall contact gradational.	60		-		
31.70 – 35.50		GREEN-GREY FINE (IN PLACES LAPILLI TUFF)-GRAINED INTERMEDIATE TUFF INTERBEDDED AND INTERMIXED WITH BLACK ARGILLITE. H-wall contact gradational. F-wall contact 90° sharp. Predominantly fine tuff or flattened lapilli fragments with or within silty to sandy argillaceous matrix. In places bands of argillite or argillite rip-up clasts.	60, 60	20 / 12A(D), 7J6	-		ct-1
35.50 – 36.60		GREEN-GREY INTERMEDIATE LAPILLI TUFF GRADING TO PALE GREEN-GREY TUFF BRECCIA WITH PYRITIC MATRIX. H-wall contact 90°. F-wall contact gradational.	40	20 ± Fs			
36.60 – 58.65		INTERBEDDED, INTERMIXED DARK-GREY TO BLACK MEDIUM TO COARSE SANDSTONE, ARGILLITE AND MINOR SILTSTONE. H-wall contact gradational. In places quartz-rich chloritic Breccia. Near the top of the interval several gouge/fault zones. Mineralized by narrow pyritic stringers and blobs. (similar to 925-31.15 interval in hole J91-22)	40	7A, 7J, 7K, (Bx)	-		-

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-23

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
tr-1% Py, disseminated.	H153	21.80	22.80	1.00	14	0.3	29	4
2-3% Py; narrow stringers-matrix supported,	H154	22.80	23.63	0.84	18	0.6	123	6
2-3% Py, tr Po — " —	H155	23.63	25.00	1.37	22	0.7	148	8
— " —	H156	25.00	26.50	1.50	2	0.8	153	7
— " —	H157	26.50	28.00	1.50	1	0.9	119	7
— " —	H158	28.00	29.10	1.10	1	0.6	514	13
— " —	H159	29.10	30.60	1.50	15	0.6	83	5
1-2% Py; narrow stringers, disseminated.	H160	30.60	31.70	1.20	7	0.4	355	8
tr Py	H161	31.70	33.20	1.50	6	0.3	37	9
1-2% Py; narrow stringers, specks, dissem.	H162	33.20	34.70	1.50	10	2.3	37	5
— " —	H163	34.70	35.50	0.80	6	0.2	32	4
2-3% Py; — " —	H164	35.50	36.60	1.10	23	0.1	42	7
1-2% Py; — " —	H165	36.60	38.10	1.50	10	1.3	83	13
— " —	H166	38.10	39.60	1.50	21	0.9	368	15

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY
		Locally rip-up bands and fragments of fine greenish tuff → very minor constituent.
		37.00 - 37.50 Gouge/ Fault zone. Three narrow gouge bands, within graphitic argillite. In places Breccia. Dominant direction 40°
		37.50 - 43.05 Coarse sandstone with very minor argillite inclusions or rip-up clasts. In places blobs or narrow stringers of pyrite. In places Brecciated. F-wall 65°
		(41.02 - 41.65) Fault zone. Interval of Brecciated, flattened thus foliated sandstone with two distinct gouge bands H-wall contact 65°. F-wall contact not discernable; core Broken up.
		43.05 - 51.00 Predominantly argillite, interbedded with siltstone and sandstone (minor sandstone). H-wall contact 65°. F-wall contact 70°. Mineralized by minor pyritic, concordant stringers.
		51.00 - 58.65 Predominantly medium to coarse grained sandstone with minor argillite and siltstone inclusions. H-wall contact 70° F-wall contact not discernable; core Broken up.
		(53.50-54.00) Breccia, flooded with quartz-rich chloritic matrix. F-wall contact 45°
6.65 - 66.80		FAULT ZONE - BLACK GRAPHITIC ARGILLITE, BRECCIATED H-wall contact not discernable, core Broken up. F-wall contact 75°. Black graphitic argillite with very minor siltstone. Dense network of quartz-carbonate stringers at all angles to C.A. Common bands of gouge. Also bands of brecciated argillite; argillite fragments flooded with quartz-carbonate matrix. Mineralized by sporadic pyritic bands. (Similar to 31.45 - 48.40 interval of J91-22) Core Broken up intensely

Cx | L | S | M | A

40 45 50 55 60

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-23

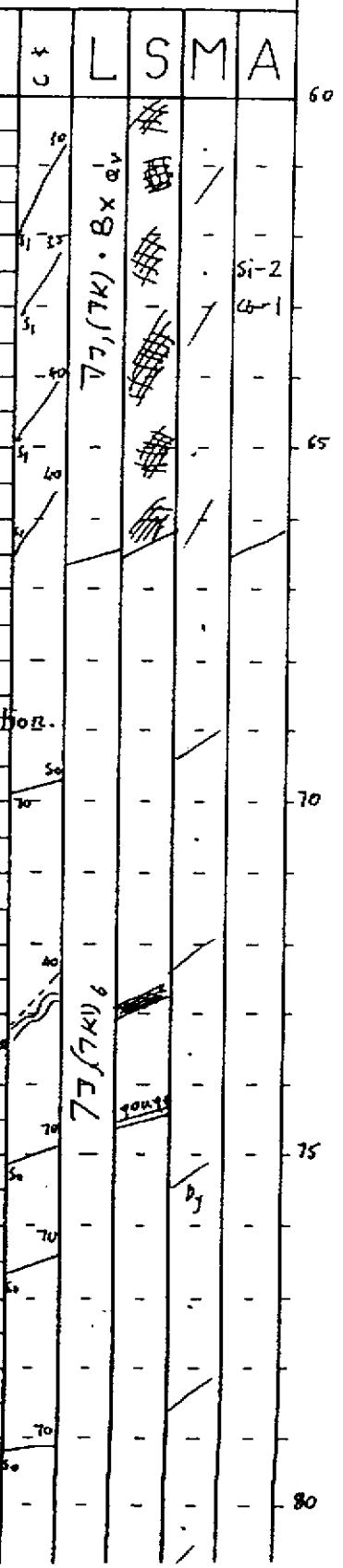
MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
1-2 % Py ; narrow stringers, blebs, single veinlets	H167	41.65	43.05	1.40	36	1.1	167	12		
— " —	H168	43.05	44.55	1.50	36	1.3	133	15		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY
66.80 – 83.70		BLACK ARGILLITE, IN PLACES INTERBEDDED WITH NARROW BANDS / LAMINAS OF SILTSTONE H-wall contact 75°. F-wall contact: 65° In places wavey planes of bedding, locally narrow gouge bands: indication of deformation. Sporadic quartz-carbonate stringers. In places blobs or specks of carbonate mineralized by narrow syngenetic pyritic bands. 73.80 – 74.00 Breccia / Crush zone. Angular clasts of argillite flooded with quartz-carbonate matrix at 74.65 – narrow gouge band, pyritic. 75° to C.A.



GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-23

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

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY	C.A	L	S	M	A
			75, 65	7J,f7K)			
3.70 - 92.70		INTERMEDIATE FINE TO LAPILLI TUFF. (IN PLACES GRADES TO TUFF BRECCIA) H-wall contact 65°, marked by pyritic band (15cm) F-wall contact 66°, marked by pyritic band (2cm) Grey in colour granular texture with fine grain size, grading to lapilli or fragmental (tuff breccia)	70	2D(E)			
		83.70 - 87.70 Lapilli fragments predominant. In places grades into tuff breccia bands. Sharp contact on the foot-wall, 75° marked by pyritic band (35cm true width). In places blackish bands of organic origin(?)					CL-1
		87.70 - 92.70 Fine to medium-grained intermediate tuff. Dark-grey in colour with blebs or bands of pyrite. Sporadic quartz-chlorite veinlets at 50° C.A. Lower part of the interval: presence of argillite or black tuff rip-up clasts of lapilli size. F-wall contact 60°, marked by pyritic band.		2A-B			
2.70 - 101.20		BLUE-GREY INTERMEDIATE FINE TO MEDIUM-GRAINED AND LAPILLI TUFF H-wall contact 60° F-wall contact gradational. Fine to medium-grained tuff intermixed with lapilli tuff. Mineralized by stringers and specks of pyrite. Upper part of the interval is brecciated	70, 45	BX, 2A-B		Py1	Si-3, CL-2, Cb-1
		92.70 - 94.49 Fault zone. Bounded by brecciated fine to medium grained tuff flooded with quartz-chloritic groundmass. Locally bands of blackish argillite? clasts within quartz-rich matrix. Chloritic.		2D(2A+B)			

Depth scale (right margin): 80, 85, 90, 95, 100

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91-23

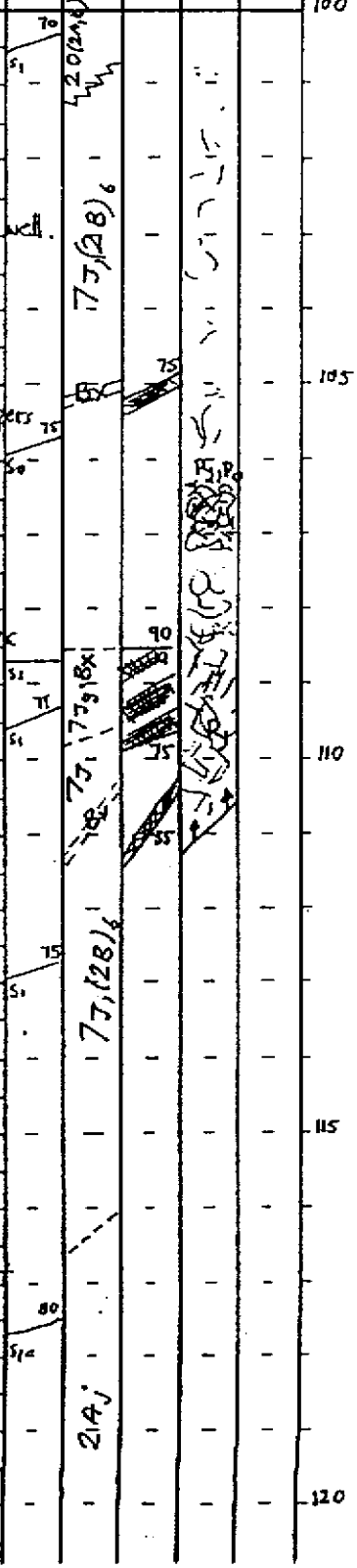
MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
tr~1% Py. sampled on wall	H169	82.50	83.70	1.20	9	0.2	46	20		
2-3% Py; narrow stringers, specks, disseminated.	H170	83.70	85.20	1.50	3	0.2	69	15		
2% Py; — 11 —	H171	85.20	86.70	1.50	5	0.2	36	9		
1~2% Py; — 11 —	H172	86.70	87.70	1.00	6	0.2	68	10		
10-12% Py; anastomosing band of pyrite *	H173	87.70	88.05	0.35	15	0.7	265	30		
tr~1% Py; specks, disseminated.	H174	88.05	89.55	1.00	2	0.1	16	5		
1~2% Py; narrow stringers, specks, dissem.	H175	89.55	91.05	1.50	1	0.1	28	3		
1~2% Py; tr Po — 11 —	H176	91.05	92.70	1.65	1	0.2	26	6		
— 11 — traces of red-brown SL *	H177	92.70	94.50	1.80	1	0.1	27	2		
tr~1% Py; dissem.	H178	94.50	96.00	1.50	1	0.1	12	2		
— 11 —	H179	96.00	97.50	1.50	1	0.1	14	2		
— 11 —	H180	97.50	99.00	1.50	1	0.1	12	2		
— 11 —	H181	99.00	101.20	2.20	1	0.1	14	2		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY
101.20 - 128.55		GREY MEDIUM, INTERMEDIATE TUFF INTERBEDDED WITH BLACK ARGILLITE. H-wall contact gradational. F-wall contact sharp. In places brecciated with argillite clasts within fine-grained tuffaceous (often pyritic) matrix. Upper part of the interval intensely mineralized by pyrrhotite and pyrite bands, often anastomosing (up 30 cm true width), stringers and specks. This is predominantly an argillaceous interval. Lower part of the interval grades into bands of fine tuff (laminar argillite) and finally into the solid tuff. Intensity of mineralization decreases downhole as well. In places brecciated with narrow gouge bands. 2-3% quartz-carbonate stringers.
104.20 - 104.40		Breccia / Fault. Narrow gouge band, at 75° to CA flanked by brecciated walls.
108.50 - 109.80		Fault / breccia. Narrow gouge bands flanked by zones of brecciated argillite, graphitic. H-wall contact 90°, F-wall contact 75°. Extensive core loss from the interval.
111.20 - 111.30		Fault. Narrow gouge band at 35° to C.A. This fault cuts off mineralization by pyrite.
116.70 -		Predominantly medium-grained tuff with minor inclusions or bands of argillite. H-wall contact 50°. In places brecciated. White carbonate specks throughout the interval. Almost barren, no sulphides visible.



GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91 – 23

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
1-2 % Py, tr Po ; sporadic stringers, specks, dissem	H182	101.20	102.70	1.50	4	0.1	2	2		
tr Py, tr Po — " —	H183	102.70	104.20	1.50	1	0.1	14	4		
— " —	H184	104.20	105.60	1.40	1	0.1	6	2		
1 % Py, 1-2 % Po ; narrow bands, stringers, specks	H185	105.60	106.70	1.10	1	0.3	124	7		
35 % of Sx. (Pyrite + Pyrrhotite) bands; vuggy, anastomosing (up 30 cm in true width), matrix filling	H186	106.70	107.20	0.50	4	0.6	1378	59		
3-4 % of Sx (Py + Po) anastomosing band: as breccia matrix filling and narrow stringers on the lower part of the interval (possible core loss of mineralized zone) appr. 20 % of core recovery of entire interval thus intensity of mineralization is difficult to estimate. 2 % Py	H187	107.20	108.50	1.30	2	0.1	482	73		
	H188	108.50	109.80	1.30	2	0.1	213	36		
3-4 % Pyrite ; narrow anastomosing stringers, blobs	H189	109.80	111.30	1.50	2	0.2	99	38		
tr Py ; sampled on wall	H190	111.30	112.78	1.48	1	0.1	14	7		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY
125.80 – 126.00		Distinct interval of green-grey chloritic medium-grained intermediate tuff. Both contacts 85°
128.55 – 150.40		INTERMEDIATE LAPILLI TO FRAGMENTAL TUFF. H-wall contact gradational marked by tuff breccia zone of tuff clasts within blackish argillaceous(?) matrix. Grey, with lapilli fragments within fine-grained pyritic and often siliceous matrix. Lower part of the interval it is dark-blackish tuff due to argillaceous matrix(?)
128.55 – 129.30		Tuff Breccia. Fragments of tuff within blackish argillaceous? matrix. H-wall contact gradational. F-wall not discernable: core broken up.

CK L S M A

120 125 130 135 140

CL-2

Si-1 CL-1

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-23

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
1-2% Py; narrow stringers, specks, disseminated.	H191	127.95	129.30	1.45	24	2.0	65	11		
1-2% Py; extensive core loss (15% core recovery)	H192	129.30	133.50	4.20	861	13.6	2716	78		
2-3% Py; narrow stringers (matrix filling) specks, disem.	H193	133.50	135.03	1.53	756	10.8	488	42		
— " —	H194	135.03	136.50	1.47	90	5.9	118	20		
— " —	H195	136.50	138.00	1.50	84	9.0	102	16		
— " —	H196	138.00	139.50	1.50	90	5.9	122	19		
— " —	H197	139.50	141.00	1.50	74	3.9	109	17		

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY	C.A	L	S	M	A
							Si-1 Cl-1
147.00 - 147.50		Amygdaloidal fragments predominant. H-wall gradational. F-wall 45°, sharp					
149.50 - 149.30		Argillaceous tuff. H-wall 45°, F-wall contact 90° Predominantly blackish tuff interbedded with narrow laminas of argillite. Chloritic.					Cl-2
149.30 - 150.40		Green coarse-grained intermediate tuff to lapilli H-wall contact 90°. F-wall contact not discernable; core broken up.					
150.40 - 180.40		GREEN-GREY SILICEOUS LAPILLI TUFF: INTERMEDIATE. H-wall contact not discernable; core broken up F-wall contact not discernable; core broken up Intermediate tuff with fragmental texture of lapilli fragments within fine-grained siliceous and chloritic matrix. Silicification is due to alteration. Green chloritic bands throughout the interval. Mineralized by pyritic-pyrrhotite stringers and blobs, specks - upto 4% overall. In places traces of sphalerite. The unit consists of intervals of siliceous, quartz-rich intermediate tuff and green-grey chloritic intermediate tuff intervals. Mineralization by: py, po and traces of SL seems to be distributed evenly throughout the unit although traces of red-brown sphalerite are associated with silica-rich intervals. In places single quartz stringers or narrow intervals of		2Dsh			Si-2 Cl-2

140 145 150 155 160

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-23

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
2-3% Py ; matrix filling narrow string, specks, disem.	H198	141.00	142.50	1.50	14	1.0	39	6
tr Py.	H199	142.50	144.00	1.50	10	0.3	23	7
tr Py.	H200	144.00	145.50	1.50	5	0.2	8	3
tr Py.	H201	145.50	147.00	1.50	2	0.3	19	3
1% Py; locall stringers, specks	H202	147.00	148.50	1.50	15	0.7	102	5
— 11 — (core loss)	H203	148.50	150.40	1.90	6	0.2	14	2
4% Py + Po ; stringers, specks, disseem. Traces SL	H204	150.40	151.90	1.50	59	0.7	74	2
— 11 —	H205	151.90	153.40	1.50	27	0.6	4	2
3% Py + Po — 11 —	H206	153.40	154.90	1.50	15	0.7	25	2
3% Py + Po — 11 —	H207	154.90	156.40	1.50	22	1.0	253	3
3% Py + Po — 11 —	H208	156.40	157.90	1.50	161	1.0	492	5
1-2% Po — 11 — no SL visible	H209	157.90	159.40	1.50	35	1.0	9	2
— 11 —	H210	159.40	160.90	1.50	75	0.6	2	2

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91 - 23

INTERVAL	C. LOSS	LITHOLOGY	C ∠	L	S	M	A
167.64 – 169.64		Breccia. Angular felsic clasts within greenish intensely chloritic matrix. H-wall contact not discernable, core broken up. F-wall contact 50°		2Eh Bx	50		CL-3 Si-1
171.15 – 171.30		Gouge band, Fault. at 50° to C.A			50		CL-5

L column: 2D sh (160–167.64), 2Eh Bx (167.64–169.64), 2D sh (169.64–180)

A column: Si-2 CL-2; CL-3 Si-1; Si-2 Cl-2; CL-5; CL-2 Si-2

Depth marks: 160, 165, 170, 175, 180

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-23

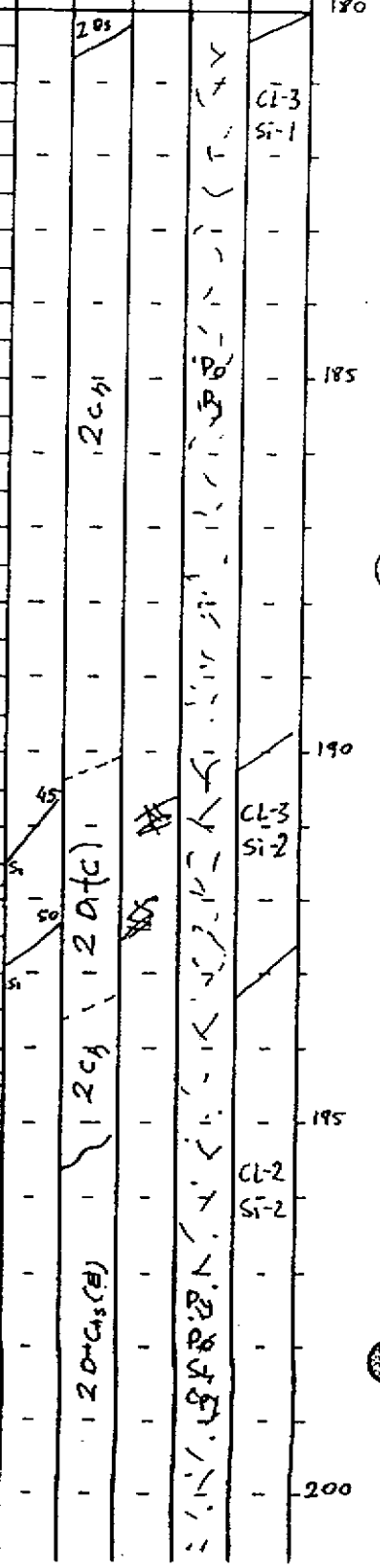
MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
2-3% Po+Py; stringers, specks, disseminated	H211	160.90	162.40	1.50	60	1.0	68	2
3% Po+Py; — " —	H212	162.40	163.90	1.50	28	1.5	224	4
— " —	H213	163.90	165.40	1.50	23	1.0	2	2
— " — tr SL *	H214	165.40	166.90	1.50	43	0.8	7	3
1-2% Py+Po, specks, dissemin.	H215	166.90	168.40	1.50	17	0.6	28	2
— " —	H216	168.40	169.90	1.50	13	1.0	109	7
— " —	H217	169.90	171.40	1.50	26	0.7	58	5
2-3% Py+Po; stringers, specks dissem.	H218	171.40	172.90	1.50	47	1.8	161	18
1-2% Py+Po; — " —	H219	172.90	174.40	1.50	11	0.7	21	9
— " —	H220	174.40	175.90	1.50	26	0.6	136	7
— " —	H221	175.90	177.40	1.50	168	0.6	36	9
— " —	H222	177.40	178.90	1.50	25	0.7	61	9
— " —	H223	178.90	180.40	1.50	27	6.6	412	16

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY
190.40 - 195.40		GREEN, COARSE-GRAINED INTERMEDIATE TUFF. H-wall contact not discernable. F-wall contact gradational. Green in colour due to chloritization. Granular texture with coarse grain size. In places carbonate stringers, often ruggy. In places dense network of carbonate-quartz stringers gives brecciated fabric. In places siliceous bands or specks (probably replacement) feature) In places bands of lapilli tuff.
190.40 - 193.45		Green, chloritic coarse-grained intermediate tuff with green-grey lapilli tuff. In places lapilli fragments are flattened. In places brecciated bands (core broken up). Both walls contact is gradational.
195.40 - 221.17		GREEN TO GREY, INTERMEDIATE LAPILLI TO COARSE Tuff. H-wall gradational. F-wall contact 80°, sharp. In places grades to fragmental tuff. Grey intervals of siliceous tuff intermixed with green, chloritic ones. Mineralized by pyrite-pyrrhotite specks, blebs and stringers. Traces of sphalerite and chalcopyrite



GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-23

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
2 % Po + Py ; stringers, blobs, specks	H224	180.40	181.90	1.50	19	0.8	35	10		
— " —	H225	181.90	183.40	1.50	72	0.4	2	10		
— " —	H226	183.40	184.90	1.50	17	0.7	9	9		
— " —	H227	184.90	186.40	1.50	17	0.4	2	9		
— " —	H228	186.40	187.90	1.50	22	1.2	67	14		
— " —	H229	187.90	189.40	1.50	92	0.6	29	13		
— " —	H230	189.40	190.90	1.50	186	1.3	14	11		
1-2 % Py + Po ; blobs, specks, disseminated	H231	190.90	192.40	1.50	121	1.1	2	12		
— " —	H232	192.40	193.90	1.50	154	0.8	2	7		
— " —	H233	193.90	195.40	1.50	121	0.3	2	8		
1-2 % Py + Po, tr Sl, tr Cpy specks, stringers, disem	H234	195.40	196.90	1.50	129	0.4	2	8		
— " —	H235	196.90	198.40	1.50	240	0.4	3	9		
— " —	H236	198.40	199.90	1.50	440	0.5	38	2		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J 91 - 23

INTERVAL	C. LOSS	LITHOLOGY	C.*	L	S	M	A	
								200
						Py Po SL	Si-2 Ct-2	
				2D-C(sh) Bx			Si-3 Ct-3	205
205.10 - 206.10		Brecciated / Crushed zone, flooded with quartz-rich matrix.						
				2D-C(E) sh				210
							Si-2 Ct-2	
								215
						Py Po SL		
								220

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-23

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au Ppb	Ag g/t	As ppm	Sb ppm
1-2% Py + Po, tr SL; specks, stringers, disseminated.	H237	199.90	201.40	1.50	56	0.1	2	2
— " —	H238	201.40	202.90	1.50	28	0.4	2	2
— " —	H239	202.90	204.40	1.50	35	0.2	2	2
— " —	H240	204.40	205.90	1.50	70	0.3	10	2
— " —	H241	205.90	207.40	1.50	740	1.9	18	2
— " —	H242	207.40	208.90	1.50	200	0.1	2	2
— " —	H243	208.90	210.40	1.50	105	0.5	22	2
— " —	H244	210.40	211.90	1.50	240	0.8	2	2
— " —	H245	211.90	213.40	1.50	330	0.4	2	2
— " —	H246	213.40	214.90	1.50	200	0.7	58	2
— " —	H247	214.90	216.40	1.50	490	0.6	131	2
— " —	H248	216.40	217.90	1.50	15	0.5	4	2
— " —	H249	217.90	219.40	1.50	57	0.7	11	2
— " —	H250	219.40	221.15	1.75	660	1.3	18	2

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY	C∠	L	S	M	A
				2D-C(?)		X	
221.17 – 223.81		GREEN INTERMEDIATE LAPILLI TUFF (ARGILLACEOUS) H-wall contact 80°, sharp, marked by narrow stringer of sphalerite. F-wall contact sharp, 70° marked by band of gouge. Strong flattening fabric throughout the interval. Predominantly tuff, with argillite rip-up clasts. No silicification. Sericitic, phyllitic. Mineralized by 2% of pyrite and pyrrhotite. Traces of chalcopyrite. Also weakly chloritic.	80, 75, 90	2Djt	#	Py Po Sl	Se-2 Cl-1
223.81 – 230.60		GREEN-GREY INTERMEDIATE FINE TO LAPILLI SANDY TUFF H-wall contact 70°, sharp. F-wall contact 55°, sharp. Commonly brecciated (core broken up) with quartz-rich intervals mineralized by traces of sphalerite. Also pyrite and pyrrhotite throughout the whole interval. Often quartz stringers or veinlets at 70 ~ 75 ~ 90° to the C.A.	90, 85, 80	2A+D.(7LT)'(Bx)'	#	Py Po	Si-3 Cl-1
230.60 – 238.50		GREY INTERMEDIATE LAPILLI TO COARSE-GRAINED TUFF. H-wall contact 55°, sharp. F-wall contact gradational. Siliceous with silica-rich intervals scattered throughout the unit. Lapilli fragments often flattened (phyllitic). Lower part of the interval: flattened lapilli tuff with (intermixed) argillite rip-up fragments. Mineralized by pyrite and pyrrhotite.	70, 65	2D+C(t)(s)			Si-2
		235.60 – 236.50 Swarm of vuggy quartz-carbonate stringers encrusted by coarse crystals of pyrite. Increase in pyrite content.	65			Py	Si-3 Cb-2
238.50 – 240.66		BLACK TO DARK-GREY ARGILLACEOUS FINE-GRAINED TUFF H-wall contact gradational, F-wall contact 60°. Volcanic component decreases down the interval.	70	2Aj			

Depth marks (right margin): 220, 225, 230, 235, 240

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91 – 23

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
2-3 % Pyrite, tr Po, tr SL; stringers, specks, dissem.	H251	221.15	222.40	1.25	290	1.1	42	2
— " —	H252	222.40	223.81	1.41	30	0.6	7	2
1% Py; tr Po, tr SL; specks disseminated	H253	223.81	225.00	1.19	6	0.5	17	2
— " —	H254	225.00	226.50	1.50	10	0.9	12	2
— " — (core loss)	H255	226.50	228.00	1.50	3	0.7	13	2
— " —	H256	228.00	229.60	1.60	5	0.8	30	3
— " —	H257	229.60	230.60	1.00	26	1.4	48	4
1% Py	H258	230.60	232.10	1.50	39	1.5	46	2
1-2 % Py, 1% Po, tr SL, stringers, specks, dissem.	H259	232.10	233.60	1.50	24	0.6	13	2
— " —	H260	233.60	235.10	1.50	67	1.3	60	2
3-4 % Py, tr SL — " —	H261	235.10	236.60	1.50	48	1.2	78	2
1-2 % Py, stringers, specks, dissem.	H262	236.60	238.50	1.90	31	0.8	25	2
tr Py	H263	238.50	239.60	1.10	13	0.4	14	3
— " —	H264	239.60	240.46	1.06	8	0.1	11	2

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-23

INTERVAL	C. LOSS	LITHOLOGY
240.66 - 247.72		DARK-GREY INTERMEDIATE FINE-GRAINED TUFF TO TUFFACEOUS SEDIMENT H-wall contact 60°. F-wall contact gradational. In places brecciated, flooded with quartz-carbonate matrix (narrow intervals). Moderately chloritic (in places). Fine tuff intermixed with sandstone and/or argillite. Mineralized by traces of pyrite. In places predominantly fine tuff.
247.72 - 253.80		GREY, FINE TO MEDIUM-GRAINED TUFFACEOUS SANDSTONE H-wall contact gradational. F-wall contact gradational. Gradually increase of argillite component at the base of the interval. Mineralized by stringers and specks of pyrite-pyrrhotite with traces of sphalerite. 251.60 - 252.50 Breccia (Fault?) Fragments of tuffaceous sandstone flooded with quartz-carbonate matrix F wall contact 70°. Core loss
253.80 - 256.95		BLACK ARGILLITE H-wall contact gradational. Upper part of the interval is brecciated and flooded with quartz-carbonate matrix where it is mineralized by fr of sphalerite and pyrite-pyrrhotite specks (up to 1%) also traces of chalcopyrite. Mineralization is cut off by fault at 255.95. 255.87 - 256.00 Narrow band of gouge (fault indicator) flanked by zones of brecciated argillite, flooded with quartz-carbonate matrix. 50° to C.A.
- 256.95		END OF THE HOLE

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

240 245 250 255 260

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-23

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
tr Py, tr Sl, specks, disem.	H265	240.60	242.20	1.56	5	0.1	8	2
— " —	H266	242.20	243.70	1.50	6	0.1	17	2
— " —	H267	243.70	245.20	1.50	4	0.4	21	2
— " —	H268	245.20	246.70	1.50	6	0.5	17	2
— " —	H269	246.70	248.20	1.50	7	0.4	16	2
— " —	H270	248.70	249.70	1.50	10	0.6	21	2
— " —	H271	249.70	251.60	1.90	1	0.5	27	3
tr Py, Po, Sl, 60% of quartz Core loss	H272	251.60	252.50	0.90	13	0.1	19	2
tr Py, Sl; specks, narrow stringers	H273	252.50	253.80	1.30	18	0.5	44	3
tr Sl, tr ~1% Py, tr Po; specks, disem	H274	253.80	254.80	1.00	35	3.3	95	2
— " — (core loss)	H275	254.80	256.00	1.20	19	1.3	49	2
tr Py	H276	256.00	256.95	0.95	6	1.1	38	6

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 # 91-5155 Page 1

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

J91 - 23

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
H 146A	1	43	10	97	.7	13	13	1926	5.48	41	5	ND	1	173	.8	10	2	17	6.38	.078	3	8	1.76	55	.01	7	1.13	.01	.25	1	16	280
RE H 150	1	18	12	112	.3	4	15	1821	6.76	51	5	ND	1	67	.7	6	2	35	2.35	.276	7	7	1.90	46	.01	2	2.48	.01	.24	1	14	40
H 147A	1	12	4	131	.4	2	12	2434	7.25	21	5	ND	1	117	.2	2	2	22	5.28	.179	7	5	2.17	60	.01	4	2.15	.01	.32	1	3	75
H 148A	1	15	12	173	.1	3	12	1664	6.96	17	5	ND	1	54	.8	2	2	31	1.93	.214	9	6	1.80	49	.01	3	2.70	.01	.30	1	8	65
H 149A	1	12	13	129	.2	2	14	2625	7.18	33	5	ND	1	86	.7	5	2	33	3.11	.200	8	7	2.16	53	.01	3	2.80	.01	.32	1	4	30
H 150	1	17	19	110	.3	3	13	1671	6.60	50	5	ND	1	63	.7	6	2	32	2.09	.262	7	6	1.79	44	.01	3	2.35	.01	.25	1	12	55
H 151	1	10	12	132	.8	4	21	940	7.65	45	5	ND	1	40	.2	7	2	54	.82	.088	5	18	2.37	23	.01	2	3.29	.01	.24	1	12	60
H 152	1	13	17	161	.4	1	11	1456	5.66	36	5	ND	1	53	1.4	4	2	21	1.72	.184	7	6	1.49	46	.01	2	1.69	.01	.39	1	9	130
H 153	1	10	6	82	.3	2	9	1793	5.47	29	5	ND	1	90	.3	4	2	23	2.43	.181	7	6	1.19	53	.01	2	1.89	.01	.36	1	14	50
H 154	1	11	15	70	.6	3	15	1976	4.67	123	5	ND	1	99	.2	6	2	17	2.98	.288	7	5	.86	61	.01	2	.98	.01	.35	1	18	135
H 155	1	9	28	49	.7	3	11	841	5.48	148	5	ND	2	42	.2	8	2	18	1.16	.227	7	8	.84	50	.01	3	1.47	.01	.56	1	22	110
H 156	1	9	14	65	.8	2	10	2078	5.93	153	5	ND	1	71	.3	7	2	18	2.70	.201	6	5	1.17	45	.01	2	1.36	.01	.44	1	2	70
H 157	1	13	15	53	.9	2	14	961	4.66	119	5	ND	1	66	.4	7	2	17	1.81	.217	7	5	.80	56	.01	2	1.43	.01	.54	1	1	95
H 158	1	15	14	25	.6	4	12	263	3.91	514	5	ND	2	37	.5	13	2	12	.73	.277	8	5	.40	55	.01	4	1.08	.01	.55	1	1	120
H 159	1	27	28	136	.6	3	10	879	5.55	83	5	ND	2	50	.6	5	2	19	1.00	.224	6	8	.76	51	.01	4	1.44	.01	.40	1	15	105
H 160	1	21	12	127	.4	3	12	1096	6.41	355	5	ND	1	64	.8	8	3	26	1.35	.246	7	6	1.16	71	.01	4	2.36	.01	.48	1	7	50
H 161	1	52	4	101	.3	8	21	1648	9.10	37	5	ND	1	77	.2	9	2	40	1.51	.217	6	7	1.56	80	.01	2	2.92	.01	.50	1	6	50
H 162	1	116	8	83	.3	13	28	1367	5.50	37	5	ND	1	83	.2	5	2	27	1.75	.191	4	6	1.05	180	.01	2	1.31	.01	.34	1	10	40
H 163	1	174	12	73	.2	12	27	1847	5.82	32	5	ND	1	120	.2	4	2	38	2.74	.403	6	10	1.15	90	.01	3	1.35	.01	.66	1	6	40
H 164	1	17	4	125	.1	2	16	2371	8.00	42	5	ND	1	179	.2	7	2	23	3.53	.276	6	5	1.43	61	.01	2	1.57	.01	.33	1	23	100
H 165	2	56	36	250	1.3	18	16	743	3.06	83	5	ND	2	58	2.5	13	2	13	1.09	.082	3	5	.50	60	.01	4	.81	.01	.49	1	10	130
H 166	1	53	15	63	.9	16	18	556	3.09	68	5	ND	2	87	.2	15	2	11	1.31	.061	2	9	.63	71	.01	3	1.08	.01	.35	1	21	65
H 167	1	24	12	58	1.1	14	9	974	3.36	167	5	ND	2	89	.3	12	2	6	1.95	.055	2	4	.54	47	.01	2	.50	.01	.28	1	36	35
H 168	1	67	16	68	1.3	38	16	698	3.99	133	5	ND	3	67	.2	15	2	8	1.25	.075	2	8	.65	55	.01	6	.87	.01	.54	1	36	60
H 169	24	32	20	195	.2	37	8	561	4.92	46	5	ND	1	80	1.6	20	2	13	2.63	.098	2	8	1.09	44	.01	2	1.16	.01	.10	1	9	1050
H 170	1	10	13	142	.2	11	28	1187	6.84	69	5	ND	1	187	.4	15	2	54	4.86	.064	3	19	2.21	49	.01	2	2.64	.01	.10	1	3	125
H 171	1	6	6	118	.2	9	21	1827	6.46	36	5	ND	1	420	.3	9	2	63	9.06	.045	2	9	2.91	33	.01	2	3.08	.01	.06	1	5	155
H 172	1	10	11	192	.2	7	19	804	6.35	68	5	ND	1	185	1.1	10	2	37	4.10	.079	4	9	1.60	45	.01	2	2.27	.01	.09	1	6	170
H 173	18	24	49	203	.7	13	35	869	13.83	265	5	ND	1	121	.3	30	2	39	3.14	.057	2	12	1.33	33	.01	4	2.14	.01	.08	1	15	580
H 174	1	4	6	137	.1	4	19	1598	6.15	18	5	ND	1	224	.2	5	2	60	6.03	.066	2	22	2.85	66	.01	2	3.52	.01	.12	1	2	65
H 175	1	7	3	146	.1	5	23	1025	6.24	28	5	ND	1	100	.4	3	2	48	2.85	.071	3	17	2.11	59	.01	2	3.02	.01	.10	1	1	100
H 176	1	12	8	145	.2	7	26	766	7.28	26	5	ND	1	58	.2	6	2	63	1.32	.077	3	19	2.28	98	.01	2	3.40	.01	.12	1	1	155
H 177	1	6	2	106	.1	7	26	1199	5.00	27	5	ND	1	172	.3	2	2	86	5.32	.074	2	28	1.42	29	.01	2	1.86	.02	.05	1	1	120
H 178	1	3	2	138	.1	6	18	1897	8.13	12	5	ND	1	180	.2	2	2	71	6.86	.129	4	4	2.28	51	.01	2	2.73	.01	.06	1	1	50
H 179	1	3	7	147	.1	3	22	1631	8.35	14	5	ND	1	184	.2	2	2	102	5.43	.127	4	5	1.76	40	.01	2	3.11	.01	.08	1	1	70
H 180	1	3	5	123	.1	6	21	1539	7.56	12	5	ND	1	191	.2	2	2	102	5.80	.118	4	6	1.48	32	.01	2	2.84	.01	.08	1	1	75
H 181	1	4	2	121	.1	3	24	1359	7.81	14	5	ND	1	166	.2	2	2	86	4.73	.118	3	7	1.22	36	.01	2	2.69	.01	.09	1	1	75
STANDARD C/AU-R	18	56	38	132	7.1	71	32	1051	3.93	37	16	6	35	46	18.3	15	21	56	.47	.088	36	59	.88	178	.09	32	1.89	.06	.14	11	450	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 18 1991 DATE REPORT MAILED: Oct 23/91. SIGNED BY: D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

[redacted] J91-Z	[redacted] ppm	[redacted] ppm	Pb ppm	[redacted] ppm	[redacted] ppm	[redacted] ppm	[redacted] ppm	[redacted] ppm	Fe %	[redacted] ppm	U ppm	[redacted] ppm	[redacted] ppm	[redacted] ppm	[redacted] ppm	Sb ppm	[redacted] ppm	V ppm	[redacted] %	[redacted] %	[redacted] ppm	Cr ppm	[redacted] %	[redacted] ppm	[redacted] %	[redacted] ppm	[redacted] %	[redacted] %	K %	[redacted] ppm	[redacted]	[redacted] ppb
H 182	2	3	22	130	.1	3	22	1584	8.01	2	5	ND	1	138	.2	2	2	90	5.29	.122	3	6	1.30	35	.01	2	2.42	.01	.12	1	4	120
H 183	1	3	13	120	.1	6	29	1807	7.52	14	5	ND	1	152	.2	4	2	95	5.56	.127	5	6	1.33	33	.01	2	2.65	.01	.13	1	1	100
H 184	1	3	6	144	.1	5	25	1864	7.36	6	5	ND	1	144	.2	2	2	96	5.36	.123	4	6	1.29	35	.01	3	2.50	.01	.14	1	1	125
H 185	3	11	6	82	.3	6	22	2356	11.13	124	5	ND	1	151	.2	7	2	48	8.09	.086	2	7	1.15	28	.01	2	1.49	.01	.12	1	1	885
H 186	22	24	7	128	.6	9	22	1080	18.00	1378	5	ND	1	43	.2	59	2	17	1.89	.061	2	8	.48	14	.01	3	.68	.01	.10	1	4	11000
H 187	7	6	14	238	.1	12	34	845	13.35	482	5	ND	1	49	.4	73	2	24	1.81	.088	2	6	.53	20	.01	2	.77	.01	.16	1	2	9900
H 188	1	11	12	228	.1	5	17	812	8.18	213	5	ND	1	50	.3	36	2	16	1.05	.018	2	6	.55	26	.01	2	.85	.01	.25	1	2	1710
H 189	1	9	11	147	.2	6	22	261	5.35	99	5	ND	1	41	.5	38	2	16	.58	.041	6	5	.39	33	.01	2	.85	.01	.29	1	2	1600
H 190	1	8	10	93	.1	2	28	1695	5.69	14	5	ND	1	78	.2	7	2	39	3.15	.103	7	9	1.55	76	.01	2	2.09	.01	.28	1	1	180
H 191	1	15	15	117	2.8	4	20	340	4.83	65	5	ND	1	21	.3	11	2	38	.36	.055	8	13	1.38	36	.01	2	1.88	.01	.28	1	24	135
H 192	1	16	39	272	13.6	11	43	194	6.40	2716	5	ND	1	45	.9	78	2	10	.67	.058	2	8	.04	21	.01	2	.25	.01	.26	1	861	625
H 193	1	17	75	218	10.8	12	43	293	6.89	488	5	ND	1	52	.6	42	2	13	.73	.052	2	9	.12	24	.01	2	.28	.01	.23	1	756	420
H 194	1	12	34	112	5.9	8	39	637	5.42	118	5	ND	1	43	.2	20	2	19	.96	.062	2	15	.56	33	.01	2	.69	.01	.27	1	90	335
H 195	1	12	18	99	4.0	8	37	1597	7.60	102	5	ND	1	79	.2	16	2	65	2.79	.062	2	31	2.10	39	.01	3	2.11	.01	.24	1	84	130
H 196	1	16	32	96	5.9	11	44	1630	7.20	122	5	ND	1	91	.5	19	2	35	3.23	.048	2	21	1.49	30	.01	2	1.26	.01	.23	1	90	150
H 197	1	12	26	61	3.9	10	43	1362	5.43	104	5	ND	1	91	.2	17	2	24	2.80	.062	3	15	.89	34	.01	3	.85	.01	.26	1	74	115
H 198	1	9	20	87	1.0	6	31	2139	7.12	39	5	ND	1	97	.2	6	2	58	3.65	.058	2	29	2.58	32	.01	3	2.54	.01	.23	1	14	45
H 199	1	12	10	81	.3	5	28	1339	7.11	23	5	ND	1	67	.2	7	2	76	2.12	.047	2	27	2.41	43	.01	2	2.96	.01	.20	1	10	35
H 200	1	5	10	86	.2	4	16	1014	6.83	8	5	ND	1	48	.2	3	2	55	1.36	.061	6	19	2.62	34	.01	2	3.17	.01	.19	1	5	25
H 201	1	5	3	66	.3	6	25	904	4.53	19	5	ND	1	55	.2	3	2	48	1.16	.041	3	18	1.74	62	.01	2	2.00	.01	.22	1	2	40
H 202	1	11	18	141	.7	11	49	1050	4.35	102	5	ND	1	74	.2	5	2	44	1.56	.045	2	15	1.12	61	.01	2	1.34	.01	.31	1	15	125
H 203	1	4	13	93	.2	1	5	744	5.80	14	5	ND	1	59	.2	2	2	17	.56	.117	13	6	1.25	70	.01	2	2.45	.01	.26	1	6	105
H 204	1	16	23	133	.7	2	3	1312	7.43	74	5	ND	1	43	.2	2	2	58	.65	.106	6	8	1.04	33	.01	2	1.67	.01	.08	1	59	130
H 205	1	6	10	115	.6	2	4	968	5.87	4	5	ND	1	29	.3	2	2	40	.49	.106	10	8	.96	40	.01	2	1.74	.01	.11	1	27	95
H 206	1	9	8	101	.7	2	4	1100	5.71	25	5	ND	1	39	.2	2	2	40	.60	.101	8	15	.92	40	.01	2	1.40	.01	.11	1	15	120
RE H 202	1	11	19	131	.6	12	48	1031	4.29	97	5	ND	1	73	.6	3	2	44	1.53	.045	2	14	1.12	63	.01	2	1.34	.01	.34	1	11	105
H 207	6	13	21	60	1.0	1	5	618	4.47	253	5	ND	1	27	.2	3	2	37	.34	.092	9	5	.59	38	.01	2	1.04	.01	.16	1	22	160
H 208	24	18	16	216	1.0	3	5	478	2.78	492	5	ND	1	21	.7	5	2	19	.26	.067	6	6	.27	41	.01	2	.50	.01	.15	1	161	255
H 209	1	20	11	91	1.0	2	5	1232	6.90	9	5	ND	1	22	.2	2	2	54	.30	.080	6	7	1.14	33	.01	2	1.96	.01	.11	1	33	65
H 210	1	11	18	140	.6	1	7	2203	8.69	2	5	ND	1	26	.4	2	2	54	.47	.092	5	9	1.58	29	.01	2	2.76	.01	.09	1	75	105
H 211	1	29	29	234	1.0	1	8	1984	9.33	68	5	ND	1	32	.3	2	2	55	.54	.096	5	6	1.64	31	.01	2	2.61	.01	.09	1	60	150
H 212	4	17	30	38	1.5	3	4	878	4.49	224	5	ND	1	31	.2	4	2	33	.66	.083	7	9	.68	38	.01	2	.82	.01	.11	1	28	265
H 213	1	16	14	157	1.0	2	6	1747	7.96	2	5	ND	1	22	.2	2	2	48	.42	.096	6	7	1.37	32	.01	2	2.24	.01	.09	1	23	160
H 214	1	12	18	114	.8	2	7	2083	8.76	7	5	ND	1	22	.2	3	2	54	.48	.101	7	12	1.58	30	.01	2	2.67	.01	.07	1	43	75
H 215	1	8	9	63	.6	2	4	1533	5.95	28	5	ND	1	35	.2	2	2	49	.71	.102	8	6	1.29	43	.01	2	1.79	.01	.11	1	17	140
H 216	4	12	28	88	1.0	3	5	3226	7.08	109	5	ND	1	104	.6	7	2	25	5.51	.066	4	5	3.05	53	.01	2	1.19	.01	.09	1	13	180
H 217	1	28	24	96	.7	3	4	925	5.90	58	5	ND	1	33	.3	5	2	34	.50	.087	8	8	1.19	64	.01	2	1.46	.01	.11	1	26	170
H 218	10	37	50	135	1.8	3	6	2458	6.84	161	5	ND	1	79	.2	18	2	27	3.57	.052	3	16	2.38	84	.01	4	.61	.01	.05	1	47	950
H 219	1	11	12	144	.7	1	4	2111	6.51	21	5	ND	1	43	.2	9	2	52	2.07	.093	8	7	2.04	50	.01	3	2.28	.01	.05	1	11	470
H 220	1	10	10	129	.6	2	4	1340	6.69	136	5	ND	1	30	.2	7	2	50	.92	.104	9	9	1.44	45	.01	4	2.25	.01	.05	1	26	300
H 221	1	10	22	101	.6	3	4	1283	6.36	36	5	ND	1	32	.6	9	2	48	1.02	.107	10	11	1.49	43	.01	4	2.08	.01	.05	1	168	145
H 222	1	15	10	135	.7	2	4	987	6.17	61	5	ND	1	25	.2	9	2	48	.53	.099	10	15	1.38	41	.01	4	2.16	.01	.06	1	25	220
H 223	22	109	1201	797	6.6	3	8	1556	5.18	412	5	ND	1	45	2.7	16	2	38	1.43	.069	6	8	1.44	35	.01	2	1.48	.01	.11	1	27	130
H 224	1	54	24	62	.8	3	9	1561	6.13	35	5	ND	1	27	.2	10	2	68	.79	.131	7	10	1.48	47	.01	4	2.14	.01	.07	1	19	135
H 225	1	24	10	96	.4	1	7	2047	8.07	2	5	ND	1	32	.2	10	2	74	.93	.133	7	14	1.68	41	.01	4	2.83	.01	.06	1	72	105
H 226	1	35	33	148	.7	1	5	1705	8.22	9	5	ND	1	26	.2	9	2	72	.95	.125	7	8	1.80	40	.01	4	2.77	.01	.05	1	17	245
H 227	1	26	11	94	.4	2	5	1646	8.75	2	5	ND	1	25	.2	9	2	76	.91	.134	7	8	1.90	40	.01	4	2.92	.01	.05	1	17	140
H 228	3	31	20	169	1.2	2	4	2296	9.82	67	5	ND	1	60	.2	14	2	69	2.52	.112	5	9	2.54	38	.01	4	2.87	.01	.06	1	22	205
H 229	1	6	13	116	.6	1	4	1915	7.94	29	5	ND	1	40	.3	13	2	54	1.39	.107	5	10	2.51	31	.01	3	3.14	.01	.06	1	92	55
H 230	1	34	58	185	1.3	1	11	2127	9.27	14	5	ND	1	32	.2	11	2	70	.99	.131	6	7	2.82	31	.01	4	3.89	.01	.05	1	186	300
H 231	1	20	44	318	1.1	1	8	2106	10.21	2	5	ND	1	35	.2	12	2	62	.90	.105	5	8	2.45	29	.02	6	3.99	.01	.04	1	121	160
H 232	1	13	26	144	.8	2	6	1473	8.32	2	5	ND	1	35	.2	7	2	66	.63	.120	5	9	2.10	34	.01	3	3.14	.01	.05	1	154	100

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

GEOCHEMICAL ANALYSIS CERTIFICATE

NOV - 4 1991

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
J91-23																																
H233	1	3	10	159	.3	1	8	1466	9.52	2	5	ND	1	24	.2	8	2	76	.39	.138	5	10	2.28	37	.02	3	3.86	.01	.05	1	121	125
H234	1	5	10	197	.4	1	7	1561	8.38	2	5	ND	1	60	.2	8	2	72	1.67	.128	5	6	2.02	53	.01	4	3.39	.01	.05	1	129	135
H235	1	17	10	134	.4	1	6	1544	8.18	3	5	ND	1	28	.2	9	2	65	.43	.126	6	7	1.98	45	.02	4	3.08	.01	.05	1	240	80
H236	2	8	8	122	.5	1	9	1246	8.16	38	5	ND	1	33	.2	2	2	63	.52	.111	6	4	1.91	59	.02	2	2.63	.01	.13	1	440	95
H237	2	3	8	116	.1	1	7	947	7.30	2	5	ND	1	32	.3	2	2	68	.62	.122	9	2	1.84	65	.01	2	2.57	.02	.15	1	56	90
H238	4	4	16	88	.4	2	6	685	6.65	2	5	ND	1	59	.5	2	2	63	.88	.122	9	4	1.19	64	.01	2	1.87	.02	.16	1	28	80
H239	3	5	12	109	.2	1	7	1255	7.41	2	5	ND	1	53	.2	2	2	62	.93	.116	7	4	1.86	59	.01	2	2.52	.01	.14	1	35	50
H240	2	12	6	207	.3	1	9	1432	7.46	10	5	ND	1	29	.4	2	2	67	.43	.117	7	2	2.01	62	.02	2	2.83	.01	.14	1	70	265
H241	3	62	553	688	1.9	1	8	1203	7.37	18	5	ND	1	24	2.5	2	2	73	.41	.122	8	3	1.60	60	.02	2	2.40	.01	.14	1	740	345
H242	1	8	10	136	.1	4	8	1333	8.17	2	5	ND	1	33	.4	2	2	77	.75	.115	5	4	1.82	48	.03	2	2.63	.01	.11	1	200	55
H243	7	10	16	149	.5	1	10	1613	9.64	22	5	ND	1	26	.2	2	2	86	.50	.123	6	3	2.22	47	.03	2	3.30	.01	.11	1	105	170
H244	2	17	9	144	.8	2	11	1415	8.32	2	5	ND	1	31	.6	2	2	76	.53	.130	6	4	2.05	48	.04	2	2.95	.01	.12	1	240	90
H245	3	18	9	180	.4	1	9	1520	8.05	2	5	ND	1	33	.3	2	2	76	.67	.124	6	3	2.15	49	.03	2	3.11	.01	.12	1	330	60
H246	8	12	28	120	.7	1	7	874	6.11	58	5	ND	1	29	.3	2	2	57	.53	.121	9	2	1.03	66	.02	2	1.56	.01	.17	1	200	80
H247	6	7	10	114	.6	1	7	969	7.16	131	5	ND	1	28	.5	2	2	74	.62	.113	9	3	1.25	67	.03	2	1.95	.02	.16	1	490	55
H248	4	11	47	167	.5	3	7	853	6.83	4	5	ND	1	27	.3	2	2	70	.51	.123	10	4	1.30	66	.03	5	1.91	.02	.15	1	15	75
H249	2	21	8	91	.7	3	25	846	5.18	11	5	ND	1	24	.2	2	2	64	.50	.127	11	2	1.19	79	.03	2	1.74	.03	.15	1	57	60
H250	4	26	65	233	1.3	3	15	1140	7.22	18	5	ND	1	26	1.0	2	2	68	.49	.109	8	4	1.48	71	.04	3	2.20	.02	.14	1	660	125
RE H254	1	125	2	84	.9	13	19	573	5.73	10	5	ND	1	41	.2	2	3	51	.24	.073	13	11	2.05	90	.01	5	2.95	.01	.35	1	14	150
H251	2	25	14	112	1.1	4	15	1032	6.26	42	5	ND	1	51	.2	2	2	35	.80	.163	6	4	1.88	74	.02	3	2.84	.01	.41	1	290	90
H252	2	24	9	91	.6	4	15	877	6.44	7	5	ND	1	49	.4	2	2	32	.85	.165	6	4	1.79	81	.01	4	2.36	.02	.37	1	30	75
H253	3	107	4	126	.5	11	22	2023	5.54	17	5	ND	1	115	.5	2	2	67	3.45	.068	8	18	3.21	79	.01	2	2.69	.01	.28	1	6	65
H254	1	125	4	84	.9	14	19	585	5.69	12	5	ND	2	42	.2	2	2	51	.27	.073	15	11	2.05	90	.01	2	2.94	.01	.37	1	10	110
H255	1	83	2	86	.7	11	18	981	5.85	13	5	ND	1	64	.5	2	2	85	.85	.091	8	17	2.72	56	.01	3	3.03	.01	.23	1	3	225
H256	3	72	8	94	.8	11	18	1468	5.29	30	5	ND	1	73	.5	3	2	61	1.76	.085	5	24	2.36	68	.01	2	2.48	.02	.27	1	5	120
H257	6	52	37	147	1.4	12	18	2293	4.14	48	5	ND	1	129	.8	4	2	44	3.44	.072	4	15	2.24	61	.01	2	1.91	.01	.23	1	26	190
H258	2	68	26	104	1.5	8	14	1890	4.61	46	5	ND	1	139	.5	2	2	60	2.87	.088	3	6	2.13	77	.01	2	1.93	.01	.27	1	39	185
H259	2	27	13	109	.6	6	13	1375	6.46	13	5	ND	1	65	.2	2	2	38	1.18	.105	5	5	2.47	74	.01	2	3.06	.01	.33	1	24	85
H260	4	18	51	153	1.3	2	8	1846	6.74	60	5	ND	1	124	.5	2	3	39	3.14	.095	4	3	1.94	49	.01	2	2.07	.01	.14	1	67	160
H261	3	15	20	131	1.2	1	8	1782	7.36	78	5	ND	1	118	.8	2	2	30	4.32	.079	3	1	1.58	45	.01	2	1.52	.01	.11	1	48	140
H262	5	19	15	124	.8	4	11	3178	6.02	25	5	ND	1	188	.8	2	2	38	5.03	.094	4	5	3.14	56	.01	2	3.02	.01	.19	1	31	70
H263	1	46	2	90	.4	15	21	909	5.96	14	5	ND	1	104	.4	3	2	50	1.83	.112	6	14	2.41	92	.01	2	3.07	.02	.31	1	13	60
H264	1	38	3	84	.1	13	20	1564	5.59	11	5	ND	1	197	.2	2	2	58	3.28	.103	6	17	2.58	84	.01	2	3.11	.01	.28	1	8	95
H265	1	39	2	246	.1	10	18	1250	5.27	8	5	ND	1	178	1.5	2	2	79	2.86	.080	5	23	1.98	65	.01	2	2.62	.01	.23	1	5	195
H266	1	84	11	119	.1	11	23	1650	6.16	17	5	ND	1	188	.6	2	2	89	2.56	.081	5	27	1.95	94	.01	2	3.00	.01	.39	1	6	80
H267	2	60	3	93	.4	8	20	1396	4.96	21	5	ND	1	163	.5	2	3	32	2.81	.114	7	5	1.17	99	.01	3	2.40	.02	.43	1	4	45
H268	1	71	5	90	.5	8	16	1685	4.81	17	5	ND	1	230	.6	2	2	33	3.78	.111	5	6	1.16	105	.01	4	2.14	.01	.45	1	6	65
H269	1	40	4	76	.4	11	13	1098	5.25	16	5	ND	1	151	.4	2	2	51	2.19	.049	5	22	1.25	75	.01	2	2.09	.01	.34	1	7	110
H270	1	44	4	85	.6	18	16	874	4.68	21	5	ND	1	161	.8	2	3	38	2.25	.069	3	17	1.58	90	.01	3	2.37	.02	.33	1	10	115
H271	1	38	3	55	.5	12	14	645	3.37	27	5	ND	1	95	.2	3	2	21	1.49	.061	3	10	.99	96	.01	4	1.58	.02	.34	1	1	265
H272	3	14	9	20	.1	17	11	542	1.59	19	5	ND	1	93	.2	2	2	11	1.34	.032	2	9	.43	57	.01	3	.73	.02	.17	1	13	25
H273	1	31	8	49	.5	10	11	630	2.56	44	5	ND	1	97	.2	3	2	17	1.51	.044	3	9	.80	90	.01	4	1.28	.03	.29	1	18	40
H274	3	117	370	1123	3.3	23	14	876	3.62	95	5	ND	1	99	19.1	2	2	26	1.27	.080	5	13	1.63	111	.01	2	2.19	.02	.32	1	35	450
H275	2	140	37	149	1.3	28	15	1149	4.38	49	5	ND	1	157	.5	2	2	44	2.81	.107	5	22	2.02	111	.01	2	2.61	.02	.24	1	19	85
RE H003	2	93	29	144	.8	29	18	590	4.74	99	5	ND	1	163	.4	6	2	15	2.48	.081	3	7	.71	57	.01	2	1.28	.01	.29	1	26	90
H276	1	119	14	102	1.1	27	14	711	3.97	38	5	ND	1	91	.2	2	2	28	1.43	.107	5	16	1.89	103	.01	2	2.59	.02	.30	1	6	45

DATE RECEIVED: OCT 22 1991 DATE REPORT MAILED: Nov 28/91. SIGNED BY ..... D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

J91-24

PURPOSE

Drill behind J91-8 to test 900 Zone

9944.887 N / 9850.55 E

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
9+50N - 1+50W	389.907 m	270°	249.94
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-50°	70.1 -52° 207.26 -60°	211.00 m	147.50m
LOGGED BY / DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED / COMPLETED**
GFM Oct16/91	J.T. Thomas.	BQ	DATE STARTED Oct16/91 DATE COMPLETED Oct

SUMMARY LOG

0-10.67 CASING	80.55-88.07 Intermediate Lapilli, siliceous.
10.67-40.25 Sandstone, siltstone, mudstone	88.07-91.44 Siliceous tuffaceous Sandstone
40.25-53.3 Black argillite contorted graphitic	91.44-96.9 Intermediate lapilli to tuff breccia - siliceous frags
53.3-59.35 Felsic/Intermediate Tuff breccia (Down)	96.9-97.2 Argillaceous fine tuff
59.35-62.5 Intermediate lapilli tuff	97.2-103.3 Intermediate Tuff breccia - siliceous frags, chloritic
62.5-62.84 Argillaceous fine tuff	103.3-105.7 Intermediate fine tuff, siliceous - chloritic
62.84-64.88 Argillaceous Lapilli tuff, vesicular frags	105.7-152.35 Intermediate tuff/breccia - siliceous frags - chloritic
64.88-67.45 Argillaceous Lapilli tuff, chloritic frags	152.35-154.05 Intermediate fine tuff - siliceous - chloritic
67.45-70.0 Argillaceous fine tuff	154.05-161.6 Intermediate Tuff breccia, siliceous frags - chloritic
70.0-70.8 Intermediate fine tuff	161.6-170.6 Intermediate chloritic fine tuff
70.8-72.45 Intermediate Lapilli, vesicular frags	170.6-172.3 Intermediate medium tuff - chloritic
72.45-73.25 Intermediate medium tuff, argillite frags	172.3-195.9 Intermediate Tuff breccia, siliceous frags - chloritic, minor
73.25-76.35 Intermediate Lapilli, chloritic frags	195.9-196.7 Int./felsic flattened lapilli - chl. frags/felsic frags
76.35-79.05 Argillaceous fine to coarse tuff	196.7-200.85 Intermediate medium tuff/tuff sandstone
79.05-79.50 Intermediate Lapilli	200.85-209.48 Intermediate Tuff breccia - siliceous frags - chloritic
79.5-79.7 Argillaceous fine tuff	209.48-240.8 Argillite, foliated, graphitic
79.7-80.55 Intermediate fine tuff to Lapilli	240.8-244.2 Felsic fine tuff/intrusive dyke
	244.2-249.94 Argillite, foliated

SIGNIFICANT MINERALIZED INTERVALS

53.3-59.35 pyritic 10%.
106. - 110 Tr py-po-sp-Aspy? Sb?
132 - 133 Tr py-po-cpy
140 - 143 pyrite 30%.
188 - 191 Tr py-po-cpy.

GRANGES EXPLORATION
DIAMOND DRILL LOG

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY
0-10.67		CASING.
10.67 – 40.25		blue-grey siltstone and fine grained sandstone with minor mudstone, pydiss 1-2% locally qv, minor tuffaceous component.
		11.3 – 16.1 fine sandstone, siltstone with minor argillite
		15.25 fault. minor
		16.1. Black mudstone - 16.3.
		16.6 fault
		16.6 - 18.0 contorted fine sandstone, mudstone, dissem py 5%, qv irregular 10%.
		18.0 fault
		18.0 - 21.8 fine grey blue sandstone, siltstone with mudstone interbedded finely bedded; some feldspars, tr py. qv 3%.
		21.4 argillite rip-up clasts.
		19.47 argillite
		21.8 - 26.3 Lt greenish grey feldspathic sandstone with tuffaceous component 30%, massive
		26.3 fault, 26.4 fault
		26.3 - 31.67 fine grained blue grey sandstone, siltstone minor mudstone minor tuffaceous component.
		29.3 fault.

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
	M001	16.0	16.6		2	0.1	21	2		
	M002	16.6	17.0		4	0.9	65	5		
	M003	17.0	18.0		21	0.7	103	6		
	M004	18.0	19.0		20	0.2	46	3		

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY	MJ	L	S	M	A
		31.67 argillite 31.8					
		31.8-34.9 fine sandstone, siltstone near conglomerate					
		34.9-36.78 coarser sandstone, tuffaceous component possibly sericitic					
		36.78-39.4 fine sandstone, siltstone, conglomerate					
		39.4-40.25 very coarse feldspathic sandstone					
		40.25 fault					
40.25	53.3	Black sheared contorted argillite with graphitic slips, qtz veins 15%, disp 3-5%					
		45.1-45.5 fault. graphitic gouge					
		51.3 fault					
		well bedded greenstone becoming siltier at base. Laminated pyrite 1%					

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
1-2% py v.d.	M005	40.25	41.0		24	2.6	70	20		
"	M006	41.0	42.0		12	2.1	47	19		
"	M007	42.0	43.0		5	1.2	18	12		
"	M008	43.0	44.0		1	1.4	27	14		
"	M009	44.0	45.0		5	1.4	21	11		
"	M010	45.0	46.0		1	1.4	27	9		
"	M011	46.0	47.0		1	0.1	22	9		
"	M012	47	48		18	0.2	24	10		
"	M013	48	49		12	0.1	26	9		
"	M014	49	50		2	0.1	30	13		
"	M015	50	51.4		12	0.1	25	8		
"	M016	51.4	52		2	0.2	45	14		

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	
		Black argillite becoming siliceous, Tr-1% py lam.	50 / 85	TJs	-	py	-	52, 53
		53.3 - 59.35 75° sharp contact with argillite, felsic to Intermediate Lt Grey - blue grey tuff breccia, vesicular fragments 5-10% anastamosing pyrite veins, black silica patchy alth and as fragments, foliated, occasional reaction rims on fragments a dendritic alth veins (DATUM?) pervasive alteration (K-Spar)?		75	-		-	54, 55
			S1 / 65	3/2 E. 1 2 a,	-		Blk silica	56, 57, 58
		lower contact gradational	S1 / 65	2D	-		-	59
59.35-62.5		Intermediate green-grey fine tuff to Lapilli, minor vesicular fragments in fine tuff matrix, anastamosing pyrite veins 2-3%		2A,D	-		-	60, 61
		gradational contact.	S1 / 70	-	-		-	62
62.5-62.84		intermediate dk grey-green fine argillaceous tuff.		2A,J	-	-	-	
62.84-64.88		intermediate grey green lapilli with chlorite fragments foliated, in fine tuffaceous matrix sharp lower contact. 65°	S1 / 65	2D. o k	-	-	-	63, 64
64.88-67.45		Intermediate black green argillaceous lapilli with vesicular fragments in black mudstone matrix 3-5% pyrite local kink band 50°⊥ to S1 75° gradational lower contact.	S1 / 75	65 / 2DJ. lva	S1 / 55°	py	-	65, 66, 67
67.45-70.0		Intermediate dk grey green fine argillaceous tuff foliated, traces pyrite, 5% anastamosing qtz veinlets gradational contacts. Tr pyrite	S1 / 65	TJS / 2AJ	-	py	qv	68, 69
70-70.8		Intermediate grey green fine tuff.		-	-	-	-	70
70.8-72.45		Intermediate grey-green lapilli with vesicular fragments Tr py, Tr qv. gradational contacts	S1 / 70	2A / 2D. o k	-	py	qv 90	71, 72
72.45-73.25		Intermediate grey-green medium grained tuff with argillite fragments. Trace pyrite gradational contacts	S1	2B (?)		py		

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
1% py. d.	M017	52	53.3		17	0.2	47	14
5-10% py v.	M018	53.3	54.		10	0.1	349	13
"	M019	54	55		3	0.1	587	16
"	M020	55	56		8	0.3	731	20
"	M021	56	57		1	0.2	549	12
"	M022	57	58		1	0.2	335	11
"	M023	58	59		6	0.2	136	6
py 2-3% v.d.	M024	59	60		5	0.1	56	3
"	M025	60	61		3	0.1	30	4
"	M026	61	62		1	0.2	60	7
Tr py d.	M027	62	63		4	0.1	25	4
"	M028	63	64.		1	0.1	13	2
"	M029	64	64.88		2	0.1	40	8
py 3-5% v.d.	M30	64.88	66		2	0.2	68	10
"	M31	66	67		2	0.1	49	8
"	M032	67	67.45		9	0.1	28	2
py 5% v.	M033	67.45	68.0		8	0.1	32	2
"	M034	68	69		8	0.2	31	5
py 5% v.	M035	69	70		5	0.1	34	8
"	M036	70	71		3	0.1	22	2

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY	C ∠	L	S	M	A	
73.25 - 76.35		Intermediate grey-green Lapilli, weak fol. chloritic fragments.		2D(t)j				73
			51/80	2D(t)·kLL	-	-	-	74
		lower contact sharp 75°	-		-	-	-	75
			-		-	-	-	76
76.35 - 79.05		Intermediate blackish green fine to coarse tuff argillaceous matrix, weakly foliated.		∠75 2A-Cj(t)	~~~	-	-	77
		lower contact gradational	51/80		-	-	-	78
79.05 - 79.50		Intermediate grey green Lapilli, foliated, trace py	-		-		-	79
79.50 - 79.70		blackish green argillaceous fine tuff, intermediate		2Dc / 2Aj		Py		
79.70 - 80.55		Intermediate grey green lapilli to fine tuff trace argillite phyllitic weakly.	-	2D-Ac	-	-	-	80
80.55 - 88.07		Intermediate grey-green phyllitic lapilli with areas of silicification, foliated, phyllitic possibly sericitic, pyrite v.d. locally 3-5% occasional fragment vesicular	-	-	-	-	-	81
			51/70	2Dt	-	Py	-	82
			-	-	-	Py	-	83
			-	2Dt(se)?	-		-	84
			51/60		-		-	85
			-	-	-	Py	-	86
			-	2DS	-	-	-	87
		lower contact faulted.	51/60					
88.07 - 91.44		Intermediate grey siliceous tuffaceous sandstone with quartz vein Bx diss py Tr to 3% locally	-	—	~~~	-	-	88
			-	7L/Ts·Bx	-	Py	-	89
			-		-	Py	qv Bx	90
			-		-	-	qv Bx	91
		91.45 - 92.7 fault. (coreless).		2	≈≈≈			
92.7 - 96.9		Intermediate grey green lapilli to tuff breccia with medium grained tuff matrix, siliceous fragment locally Tr-1% py-po	-	2	≈≈≈	-	-	92
			-	2D/E-(B)	-	-	-	93
								94

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au PPB	Ag g/t	As ppm	Sb ppm		
Tr. pyrite	M037	79	80		22	0.3	42	6		
Pyrite 3%	M038	80	81		4	0.4	35	4		
Pyrite 3-5%	M039	81	82		2	0.2	33	2		
Pyrite 3-5%	M040	82	83		48	1.1	71	10		
Pyrite 3-5%	M059	83	84		24	0.8	41	2		
Pyrite 5%	M041	84	85		27	0.2	40	2		
Pyrite 3-5%	M042	85	86		142	1.4	114	5		
Tr. pyrite	M043	86	87		3	2.0	78	10		
Tr. py.	M044	87	88		27	0.9	19	3		
3% py.	M045	88	89		18	0.8	41	2		
3% py	M046	89	90		22	1.3	75	3		
Tr. py.	M047	90	91		76	0.9	31	2		
Tr. py.	M048	91	92		23	0.9	57	2		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY	C∠	L	S	M	A
		Heterolithic lithic fragments various kinds some siliceous from dk to whitish		2D/E (B)			
96.9 - 97.2		dark grey-green argillaceous tuff (2Aj)					
97.2 - 103.3		Intermediate grey-green tuff breccia, gy siliceous fragments in fine green chloritic ash matrix. Traces of PO-d, trace sphalerite	51/20	2E Bx		Po	
		100.6 - 101 fault.					
103.3 - 105.7		intermediate grey-green fine siliceous, chloritic tuff with qtz v., diss PO v.d, Tr sphalerite d.	51/70	2A sk		Po	30 qv
105.7 - 152.35		Intermediate grey-green tuff breccia, grey siliceous fragments, patches. chloritic matrix, qtz v Bx with diss PO-sphal. Trace stibnite, local vesicular fragments local bluish chalcedonic qtz.		12E sk · us · Bx		sp, Po	qv Ox, qv Bx, qv
		110.9 - 111 minor fault					
		111.8 gouge.				Po	

Depth marks (right margin): 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
Tr py	M049	101	102		23	0.9	57	2		
Tr - 1% po	M050	102	103		22	0.8	26	2		
Tr py	M051	103	104		124	0.4	38	2		
"	M052	104	105		210	0.4	2	2		
"	M053	105	106		7	1.8	2	2		
1-2% po - Tr sphalerite	M054	106	107		8	0.8	3	2		
1-2% po - Tr splal., Tr sb	M055	107	108		14	0.7	358	2		
1-2% po - Tr splal.	M056	108	109		5	0.7	593	2		
1-2% po	M057	109	110		3	0.4	23	2		
"	M058	110	111		14	0.6	9	2		
"	M060	111	112		23	0.3	30	2		
"	M061	112	113		280	3.1	155	3		
"	M062	113	114		85	1.5	71	2		
"	M063	114	115		74	2.1	49	2		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY	∠ to C.A.	L	S	M	A	
		Intermediate grey-green tuff breccia to volcanic breccia						115
		fragments in finer ash matrix, large fragments siliceous grey	–	–	~~	–	–	116
		patchy silicification, chloritic matrix, diss. py-po						
		qtz v Bx, brittle Fractures, siliceous frags fractured.	–	2 E/Fx (c) 5%	≈	po	qv. Bx	117
							qv.	
			–		–	po	–	118
		Traces of py+po diss. 1-2% on later brittle fractures						
			–		–	–	–	119
			–			py	–	120
			–	–	Fe	po/py	qv	121
			–	–		–	–	122
			–	–	–	po	–	123
			–	–	–	–	–	124
			–	–	–	po	–	125
			–	–	–	–	–	126
			–	–	–	–	–	127
			–	–	–	po	–	128
			–	–	–	–	–	129
			–	–	–	po	–	130
		130.5 carbonate vein					Carb V.	
			–	–	–	–	–	131
		131.8 dark green chlorite with pyrite dust					chl+py	132
		132.8 dark green chlorite with pyrite, po, cpy	–	–	–	Cl. Po cp	chl.	133
			–	–	–	po	–	134
		Dark green unspy chlorite with pyrite diss + po						
		coating fractures.	–	–	–	po py	–	135
		Mislatch - possible fault? Core loss						

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
Tr-1% po	M064	115	116		32	0.5	37	2		
"	M065	116	117		4	0.5	255	2		
"	M066	117	118		2	0.4	23	2		
"	M067	118	119		90	0.4	70	2		
"	M068	119	120		73	0.9	64	2		
"	M069	120	121		64	1.2	37	2		
"	M070	121	122		121	0.9	17	2		
"	M071	122	123		177	0.8	81	2		
"	M072	123	124		200	0.9	80	2		
"	M073	124	125		172	5.5	22	2		
"	M074	125	126		55	0.4	80	2		
"	M075	126	127		70	0.7	65	4		
"	M076	127	128		510	0.5	20	2		
"	M077	128	129		90	1.2	18	2		
"	M078	129	130		64	2.7	38	2		
Tr py-po	M079	130	131		210	0.8	141	2		
"	M080	131	132		220	0.7	130	2		
Tr-1% py, po, cpy	M081	132	133		124	1.3	102	2		
Tr-1% po, py	M082	133	134		210	1.4	44	2		
2-3% py-po	M083	134	136		250	1.2	28	2		
2-3% py-po	M084	136	137		200	1.4	101	2		

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY	C ∠	L	S	M	A	
		Intermediate grey-green tuff breccia, in finer ash matrix large fragments vesicular & siliceous; patchy silica. chlorite, chlorite dark green with py-po Tr cpy. chloritic matrix		2EKs · ah · sv		py po py po		136–139
		Py diss. 10%, w/ spy dk green chlorite 140-141.5				qv py	dk chlorite	140–141
		142.4-142.7 colliform-botryoidal pyrite 35%					pyrite	142–143
				2/3E/F s(k)·ah·sv		py py/po py/po py po	qv 30 qtz ck qv 60	144–151
		Chlorite filled vesicules with white silica rims				py		152
152.35-154.05		Intermediate medium to fine grained grey green siliceous, chloritic tuff diss py 3-5%		2B-c(k)		py		153–154
154.05-161.6		Intermediate grey green tuff breccia to Vol. Bx siliceous, chloritic matrix & fragments, brittle fractures, anastomosing py-po stringers + diss 3-5%.		2E/F s(k)·Bx		py po		155–156

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
Py-po'd. 3-5%.	M085	137	138		330	1.4	125	2
"	M086	138	139		780	1.2	113	2
"	M087	139	140		550	1.4	107	2
Py d. 10%.	M088	140	141		810	1.7	211	2
py 3-5% v.d.	M089	141	142		840	6.7	257	2
Py. 20%. d. masses	M090	142	143		1020	20.6	637	104
py 3-5% d.	M091	143	144		230	8.9	353	37
"	M092	144	145		220	3.0	236	7
"	M093	145	146		200	1.9	207	2
"	M094	146	147		240	2.9	199	2
"	M095	147	148		230	2.3	221	2
"	M096	148	149		250	1.8	119	2
"	M097	149	150		440	2.5	86	2
Py diss 3%.	M098	150	151		340	1.8	64	2
"	M099	151	152		250	2.3	93	2
"	M100	152	153		200	1.1	58	2
"	M101	153	154		910	1.8	93	2
py-po-vd 3-5%.	M102	154	155		200	3.2	257	2
"	M103	155	156		220	3.1	156	2
"	M104	156	157		103	2.6	179	4
"								

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY	C ∠	L	S	M	A	
		Siliceous tuff breccia, anastomosing py veins & diss						157
								158
				2Es ·05		Py-Po		159
								160
								161
161.6-170.6		Intermediate medium to fine tuff, strongly chloritic dark green blue, soft.		40				162
		faulted upper & lower contacts.						163
								164
								165
				2IB-Ak				166
								167
								168
						Py		169
								170 carbv.
170.6-172.3		Intermediate medium tuff, moderate chlorite pyrite diss Tr-1%.		2IBk (t)				171
								172
172.3-195.9		Intermediate green-grey siliceous, weakly chloritic matrix tuff breccia with siliceous patches, vesicular fragments. diss po-py.		2Es (k) ·45·au				173
								174
						P-Po		175
								176
		177.5-177.6 Hematite in Calv.						177 calv

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J-91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
py diss - 3-5 %.	M105	157	158		450	2.2	189	2
"	M106	158	159		150	2.5	157	6
"	M107	159	160		270	6.2	344	17
py tr.	M108	160	161		170	3.1	212	10
"	M109	161	161.6		140	1.6	163	10
"	M110	161.6	163		9	0.1	19	2
Pyrite Trace	M111	163	164		15	0.4	21	2
"	M112	164	165		23	0.2	20	2
"	M113	165	166		4	0.2	16	2
"	M114	166	167		6	0.5	19	2
"	M115	167	168		3	1.7	21	2
"	M116	168	169		3	1.2	29	2
"	M117	169	170		10	0.7	26	2
"	M118	170	170.6		30	1.3	38	5
"	M119	170.6	172.3		50	1.7	78	5
1-2 %. py	M120	172.3	173		49	1.6	131	3
2 %. py	M121	173	174		140	1.7	272	9
1-2 %. py	M122	174	175		170	1.7	149	4
2 %. py-pφ	M123	175	176		180	2.3	85	3
1-2 %. py-pφ	M124	176	177		160	3.1	263	7
1-2 %. py-pφ	M125	177	178		190	1.8	45	2

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY	C &	L	S	M	A
172.3 - 195.9		Intermediate grey-green tuff breccia, siliceous fragments siliceous or chloritic matrix, qtz v Bx - sulphides, py-po dissemination 3-5%.					
		189.5. sulphide-chlorite vein po-py-cpy 3%.					
		190.5-191. Vein Bx chlorite-qtz, chloritic fragments, diss. po-py-cpy 5%.					
		191.5 possibly flow banded fragments, wispy dk chlorite					
195.9 - 196.7		Intermediate to felsic flattened phyllitic lapilli tuff white green-grey. dark chloritic frags, white felsic frags, fol 70° Tr py diss' contact gradational					
196.7 - 200.85		Intermediate grey-dark green medium grained tuff to tuffaceous sandstone, local dark green chlorite alter., locally argillaceous possibly, Trace of Diss. py to 1-2%, foliated					

178 gr Bx 179 180 181 gr Bx 182 183 gr Bx 184 185 cal-qtz 186 187 188 189 190 v-Bx chl-qtz py-po-cp 191 chl breccia 192 193 194 qv 195 196 197 198 200

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
3-5% py-pφ	M126	178	179		330	1.6	39	2		
1% py-po	M127	179	180		200	2.9	145	2		
3-5% py-po	M128	180	181		210	2.1	117	2		
3% py-po	M129	181	182		160	2.8	171	5		
1% py	M130	182	183		170	2.1	42	2		
"	M131	183	184		240	2.5	172	2		
3% py	M132	184	185		140	2.6	134	2		
3% py	M133	185	186		160	1.7	184	2		
3% py	M134	186	187		260	6.7	237	2		
3% py-po-cpy	M135	187	188		210	2.1	160	2		
3% py-po-cpy	M136	188	189		300	2.1	232	2		
1-2% py-po	M137	189	190		230	7.4	215	2		
5% py-po-cpy	M138	190	191		270	1.8	300	2		
3% py-po	M139	191	192		160	1.6	105	2		
1-2% py-po	M140	192	193		86	0.7	50	2		
"	M141	193	194		65	0.7	20	2		
"	M142	194	195		54	0.5	2	2		
"	M143	195	195.9		106	0.7	35	2		
py-Tr-1%	M144	195.9	197		13	0.2	16	2		
Tr-1% py	M145	197	198		22	0.5	19	3		
1-2% py	M146	198	199		14	0.2	20	2		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY	C [∡]	L	S	M	A	
			S1 70					199 chl.
		minor fault. 200.2 - 200.6		2ltk ?		Py.		200
200.85 - 209.48		upper contact 60°			Fr			201
		Intermediate pale green to dark green, flattened phyllitic lapilli tuff, with felsic and mafic fragments, locally argillaceous?, chlorite alteration locally, 1-2% diss Py, boudinaged qtz veins, very minor Kink banding S2 + fractures.	S1 70					qv 202
			ST 50		Kink S2 40			qv 203 qv
				2 Dkt(j) "wk. 3a				204
			S1 70		Fr 40			205 qv80
								206 chl. alt. Fr70
			S1 80					207
								208
							70°	chl. 209
		Faulted lower contact.						
209.48 - 240.8		Black argillite, bedded, lam 5% grey siltstone or wispy tuff? foliated, contorted, graphitic slips, local folds qtz veins 10%, Py laminations 5%, local gouge.						qtz. 210
			S1 80	7Jtg (K/A)				211
						Py		212
			S1 85					qv 213
			S1 70					214
								215 qv-cal
			S1 80					216
								217
			S1 75					218.
		218.8 - 219.1 pale green foliated fine chlorite tuff / Dyke?		2At				219
			S1 70	7J				

GRANGES EXPLORATION LTD.

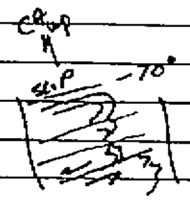
DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
1-2% pyrite	M147	199	200		8	0.3	7	2		
"	M148	200	200.85		3	0.1	15	2		
"	M149	200.85	202		1	0.1	2	2		
"	M150	202	203		5	0.1	3	2		
"	M151	203	204		2	0.1	2	2		
"	M152	204	205		6	0.1	2	2		
"	M153	205	206		3	0.1	2	2		
"	M154	206	207		1	0.2	2	2		
"	M155	207	208		11	0.3	2	2		
"	M156	208	209		6	0.3	9	2		
"	M157	209	209.45		34	0.3	329	2		
"	M158	209.45	210.3		9	0.4	45	6		
"	M159	210.3	211		6	0.3	12	2		
"	M160	211	212		6	0.2	11	2		
"	M161	212	213		2	0.2	3	2		
Py 3%	M162	213	215		1	0.3	16	2		
"	M163	215	216		5	0.4	4	2		
"	M164	216	217		2	0.4	3	2		
"	M165	217	218		3	0.3	3	2		
"	M166	218	219		2	0.4	21	2		

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No. J91-24

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	
		foliated Black argillite, graphitic slips, local gouge						220
		py-lam 5% qtv, qvBx 10%, local folding						221
		silty or tuff bands 5%, boudinaged qtz v., py in late fractures	S1/70			PY		
				7Jtg ·(K/A)				222
								223
								224
			S1/70					225
								226
			S1/65					227
								228 qv
						PY		229
								Au 230
		local slip fold	S1/70					231
								qv 232
								qv 233
			S1/50			PY		qvBx 234
								235
			S1/70			PY		236
								qv 237
								238
			S1/70			PY		239
240.73 - 244.2		contacts qtz veined, graphitic slips		7Db				240 qv.

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
py 1-2%.	M167	230	231		6	0.3	10	6		
py 1-2%.	M168	231	232		7	0.1	4	2		
Tr py	M169	240	240.3	13	1	0.4	5	2		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-24.

INTERVAL	C. LOSS	LITHOLOGY	C∠	L	S	M	A	
240.73.-244.2.		Intermediate to felsic fine tuff or felsic dyke, pale green locally chlorite altn, diss py-po, weak foliation contacts qtz veined, graphitic slips		13/2A/9W'K(?)	Fe 50	Py po	chlorite	241 242 243 244
244.2 - 249.94.		foliated black argillite, graphitic slips, py/lam 5%, qtz v + vBx 10%, grey silty or felsic tuff 5%, local gouge, boudined qv.	S1 60, S1 40, S1 28	7Jts(K/h)		Py	qv qvBx qv	245 246 247 248 249 250
		EoH 249.94						

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-24

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
pyrite 3 %.	M170	240.73	242		1	0.1	2	2		
"	M171	242	243		1	0.1	2	2		
pyrite-po 3 %.	M172	243	244.2		1	0.1	2	2		
pyrite 1-2 %.	M173	244.2	245		2	0.4	5	2		
py-3-5 %.	M174	245	246		1	0.3	4	2		
"	M175	246	247		3	0.3	2	2		
py 1-2 %.	M176	247	248		3	0.3	13	2		
py 3 %.	M177	248	249		4	0.4	10	2		
"	M178	249	249.94		1	0.2	11	2		

Sample J-91-24 164.7 m — **Intermediate Lapilli Tuff/Pebbly Greywacke: Large Fragments of Argillite (Unit 2D/7L.7Ju)**

A few fragments up to at least 2 cm in size are of extremely fine grained argillite containing minor detrital grains of quartz and plagioclase averaging 0.02 mm in size in a moderately foliated, extremely fine grained groundmass dominated by plagioclase and sericite. A few fragments up to 1.5 mm long are of argillite with abundant seams of carbonaceous opaque parallel to foliation.

One fragment 2 mm across is of a porphyritic andesite/basalt containing abundant phenocrysts of plagioclase up to 0.7 mm in size and minor ones of hornblende in a groundmass dominated by lathy plagioclase. Plagioclase phenocrysts are altered slightly to sericite; those of hornblende are altered completely to chlorite. Opaque (pyrite?) forms irregular patches in the plagioclase phenocrysts and groundmass.

Smaller fragments averaging 0.15-0.4 mm in size are of several types, including crystals and crystal fragments of K-feldspar, quartz, muscovite, plagioclase, and apatite, extremely fine grained latite, lenses of opaque.

The groundmass is well foliated and dominated by sericite and plagioclase. Wispy seams and lenses are of coarser grained sericite/muscovite. Replacement patches are dominated by calcite (1-2%), and a few are of pyrite and quartz (0.3%).

A lensy veinlet 0.15 mm wide parallel to foliation is of very fine grained quartz and interstitial ankerite. A few strongly contorted veinlets up to 0.3 mm wide are of extremely fine grained quartz and opaque (pyrite?). These veinlets are segmented and offset along cleavage planes parallel to foliation. A late, planar veinlet 0.1 mm wide is dominated by calcite with minor quartz.

Sample J-91-24 207.3 m — **Strongly Foliated Intermediate Tuff or Flow (Unit 2B/Ga)**

Scattered fragments (5%) include crystals of plagioclase and K-feldspar, and patches of latite and quartz aggregates. These average 0.1-0.2 mm in size. They are set in a well foliated groundmass containing bands rich in sericite, others rich in chlorite, and others composed of sericite-plagioclase. Some layers contain moderately abundant K-feldspar. Pyrite forms scattered grains up to 0.2 mm in size. A few lenses up to 1.5 mm in length are of slightly coarser grained sericite/muscovite, and may represent fragments. These textures suggest that the rock is an intermediate fine tuff.

The rock contains 4-5% lensy patches up to 2 mm long of extremely fine grained quartz and less abundant extremely fine to very fine grained ankerite; textures are similar to those of amygdules in samples of amygdaloidal andesite flows. This suggests that the rock is a strongly sheared andesite flow.

Several replacement lenses and veinlets averaging less than 0.2 mm wide are of very fine grained ankerite and pyrite. One widens to a patch 1.3 mm wide of coarser grained ankerite. A few oval-shaped patches up to 1 mm long are of very fine to fine grained ankerite.

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	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	.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	.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	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	154	37	79	5.0	100.08
J91-17-149.0	65.12	12.13	6.33	2.70	.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	.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	.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	.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	.97	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	1.36	.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	.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	.10	.05	5.78	.94	.10	.10	.002	1119	38	26	162	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	.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	.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	140	27	108	5.1	100.04
J91-25-45.4	50.89	15.41	8.40	1.83	7.46	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	103	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	10	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

SAMPLE# J91-24	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
M001	1	104	11	111	.1	19	17	569	3.91	21	5	ND	1	191	.2	2	2	24	2.51	.089	4	11	1.23	153	.01	4	1.86	.03	.28	1	2	40
M002	2	84	19	134	.4	27	15	677	3.19	65	5	ND	1	343	.2	5	2	15	3.47	.084	3	9	.57	73	.01	3	1.16	.02	.34	1	4	90
M003	2	95	29	139	.7	27	17	584	4.67	103	5	ND	1	165	.6	6	2	15	2.46	.081	3	7	.69	54	.01	4	1.25	.01	.29	1	21	80
M004	2	67	14	84	.2	17	15	504	3.62	46	5	ND	1	119	.2	3	2	26	1.56	.079	4	12	.84	93	.01	4	1.59	.03	.31	1	20	35
M005	12	23	35	125	2.6	24	9	577	3.85	70	5	ND	1	184	.7	20	2	12	3.04	.057	2	5	1.06	67	.01	2	.49	.01	.21	1	24	290
M006	9	25	36	224	2.1	17	9	404	4.55	47	5	ND	1	114	1.4	19	2	12	1.93	.076	2	2	.77	46	.01	2	.66	.01	.24	1	12	305
M007	12	17	26	206	1.2	21	6	759	3.10	18	5	ND	1	166	1.2	12	2	10	4.83	.057	2	4	1.02	86	.01	2	.32	.01	.18	1	5	265
M008	17	25	30	214	1.4	25	9	769	4.03	27	5	ND	1	144	1.6	14	2	12	4.39	.057	2	3	1.04	42	.01	3	.36	.02	.22	1	1	330
M009	22	25	46	235	1.4	29	7	717	3.63	21	5	ND	1	121	1.7	11	2	10	4.16	.064	3	2	1.03	60	.01	2	.32	.01	.22	1	5	405
M010	22	29	37	304	1.4	32	7	600	3.80	27	5	ND	1	138	2.1	9	2	8	3.34	.055	2	2	1.09	51	.01	2	.34	.01	.20	1	1	440
M011	19	24	14	149	.1	26	7	383	3.73	22	5	ND	1	137	.7	9	2	7	2.64	.055	3	3	.92	43	.01	2	.67	.01	.17	1	1	675
M012	25	24	14	154	.2	29	7	556	3.37	24	5	ND	1	173	1.3	10	2	13	4.22	.061	4	3	1.15	69	.01	2	1.24	.01	.15	1	18	635
M013	26	30	18	189	.1	32	7	502	3.66	26	5	ND	1	195	1.4	9	2	12	3.97	.058	3	3	.88	56	.01	2	.85	.02	.15	1	12	770
M014	27	35	14	185	.1	37	7	535	3.26	30	5	ND	1	149	1.2	13	2	12	5.53	.057	4	4	.87	72	.01	2	.85	.02	.17	1	2	540
M015	16	26	9	148	.1	24	5	676	2.41	25	5	ND	1	414	1.0	8	2	11	12.83	.041	2	2	.89	62	.01	2	.67	.01	.12	1	12	530
M016	25	42	17	331	.2	48	7	503	3.33	45	5	ND	1	135	2.5	14	2	15	4.82	.045	2	3	1.05	67	.01	2	.36	.01	.18	1	2	735
M017	26	27	17	180	.2	31	8	324	3.12	47	5	ND	1	117	1.3	14	2	8	3.12	.051	3	4	.56	35	.01	2	.34	.01	.17	1	17	755
M018	6	19	21	49	.1	5	27	234	8.47	349	5	ND	1	57	.2	13	2	14	1.52	.148	6	1	.75	28	.01	2	.87	.04	.17	1	10	1950
M019	5	22	20	46	.1	8	30	336	9.63	587	5	ND	1	51	.2	16	2	15	2.02	.211	5	3	.74	45	.02	2	1.22	.07	.25	1	3	2850
M020	4	25	19	107	.3	6	32	402	11.32	731	5	ND	1	51	1.3	20	2	15	2.04	.160	4	3	.78	54	.02	3	1.29	.06	.26	1	8	2050
M021	3	17	19	120	.2	5	27	421	7.83	549	5	ND	1	80	.3	12	2	17	2.99	.206	6	2	.77	54	.02	2	1.22	.06	.23	1	1	1400
M022	3	21	16	118	.2	5	37	479	7.75	335	5	ND	1	84	.2	11	2	19	3.23	.211	6	2	.80	50	.02	2	1.23	.06	.20	1	1	1550
M023	1	17	11	131	.2	5	19	550	5.80	136	5	ND	1	88	.2	6	2	28	3.05	.196	6	3	.96	75	.03	3	1.45	.06	.26	1	6	705
M024	1	17	12	111	.1	3	15	628	3.90	56	5	ND	1	104	.2	3	2	38	3.38	.155	7	2	1.16	75	.02	2	1.83	.07	.24	1	5	470
M025	1	11	11	69	.1	3	11	796	3.54	30	5	ND	1	127	.2	4	2	32	4.29	.142	8	3	.95	69	.02	2	1.55	.08	.23	1	3	195
M026	3	17	15	109	.2	5	14	1040	5.80	60	5	ND	1	187	.2	7	2	38	3.71	.141	7	3	1.59	62	.03	2	2.36	.07	.21	1	1	295
M027	2	20	17	109	.1	4	18	1073	5.67	25	5	ND	1	139	.2	4	2	36	3.19	.115	7	5	2.12	72	.03	2	3.41	.02	.21	1	4	105
M028	3	16	12	123	.1	2	10	1123	4.97	13	5	ND	1	133	.2	2	2	20	3.86	.146	10	3	2.04	97	.04	2	3.41	.02	.29	1	1	60
M029	3	10	18	106	.1	7	21	938	4.65	40	5	ND	1	145	.2	8	2	25	3.77	.119	6	6	1.27	110	.03	2	2.16	.02	.27	1	2	305
M030	2	13	16	93	.2	10	29	1758	5.95	68	5	ND	1	297	.3	10	2	77	7.32	.053	3	21	2.04	86	.02	2	2.74	.04	.16	1	2	290
M031	2	8	14	112	.1	10	34	1075	5.55	49	5	ND	1	179	.2	8	2	87	3.95	.063	2	23	2.19	72	.02	2	3.02	.05	.20	1	2	215
STANDARD C/AU-R	19	59	44	134	7.6	75	32	1061	4.01	41	16	8	40	52	18.9	18	22	56	.49	.091	39	59	.91	178	.09	32	1.90	.06	.15	11	480	1400

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

SAMPLE# J91-24	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
M032	1	4	2	62	.1	5	23	2362	6.32	28	5	ND	1	441	.2	2	2	93	11.48	.063	2	32	2.32	37	.02	3	2.56	.02	.09	1	9	55
M033	1	8	6	115	.1	3	22	730	6.63	32	5	ND	1	78	.4	2	2	47	2.18	.047	3	20	2.05	54	.01	4	3.10	.01	.17	1	8	110
M034	1	12	5	102	.2	4	23	712	7.64	31	5	ND	1	83	.2	5	2	47	2.46	.060	4	20	1.95	69	.01	4	3.13	.01	.23	1	8	90
M035	1	12	9	126	.1	6	26	798	5.69	34	5	ND	1	133	.4	6	2	42	3.48	.065	4	16	1.54	74	.01	2	2.30	.01	.26	1	5	130
M036	1	8	3	93	.1	4	26	1303	6.24	22	5	ND	1	221	.3	2	2	74	5.07	.061	2	26	2.31	55	.01	2	2.81	.02	.23	1	3	55
M037	1	9	3	71	.3	7	29	1369	4.17	42	5	ND	1	107	.2	6	2	34	3.19	.044	2	18	1.84	66	.01	2	1.30	.01	.29	1	22	95
M038	1	11	5	100	.4	8	32	1840	6.90	35	5	ND	1	102	.2	4	2	74	4.00	.049	2	21	3.39	63	.01	2	2.71	.01	.24	1	4	90
M039	1	6	5	99	.2	5	29	1381	6.11	33	5	ND	1	88	.2	2	2	61	3.01	.066	2	26	2.79	62	.01	2	2.75	.01	.29	1	2	50
M040	1	17	7	112	.1	10	43	1309	7.94	71	5	ND	1	96	.2	10	2	54	3.38	.058	2	25	2.49	48	.01	5	1.95	.01	.28	1	48	80
M041	1	8	12	84	.8	7	32	2037	7.97	21	5	ND	1	94	.4	2	2	90	3.97	.060	2	30	3.26	53	.01	3	2.89	.01	.24	1	24	60
M042	1	6	3	91	.2	6	30	1520	6.83	40	5	ND	1	73	.2	2	2	75	2.66	.073	3	30	3.14	47	.01	4	3.15	.01	.32	1	27	40
M043	2	16	11	381	1.4	7	26	1695	7.32	14	5	ND	1	71	2.3	5	2	65	2.95	.059	2	29	2.62	40	.01	3	2.20	.01	.23	1	142	195
M044	1	17	19	80	2.0	8	37	1777	10.96	78	5	ND	1	65	.2	10	2	96	2.79	.046	2	24	2.60	41	.01	3	2.45	.01	.19	1	3	75
M045	1	8	17	29	.9	5	13	541	2.79	19	5	ND	1	29	.2	3	2	31	.60	.027	3	13	.67	47	.01	2	.79	.01	.22	1	27	30
M046	1	13	31	75	.8	7	19	524	6.00	41	5	ND	1	16	.3	2	2	74	.31	.029	2	33	1.42	39	.01	2	1.76	.01	.15	1	18	60
M047	2	15	100	321	1.3	7	16	870	5.92	75	5	ND	1	43	.6	3	2	59	.79	.037	2	18	1.36	30	.01	2	1.41	.01	.13	1	22	310
M048	3	15	148	321	.9	4	12	792	5.40	31	5	ND	1	33	.2	2	2	45	.64	.078	5	15	1.42	46	.01	3	2.01	.01	.22	1	76	165
M049	2	32	10	122	.9	2	6	1382	9.65	57	5	ND	1	37	.2	2	2	48	.71	.083	4	18	2.14	52	.01	3	3.00	.01	.18	1	23	70
M050	1	28	15	133	.8	3	6	1033	8.42	26	5	ND	1	19	.2	2	2	37	.36	.094	7	11	1.50	64	.01	2	2.21	.01	.20	1	22	85
RE M046	1	14	21	74	.8	6	18	522	6.01	36	5	ND	1	16	.2	2	2	73	.30	.029	2	33	1.41	41	.01	4	1.76	.01	.16	1	16	55
M051	1	15	25	189	.4	2	9	1668	11.29	30	5	ND	1	22	.2	2	2	59	.40	.115	7	11	2.47	52	.02	3	4.30	.01	.16	1	124	90
M052	1	18	13	246	.4	1	6	1336	9.42	2	5	ND	1	24	.3	2	2	74	.42	.149	7	14	1.99	68	.02	2	3.18	.01	.21	1	210	200
M053	1	84	6	158	1.8	3	6	973	9.14	2	5	ND	1	18	.3	2	2	69	.32	.132	7	13	1.69	64	.01	4	2.61	.01	.22	1	7	135
M054	1	32	12	76	.8	2	6	1047	8.45	3	5	ND	1	36	.2	2	2	60	.58	.124	6	10	1.58	77	.01	4	2.09	.01	.20	1	8	50
M055	1	24	9	127	.7	3	9	1018	7.65	358	5	ND	1	49	.2	2	2	49	.66	.110	6	17	1.40	62	.01	2	1.83	.01	.19	1	14	270
M056	1	27	20	92	.7	3	10	973	7.23	593	5	ND	1	29	.2	2	2	52	.46	.103	7	11	1.82	66	.01	3	2.30	.01	.21	1	5	150
M057	1	18	14	82	.4	4	6	983	5.03	23	5	ND	1	41	.2	2	2	48	.62	.118	8	10	1.63	64	.01	2	1.89	.01	.19	1	3	375
M058	1	13	11	90	.6	2	7	2096	7.96	9	5	ND	1	43	.2	2	2	48	1.17	.102	4	16	2.76	42	.01	2	3.01	.01	.14	1	14	60
M059	1	8	5	76	.3	6	30	1141	6.85	30	5	ND	1	70	.2	2	2	66	2.15	.070	3	28	2.71	40	.01	2	2.81	.01	.28	1	23	90
M060	1	23	41	125	3.0	4	26	1710	10.27	155	5	ND	1	24	.2	2	2	83	.52	.168	5	11	2.93	55	.02	4	3.86	.01	.21	1	280	70
M061	1	52	34	81	1.5	13	70	1568	7.76	71	5	ND	1	25	.2	3	2	79	.55	.176	7	15	2.19	56	.01	4	2.85	.01	.21	1	85	60
M062	1	82	24	135	2.1	9	55	1637	11.17	49	5	ND	1	21	.3	4	2	80	.34	.140	6	12	2.72	48	.02	3	4.09	.01	.17	1	74	125
M063	1	7	17	141	.4	2	13	1357	7.86	6	5	ND	1	19	.2	2	2	66	.35	.151	7	10	2.14	65	.02	5	3.16	.01	.20	1	57	110
M064	1	10	5	99	.3	2	5	1084	8.93	37	5	ND	1	17	.2	2	2	73	.32	.139	7	15	1.51	68	.01	4	2.26	.01	.21	1	32	170
M065	1	18	7	166	.5	2	4	1119	8.58	255	5	ND	1	18	.3	2	2	67	.33	.124	8	11	1.60	53	.01	2	2.20	.01	.20	1	4	80
M066	1	19	11	64	.4	2	7	1049	6.75	23	5	ND	1	25	.2	2	2	60	.38	.117	7	9	1.53	57	.01	2	2.06	.01	.21	1	2	45
M067	1	29	7	53	.4	2	5	807	6.90	70	5	ND	1	26	.2	2	2	56	.42	.116	7	16	1.29	53	.01	2	1.77	.01	.21	1	90	50
STANDARD C/AU-R	18	60	43	134	6.9	70	32	1055	3.99	37	17	8	36	52	19.0	15	19	58	.49	.090	37	59	.89	179	.09	36	1.92	.06	.15	13	450	1400

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

SAMPLE# J91-24.	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
M068	3	31	17	59	.9	2	8	776	6.68	64	5	ND	1	23	.2	2	2	47	.41	.110	6	5	1.34	49	.01	2	1.69	.01	.19	1	73	95
M069	3	19	18	61	1.2	3	7	740	9.53	37	5	ND	1	28	.2	2	2	33	.41	.094	6	5	1.06	48	.01	2	1.41	.01	.18	1	64	120
M070	3	12	18	98	.9	2	9	1324	8.90	17	5	ND	1	26	.2	2	2	48	.43	.097	5	9	1.91	54	.01	2	2.46	.01	.19	1	121	110
M071	4	26	21	69	.8	4	8	994	8.01	81	5	ND	1	26	.2	2	2	55	.48	.119	6	4	1.88	58	.01	2	2.23	.01	.21	1	177	180
M072	3	38	13	41	.9	2	6	1082	6.71	80	5	ND	1	23	.2	2	3	57	.45	.110	8	4	2.05	61	.01	2	2.29	.01	.19	1	200	200
M073	2	20	14	80	.6	3	7	1283	7.58	22	5	ND	1	23	.2	2	2	66	.40	.111	8	10	1.93	71	.01	2	2.55	.01	.21	1	172	80
M074	3	28	17	39	.8	3	7	1150	6.97	80	5	ND	1	23	.3	2	2	67	.43	.118	9	5	1.79	69	.01	2	2.13	.01	.22	1	55	230
M075	4	41	16	45	.9	3	8	1324	7.26	65	5	ND	1	21	.2	4	2	62	.57	.113	9	4	1.82	58	.01	2	2.09	.01	.19	1	70	295
M076	2	9	11	88	5.5	1	7	1049	7.39	20	5	2	1	17	.2	2	2	68	.30	.111	9	9	1.54	65	.02	2	2.21	.01	.20	1	510	305
M077	2	7	9	86	.4	3	6	1107	7.76	18	5	ND	1	19	.2	2	3	71	.35	.121	10	4	1.51	77	.02	2	2.26	.01	.24	1	90	45
M078	2	25	13	81	.7	2	9	1564	8.23	38	5	ND	1	24	.2	2	2	59	.49	.098	6	10	2.25	60	.02	2	2.77	.01	.16	1	64	110
M079	3	28	11	47	.5	1	6	1690	6.49	141	5	ND	1	40	.2	2	3	50	1.02	.101	6	2	2.75	58	.01	2	2.61	.01	.19	1	210	170
M080	3	30	21	49	1.2	2	8	1448	6.71	130	5	ND	2	30	.2	2	2	51	.73	.104	5	4	3.33	51	.01	2	2.81	.01	.15	1	220	175
M081	4	402	14	58	2.7	1	7	1542	7.02	102	5	ND	1	40	.2	2	2	68	.74	.110	6	9	3.42	52	.02	2	3.11	.01	.16	1	124	195
M082	2	35	13	57	.8	2	7	1092	7.29	44	5	ND	1	17	.2	2	2	74	.31	.114	8	3	1.92	67	.01	2	2.33	.01	.20	1	210	40
M083	2	19	10	65	.7	2	7	1242	7.69	28	5	ND	1	17	.2	2	2	74	.27	.107	8	3	2.00	71	.02	2	2.63	.01	.21	1	250	20
M084	3	26	19	66	1.3	2	9	1044	7.90	108	5	ND	1	18	.2	2	2	62	.29	.113	8	10	1.60	71	.01	2	2.14	.01	.21	1	200	110
M085	2	27	21	118	1.4	2	10	1157	8.15	125	5	ND	1	23	.2	2	2	60	.32	.120	6	2	1.56	75	.01	2	2.27	.01	.23	1	330	70
M086	1	26	23	89	1.2	4	9	1161	7.99	113	5	ND	1	21	.2	2	4	60	.33	.126	6	3	1.61	65	.01	2	2.26	.01	.22	1	780	40
M087	1	31	17	57	1.4	3	9	1200	8.37	107	5	ND	1	22	.2	2	2	59	.34	.140	6	6	1.94	62	.01	2	2.62	.01	.21	1	530	25
M088	1	41	45	68	1.7	2	11	1804	10.94	211	5	ND	1	28	.2	2	3	68	.27	.094	3	2	3.23	35	.01	2	3.59	.01	.12	1	810	140
M089	4	177	623	270	6.7	1	13	1825	13.79	257	5	ND	1	34	.2	2	7	86	.36	.091	2	3	3.81	22	.01	2	3.98	.01	.07	1	840	330
M090	9	1290	259	351	20.6	3	11	1212	16.76	637	5	ND	1	34	.2	104	5	30	.94	.079	2	12	1.68	25	.01	2	1.41	.01	.12	1	1020	12000
M091	3	141	51	87	8.9	2	9	765	9.78	353	5	ND	1	40	.2	37	2	36	.91	.100	4	3	.43	30	.01	2	.52	.01	.15	1	230	940
M092	2	65	37	55	3.0	4	7	829	8.11	236	5	ND	1	34	.2	7	2	50	.66	.120	5	4	.88	40	.01	2	1.05	.01	.15	1	220	195
M093	3	36	20	71	1.9	2	8	1630	8.96	207	5	ND	1	24	.2	2	4	71	.66	.125	5	7	1.74	54	.02	2	2.03	.01	.21	1	200	80
M094	7	50	18	82	2.9	4	11	1790	12.78	199	5	ND	1	26	.2	2	2	95	.46	.130	5	1	3.04	53	.03	2	3.62	.01	.18	1	240	90
M095	5	74	18	80	2.3	1	8	1550	9.08	221	5	ND	1	32	.2	2	2	68	.51	.133	5	3	1.67	64	.01	2	2.02	.01	.19	1	230	130
M096	4	70	20	61	1.8	2	7	1594	7.62	119	5	ND	1	56	.2	2	2	60	.80	.117	5	9	1.40	65	.01	2	1.76	.01	.19	1	250	70
M097	2	41	36	71	2.5	2	8	3057	8.72	86	5	ND	1	290	.2	2	4	56	3.17	.092	3	1	1.36	57	.01	2	1.80	.01	.17	1	440	115
RE M093	3	39	24	76	2.2	4	9	1726	10.04	225	5	ND	1	27	.2	2	2	76	.71	.131	5	9	1.84	57	.02	2	2.15	.01	.22	1	220	85
M098	2	26	21	129	1.8	3	10	1707	7.84	64	5	ND	1	59	.2	2	3	71	.82	.171	5	3	1.82	94	.01	2	2.49	.01	.23	1	240	105
M099	3	31	16	108	2.3	2	11	1811	8.43	93	5	ND	1	41	.2	2	2	72	.61	.157	6	5	2.28	100	.02	2	2.91	.01	.23	1	250	100
M100	1	10	17	73	1.1	1	10	2367	8.59	58	5	ND	1	95	.2	2	2	63	1.01	.100	4	2	2.29	65	.01	2	2.76	.01	.18	1	200	110
M101	2	12	23	102	1.8	1	11	2225	9.01	43	5	ND	1	25	.2	2	2	65	.49	.096	4	2	2.53	61	.01	2	3.05	.01	.18	1	210	140
M102	6	50	36	120	3.2	2	9	1124	10.20	257	5	ND	1	26	.2	2	2	50	.42	.106	4	9	1.26	57	.01	2	1.63	.01	.19	1	200	175
M103	4	37	29	65	3.1	1	11	1739	9.78	156	5	ND	1	81	.3	2	2	49	1.19	.107	4	2	1.34	52	.01	2	1.73	.01	.18	1	220	125
STANDARD C/AU-R	18	56	37	132	7.5	70	33	1037	3.98	39	18	6	36	52	17.6	15	19	56	.49	.091	36	59	.89	180	.09	34	1.86	.06	.15	12	480	1700

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
J91-24																																
M104	4	26	27	71	2.6	1	8	2015	8.64	179	5	ND	1	99	.2	4	2	48	1.72	.107	5	4	1.21	43	.01	2	1.35	.01	.13	1	103	155
M105	2	29	25	65	2.2	1	10	2067	8.50	189	5	ND	1	58	.2	2	2	43	1.09	.091	3	8	1.68	38	.01	2	1.81	.01	.13	1	450	120
M106	4	50	33	58	2.5	2	10	1514	7.32	157	5	ND	1	70	.2	6	2	37	1.07	.088	3	3	1.01	36	.01	2	1.09	.01	.10	1	150	105
M107	2	101	40	60	6.2	4	11	946	10.99	344	5	ND	1	77	.2	17	2	14	1.12	.071	3	6	.23	21	.01	2	.43	.01	.14	1	270	260
M108	4	37	34	26	3.1	2	7	3229	6.14	212	5	ND	1	264	.2	10	2	12	4.13	.086	3	11	.11	42	.01	2	.19	.01	.10	1	170	275
M109	3	16	20	47	1.6	8	13	1389	5.93	163	5	ND	1	145	.2	10	2	28	1.67	.106	4	6	.67	26	.01	2	1.47	.02	.29	1	140	245
M110	1	8	7	119	.1	10	22	1485	5.23	19	5	ND	1	152	.2	2	2	94	1.34	.411	10	12	1.66	164	.01	2	2.84	.02	.39	1	9	35
M111	1	6	4	118	.4	12	26	1661	5.84	21	5	ND	1	211	.2	2	2	53	1.37	.267	10	11	1.83	184	.01	2	3.10	.02	.39	1	15	30
M112	1	11	7	119	.2	13	25	1398	6.07	20	5	ND	1	131	.2	2	2	48	.78	.121	8	13	1.74	171	.01	2	2.94	.02	.34	1	23	20
M113	1	7	8	102	.2	13	22	1160	5.72	16	5	ND	1	129	.2	2	2	46	.80	.208	13	12	1.63	185	.01	2	2.96	.02	.38	1	4	15
M114	1	136	7	112	.5	15	26	1221	6.50	19	5	ND	1	93	.2	2	2	56	.66	.173	11	14	1.91	176	.01	2	3.31	.02	.37	1	6	30
M115	1	540	3	107	1.7	9	23	1220	5.05	21	5	ND	2	130	.2	2	2	48	1.09	.217	15	9	1.70	154	.01	3	2.61	.02	.33	1	3	40
M116	1	300	6	110	1.2	12	29	1356	5.38	29	5	ND	1	107	.2	2	2	51	.74	.106	10	11	1.73	177	.01	2	2.74	.01	.35	1	3	40
M117	1	191	12	108	.7	13	26	1343	5.79	26	5	ND	1	78	.2	2	2	49	.55	.123	9	14	1.99	169	.01	5	3.00	.02	.36	1	10	35
M118	3	55	25	87	1.3	14	24	1353	6.04	38	5	ND	1	65	.2	5	2	72	.57	.117	6	18	2.38	104	.03	2	2.91	.01	.20	1	30	55
M119	2	63	101	197	1.7	12	17	1973	5.35	78	5	ND	1	71	.4	5	2	82	.96	.054	3	30	2.49	62	.01	2	2.44	.01	.15	1	50	150
M120	4	86	59	244	1.6	9	16	1436	7.40	131	5	ND	1	34	.4	3	2	72	.56	.099	5	17	1.45	63	.01	3	1.71	.01	.15	1	49	175
M121	7	36	54	247	1.7	3	12	668	8.45	272	5	ND	1	23	.2	4	2	51	.46	.133	9	3	.65	31	.01	2	.90	.01	.15	1	140	170
M122	6	27	67	304	1.7	3	13	960	7.55	49	5	ND	1	28	.2	4	2	63	.51	.129	9	4	1.08	64	.02	2	1.42	.01	.14	1	170	215
M123	7	18	62	253	2.3	1	12	2624	7.19	85	5	ND	1	79	.2	3	2	64	1.97	.122	8	5	1.94	68	.03	2	2.12	.01	.14	1	180	200
M124	7	31	76	231	3.1	2	10	1595	7.77	263	5	ND	1	60	.2	7	2	51	1.40	.122	7	2	1.35	52	.01	2	1.40	.01	.12	1	160	205
M125	3	21	28	131	1.8	2	12	2947	6.68	45	5	ND	1	148	.2	2	2	57	3.20	.119	7	3	1.70	66	.01	2	2.02	.01	.14	1	190	165
M126	3	18	26	160	1.6	2	11	1945	7.53	39	5	ND	1	86	.2	2	2	61	1.77	.112	6	7	1.25	64	.01	2	1.59	.01	.12	1	330	160
M127	11	26	98	464	2.9	2	11	1678	7.87	145	5	ND	1	40	.5	2	2	66	.89	.123	7	3	1.39	78	.02	4	1.70	.01	.16	1	200	300
M128	2	17	30	146	2.1	1	8	3379	7.63	117	5	ND	1	135	.2	2	2	56	3.26	.113	6	3	1.52	64	.01	2	1.60	.01	.14	1	210	150
M129	4	29	38	146	2.8	1	10	4275	9.44	171	5	ND	1	154	.2	5	2	42	4.37	.094	2	2	1.17	45	.01	2	1.29	.01	.11	1	160	315
M130	3	20	35	157	2.1	1	8	3045	7.27	42	5	ND	1	135	.2	2	2	48	3.32	.121	6	5	1.58	62	.01	2	1.68	.01	.14	1	170	220
M131	2	53	55	272	2.5	2	9	1633	7.79	172	5	ND	1	64	.2	2	2	44	1.32	.124	6	3	1.24	52	.01	2	1.32	.01	.13	1	240	240
M132	5	71	78	348	2.6	1	10	1205	8.54	184	5	ND	1	36	.3	2	2	52	.65	.126	6	2	1.39	53	.01	2	1.51	.01	.14	1	140	255
M133	3	33	47	109	1.7	1	9	1579	8.31	184	5	ND	1	85	.2	2	2	52	1.07	.130	6	9	1.51	53	.01	2	1.61	.01	.14	1	160	140
RE M129	4	31	39	153	3.0	1	11	4530	10.04	174	5	ND	1	122	.2	5	2	44	3.79	.101	2	2	1.24	46	.01	2	1.40	.01	.11	1	180	355
M134	6	88	1012	2029	6.7	2	11	2241	7.70	237	5	ND	1	56	5.4	2	2	53	2.49	.113	5	2	2.60	54	.01	2	1.86	.01	.11	1	260	1750
M135	2	41	57	212	2.1	1	9	1648	7.57	160	5	ND	1	58	.2	2	2	59	1.50	.124	6	1	1.78	64	.01	2	1.85	.01	.13	1	210	220
M136	2	46	37	193	2.1	2	12	1450	8.25	232	5	ND	1	33	.2	2	2	63	.83	.141	5	7	1.73	64	.01	2	1.96	.01	.16	1	300	240
M137	8	214	511	579	7.4	3	9	1419	7.87	215	5	ND	1	34	.7	2	2	65	.81	.120	6	3	1.71	60	.01	2	1.90	.01	.12	1	230	280
M138	11	27	39	151	1.8	1	14	2380	9.03	308	5	ND	1	56	.2	2	2	66	2.04	.114	6	1	2.15	65	.01	3	1.97	.01	.14	1	270	110
M139	4	12	24	146	1.6	2	8	1377	7.47	105	5	ND	1	52	.2	2	2	65	1.14	.118	6	7	1.51	72	.01	3	1.93	.01	.15	1	160	95
STANDARD C/AU-R	19	58	42	133	7.5	72	32	1054	4.00	38	15	7	39	52	18.4	15	19	55	.49	.090	38	59	.90	177	.09	32	1.89	.06	.15	11	520	1400

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

SAMPLE# J91-24	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
M140	1	17	25	104	.7	1	6	1968	8.68	50	5	ND	1	64	.4	2	2	69	1.84	.127	5	10	1.33	64	.01	4	2.02	.01	.13	1	86	75
M141	1	21	14	160	.7	1	8	1624	9.55	20	5	ND	1	30	.2	2	2	79	.62	.159	6	9	1.54	62	.01	7	2.44	.01	.13	1	63	100
M142	1	23	11	160	.5	1	8	2603	8.22	2	5	ND	1	96	.2	2	2	77	2.12	.156	7	15	1.37	63	.02	4	2.14	.01	.10	1	54	100
M143	1	14	20	172	.7	2	10	2306	8.64	55	5	ND	1	58	.5	2	2	80	1.56	.145	5	14	2.13	58	.02	10	2.96	.01	.07	1	106	100
M144	1	21	18	151	.2	7	18	1608	8.00	16	5	ND	1	51	.2	2	2	70	.88	.136	4	24	2.71	98	.01	11	4.26	.01	.18	1	13	40
M145	1	40	13	90	.5	15	28	2303	6.33	19	5	ND	1	185	.2	3	2	113	3.52	.102	4	43	2.21	95	.01	10	3.28	.01	.14	1	22	20
M146	1	35	14	78	.2	15	25	2372	5.06	20	5	ND	1	152	.2	2	2	101	3.55	.076	3	38	2.32	89	.01	7	2.89	.01	.13	1	14	25
M147	1	50	9	98	.3	14	27	2152	6.82	7	5	ND	1	163	.2	2	2	121	3.98	.107	3	37	3.36	102	.01	9	4.12	.01	.12	1	8	35
M148	1	133	17	105	.1	16	29	2535	6.14	15	5	ND	1	201	.2	2	2	84	4.08	.148	4	35	2.27	164	.01	8	3.40	.01	.18	1	3	40
M149	1	19	16	142	.1	3	16	1655	6.97	2	5	ND	1	140	.7	2	2	83	3.52	.292	6	11	1.33	138	.06	7	3.03	.01	.15	1	1	100
M150	1	9	15	157	.1	3	17	2040	7.21	3	5	ND	1	158	.2	2	2	82	5.44	.302	6	9	1.31	230	.06	9	3.12	.01	.13	1	5	115
M151	1	6	13	172	.1	2	15	2093	7.42	2	5	ND	1	169	.2	2	2	83	5.26	.274	5	11	1.25	132	.10	10	3.07	.01	.11	1	2	135
M152	1	4	15	158	.1	3	13	2017	7.35	2	5	ND	1	172	.6	2	2	90	5.20	.314	8	10	1.26	129	.09	10	3.10	.01	.14	1	6	135
M153	1	8	14	130	.1	2	14	1992	6.86	2	5	ND	1	135	.2	2	2	85	4.66	.290	7	9	1.31	136	.08	7	2.98	.01	.14	1	3	155
M154	1	11	12	173	.2	1	8	2124	8.55	2	5	ND	1	158	.5	2	2	41	4.21	.149	4	9	1.38	80	.06	6	3.40	.01	.28	1	1	150
M155	1	11	15	160	.3	2	8	2619	8.40	2	5	ND	1	173	.7	2	2	40	4.71	.117	4	7	1.46	82	.05	6	3.10	.01	.25	1	11	175
M156	1	12	10	148	.3	3	13	2394	7.18	9	5	ND	1	160	.7	2	2	48	4.25	.252	4	7	1.60	103	.02	4	3.12	.01	.35	1	6	120
M157	1	22	14	153	.3	2	16	1523	8.25	329	5	ND	1	150	.5	2	2	55	3.82	.328	7	7	1.26	129	.02	7	3.09	.02	.29	1	34	75
M158	1	91	14	110	.4	22	13	799	4.91	45	5	ND	1	243	.3	6	2	23	6.63	.121	3	16	1.16	106	.01	3	1.84	.01	.23	1	9	85
M159	1	69	19	121	.3	16	13	919	5.41	12	5	ND	1	173	.2	2	2	32	4.89	.149	4	14	1.15	99	.02	3	2.00	.01	.22	1	6	125
M160	1	79	9	108	.2	21	13	623	4.56	11	5	ND	1	218	.2	2	2	24	7.03	.111	4	17	1.20	84	.01	5	1.87	.01	.18	1	6	85
M161	1	84	16	121	.2	22	14	629	4.88	3	5	ND	1	181	.2	2	2	31	5.80	.130	6	20	1.38	79	.01	4	2.34	.01	.17	1	2	50
RE M157	1	23	13	153	.2	3	17	1457	8.24	324	5	ND	1	150	.5	2	2	55	3.80	.325	8	7	1.26	133	.02	3	3.10	.02	.33	1	29	65
M162	1	110	20	127	.3	28	18	592	5.75	16	5	ND	1	159	.2	2	2	37	4.57	.147	6	22	1.20	97	.01	5	2.11	.01	.21	1	1	145
M163	1	121	18	124	.4	34	19	812	5.65	4	5	ND	1	199	.3	2	2	45	6.20	.137	5	25	1.36	82	.01	5	2.26	.01	.14	1	5	165
M164	1	134	20	117	.4	36	17	732	5.31	3	5	ND	1	183	.2	2	2	40	5.47	.125	6	22	1.32	86	.01	3	2.17	.01	.15	1	2	150
M165	1	117	18	121	.3	39	19	605	5.57	3	5	ND	1	142	.3	3	2	39	3.78	.128	7	25	1.51	91	.01	4	2.47	.01	.16	1	3	140
M166	1	124	26	114	.4	33	18	664	5.40	21	5	ND	1	217	.2	2	2	32	5.90	.128	10	18	1.21	85	.01	5	2.03	.01	.17	1	2	220
M167	1	110	19	92	.3	28	19	669	6.24	10	5	ND	1	274	.2	6	2	42	5.48	.120	10	20	1.49	78	.01	2	2.35	.02	.18	1	6	140
M168	1	108	17	97	.1	42	17	594	5.52	4	5	ND	1	200	.2	2	2	44	3.57	.125	5	26	1.50	86	.01	3	2.45	.01	.14	1	7	100
M169	1	81	29	128	.4	26	17	658	6.33	5	5	ND	1	271	.2	2	2	33	4.52	.147	6	27	1.37	87	.01	4	2.50	.01	.15	1	1	135
M170	2	66	10	705	.1	7	9	462	4.44	2	5	ND	1	178	1.6	2	2	11	2.59	.070	9	9	.84	93	.01	4	1.70	.01	.19	1	1	110
M171	2	29	2	84	.1	2	2	226	1.89	2	5	ND	1	70	.6	2	2	2	.94	.006	14	5	.43	81	.01	3	.79	.01	.18	1	1	25
M172	2	21	4	56	.1	3	3	326	1.75	2	5	ND	1	165	.7	2	2	2	2.18	.007	8	13	.40	76	.01	2	.72	.01	.15	1	1	15
M173	1	85	24	126	.4	28	16	621	5.64	5	5	ND	1	272	.2	2	2	40	5.92	.130	5	30	1.27	81	.01	6	2.40	.01	.13	2	2	195
M174	1	88	19	119	.3	26	14	588	5.47	4	5	ND	1	266	.2	2	2	38	6.50	.126	5	26	1.21	82	.01	4	2.21	.01	.13	1	1	200
M175	1	96	22	117	.3	24	16	680	5.84	2	5	ND	1	282	.2	2	2	37	6.33	.124	6	30	1.25	78	.01	5	2.31	.01	.13	1	3	125
M176	2	101	14	119	.3	22	17	569	5.17	13	5	ND	1	295	.2	2	2	33	5.33	.122	4	20	1.36	73	.01	2	2.08	.02	.14	1	3	145
M177	2	120	14	105	.4	22	16	754	4.84	10	5	ND	2	377	.2	2	2	30	7.49	.113	6	17	1.04	68	.01	2	1.77	.02	.14	1	4	125
M178	2	121	18	129	.2	27	17	607	5.28	11	5	ND	1	316	.2	2	2	33	5.55	.121	5	24	1.33	75	.01	2	1.99	.02	.15	1	1	150

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

UNUK RIVER PROJECT (134)

HOLE No. J91-25

COUL 3 CLAIM

PURPOSE

TO TEST DOWN DIP EXTENSION OF MINERALIZATION INTERSECTED IN HOLE 10 ('750 ZONE').

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
JEFF GRID 0+75E, 7+51N	455	270	134.11 m
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-81°	57.91m -77° 134.11m -77°	131.11 m	28.20 m
LOGGED BY / DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED / DATE COMPLETED**
G. ALLEN OCT. 18, 19	J.T. THOMAS	BQ.	OCT. 18/91 OCT. 19

SUMMARY LOG

0-7.62	CASING
7.62-8.63	OVERBURDEN
8.63-68.65	INTERMEDIATE (TO FELSIC ?) FINE-GRAINED TUFF AND LAPILLI TUFF
68.65-74.18	ARGILLITE, SILTSTONE
74.18-87.13	INTERMEDIATE TO FELSIC AMYGDALOIDAL LAPILLI TUFF TO TUFF BRECCIA, STRINGER ZONE
87.13-111.97	INTERMEDIATE TO FELSIC COARSE-GRAINED TUFF TO LAPILL TUFF
111.97-113.95	ARGILLITE
113.95-116.9	INTERMEDIATE FINE TO MEDIUM-GRAINED TUFF
116.9-118.28	ARGILLITE, SILTSTONE
118.28-119.0	INTERMEDIATE COARSE-GRAINED TUFF
119.0-125.60	ARGILLITE, SILTSTONE
125.60-127.7	MEDIUM-GRAINED ARGILLACEOUS SANDSTONE
127.7-134.11	INTERBEDDED SILTSTONE, ARGILLITE AND MINOR SANDSTONE
	134.11 E.O.H.

SIGNIFICANT MINERALIZED INTERVALS

68.65-74.18 - < 1% RED-BROWN SPHALERITE AND GALENA IN QUARTZ-CARBONATE STRINGERS IN ARGILLITE. PROBABLY CORRELATIVE WITH GOLD-BEARING ARGILLITE IN J91-10.

74.18-111.97 - SPORADIC 3-7% STRINGER-RELATED PYRITE IN SILICIFIED VOLCANICLASTIC ROCK.

74.18-94.5 - < 1% EACH OF SPHALERITE AND GALENA.

94.5-111.97 TRACES GALENA AND SPHALERITE

* 96.1 TRACES CINNABAR

THIS INTERVAL PROBABLY CORRELATIVE WITH MINERALIZED ZONE IN

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-25

INTERVAL	C. LOSS	LITHOLOGY
0-7.62		CASING No recovery
7.62-8.63		OVERBURDEN Polylithic rubble
8.63-68.66		INTERMEDIATE (TO FELSIC?) FINE-GRAINED TUFF AND LAPILLI TUFF Medium bluish-grey fine-grained massive to poorly bedded to weakly phyllitic soft (sericitic?) tuff with some (ca.) coarse-grained multilithic fragmental intervals to 1.5m. Fragments are fine-grained medium blue-grey material similar to the fine-grained tuff and may in fact be debris flows or brecciated fine-grained tuffs. 8.63-9.68 - 40% white quartz-carbonate veins and breccia filling. Veins at 80° CA. Barren. 9.68-10.68 - Possibly a tuff breccia with a few light grey aphanitic volcanic fragments to 8cm. Rarely fragments have fine or small amygdules to 1mm. No amygdaloidal fragments apparent in rest of interval.

Graphic log columns (C∠, L, S, M, A):

- L: CASING (0-7.62); overburden rubble symbol (7.62-8.63); 2A(t),D (from 8.63)
- C∠: S_1/S_0; S_1=0; S_1=40, S_0=0; S_1=40; S_1=40
- M: QC v'ns, 2-3% PY; 10% PY; 2-3% PY; 2% PY; 3-5% PY; 1-2% PY; 3-4% PY; 1% PY

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-25

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
8.63 - 9.68 - 40% white quartz - carbonate veins and breccia. Veins barren	S-209	8.63	9.68	1.05	1	0.1	26	2		
2-3% fracture - filling pyrite in host.	S-210	9.68	10.68	1.0	2	0.7	271	5		
	S-211	10.68	11.75	1.07	1	0.1	37	2		
9.68 - 10.68 - 10% pyrite in irregular masses and foliation parallel bands.	S-212	11.75	12.19	0.44	1	0.5	61	2		
10.68 - 11.75 - 2-3% pyrite in discontinuous foliation - parallel bands to 1 mm wide.	S-213	12.19	13.38	1.19	3	0.1	40	2		
	S-214	13.38	14.90	1.52	2	0.1	6	2		
11.75 - 12.19 - 8% pyrite. As above. Bands to 3 mm.	S-215	14.90	16.40	1.50	2	0.1	21	2		
12.19 - 13.38 - 3-5% pyrite. Pyrite as above and in fracture filling.	S-216	16.40	17.70	1.30	1	0.1	28	2		
	S-217	17.70	19.02	1.32	1	0.1	2	2		
13.38 - 16.40 - 1-2% pyrite Disseminated, along fractures and bands.	S-218	19.02	20.46	1.44	1	0.1	8	2		
16.40 - 17.7 - 3-4% pyrite. "										
17.70 - 22.67 - 1% pyrite. "										

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-25

INTERVAL	C. LOSS	LITHOLOGY	∠C	L	S	M	A
				2A(b,f), D		1% PY	
						4% PY	
						<1% PY	
			5.5°/50				
			50°/45				
			50/40				
			51/40				
						1-2% PY	

20

25

30

35

40

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

391-25

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
	S-219	20.46	21.52	1.06	2	0.1	3	2
	S-220	21.52	22.67	1.15	2	0.1	2	2
22.67 - 23.48 - 4% pyrite in irregular masses to 1 cm x 5mm in wk chlorite, carbonate flooded breccia.	S221	22.67	23.48	0.81	2	0.1	19	2
	S-222	23.48	24.90	1.42	1	0.1	4	2
23.48 - 38.15 <1% disseminated, fracture filling and bands of pyrite.	S-223	24.90	26.37	1.47	1	0.1	5	2
	S-224	26.37	27.82	1.45	1	0.1	5	2
	S-225	27.82	29.36	1.54	1	0.1	2	2
	S-226	29.36	30.82	1.46	1	0.1	2	2
	S-227	30.82	32.38	1.56	1	0.1	6	2
	S-228	32.38	33.70	1.32	1	0.1	2	2
	S-229	33.70	35.18	1.48	1	0.1	5	2
	S-230	35.18	36.58	1.40	3	0.1	3	2
	S-231	36.58	37.33	0.75	1	0.1	2	2
	S-232	37.33	38.15	0.82	2	0.1	3	2
	S-233	38.15	39.62	1.47	1	0.1	24	2
	S-234	39.62	41.10	1.48	1	0.1	25	2
38.15 - 49.55 - 1-2% pyrite as above.								

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No.

J91-25

INTERVAL	C. LOSS	LITHOLOGY	∠C	L	S	M	A	Depth
				2A (b,+), D		r2% PY		40
			S1= 45					
			S1= 35					
								45
			S0= 40					
						2-3% PY		50
			S1= 35					55
		57.91 - 59.97 - Minor blue-grey chalcedony in breccia filling (zone to 20 cm) associated with pyrite and calcite				3-5% PY		
						QCV		
			S1 38			QCV	60% PY	60

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

591-25

MINERALIZATION · ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm	Hg
	S-235	41.10	42.67	1.57	2	0.1			
	S-236	42.67	43.26	0.59	1	0.1			
	S-237	43.26	45.27	2.01	1	0.1			
	S-238	45.27	47.24	1.97	1	0.1			
	S-239	47.24	48.25	1.01	1	0.1			
	S-240	48.25	49.55	1.30	1	0.1			
	S-241	49.55	51.0	1.45	2	0.1			
	S-242	51.0	52.44	1.44	1	0.1			
	S-243	52.44	54.04	1.60	1	0.1			
49.55 - 56.46 - 2-3% pyrite; predom in 1-2mm fractures and breccia fillings. Some foliation - parallel bands may be fractures also.	S-244	54.04	55.50	1.46	1	0.2			
	S-245	55.50	56.46	0.96	1	0.2	63	3	445
	S-246	56.46	57.91	1.45	1	0.2	90	2	540
	S-247	57.91	58.77	0.86	3	0.2	338	19	3250
	S-248	58.77	59.97	1.20	2	0.5	232	10	1650
	S-249	59.97	61.10	1.13	3	0.1	185	6	1100
56.46 - 65.10 - 3-5% pyrite as above.									
59.74 - 59.8 - 4-5cm vein of 60% pyrite banded and in radiating colliform masses.									

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
J91-25

INTERVAL	C. LOSS	LITHOLOGY	STRUCTURE	LITHOLOGY	SILICIFICATION	MINERALIZATION	ALTERATION
		61.5 - 68.17 - Predominantly lapilli tuff. Some fragments to 5 cm. Some fragments amygdaloidal (<1 mm)		2A(bt) D		3-5% PY	
		62.10 - 63.54 - Weakly brecciated interval with minor blue-grey chalcedony flooding.					
		67.06 - 68.17 - Dark grey lapilli tuff with rare blocks sliver of argillite (rip-up clasts?)					
			31/45			5-7% PY	
		68.17 - 68.65 - Brecciated quartz - carbonate vein or stringer zone. Part of adjacent fault.				QC-CB	
68.65 - 74.18		ARGILLITE, SILTSTONE					
		Black massive argillite with minor beds of siltstone to 1 cm. Unit cut by 3-5% 1 mm to 1 cm quartz and minor carbonate stringers predominantly parallel to sub-parallel to bedding. Some cross-cutting stringers and breccia fillings.	30°/44			2-5% PY	
		68.65 - 69.6 - FAULT. Rubble, gouge. Sheared 30° to 60° CA, apparently parallel to foliation.					
		73.15 - 74.18 - Intermixed argillite and intermediate blue-grey tuff.					
	*	This unit probably correlative with electrum-bearing unit in J91-10.					

60 65 70 75 80

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

DD91-25

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm	Hg
	S-250	61.1	62.10	1.0	2.	0.1	313	17	3300
	S-251	62.10	63.20	1.1	1	0.1	363	23	3450
	S-252	63.20	64.01	0.81	3	0.1	852	57	12000
	S-253	64.01	65.10	1.09	3	0.1	364	15	2200
	S-254	65.10	65.84	0.74	2	0.1	790	51	10500
65.10 - 67.06 - 5-7% pyrite in irregular masses to 5 mm in diorite, calcite quartz flooded matrix of lapilli tuff.	S-255	65.84	67.06	1.22	1	0.1	412	24	5700
	S-256	67.06	68.17	1.11	3	0.1	616	39	6250
	S-257	68.17	68.65	0.48	11	0.9	275	16	2450
67.06 - 68.17 - 8% pyrite as above									
	S-258	68.65	69.84	1.19	1380	30.9	280	92	1700
68.17 - 68.65 - 3-4% pyrite in brecciated quartz vein.	S-259	69.84	70.80	0.96	140	11.0	129	42	790
* 68.65 - 74.18 - <1% red-brown sphalerite, and traces of galena and chalcopyrite throughout. Predominantly associated with calcite stringers. Sporadic 2-3% pyrite in masses and stringers to 5 mm generally adjacent to quartz - carbonate stringers.	S-260	70.80	72.90	2.10	420	21.2	313	88	3250
	S-261	72.90	73.80	0.90	1280	42.4	303	100	3450
	S-262	73.80	74.18	0.38	5180	81.6	560	115	4800
	S-263	74.18	75.20	1.02	660	34.7	555	62	1900
	S-264	75.20	76.2	1.00	590	22.3	425	49	1250
74.18 - 94.5 - 4-5% pyrite; predominantly in irregular masses and stringers up to 5 mm most commonly at low core angle but also up to 80°CA commonly along quartz or carbonate veins or stringers up to 2 cm.	S-265	76.2	77.2	1.00	5420	39.1	550	101	8450
	S-266	77.2	78.2	1.0	560	22.6	222	32	1250
	S-267	78.2	79.25	1.05	420	12.8	222	38	1950
* 74.18 - 83.3 - <1% red-brown sphalerite and galena generally associated with pyrite in quartz stringers also with late white carbonate stringers. 81.8 - poorly banded sphalerite with light-coloured ore.	S-268	79.25	80.25	1.0	340	15.5	391	32	3250

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No.
J91-25

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
74.18-87.13		INTERMEDIATE TO FELSIC AMYGDALOIDAL LAPILLI TUFF TO TUFF BRECCIA, STRINGER ZONE Mottled medium to light blue-grey aphanitic massive to amygdaloidal fragments up to 20cm in a coarse-grained tuffaceous groundmass. Some parts along clast margins appear to be hyaloclastite and the unit may be a pillow breccia. The unit is generally silicified and cut by closely spaced (2-3mm to 2cm) <1mm to 3mm hairline quartz stringers in a conjugate set at 30-60° and 60-90° to core axis (XXXX). These fine stringers appear to be related to some of the larger white quartz stringers and crosscut by others. The unit is cut by 5-10% 1mm to 2cm quartz and minor carbonate stringers subparallel to 90° to CA. These quartz stringers commonly truncate pyrite stringers and are a later mineralizing event. Unit characterized by distinct amygdaloidal fragments with quartz amygdules to 1cm.		2-5 Des-Ep. Chl	30cm gouge	QC stringers, Sp, Py, Gl, Sp; 4-5% Py; Trace Sp, Gl, Sp	Si-2; Si-2
87.13-111.97		INTERMEDIATE TO FELSIC COARSE-GRAINED TUFF TO LAPILLI TUFF Mottled light to medium blue-grey coarse-grained to lapilli tuff with monolithic fragments. Fragments are siliceous, aphanitic to fine-grained feldspar phyric, some with indistinct quartz amygdules to 1mm. Appears to have undergone same silicification as unit above, but stringer density down to ≤5%. Fragments range from <1mm to 8cm, average ≤1cm. 94.5-111.64 - Sporadic <1-5% (average 1-2%) blue-grey to black chalcedony in stringers and in breccia matrix. Appears to be an early silicification event. 87.3-87.5 - White fault gouge. Orientation unclear. 87.5-87.7 - Dark grey cherty sediment (?)		2-3 C-Ds		4-7% Py	Hg

Depth scale (right margin): 80, 85, 90, 95, 100

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

J91-25

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm	Hg
80									
	S-269	80.25	81.25	1.0	350	19.4	163	36	2950
	S-270	81.25	82.30	1.05	320	7.7	340	153	3250.
	S-271	82.30	83.30	1.0	150	12.6	149	35	695
83.3-111.97- Traces sphalerite and galena in quartz stringers.	S-272	83.30	84.30	1.0	470	10.7	544	25	400
	S-273	84.30	85.30	1.0	290	15.3	733	45	610
85									
	S-274	85.30	86.30	1.0	250	11.3	469	43	1300
	S-275	86.30	87.10	0.8	135	15.2	214	44	1900
	S-276	87.10	87.70	0.6	440	74.6	231	126	4600
	S-277	87.70	88.70	1.0	310	15.9	352	99	2150
* 89.3- Traces stibnite in white quartz stringer.	S-278	88.70	90.0	1.0	19	8.3	181	28	585
90									
	S-279	90.0	91.0	1.0	490	30.6	760	126	3300
	S-280	91.0	92.0	1.0	240	20.8	305	45	1350
	S-281	92.0	93.0	1.0	270	15.5	915	93	5950
	S-282	93.0	94.0	1.0	106	12.7	505	55	3000
94.5-105.3- 4-7% pyrite as 74.18 to 94.5.	S-283	94.0	95.0	1.0	138	11.4	327	30	1550
95									
	S-284	95.0	95.9	0.9	210	14.6	718	45	475
* 96.1- Weak cinnabar mineralization in blue-grey chalcedony breccia filling.	S-285	96.9	96.3	0.4	240	18.2	270	36	310
	S-286	96.3	97.3	1.0	440	13.7	1745	79	1400
	S-287	97.3	98.3	1.0	320	19.7	1347	80	2650
	S-288	98.3	99.3	1.0	350	15.9	1410	50	1150
100									
	S-289	99.30	100.30	1.0	280	22.1	870	91	2200

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
391-25

INTERVAL	C. LOSS	LITHOLOGY
		105.46 - 105.85 - Dark blue - grey chalcedonic matrix in a breccia. Brecciad fragments rimmed with distinctive 1 mm wide white to light blue - grey chalcedony. Pyrite band to 1 cm could be syngenetic. Pyrite masses to 1 cm in centre of chalcedonic matrix suggesting last stage of open space filling.
		10.8 - 11.2 - Blue - grey chalcedony breccia filling subvuggy and filled with black chalky material. Both cut by pyrite.
		111.63 - 111.97 - argillaceous phyllitic fine - grained light to dark grey tuff.
111.97 - 113.95		ARGILLITE Black to dark blue - grey argillite and minor siltstone.
		112.2 - 113 - FAULT. Pulverized rock, minor gouge. Sheared 30° and 90° CA.
113.95 - 116.9		INTERMEDIATE FINE TO MEDIUM - GRAINED TUFF Medium greenish - grey soft fine - grained to medium - grained tuff with 20% indistinct white grains to 1 mm. Phyllitic.
		116.2 - 116.9 - FAULT - Gouge, pulverized rock. Sheared 45° and subparallel CA.
116.9 - 118.28		ARGILLITE, SILTSTONE Black to dark blue - grey argillite and minor siltstone.
118.20 - 119.0		INTERMEDIATE COARSE - GRAINED TUFF

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

J91-25

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm	Hg.
	290	100.30	101.3	1.0	350	10.0	969	139	5400
	S-291	101.3	102.3	1.0	220	10.0	401	46	295
	S-292	102.3	103.3	1.0	260	11.9	1043	76	2100
	S-293	103.3	104.3	1.0	200	9.4	>635	70	2150
	S-294	104.3	105.3	1.0	210	11.6	684	70	1800
105.3 - 106.68 - 10% pyrite predom. in stringers to 2 cm wide at 30° to 90° to CA associated with and along the selvages of carbonate stringers.	S-295	105.3	106.3	1.0	440	30.0	1385	186	6450
	S-296	106.3	107.3	1.0	240	25.9	1367	208	3650
	S-297	107.3	108.3	1.0	250	11.3	750	70	1550
106.68 - 110.3 - 5-6% pyrite along stringers to 3 mm and as breccia matrix	S-298	108.3	109.3	1.0	210	13.1	656	65	1050
	S-299	109.3	110.3	1.0	320	15.8	968	76	880
7% PY.									
110.3 - 111.3 - Brecciated interval flooded by minor blue-grey banded chalcedony along stringers and fragment selvages and massive to banded botryoidal pyrite masses and stringers to 2 cm wide.	S-300	110.3	111.3	1.0	220	19.5	1263	166	3150
	S-301	111.3	111.97	0.67	31	2.6	107	7	270
	S-302	111.97	112.78	0.81	28	1.9	51	4	120
111.3 - 111.97 - 3-4% pyrite.	S-303	112.78	113.95	1.17	26	0.7	43	2	75
111.97 - 113.95 - 1% pyrite in thin discontinuous bands to 3 mm long.	S-304	113.95	115.82	1.87	220	4.3	583	14	280
	S-305	115.82	116.9	1.08	380	4.4	974	19	190
113.95 - 116.9 - 2-3% fine-grained disseminated pyrite.	S-306	116.9	118.28	1.38	12	0.9	59	2	125
116.9 - 118.28 - Sporadic <1-3% pyrite concentrated in non-argillaceous parts. Concordant foliation-parallel bands.	S-307	118.28	119.0	0.72	90	0.7	352	2	355
	S-308	119.0	120.5	1.50	57	0.8	142	21	150
118.28 - 119.0 - 1-2% disseminated pyrite.									
119.0 - 125.60 - <1% pyrite.									

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

391-25

INTERVAL	C. LOSS	LITHOLOGY	μ	L	S	M	A
19.0–125.60		ARGILLITE, SILTSTONE Black argillite and lt blue-grey siltstone. Poorly shaly laminated.	50/50	75%		<1% py	
125.60–127.7		MEDIUM-GRAINED ARGILLACEOUS SANDSTONE medium to dk grey medium-grained sandstone with blk and white grains to 0.5 mm. Minor blk argillaceous beds near top of unit.	50/17 50/30	75%		Bom	
127.7–134.11		INTERBEDDED SILTSTONE, ARGILLITE AND MINOR SANDSTONE Dark blue-grey siltstone (50%) black argillite (30%) and sandstone. Poorly bedded	50/34 50/50	70%			
					134.11 E.O.H.		

120 125 130 135 140

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

J91-25

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
	S-309	120.5	121.16	0.66	10	0.8				
	S-310	121.16	123.85	2.69	6	0.4				
	S-311	123.85	125.60	1.75	8	0.5				
	S-312	125.60	126.50	0.9	6	0.8				
	S-313	126.50	127.70	1.20	8	0.7				
125.6 - 127.7 - Bonner	S-314	127.7	128.80	1.10	5	0.5				
	S-315	128.8	130.10	1.30	6	10.0	59	27	80	
127.7 - 134.11 - Trace pyrite	S-316	130.10	131.06	0.96	6	12.2	88	39	70	
	S-317	131.06	132.50	1.44	5	0.5				
	S-318	132.5	134.11	1.61	6	0.2				
130.1 - 130.25 - Quartz - carbonate flooded breccia zone. Bonner.			E.O.H.							

Sample J-91-25 26.9 m **Contact: Strongly Sheared Latite/Andesite Flow (Unit 2Gr), Cherty Argillite (Unit 7J/N)**

About 2/3 of the sample is a strongly foliated latite/andesite flow containing equant to lathy plagioclase (35-40%) grains averaging 0.05-0.07 mm in length and lensy patches of opaque (2-3%) averaging 0.1-0.3 mm long in a groundmass of finer grained plagioclase and sericite. Sericite-muscovite (20-30%) is concentrated in lenses up to 1.5 mm across parallel to foliation.

A few lenses up to 1.2 mm long are of extremely fine grained sericite (0.3%).

Ankerite (4-5%) forms slightly to strongly elongated patches averaging 0.7-1.5 mm long.

The other 1/3 of the sample at one end of the section is a cherty argillite contains scattered lensy fragments up to 1.5 mm in size of latite/andesite flow in a moderately foliated groundmass dominated by aphanitic, moderately interlocking plagioclase/quartz. Several lenses up to several mm long are dominated by coarser grained sericite-muscovite. Ankerite forms disseminated grains averaging 0.05-0.07 mm in size and several replacement patches up to 1.5 mm in size. The argillite is replaced by an irregular veinlike zone up to 3 mm wide of extremely fine to very fine grained pyrite with less abundant interstitial quartz, and patches of ankerite. Among pyrite grains, quartz is recrystallized to comb-textured aggregates. A few coarser grains of pyrite up to 0.5 mm in size have elongate overgrowths of quartz showing delicate comb textures.

Sample J-91-25 45.4 m **Strongly Sheared Amygdaloidal Latite/Andesite Flow (Unit 2Gar); Pyrite-(Quartz-Ankerite) Veinlets**

The rock was sheared strongly and brecciated slightly.

Lathy plagioclase grains (2-3%) averaging 0.01-0.2 mm and locally up to 0.3 mm long are set in a groundmass of lathy to equant plagioclase averaging 0.03-0.05 mm in size with 5-10% sericite and 1-2% disseminated opaque/Ti-oxide. Sericite is concentrated moderately in certain bands up to a few mm across.

Elongate patches up to a few mm long and 1.5 mm wide are of extremely fine grained quartz and less ankerite (10-12%). Textures are similar to those of amygdules in less deformed andesite/latite flows in the suite. Some large amygdules contain fine to medium grained patches (7-8%) of ankerite and much less quartz and pyrite. Some coarser patches of pyrite (up to 0.5 mm in size) are partly rimmed by elongate aggregates of quartz showing delicate comb textures.

Sericite (0.3%) forms lenses up to 1 mm long; these may represent flattened amygdules or replacement patches.

Irregular to lensy replacement veinlets and patches (5-7%) are of very fine to fine grained pyrite with less quartz and ankerite.

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	4.70	.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	.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	106	25	20	13.4	100.29
J91-8-65.2	63.84	13.75	5.44	1.62	7.90	.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	5.14	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	5.12	1.62	3.66	1.80	.60	.25	.002	784	243	13	115	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	166	9	24	7.2	100.13
J91-15-91.0	29.07	13.20	11.60	6.70	16.97	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	70	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	152	37	79	5.0	100.08
J91-17-149.0	65.12	12.13	6.33	2.70	2.77	.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	3.92	.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	4.93	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	5.25	.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	6.22	.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	164	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	6.50	.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	160	28	59	10.5	100.24
J91-22-45.0	62.61	10.92	9.01	2.19	1.52	.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	.47	.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	.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	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	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	103	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	5.17	4.09	1.85	2.35	.60	.15	.002	1756	339	14	154	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	1.32	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	3.61	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

	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppb
S209	1	9	2	111	.1	7	22	574	4.83	26	5	ND	1	67	.2	2	2	36	2.33	.144	4	12	1.29	36	.01	2	1.33	.03	.06	1	1	205
S210	13	20	18	82	.7	5	63	382	19.28	271	5	ND	1	38	.2	5	2	27	1.22	.178	2	8	.87	6	.01	5	.85	.02	.15	1	2	625
S211	2	12	14	108	.1	4	27	636	5.58	37	5	ND	1	78	.2	2	2	23	3.76	.248	4	11	1.51	34	.01	3	.67	.02	.17	1	1	240
S212	2	42	19	110	.5	3	34	810	13.43	61	5	ND	1	22	.2	2	2	22	1.38	.192	2	8	1.60	8	.01	3	.80	.02	.15	1	1	355
S213	3	59	15	338	.1	5	46	950	7.62	40	5	ND	1	64	.4	2	2	19	3.73	.202	2	8	1.93	19	.01	5	.57	.02	.15	1	3	370
S214	1	13	5	116	.1	2	15	444	3.08	6	5	ND	1	84	.2	2	2	22	2.92	.272	8	6	1.19	83	.01	2	1.21	.03	.16	1	2	135
S215	1	21	15	137	.1	2	18	376	5.51	21	5	ND	1	71	.2	2	2	23	2.44	.285	6	11	1.01	32	.01	2	1.18	.03	.15	1	2	230
RE S211	2	12	7	104	.1	3	26	610	5.34	33	5	ND	1	88	.2	2	2	22	3.71	.231	4	10	1.46	39	.01	3	.66	.02	.17	1	1	255
S216	1	12	12	210	.1	3	15	753	6.03	28	5	ND	1	120	.2	2	2	34	3.84	.218	5	7	1.23	35	.01	2	1.31	.03	.10	1	1	245
S217	1	8	5	115	.1	2	10	904	4.23	2	5	ND	1	185	.2	2	2	49	5.13	.223	7	6	1.30	58	.01	2	1.82	.03	.09	1	1	75
S218	1	15	6	216	.1	2	16	1328	7.77	8	5	ND	1	161	.2	2	2	72	4.66	.220	7	9	1.57	35	.01	3	2.78	.03	.04	1	1	115
S219	1	13	7	157	.1	1	14	1589	8.19	3	5	ND	1	148	.2	2	2	88	5.05	.224	7	8	1.81	33	.01	2	3.12	.02	.03	1	2	40
S220	1	12	8	138	.1	1	12	1146	7.05	2	5	ND	1	107	.2	2	2	67	3.82	.213	7	7	1.65	56	.01	2	2.89	.02	.08	1	2	65
S221	1	20	9	155	.1	1	18	1494	7.95	19	5	ND	1	169	.2	2	2	75	5.03	.140	5	8	1.38	30	.01	2	2.53	.02	.05	1	2	225
S222	1	16	14	163	.1	1	16	1287	6.61	4	5	ND	1	148	.2	2	2	55	4.52	.200	7	8	1.50	63	.01	2	2.60	.03	.13	1	1	140
S223	1	15	12	106	.1	1	15	1505	4.97	5	5	ND	1	175	.2	2	2	35	6.94	.171	5	7	1.34	59	.01	2	1.87	.02	.13	1	1	200
S224	1	18	9	165	.1	1	17	1196	6.39	5	5	ND	1	153	.2	2	2	45	4.89	.163	5	7	1.20	55	.01	2	2.15	.02	.11	1	1	195
S225	1	15	13	137	.1	1	14	1087	5.75	2	5	ND	1	128	.2	2	2	42	4.18	.173	6	7	1.05	62	.01	2	2.21	.02	.12	1	1	95
S226	1	12	8	126	.1	1	14	965	6.28	2	5	ND	1	113	.2	2	2	45	3.65	.172	8	7	1.13	66	.01	2	2.58	.02	.14	1	1	65
S227	1	16	8	111	.1	1	14	805	4.18	6	5	ND	1	121	.2	2	2	27	4.00	.182	6	7	.75	78	.01	2	1.60	.02	.18	1	1	90
S228	1	16	8	122	.1	1	13	1009	5.15	2	5	ND	1	162	.2	2	2	35	4.89	.176	6	7	.96	65	.01	2	1.92	.02	.16	1	1	135
S229	1	24	13	148	.1	1	16	1052	6.34	5	5	ND	1	161	.2	2	2	33	4.79	.166	4	7	1.02	57	.01	4	1.85	.02	.14	1	1	175
S230	1	16	15	186	.1	1	15	1268	7.22	3	5	ND	1	157	.4	2	2	42	5.24	.169	5	9	1.17	54	.01	2	2.26	.02	.13	1	3	205
S231	1	12	13	160	.1	1	13	1319	7.28	2	5	ND	1	137	.2	2	2	47	4.74	.189	6	8	1.25	71	.01	2	2.60	.01	.10	1	1	85
S232	1	15	14	116	.1	1	16	1220	7.52	3	5	ND	1	136	.2	2	2	46	4.30	.191	7	6	1.28	88	.01	2	2.33	.02	.11	1	2	95
S233	1	19	17	150	.1	2	20	1531	8.00	24	5	ND	1	184	.2	2	2	44	6.53	.181	4	8	1.54	39	.01	2	2.46	.01	.10	1	1	230
S234	1	17	12	133	.1	1	20	1171	7.07	25	5	ND	1	155	.2	2	2	41	5.60	.152	4	7	1.25	39	.01	2	2.03	.02	.11	1	1	450
S235	1	13	13	109	.1	1	9	1280	5.79	2	5	ND	1	146	.2	2	2	35	5.81	.179	6	7	1.08	52	.01	2	2.25	.02	.13	1	2	85
S236	1	21	14	138	.1	1	13	1263	6.29	2	5	ND	1	132	.2	2	2	31	5.54	.149	4	6	1.02	57	.01	2	1.87	.03	.15	1	1	300
S237	1	16	9	121	.1	2	14	1103	5.17	19	5	ND	1	141	.2	2	2	25	6.45	.164	5	6	.96	56	.01	2	1.23	.03	.16	1	1	425
S238	1	23	12	126	.1	3	17	1085	5.46	30	5	ND	1	135	.2	2	2	26	6.30	.189	5	6	1.10	53	.01	2	.86	.03	.17	1	1	650
S239	1	17	16	121	.1	2	14	870	4.83	18	5	ND	1	96	.2	2	2	20	4.39	.211	5	7	1.05	58	.01	2	.75	.03	.18	1	1	235
S240	1	21	14	164	.1	4	17	826	4.68	11	5	ND	1	100	.2	2	2	28	3.96	.225	7	6	.98	70	.01	3	1.29	.04	.20	1	1	175
S241	1	16	11	113	.1	2	15	1082	4.34	18	5	ND	1	140	.2	2	2	24	6.03	.239	6	6	.90	62	.01	2	1.12	.03	.18	1	2	240
S242	1	17	8	115	.1	3	15	956	4.97	27	5	ND	1	127	.2	2	2	24	5.61	.214	5	5	1.06	50	.01	2	.81	.03	.18	1	1	440
S243	1	15	12	73	.1	2	15	786	4.53	25	5	ND	1	126	.2	2	2	24	4.82	.219	6	7	1.01	50	.01	2	.68	.03	.16	1	1	185
S244	1	16	8	135	.2	3	14	719	4.50	27	5	ND	1	112	.4	2	2	21	4.47	.180	6	8	.88	45	.01	2	.81	.03	.15	1	1	220
S245	1	13	10	160	.2	4	15	556	3.32	63	5	ND	1	85	.4	3	2	10	3.88	.195	6	6	.45	43	.01	2	.43	.03	.19	1	1	445
S246	1	16	9	97	.2	2	13	372	6.22	90	5	ND	1	80	.2	2	2	12	2.59	.151	4	5	.40	16	.01	3	.40	.03	.17	1	1	540
S247	7	23	20	71	.2	3	11	864	9.77	338	5	ND	1	96	.2	19	2	10	3.73	.124	2	13	1.71	16	.01	3	.55	.02	.12	1	3	3250
S248	5	16	17	113	.5	3	13	1276	8.53	232	5	ND	1	137	.2	10	2	10	5.38	.134	2	6	1.59	18	.01	4	.32	.02	.15	1	2	1650
S249	3	18	9	110	.1	3	14	1071	7.08	185	5	ND	1	113	.2	6	2	19	4.92	.157	3	7	1.84	33	.01	3	.95	.02	.16	1	3	1100
S250	5	14	13	213	.1	3	11	565	6.62	313	5	ND	1	85	.2	17	2	14	2.83	.128	3	7	1.00	22	.01	2	.66	.03	.15	1	2	3300
S251	7	11	11	146	.1	4	9	705	4.83	363	5	ND	1	83	.3	23	2	9	3.59	.121	3	17	1.24	25	.01	2	.30	.02	.13	1	1	3450
S252	17	16	15	65	.1	5	13	665	13.67	852	5	ND	1	59	.2	57	2	9	2.16	.129	2	9	1.20	10	.01	4	.58	.02	.15	1	3	12000
S253	3	12	13	81	.1	6	24	631	5.81	364	5	ND	1	99	.2	15	2	14	4.80	.150	4	8	1.28	28	.01	2	.70	.02	.13	1	3	2200
S254	9	13	15	97	.1	6	25	545	9.89	790	5	ND	1	70	.2	51	2	7	3.38	.132	2	6	1.02	17	.01	2	.52	.02	.16	1	2	10500
S255	8	12	15	69	.1	6	25	772	6.69	412	5	ND	1	66	.2	24	2	8	2.83	.179	4	15	1.59	24	.01	2	.50	.02	.19	1	1	5700
S256	12	10	13	96	.1	6	19	1980	10.42	616	5	ND	1	78	.2	39	2	7	4.28	.102	2	4	3.49	17	.01	3	.28	.01	.14	1	3	6250
S257	8	8	12	26	.9	6	15	1236	5.95	275	5	ND	1	150	.2	16	2	13	5.53	.113	2	9	2.82	11	.01	2	.38	.01	.13	1	11	2450
S258	19	157	118	621	30.9	15	4	304	5.00	280	5	ND	1	33	2.9	92	2	3	.93	.032	2	6	.38	17	.01	4	.22	.01	.11	1	1380	1700
S259	21	34	360	301	11.0	33	8	229	3.40	129	5	ND	1	37	2.8	42	2	9	.95	.046	3	13	.42	20	.01	3	.34	.01	.19	1	140	790

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
J91-25																																
S260	24	39	152	521	2.2	33	8	241	4.50	313	5	ND	1	43	.3	88	2	8	.91	.041	2	8	.39	21	.01	2	.26	.01	.14	1	420	3250
S261	36	472	385	2087	2.4	20	5	281	3.20	303	5	ND	1	30	16.2	100	2	5	.88	.014	4	9	.13	22	.01	2	.20	.01	.11	1	1280	3450
S262	23	96	489	1177	1.6	15	8	121	6.29	560	5	ND	1	24	6.8	115	2	6	.39	.049	3	8	.12	12	.01	2	.33	.01	.17	1	5180	4800
S263	14	45	164	383	3.7	9	19	151	5.53	555	5	ND	1	39	1.4	62	2	10	.68	.152	5	20	.24	17	.01	2	.50	.01	.29	1	660	1900
S264	10	30	92	152	2.3	8	19	130	5.53	421	5	ND	1	35	.7	49	2	14	.63	.187	6	8	.32	17	.01	2	.59	.01	.30	1	590	1250
S265	23	88	1032	3947	9.1	11	17	467	6.81	550	5	ND	1	59	31.7	101	2	8	2.06	.164	5	6	.04	11	.01	4	.22	.01	.17	1	5420	8950
S266	9	36	117	139	2.6	6	14	98	4.42	222	5	ND	1	33	1.0	32	2	12	.43	.097	5	5	.10	16	.01	2	.26	.01	.20	1	560	1250
RE S262	22	91	448	1062	3.6	13	8	113	6.05	541	5	ND	1	24	6.2	106	2	6	.35	.045	3	6	.11	10	.01	2	.32	.01	.17	1	5220	5200
S267	15	32	125	540	1.5	6	15	73	3.16	222	5	ND	1	29	3.8	38	2	8	.40	.082	4	25	.08	17	.01	2	.19	.01	.17	1	420	1950
S268	9	31	347	2335	5.5	7	16	190	3.48	591	5	ND	1	57	17.2	32	2	12	1.04	.216	6	7	.08	19	.01	5	.26	.01	.21	1	340	3250
S269	12	31	1048	2269	9.4	6	10	936	2.40	163	5	ND	1	100	16.0	36	2	7	4.01	.076	3	6	.09	31	.01	2	.17	.01	.15	1	350	2950
S270	35	242	601	1406	7.7	7	12	302	4.18	340	5	ND	1	49	10.2	153	2	11	1.22	.106	4	5	.20	19	.01	2	.27	.01	.18	1	320	3250
S271	12	47	69	228	2.6	7	13	257	2.32	149	5	ND	1	50	1.2	35	2	10	1.01	.101	5	26	.14	44	.01	5	.22	.01	.20	1	150	695
S272	5	29	54	32	0.7	9	15	88	4.13	544	5	ND	1	34	.4	25	2	11	.68	.164	6	10	.03	29	.01	5	.25	.01	.24	1	470	400
S273	6	32	44	86	1.3	7	18	196	5.05	733	5	ND	2	43	.6	45	2	12	.91	.201	6	7	.07	19	.01	2	.28	.01	.25	1	290	610
S274	10	30	76	220	1.3	9	14	348	3.24	489	5	ND	1	57	.8	43	2	11	1.34	.101	5	8	.17	35	.01	5	.22	.01	.19	1	250	1300
S275	7	41	62	106	1.2	10	13	189	3.23	214	5	ND	1	48	.6	44	2	13	.71	.155	6	10	.15	34	.01	2	.23	.01	.23	1	135	1900
S276	18	81	104	1513	4.6	16	9	2845	2.83	231	5	ND	1	115	5.2	126	2	6	10.10	.053	3	16	.17	38	.01	2	.12	.01	.11	1	440	4600
S277	11	24	67	123	1.9	7	9	211	3.88	352	5	ND	1	64	.7	99	2	12	.81	.145	6	6	.20	32	.01	3	.29	.01	.25	1	310	2150
S278	5	16	27	23	0.3	6	6	255	2.88	181	5	ND	1	62	.5	28	2	10	.97	.181	7	8	.47	41	.01	2	.44	.01	.26	1	19	585
S279	12	22	58	116	0.6	4	6	2087	5.84	760	5	ND	1	102	.6	126	2	4	7.01	.116	3	6	.16	25	.01	3	.15	.01	.14	1	490	3300
S280	5	21	57	80	0.8	5	8	201	6.19	305	5	ND	1	33	.5	45	2	7	.74	.169	4	19	.14	23	.01	7	.21	.01	.20	1	240	1350
S281	14	15	56	92	1.5	6	7	302	6.08	915	5	ND	1	43	.6	93	2	6	.86	.145	3	6	.33	19	.01	5	.18	.01	.14	1	270	5950
S282	7	16	49	102	2.7	7	8	117	4.02	505	5	ND	1	24	.2	55	2	13	.55	.198	7	7	.43	28	.01	3	.52	.01	.23	1	106	3000
S283	5	11	32	128	1.4	3	10	1670	5.10	327	5	ND	1	71	.3	30	2	15	6.10	.147	7	5	.82	31	.01	2	.72	.01	.20	1	138	1550
S284	5	14	46	123	1.6	6	11	181	6.96	718	5	ND	1	24	.3	45	2	8	.79	.146	5	22	.11	14	.01	5	.22	.01	.18	1	210	475
S285	4	20	39	135	1.2	6	15	92	7.48	270	5	ND	1	24	.7	36	4	8	.58	.181	6	5	.12	15	.01	5	.35	.01	.29	1	240	310
S286	8	15	49	154	3.7	7	11	111	5.27	1745	5	ND	1	26	.4	79	2	8	.61	.191	7	7	.12	18	.01	2	.21	.01	.19	1	440	1400
S287	9	17	54	298	1.4	7	13	592	8.18	1347	5	ND	1	40	1.0	80	2	8	1.63	.157	4	9	.22	17	.01	5	.27	.01	.18	1	320	2650
S288	7	16	42	93	1.9	4	15	84	6.94	410	5	ND	1	19	.4	50	2	8	.54	.192	7	14	.19	20	.01	4	.47	.01	.27	1	350	1150
S289	9	20	48	271	2.1	5	12	122	7.54	870	5	ND	1	23	.7	91	2	8	.60	.184	7	5	.20	15	.01	3	.27	.01	.20	1	280	2200
S290	15	24	53	358	0.0	8	13	391	9.66	969	5	ND	1	32	1.1	139	2	8	1.19	.145	5	7	.23	12	.01	5	.28	.01	.15	1	350	5400
S291	4	16	28	270	0.8	5	11	354	6.51	401	5	ND	1	39	1.0	46	2	6	1.32	.171	7	7	.18	17	.01	2	.23	.01	.19	1	220	295
S292	7	15	30	139	1.9	4	9	105	6.25	1043	5	ND	1	20	.2	76	2	5	.53	.174	7	19	.05	16	.01	3	.17	.01	.18	1	260	2100
S293	7	13	32	111	1.4	4	12	265	6.84	635	5	ND	1	34	.6	70	2	5	1.10	.173	7	4	.09	16	.01	4	.20	.01	.20	1	200	2450
S294	10	14	35	89	1.6	6	13	123	8.43	684	5	ND	1	16	.2	70	2	7	.56	.190	8	6	.11	14	.01	6	.30	.01	.25	1	210	1800
S295	16	19	35	178	0.0	5	13	411	13.95	1385	5	ND	1	24	.5	186	2	5	1.19	.130	4	7	.10	10	.01	5	.21	.01	.18	1	410	6450
S296	10	18	35	158	5.9	4	16	309	15.21	1367	5	ND	1	21	.3	208	2	6	.99	.158	6	15	.07	9	.01	2	.19	.01	.17	1	240	3650
S297	11	15	28	92	1.3	5	16	89	8.67	750	5	ND	2	15	.3	70	2	7	.46	.192	9	5	.05	13	.01	2	.21	.01	.21	1	250	1550
S298	11	26	31	66	1.3	5	15	71	12.59	656	5	ND	1	13	.2	65	2	5	.36	.160	7	5	.06	9	.01	5	.20	.01	.19	1	210	1050
S299	11	33	23	51	1.8	6	17	90	14.32	965	5	ND	1	12	.2	76	2	6	.31	.140	6	6	.07	9	.01	2	.25	.01	.18	1	320	880
S300	17	19	30	125	1.5	8	15	114	16.48	1263	5	ND	3	10	.2	166	2	6	.27	.104	5	17	.16	10	.01	4	.25	.01	.15	1	220	3150
S301	6	11	32	231	2.0	5	13	999	6.09	107	5	ND	1	36	.8	7	3	11	1.44	.137	6	4	1.73	40	.01	8	.92	.01	.30	1	31	270
S302	4	8	13	34	1.9	6	12	768	3.44	51	5	ND	2	52	.2	4	3	5	1.35	.049	9	4	.95	30	.01	7	.70	.01	.32	1	28	120
S303	3	6	10	63	.7	3	7	231	2.79	43	5	ND	2	19	.3	2	2	4	.19	.033	18	3	.86	82	.01	3	1.15	.01	.39	1	26	75
S304	4	21	20	132	4.3	27	31	1000	6.12	583	5	ND	1	56	.5	14	2	50	1.26	.068	2	22	2.17	31	.01	5	2.18	.01	.32	1	220	280
S305	1	30	11	164	4.4	33	31	1463	6.02	974	5	ND	1	100	.3	19	2	79	2.14	.049	2	42	4.13	43	.01	2	3.70	.01	.27	1	380	190
RE S301	6	11	28	208	2.2	7	13	1055	6.33	107	5	ND	1	39	.9	4	2	12	1.53	.144	6	4	1.84	41	.01	6	1.01	.01	.31	1	29	285
S306	1	11	8	86	.9	9	10	570	5.26	59	5	ND	1	18	.2	2	2	17	.29	.060	11	5	1.94	38	.01	4	2.30	.01	.27	1	12	125

SAMPLE# J91-25	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
S307	1	18	18	140	1.7	34	33	989	8.41	352	5	ND	1	25	.2	2	2	70	.53	.069	2	54	2.90	38	.01	2	3.77	.01	.21	1	90	355
S308	1	19	25	125	.8	14	15	1618	6.00	142	5	ND	1	113	.2	2	2	34	3.44	.081	5	16	1.80	65	.01	2	2.67	.01	.30	1	51	150
S309	1	21	7	55	.4	16	11	614	3.66	6	5	ND	1	68	.2	2	2	19	1.65	.037	12	14	.99	75	.01	4	2.01	.01	.33	1	10	40
RE S313	1	42	11	93	.5	16	14	1733	5.03	10	5	ND	1	94	.2	2	2	20	3.08	.042	6	16	1.96	85	.01	2	2.55	.01	.23	1	2	45
S310	1	99	6	60	.8	19	13	437	3.82	5	5	ND	1	60	.2	2	2	21	1.03	.143	10	10	.92	366	.01	4	2.14	.01	.48	1	6	65
S311	1	123	9	85	.7	17	14	1351	3.72	18	5	ND	1	90	.2	2	2	20	4.97	.130	13	12	1.08	119	.01	4	2.10	.01	.44	1	8	75
S312	1	83	10	95	.5	17	15	1038	3.98	18	5	ND	1	79	.2	2	2	20	2.19	.055	11	15	1.32	45	.01	5	2.10	.01	.34	1	6	55
S313	1	41	12	89	.5	15	14	1716	5.19	6	5	ND	1	96	.2	2	2	21	3.13	.042	6	17	1.96	90	.01	3	2.54	.01	.24	1	8	40
S314	1	119	5	72	.6	17	15	649	3.61	24	5	ND	1	58	.2	2	2	16	1.83	.134	16	12	1.03	57	.01	4	1.90	.01	.52	1	5	65
S315	1	138	4	90	10.0	15	14	1157	2.92	59	5	ND	1	88	.2	27	2	10	3.71	.084	12	7	.92	76	.01	5	.97	.01	.38	1	6	80
S316	1	113	11	49	12.2	13	12	1878	3.92	88	5	ND	1	122	.3	39	2	9	5.73	.034	5	5	1.52	282	.01	6	.73	.01	.26	1	4	70
S317	1	101	4	58	.5	17	11	536	3.91	17	5	ND	1	45	.3	2	2	17	1.19	.058	12	12	1.01	83	.01	5	1.85	.01	.44	1	5	40
S318	1	12	13	79	.2	17	13	984	5.91	4	5	ND	1	46	.2	2	2	23	1.90	.074	10	14	1.50	58	.01	5	2.44	.01	.37	1	6	50
STANDARD C/AU-R	19	61	42	132	7.3	70	32	1034	4.01	42	15	7	36	53	18.5	15	23	56	.49	.091	37	58	.87	179	.09	37	1.91	.06	.14	11	510	1400

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

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91-26.

PURPOSE

To test coincident chargeability and magnetic highs.

10696.363N / 10064.857E

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
1700N 073E	397.411 m	270°	222.50 m
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
52°	70 10 53.5 Avg 52.9 170.69 52.5 222.50 53°	171.40 m	135.70 m
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED Oct 19/91**
Ross Fawcett Oct 2/91	J.T.T.	BQ	**DATE COMPLETED Oct 20/91**

SUMMARY LOG

0.0 - 103.63 Argillite with minor interbedded siltstones & Sandstones
103.63 - 121.14 Intermediate Lapilli Tuff
121.14 - 222.50 Argillite with Minor interbedded siltstones & Sandstones

SIGNIFICANT MINERALIZED INTERVALS

125.80 - 134.11 - quartz carbonate stringers with Trace sphalerite and galena.
134.11 - 135.0 5% pyrite, 1% sphalerite

155.60 - 157.0
- Trace Sphalerite, galena and arsenopyrite
166.90
- Trace galena, sphalerite and chalcopyrite.

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	C/A	L	S	M	A
0-6.10		Casing		CASE			
-8.90		SANDSTONE - medium grey colour - fine to medium grained - massive, with indistinct bedding	So 80	7L			
0-102.60		Argillite - minor (≤10%) siltstone and sandstone beds - Argillite is black in colour with the Sandstone siltstone a medium grey - bedding is indistinct to non-existent in the Argillite, generally visible only in the more coarse intervals. - Rare, thin, light green intermediate tuff beds - occassional calcite veins, 2-5mm across usually at steep angles to CA 12.40 - 16.00 - minor quartz-carbonate stringers generally oriented at 40°-80° to CA - <1% pyrite with traces of red-brown sphalerite	So 75 So 80	7J(4) 7J(4)		SL <1% Py SL	

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No J91-26

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
	B001	12.0	13.0		25	4.9	536	3		
12.40 - 16.00										
- quartz-carbonate steingees with	B002	13.0	14.0		36	4.6	139	2		
< 1% pyrite and Traces of										
Red-brown Sphalerite.	B003	14.0	15.0		7	2.9	44	2		
	B004	15.0	16.0		9	1.3	26	2		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	MC	L	S	M	A
8.90 - 102.60 Cont'D				FJ,(k)			
		23.50 -minor calcite veins		FJ			CAI 80
			50/80				
				FJ			
						SL	
		32.0 - 34.83 Sandstone -medium grey, medium grained -weakly calcareous -grain size uniform throughout the interval fining up hole(?) near top contact -Bottom contact sharp at 80° to CA with rip-up clasts of argillite in the Sandstone		FL(s) 80°			CAI 40
						SL	

20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. 391-26

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
quartz CARBONate stringers with Trace pyrite and sphalerite.	B005	27.5	29.0		7	0.3	20	2		
Trace Sphalerite and pyrite	B006	30.48	31.90		4	0.4	17	2		
Sporadic quartz carbonate stringers with Traces of sphalerite and pyrite	B007	37.3	38.7		6	0.7	26	2		
	B008	38.7	40.:		6	0.4	24	2		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	C*	L	S	M	A	
8.90 - 102.60 cont'd								40
				75(K)				41
		41.68 - 42.40 Intermediate Fine Grained Tuff - greenish grey colour - well bedded at 80° to CA - weakly phyllitic - Top and bottom contacts sharp - 1-2% po and py associated with quartz carbonate stringers	So 80	28(K)		po		42
				75(K)				43
								44
								45
								46
		47.05 - 48.90 - carbonate veinlets with 20-25 pyrobitumen and 2-3% pyrrhotite				Po pybt	CA'	47
								48
			So 80				CA'	49
								50
								51
								52
		53.2 - 53.52 Intermediate Medium Grained Tuff - greenish grey colour - well bedded - Trace to 1% pyrite and pyrrhotite				Sc Po		53
				28				54
			So 75	75(K)			~	55
								56
		57.13 - Fault						57
								58
								59
								60

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-26

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	ppb Au	Ag g/t	As ppm	Sb ppm
	B009	40.2	41.68	1.48	3	0.9	27	2
41.68 - 42.40								
- 2% pyrrhotite, 1% pyrite	B010	41.68	42.40	0.72	3	0.1	2	2
	B011	42.40	43.60	1.20	8	0.7	36	2
47.05	B012	46.8	48.08	1.28	13	1.1	32	2
- 5mm carbonate vein with								
25% pyrobitumen, 2-3% pyrrhotite	B013	48.08	49.45	1.53	24	0.8	32	2
	B014	49.45	50.60	1.15	24	0.7	39	3
	B015	53.15	54.1	0.95	62	1.1	89	2
53.20 - 53.52								
- Trace sphalerite and pyrrhotite	B016	54.1	55.0	0.90	8	2.0	130	3
	B017	55.0	55.9	0.90	3	2.2	178	12
53.52 - 57.3	B018	55.9	57.3	1.40	2	2.6	190	6
- Trace → 1% pyrite with Trace								
pyrrhotite and sphalerite found in								
rare quartz carbonate stringers								

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	MC	L	S	M	A
8.90 – 102.60 Cont'd							
		67.30 - 72.30 - 1-2% quartz carbonate veinlets 1-4 mm wide, usually 10-20° to CA - less frequent veinlets at 80-90° to CA, quartz carbonate, hosting trace quantities of pyrrhotite, sphalerite and pyrite.					

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-26

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	B019	63.7	65.25	1.55	8	0.9	28	2
	B020	65.25	66.65	1.40	3	0.6	23	5
64.90 - Quartz carbonate vein with Traces of pyrite and sphalerite	B021	66.65	68.0	1.35	2	0.6	19	2
	B022	68.0	69.6	1.60	1	0.3	19	3
	B023	69.6	70.80	1.20	3	0.4	21	2
66.40 - Trace Sphalerite	B024	70.80	72.0	1.20	4	0.4	19	2
	B025	72.0	73.15	1.15	2	0.4	18	2
72.3 - 73.15 - Trace → 1% pyrite, sedimentary (?) Trace pyrrhotite in rare veinlets								
76.50 - 77.5 - Trace pyrrhotite and pyrite in quartz carbonate stringers.	B026	76.5	77.5	1.0	4	0.5	22	2

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	
								80
8.90 – 102.60 cont'd			So -80	FT(K)	-	-	-	81
			-		-	-	-	82
			-	-	-	-	-	83
			-	-	-	CPY	-	84
			-	-	-	-	-	85
		85.50 – 86.30 Intermediate Fine Grained Tuff (?) - possibly a dyke (?) - fine grained, mottled, light greenish-grey to dark greenish-grey. - darker areas more silicified	-	IB	-	po	Si Si	86
			-	-	-	-	-	87
			-	-	-	-	-	88
			-	FT(K)	-	gl SL	-	89
			So 85		-	-	-	90
		91.30 - small recumbent fold with limbs at 80° to CA	-	-	-	-	-	91
			-	-	-	-	-	92
			-	-	-	-	-	93
			-	-	-	-	-	94
			So 75	-	-	-	-	95
			-	-	-	-	-	96
			-	-	-	-	-	97
			-	FT(K)	-	-	-	98
			-		-	-	-	99
			-	-	-	-	-	100

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-26

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	B027	83.8	85.2	1.50	7	0.9	27	2
83.50 Trace chalcopyrite	B028	85.2	86.4	1.20	7	0.5	11	3
	B029	86.4	87.9	1.30	11	0.7	27	4
	B030	87.9	89.20	1.30	7	0.8	23	2
88.4 Trace galena and sphalerite.	B031	89.2	90.2	1.0	6	0.9	20	2

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	
89.0 - 102.60 Cont'd		101.95 - 102.50						100
		- Black Argillite with ~20% felsic volcanic fragments		4J				101
		- fragments are grey to light greenish-grey, angular to sub-angular and usually 2-4mm across with some as large as 20mm.	S0 75	4J/2A				102, 103
		- fragmental component increases down hole.	S0 80	2A		Po		104, 105
		102.50 - 102.60 - Fault Gouge						106
102.60 - 103.63		Argillaceous Tuff	S0 60	2D		Py		
		- Greenish Black in colour with ~50% fragments						107
		- Fragments are dominantly felsic volcanic, Angular to Sub-Angular with a small proportion of sandstone fragments that are generally more rounded and of smaller size.						108, 109
		- bottom contact is a fault				Tr - 1% Py		
		- upper contact gradational.						110
103.63 - 104.10		Intermediate Fine Grained Tuff						111
		- light green to grey colour and well bedded						
		- bottom contact gradational, Top contact a fault.						112
104.10		Fault						113
104.10 - 121.14		Intermediate Lapilli Tuff						114
		- medium greenish grey colour						
		- polylithic						115
		- fragments diverse in appearance with the most abundant (~40%) lapilli sized subrounded intermediate fragments similar in composition to groundmass						116
		- 5mm to 15mm elongate, flattened dark green chloritic(?) fragments (~20%)			Fr? 40			117
		- angular to sub-angular felsic fragments 5-25mm across, often with quartz overgrowths.		2D			Si₂	118
		- minor amount of well rounded 1-8cm fine grained intermediate (?) volcanic fragments, light purple in colour					Cb	119
		- Bottom contact Sharp						120

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-26

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
	B032	101.2	102.6	1.40	23	2.0	58	5		
	B033	102.6	104.1	1.50	78	2.1	99	3		
	B034	104.1	105.5	1.40	101	0.7	46	2		
104.10 - 121.14	B035	105.5	106.9	1.40	38	0.8	47	2		
· 1% pyrite	B036	106.9	108.5	1.60	89	0.8	55	2		
	B037	108.5	109.7	1.20	95	0.7	78	2		
	B038	109.7	111.10	1.40	200	0.9	102	2		
	B039	111.10	112.6	1.50	240	1.0	333	2		
	B040	112.6	114.0	1.40	200	0.8	61	2		
	B041	114.0	115.7	1.30	87	1.1	123	2		
115.82 - 118.87 50% Core Recovery	B042	115.7	118.9	3.20	97	1.0	120	2		
	B043	118.9	120.2	1.30	200	0.4	49	2		
	B044	120.2	121.14	0.96	280	1.4	254	3		
	B045	121.14	122.5	1.36	57	2.7	62	2		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	STRUCTURE	L	S	M	A
		118.87 - 121.14 - Quartz carbonate flooding and veining resulting in silicification and obliteration of original textures		2D			S_{i_2}
121.14 - 135.20		Argillite - minor (<10%) thin siltstone beds - quartz calcite stringers, 1-3mm wide at moderate to steep angles to CA. Usually no more than 1-2/10cm with occasional short intervals containing intense, sulfide bearing, stringers. Sphalerite, Galena, Arsenopyrite and chalcopyrite are found sporadically in trace amounts within the stringers	Su/75	2D FJ(k) FJ,(k)		P0 P1 GL P1 SL	Qtz-Cb
135.20 - 158.14		Argillite - ≤ 50% interbedded siltstones and sandstones ≤ 30cm. - Tops down hole	Su/65 Su/80	FJ,SL		P1 GL SL	Qtz-Cb

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-26

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
	B046	122.5	124.0	1.50	43	2.7	63	2		
125.80	B047	124.0	125.9	1.40	19	2.7	45	2		
- 3cm of massive pyrite										
- Trace galena	B048	125.9	126.95	1.55	270	5.9	249	4		
	B049	126.95	127.5	0.55	147	8.9	1197	51		
126.95 - 127.50										
- quartz carbonate vein	B050	127.5	128.7	1.20	120	2.0	116	9		
- 127.0 - 127.15 60% pyrite										
- Trace sphalerite	B051	128.7	130.1	1.40	180	1.7	67	4		
	B052	130.1	131.4	1.30	140	1.7	56	2		
127.50 - 135.80	B053	131.4	132.9	1.50	80	1.8	63	2		
2-3mm wide qtz-carbonate stringers										
at 50-60° to CA with a density of	B054	132.9	134.1	1.20	330	2.8	122	3		
2-3/10 cm										
- Traces of Red-Brown sphalerite and	B055	134.1	135.0	0.90	479	7.0	202	9		
galena.										
- ≤ 1% pyrite	B056	135.0	136.3	1.30	116	1.4	47	2		
	B057	136.3	137.7	1.40	3	0.9	34	2		
134.11 - 135.0										
- intense quartz carbonate flooding										
with 5% pyrite and 1% sphalerite										

GRANGES EXPLOR[redacted]

DIAMOND DRILL LOG

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	CK	L	S	M	A
1581.9-222.50		Argillite - minor (<10%) thin siltstone beds					

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-26

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
	B058	140.0	141.2	1.20	11	0.6	46	2
141.20 - 141.6								
- quartz carbonate stringers, 30% across interval	B059	141.2	141.6	0.40	20	0.8	532	4
- pale brown sphalerite 1%	B060	141.6	142.4	0.80	10	0.5	55	7
- Traces of Aspy, GALENA(?)								
	B061	152.65	154.05	1.40	14	1.4	70	4
155.60 - 157.0								
- minor quartz carbonate stringers with Traces of Sphalerite, galena and arsenopyrite.	B062	154.05	155.6	1.55	27	1.5	83	5
	B063	155.6	157.0	1.40	73	1.0	1363	4
	B069	157.0	158.3	1.30	41	1.1	282	3

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	∠ CA	L	S	M	A	Depth
158.14 – 222.50 cont'd								160
								161
								162
				ZJ(f)				163
								164
			So/70					165
						SE 9% CPY PY		166
								167
								168
								169
								170
								171
								172
			So/66					173
				ZJ(f)				174
					FRAC/50			175
								176
								177
			So/65					178
								179
								180

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
160.8	B065	160.4	161.3		35	1.8	64	5
-2.4mm quartz carbonate veinlets at 80° to CA with Trace sphalerite and 1% pyrite								
	B066	166.0	167.4		15	1.0	39	2
166.4 Trace chalcopyrite, galena, sphalerite	B067	167.4	169.0		12	1.5	29	2
	B068	169.0	170.0		20	1.7	34	2
169.65 Trace Antimony (?) Pyrite	B069	170.0	170.95		3	0.7	29	2

GRANGES EXPLOR...

DIAMOND DRILL LOG

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	W.C.	L.	S	M	A
158.14-222.50 cont'd		180.90 - 180.55 Fault Gouge					
		192.0 - 193.2 Fault Zone - 1-4cm intervals of fault gouge alternating with 1-8cm intervals of competent argillite					

180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-26

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
180.4										
- fault Gouge with 1-2% pyrite	B070	180.1	180.9	0.8	2	0.3	20	2		
	B071	180.9	181.9	1.0	1	0.2	18	2		
Fault Zone with Trace Pyrite	B072	191.4	192.7	1.30	7	0.4	21	2		
	B073	192.7	193.7	1.0	7	0.4	23	2		

GRANGES EXPLORATION

DIAMOND DRILL LOG

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	CA	L	S	M	A
158.14 - 222.50 cont'd		203.2 - 204.22 -fault gouge					

200 205 210 215 220

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-26

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
	B074	203.1	204.2	1.10	7	1.2	72	4
203.3 - 204.22 Fault gouge with Trace - 1% pyrite.	B075	204.2	205.2	1.0	64	6.8	187	5
	B076	205.2	206.3	1.10	5	0.8	38	2
204.22 - 205.05 - 10-15% quartz carbonate stringers hosting 1% pyrite and Trace sphalerite	B077	206.3	207.7	1.40	7	0.4	34	3
	B078	207.7	209.3	1.60	6	0.3	32	2
	B079	209.3	210.65	1.35	2	0.3	42	2
	B080	210.65	212.0	1.35	1	0.3	27	2
	B081	212.0	212.9	0.90	1	0.3	20	2
	B082	212.9	213.8	0.90	10	0.3	29	.3

GRANGES EXPLORATION

DIAMOND DRILL LOG

HOLE No. J91-26

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
			70/80				
		22250 END of Hole		75(k)			

220

Sample J-91-26 42.4 m **Contact: Latite Tuff (Unit 2/4A) with Calcite Replacement Patches; Mudstone (Unit 7J) with a lens of Siltstone (Unit 7K)**

The latite tuff contains minor equant grains of quartz up to 0.05 mm in size in a well foliated, extremely fine grained groundmass dominated by sericite and plagioclase, with wispy to well defined seams of Ti-oxide parallel to foliation. In a band up to 2 mm wide near the argillite contact, the tuff contains abundant lenses averaging 0.1 mm in size of ankerite.

Calcite (20-25%) forms replacement patches up to a few mm across of very fine to fine grained aggregates. One lens 2.5 mm long is of fine grained calcite with minor opaque at one end.

A lens parallel to foliation 1.5 mm long is of medium grained quartz with minor carbonate at one end.

The argillite is extremely fin e grained and dominated by sericite and less plagioclase with abundant wispy seams of opaque. Dusty opaque colors the rock a medium brown in thin section.

Lensy to irregular replacement patches (2-3%) are of extremely fine grained, colorless sericite.

Near the contact with the tuff in a band parallel to foliation averaging 1 mm wide, the argillite contains abundant disseminated grains of pyrite. In about half of the layer, pyrite forms disseminated grains averaging 0.03-0.05 mm in size. Towards one end of the layer, pyrite is concentrated in dense patches up to 1.5 mm long and 0.5 mm wide.

In the argillite is a discontinuous layer up to 21.5 mm wide of siltstone. It is similar to the argillite but contains 5-7% detrital grains of quartz and plagioclase averaging 0.03-0.05 mm in size.

Sample J-91-26 105.2 m **Heterolithic Latite Lapilli Tuff (Unit 2D.5u,4u.2u)**

Numerous types of fragments ranging from less than 0.5 mm to several mm in size are set in a moderately foliated, aphanitic groundmass of plagioclase, sericite, and much less chlorite. The major fragment types include non-porphyritic, very fine to extremely fine grained, trachy-latite to trachy-andesite flows, and well foliated, sericite-rich fragments of uncertain origin (fine tuff or argillite).

Flows (15-17%) contain minor lathy plagioclase grains up to 0.2 mm in size in a groundmass of finer grained, lathy to equant plagioclase, K-feldspar, chlorite/sericite, and minor to moderately abundant opaque. Some flow rocks are replaced slightly to strongly by patches of ankerite.

One elongate flow is dominated by extremely fine grained, equant plagioclase and less K-feldspar, with several seams and irregular patches rich in sericite and scattered concentrations of extremely fine grained pyrite.

Sericite-rich fragments (10-12%) are elongate parallel to foliation and dominated by extremely fine grained sericite.

Minor fragments (1-2%) averaging 0.05-0.2 mm in size are of crystals of quartz and less abundant K-feldspar and plagioclase. One quartz grain is 0.6 mm across.

The groundmass is dominated by zones of aphanitic plagioclase and less abundant sericite and chlorite, and lenses and seams rich in sericite with locally minor abundant chlorite.

A few veinlets (3-4%) averaging 0.15-0.3 mm wide and locally up

Sample J-91-26 125.6 m **Argillite (Unit 7J); Veins of Quartz-(Ankerite-Pyrite); Replacement Patch of Quartz-Pyrite-Galena-Sphalerite-Chalcopyrite-(Electrum)**

The argillite contains scattered detrital grains averaging 0.02-0.03 mm in size of quartz and minor muscovite in a groundmass dominated by plagioclase and sericite with minor disseminated Ti-oxide and opaque and minor seams of carbonaceous opaque. Pyrobitumen forms a very few grains up to 0.02 mm in size.

A vein up to 2.5 mm wide is of quartz with much less ankerite. Quartz in the vein is sheared moderately and recrystallized slightly to moderately to extremely fine subgrain aggregates with interlocking grain borders.

A few strongly contorted veinlets averaging 0.1-0.3 mm in width are of quartz and K-feldspar with minor to locally moderately abundant patches of ankerite, pyrite and chalcopyrite, and trace amounts of pyrrhotite and sphalerite.

The replacement patch is dominated by fine to medium grained pyrite (30-35%) and quartz (20-25%). Interstitial to pyrite are moderately abundant quartz and ankerite (4-5%), and locally abundant galena (3-4%), sphalerite (1-2%), and chalcopyrite (0.5%). Galena forms interstitial patches up to 1.5 mm in size. Medium orangish brown sphalerite forms patches up to 0.7 mm in size and generally contains abundant exsolution blebs of chalcopyrite averaging less than 0.003 mm in size. Chalcopyrite forms patches up to 0.5 mm in size. Pyrrhotite (trace) forms a grain 0.07 mm in size enclosed in a grain of ankerite interstitial to pyrite.

Light yellow electrum/native gold forms two subrounded grains 0.01 mm in size in a veinlet in pyrite associated with galena and minor sphalerite(?).

Quartz with minor ankerite forms very fine to fine grained patches up to a few mm across bordering the pyrite-rich patch. Quartz shows evidence of shearing and partial recrystallization. Against pyrite, some quartz was recrystallized into comb-textures aggregates.

Ankerite forms a patch up to 2.5 mm across of medium to coarse grains interstitial to pyrite.

AA LL

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	.03	.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	16.76	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	789	860	10	106	25	20	13.4	100.29
J91-8-65.2	63.84	13.75	5.44	1.62	1.92	.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	5.68	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	5.92	1.62	3.66	1.80	.60	.26	.002	784	243	13	113	26	48	6.0	100.10
J91-12-175.6	56.93	13.43	7.78	3.63	8.87	.66	5.03	.77	.26	.35	.006	1046	147	12	166	9	24	7.2	100.13
J91-15-91.0	29.07	13.20	11.60	6.70	6.57	1.57	2.72	1.08	.19	.54	.012	707	246	10	65	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	2.28	.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	1.87	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	8.50	.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	12.21	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	1.38	.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	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	.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	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	7.91	.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	7.59	3.81	2.90	2.43	.57	.26	.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	132	26	20	4.3	100.05
J91-27-60.5	74.21	9.88	3.60	.88	1.08	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

J91-26

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
B001	1	112	32	174	4.9	47	16	390	3.79	536	5	ND	1	76	.3	3	2	15	1.27	.097	5	20	1.09	76	.01	3	1.24	.01	.31	1	25	310
B002	1	106	43	149	4.6	52	19	362	4.21	139	5	ND	1	69	.2	2	2	20	1.03	.089	5	22	1.30	60	.01	5	1.73	.01	.26	1	36	290
B003	1	127	18	110	2.9	51	19	498	5.28	44	5	ND	1	63	.2	2	2	26	1.74	.110	5	26	1.64	64	.01	4	2.30	.01	.28	1	7	145
B004	1	118	14	113	1.3	51	18	652	4.38	26	5	ND	1	123	.2	2	2	25	3.15	.109	7	25	1.57	64	.01	3	2.19	.01	.27	1	9	80
B005	1	126	20	99	.3	62	20	856	4.92	20	5	ND	1	266	.2	2	2	29	6.85	.121	5	31	1.49	59	.01	4	2.15	.01	.24	1	7	95
B006	1	120	19	100	.4	57	18	609	4.70	17	5	ND	1	133	.2	2	2	28	3.69	.110	5	29	1.44	71	.01	3	2.14	.01	.25	1	4	75
B007	1	142	137	216	.7	42	14	951	4.05	26	5	ND	1	197	.7	2	2	23	5.30	.091	5	25	1.30	76	.01	3	1.93	.01	.17	1	6	105
B008	1	106	16	97	.4	45	14	843	4.28	24	5	ND	1	198	.2	2	2	24	5.63	.098	5	26	1.38	55	.01	3	2.09	.01	.23	1	6	50
B009	1	103	12	96	.4	45	16	696	4.15	27	5	ND	1	159	.2	2	2	23	4.21	.101	7	26	1.16	53	.01	3	1.92	.01	.22	1	3	70
B010	1	14	12	91	.1	5	4	1257	5.76	2	5	ND	1	310	.2	2	2	1	7.89	.080	4	5	.80	85	.01	4	1.66	.01	.26	1	3	25
B011	1	111	12	103	.7	53	16	778	4.20	36	5	ND	4	185	.2	2	2	24	4.81	.099	9	25	1.37	67	.01	4	2.28	.01	.23	1	8	55
RE B016	1	129	14	123	1.8	33	15	1121	4.58	132	5	ND	2	168	.2	11	2	20	4.59	.122	9	14	1.35	68	.01	5	2.10	.01	.27	1	32	70
B012	1	122	16	115	1.1	28	14	740	4.36	32	5	ND	3	179	.2	2	2	26	4.52	.119	8	17	1.35	63	.01	4	2.28	.01	.23	1	13	105
B013	1	110	17	113	.8	25	13	800	4.41	32	5	ND	3	186	.2	2	2	27	5.13	.115	8	17	1.40	60	.01	4	2.32	.01	.21	1	5	85
B014	1	113	22	118	.7	28	14	867	4.84	39	5	ND	3	207	.2	3	2	28	5.44	.122	8	19	1.42	60	.01	4	2.39	.01	.21	1	11	90
B015	9	86	21	305	1.1	29	11	1287	4.73	89	5	ND	2	152	2.3	2	2	16	4.75	.099	8	15	1.55	64	.01	4	2.41	.01	.21	1	13	65
B016	1	134	16	126	2.0	33	15	1145	4.69	130	5	ND	3	173	.2	3	2	20	4.67	.123	9	14	1.38	68	.01	4	2.13	.01	.28	1	24	60
B017	1	131	20	97	2.2	31	14	1167	4.27	178	5	ND	3	172	.2	12	2	17	4.69	.114	9	11	.99	60	.01	4	1.52	.01	.25	1	24	85
B018	1	102	24	94	2.6	31	14	957	4.08	190	5	ND	3	135	.2	6	2	22	3.60	.121	9	16	1.31	57	.01	4	2.01	.01	.26	1	62	55
B019	1	98	15	97	.9	30	13	677	3.86	28	5	ND	2	237	.2	2	2	27	5.02	.100	8	17	1.35	59	.01	4	2.07	.02	.20	1	8	55
B020	1	113	13	106	.6	30	14	522	3.99	23	5	ND	2	151	.2	5	2	27	3.39	.109	8	18	1.23	65	.01	4	1.94	.02	.20	1	3	85
B021	1	121	13	109	.6	27	14	503	4.18	19	5	ND	3	132	.2	2	2	27	2.84	.105	8	16	1.28	64	.01	3	2.01	.02	.19	1	2	65
B022	1	123	12	118	.3	26	14	539	4.23	19	5	ND	2	153	.2	3	2	29	3.15	.115	8	19	1.36	83	.01	4	2.18	.02	.22	1	1	80
B023	1	128	12	119	.4	28	15	619	4.44	21	5	ND	2	191	.2	2	2	31	3.82	.121	9	20	1.39	98	.01	4	2.24	.02	.21	1	3	70
B024	1	126	11	124	.4	27	14	563	4.45	19	5	ND	3	175	.2	2	2	30	3.38	.119	9	19	1.41	91	.02	5	2.31	.02	.24	1	4	85
B025	1	119	13	118	.4	28	14	609	4.54	18	5	ND	3	184	.2	2	2	30	3.57	.123	8	20	1.39	74	.02	4	2.22	.02	.23	1	2	80
B026	1	134	12	115	.5	44	16	658	4.41	22	5	ND	2	206	.2	2	2	30	4.47	.115	8	22	1.46	82	.01	4	2.27	.02	.24	1	4	75
B027	1	107	12	103	.9	38	14	795	4.17	27	5	ND	2	211	.2	2	2	27	5.11	.103	9	19	1.39	75	.01	4	2.19	.02	.21	1	7	70
B028	1	49	13	101	.5	16	9	668	4.64	11	5	ND	1	228	.2	3	2	12	3.73	.105	6	10	.86	63	.01	3	1.44	.02	.19	1	7	25
B029	1	105	11	96	.7	37	14	581	3.93	27	5	ND	2	128	.2	4	2	24	2.94	.100	8	16	1.36	74	.01	4	2.07	.01	.22	1	11	105
B030	1	97	14	108	.8	49	13	708	3.52	23	5	ND	2	210	.2	2	2	23	4.73	.087	8	23	1.28	80	.01	4	1.91	.01	.20	1	7	75
B031	1	102	10	96	.9	49	14	548	3.58	20	5	ND	2	155	.2	2	2	24	3.26	.085	8	24	1.35	71	.01	4	1.93	.01	.20	1	6	65
B032	1	95	15	96	2.0	33	14	834	4.20	58	5	ND	2	171	.2	5	2	27	2.92	.105	6	17	1.39	75	.01	3	2.09	.02	.28	1	23	85
B033	2	51	14	93	2.1	18	13	1086	4.43	99	5	ND	1	77	.2	3	2	23	1.54	.095	5	11	.90	75	.01	5	1.44	.01	.32	1	78	105
B034	2	25	5	111	.7	10	16	1796	5.26	46	5	ND	1	103	.2	2	2	41	3.27	.099	6	12	1.41	49	.01	2	2.56	.01	.24	1	101	45
B035	1	20	6	93	.8	8	15	1812	5.36	47	5	ND	1	97	.2	2	2	36	3.45	.114	7	8	1.41	50	.01	2	2.57	.01	.26	1	88	10
B036	1	16	3	93	.8	7	14	1932	5.13	55	5	ND	1	95	.2	2	2	42	3.86	.105	6	9	1.32	70	.01	2	2.39	.01	.23	1	89	20
B037	1	19	6	86	.7	10	16	1849	5.42	78	5	ND	1	77	.2	2	2	45	3.13	.097	5	9	1.25	41	.01	2	2.31	.01	.22	1	95	20
B038	1	26	9	98	.9	11	18	2144	5.68	102	5	ND	1	88	.2	2	2	47	3.64	.096	5	10	1.22	55	.01	2	2.39	.01	.24	1	200	30
B039	1	32	19	117	1.0	13	17	2176	5.17	333	5	ND	1	96	.2	2	2	48	3.67	.082	4	10	1.05	43	.01	2	2.07	.01	.24	1	240	40
B040	1	23	4	77	.8	9	15	2812	5.16	61	5	ND	1	146	.2	2	2	46	4.68	.083	4	9	.90	42	.01	2	1.95	.01	.22	1	200	30
B041	1	29	11	83	1.1	12	20	1745	5.77	23	5	ND	1	67	.3	2	2	54	2.09	.095	4	11	.87	65	.01	3	1.82	.01	.22	1	87	45
B042	1	23	6	82	1.0	14	18	1886	5.66	120	5	ND	1	67	.2	2	2	41	2.50	.093	5	12	.86	49	.01	2	2.06	.01	.27	1	97	40
B043	1	10	2	47	.4	11	14	3827	3.73	49	5	ND	1	444	.2	2	2	43	11.73	.047	7	12	.82	33	.01	2	1.71	.01	.15	1	200	10
B044	2	38	19	760	1.4	7	13	1342	4.51	434	5	ND	1	99	4.3	3	2	14	2.89	.135	7	5	.58	73	.01	4	1.01	.01	.25	1	280	315
B045	1	102	13	106	2.7	46	15	1093	4.04	62	5	ND	1	131	.2	2	2	23	3.28	.098	5	18	1.22	57	.01	2	1.92	.01	.27	1	57	50
B046	1	96	13	76	2.7	39	13	1056	3.54	63	5	ND	1	93	.2	2	2	21	2.89	.088	6	17	1.09	56	.01	2	1.72	.01	.26	1	43	50

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
J91-26																																
B047	1	129	10	101	2.7	45	16	1294	4.18	45	5	ND	1	128	.2	2	2	28	3.16	.098	6	21	1.35	73	.01	2	2.04	.02	.31	1	19	45
B048	1	283	1881	927	5.9	40	16	1561	5.61	249	5	ND	1	127	2.3	4	2	22	3.30	.098	5	17	1.07	54	.01	3	1.57	.02	.32	1	270	245
B049	7	161	65	239	8.9	18	9	2736	7.59	197	5	ND	1	149	.2	51	2	14	5.42	.047	3	9	.79	33	.01	2	.93	.01	.18	1	147	2000
B050	1	108	62	286	2.0	25	15	1666	4.94	16	5	ND	1	153	1.6	9	2	15	3.27	.096	5	8	1.46	70	.01	2	1.19	.02	.32	1	120	115
B051	1	124	65	177	1.7	36	16	1323	4.05	62	5	ND	1	212	.8	4	2	13	3.85	.105	6	6	1.48	102	.01	6	.62	.02	.34	1	180	70
B052	1	124	17	99	1.7	51	17	1457	4.31	56	5	ND	1	184	.2	2	2	22	4.63	.102	7	17	1.52	68	.01	2	1.36	.02	.30	1	140	50
B053	1	123	31	122	1.8	47	16	1324	4.32	63	5	ND	1	147	.2	2	2	27	3.36	.104	7	22	1.50	92	.01	2	1.76	.02	.26	1	80	95
B054	1	135	194	208	2.8	58	16	895	4.02	122	5	ND	1	76	.5	3	2	23	1.27	.102	7	20	1.22	57	.01	3	1.10	.02	.26	1	330	80
B055	8	119	2241	2635	7.0	31	12	1724	3.97	202	5	ND	1	197	18.7	9	2	24	4.01	.062	4	22	1.14	46	.01	2	1.08	.01	.18	1	479	770
B056	1	104	26	97	1.4	35	15	1074	4.28	47	5	ND	1	201	.2	2	2	25	4.14	.087	5	16	1.20	80	.01	2	1.76	.02	.26	1	116	35
B057	1	85	15	86	.9	35	15	804	3.96	34	5	ND	1	168	.2	2	2	28	3.54	.090	7	20	1.35	53	.01	2	1.97	.02	.25	1	3	25
B058	1	101	20	105	.6	31	16	902	4.83	46	5	ND	1	115	.2	2	2	20	2.44	.102	6	11	1.59	75	.01	2	1.95	.03	.29	1	11	20
B059	1	101	39	3388	.8	33	13	1524	3.59	532	5	ND	1	157	27.8	4	2	9	4.60	.098	3	9	1.47	59	.01	4	.78	.02	.30	1	20	745
B060	1	81	51	427	.5	42	16	859	4.01	55	5	ND	1	136	2.8	7	2	19	2.43	.104	7	12	1.34	104	.01	4	.85	.03	.31	1	10	70
B061	1	92	87	549	1.4	37	16	1085	4.65	70	5	ND	1	106	3.8	4	2	33	2.29	.093	8	23	1.41	91	.01	2	1.49	.02	.23	1	14	165
B062	1	100	44	316	1.6	32	17	1288	4.65	183	5	ND	1	117	1.4	5	2	27	1.88	.101	7	15	1.44	131	.01	3	1.03	.03	.29	1	27	95
B063	3	62	192	465	1.0	26	14	1587	3.90	1363	5	ND	1	155	2.9	4	2	34	3.15	.076	5	23	.86	71	.01	2	.91	.02	.20	1	73	125
B064	4	78	40	151	1.1	29	17	1271	5.05	282	5	ND	1	68	.2	3	2	38	1.05	.101	5	23	1.39	63	.01	2	1.58	.02	.22	1	41	45
B065	2	167	515	900	1.8	38	18	998	4.63	64	5	ND	1	108	5.1	5	2	15	1.45	.110	7	9	1.13	101	.01	2	.73	.02	.31	1	35	190
B066	1	110	27	110	1.0	50	16	640	4.60	39	5	ND	1	110	.2	2	2	27	1.77	.110	7	23	1.60	118	.01	2	1.95	.02	.28	1	15	70
B067	1	251	129	367	1.5	40	14	1034	3.79	29	5	ND	1	214	2.1	2	2	26	4.42	.095	8	21	1.27	129	.01	2	1.73	.02	.25	1	12	95
B068	1	189	965	1003	1.7	41	16	960	4.66	34	5	ND	1	258	8.6	2	2	29	4.14	.102	6	24	1.28	113	.01	3	1.90	.02	.25	1	20	215
B069	1	114	30	128	.7	56	17	907	4.55	29	5	ND	1	249	.2	2	2	34	4.34	.107	7	34	1.66	108	.01	2	2.32	.03	.24	1	3	50
B070	1	89	14	87	.3	45	15	999	4.07	20	5	ND	1	320	.2	2	2	27	6.02	.084	5	24	1.29	143	.01	2	1.86	.04	.22	1	2	40
B071	1	89	11	79	.2	46	14	866	4.11	18	5	ND	1	299	.2	2	2	29	5.68	.088	5	30	1.32	99	.01	2	1.90	.03	.25	1	1	35
B072	1	84	10	88	.4	45	15	792	4.26	21	5	ND	2	309	.2	2	2	33	4.55	.093	5	31	1.36	116	.01	2	2.09	.04	.23	1	7	65
RE B068	1	181	890	973	1.7	39	16	915	4.46	31	5	ND	1	245	8.4	2	2	27	3.94	.098	5	23	1.22	104	.01	2	1.80	.02	.25	1	15	210
B073	1	97	23	113	.4	30	14	678	4.36	23	5	ND	2	237	.2	2	2	31	3.58	.107	7	20	1.32	98	.01	2	2.10	.03	.22	1	7	75
B074	1	105	145	377	1.2	43	16	2145	4.94	72	5	ND	1	98	.9	4	2	42	1.32	.103	6	30	1.63	72	.01	2	2.21	.04	.26	1	7	95
B075	4	1151	122	2654	6.8	37	20	1161	5.81	187	5	ND	1	98	14.9	5	14	43	1.51	.078	3	32	.88	44	.01	2	1.17	.03	.13	1	64	445
B076	1	131	12	97	.8	39	17	841	3.98	38	5	ND	2	205	.2	2	2	26	3.60	.105	7	19	1.32	76	.01	2	2.06	.02	.24	1	5	55
B077	1	127	14	110	.4	31	16	956	4.62	34	5	ND	3	317	.2	3	2	29	5.19	.117	8	16	1.31	80	.01	2	2.19	.02	.23	1	7	85
B078	1	108	13	95	.3	35	14	930	4.16	32	5	ND	2	303	.2	2	2	27	5.51	.103	6	19	1.28	71	.01	2	2.03	.02	.22	1	6	120
B079	1	117	13	91	.3	47	16	724	4.09	42	5	ND	2	287	.2	2	2	26	4.28	.098	7	22	1.23	86	.01	2	2.03	.02	.21	1	2	70
B080	1	100	11	114	.3	34	13	755	3.78	27	5	ND	2	359	.2	2	2	24	4.82	.092	7	17	1.15	80	.01	2	1.85	.02	.21	1	1	95
B081	1	78	11	86	.3	21	11	920	3.78	20	5	ND	2	525	.2	2	2	27	6.65	.089	5	11	1.27	64	.01	2	1.96	.02	.18	1	1	75
B082	1	112	11	98	.3	43	16	680	4.20	29	5	ND	2	314	.2	3	2	30	3.50	.106	7	22	1.41	76	.01	3	2.03	.02	.20	1	10	80
STANDARD C/AU-R	19	61	38	132	6.9	69	33	1055	4.02	42	17	7	40	52	18.9	15	19	56	.48	.090	40	58	.88	178	.09	33	1.90	.06	.15	13	480	1500

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

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-27 (JEFF GRID) COUL-3

UNUK RIVER PROJECT

PURPOSE

STRATIGRAPHIC

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
17+00 N / 3+38 E	482 m /ALTIM/	270°	187.15 m
DIP	**DIP TESTS**	**VERTICAL PROJECT.**	**HORIZONTAL PROJECT**
−45°	94.49 — 46° 30' 178.31 — 47° HEAD 47°		
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED SEPT. 21/1991**
JEFF TESAR / GORD ALLEN OCT 22/1991	J. T. THOMAS	B.Q	DATE COMPLETED SEPT. 22/1991

SUMMARY LOG (m)

00 - 3.25 OVERBURDEN / CASING
3.25 - 39.90 INTERMEDIATE FINE TO MEDIUM-GRAINED TUFF
39.90 - 64.00 INTERMEDIATE LAPILLI AMYGDALOIDAL TUFF
64.00 - 67.00 INTERMEDIATE MEDIUM TO COARSE-GRAINED TUFF
67.00 - 69.10 TUFFACEOUS MEDIUM TO COARSE-GRAINED SANDSTONE
69.10 - 82.80 SILTSTONE INTERBEDDED WITH ARGILLITE
82.80 - 116.47 ARGILLITE (GRAPHITIC), MINOR SILTSTONE Fossil belemnite ✓ (SALMON RV. Fm?)
116.47 - 123.03 INTERMEDIATE COARSE-GRAINED TUFF TO LAPILLI TUFF
123.03 - 124.50 SILICEOUS INTERMEDIATE VOLCANIC ROCK
124.50 - 143.50 INTERMEDIATE MEDIUM-GRAINED TO LAPILLI TUFF
143.50 - 144.30 ARGILLACEOUS TUFFACEOUS SEDIMENT
144.30 - 151.70 INTERMEDIATE TO MAFIC LAPILLI TUFF
151.70 - 171.40 INTERMIXED FINE-GRAINED SANDSTONE, SILTSTONE AND ARGILLITE
171.40 - 185.15 ARGILLITE, SILTSTONE

SIGNIFICANT MINERALIZED INTERVALS (m)

SAMPLE SERIES: H 277 - H 315
S 319 - S 366

80.65 - 81.45 5% Py; breccia groundmass component
135.50 - 143.50 6-7% Py; fine-grained pyrite in irregular stringers and foliation parallel bands.

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-27

INTERVAL	C. LOSS	LITHOLOGY	C.K	L	S	M	A
00 - 3.25		OVERBURDEN / Casing 00-3.05 /		OV.			
3.25 - 39.90		INTERMEDIATE FINE TO MEDIUM-GRAINED TUFF. H-wall contact not discernable. Foot-wall contact gradational. Grey in colour. Granular texture with fine to medium grain size. Massive structure. In places phyllitic. Quartz - carbonate veinlets and stringers scattered throughout the interval. In places Black, carbonaceous silica filling cracks at all angles to C.A, giving sporadic intervals an appearance of Breccia. In places narrow bands of tectonic breccia, often flooded with quartz-carbonate matrix, vuggy. Mineralized by traces to 2 % of pyrite. Upper part limonitic.		2A-B$_n$			Li-1
		8.65 - 8.80 Narrow Brecciated band, flooded with quartz-carbonate matrix. Vuggy, core broken up. Dominant direction 65° to C.A. Chloritic.			65		Si-3 Ch-2 Ci-2
				2A+B$_n$		Py	
		14.95 - 15.10 Narrow Brecciated band. flooded with quartz-carbonate matrix. Vuggy. Core broken up. Dominant direction 70°		B+			Ch-2 Si-3
				2A-B$_n$ (+)			
		19.80 - 19.95 Phyllitic tuff, mineralized by stringers of pyrite which are parallel to the foliation planes.	70 Si			Py	

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91-27

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
tr Py	H277	12.65	14.15	1.50	16	0.3	2	2		
2% Py ; narrow stringers, disseminated	H278	14.15	15.65	1.50	13	0.5	2	2		
tr-1% Py ; stringers, disseminated.	H279	15.65	17.15	1.50	3	0.4	2	2		
1-2% Py ; narrow stringers, disseminated.	H280	17.15	18.65	1.50	1	0.4	2	2		
2% Py ; — " —	H281	18.65	20.15	1.50	1	0.5	3	2		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J 91-27

INTERVAL	C. LOSS	LITHOLOGY	C ∢	L	S	M	A
		20.50 - 20.60 Gouge / Fault, flanked by zones of brecciated tuff, flooded with quartz - carbonate matrix. Dominant angle 85°	70 S1; 70 S1	2 A - Bn			Si-1

20 25 30 35 40

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-27

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
1-2% Py; narrow stringers, disseminated	H282	20.15	21.65	1.50	2	0.4	2	2
2% Py; — " —	H283	21.65	23.15	1.50	4	0.4	3	2
tr Py	H284	23.15	24.65	1.50	1	0.4	2	2
tr Py	H285	28.80	29.90	1.10	4	0.5	2	2
1-2% Py; narrow stringers, disseminated	H286	29.90	31.35	1.45	2	0.4	5	2
tr Py	H287	31.35	32.45	1.10	1	0.4	2	2
tr Py	H288	32.45	33.72	1.27	1	0.5	2	2
1-2% Py; narrow stringers, disseminated	H289	33.72	35.30	1.58	5	0.5	3	2
tr Py	H290	35.30	36.58	1.28	2	0.4	2	2

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-27

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
39.90-64.00		INTERMEDIATE LAPILLI AMYGDALOIDAL TUFF H-wall contact gradational. F-wall contact gradat. Grey in colour, fragmental texture with lapilli - up to 3 cm. within carbonate, medium grained matrix. Vesicular texture throughout the interval with variable intensity. Amygdules are white, carbonaceous, subangular and/or rounded. Anastomosing narrow carbonate-quartz stringers throughout the interval. Their intensity increase down the hole. Weakly sericitic. In places tuff grades into fine-grained. Mod. siliceous.		2Da(A) 2Da(Bx)		P2	Si-2 Si-1 C6-1 Se-1 Si-2
		41.45-42.60 Minor fault zone. 4 narrow bands of gouge which are flanked by narrow breccia intervals flooded with limonitic quartz-carbon. matrix. Dominant direction 90° to the C.A. Core broken up. Sericitic weakly.		2Da(A)			
		55.88-64.00 Increase in silica content. Also amygdaloidal fragments predominant. Common bands of black cherty (carbonaceous?) matrix. Increase in intensity of quartz-carbonate stringers; 7-8% of the interval. H-wall contact gradational. In places lapilli texture grades to fragmental. Increase in mineralization by pyrite. F-wall contact gradational.		2D-(E)a(A)		P2	Si-2 C6-1

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. 791-27

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
tr - 1% Py ; disseminated	H291	39.90	41.45	1.65	1	0.4	3	2
tr Py	H292	41.45	42.60	1.15	1	0.3	3	2
1-2% Py ; narrow stringers, blobs, disseminated	H293	45.72	47.22	1.50	4	0.7	11	7
1% Py ; — " —	H294	47.22	48.62	1.40	2	0.6	7	2
tr - 1% Py ; disseminated	H295	48.62	50.30	1.68	1	0.6	6	2
2% Py ; disseminated, narrow stringers.	H296	50.30	51.80	1.50	1	0.6	22	6
2% Py ; — " —	H297	51.80	53.30	1.50	2	0.5	26	2
1-2% Py ; — " —	H298	53.30	54.80	1.50	3	0.5	22	2
1-2% Py ; — " —	H299	54.80	56.30	1.50	2	0.7	53	2
2% Py ; — " —	H300	56.30	57.80	1.50	4	0.5	53	7
2-3% Py ; — " —	H301	57.80	59.30	1.50	3	0.5	71	5
2% Py ; — " —	H302	59.30	60.80	1.50	6	0.4	166	3
3% Py ; — " —	H303	60.80	62.30	1.50	2	0.5	97	7

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-27

INTERVAL	C. LOSS	LITHOLOGY	C.K	L	S	M	A
64.00 – 67.00		INTERMEDIATE MEDIUM TO COARSE TUFF Hang.-wall contact gradational. F-wall contact 40°, sharp, marked by quartz-carbonate vein (4cm in true width). Grey to dark-grey in colour, granular texture with medium to coarse grain size. In places blackish, anastomosing, narrow stringers of chert, giving the rock a lapilli (feature) pattern. Interval is uniform, mineralized by narrow bands or blebs and disseminated pyrite, siliceous.		2D-(E)a(s) 2B-Cs 7Lx-yT(b)			Si-2 Cb-1 Py Si-2
67.00 – 69.10		TUFFACEOUS MEDIUM TO COARSE-GRAINED SANDSTONE H-Wall contact 40°, sharp marked by quartz-carbonate veinlet (4cm in true width). F-Wall contact gradational. Grey in colour, with characteristic tuffaceous appearance and very minor inclusions of argillite. In places poorly bedded.		7K, 7T 7Kx			Si-2 Cb-1
69.10 – 82.80		SILTSTONE INTERBEDDED WITH ARGILLITE H-Wall contact gradational. F-Wall contact gradational. Dark grey siltstone interbedded with black argillite (Tops downhole). In places quartz-carbonate stringers or zones of brecciation flooded with quartz-carbonate matrix. Increase argillite content downhole.		tops 7K, 7T			Py
		72.00 – 72.90 Fault Zone. Rock brecciated, sheared, in places gouge, flooded with quartz-carbonate matrix, also graphitic. Sense of movement along 60° to the core axis.					

60 65 70 75 80

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J 91-27

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
2-3% Py; narrow bands, single string, specks, disem.	H304	62.30	64.00	1.70	3	0.8	323	27
2-3% Py; — " —	H305	64.00	65.50	1.50	4	0.7	218	14
1-2% Py; stringers, specks, disseminated	H306	65.50	67.00	1.50	4	0.3	30	2
— " —	H307	67.00	69.10	2.10	7	0.7	44	2
1% Py; — " —	H308	69.10	70.50	1.40	10	0.6	31	9
tr Py; narrow concordant pyritic bands	H309	70.50	72.00	1.50	39	2.0	54	31

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-27

INTERVAL	C. LOSS	LITHOLOGY
		80.60 - 81.45 Band of brecciated argillite, flooded with quartz-carbonate matrix
82.80 - 116.47		ARGILLITE (± GRAPHITIC), MINOR SILTSTONE. Black in colour argillite interbedded with minor grey siltstone. Siltstone content decreases down the hole and the interval grades into argillite. In places increase in mineralization by pyritic bands. Bedding planes at 80° to C.A tops down hole. Argillite is graphitic.
		89.85 - 89.95 Minor fault. Narrow band of gouge at 65° to C.A graphitic, flanked by narrow bands of brecciated argillite, flooded with quartz-carbonate matrix — — — quartz-carbonate stringers striking parallely to the C.A.
		90.00 - 116.47 (G. ALLEN) Black massive argillite, probably graphitic. Minor dark grey siltstone beds to 5mm. Disseminated pyrite concentrated along 1mm to 2cm beds (syngenetic?). Rock is cut by a relatively few quartz-carbonate stringers.

C.A | L | S | M | A

80 85 90 95 100

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

I91-27

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
tr Py ; narrow stringers parallel to the bedding plane	H310	79.34	80.65	1.31	2	0.2	12	2
5% Py; breccia groundmass component, string, often anastomosing, blebs, disseminated. *	H311	80.65	81.45	0.80	2	0.5	10	2
1% Py ; narrow stringers parallel to the bedding planes., disseminated.	H312	81.45	82.30	0.85	1	0.2	8	2
tr-1% Py — " —	H313	82.30	83.80	1.50	4	0.2	10	2
tr-1% Py — " —	H314	83.80	85.28	1.48	4	0.1	13	2
— " —	H315	89.54	90.94	1.40	16	0.3	25	5
90.94 - 113.7 - ≤1% pyrite concentrated along 1mm to 2cm bits or bands with a calcareous matrix.	S-319	90.94	92.40	2.16	3	0.2	25	3
	S-320	92.40	93.60	1.20	4	0.2	35	4
	S-321	93.60	95.08	1.48	3	0.3	33	6
	S-322	95.08	96.50	1.42	2	0.4	24	2
	S-323	96.50	97.94	1.44	2	0.4	20	2
	S-324	97.94	99.38	1.44	2	0.4	20	2
	S-325	99.38	100.80	1.42	2	0.2	25	2

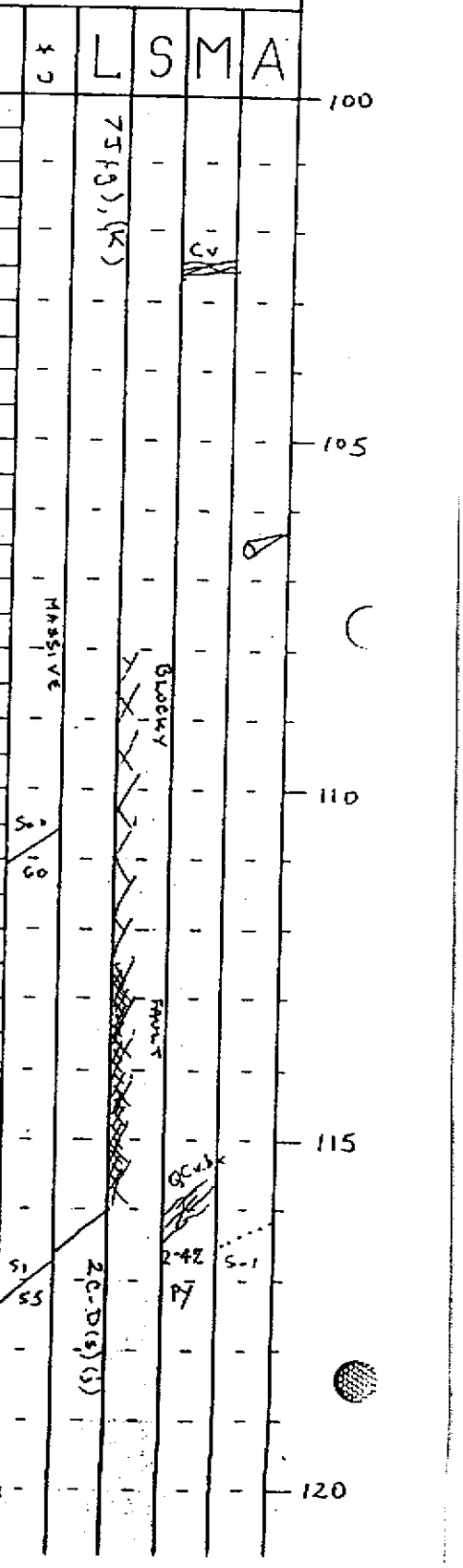
GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

I91-27

INTERVAL	C. LOSS	LITHOLOGY
		102.45-102.66 - White carbonate stringer - breccia zone.
		106.68 Fossil Belemnite
		112.5-115.91 - FAULT - Broken core, rubble. Polished graphitic shear surface 20-45° CA. Minor gouge. Roughly 50% core loss between 112.78 and 115.82, probably down to 115.82.
		116.1-116.47 - Quartz - carbonate stringer - breccia zone. 40° CA
116.47-123.03		INTERMEDIATE COARSE-GRAINED TUFF TO LAPILLI TUFF Mottled medium blue-grey and black coarse-grained to lapilli tuff with vague generally indistinct white-grey aphanitic monolithic fragments to 1 cm flattened in the plane of foliation. Irregular pyritic and foliation-parallel bands of black chloritic material contain 15-20%



GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-27

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
100	S-326	100.80	102.32	1.52	3	0.3	26	2
	S-327	102.32	103.80	1.48	3	0.3	26	2
	S-328	103.80	105.25	1.45	4	0.4	37	3
	S-329	105.25	106.68	1.43	6	0.4	35	6
	S-330	106.68	108.12	1.44	1	0.4	34	4
105	S-331	108.12	109.85	1.73	4	0.4	32	6
	S-332	109.85	111.50	1.65	4	0.6	34	8
	S-333	111.50	112.96	1.46	12	0.4	41	7
	S-334	112.96	113.70	0.74	2	0.6	43	5
	S-335	113.7	116.47	2.77	8	0.4	33	5
110	S-336	116.47	118.05	1.58	4	0.3	72	2
	S-337	118.05	119.80	1.75	3	0.1	20	2
	S-338	119.80	120.70	0.90	3	0.2	25	2
115								
116.47 - 123.03 - 2-4% sporadic pyrite along fracture and in 1-2mm discontinuous foliation - parallel bands.								
120								

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-27

INTERVAL	C. LOSS	LITHOLOGY	∠ CA	L	S	M	A
		1-2 mm blue-grey 'patches' which could be fragments or possibly alteration texture. The black cherty material may be a silica-rich tuff or an alteration of the adjacent tuff. Grey parts of unit sporadically moderately siliceous. Black parts possibly silicified argillaceous tuff?	S1 50	2C-D(S)(?)		QC stringer zone; 2-2% PY	Si-1
		119.8-121.28- Quartz and minor carbonate stringer zone. 20% white quartz-carbonate stringers subparallel to 90° CA. Stringers to 2cm.		2 4		2% PY; 1-2% PY	Si-2; Se-1
123.03-124.5		SILICEOUS INTERMEDIATE VOLCANIC ROCK Black cherty groundmass with 20-30% 1mm × 1-5mm blue-grey masses and streaks parallel to foliation. Could be fragments, amygdules(?) or patchy alteration. Cut by minor ≤1 mm blue-grey chalcedonic stringers and masses to 3 mm.	S1 70	4-B-D+			
124.5-143.50		INTERMEDIATE MEDIUM-GRAINED TUFF TO LAPILLI TUFF Medium grey fine-grained soft sericitic phyllitic rock with vague flattened fragments to 1 cm. Unit contains 10% blue-grey chalcedony in irregular foliation-parallel stringers up to 5mm wide. Unit cut by ≤5% white 1-5cm quartz-carbonate stringers 30-60° CA crosscutting foliation.	S1 65			5-12% PY	Si-2
		130.1 - Kink banded ( ) foliation	S1 60				
		134-137- few 1-3mm blue-grey quartz amygdules in vague fragments to 3 cm.					
		133.5-143.5- Moderately silicified.				10-15% PY	
*		133.5-143.5- SULPHIDE ZONE - Pyrite spatially related to small thinly banded blue-grey and black chalcedony stringers and open space fillings up to 5mm wide (avg ≤1mm).	S1 50			5-12% PY; 8-10% PY	

Depth marks (right margin): 120, 125, 130, 135, 140

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-27

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
120								
	S-339	120.7	121.26	0.56	1	0.1	21	2
	S-340	121.26	122.10	0.82	27	0.1	26	2
	S-341	122.10	123.03	0.93	2	0.1	24	2
	S-342	123.03	124.50	1.47	1	0.1	16	2
123.03-124.5 - 2% pyrite predominantly in stringers adjacent blue-grey chalcedony.	S-343	124.50	125.95	1.45	1	0.1	15	2
125	S-344	125.95	127.47	1.52	3	0.1	25	2
124.5-133.5 1-2% pyrite along fractures and foliation - parallel bands to 5mm.	S-345	127.47	128.94	1.47	2	0.1	22	3
	S-346	128.94	130.50	1.56	3	0.1	18	2
	S-347	130.50	132.0	1.50	7	0.1	37	2
	S-348	132.0	133.5	1.50	2	0.1	48	2
130	S-349	133.5	134.5	1.0	32	0.1	187	6
	S-350	134.5	135.5	1.0	4	0.2	93	2
	S-351	135.5	136.5	1.0	1	0.1	57	3
* 133.5-134.5 - 5-7% fine-grained pyrite in irregular stringers and foliation - parallel bands up to 1 cm wide.	S-352	136.5	137.5	1.0	2	0.1	259	2
135	S-353	137.5	138.9	1.4	1	0.1	152	2
136.5-137.5 - 10-15% pyrite as above.	S-354	138.9	140.0	1.1	2	0.1	406	2
137.5-138.9 - 5-7% pyrite.								
138.9 - 143.5 - 8-10% pyrite as above. In some parts pyrite appears to be within the brecciated intervals								
140								

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-27

INTERVAL	C. LOSS	LITHOLOGY
		142-143 - Closely spaced rounded light-grey mocks up to 3 mm in zone to 5 cm. Could be pelitic texture from weathered volcanic rock.
143.50 - 144.30		ARGILLACEOUS TUFFACEOUS SEDIMENT Medium to dark grey fine-grained tuffaceous sediment with an argillaceous component. Poorly bedded.
144.3 - 151.7		INTERMEDIATE TO MAFIC LAPILLI TUFF Light to dark green fine-grained phyllitic chloritic groundmass with 40-50% <1 mm to 3 cm medium to light greenish-grey aphanitic volcanic fragments flattened in the plane of foliation. Fragments are rarely amygdaloidal (<0.5 mm) and have fine-grained feldspar phenocrysts. 144.3 - 147.3 - Weak quartz stringer zone, 5% white quartz and minor carbonate stringers to 5 cm with some associated dark green fine-grained chlorite.
151.7 - 171.40		INTERMIXED FINE-GRAINED SANDSTONE, SILTSTONE AND ARGILLITE Medium blue-grey massive fine-grained sandstone in intervals to 2 m with minor dark grey to black siltstone and argillite intervals. 151.7 - 154.5 - Weak quartz-carbonate-chlorite stringer zone; stringers and veins to 10 cm 60° to subparallel to core axis. 10% vein material. 159.7 - 159.9 - Broken, sheared core.

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-27

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
140								
	S-355	140.0	141.0	1.0	10	0.1	304	2
	S-356	141.0	142.0	1.0	9	0.1	255	13
	S-357	142.0	143.0	1.0	5	0.1	265	18
	S-358	143.0	143.5	0.5	2	0.1	407	18
143.5 - 144.3 - 1-2% pyrite; disseminated and in foliation - parallel bands to 2 mm.	S-359	143.5	144.30	0.8	11	0.1	100	2
145	S-360	144.30	145.83	1.53	5	0.1	2	3
144.3 - 147.3 - 1% pyrite usually associated with quartz stringers.	S-361	145.83	147.3	1.47	1	0.1	2	2
147.3 - 187.15 <1% pyrite along fractures, disseminated and in bedding - parallel bands to 1 mm.	S-362	147.3	148.85	1.55	3	0.1	4	2
	S-363	148.85	150.28	1.43	10	0.1	2	2
	S-364	150.28	151.7	1.42	18	0.1	3	2
150								
155								
160								

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

J91-27

INTERVAL	C. LOSS	LITHOLOGY	U	L	S	M	A
		161.54 - 163.4 - Sheared subparallel to core axis. Weak breccia zone.	So 10 / So 40			<1% Py	
		169.60 - 169.93 - Quartz - carbonate - flooded breccia zone, subparallel to bedding.	So 65			QCv	
171.40 - 187.15		SILTSTONE ARGILLITE Dark grey to black thinly laminated siltstone and argillite. Unit cut by <5% irregular white quartz - carbonate stringers up to 5 cm, generally subparallel to bedding. Generally laminated with traces of pyrite.	So 60 / So 71 / So 70				

160 165 170 175 180

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
J91-27

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
		S-365	172.43	173.84	1.41	6	0.1	8	2		

160
165
170
175
180

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No.
J91-27

INTERVAL	C. LOSS	LITHOLOGY	∠ C	L	S	M	A	Depth
		180.3 - 181.3 - Quartz - carbonate stringer zone. 10% white quartz - carbonate stringers to 5 cm. Minor pyrite.	S0/55			QCV <1% PY	STRINGER ZONE	180
		184.4 - possible graded bed suggesting tops down hole						
			S0/45					185
		186.3 - 187.15 - FAULT - Broken core, rubble. Sheared 45° & 20° CA. Hole abandoned. (Rods tight).			FAULT			
					187.15 E.O.H.			
								190
								195
								200

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

391-27

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
180.3 - 181.3 - Stringer zone. <1% pyrite	S-366	180.3	181.3	1.0	2	0.1	15	2		

180

185

190

195

200

Sample J-91-27 32.65 m **Andesite Flow; Zoned Replacement Patch of Ankerite-Calcite-Quartz-Pyrite-(Chlorite)**

The host rock is a uniform andesite flow which was sheared slightly to moderately. Wispy opaque and semiopaque seams in the groundmass define a weak foliation parallel to the planes of shearing.

Plagioclase (40-45%) ranges from lathy grains up to 0.15 mm long to equant grains as fine as 0.01-0.03 mm in size. The latter are intergrown with chlorite (8-10%) of similar grain size. A slightly preferred orientation of lathy grains defines a weak flow foliation.

Ankerite (3-4%) forms disseminated patches averaging 0.05-0.15 mm in size.

Opaque (pyrite?) (2-3%) forms disseminated grains averaging 0.02-0.05 mm in size.

The replacement patch is zoned strongly.

Along one margin is a thin selvage of fine to medium grained pyrite with interstitial very fine grained quartz and chlorite. Quartz was recrystallized in comb-textured aggregates against pyrite grains.

Near the host rock and near one end of the section in zones up to a few mm wide are patches of very fine to fine grained ankerite containing abundant dusty opaque (black in hand sample). Some ankerite grains have euhedral terminations against coarse calcite. Ankerite patches are cut and replaced by patches of coarse to very coarse grained calcite with minor to abundant very fine to medium grained quartz (colorless in hand sample).

In the core of the replacement patch is an elongate V-shaped zone which is outlined by a rim up to 1 mm wide containing abundant extremely fine to very fine grained pyrite. Along one side of the patch, just inside the pyrite rim is an elongate inclusion of andesite flow(?). It contains scattered clusters of ragged plagioclase grains averaging 0.1-0.2 mm in size in an extremely fine grained groundmass containing scattered aggregates of pyrite 0.01-0.02 mm in grain size enclosed in patches of chlorite. Ankerite forms minor disseminated grains, possibly of replacement origin. Opaque (pyrite?) forms minor disseminated grains averaging 0.05-0.80 mm in size.

The core of the V-shaped zone is of very fine ankerite with less calcite, minor quartz, and moderately abundant disseminated pyrite grains averaging 0.02-0.05 mm in size.

At the extreme end of the section is a thin zone of host rock andesite flow as in the main patch at the other end of the section.

Sample J-91-27 60.0 m Amygdaloidal Aphanitic Latite Flow; Early Replacement by Chalcedonic Quartz-(Ankerite); Later Replacement by Quartz-Calcite-Pyrite-Sericite-Chlorite

The host rock (35-40%) contains minor lathy plagioclase grains over 0.05 mm long in an extremely fine grained groundmass dominated by plagioclase with moderately abundant dusty opaque.

Amygdules (10-12%) are mainly from 0.1-0.2 mm in size, with a few from 0.2-0.5 mm across. Smaller ones are of single grains or a few grains of quartz. Some larger ones contain aggregates of very fine grained quartz and less abundant pyrite and muscovite. Those over about 0.5 mm across are mainly of extremely fine grained quartz which appears to have been recrystallized from coarser grained aggregates. Some contain porphyroblasts of ankerite as in the replacement patches.

A few amygdules up to 1 mm across are of very fine to fine grained aggregates of ankerite and pyrite with minor to moderately abundant, extremely fine to very fine grained patches of quartz, sericite, and chlorite.

Early replacement (40-45%, grey in hand sample) is of extremely fine grained, chalcedonic quartz. Ankerite forms equant to elongate porphyroblasts averaging 0.2-0.7 mm in size. Some patches are cut by veinlets up to 0.1 mm wide of very fine grained quartz, which is associated with the coarser grained replacement patches.

Several veinlets averaging 0.05-0.1 mm in width cut the host rock. These consist of extremely fine grained aggregates of quartz and sericite, and may be associated with the early replacement.

Later replacement (17-20%, white in hand sample) is dominated by very fine to fine grained quartz, which commonly is slightly to moderately strained and slightly recrystallized. Near borders of many patches are aggregates of fine grained pyrite surrounded by quartz with less sericite and chlorite. Sericite and chlorite are especially concentrated along borders of the replacement patches against the host rock. Quartz forms comb-textured aggregates growing outwards from pyrite crystal faces. A few patches contain cores of medium grained calcite. Medium orange brown sphalerite forms a very few ragged grains up to 0.2 mm in size in quartz.

Sample J-91-27 60.6 m — Brecciated Slightly Porphyritic, Amygdaloidal Aphanitic Latite; Matrix of Quartz-Pyrite

Phenocrysts up to 0.8 mm in size of plagioclase (0.2%) are altered slightly to sericite and ankerite.

The groundmass (35-40%) contains scattered lathy plagioclase averaging 0.03-0.07 mm long in a groundmass of aphanitic to extremely fine grained lathy to equant plagioclase and dusty semiopaque. Extremely fine grained sericite is moderately abundant in a few diffuse patches.

Amygdules (5-7%) averaging 0.07-0.2 mm in size are of single grains or clusters of a few very fine grains of quartz. Larger amygdules averaging 0.3-0.7 mm in size commonly contain patches of very fine grained quartz recrystallized in part to extremely fine grained aggregates. Medium orange sphalerite forms a few patches up to 0.2 mm in size. Chlorite forms scattered clusters of a few, very fine grained flakes.

Two veins (2-3%) up to 1.2 mm wide in the largest fragment are dominated by very fine to fine grained pyrite with much less interstitial chlorite, and minor interstitial quartz and sericite.

The breccia matrix contains border zones dominated by extremely fine grained quartz (30-35%). Ankerite (2-3%) forms scattered, ragged patches averaging 0.05-0.15 mm in size, and locally up to 0.3 mm across. A few elongate ankerite grains are form 0.5-1 mm long. Cores of zones are of fine to medium grained quartz (10-12%) and minor pyrite (1%). Sericite (1%) forms scattered clusters of extremely fine grains, mainly near borders of fragments.

Pyrite (3-4%) is concentrated in irregular patches in the smaller fragments as extremely fine to locally fine grained aggregates.

A coarse pyrite grain in the breccia matrix contains a veinlet 0.02 mm wide of chalcopyrite and a few inclusions up to 0.02 mm in size of pyrrhotite. Other coarse grains contain minor inclusions of one or more of chalcopyrite, sphalerite, and pyrrhotite.

Sample J-91-27 68.0 m Andesite/Latite Coarse Tuff (Unit 2C)

Fragments up to 2 mm in size are of a variety of andesite flows.

One fragment contains a few equant phenocrysts of plagioclase from 0.2-0.4 mm in size and a few prismatic ones up to 0.6 mm long in a groundmass of lathy plagioclase up to 0.2 mm long and interstitial plagioclase and moderately abundant opaque. Another 2 mm across is similar but lacks plagioclase phenocrysts.

One fragment 2 mm long contains moderately oriented lathy plagioclase grains averaging 0.05-0.07 mm long in a groundmass replaced by fine to medium grained, skeletal, porphyroblasts of ankerite.

A few fragments are of andesite/latite and latite containing lathy plagioclase up to 0.1 mm long in a groundmass of aphanitic plagioclase and abundant extremely fine grained opaque.

One ragged fragment 2.5 mm long and two 1.5 mm long are of an extremely fine grained andesite flow with a weak flow foliation and moderately abundant opaque in the groundmass. It contains 7-10%, commonly flattened amygdules averaging 0.1-0.3 mm in size of extremely fine grained sericite.

One latite flow fragment 2 mm long has well developed perlitic fractures, with ellipsoidal surfaces ranging in major diameter from 0.1-1 mm. The glass was recrystallized to extremely fine grained plagioclase which, in turn, was altered slightly to sericite.

One latite/dacite fragment 1.5 mm across contains phenocrysts of quartz and plagioclase in an extremely fine grained groundmass dominated by cherty plagioclase/quartz, with 2-3% sericite and 1-2% disseminated, extremely fine grained opaque.

A few fragments up to 1.5 mm long are of latite pumice; they consist of extremely fine grained sericite with lensy patches of extremely fine grained sericite outlined by dusty to aphanitic opaque.

Quartz forms a few grains up to 0.4 mm across.

Plagioclase forms a few grains up to 0.5 mm in size; alteration is slight to sericite.

The groundmass is dominated by sericite and plagioclase, with moderately abundant dusty to extremely fine grained, disseminated opaque and wispy seams rich in opaque. Sericite is moderately to strongly oriented in the foliation plane. Pyrite (1-2%) forms single grains and clusters of grains averaging 0.02-0.05 mm in grain size.

A few irregular,lensy replacement seams and lenses are of very fine grained pyrite and minor quartz.

Sample J-91-27 71.0 m Argillaceous Andesite Tuff (Unit 2Bj.1/2Gau.1/2Gu)

One fragment up to 1.5 cm long is of extremely fine grained, amygdaloidal andesite/basalt. The groundmass is variable and in places contains very abundant opaque. Amygdules up to 0.7 mm in size are dominated by sericite and minor chlorite and ankerite.

One equant fragment 3.5 mm across contains an equant phenocryst of plagioclase 0.5 mm across in a groundmass of extremely fine grained plagioclase-sericite, with 5-7% disseminated pyrite.

A few fragments up to 2 mm long are of aphanitic to very fine grained andesite, and contain lensy patches of sericite which may represent flattened amygdules.

A few fragments are of slightly porphyritic latite, and contain minor plagioclase phenocrysts in an extremely fine grained groundmass dominated by plagioclase and sericite.

Most fragments are from 0.1-0.3 mm in size. They are of a variety of aphanitic to very fine grained volcanic rocks, plagioclase aggregates and single grains, and quartz grains.

The groundmass is dominated by aphanitic plagioclase and carbonaceous opaque; the latter is concentrated in seams parallel to foliation, and generally obscures any other minerals.

Sample J-91-27 118.1 m Metamorphosed Latite/Andesite Flow (Unit 2G); Seams of Opaque; Vein of Chalcedonic Quartz-Ankerite

Plagioclase (0.2%) forms prismatic phenocrysts averaging 0.2-0.3 mm long.

The groundmass is dominated by lathy to equant plagioclase averaging 0.03-0.1 mm in grain size. Sericite (1%) forms local concentrations of extremely fine grained flakes. Ankerite (1-2%) forms scattered, irregular replacement patches. Pyrite (1-2%) forms disseminated equant grains averaging 0.02-0.04 mm in size. Apatite (0.2%) forms acicular grains averaging 0.1-0.2 mm long. Carbonaceous(?) opaque (2-3%) is concentrated irregularly in the groundmass in dense patches up to 3 mm in size.

Opaque (2-3%) forms irregular seams averaging 0.05-0.1 mm in width.

Veins and replacement patches up to a few mm across are dominated by extremely fine grained, chalcedonic quartz, in which patches averaging 0.1-0.15 mm in size are in approximate parallel optic orientation. A few patches up to 1.5 mm in size, mainly in one vein, are dominated by extremely fine grained sericite with much less quartz. Sericite was recrystallized slightly in small kink folds. Ankerite (1-2%) forms a few, irregular very fine grained patches up to 1.2 mm in size in the cores of patches of chalcedonic quartz.

Sample J-91-27 137.4 m **Brecciated Amygdaloidal Andesite/Latite Flow (Unit 2Ga); Matrix of Pyrite-Quartz-Ankerite**

A few elongate phenocrysts of plagioclase average 0.2-0.3 mm long. The groundmass is dominated by lathy plagioclase grains averaging 0.07-0.12 mm in length. Ankerite (3-4%) is concentrated in some patches as ragged, disseminated grains up to 0.1 mm in size. Chlorite (0.3%) forms scattered lenses up to 0.2 mm long. Pyrite (0.5%) forms disseminated grains averaging 0.02-0.05 mm in size. Ti-oxide (minor) forms elongate grains averaging 0.02-0.03 mm long.

Amygdules (4-5%) vary widely in size and texture. A few amygdules from 0.3-0.9 mm in size are of very fine grained quartz. Some are recrystallized slight to extremely fine grained aggregates. An amygdule 1.2 mm across has a thin border zone of very fine grained quartz and a core of extremely fine grained quartz and ragged grains of ankerite. A few larger amygdules are of extremely fine grained quartz with irregular patches of ankerite. On the border of one is a veinlike zone up to 0.3 mm wide of very fine grained ankerite and moderately abundant pyrite.

In the breccia matrix, pyrite (17-20%) forms clusters of grains averaging 0.02-0.07 mm in size, and a few grains from 0.1-0.25 mm across. Interstitial to pyrite is very fine grained quartz showing comb textures.

Quartz (17-20%) forms aggregates recrystallized aggregates with well developed comb textures extending outwards from pyrite grains. Some of these are tightly folded. Ankerite (3-4%) forms irregular, very fine grained patches intergrown with quartz.

Ti-oxide forms a few patches up to 0.1 mm in size of extremely fine grained aggregates in pyrite.

Sample J-91-28 52.8 m **Sheared Latite Lapilli Tuff with Fragments of Sheared Basalt Flow (Unit 2Dr.1Gur); Veinlets of Chalcedonic Quartz, Ankerite**

Fragments (30%) up to 2 cm long are of sheared basalt flows containing plagioclase grains averaging 0.02-0.03 mm long in an opaque-rich groundmass. Seams of opaque define a prominent foliation.

The groundmass (60%) is dominated by extremely fine grained sericite with much less abundant plagioclase. Wispy seams of semiopaque define a prominent foliation, along which the rock was sheared strongly and kink folded. Pyrite (2-3%) forms disseminated grains averaging 0.02-0.05 mm in size.

Irregular replacement patches (3-4%) are of very fine to fine grained pyrite with minor interstitial patches of sericite and quartz. The latter forms comb-textured aggregates outwards from pyrite grains. Pyrite (1-2%) also forms disseminated grains averaging 0.1-0.4 mm in size; many of these have partial rims of comb-textured aggregates of quartz.

Other irregular replacement patches and veinlets up to 0.5 mm wide are of extremely fine grained, chalcedonic quartz (4-5%). A few veinlets also contain patches of fine grained ankerite (1%).

WHOLE ROCK ICP ANALYSIS

Grandes 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	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	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	.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	.74	.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	3.63	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	174	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	.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	.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	.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	.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	1.36	.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	.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	.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	.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	.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	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	103	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

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 %
J91-27-71.0	49.23	16.77	12.81	2.90	[illegible]	2.18	3.39	2.25	.31	.11	.003	2653	174	34	233	42	51	8.8	99.81
J91-27-118.1	57.65	16.32	5.98	.88	1.65	2.87	3.79	3.87	.72	.02	.003	2739	158	20	225	36	20	5.6	99.87
J91-27-137.4	54.14	10.13	15.04	1.09	2.40	3.82	1.56	1.88	.46	.05	.002	795	196	23	170	18	98	8.1	99.87
J91-28-30.5	63.38	10.77	3.00	1.45	1.39	5.90	.43	.99	.15	.17	.013	287	442	10	68	10	20	6.1	99.86
J91-28-52.8	57.15	12.64	9.77	1.37	5.23	2.43	3.16	2.16	.48	.13	.002	586	173	16	155	26	44	5.2	99.87
J91-28-66.8	49.72	11.99	19.52	3.79	4.24	1.51	1.46	2.10	.45	.19	.002	248	124	24	1216	35	89	4.8	99.88
RE J91-28-30.5	63.36	10.65	3.05	1.44	1.24	5.66	.37	1.00	.13	.17	.012	251	434	10	68	11	20	6.8	99.99
J91-28-80.1	55.37	13.22	13.89	2.29	1.06	2.24	1.65	1.02	.22	.20	.006	1161	88	52	246	31	25	8.9	100.32
J91-28-86.9	50.34	14.75	8.23	3.42	5.05	.07	5.35	2.41	.61	.25	.002	564	157	13	178	33	20	9.4	100.03
J91-28-109.85	66.21	13.30	6.45	2.84	.53	.05	5.29	.63	.02	.14	.002	829	39	17	203	30	20	4.4	100.08
J91-28-115.7	59.18	14.76	9.93	3.60	.48	.06	5.55	1.47	.35	.19	.004	904	59	10	151	24	20	4.4	100.14
STANDARD SO-4	67.71	10.41	3.43	.99	1.60	1.34	2.10	.56	.22	.11	.007	794	188	28	292	20	20	11.3	99.98

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

ACME ANALYTICAL

J 91-27

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
S319	29	35	13	181	.2	35	6	682	3.38	25	5	ND	1	181	1.6	3	2	23	6.08	.055	3	3	1.63	60	.01	2	.71	.02	.09	1	3	535
S320	42	44	16	319	.2	54	7	385	3.51	35	5	ND	1	105	3.1	4	2	17	3.59	.050	2	4	.97	50	.01	2	.36	.02	.08	1	4	695
S321	37	50	16	346	.3	55	7	369	3.33	33	5	ND	1	111	3.4	6	2	23	3.52	.047	2	3	1.27	54	.01	2	.36	.02	.10	1	3	525
S322	28	44	13	327	.4	53	6	451	3.19	24	5	ND	1	144	3.1	2	2	27	4.14	.047	3	5	1.23	67	.01	2	.86	.02	.09	1	2	705
S323	31	38	15	284	.4	49	6	625	3.33	20	5	ND	1	140	2.7	2	2	23	6.09	.053	4	5	1.03	62	.01	2	1.00	.02	.08	1	2	845
S324	24	48	11	387	.4	49	5	631	2.93	20	5	ND	1	166	3.9	2	2	28	7.86	.076	4	7	.88	65	.01	2	.91	.02	.08	1	2	840
S325	27	58	16	356	.2	55	8	342	3.89	25	5	ND	1	70	3.6	2	2	25	2.53	.048	2	6	1.00	72	.01	2	1.01	.02	.09	1	2	880
S326	27	54	16	397	.3	58	7	329	3.84	26	5	ND	1	57	4.1	2	2	26	2.11	.043	2	7	1.02	74	.01	2	.92	.02	.10	1	3	795
S327	22	43	14	278	.3	43	6	400	3.46	26	5	ND	1	119	2.9	2	2	20	4.19	.057	2	6	.90	73	.01	2	.86	.02	.09	1	3	510
S328	34	55	18	598	.4	66	6	395	3.36	37	5	ND	1	108	6.4	3	2	26	4.09	.063	3	5	.89	60	.01	2	.59	.02	.11	1	4	540
S329	28	42	21	585	.4	56	6	377	3.08	35	5	ND	1	87	6.6	6	2	27	3.36	.047	2	7	.91	76	.01	2	.61	.02	.08	1	6	435
S330	24	49	26	250	.4	54	7	429	3.37	34	5	ND	1	104	2.7	4	2	22	3.87	.046	2	6	.95	53	.01	2	.67	.02	.09	1	1	395
S331	20	53	24	328	.4	36	8	432	3.98	32	5	ND	1	111	3.9	6	2	23	3.90	.040	2	4	.85	51	.01	2	.48	.01	.08	1	4	245
S332	14	41	34	464	.6	44	5	350	2.62	34	5	ND	1	74	5.8	8	2	23	2.98	.026	2	6	.72	71	.01	2	.36	.02	.10	1	4	335
S333	22	36	26	703	.4	55	4	499	2.74	41	5	ND	1	122	8.2	7	2	41	4.68	.061	2	9	.97	92	.01	2	.38	.02	.07	1	12	400
S334	27	48	26	411	.6	53	6	548	3.59	43	5	ND	1	138	4.1	5	2	29	3.47	.058	2	4	1.18	71	.01	2	.52	.01	.10	1	2	305
S335	14	22	26	266	.4	40	7	450	3.60	33	5	ND	1	111	2.6	5	2	23	2.67	.079	2	10	1.12	93	.01	2	1.00	.01	.10	1	8	230
S336	7	15	11	89	.3	6	19	438	5.83	72	5	ND	1	98	.2	2	2	12	2.62	.151	4	2	.69	35	.01	2	.56	.02	.11	1	4	770
S337	5	12	6	79	.1	3	13	217	3.93	20	5	ND	1	44	.2	2	2	10	1.19	.178	7	1	.41	60	.01	3	.62	.03	.14	1	3	140
S338	9	12	7	110	.2	5	10	337	5.06	25	5	ND	1	77	.4	2	2	7	2.70	.148	4	4	.32	49	.01	2	.42	.02	.14	1	3	210
S339	1	13	7	108	.1	6	19	351	3.10	21	5	ND	1	64	.2	2	2	14	1.92	.195	6	3	.42	79	.01	4	.58	.04	.11	1	1	210
S340	1	14	16	94	.1	11	28	446	3.41	26	5	ND	1	123	.2	2	2	14	3.56	.233	8	3	.60	86	.01	5	.50	.04	.15	1	27	275
S341	1	14	15	95	.1	14	25	292	4.07	24	5	ND	1	90	.2	2	2	17	2.12	.220	7	4	.37	68	.01	3	.62	.03	.10	1	2	240
S342	1	11	10	94	.1	9	16	422	2.54	16	5	ND	1	113	.2	2	2	20	3.64	.180	8	20	.55	51	.01	4	.69	.04	.06	1	1	165
S343	1	12	10	139	.1	4	14	987	2.58	15	5	ND	1	224	.2	2	2	18	7.65	.166	6	2	1.16	54	.01	2	.75	.02	.06	1	1	225
S344	1	14	8	83	.1	6	18	729	2.63	25	5	ND	1	202	.2	2	2	16	5.36	.201	8	3	1.09	86	.01	5	.73	.04	.12	1	3	235
S345	1	15	10	96	.1	5	14	648	3.69	22	5	ND	1	161	.3	2	2	14	4.44	.185	6	4	.96	66	.01	4	.38	.04	.10	1	2	210
S346	1	13	8	126	.1	6	15	667	3.46	18	5	ND	1	164	.2	2	2	14	4.47	.170	6	12	.91	69	.01	4	.38	.03	.10	1	3	200
S347	1	18	9	219	.1	9	27	708	3.89	37	5	ND	1	169	.2	2	2	17	4.85	.174	6	3	.94	64	.01	5	.63	.04	.10	1	7	365
S348	1	14	7	129	.1	6	28	287	2.46	48	5	ND	1	77	.2	2	2	19	2.23	.176	5	3	.78	80	.01	5	.85	.03	.10	1	2	345
S349	24	15	16	202	.1	7	33	344	11.31	187	5	ND	1	85	.6	2	2	9	2.21	.135	4	2	.48	30	.01	2	.50	.02	.10	1	32	1250
S350	8	20	16	197	.2	4	20	440	12.15	93	5	ND	1	122	.2	6	2	12	3.52	.148	5	10	.46	35	.01	2	.56	.03	.10	1	4	600
S351	6	12	11	64	.1	5	18	324	5.89	57	5	ND	1	107	.3	2	2	11	3.15	.163	6	3	.52	53	.01	2	.57	.03	.10	1	1	235
S352	25	9	2	146	.1	9	38	327	14.59	259	5	ND	1	86	.2	2	2	15	2.26	.119	3	1	.54	31	.01	2	.68	.03	.08	1	2	1050
S353	12	9	11	52	.1	6	23	617	8.92	152	5	ND	1	180	.2	2	2	22	4.78	.176	5	2	1.06	40	.01	2	1.20	.04	.10	1	1	385
S354	37	13	11	227	.1	13	53	367	16.17	406	5	ND	1	78	.2	2	2	15	2.07	.149	3	8	.69	21	.01	2	.82	.04	.12	1	2	985
RE S350	7	20	13	189	.3	5	18	413	11.50	97	5	ND	1	112	.9	6	2	12	3.17	.140	5	9	.43	34	.01	2	.55	.03	.10	1	2	600
S355	36	10	12	50	.1	3	28	154	14.70	304	5	ND	1	43	.4	2	2	13	.98	.155	4	1	.41	17	.01	3	.60	.03	.09	1	10	935
S356	36	10	2	38	.1	6	19	209	15.59	255	5	ND	1	32	.2	13	2	16	.81	.186	3	8	.52	23	.01	2	.62	.04	.07	1	9	715
S357	22	13	4	45	.1	5	17	187	13.54	265	5	ND	1	20	.2	18	2	26	.51	.192	2	10	.68	23	.01	2	.79	.05	.06	1	5	865
S358	13	13	14	75	.1	5	14	273	10.89	407	5	ND	1	19	.2	18	2	26	.45	.111	2	17	1.18	18	.01	2	1.40	.03	.08	1	2	805
S359	1	9	9	93	.1	5	11	301	6.78	100	5	ND	1	22	.2	2	2	20	.48	.050	2	13	1.34	47	.01	2	1.66	.01	.11	1	11	280
S360	2	13	2	93	.1	9	14	937	6.10	2	5	ND	1	71	.2	3	2	42	2.07	.083	4	10	1.57	31	.01	2	2.42	.02	.09	1	5	50
S361	1	25	5	100	.1	4	7	887	5.88	2	5	ND	1	74	.2	2	2	26	1.75	.075	7	9	1.17	42	.01	2	2.36	.03	.14	1	1	30
S362	1	12	8	81	.1	3	3	857	3.00	4	5	ND	1	50	.2	2	2	12	1.51	.081	14	11	1.07	39	.01	2	1.38	.02	.13	1	3	35
S363	1	7	12	94	.1	2	4	419	3.22	2	5	ND	1	28	.2	2	2	7	.59	.043	19	7	1.05	51	.01	2	1.61	.01	.14	1	10	35
S364	4	113	7	67	.1	10	14	1417	6.00	3	5	ND	1	103	.2	2	2	27	2.27	.083	3	12	1.32	69	.01	2	2.02	.02	.20	1	18	45
S365	1	133	10	98	.1	43	16	729	4.56	8	5	ND	1	236	.2	2	2	25	4.28	.111	5	23	1.45	51	.01	2	2.02	.01	.15	1	6	65
S366	1	113	16	143	.1	44	14	667	3.83	151	5	ND	1	408	.2	2	2	23	5.37	.083	4	27	1.28	56	.01	2	1.81	.02	.16	1	2	180

SAMPLE# J91-27	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
H277	1	15	3	119	.3	1	9	809	4.25	2	5	ND	1	205	.2	2	2	29	4.15	.131	7	1	.66	192	.02	2	1.98	.05	.18	1	16	20
H278	2	16	7	116	.5	1	11	1189	5.80	2	5	ND	1	281	.2	2	2	26	7.03	.121	5	1	.80	145	.01	2	1.57	.04	.17	1	13	50
H279	1	17	4	111	.4	1	11	1137	4.88	2	5	ND	1	319	.2	2	2	30	7.36	.122	6	2	.67	144	.01	2	1.96	.03	.13	1	3	45
H280	1	16	2	113	.4	1	10	1215	5.10	2	5	ND	1	289	.2	2	2	34	6.34	.119	6	1	1.12	168	.01	2	2.16	.04	.16	1	1	35
H281	1	13	5	109	.5	1	11	1219	5.54	3	5	ND	1	316	.2	2	2	33	8.20	.117	5	2	1.19	147	.01	2	1.93	.03	.14	1	1	35
H282	1	12	2	105	.4	1	9	1458	5.15	2	5	ND	1	250	.2	2	2	43	7.29	.113	6	2	1.33	132	.02	2	2.45	.04	.11	1	2	35
H283	1	16	5	97	.4	2	8	1043	5.68	3	5	ND	1	235	.2	2	2	20	6.45	.117	4	2	1.48	88	.01	2	.98	.03	.13	1	4	75
H284	1	12	2	111	.4	1	10	1267	5.41	2	5	ND	1	263	.2	2	2	41	6.58	.137	6	2	1.84	168	.01	2	2.54	.05	.16	1	1	60
H285	1	19	3	131	.5	1	10	1288	5.50	2	5	ND	1	219	.2	2	2	43	5.43	.133	6	3	1.52	159	.01	2	2.58	.04	.13	1	4	50
H286	1	19	7	95	.4	1	9	1274	5.01	5	5	ND	1	309	.2	2	2	26	8.87	.103	5	1	1.38	133	.01	2	1.49	.04	.13	1	2	60
H287	1	18	4	90	.4	2	9	877	4.06	2	5	ND	1	204	.2	2	2	37	5.31	.126	6	2	1.40	186	.01	2	2.16	.06	.16	1	1	40
H288	1	13	3	100	.5	1	9	1096	5.31	2	5	ND	1	215	.2	2	2	48	5.65	.129	6	2	2.04	155	.01	2	2.79	.05	.13	1	1	45
H289	1	13	3	118	.5	1	10	1451	5.87	3	5	ND	1	271	.2	2	2	53	7.74	.122	5	2	2.12	124	.01	2	2.68	.03	.11	1	5	45
H290	1	21	4	150	.4	1	10	1258	5.24	2	5	ND	1	221	.2	2	2	43	6.07	.143	6	2	1.71	157	.01	2	2.65	.04	.14	1	2	45
H291	1	16	3	121	.4	1	11	1256	5.56	3	5	ND	1	207	.2	2	2	62	5.65	.145	6	3	1.72	106	.02	2	2.89	.04	.09	1	1	35
H292	1	15	2	107	.3	1	11	1150	5.96	3	5	ND	1	177	.2	2	2	66	4.84	.115	5	2	1.99	58	.03	2	3.30	.04	.03	1	1	20
H293	3	16	10	95	.7	2	7	341	4.47	11	5	ND	1	61	.2	7	2	17	1.96	.105	9	3	.24	155	.02	3	1.13	.06	.18	1	4	40
H294	2	14	7	65	.6	2	5	255	2.36	7	5	ND	1	60	.2	2	2	13	1.80	.178	10	2	.17	196	.01	3	.87	.06	.18	1	2	25
H295	1	14	2	44	.6	1	5	559	2.50	6	5	ND	1	80	.2	2	2	18	2.63	.186	11	1	.31	253	.02	5	1.34	.07	.20	1	1	25
H296	3	14	8	81	.6	4	7	485	4.04	22	5	ND	1	68	.2	6	2	18	2.28	.156	8	4	.25	182	.02	5	1.10	.06	.18	1	1	35
H297	2	13	7	73	.5	2	5	523	3.35	26	5	ND	1	74	.2	2	2	15	2.66	.170	9	2	.19	144	.01	3	.89	.05	.17	1	2	35
H298	2	13	6	72	.5	1	5	622	3.30	22	5	ND	1	84	.2	2	2	20	2.91	.182	10	1	.40	214	.02	3	1.40	.07	.19	1	3	30
H299	2	11	5	92	.7	3	7	733	4.21	55	5	ND	1	164	.2	2	2	17	5.37	.176	8	5	.36	158	.01	2	1.01	.05	.17	1	2	80
H300	3	17	8	181	.5	3	10	402	4.42	53	5	ND	1	95	.2	7	2	16	2.76	.185	8	3	.34	96	.01	3	.86	.05	.17	1	4	180
H301	2	11	6	155	.5	2	8	422	4.87	71	5	ND	1	63	.2	5	2	12	2.05	.129	5	1	.15	52	.01	2	.44	.03	.10	1	3	90
H302	4	14	7	136	.4	4	7	403	4.93	166	5	ND	1	49	.2	3	2	18	1.81	.128	6	5	.39	84	.02	2	.87	.05	.10	1	6	80
H303	5	14	6	128	.5	3	7	409	4.20	97	5	ND	1	106	.2	7	2	10	2.97	.143	7	3	.18	60	.01	2	.42	.03	.09	1	2	90
H304	7	19	7	88	.8	3	16	275	8.06	323	5	ND	1	61	.2	27	2	17	1.84	.130	5	1	.54	42	.01	2	.75	.05	.09	1	3	460
H305	11	14	6	80	.7	4	18	619	6.27	218	5	ND	1	168	.2	24	2	39	3.99	.149	6	3	2.18	57	.02	2	2.12	.06	.05	1	4	370
H306	1	7	2	57	.3	2	6	1226	3.46	30	5	ND	1	566	.3	2	2	43	12.75	.069	4	2	3.68	54	.01	2	3.07	.01	.01	1	4	100
H307	4	12	4	122	.7	3	11	582	6.60	44	5	ND	1	192	.3	2	2	36	3.65	.134	7	4	2.67	123	.04	2	3.13	.03	.15	1	7	130
H308	4	13	9	104	.6	3	10	243	5.44	31	5	ND	2	23	.2	9	2	18	.46	.059	7	4	1.67	69	.01	2	1.97	.02	.12	1	10	130
H309	5	20	23	101	2.0	11	9	868	6.61	54	5	ND	1	130	.3	31	2	24	3.75	.084	5	5	2.53	52	.01	2	2.17	.01	.10	1	39	375
RE H305	11	17	3	81	.7	4	18	636	6.32	216	5	ND	1	171	.2	9	2	40	4.05	.153	7	3	2.25	59	.02	2	2.17	.06	.04	1	7	420
H310	4	12	4	83	.2	8	7	1586	3.67	12	5	ND	1	215	.3	2	2	32	8.44	.071	3	4	3.39	63	.01	3	2.39	.01	.06	1	2	355
H311	42	9	2	25	.5	1	2	2707	10.40	10	5	ND	1	208	.4	2	2	6	9.59	.079	2	1	2.77	31	.01	2	1.10	.01	.01	1	2	190
H312	6	13	4	57	.2	5	3	1778	3.60	8	5	ND	1	364	.4	2	2	12	12.58	.041	3	3	2.67	60	.01	2	1.82	.01	.05	1	1	210
H313	10	15	17	157	.2	12	5	500	3.24	10	5	ND	1	104	1.1	2	2	12	2.86	.050	4	3	1.45	87	.01	2	1.40	.02	.09	1	4	375
H314	11	26	11	157	.1	22	6	240	3.78	13	5	ND	1	39	1.3	2	2	17	1.24	.054	4	7	1.29	57	.01	2	1.30	.03	.10	1	4	775
H315	32	38	18	270	.3	41	6	703	3.24	25	5	ND	1	212	2.4	5	2	35	6.03	.048	3	5	2.10	75	.01	2	.46	.02	.06	1	16	455

GRANGES EXPLORATION LTD.
DIAMOND DRILL LOG

HOLE No.
J91-28

PURPOSE
DRILL TEST 900 zone between Hole 7 & 9.

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
L9+00N/1+50W 2m at 120°	~390m.	225°	170.69
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-45°	39.62m 45.5° 131.06m 45.7°	121.5m.	120m
LOGGED BY / DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED / DATE COMPLETED**
GF McARTHUR Oct22/91	J.T. Thomas.	BQ	Oct22/91 Oct23/91

SUMMARY LOG

0-6.18 CASING
6.18-10.85 Sandstone
10.85-13.5 FAULT
10.85-20.8 Argillite
20.8-29.2 fine tuff
29.2-30.0 Lapilli
30.0-30.8 Flow, vesicular
30.8-34.75 Flow, banded
34.75-35.75 Flow, vesicular
35.75-36.7 argillaceous coarse tuff
36.7-37.15 Tuff or Dyke
37.15-46.3 Lapillic - Pyritic
46.3-46.8 argillaceous tuff
46.8-50.8 medium tuff
50.8-51.82 Lapillic
51.82-53.65 Argillite
53.65-54.4 fine tuff
54.4-54.86 Fault
54.86-55.6 tuffaceous argillite
55.6-66.45 fine tuff
66.45-67.7 Lapillic
67.7-76.7 fine tuff
76.7-78.4 Lapillic
78.4-86.4 Lapillic
86.4-89.4 argillaceous lapilli
89.4-91.0 fine Ash tuff
91.0-93.8 Heterolithic lapilli
93.8-94.2 fine tuff
94.2-97.15 argillaceous lapilli
97.15-97.65 tuff-dyke?
97.65-98.8 Lapilli
98.8-101.9 Argillite
101.9-106.2 flow
106.2-109.55 argillaceous tuff
109.55-122.92 Lithic lapilli - purple
122.92-136.75 Siliceous tuff Bx.
136.75-144.4 Lithic lapilli - purple
144.4-170.69 Argillite - faulted & sheared.
170.69 EOH

SIGNIFICANT MINERALIZED INTERVALS

37.3-46.3 py v.d. 5-10%.
76.7-78.4 py po - sl Tr
85.1 py - po - sl Tr
121.92-136.75 py-po-sl 3-5% (900 zone) zoned sphalerite
144.4-160 Tr-po-py-cpy

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-28

INTERVAL	C. LOSS	LITHOLOGY	C ∡	L	S	M	A	
0 - 6.18		CASING.						
6.18 - 7.7		Rubble	-	-	-	-	-	7
7.7 - 10.85		grey medium grained feldspathic sandstone massive, minor argillite chips 1-2%, limonitic fractures, lower contact faulted.	-	-	-	-	-	8
					Fe/70		Li	
			-	7L	-	-	-	9
					Fe/70			
			-	-	-	-	-	10
					Fe/40			
			-	-	~~	-	-	11
			-	7Jg(?)	~~	-	-	12
			-	-	~~	-	-	13
		10.85-13.5 fault gouge graphitic			~~			
			50/80	-	-	-	-	14
			-	-	-	-	-	15
			50/75		~~			
		15.25-16 fault gouge, graphitic	-	-	~~	-	-	16
			50/70	-	-	-	-	17
		17.6 - 18.5 calcareous intervals.	-	-	-	-	-	18
			50/75					
			-	-	-	-	-	19
			50/80		~~			
		minor tuff bands in argillite - locally gouge minor	51/70		~~	-	-	20
20.8 - 29.2		Intermediate greenish-grey fine to medium tuff, foliated, locally argillaceous	-	(80)	-	-	-	21
					Fe/40			
			-	2AB3W	-	-	-	22
			-		-	-	qv.	23
			-		-	-	-	24
			-		-	Py	25	chlority 25
			-		-	-		chlority 26
						Py		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-28

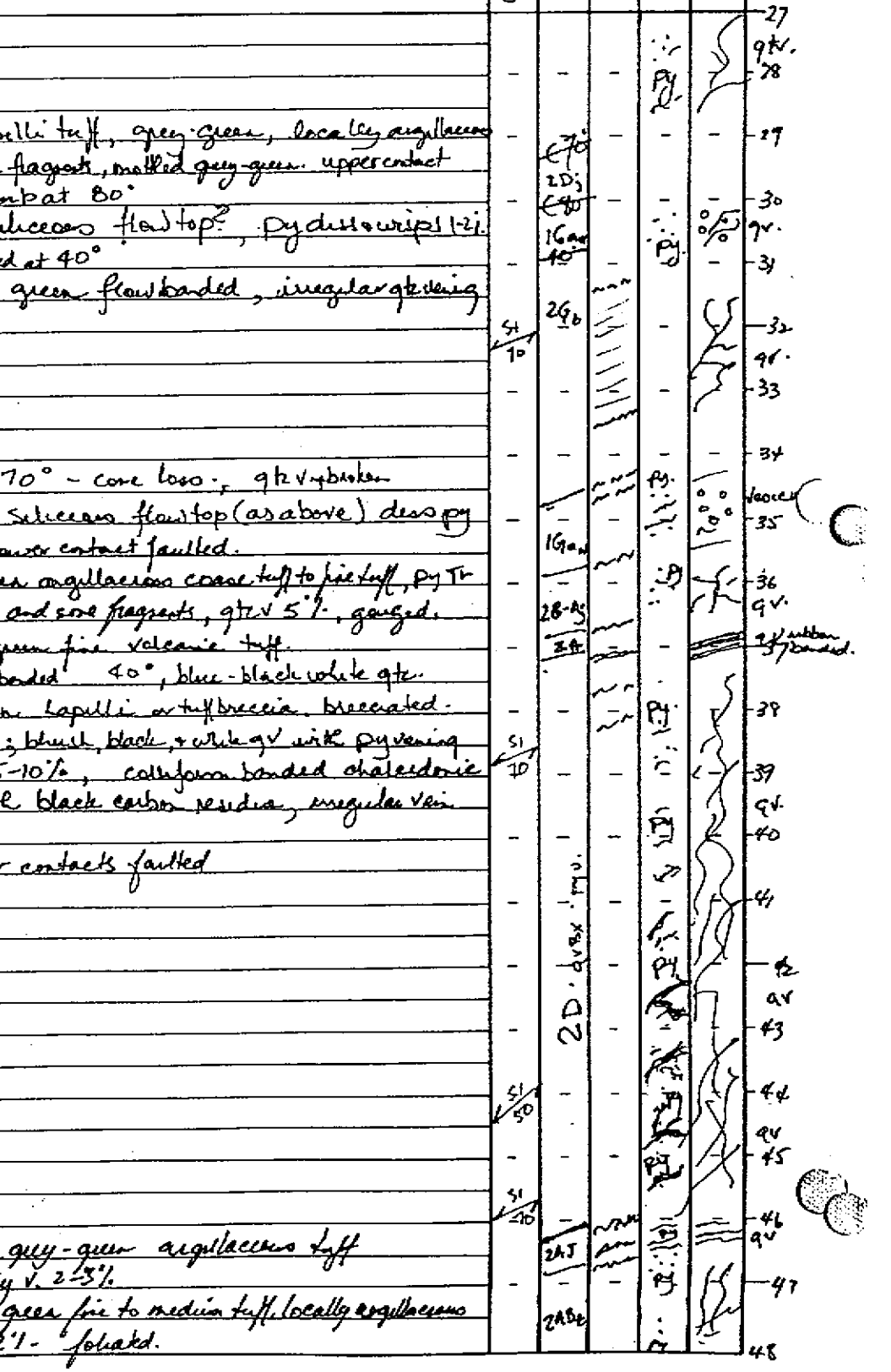
MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
fault gouge	M179	10.8	14.0		18	1.3	35	4
Tr-py	M180	14	15		10	0.3	26	2
"	M181	15	16		9	0.3	22	2
"	M182	16	17		5	0.1	13	2
"	M183	17	18		15	0.1	13	2
"	M184	18	19		11	0.1	19	6
"	M185	19	20		12	0.1	37	11
"	M186	20.0	20.8		17	0.1	46	9
1-2% py	M187	20.8	22		7	0.1	6	2
Tr-py	M188	22	23		1	0.1	3	2
"	M189	23	24		1	0.1	2	2
"	M190	24	25		1	0.1	2	2
1-2% py	M191	25	26		2	0.1	2	2

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-28

INTERVAL	C. LOSS	LITHOLOGY
29.2 - 30.0		Intermediate, lapilli tuff, grey-green, locally argillaceous dark green, light green fragments, mottled grey-green. upper contact sharp at 70°, lower contact at 80°
30.0 - 30.8		Black vesicular, siliceous flow top?, py dust + wisps 1-2%. lower contact sheared at 40°
30.8 - 34.75		Intermediate grey green flow banded, irregular qtz veining
		33.5 gouge
		34 - 34.75 gouge 70° - core loss, qtz v broken
34.75 - 35.75		Black vesicular, siliceous flow top (as above) disseminated py + wisps 1-2%, lower contact faulted.
35.75 - 36.70		Mottled dk grey-green argillaceous coarse tuff to fine tuff, py in argillaceous, matrix and some fragments, qtz v 5%, gouged.
36.7 - 37.15		Intermediate grey-green fine volcanic tuff.
37.15 - 37.3		qtz veined fault, ribbon banded 40°, blue-black volatile qtz.
37.3 - 46.3		Mottled grey-green lapilli or tuff breccia, brecciated. Strong veining 30%; bluish, black, + white qv with py veining and disseminated 5-10%, colliform banded chalcedonic qtz veining with black carbon residue, irregular vein breccia - diss py. lower + upper contacts faulted
46.3 - 46.8		Mottled sheared dk grey-green argillaceous tuff qtz v, faulted, py v. 2-3%
46.3 - 50.8		Intermediate dark grey green fine to medium tuff, locally argillaceous qtz v. 5%, py 1-2%. foliated.



GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-28

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
1-2 % py	M192	26	27		1	0.1	2	2
"	M193	27	28		1	0.1	2	2
"	M194	28	29		1	0.1	2	2
"	M195	29	30		2	0.1	2	2
"	M196	30	30.8		1	0.1	19	2
Tr-1 % py	M197	30.8	32		3	0.1	2	2
"	M198	32	33		1	0.1	2	2
"	M199	33	34.75		3	0.1	2	2
1-2 % py	M200	34.75	35.75		9	0.1	89	2
"	M201	35.75	37.3		1	0.1	2	2
3-5 % py	M202	37.3	38		4	0.1	15	2
3-5 % py	M203	38	39		1	0.1	11	2
3 % py	M204	39	40		2	0.1	42	4
3 % py	M205	40	41		2	0.1	45	4
3 % py	M206	41	42		4	0.1	2	2
5 % py	M207	42	43		3	0.1	14	2
5-10 % py	M208	43	44		3	0.1	800	93
5-10 % py	M209	44	45		7	0.2	301	37
5-10 % py	M210	45	46		2	0.1	273	21
3-5 % py	M211	46	47		8	0.1	173	36
3-5 % py	M212	47	48		7	0.1	9	2
1-2 % py	M213	48	49		2	0.1	41	2

Hedd 46°

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-28

INTERVAL	C. LOSS	LITHOLOGY	C ∢	L	S	M	A
46.8 - 50.8		Intermediate grey-green fine to med tuff, locally argillaceous foliated, qv 5%, py 1-2%.	S1 70	2A+B t		py	
50.8 - 51.82		Intermediate grey-green lapilli tuff, localy argillaceous qv 1-2%, py Tr-1%, foliated. sharp upper + lower contacts at 70°	S1 70	2B t ∢70			
51.82 - 53.65		Greenish black argillite with tuff intercalations locally, qtz-py v 5% foliated, brecciated	S1 65	7A t ∢70		py	
53.65 - 54.4		Intermediate grey-green fine tuff, foliated 54.4-54.86 fault gouge		2AC		py	
54.4 - 55.6		greenish-black argillite with fine to coarse ash foliated, py v 1-2%		7B t			
55.6 - 66.45		Intermediate grey-green fine to medium tuff, foliated qtz-py-po v 1-2% irregular	S1 70	2A+B t		py, po	
~~66.4~~		Contacts sharp at 70° upper + lower.	S1 65				
			S1 70				
			S1 1°			po	
66.45 - 67.7		Mottled dk grey green Lapilli tuff with dark green anastamosing chlorite stringers, py dis 1-2%.		∢70 2B tx		py	
67.7 - 76.7		Intermediate grey-green fine to medium tuff, foliated. 1-2% qtz v irregular					

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-28

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
py 3%.	M214	51	52		7	0.1	3	2		
py 5%.	215	52	53		120	0.1	5	2		
py 2-5%.	M216	53	54		3	0.1	2	2		
py 1%.	M217	54.	55		2	0.1	5	2		
py 1-2%.	M218	55	56		18	0.1	4	2		
py-po 1-2%.	M219	56	57		6	0.1	2	2		
py-Po 1-2%.	M220	57	58		2	0.1	2	2		
py Tr-1%.	M221	66.5	67		2	0.1	19	2		
Py Tr-1%.	M222	67	68		2	0.1	2	2		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-28

INTERVAL	C. LOSS	LITHOLOGY
67.7 - 76.7		Intermediate grey-green fine to medium tuff, foliated, 1-2% qtz veins irregular Tr py-po. gradational contacts
76.7 - 78.4		Intermediate dark green - grey green mottled, lapilli tuff ; foliated, anastomosing chlorite veins py% 1-7 qtz - chlorite - py - po - sphalerite vein 76.6 - 77.0.
78.4 - 86.4		Intermediate grey-green medium to lapilli tuff, foliated anastomosing chlorite veins faulted contacts top 80°, bottom.
		85.1 qtz-chl - py-po, sphalerite v.
		86.4 fault broken + gouge
86.4 - 89.5		Intermediate dark grey green with green coarse ash to lapilli fragments in a tuffaceous - argillaceous matrix feathery flattened fragments., some argillite chips
		Sharp lower contact 75°
89.5 - 91.0		Intermediate grey-green fine ash, argillaceous locally py v. Tr

C∢ / L / S / M / A columns (graphic log, depth scale 69–90): S1 70 (at ~71.5), S1 70 (at ~74.5), S1 70 (at ~82.5), S1 75 (at ~88.5); L: 2IA+B tk, ∠10, 2D tk, 2 B-D tk, 2C-Dj 6, ∠75; M: po (71), po (74), po sp py (76); A: qv (72.5), qv (76), chlor (77), qv (81), qv (83), 45° qtz v (88), 80 qv (89).

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-28

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
po-py 1-2'/. Tr sphalerite	M223	76	77		14	0.5	10	2		
po-py 1-2'/.	M224	77	78		2	0.5	21	2		
py 1'/.	M225	78	79		21	1.4	29	4		
Tr py.	M226	84	85		14	0.1	3	2		
Tr py-po - sphalerite	M227	85	86		4	0.1	12	2		
Tr py	M228	86	87		7	0.7	85	2		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-28

INTERVAL	C. LOSS	LITHOLOGY	∠CA	L	S	M	A
89.5-91.0		Intermediate grey-green fine Ash, locally argillaceous, py v Tr 91.0 fault - broken.		2Ajt		py	80
91.0-93.8		Intermediate grey-green lithic lapilli tuff, Hetrolithic with variety of fragments, angular to rounded. dark green chloritic; argillaceous and pale felsic fragments sharp contact, minor qtz v, Tr py	S1 70	2Dk		py	
93.8-94.2	2	Intermediate grey-green fine tuff or dyke sharp contacts		2A			
94.2-97.15	5	Intermediate dark grey-green lapilli tuff with angular coarse ash to lapilli in mixed tuffaceous-argillaceous matrix	S1 70	2Dcj		py	
97.15-97.65	5	Intermediate grey-green fine grained volcanic tuff or dyke.		2A			
97.65-98.8		Intermediate medium to coarse ash and lapilli tuff, fragments angular to rounded, argillite a volcanic fragments in fine volcanic ash matrix, locally argillaceous.	S1 70	2Dj			
98.8-101.9		Black argillite with 20% coarse ash, angular flattened. 100.4-102.2 broken, massive bedded. fol. slip ⊥ to CA on 30° fracture plane.	S1 75	7J-2Ct			
101.9-106.2		Intermediate grey-green fine grained vesicular, brecciated flow, Tr diss py, sharp lower contact 80°		2Ga		po	vesicular
106.2-109.55		Mottled grey blue-green, argillaceous fine tuff 109.55 fault gouge 30°		2Aj		po, py	
109.55-122.92		Bluish-purple grey-green lithic lapilli to tuff breccia Hetrolithic felsic pumice to argillite angular to subrounded Sand to 6cm, pinkish intrusive frag?, qtz v 1-2% foliated Tr po-py 1-2% diss	S1 70	2D/7H		po	

Depth marks (right margin): 90, 9v, 91, 92, 93, 94, 9v, 95, 1v, 96, 97, 9v, 98, 9v, 99, 100, 101, 102, 9v, 103, vesicular, 104, 9v, 105, 106, 107, 9v, 108, 109, 110

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.
J91-28

MINERALIZATION	ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		

HOLE No. J91-28

INTERVAL	C. LOSS	LITHOLOGY	C ∡	L	S	M	A
109.55 – 122.92		Bluish purple-grey-green lithic Lapilli lithic felsic pumice to argillite, angular to subrounded, sand to 6 cm size, pinkish intrusive frag local qtz.v., foliated, Tr diss po+py 1-2%	51 / 60	2D₁ U3, UJ,		po, py, po	60° qv
		110.4 - 110.5 (dyke?) or frag.					
122.92 - 136.75		Siliceous pale blue grey tuff Breccia with vesicular fragments, flow banded fragments, white qtz.v. bluish chalcedonic qtz.v., veins and diss py-po-sphalerite 3-5%, pale zoned sphalerite with dark reddish rims qtz-sulphide crackle breccia.		3/2 D-E5 · Bx		py, po, sp, sp, po	qv
		124-127 strong V. bx mineralization weakens down hole to diss py-po.					

111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-28

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
py-po 3%	M229	120	121		24	0.8	93	2		
py-po 3%	M230	121	122		26	0.8	55	2		
py-po 5%	M231	122	122.92		1240	1.9	175	2		
py-po-sl 3-5%	M232	122.92	124		590	2.6	288	14		
py-po-sl 3-5%	M233	124	125		270	2.5	291	10		
py-po-sl-3-5%	M234	125	126		340	6.2	235	2		
py-po-sl-3-5%	M235	126	127		260	2.3	153	2		
py-po Tr sl. 3%	M236	127	128		2	1.0	30	2		
py-po 3%	M237	128	129		1110	2.0	98	2		
py-po 3-5%	M238	129	130		200	3.1	174	12		
py-po 3-5%	M239	130	131		290	2.3	86	2		
py-po 3-5%	M240	131	132		250	1.8	139	9		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-28

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
122.92 –		136.75 chalcedonic crackle Bx + diss sulphides po-py siliceous tuff breccia					
		large white qtz v. - po					
		contact gradational.					
136.75 –		144.4 Blueish purple-grey-green Lithic Lapilli Heterolithic, rounded to angular fragments, felsic to mafic chlorite frags, rounded qtz fragments. Tr py-po diss., minor white qtz v. 1-2%, weak foliation					
		faulted contact lower. 40°					
144.4 –		170.89 Black argillite, graphitic slips + gouge, strongly contorted, intense qtz veining 40% traces of py-po · minor cpy. strong faulting minor HBX.					
		145.97-146.4 qtz v with dyke fragments					
		qtz veins with black carbon stylolites.					
		qtz with greenish chlorite -po.					

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-28

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
py-po 3-5%	M241	132	133		210	1.2	116	2
"	M242	133	134		190	1.6	91	10
"	M243	134	135		680	3.4	104	10
"	M244	135	136		12	1.0	56	2
"	M245	136	137		180	0.7	114	2
"	M246	137	138		220	0.1	56	2
TR-py-po	M247	146	147		130	0.1	10	2
"	M248	147	148		5	0.1	17	2
"	M249	148	149		4	0.1	16	2
"	M250	149	150		6	0.3	31	2
"	M251	150	151		2	0.1	48	2
"	M252	151	152		3	0.1	72	2
"	M253	152	153		2	0.1	35	2

HOLE No. J91-28

INTERVAL	C. LOSS	LITHOLOGY	C/A	L	S	M	A
144.4 - 170.69		Black argillite, graphitic gouge + slips, strong qtz veins 90%, Tr py-po diss + v. irregular crenulated bedding, contorted minor folds.	S1 / 10	Jgt · qv Bx		py, po	
		156.4 - 156.5 greenish dyke?					
		158.2 - 162.5 qtz v - Bx	S1 / 50			py	qBx
			S1 / 50			py	qv
			So / 80			py	
			S1 / 70			py	
		EoH 170.69					

Depth scale: 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-28

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
Tr py+po	M254	153	154		5	0.5	31	4		
"	M255	154	155		2	0.2	139	2		
"	M256	155	156		4	0.2	32	2		
"	M257	156	157		6	0.3	19	2		
"	M258	157	158		4	6.7	59	2		
"	M259	158	159		5	0.1	34	2		
"	M260	159	160		1	0.1	42	2		
"	M261	160	161		<1	0.1	63	2		

Sample J-91-27 137.4 m **Brecciated Amygdaloidal Andesite/Latite Flow (Unit 2Ga); Matrix of Pyrite-Quartz-Ankerite**

A few elongate phenocrysts of plagioclase average 0.2-0.3 mm long. The groundmass is dominated by lathy plagioclase grains averaging 0.07-0.12 mm in length. Ankerite (3-4%) is concentrated in some patches as ragged, disseminated grains up to 0.1 mm in size. Chlorite (0.3%) forms scattered lenses up to 0.2 mm long. Pyrite (0.5%) forms disseminated grains averaging 0.02-0.05 mm in size. Ti-oxide (minor) forms elongate grains averaging 0.02-0.03 mm long.

Amygdules (4-5%) vary widely in size and texture. A few amygdules from 0.3-0.9 mm in size are of very fine grained quartz. Some are recrystallized slight to extremely fine grained aggregates. An amygdule 1.2 mm across has a thin border zone of very fine grained quartz and a core of extremely fine grained quartz and ragged grains of ankerite. A few larger amygdules are of extremely fine grained quartz with irregular patches of ankerite. On the border of one is a veinlike zone up to 0.3 mm wide of very fine grained ankerite and moderately abundant pyrite.

In the breccia matrix, pyrite (17-20%) forms clusters of grains averaging 0.02-0.07 mm in size, and a few grains from 0.1-0.25 mm across. Interstitial to pyrite is very fine grained quartz showing comb textures.

Quartz (17-20%) forms aggregates recrystallized aggregates with well developed comb textures extending outwards from pyrite grains. Some of these are tightly folded. Ankerite (3-4%) forms irregular, very fine grained patches intergrown with quartz.

Ti-oxide forms a few patches up to 0.1 mm in size of extremely fine grained aggregates in pyrite.

Sample J-91-28 52.8 m **Sheared Latite Lapilli Tuff with Fragments of Sheared Basalt Flow (Unit 2Dr.1Gur); Veinlets of Chalcedonic Quartz, Ankerite**

Fragments (30%) up to 2 cm long are of sheared basalt flows containing plagioclase grains averaging 0.02-0.03 mm long in an opaque-rich groundmass. Seams of opaque define a prominent foliation.

The groundmass (60%) is dominated by extremely fine grained sericite with much less abundant plagioclase. Wispy seams of semiopaque define a prominent foliation, along which the rock was sheared strongly and kink folded. Pyrite (2-3%) forms disseminated grains averaging 0.02-0.05 mm in size.

Irregular replacement patches (3-4%) are of very fine to fine grained pyrite with minor interstitial patches of sericite and quartz. The latter forms comb-textured aggregates outwards from pyrite grains. Pyrite (1-2%) also forms disseminated grains averaging 0.1-0.4 mm in size; many of these have partial rims of comb-textured aggregates of quartz.

Other irregular replacement patches and veinlets up to 0.5 mm wide are of extremely fine grained, chalcedonic quartz (4-5%). A few veinlets also contain patches of fine grained ankerite (1%).

Sample J-91-28 30.5 m — **Amygdaloidal Basalt/Andesite Flow (Unit 1Ga.2Gu); Vein of Quartz-Calcite; Veinlets of Calcite**

The rock contains 7-8% lathy plagioclase grains averaging 0.02-0.04 mm long in a patchy groundmass of two main types. The dominant type (50-55%) contains abundant opaque, which obscures any other minerals. The less dominant type (20-25%) forms interstitial patches and seams dominated by equant plagioclase averaging 0.01 mm in grain size, with interstitial chlorite, sericite, and opaque.

Amygdules (15-20%) averaging 0.5-1.2 mm in size and locally up to 3.5 mm across are of a few textural and compositional types. Many are dominated by extremely fine grained, chalcedonic quartz. Some of these are concentrically zoned, with coarser grained rims surrounding finer grained cores. Some have thin rims of chalcedonic quartz and cores of fine to very fine grained quartz. One of these has a core 0.4 mm across containing an aggregate of extremely fine grained opaque with minor interstitial quartz. Another 0.6 mm long is dominated by similar opaque.

A few amygdules up to a few mm across have rims of chalcedonic quartz, a central zone of trace to abundant medium grained calcite, and a core of fine grained quartz containing irregular patches of very fine grained opaque averaging 0.03-0.07 mm in size; the texture suggests that this opaque might be pyrobitumen.

Ragged patches of ankerite up to 0.5 mm in size occur in cores of some amygdules. In others, thin partial shells of ankerite occur near the margins. A few have cores of medium grained ankerite and fine grained quartz.

Some large amygdules are composites of coarse mosaic patches of radiating aggregates of chalcedonic quartz.

One amygdule 2.3 mm across has a core of very fine grained quartz and a rim 0.2 mm wide of extremely fine grained, chalcedonic quartz. Between the two are a few irregular patches of extremely fine grained sericite.

Several amygdule-like to fragment-like patches (7-8%) up to several mm across have broad cores of andesite/latite dominated by equant grains of plagioclase averaging 0.03-0.04 mm in size with moderately abundant interstitial chlorite and minor to locally abundant patches of ankerite. Many of these are rimmed by zone of chalcedonic quartz averaging 0.2-0.4 mm wide.

One fragment 2.5 mm across consists of a granular aggregate of carbonate grains averaging 0.01-0.02 mm in size, with interstitial selvages of opaque.

One fragment (?) 1.1 mm across consists of muscovite, chlorite, and abundant dusty opaque, mainly in chlorite.

Opaque (0.5%) forms irregular veinlets up to 0.07 mm wide.

A vein up to 3 mm wide is dominated by fine to medium grained quartz, with patches of finer grained quartz and of medium to coarse grained ankerite. Muscovite forms a few flakes up to 0.25 mm in size.

Late veinlets (1%) up to 0.2 mm wide are of calcite and minor quartz.

Sample J-91-28 66.8 m Strongly Sheared Andesite/Basalt Flow Unit 1G/Ar)

Near one end, the rock contains disseminated lathy plagioclase grains averaging 0.02 mm long in a chlorite-rich groundmass with abundant wispy semiopaque/opaque seams parallel to foliation. Textures suggest that this is a strongly sheared andesite/basalt flow.

Much of the sample is well foliated, and dominated by chlorite with moderately abundant to very abundant dusty to extremely fine grained opaque. A strong foliation is defined by parallel orientation of chlorite and seams of opaque. Dark layers contain abundant opaque as disseminated grains to dense patches; some layers contain moderately abundant cubic pyrite grains averaging 0.1-0.3 mm in size. This rock probably is a more strongly sheared variety of the rock with the fine plagioclase laths.

Tight folds are outlined in some layers by wispy sericite-rich seams.

Replacement veins and patches (4-5%) up to 1 mm wide are dominated by chalcedonic quartz with irregular patches of calcite/ankerite. Other patches are dominated by very fine grained ankerite with much less quartz.

Sample J-91-28 80.1 m Sheared Argillaceous Intermediate Coarse Tuff (Unit 2Cjr) (note: no offcut block)

Plagioclase forms a few phenocrysts or crystal fragments up to 0.6 mm in size; alteration is moderate to ankerite/limonite.

Some lensy fragments up to a few mm long are of extremely fine grained andesite flow dominated by plagioclase (altered moderately to sericite) with less abundant interstitial opaque and chlorite.

A fragment 2.5 mm long and elongate parallel to foliation is of latite tuff(?); it is dominated by extremely fine grained plagioclase with wispy seams of sericite parallel to foliation.

A few fragments up to 1.5 mm long are dominated by aphanitic grains which give the fragment a light to medium grey or brown color and semiopaque appearance. Two fragments are replaced moderately by anhedral to euhedral porphyroblasts of ankerite. The fragments probably are felsic flows.

One fragment 1.5 mm across is of a very fine grained latite flow containing abundant sericite after plagioclase and abundant disseminated pyrite grains.

Pyrite (2-3%) forms euhedral grains averaging 0.2-0.3 mm in size, and a few up to 0.6 mm across.

The groundmass is dominated by extremely fine grained chlorite with moderately abundant to very abundant dusty to extremely fine grained disseminated semiopaque and opaque grains. In a few layers, the abundance of semiopaque and opaque is high enough to make the whole layer semiopaque. Sericite (1-2%) is concentrated in lenses parallel to foliation.

A few replacement patches and lenses (2-3%) up to 0.4 mm wide parallel to foliation are of very fine grained quartz with minor to moderately abundant ankerite.

Several veinlets (4-5%) up to 0.3 mm wide of sericite and less ankerite and chlorite were sheared into discontinuous, isoclinal folds. A few patches up to 1.5 mm in size are of similar, extremely fine grained sericite.

Sample J-91-28 109.85 m Trachy/Latite Tuff (Unit 2/5 C/D)
Note: no offcut block

K-feldspar (2-3%) forms crystal fragments up to 1.2 mm across; larger ones are altered moderately to ankerite. Plagioclase (0.3%) forms crystal fragments averaging 0.1-0.2 mm in size. Quartz (0.1%) forms angular grains up to 0.4 mm in size.

A few fragments from 1.1-2.5 mm across are of extremely fine grained trachy-/latite; they contain minor K-feldspar phenocrysts in a groundmass dominated by plagioclase/K-feldspar, with moderately abundant disseminated opaque and patches of ankerite.

The groundmass consists of equant plagioclase grains averaging *0.003-0.005 mm in size intergrown with sericite flakes.* The latter are oriented strongly parallel to foliation. Numerous ragged patches up to 1.5 mm long are dominated by sericite. Pyrite (2-3%) forms porphyroblastic grains up to 1 mm in size.

A replacement band up to a few mm wide is of very fine to fine grained pyrite with interstitial quartz and ankerite. It occurs within a zone 5 mm wide containing elongate patches, possibly large fragments(?) of sericite-rich material. One of these contains two patches up to 1.2 mm in size of fine grained quartz.

A few lensy replacement patches up to 1 mm long are of very fine grained quartz with much less abundant chlorite and pyrite. One contains a grain of medium orange brown sphalerite 0.1 mm across.

Wispy lenses of semiopaque cut irregularly across the foliation and are folded openly to tightly.

Sample J-91-28 115.7 m Heterolithic Latite Lapilli Tuff (Unit 4/5D)

Fragments (4-5%) up to 8 mm in size are of extremely fine grained to aphanitic latite/trachyte flow, locally with minor phenocrysts of K-feldspar.

K-feldspar (1-2%) forms fragments averaging 0.1-0.3 mm in size, and a few up to 0.5 mm across. Quartz (0.5%) forms crystal fragments averaging 0.2-0.4 mm in size. Plagioclase (0.2%) forms fragments up to 0.4 mm in size; alteration is slight to moderate to sericite. Pyrite (0.5%) forms fragments up to 0.7 mm long of extremely fine grained aggregates.

Ragged fragments (4-5%) up to 1.5 mm in size are dominated by foliated chlorite with minor sericite.

One rounded fragment 1.2 mm across is of hypabyssal dacite(?); it contains very fine to extremely fine grained K-feldspar, plagioclase, and much less quartz and patches of sericite/muscovite in a sparse, extremely fine grained groundmass dominated by plagioclase.

Zircon forms one subrounded grain 0.08 mm across.

The groundmass is dominated by extremely fine grained plagioclase, with abundant wispy to dense seams of sericite/muscovite parallel to foliation. Pyrite (4-5%) forms disseminated grains averaging 0.05-0.15 mm in size and a few coarser patches up to 1.5 mm in size.

Replacement lenses (1-2%) up to a few mm long are dominated by pyrite; in some patches, pyrite is surrounded by very fine grained quartz.

Sample J-91-28 125.6 m — **Andesite/Latite Flow (Unit 2G); Replacement Patch of Quartz-Pyrite-Pyrrhotite-Sphalerite**

The host rock (22-25%)is dominated by lathy to anhedral plagioclase grains averaging 0.03-0.05 mm in size. A patch 0.5 mm across of extremely fine grained quartz and minor sericite and patches of Ti-oxide and acicular grains of apatite may represent altered hornblende phenocrysts.

Ti-oxide forms patches up to 0.15 mm in size of prismatic grains averaging 0.02-0.03 mm long. Pyrite forms disseminated, subhedral grains averaging 0.01-0.02 mm in size. Pyrrhotite forms disseminated patches averaging 0.01-0.03 mm in size. Ankerite forms scattered, subhedral porphyroblasts up to 0.08 mm in size.

The rock is cut by a few veinlets (1-2%) up to 0.2 mm wide of quartz and minor to abundant pyrrhotite and minor chalcopyrite, and minor pyrite and ankerite.

The replacement patch (73-76%) is dominated by zones rich in quartz and others rich in sulfides. Quartz-rich patches show a variety of textures. Some patches up to 1.5 cm long consist of parallel aggregates of very coarse grains. Others are of equant fine to medium grained aggregates.

Patches of very fine grained aggregates may represent earlier replacement of the host rock. Some of these contain minor euhedral porphyroblasts of ankerite averaging 0.05-0.1 mm in size. Sericite (2-3%) forms extremely fine grained patches associated with some patches of very fine grained quartz, especially where these border sulfides or coarse grained quartz.

Pyrite (20-25%) forms anhedral grains and clusters averaging 0.1-0.5 mm in grain size. Interstitial to some pyrite patches, quartz was recrystallized to irregular comb-textured aggregates.

Pyrrhotite (10-12%) and medium orange-brown sphalerite (5-7%) occur in interstitial patches among pyrite grains. They also form very fine to fine grained patches up to 2 mm in size bordering pyrite aggregates. Some coarse grains of sphalerite contain disseminated, exsolution inclusions of pyrrhotite.

Arsenopyrite (0.5%) forms clusters of euhedral grains averaging 0.015-0.025 mm in size enclosed in sphalerite and pyrrhotite, mainly near borders of pyrite grains.

Chalcopyrite (minor) forms grains up to 0.07 mm in size with pyrrhotite and sphalerite and in the adjacent host rock, and a few grains up to 0.03 mm in size enclosed in pyrite.

Pale yellow electrum forms a subrounded grain 0.0025 mm across in pyrrhotite.

Ankerite (0.5%) forms a few patches up to 0.2 mm in size on quartz-sulfide borders.

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 %
J91-27-71.0	49.23	16.77	12.81	2.90	[illegible]	2.18	3.39	2.25	.31	[illegible]	.003	2653	174	34	233	42	51	8.8	99.81
J91-27-118.1	57.65	16.32	5.98	.88	[illegible]	2.87	3.79	3.87	.72	.02	.003	2739	158	20	225	36	20	5.6	99.87
J91-27-137.4	54.14	10.13	15.04	1.09	[illegible]	3.82	1.56	1.88	.46	.05	.002	795	196	23	170	18	98	8.1	99.87
J91-28-30.5	63.38	10.77	3.00	1.45	[illegible]	5.90	.43	.99	.15	.17	.013	287	442	10	68	10	20	6.1	99.86
J91-28-52.8	57.15	12.64	9.77	1.37	[illegible]	2.43	3.16	2.16	.48	.13	.002	586	173	16	155	26	44	5.2	99.87
J91-28-66.8	49.72	11.99	19.52	3.79	[illegible]	1.51	1.46	2.10	.45	.19	.002	248	124	24	218	35	89	4.8	99.88
RE J91-28-30.5	63.36	10.65	3.05	1.44	[illegible]	5.66	.37	1.00	.13	.17	.012	251	434	10	68	11	20	6.8	99.99
J91-28-80.1	55.37	13.22	13.89	2.29	[illegible]	2.24	1.65	1.02	.22	.20	.006	1161	88	52	248	31	25	8.9	100.32
J91-28-86.9	50.34	14.75	8.23	3.42	[illegible]	.07	5.35	2.41	.61	.25	.002	564	157	13	178	33	20	9.4	100.03
J91-28-109.85	66.21	13.30	6.45	2.84	[illegible]	.05	5.29	.63	.02	.14	.002	829	39	17	203	30	20	4.4	100.00
J91-28-115.7	59.18	14.76	9.93	3.60	[illegible]	.06	5.55	1.47	.35	.19	.004	904	59	10	161	24	20	4.4	100.14
STANDARD SO-4	67.71	10.41	3.43	.99	[illegible]	1.34	2.10	.56	.22	.11	.007	794	188	28	292	20	20	11.3	99.98

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

TOTAL P.003

M17[illegible]	28	40	75	401	1.3	59	9	561	3.42	[illegible]	5	ND	1	195	[illegible]	4	2	13	7.69	.084	3	3	.82	69	.01	2	.35	.02	.17	1	1[illegible]	580
M18[illegible]	45	59	14	354	.3	84	8	344	3.72	26	5	ND	1	150	.9	2	2	16	6.96	.088	3	2	.74	64	.01	2	.33	.02	.12	1	[illegible]	[illegible]95
M181	38	83	16	484	.3	72	11	312	5.37	22	5	ND	1	101	3.9	2	2	19	3.70	.057	2	5	.87	58	.01	2	.71	.02	.13	1	9	870
M182	33	43	14	270	.1	50	9	360	3.51	13	5	ND	1	124	1.6	2	2	13	4.47	.057	3	3	.89	64	.01	2	.88	.02	.13	1	5	685
M183	26	37	11	152	.1	34	7	470	3.25	13	5	ND	1	116	.5	2	2	11	4.58	.059	3	2	.99	60	.01	2	1.00	.01	.13	1	15	450
M184	22	35	12	144	.1	31	8	908	3.26	19	5	ND	1	186	1.0	6	2	15	7.62	.057	3	4	1.23	60	.01	2	1.28	.01	.11	1	11	365
M185	25	36	17	188	.1	33	11	581	4.37	37	5	ND	1	114	.4	11	2	16	3.24	.072	4	3	1.08	57	.01	2	1.35	.01	.12	1	12	430
M186	17	28	12	151	.1	22	16	345	5.52	46	5	ND	1	37	.2	9	2	16	.84	.077	4	3	1.25	50	.01	2	1.56	.01	.12	1	17	340
M187	2	13	9	125	.1	7	29	980	4.75	6	5	ND	1	192	.2	2	2	77	4.03	.081	3	19	1.38	62	.01	2	2.02	.03	.11	1	7	110
M188	1	11	2	126	.1	6	28	1166	4.08	3	5	ND	1	213	.3	2	2	99	4.98	.079	3	28	1.62	163	.03	2	2.76	.07	.22	1	1	50
M189	1	8	2	132	.1	5	23	1459	4.44	2	5	ND	1	269	.4	2	2	100	5.57	.076	3	27	1.67	81	.02	2	2.75	.06	.19	1	1	70
M190	1	8	9	142	.1	6	31	1160	3.99	2	5	ND	1	160	.2	2	2	79	4.72	.086	3	21	1.11	70	.02	2	1.95	.06	.18	1	1	115
M191	1	9	2	128	.1	6	29	1404	5.35	2	5	ND	1	204	.2	2	2	114	5.85	.071	4	30	1.70	50	.01	2	2.87	.04	.09	1	2	60
M192	1	7	2	76	.1	4	23	1292	4.38	2	5	ND	1	191	.2	2	2	110	4.84	.069	4	30	1.63	35	.01	2	2.37	.05	.08	1	1	50
M193	1	11	5	64	.1	6	24	1754	4.87	2	5	ND	1	324	.2	2	2	153	5.88	.065	3	34	1.67	27	.01	2	2.40	.04	.02	1	1	45
M194	1	12	2	68	.1	5	22	1433	4.31	2	5	ND	1	244	.4	2	2	92	4.80	.059	3	26	1.63	61	.01	2	2.40	.03	.11	1	1	60
M195	1	12	4	88	.1	2	18	1324	4.66	2	5	ND	1	154	.2	2	2	52	4.18	.050	4	12	2.09	75	.01	2	2.69	.01	.13	1	2	45
M196	1	11	2	69	.1	12	33	1273	3.68	19	5	ND	1	243	.2	2	2	89	5.14	.045	3	36	1.50	33	.01	2	1.82	.03	.02	1	1	110
M197	1	10	2	102	.1	6	25	1030	2.99	2	5	ND	1	159	.2	2	2	49	4.74	.073	4	26	1.63	185	.02	2	2.56	.03	.37	1	3	65
RE M194	1	11	2	66	.1	3	21	1399	4.17	2	5	ND	1	238	.2	2	2	89	4.68	.057	3	25	1.59	61	.01	2	2.35	.03	.11	1	4	45
M198	1	13	2	109	.1	3	24	1306	3.86	2	5	ND	1	172	.2	2	2	60	6.28	.057	3	29	1.88	121	.02	2	2.92	.02	.28	1	1	40
M199	1	12	2	99	.1	6	22	1210	3.82	2	5	ND	1	279	.2	2	2	55	6.16	.064	3	29	1.91	126	.02	2	2.99	.02	.29	1	3	35
M200	1	10	2	65	.1	9	34	1208	4.36	89	5	ND	1	256	.2	2	2	117	6.24	.054	2	34	1.36	26	.01	2	1.83	.03	.04	1	9	205
M201	1	8	3	120	.1	5	24	741	5.79	2	5	ND	1	91	.2	2	2	68	2.49	.096	5	3	1.55	69	.02	2	2.83	.02	.14	1	1	80
M202	1	4	2	80	.1	7	20	1433	4.34	15	5	ND	1	160	.2	2	2	73	4.86	.104	4	2	1.09	53	.02	2	1.84	.04	.08	1	4	195
M203	1	5	2	91	.1	5	21	1309	5.33	11	5	ND	1	162	.2	2	2	99	3.48	.091	4	1	1.50	47	.02	2	2.20	.04	.07	1	1	240
M204	1	2	2	36	.1	7	11	1634	3.23	42	5	ND	1	140	.2	4	2	32	4.71	.038	2	1	1.45	41	.01	2	.93	.01	.06	1	2	365
M205	1	2	2	52	.1	4	14	1947	3.86	45	5	ND	1	117	.2	4	2	35	5.75	.055	3	1	1.93	56	.01	2	1.10	.02	.11	1	2	415
M206	1	3	2	111	.1	3	15	1268	4.17	2	5	ND	1	127	.2	2	2	59	4.07	.088	4	1	1.25	99	.02	2	1.91	.04	.19	1	4	220
STANDARD C/AU-R	18	59	42	132	7.3	70	32	1052	3.96	39	19	8	37	51	18.4	16	20	55	.48	.090	38	60	.88	176	.09	32	1.88	.06	.15	13	500	1400
M207	1	3	5	113	.1	2	20	1188	4.71	14	5	ND	1	108	.2	2	2	50	4.34	.094	4	2	1.22	56	.01	2	1.50	.02	.14	1	3	195
M208	21	4	5	85	.1	11	29	776	14.29	800	5	ND	1	65	.2	93	2	28	2.49	.083	3	3	.65	26	.01	2	1.02	.02	.14	1	3	3250
M209	4	5	12	75	.2	11	29	1019	8.48	301	5	ND	1	76	.2	37	2	17	4.17	.073	2	11	1.11	27	.01	2	.59	.01	.13	1	7	3550
M210	4	7	6	123	.1	10	27	1245	11.92	273	5	ND	1	86	.2	21	2	38	3.18	.096	3	2	.93	39	.01	2	1.50	.02	.15	1	2	3700
M211	3	6	9	134	.1	14	30	996	6.29	173	5	ND	1	82	.2	36	2	37	3.15	.094	4	2	.87	26	.01	3	1.54	.01	.13	1	8	5800
RE M216	1	4	2	125	.1	4	23	1403	6.55	2	5	ND	1	190	.2	2	2	78	7.04	.107	4	1	1.00	29	.01	2	2.31	.02	.13	1	130	190
M212	1	3	6	82	.1	5	21	1310	6.00	9	5	ND	1	146	.2	2	2	50	5.26	.126	5	1	.92	34	.01	3	2.00	.03	.14	1	7	385
M213	1	5	2	105	.1	1	22	1538	6.91	41	5	ND	1	216	.2	2	2	93	6.87	.101	4	3	1.05	47	.01	3	2.59	.03	.12	1	2	325
M214	1	5	2	94	.1	3	22	1432	6.75	3	5	ND	1	201	.2	2	2	80	6.09	.103	4	2	1.10	37	.01	3	2.20	.03	.12	1	7	160
M215	1	3	4	131	.1	3	22	1121	4.89	5	5	ND	1	160	.2	2	2	48	5.14	.109	4	1	.68	38	.01	2	1.36	.02	.16	1	140	215
M216	1	5	3	115	.1	2	23	1361	6.31	2	5	ND	1	189	.2	2	2	76	6.63	.106	4	1	.96	29	.01	2	2.29	.02	.12	1	120	150
M217	1	6	39	345	.1	6	24	1128	6.93	5	5	ND	1	132	2.5	2	2	59	4.36	.109	4	4	1.15	29	.01	4	2.72	.01	.12	1	3	335
M218	1	4	44	241	.1	8	23	1281	5.87	4	5	ND	1	143	1.1	2	2	46	4.86	.139	4	1	1.09	24	.01	2	2.21	.02	.10	1	2	255
M219	1	6	6	109	.1	2	17	1732	6.84	2	5	ND	1	241	.2	2	2	80	7.28	.088	4	1	1.57	31	.01	2	2.47	.02	.12	1	18	70
M220	1	15	9	95	.1	3	22	1501	7.26	2	5	ND	1	205	.2	2	2	65	5.75	.093	4	2	1.09	36	.01	3	1.88	.03	.15	1	6	140
M221	1	5	4	94	.1	31	48	608	9.75	19	5	ND	1	59	.2	2	2	76	1.42	.136	3	4	1.75	38	.02	2	3.69	.02	.12	1	2	195
M222	1	5	6	117	.1	15	33	905	7.64	2	5	ND	1	135	.2	2	2	74	2.96	.121	4	1	1.56	34	.02	2	3.27	.02	.12	1	2	95
M223	1	6	48	244	.5	9	28	955	6.14	10	5	ND	1	127	1.6	2	2	58	2.98	.107	4	2	1.35	63	.03	2	2.36	.02	.22	1	14	110
M224	1	3	9	106	.5	9	22	661	4.21	21	5	ND	1	49	.2	2	2	52	1.36	.077	6	2	1.29	50	.01	3	1.78	.01	.18	1	2	60
M225	5	6	87	257	1.4	10	24	1034	6.31	29	5	ND	1	69	1.3	4	2	60	2.08	.110	4	4	1.52	40	.01	2	2.01	.01	.14	1	21	155
M226	1	5	17	211	.1	1	18	1149	6.06	3	5	ND	1	174	1.0	2	2	53	4.46	.133	6	1	1.31	47	.01	2	2.31	.02	.17	1	14	100
M227	1	4	13	198	.1	1	20	1273	5.76	12	5	ND	1	100	.6	2	2	43	4.01	.136	6	1	1.70	57	.01	4	1.43	.02	.24	1	4	110
M22[illegible]	4	5	6	60	.7	7	27	1352	5.42	65	5	ND	1	1[illegible]	.4	2	2	26	3.90	.121	3	1	1.61	57	.01	5	.63	.01	.29	1	[illegible]	70
M22[illegible]	1	16	16	84	.8	5	11	758	5.35	93	5	ND	1	[illegible]	.2	2	2	17	.39	.088	5	6	.95	39	.01	2	1.41	.01	.34	1	[illegible]	55

SAMPLE# J91-28	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
M231	1	20	17	55	1.9	6	8	151	3.86	175	5	ND	1	28	.2	2	2	11	.38	.118	6	4	.24	46	.01	2	.61	.01	.30	1	1240	105
M232	12	23	45	134	2.6	4	9	138	5.12	288	5	ND	1	15	.2	14	2	8	.25	.071	6	4	.10	35	.01	4	.27	.01	.16	1	590	1250
M233	48	26	81	2828	2.5	4	8	145	5.02	291	5	ND	1	14	24.8	10	2	9	.22	.068	6	18	.07	35	.01	2	.24	.01	.14	1	270	2050
M234	16	50	41	2251	6.2	1	7	622	6.41	235	5	2	1	16	18.6	2	2	18	.25	.081	8	1	.52	39	.01	2	.87	.01	.15	1	340	1750
M235	57	30	45	2326	2.3	4	9	540	5.50	153	5	ND	1	13	25.0	2	2	17	.20	.070	8	3	.53	36	.01	4	.82	.01	.13	1	260	1750
M236	3	25	34	176	1.0	2	5	510	4.57	30	5	ND	1	15	.2	2	2	16	.24	.081	8	3	.48	37	.01	3	.72	.01	.14	1	2	140
M237	6	19	43	219	2.0	2	6	523	4.50	98	5	ND	1	17	.2	2	2	24	.29	.099	11	15	.56	49	.01	2	.89	.01	.17	1	1110	325
M238	4	30	37	572	3.1	1	8	162	5.58	174	5	ND	1	14	3.1	12	2	7	.22	.078	7	3	.08	32	.01	3	.25	.01	.17	1	200	1000
M239	7	31	132	1030	2.3	1	9	887	7.08	86	5	ND	1	17	5.1	2	2	15	.20	.067	6	2	.77	40	.01	3	1.12	.01	.18	1	290	845
M240	9	24	39	939	1.8	4	7	323	4.45	139	5	ND	1	15	7.7	4	2	15	.22	.075	7	4	.25	43	.01	4	.50	.01	.17	1	250	935
M241	8	21	29	179	1.2	4	6	359	4.29	116	5	ND	1	17	.2	2	2	15	.23	.077	7	20	.33	56	.01	2	.62	.01	.22	1	210	395
M242	3	17	27	113	1.6	3	8	243	5.04	91	5	ND	1	13	.2	10	2	14	.19	.074	7	2	.18	40	.01	2	.48	.01	.18	1	190	400
M243	1	22	89	128	3.6	3	10	299	7.81	104	5	ND	1	15	.2	10	2	11	.20	.074	5	3	.17	38	.01	5	.49	.01	.16	1	680	475
M244	1	18	21	74	1.0	4	8	296	5.68	56	5	ND	1	16	.2	2	2	7	.24	.090	6	3	.17	56	.01	2	.51	.01	.23	1	12	70
M245	1	11	24	89	.7	4	8	747	5.79	114	5	ND	1	18	.2	2	2	19	.24	.087	6	12	.60	63	.01	3	1.08	.01	.17	1	180	50
M246	1	12	12	170	.1	2	13	2264	9.46	56	5	ND	1	35	.2	2	2	47	.41	.127	5	3	1.98	48	.02	2	3.50	.01	.16	1	220	70
M247	1	33	4	46	.1	10	8	944	3.05	10	5	ND	1	446	.2	2	2	17	7.56	.080	4	7	.88	64	.01	2	1.47	.01	.17	1	130	65
M248	1	71	6	57	.1	29	14	730	4.07	17	5	ND	1	277	.2	2	2	28	4.83	.234	4	13	1.09	73	.01	2	1.70	.01	.17	1	5	125
M249	1	90	8	75	.1	31	16	891	4.65	16	5	ND	1	291	.2	2	2	35	5.12	.121	5	18	1.16	69	.01	2	1.86	.02	.16	1	4	150
M250	1	92	10	69	.3	34	18	1058	5.27	31	5	ND	1	365	.2	2	2	38	6.54	.112	4	16	1.17	64	.01	2	1.84	.02	.15	1	6	180
M251	1	109	8	74	.1	35	21	683	5.79	48	5	ND	1	180	.2	2	2	36	2.92	.139	4	18	1.40	88	.01	2	2.12	.02	.21	1	2	170
M252	1	25	2	41	.1	13	9	898	2.55	72	5	ND	1	265	.2	2	2	19	3.98	.069	4	12	.91	53	.01	2	1.30	.01	.12	1	3	30
M253	1	57	11	36	.1	14	13	808	3.14	35	5	ND	1	296	.2	2	2	16	4.81	.102	5	17	.74	70	.01	3	1.06	.01	.16	1	2	150
M254	1	91	20	65	.5	35	21	590	4.76	31	5	ND	1	176	.2	4	2	29	2.87	.138	4	13	1.07	91	.01	3	1.74	.01	.21	1	5	195
M255	1	150	2	63	.2	29	19	475	5.06	139	5	ND	1	148	.2	2	2	23	2.19	.117	3	13	1.11	79	.01	4	1.76	.01	.18	1	2	110
M256	1	163	8	61	.2	31	20	416	5.45	32	5	ND	1	112	.2	2	2	30	1.77	.146	3	14	1.05	83	.01	4	1.70	.02	.19	1	4	135
M257	1	96	8	102	.3	30	19	375	5.74	19	5	ND	1	91	.2	2	2	37	1.51	.200	3	23	1.46	78	.01	2	2.20	.02	.17	1	6	145
M258	1	143	13	65	.7	30	24	744	5.85	59	5	ND	1	228	.2	2	2	26	3.85	.116	4	12	1.13	75	.01	2	1.77	.02	.17	1	4	125
M259	1	20	7	35	.1	11	9	322	2.60	34	5	ND	1	98	.2	2	2	20	1.25	.079	2	12	.87	55	.01	4	1.18	.02	.12	1	5	35
M260	1	54	23	142	.1	20	13	633	3.70	42	5	ND	1	190	.3	2	2	24	2.90	.083	3	13	1.26	68	.01	4	1.80	.01	.15	1	1	75
M261	1	17	11	71	.1	11	8	680	3.39	63	5	ND	1	156	.2	2	2	26	2.37	.086	2	28	1.39	58	.01	2	1.84	.01	.13	1	4	25
M262	2	15	7	106	.1	12	8	870	3.94	73	5	ND	1	108	.2	18	2	7	4.25	.066	4	2	1.27	58	.01	3	.63	.01	.18	1	4	360
M263	19	27	51	1077	18.8	16	32	368	13.89	822	5	ND	1	104	.2	76	2	5	2.52	.096	3	2	.35	24	.01	3	.22	.01	.15	1	530	3050
M264	13	15	33	571	11.5	7	27	145	11.97	399	5	ND	1	95	.2	32	7	5	1.36	.116	3	3	.04	23	.01	2	.26	.01	.18	1	240	880
M265	5	15	25	296	11.6	9	17	593	7.22	413	5	ND	1	94	.2	30	2	5	3.19	.118	5	11	.07	39	.01	2	.26	.01	.19	1	290	730
M266	9	12	22	613	11.3	3	6	449	3.28	369	5	ND	1	72	.3	50	2	3	2.64	.104	5	1	.10	50	.01	3	.22	.01	.17	1	160	1750
M267	8	20	30	703	7.3	5	6	495	4.39	417	5	ND	1	63	.3	37	2	3	2.39	.116	5	3	.26	45	.01	2	.51	.01	.20	1	180	1650
M268	12	27	20	311	2.5	6	5	173	3.47	279	5	ND	1	17	.2	18	2	3	.54	.118	6	5	.21	55	.01	2	.55	.01	.18	1	140	675
M269	5	24	15	314	1.5	4	5	322	2.72	322	5	ND	1	41	.4	8	2	4	.99	.123	6	16	.21	55	.01	5	.53	.01	.18	1	130	330
M270	18	34	25	295	2.3	5	9	92	3.04	806	5	ND	1	16	.2	23	2	4	.49	.127	7	3	.14	47	.01	2	.60	.01	.22	1	160	400
M271	6	48	14	738	1.0	7	8	201	3.72	313	5	ND	1	17	11.8	10	2	5	.57	.126	5	5	.17	48	.01	3	.50	.01	.21	1	18	590
M272	1	40	10	302	.7	6	8	95	3.57	59	5	ND	1	19	.2	3	2	5	.54	.159	7	4	.14	56	.01	3	.52	.01	.27	1	4	310
M273	2	40	23	224	2.4	4	6	83	3.87	868	5	ND	1	12	.4	20	2	3	.39	.135	7	13	.06	51	.01	4	.29	.01	.21	1	19	310
M274	1	54	17	105	.1	3	9	99	4.66	218	5	ND	1	12	.2	6	2	3	.41	.154	6	1	.19	36	.01	5	.62	.01	.24	1	4	170
RE M270	18	35	26	302	2.4	4	9	91	3.09	823	5	ND	1	16	.2	22	2	4	.49	.130	7	1	.14	49	.01	4	.63	.01	.23	1	160	405
M275	1	55	32	2810	1.5	6	11	229	5.11	455	5	ND	1	17	25.4	7	2	6	.62	.154	7	3	.22	53	.01	5	.57	.01	.28	1	32	830
M276	5	66	89	626	17.6	6	16	112	7.89	3214	5	ND	1	12	1.3	97	2	7	.38	.148	7	4	.13	38	.01	5	.55	.01	.28	1	770	2700
M277	1	78	26	194	1.1	7	16	456	7.02	754	5	ND	1	29	.3	14	2	6	.94	.150	7	12	.20	46	.01	2	.72	.01	.27	1	210	205
M278	1	63	21	197	1.3	7	16	319	5.28	143	5	ND	1		.2	5	2	10	.69	.162	5	2	.41	42	.01	3	.71	.01	.22	1	9	310

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

COUL 3

HOLE No. J91-29 (JEFF GRID)

PURPOSE

TO CHECK THE POSSIBILITY OF GOLD ANOMALY INTERVAL INTERSECTED IN HOLE J91-12 EXTENDING NORTH.

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
8+50N / 1+21E	460 m (ALTIM)	270°	146.30 m
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-50°	124.97 m -45° 146.30 head -50°		
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED** OCT 23, 1991 **DATE COMPLETED** OCT 24, 1991
JEFF TESAR OCT. 24 / 1991	J.T. THOMAS	B.Q.	

SUMMARY LOG (m)

00 - 9.14 OVERBURDEN / CASING
9.14 - 57.75 INTERMEDIATE COARSE-GRAINED TO LAPILLI TUFF
57.75 - 83.20 FINE TO MEDIUM-GRAINED SANDSTONE WITH MINOR ARGILLITE
83.20 - 84.40 FAULT ZONE
84.00 - 143.00 INTERMEDIATE FINE-GRAINED TO LAPILLI TUFF
143.00 - 146.30 FINE-GRAINED SANDSTONE WITH MINOR ARGILLITE

SAMPLE: H316 — H395

SIGNIFICANT MINERALIZED INTERVALS (m)

39.50 - 55.75 7-8% Pyrite ; anastomosing bands, narrow stringers, blobs, disseminated
123.16 - 135.00 3-4% Pyrite ; narrow irregular stringers, angle bands, disseminated

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-29

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
0 - 9.14		OVERBURDEN / CASING					
9.14 - 57.75		INTERMEDIATE COARSE-GRAINED TO LAPILLI TUFF Grey to blue-grey in colour. Granular texture with coarse grain size, grading in places into fragmental with lapilli up to 2 cm. In places phyllitic structure. In places Brecciated due to tectonic movements, with narrow bands of gouge or crushed tuff flanked by zones of brecciation often flooded with quartz-carbonate matrix. Presence of bluish, narrow stringers of black chlorite (carbonate) throughout the core. In places swarms of quartz-carbonate stringers at all angles to the core axis. Interval is mineralized by pyrite with variable intensity throughout it. Lower part of the interval is in faulted contact with sandstone.		OV			Cl-1
		9.50 - 9.70 Breccia / Fault. Gouge band flanked by zones of crushed tuff. Chloritic core broken up.					
		10.67 - 11.65 Breccia / Fault. H-wall contact 65° marked by quartz-carbonate band. F-wall contact indiscernible. Strong flattening fabric, in places gouge bands. Common contorted foliation.					

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-29

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
tr Py	H316	9.14	10.67	1.53	60	1.5	160	2		
1-2% Py; narrow stringers of py along foliation planes	H317	10.67	11.65	0.98	260	4.0	721	24		
1% Py; sporadic narrow stringers, disseminated.	H318	11.65	13.40	1.75	220	4.2	400	3		
— " — (fault: core loss)	H319	13.40	14.50	1.10	68	1.2	273	2		
1% Py; sporadic narrow stringers, disseminated	H320	14.50	16.00	1.50	130	3.0	722	14		
1% Py; — " —	H321	16.00	17.50	1.50	144	1.9	273	4		
1-2% Py — " —	H322	17.50	19.00	1.50	122	1.1	247	2		
2% Py; — " —	H323	19.00	20.50	1.50	210	1.7	344	4		

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91 - 29

INTERVAL	C. LOSS	LITHOLOGY
		13.40 - 14.50 Fault/Breccia. Both walls contacts not discernable · core broken up. Several narrow bands of gouge, phyllitic. Core loss. Wavey foliation pattern. Weakly chloritic.
		23.80 - 23.90 Fault/Breccia. Minor fault, marked by narrow gouge band flanked by brecciated zones flooded with quartz-carbonate matrix. Chloritic. Sense of movement 45° to C.A.
		25.23 - 25.80 Fault/Breccia. Several narrow gouge bands flanked by brecciated tuff, flooded with quartz-carbonate groundmass. H-wall contact 25° F-wall contact 52°, both sharp, marked by quartz-carbonate bands (2cm in true thickness)
		28.85 - 29.15 Fault/Breccia. Band of gouge flanked by zones of crushed tuff, flooded with quartz-carbonate matrix. Core broken up.
		29.95 - 30.20 Fault/Breccia. Band of gouge flanked by brecciated tuff. H-wall contact 45°. F-wall contact 40°. Sense of movement 40° to C.A.
		34.75 - 34.95 Fault/Breccia. Narrow band of gouge flanked by intensely foliated tuff. Sense of movement along 40° to C.A.

C.A. L S M A

20 25 30 35 40

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91 - 29

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
1-2% Py; sporadic narrow stringers, disseminated.	H324	20.50	22.00	1.50	110	0.9	175	2
— " —	H325	22.00	23.50	1.50	86	1.0	160	7
2% Py; — " —	H326	23.50	25.23	1.73	520	2.4	859	16
tr Py.	H327	25.23	25.80	0.57	490	2.8	927	26
1-2% Py; — " —	H328	25.80	27.30	1.50	230	1.3	609	11
— " —	H329	27.30	28.80	1.50	188	1.5	456	7
2% Py; — " —	H330	28.80	30.30	1.50	220	2.7	760	15
2% Py; — " —	H331	30.80	31.80	1.50	125	1.4	540	7
— " —	H332	31.80	33.50	1.70	122	1.9	265	7
— " —	H333	33.50	35.00	1.50	209	1.1	530	11
— " —	H334	35.00	36.50	1.50	290	2.8	700	18
2-3% Py; — " —	H335	36.50	38.00	1.50	106	3.0	305	11
— " —	H336	38.00	39.50	1.50	180	2.6	608	22
3-4% Py; anastomosing bands, stringers, blobs * and disseminated. This is the upper end of pyritic zone. Increase in Quartz-carbonate stringers.	H337	39.50	41.00	1.50	420	6.9	1321	49

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91 – 29

INTERVAL	C. LOSS	LITHOLOGY
41.90 – 42.70		Fault / Crushed zone. Angular fragments of tuff within quartz-carbonate matrix. Core broken up. H-wall contact 50°, F-wall contact 60, both marked by narrow bands of gouge.
49.50 – 50.80		Crushed zone. Interval intensely foliated, crushed, brecciated. Core broken up. Dominant direction parallel to the core axis. No change in lithology. Decrease in intensity of quartz-carbonate stringers downhole.
55.75 – 57.75		Hanging wall of the fault which separates intermediate tuff interval from sedimentary one. Interval begins with quartz-carbonate vein 15 cm wide. Brecciated tuff, flooded with quartz-carbonate matrix. Intensely foliated - bottom of the interval grades into gouge with contorted pattern of foliation. F-wall contact of the interval slickenside of the fault, 40° chloritic fault cuts off mineralization by pyrite.
57.75 – 83.20		FINE TO MEDIUM-GRAINED SANDSTONE WITH MINOR ARGILLITE

C.A | L | S | M | A

40 45 50 55 60

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J 91-29

MINERALIZATION ALTERATION		SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
7-8% Py; Anastomosing bands (up 7cm wide) stringers and blobs. Disseminated.	*	H338	41.00	41.90	0.90	450	7.4	1353	48
7-8% Py; anastom. bands, stringers, blobs, dissem. (fault mineralized by pyrite)	*	H339	41.90	42.70	0.80	310	7.7	852	69
8-10% Py; anastomosing bands, stringers, blobs, dissemin.	*	H340	42.70	44.00	1.30	198	4.7	847	36
7-8% Py; — " —	*	H341	44.00	45.50	1.50	215	9.5	803	102
8-10% Py; — " —	*	H342	45.50	47.00	1.50	240	7.7	782	340
7-8% Py; — " —	*	H343	47.00	48.50	1.50	146	7.6	952	146
— " —	*	H344	48.50	49.50	1.50	119	6.4	517	98
2-3% Py; sporadic stringers, blobs, disseminated.		H345	49.50	50.80	1.30	58	2.0	191	34
5-6% Py	*	H346	50.80	52.00	1.20	120	6.6	326	84
8-10% Py; anastomosing stringers, bands, specks, diss.	*	H347	52.00	53.40	1.40	520	14.8	2408	268
6-7% Py; — " —	*	H348	53.40	54.80	1.40	110	5.2	350	98
— " —	*	H349	54.80	55.75	0.95	230	6.4	585	93
2-3% Py; sporadic stringers, blobs, disseminated (core loss) end of the lower part of pyritic zone.		H350	55.75	57.75	2.00	330	2.5	1002	29
tr-1% Py; disseminated		H351	57.75	58.60	0.85	14	0.9	42	6

HOLE No. J91-29

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
		H-wall contact sharp, slickenside of fault, 40° to C.A. flanked downhole by zone of brecciated rock (angular fragments of sandstone flooded with quartz-carbonate matrix, weakly chloritic) Dark-grey in colour, clastic texture with fine to medium grain size. In places poorly interbedded with minor argillite. In places brecciated - minor faults. F-wall (contact 25°) sporadic quartz-carbonate stringers. Mineralized by very minor pyrite (traces)	29, S0, 25	7L-X-Y(C)			
66.00-66.20		Breccia / Fault. Narrow band of gouge flanked downhole by band of intensely phyllitic sandstone Sense of movement 65°. Vuggy stringers of quartz-carbonate	Bx, S1	7L-X-Y(C)	65		si-3, cb-3
69.80-70.00		Breccia / Crushed zone. Core broken up. Fragments of sandstone flooded with quartz-carbonate groundmass	Bx				si-1, cb-1
			75, S0	7L-X-Y(C)			
77.80-77.90		Narrow band of brecciated sandstone at 75° to C.A	Bx	7L-X-Y(C)	75		si-1, cb-1

60 65 70 75 80

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-29

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
tr Py	H352	58.60	60.60	2.00	10	0.2	30	2		

HOLE No. J91-29

INTERVAL	C. LOSS	LITHOLOGY		C∠	L	S	M	A
					7L x-y (T)			
83.20 - 84.40		FAULT ZONE	Hanging-wall contact sharp 87° marked by gouge band, flanked downhole by zone of Brecciated rock, flooded with quartz-carbonate matrix. Brecciated zone consists of angular or/and subangular clasts of grey intermediate tuff flooded with pyritic, quartz-carbonate and chloritic matrix. Strong flattening fabric. In places bands of blackish, cherty groundmass. Foot-wall contact 50°, sharp.	50	2.Bx a.r.	87 / 50		CL-3 Si-2 Cb-2
84.40 - 143.00		INTERMEDIATE FINE-GRAINED TO LAPILLI TUFF	H-wall contact sharp 50°. Foot-wall contact 75° sharp. Grey in colour. Granular texture with fine to coarse grain size. Downhole grades into lapilli. In places amygdaloidal. Massive structure, in places phyllitic. Variable intensity of silicification. In places Brecciated Lapilli tuff is moderately sericitic.		2A-C		Py	
		87.96 - 93.80	Amygdaloidal fragments predominant		2d			
		93.80 - 95.10	Breccia. Zone of crushed tuff, flooded with quartz-carbonate and pyritic matrix. Both walls of contact not discernable: core Broken up. Phyllitic	40	2A-C, Bx		Py	Si-1 Cb-2
		95.10 - 114.50	Lapilli fragment predominant. Strong flattening fabric, in places lapilli fragments are rotated. Common watery pattern of foliation. Moderately sericitic. Foot-wall contact sharp 50°.	50	2D (b)		Py	Se-2

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J 91-29

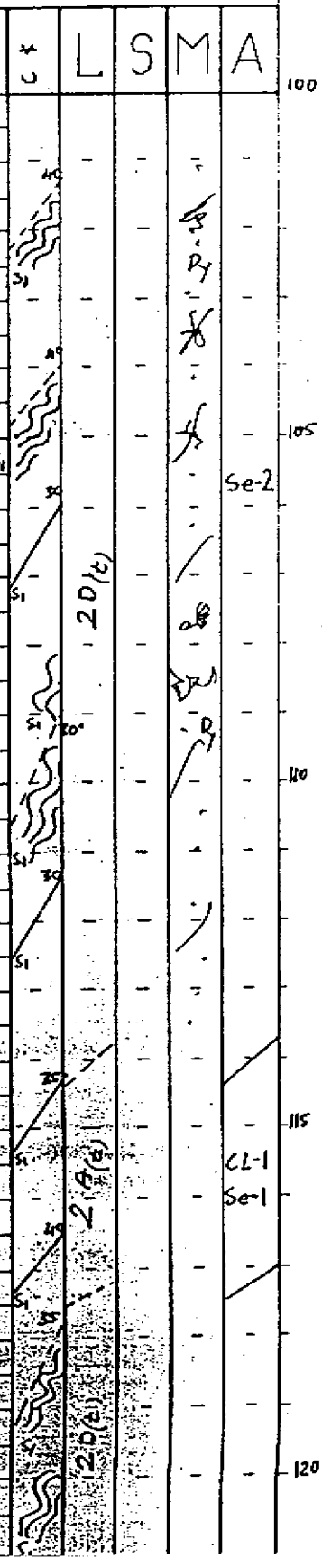
MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
tr Py.	H353	82.30	83.20	0.90	4	0.1	28	2
4-5% Py; narrow irregular stringers parallel to foliation planes. Scattered blobs. *	H354	83.20	84.40	1.20	92	3.6	484	20
1-2% Py; sporadic stringers, specks, disseminated	H355	84.40	86.00	1.60	2	2.0	77	2
— " —	H356	86.00	87.90	1.90	4	2.1	52	2
— " —	H357	87.90	89.50	1.60	72	3.2	224	7
— " —	H358	89.50	91.00	1.50	49	2.8	111	11
— " —	H359	91.00	92.50	1.50	212	3.4	225	12
— " —	H360	92.50	93.80	1.30	582	3.6	491	21
8-10% Py; anastomosing stringers, blobs, specks, diss. *	H361	93.80	95.10	1.30	54	2.5	186	11
1-2% Py; sporadic stringers, specks, disseminated. (core loss)	H362	95.10	97.54	2.44	15	0.1	16	2
1-2% Py; sporadic bands, specks, stringers, dissem.	H363	97.54	99.00	1.46	3	0.1	25	2
2-3% Py; — " —	H364	99.00	100.50	1.50	8	0.1	24	2

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. J91-29

INTERVAL	C. LOSS	LITHOLOGY
114.50 - 117.45		Intermediate fine-grained phyllitic tuff. H-wall contact 50° sharp. F-wall contact gradational. Weakly dilaritic.



GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-29

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
2% Py; sporadic bands, stringers (narrow irregular, specks, disseminated)	H365	100.50	102.00	1.50	1	0.1	7	2		
— " —	H366	102.00	103.50	1.50	6	0.1	7	2		
— " —	H367	103.50	105.00	1.50	1	0.1	4	2		
— " —	H368	105.00	106.50	1.50	3	0.1	5	2		
— " —	H369	106.50	108.00	1.50	9	0.1	10	2		
— " —	H370	108.00	109.50	1.50	7	0.1	12	2		
— " —	H371	109.50	111.00	1.50	2	0.1	10	2		
— " —	H372	111.00	112.50	1.50	2	0.1	6	2		
— " —	H373	112.50	114.00	1.50	1	0.1	7	2		
— " —	H374	114.00	115.50	1.50	3	0.1	25	2		
— " —	H375	115.50	117.00	1.50	1	0.3	26	2		
— " —	H376	117.00	118.50	1.50	2	0.3	13	2		
— " —	H377	118.50	120.00	1.50	1	0.4	24	2		

GRANGES EXPLORATION LTD
DIAMOND DRILL LOG

HOLE No. J91-29

INTERVAL	C. LOSS	LITHOLOGY	C ∠	L	S	M	A
121.72 - 135.00		Significant increase in silicification throughout the interval, thus change in colour to blue-grey. Increase in mineralization by pyrite. Sporadic quartz-carbonate stringers.	50, 60	20(t), 20s		Py	si-2
135.00 - 135.93		Breccia / Fault. H-wall contact 65° sharp, marked by intensely foliated rock. F-wall contact 60° sharp, marked by 7cm band of gouge. Sericitic.		20 Bx	65, 60		Se-2
				20		Py	Se-1

120 125 130 135 140

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-29

MINERALIZATION ALTERATION		SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
2% Py; sporadic stringers, specks, disseminated		H378	120.00	121.92	1.92	1	0.4	21	2
— " —		H379	121.92	123.16	1.24	1	0.9	65	2
3-4% Py; narrow irregular stringers, single bands, disem.	*	H380	123.16	124.35	1.19	20	2.4	235	16
5-6% Py; — " —	*	H381	124.35	125.90	1.55	1732	14.0	4217	133
4-5% Py; — " —	*	H382	125.90	127.40	1.50	212	3.4	361	31
3-4% Py; — " —	*	H383	127.40	128.90	1.50	312	4.4	511	30
3-4% Py; — " —	*	H384	128.90	130.50	1.60	3112	76.6	9756	186
— " —	*	H385	130.50	132.00	1.50	1932	53.5	3749	173
— " —	*	H386	132.00	133.50	1.50	1392	20.9	2954	97
— " —	*	H387	133.50	135.00	1.50	342	6.3	1184	54
1-2% Py — " —		H388	135.00	135.90	0.90	101	3.0	215	3
2-3% Py; narrow stringers, specks, disseminated.		H389	135.90	137.40	1.50	210	5.4	698	37
3-4% Py; — " —		H390	137.40	138.90	1.50	191	4.8	465	36
— " —		H391	138.90	140.40	1.50	177	3.1	489	15

HOLE No.

INTERVAL	C. LOSS	LITHOLOGY	C ∡	L	S	M	A
			75 S1	20		Py	Se-1
		141.15 – 143.00 Intermediate lapilli ash tuff (pumice), sericitic. H-wall contact 40° sharp F-wall contact 75°, sharp		7LIX(T)			
143.00 – 146.30		FINE-GRAINED SANDSTONE WITH MINOR ARGILLITE H-wal contact 75° sharp. Dark-grey in colour. clastic texture with fine grain size. Massive structure. In places inclusions of argillite. Mineralized by traces of Py.					
146.30		END OF THE HOLE					

140

145

155

160

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm		
2-3% Py; narrow irregular stringers, specks, dissem	H392	140.40	141.80	1.40	90	2.8	373	13		
3-4% Py; — " —	H393	141.80	143.00	1.20	250	3.5	1949	26		
tr Py	H394	143.00	144.60	1.60	35	1.1	203	7		
tr Py	H395	144.60	146.30	1.70	8	0.4	18	2		

391-29

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
H352	1	40	9	59	.2	18	14	1077	4.20	30	5	ND	1	146	.2	2	2	19	4.09	.079	5	13	2.13	61	.01	2	1.31	.01	.32	1	10	60
H353	1	28	7	70	.1	15	12	1260	4.01	28	5	ND	1	181	.2	2	2	15	3.09	.066	4	11	1.89	66	.01	5	.68	.01	.31	1	4	55
H354	4	17	51	110	3.6	39	42	811	5.39	484	5	ND	1	139	.2	20	3	28	1.46	.101	3	11	1.77	41	.01	5	.99	.01	.22	1	92	355
H355	1	10	12	82	2.0	5	14	528	4.12	77	5	ND	1	50	.2	2	2	15	.79	.212	7	10	1.60	45	.01	3	1.58	.01	.26	1	2	65
H356	1	13	17	106	2.1	8	14	764	6.21	52	5	ND	1	19	.2	2	2	34	.32	.101	5	12	2.53	36	.01	3	2.82	.01	.18	1	4	60
H357	1	11	16	124	3.2	8	14	588	4.38	224	5	ND	1	23	.3	7	2	23	.54	.088	4	10	1.65	35	.01	2	1.70	.01	.16	1	72	130
H358	1	13	17	70	2.8	7	17	413	4.86	111	5	ND	1	18	.2	11	2	21	.38	.093	4	11	1.51	41	.01	2	1.65	.01	.25	1	49	75
H359	1	11	15	46	3.4	6	13	348	4.62	225	5	ND	1	25	.2	12	2	11	.53	.074	3	9	.91	35	.01	5	.88	.01	.20	1	212	220
H360	3	12	22	70	3.6	4	13	326	3.53	491	5	ND	1	54	.4	21	2	6	1.04	.111	4	6	.77	43	.01	2	.64	.01	.20	1	582	310
H361	4	12	12	85	2.5	5	12	1297	11.64	186	5	ND	1	97	.2	11	2	8	4.58	.120	2	8	1.94	25	.01	5	.57	.01	.19	1	54	950
H362	6	12	9	51	.1	2	11	510	3.81	16	5	ND	1	98	.2	2	2	10	3.13	.182	6	6	.67	83	.01	2	.64	.01	.30	1	15	215
H363	1	10	6	73	.1	3	10	1028	3.66	25	5	ND	1	126	.2	2	2	15	6.10	.146	5	6	2.15	102	.01	2	.92	.01	.22	1	3	280
H364	1	14	7	177	.1	2	14	505	5.07	24	5	ND	1	119	.2	2	2	18	3.77	.186	6	7	.64	29	.01	3	.98	.02	.29	1	8	280
H365	1	12	6	125	.1	2	11	806	3.54	7	5	ND	1	151	.2	2	2	18	5.57	.165	6	6	.67	87	.01	4	.91	.02	.25	1	1	215
H366	1	14	11	86	.1	1	10	768	4.57	17	5	ND	1	120	.2	2	2	21	4.60	.152	5	6	.87	85	.01	2	1.18	.02	.26	1	6	160
H367	1	12	8	64	.1	3	7	633	2.45	4	5	ND	1	139	.2	2	2	14	4.51	.164	7	5	.53	95	.01	2	.91	.02	.27	1	1	95
H368	1	16	8	69	.1	2	8	673	3.73	5	5	ND	1	133	.2	2	2	11	4.94	.193	6	5	.34	75	.01	4	.71	.02	.26	1	3	150
H369	1	12	7	82	.1	1	10	661	3.37	10	5	ND	1	123	.2	2	2	15	3.90	.194	7	5	.49	78	.01	2	.86	.02	.28	1	4	225
H370	1	11	10	94	.1	2	13	945	4.34	12	5	ND	1	145	.2	2	2	18	5.96	.196	6	6	.85	70	.01	2	1.05	.02	.25	1	7	240
RE H367	1	10	6	59	.1	2	7	615	2.27	5	5	ND	1	131	.2	2	2	13	4.43	.153	6	5	.51	88	.01	2	.86	.02	.25	1	2	120
H371	1	9	6	104	TR	2	12	875	4.22	10	5	ND	1	136	.2	2	2	24	4.94	.187	6	7	.99	72	.01	3	1.34	.02	.23	1	2	230
H372	1	11	9	77	.1	1	8	795	3.19	6	5	ND	1	120	.2	2	2	12	3.67	.196	7	6	.91	88	.01	3	1.32	.02	.27	1	2	70
H373	1	11	4	103	.1	2	9	804	3.17	7	5	ND	1	153	.2	2	2	9	4.11	.212	8	5	.54	81	.01	2	1.15	.02	.28	1	1	85
H374	1	16	6	97	.1	2	9	341	3.41	25	5	ND	1	62	.2	2	2	13	1.56	.208	7	7	1.61	56	.01	2	1.67	.01	.23	1	3	140
H375	1	28	13	86	.3	1	12	208	4.18	26	5	ND	1	51	.2	2	2	21	.89	.220	8	4	3.68	46	.01	2	2.92	.01	.24	1	1	140
H376	1	14	12	67	.3	1	7	203	3.99	13	5	ND	1	59	.2	2	2	18	1.04	.245	6	4	3.25	61	.01	2	2.49	.01	.25	1	2	65
H377	1	12	10	76	.4	2	6	221	4.15	24	5	ND	1	69	.2	2	2	16	1.54	.237	5	7	2.67	44	.01	2	2.04	.01	.29	1	1	75
H378	1	14	13	125	.4	1	6	201	3.44	21	5	ND	1	49	.2	2	2	15	.97	.293	7	6	3.16	58	.01	3	2.39	.01	.37	1	1	110
H379	11	9	3	106	.9	2	7	270	4.97	65	5	ND	1	47	.2	2	2	21	1.06	.216	6	6	3.28	46	.01	2	2.41	.01	.26	1	1	215
H380	7	13	16	85	2.4	6	13	152	7.66	235	5	ND	1	31	.2	16	2	15	.56	.178	4	8	1.34	19	.01	3	1.11	.01	.25	1	20	795
H381	29	13	52	131	14.0	7	7	913	8.09	4217	5	ND	1	51	.2	133	2	4	1.86	.055	2	8	1.28	19	.01	2	.55	.01	.14	1	1232	2250
H382	9	15	13	108	3.4	6	13	127	8.00	361	5	ND	1	28	.2	31	3	8	.55	.164	4	5	.29	13	.01	2	.38	.01	.22	1	212	1600
H383	3	9	15	63	4.4	7	8	412	4.08	511	5	ND	1	37	.2	30	2	3	1.26	.031	2	9	.60	27	.01	2	.37	.01	.16	1	312	705
H384	11	30	112	339	76.6	23	20	866	6.41	9756	5	ND	1	71	.3	186	2	6	2.38	.038	2	12	.71	23	.01	2	.23	.01	.19	1	3112	2150
H385	12	77	139	300	53.5	44	36	280	9.30	3749	5	ND	1	52	.2	173	2	9	1.06	.045	2	11	.18	19	.01	2	.22	.01	.20	1	1932	3000
H386	3	48	44	164	20.9	35	28	403	7.28	2954	5	ND	1	51	.2	97	2	11	1.20	.040	2	13	.38	13	.01	4	.29	.01	.23	1	1392	1350
H387	3	28	35	94	6.3	29	25	391	4.44	1184	5	ND	1	47	.2	54	2	8	1.19	.039	2	9	.28	27	.01	2	.29	.01	.23	1	342	785
H388	1	32	11	107	3.0	37	33	681	6.27	215	5	ND	1	167	.2	3	2	65	1.59	.044	2	41	4.07	36	.01	2	3.17	.01	.35	1	101	215
H389	1	43	20	103	5.4	43	41	618	8.11	698	5	ND	1	69	.2	37	2	31	1.05	.049	2	19	1.76	28	.01	2	1.43	.01	.33	1	210	840
H390	1	39	11	130	4.8	54	48	344	5.83	465	5	ND	1	59	.2	36	2	20	.80	.062	2	12	.84	31	.01	2	.72	.01	.31	1	191	485
H391	1	26	14	48	3.1	41	36	606	6.44	489	5	ND	1	62	.2	15	2	50	.82	.038	2	26	2.31	27	.01	2	1.89	.01	.21	1	177	255
H392	1	126	19	72	2.8	21	26	640	6.23	373	5	ND	1	71	.3	13	2	31	.97	.119	3	13	1.55	45	.01	2	1.14	.01	.27	1	90	165
H393	1	55	17	65	3.5	25	32	735	6.78	1949	5	ND	1	62	.2	20	2	46	.89	.082	2	22	2.40	39	.01	2	1.80	.01	.24	1	250	200
H394	1	59	5	108	1.1	16	15	818	3.71	203	5	ND	1	118	.3	7	2	12	1.82	.082	4	4	1.12	101	.01	4	.60	.01	.38	1	35	55
H395	1	33	8	58	.4	11	12	986	2.95	118	5	ND	1	224	.2	2	2	12	4.07	.059	3	5	1.82	104	.01	2	.80	.01	.30	1	8	25

GEOCHEMICAL ANALYSIS CERTIFICATE

Granges Inc. PROJECT UNUK RIVER 134 File # 91-5321 Page 1 NOV - 4 1991

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

SAMPLE# J91-29	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
H316	1	39	60	172	1.5	29	26	1864	5.39	160	5	ND	1	61	.2	2	2	125	.82	.043	2	70	4.69	87	.01	2	3.68	.01	.13	1	60	90
H317	2	30	74	205	4.0	40	36	1949	7.69	721	5	ND	1	166	.9	24	2	94	1.49	.035	2	40	4.63	38	.01	2	2.06	.01	.15	1	260	385
H318	2	47	42	215	4.2	32	30	1664	7.25	400	5	ND	1	50	.4	3	2	147	.55	.046	2	73	5.54	41	.01	2	4.10	.01	.10	1	220	240
H319	1	43	22	112	1.2	32	30	1427	5.69	273	5	ND	1	27	.2	2	2	161	.30	.050	2	83	5.10	44	.01	2	4.50	.01	.10	1	68	20
H320	1	75	46	113	3.0	38	37	1486	7.07	722	5	ND	1	29	.2	14	2	151	.27	.042	2	78	4.81	42	.01	2	4.41	.01	.11	1	130	30
H321	1	49	48	164	1.9	37	35	1608	6.93	273	5	ND	1	32	.3	4	2	140	.35	.039	2	70	4.84	43	.01	2	4.19	.01	.11	1	144	50
H322	1	23	28	104	1.1	37	33	1538	6.33	247	5	ND	1	30	.2	2	2	146	.27	.046	2	81	5.55	55	.01	2	4.46	.01	.14	1	122	25
H323	1	28	22	86	1.7	34	30	1488	6.16	344	5	ND	1	54	.2	4	2	116	.58	.044	2	67	4.63	53	.01	2	3.48	.01	.15	1	210	40
H324	1	31	20	86	.9	31	29	1197	5.56	175	5	ND	1	36	.3	2	2	90	.30	.042	2	55	3.86	53	.01	2	2.87	.01	.17	1	110	15
H325	1	27	20	86	1.0	35	33	1348	6.01	160	5	ND	1	31	.4	7	2	130	.39	.042	2	65	3.76	55	.01	2	3.06	.01	.13	1	86	30
H326	1	46	58	177	2.4	30	30	2225	5.88	859	5	ND	1	151	.6	16	2	99	2.08	.037	2	48	4.36	61	.01	2	2.53	.01	.11	1	520	120
H327	1	55	91	171	2.8	33	33	1858	7.14	927	5	ND	1	359	.7	26	2	76	1.82	.040	2	33	4.29	40	.01	2	2.06	.01	.19	1	490	275
RE H332	1	44	38	246	2.1	32	30	1287	6.06	286	5	ND	1	49	.7	6	2	116	.42	.047	2	66	3.54	43	.01	2	3.09	.01	.18	1	120	135
H328	1	62	37	153	1.3	35	34	1467	6.42	604	5	ND	1	70	.2	11	2	91	.61	.043	2	47	4.38	69	.01	2	2.58	.01	.22	1	230	80
H329	1	75	43	202	1.5	32	31	1500	6.00	456	5	ND	1	83	.4	7	2	106	.82	.042	2	58	4.12	55	.01	2	3.30	.01	.18	1	188	80
H330	1	105	292	799	2.7	31	33	1290	7.04	760	5	ND	1	107	2.8	15	2	91	.74	.045	2	47	3.23	42	.01	2	2.54	.01	.17	1	220	385
H331	1	52	70	278	1.4	33	31	1441	5.87	540	5	ND	1	46	1.0	7	2	117	.46	.048	2	66	3.83	52	.01	2	3.50	.01	.18	1	125	110
H332	1	45	38	231	1.9	34	30	1260	5.97	265	5	ND	1	46	.7	7	2	115	.40	.047	2	66	3.48	47	.01	2	3.09	.01	.19	1	122	135
H333	1	32	22	103	1.1	36	33	1186	6.34	530	5	ND	1	26	.6	11	2	111	.22	.047	2	69	4.17	38	.01	2	3.83	.01	.20	1	209	85
H334	1	85	69	290	2.8	34	32	1230	6.85	700	5	ND	1	15	1.1	18	2	134	.17	.041	2	66	3.51	49	.01	2	3.45	.01	.18	1	290	180
H335	1	41	23	161	3.0	33	32	1229	6.13	305	5	ND	1	22	.5	11	2	118	.26	.045	2	61	3.31	62	.01	2	2.89	.01	.21	1	106	90
H336	1	49	26	174	2.6	40	36	1044	6.39	608	5	ND	1	55	.7	22	2	46	.46	.045	2	22	2.94	33	.01	2	1.07	.01	.28	1	180	200
H337	3	55	37	121	6.9	35	36	839	9.22	1321	5	ND	1	48	.2	49	2	33	.43	.030	2	14	2.25	16	.01	2	.73	.01	.26	1	420	210
H338	2	33	46	93	7.4	33	41	539	12.26	1353	5	ND	1	48	.2	48	2	25	.45	.042	2	8	1.26	14	.01	2	.58	.01	.31	1	450	370
H339	3	25	29	47	7.7	38	42	516	9.64	852	5	ND	1	103	.2	69	3	14	1.14	.038	2	6	.66	17	.01	2	.46	.01	.32	1	310	620
H340	2	18	31	40	4.7	37	41	467	7.58	847	5	ND	1	53	.2	36	2	20	.82	.047	2	8	.76	23	.01	2	.57	.01	.40	1	198	345
H341	4	25	40	44	9.5	54	48	118	12.02	803	5	ND	1	33	.2	102	4	12	.40	.053	2	5	.18	17	.01	2	.41	.01	.31	1	215	490
H342	3	25	42	82	7.7	43	44	107	7.92	782	5	ND	1	24	.4	340	4	13	.29	.049	2	6	.12	20	.01	5	.43	.01	.33	1	240	375
H343	4	23	90	885	7.6	46	40	400	7.21	952	5	ND	1	38	8.7	146	2	11	.84	.042	2	6	.34	18	.01	3	.26	.01	.23	1	146	1600
H344	8	23	31	365	6.4	48	42	515	5.31	517	5	ND	1	40	3.1	98	2	12	.91	.050	2	7	.35	24	.01	2	.34	.01	.27	1	119	1000
H345	1	16	21	50	2.0	47	51	121	1.19	191	5	ND	1	31	.6	34	2	14	.37	.064	3	7	.13	79	.01	3	.37	.01	.31	1	58	365
H346	2	23	23	220	6.6	53	49	145	5.52	326	5	ND	1	27	1.4	84	2	14	.40	.051	2	7	.15	21	.01	3	.39	.01	.34	1	120	440
H347	11	38	107	74	14.8	52	48	216	11.15	2408	5	ND	1	26	.2	268	2	14	.38	.042	2	7	.18	11	.01	3	.48	.01	.34	1	520	520
H348	2	22	32	34	5.2	50	48	100	6.12	350	5	ND	1	25	.2	98	2	14	.33	.051	2	6	.14	20	.01	2	.37	.01	.31	1	110	645
H349	5	21	44	131	6.4	34	34	221	6.93	585	5	ND	1	35	.8	93	3	12	.46	.040	2	4	.18	18	.01	3	.28	.01	.23	1	230	850
H350	4	16	41	106	2.5	12	21	277	4.55	1002	5	ND	1	90	.8	29	2	24	.78	.087	2	5	.75	45	.01	3	.81	.01	.21	1	330	305
H351	1	9	10	88	.9	15	11	785	4.04	42	5	ND	1	80	.8	6	2	16	2.46	.060	3	2	1.69	28	.01	2	1.55	.01	.23	1	14	95
STANDARD C/AU-R	20	59	45	136	7.5	72	32	1074	4.00	41	20	7	38	52	18.5	15	22	56	.49	.088	39	59	.89	180	.09	33	1.90	.06	.15	11	490	1500

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 30 1991 DATE REPORT MAILED: Oct 31/91 SIGNED BY .... D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No.

J91-30

PURPOSE

To Test 700 ZONE in FRONT of HOLE J91-20

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
L7+00N / 0+26E	~454m.	270°	41.45m
DIP	**DIP TESTS**	**VERTICAL PROJECT**	**HORIZONTAL PROJECT**
-45°	41.45 -45.5°	29 m	28m
LOGGED BY / DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED / COMPLETED**
G. F. McAlpine Oct 24/91	J.T. THOMAS	BQ	Oct 24/91 Oct 24/91

SUMMARY LOG

0-3. Casing
3-5.3 Silty Argillite
5.3-6.8 Vesicular flow (DACITE) Pyritic
6.8-12.4 Tuff breccia altered pyritic
12.4-23.2 Tuff breccia weak alt py-po Tr sl.
23.2-25.9 Lithic lapilli Tuff / sed
25.9-31.1 Tuff breccia py-po
31.1-33.5 Lapilli (vesicular).
33.5-34.6 Lithic lapilli tuff / sed
34.6-36.83 silicified faulted lapilli
36.6-37.2 fault.
36.83-41.45 tuffaceous Argillite

SIGNIFICANT MINERALIZED INTERVALS

6.8-12.4 10% py
5.3-6.8 ± 10-20% py
20.6 TR sphalerite
25.9-31.1 ± 5-10% py-po
34.6-36.8 5-10% py-po.

HOLE No. J91-30

INTERVAL	C. LOSS	LITHOLOGY	C.A.	L	S	M	A
0-3.04		CASING	-	-	-	-	-
3.04-5.3		Black Argillite, grey Siltstone, streaks of py, foliated 5.1-5.2 gouge	S1/50°	7.5,K		py	
5.3-6.8		Grey vesicular flow, anastomosing py veins 10-20%, vesicules 1-2cm. qtz filled, mottled attn.	S1/60	2Ga		py	vesicular
6.8-12.4		Grey tuff breccia siliceous matrix cherty, anastomosing py veins + diss 10%, bleached rims on fragments, patchy qtz., grey to black cherty matrix, vesicular fragments, 1-2mm vesicles foliated.	S1/60	3ZES	Fe/30		qV 70, qV 50
12.4-23.2		Grey-green tuff breccia, blk cherty to siliceous matrix, py-po disseminations + veins 5%, qtz veining 3-5%, bluish chalcedonic qtz vein 8%, weak fabric, flow banded fragments, bleached rims on fragment 20.6 white qtz.V. with po- reddish sphalerite qV	S1/50, S1/60	3ZES(c)		py, po, sp	qV, qV, qV, qtV

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-30

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
Tr py	M262	4	5.30		4	0.1	73	18
Py - 5%	M263	5.30	6		530	18.8	822	76
py - 15%	M264	6	6.8		240	11.5	399	32
py. - 20%	M265	6.8	8		290	11.6	413	30
py. - 10%	M266	8	9		160	11.3	369	50
py - 5% po Tr	M267	9	10		180	7.3	417	37
py-po 1-2%	M268	10	11		140	2.5	279	18
py-po 3%	M269	11	12		130	1.5	322	8
py-po 5%	M270	12	13		160	2.3	806	23
py-po 5-7%	M271	13	14		18	1.0	313	10
py-po 5%	M272	14	15		4	0.7	59	3
py-po 7%	M273	15	16		19	2.4	868	20
py-po 8%	M274	16	17		4	1.1	218	6
py-po 8%	M275	17	18		32	1.5	455	7
py-po 10%	M276	18	19		770	17.6	3214	97
py po 10%	M277	19	20		210	4.1	754	14
py-po 7% Tr sphalerite inclus.	M278	20	21		240	1.3	143	5
py-po 5%	M279	21	22		91	2.3	1474	41
"	M280	22	23		12	1.4	363	2

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-30

INTERVAL	C. LOSS	LITHOLOGY
23.2 - 25.9		Greyish-purple lithic lapilli tuff. - fine ash, coarse lithic fragments in banded fine ash matrix disc py-po 5%. weak fabric
25.9 - 31.1		Greyish-beige-green mottled Tuff breccia, with flow banded fragments, locally siliceous matrix, qtvv 3%. 5% py-po diss in matrix, fragments bleached rims, py rims fragments weak fabric, wispy fragments, bk chorty veins locally.
31.1 - 33.5		greenish-grey coarse ash to lapilli, closely packed fragments rounded to subrounded in fine matrix, fragments contain pale spots (vesicles?) Chilled rims to fragments, py-po diss 2-3% weak fabric, dark wispy chlorite matrix, weak silicified
33.5 - 34.6		greyish green purple fine to coarse ash, lithic fragments, bedded argillite frags. Tr py.
34.6 - 36.83		greenish grey to blue grey lapilli tuff - strongly silicified, strong fabric crushing, fault gouge, gouletion, random qtz veins 30%. py-po diss + wispy veins 5-10%. 36.6 - 37.2 fault gouge.
36.83 - 41.45		Black graphitic argillite, locally bedded greenish grey tuffs sheared & broken, qtz veined, faulted, Trace diss py. Contorted bedding locally.
		EOH 41.45

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. J91-30

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag ppm	As ppm	Sb ppm
py-po-5%.	M281	23	24		20	0.2	2	2
"	M282	24	25		16	0.1	2	2
"	M283	25	26		21	0.6	593	2
py-po-10%.	M284	26	27		10	0.7	66	2
"	M285	27	28		3	0.7	81	2
"	M286	28	29		13	3.1	197	7
"	M287	29	30		95	8.1	4079	59
py-po 10%.	M288	30	31		33	6.4	8672	125
py-po 2%.	M289	31	32		22	2.1	128	3
py-po 3%.	M290	32	33		13	1.4	107	2
py-po 3%.	M291	33	34.6		5	1.0	155	2
py-po 10%.	M292	34.6	35.5		9	0.1	44	2
py-po 8%.	M293	35.5	36.83		7	0.1	38	2
Tr py	M294	36.83	38		2	0.1	28	7
Tr py	M295	38	39		6	0.1	27	3
"	M296	39	40		6	0.5	32	3
"	M297	40	41.45		1	0.5	31	2

SAMPLE# J91-30	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
M262	2	15	7	106	.1	12	8	870	3.94	73	5	ND	1	108	.2	18	2	7	4.25	.066	4	2	1.27	58	.01	3	.63	.01	.18	1	4	360
M263	19	27	51	1077	18.8	16	32	368	13.89	822	5	ND	1	104	.2	76	2	5	2.52	.096	3	2	.35	24	.01	3	.22	.01	.15	1	530	3050
M264	13	15	33	571	11.5	7	27	145	11.97	399	5	ND	1	95	.2	32	7	5	1.36	.116	3	3	.04	23	.01	2	.26	.01	.18	1	240	880
M265	5	15	25	296	11.6	9	17	593	7.22	413	5	ND	1	94	.2	30	2	5	3.19	.118	5	11	.07	39	.01	2	.26	.01	.19	1	290	730
M266	9	12	22	613	11.3	3	6	449	3.28	369	5	ND	1	72	.3	50	2	3	2.64	.104	5	1	.10	50	.01	3	.22	.01	.17	1	160	1750
M267	8	20	30	703	7.3	5	6	495	4.39	417	5	ND	1	63	.3	37	2	3	2.39	.116	5	3	.26	45	.01	2	.51	.01	.20	1	180	1650
M268	12	27	20	311	2.5	6	5	173	3.47	279	5	ND	1	17	.2	18	2	3	.54	.118	6	5	.21	55	.01	2	.55	.01	.18	1	140	675
M269	5	24	15	314	1.5	4	5	322	2.72	322	5	ND	1	41	.4	8	2	4	.99	.123	6	16	.21	55	.01	5	.53	.01	.18	1	130	330
M270	18	34	25	295	2.3	5	9	92	3.04	806	5	ND	1	16	.2	23	2	4	.49	.127	7	3	.14	47	.01	2	.60	.01	.22	1	160	400
M271	6	48	14	738	1.0	7	8	201	3.72	313	5	ND	1	17	1.8	10	2	5	.57	.126	5	5	.17	48	.01	3	.50	.01	.21	1	18	590
M272	1	40	10	302	.7	6	8	95	3.57	59	5	ND	1	19	.2	3	2	5	.54	.159	7	4	.14	56	.01	3	.52	.01	.27	1	4	310
M273	2	40	23	224	2.4	4	6	83	3.87	868	5	ND	1	12	.4	20	2	3	.39	.135	7	13	.06	51	.01	4	.29	.01	.21	1	19	310
M274	1	54	17	105	1.1	3	9	99	4.66	218	5	ND	1	12	.2	6	2	3	.41	.154	6	1	.19	36	.01	5	.62	.01	.24	1	4	170
RE M270	18	35	26	302	2.4	4	9	91	3.09	823	5	ND	1	16	.2	22	2	4	.49	.130	7	1	.14	49	.01	4	.63	.01	.23	1	160	405
M275	1	55	32	2810	11.5	6	11	229	5.11	455	5	ND	1	17	25.4	7	2	6	.62	.154	7	3	.22	53	.01	5	.57	.01	.28	1	32	830
M276	5	66	89	626	17.6	6	16	112	7.89	3214	5	ND	1	12	1.3	97	2	7	.38	.148	7	4	.13	38	.01	5	.55	.01	.28	1	770	2700
M277	1	78	26	194	1.1	7	16	456	7.02	754	5	ND	1	29	.3	14	2	6	.94	.150	7	12	.20	46	.01	2	.72	.01	.27	1	210	205
M278	1	63	21	197	1.3	7	16	319	5.28	143	5	ND	1	22	.2	5	2	10	.69	.162	5	2	.41	42	.01	3	.71	.01	.22	1	240	310
M279	4	30	25	440	2.3	8	19	369	4.43	2474	5	ND	1	39	1.9	41	2	9	1.26	.148	6	5	.20	58	.01	5	.57	.01	.26	2	91	305
M280	2	57	24	2101	1.4	4	18	548	5.56	363	5	ND	1	29	17.3	2	2	12	.83	.167	6	5	.76	51	.01	3	1.39	.01	.31	1	12	590
M281	1	55	12	549	.2	3	20	1017	6.10	2	5	ND	1	66	.7	2	2	13	1.64	.180	7	5	1.16	50	.01	2	2.01	.01	.33	2	20	290
M282	1	20	15	135	.1	4	18	1590	5.93	2	5	ND	1	187	.3	2	2	21	3.66	.111	7	4	1.44	48	.01	2	2.60	.01	.29	2	16	70
M283	1	41	362	737	.6	5	17	1070	5.73	593	5	ND	1	64	6.6	2	2	12	1.83	.232	7	2	1.15	54	.01	2	1.71	.01	.30	1	21	300
M284	1	47	50	215	.7	3	11	555	4.38	66	5	ND	1	23	.7	2	2	14	.65	.243	9	1	1.22	55	.01	2	1.68	.01	.34	1	10	150
M285	1	16	14	75	.7	6	9	464	2.83	81	5	ND	1	50	.3	2	2	10	1.10	.166	9	13	.97	47	.01	4	1.15	.01	.31	1	3	100
M286	3	13	40	712	3.1	4	11	316	4.25	197	5	ND	1	49	4.5	7	2	6	1.16	.143	4	1	.38	42	.01	2	.47	.01	.25	1	13	330
M287	1	21	46	182	8.1	4	15	331	7.15	4079	5	ND	1	29	.5	59	2	16	.66	.134	5	2	.76	37	.01	2	1.01	.01	.22	1	95	230
M288	1	23	53	355	6.4	5	12	342	5.39	8672	5	ND	1	27	.6	125	2	13	.78	.142	5	3	.65	47	.01	2	.83	.01	.23	1	33	420
M289	1	14	20	274	2.1	1	7	813	3.20	128	5	ND	1	80	.2	3	3	10	2.34	.187	9	5	1.56	65	.01	2	1.45	.01	.29	1	22	220
M290	1	22	32	132	1.4	1	8	516	3.35	107	5	ND	1	35	.2	2	2	8	1.36	.239	11	1	1.04	71	.01	2	1.21	.01	.34	1	13	210
M291	1	31	48	266	1.0	2	14	869	5.88	155	5	ND	1	43	.2	2	2	16	1.21	.164	8	2	1.77	59	.01	2	2.35	.01	.29	1	5	130
M292	1	32	13	104	.1	1	8	1068	7.76	44	5	ND	1	41	.2	2	2	40	.85	.099	5	3	1.76	58	.01	2	2.22	.01	.13	1	9	105
M293	1	46	16	119	.1	5	9	924	7.99	38	5	ND	1	32	.6	2	2	47	.70	.115	6	9	1.54	42	.01	2	2.19	.01	.13	2	7	195
M294	17	33	18	236	.1	28	8	874	3.67	28	5	ND	1	252	1.3	7	2	9	6.24	.062	5	1	1.72	64	.01	2	.33	.01	.19	1	2	370
M295	11	16	16	173	.1	24	8	1043	3.76	27	5	ND	1	452	.3	3	2	23	9.03	.071	6	4	1.52	65	.01	5	.84	.01	.14	1	6	580
M296	11	23	43	320	.5	25	7	1029	3.91	32	5	ND	1	164	1.4	3	2	11	5.53	.065	4	3	1.47	61	.01	2	.33	.02	.15	1	6	1100
M297	18	32	30	243	.5	32	8	770	3.73	31	5	ND	1	125	1.0	2	2	15	6.28	.054	3	8	1.22	62	.01	2	.49	.02	.14	1	1	1550
STANDARD C/AU-R	19	61	43	136	6.7	74	32	1102	4.02	42	15	7	38	52	18.0	14	19	56	.49	.092	39	59	.89	180	.09	36	1.92	.06	.15	13	450	1700

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

Vancouver Petrographics Ltd.

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Report for: Gord Allen,
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2300 -885 West Georgia Street,
VANCOUVER, B.C., V6C 3E8

Job 268
November 1991

Unuk River Project

Samples:

Summary:

Electrum or locally native gold were identified in most samples which assayed over 1 gm/ton gold. Electrum is most abundant in one sample in association with cinnabar. In this sample electrum is intergrown with another precious-metal-bearing phase, designated Mineral X. In other samples, electrum is most common in association with veins and replacement patches of sphalerite and galena. Less abundant electrum occurs in the same samples as inclusions and veinlets in pyrite.

Gold occurs in electrum and probably in Mineral X.

Silver occurs in major amounts in electrum and Mineral X, and probably occurs in minor amounts in tetrahedrite and galena. No other minerals were identified in which silver is a major phase.

Most samples are of a few major rock types, including the following:

1) argillite, minor siltstone/greywacke
2) andesite/basalt flow, commonly amygdaloidal
3) K-altered andesite flow
4) andesite/latite flow/trachy-latite flow
5) intermediate tuffs, lapilli tuff
6) felsic lapilli tuff

Some samples are sheared strongly, especially in holes 25 and 28.

John G. Payne
(604)-986-2928

LIST OF PHOTOGRAPHS

The following photos illustrate textures of electrum and sulfides. They were taken in ordinary reflected light with a blue filter. Unless otherwise stated, the length of the photos is 1.6 mm.

No.	Sample	Description
0	2-6.0 m	native gold in quartz and associated with sphalerite; host rock contains abundant disseminated pyrite.
1	2-25.7 m	electrum in coarse sphalerite, Length of photo 0.40 mm.
2		electrum inclusions in pyrite (with minor chalcopyrite and tetrahedrite/telluride), Length of Photo 0.40 mm
3	4-31.9	electrum with tetrahedrite, galena, and sphalerite in veinlet in pyrite. Length of photo 0.40 mm
4		framboidal pyrite with pyrite overgrowths, inclusions of galena in pyrite, patch of sphalerite, gangue of carbonate
5	7-64.3	electrum intergrown with Mineral X, associated with cinnabar in quartz. Length of photo: 0.40 mm.
6		Mineral X with minor tetrahedrite in quartz containing abundant extremely fine grains of cinnabar.
7	10-63.8	electrum interstitial to pyrite and with galena, associated with major patch of sphalerite intergrown with ankerite and quartz; one side of photo is argillite.
8		electrum intergrown with galena in large patch of sphalerite, minor electrum and galena in inclusion and veinlets in pyrite, interstitial quartz and minor ankerite.
9	26-125.6	pyrite grains with interstitial patches of sphalerite (with exsolution blebs of chalcopyrite), chalcopyrite, and galena. Non-reflective grains are quartz and ankerite.
10		pyrite grains surrounded by and corroded slightly by galena.
11,12		light yellow electrum with galena and chalcopyrite and minor sphalerite in veinlet in fracture in pyrite. Length of photo: 0.40 mm.
13	18-123.4	pyrite grains with interstitial pyrrhotite and minor chalcopyrite; gangue is quartz.

(continued)

LIST OF PHOTOGRAPHS

(continued)

The following photos illustrate textures in quartz. They were taken in transmitted light with crossed nicols and a blue filter. The length of photos is 1.60 mm unless indicated otherwise.

No.	Sample	Description
14	27-60.0	extremely fine grained, early chalcedonic, quartz replacement with elongate porphyroblasts of ankerite; cut by late veinlet of slightly coarser grained quartz.
15,16	27-137.4	quartz showing curved, comb-textured aggregates against pyrite. Quartz contains scattered patches of ankerite.

AA LL

WHOLE ROCK GP ANALYSIS

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

2300 885 W Georgia St Vancouver V6E 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	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	.16	.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	1.90	.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	80	10	124	31	20	2.9	100.02
J91-11-88.0	54.61	15.27	4.72	2.17	5.60	5.42	1.84	1.32	.22	.09	.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	115	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	186	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	.22	.007	1010	141	10	173	18	87	8.0	100.16
J91-17-89.6	39.10	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	73	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	165	50	60	3.9	100.03
J91-18-77.3	59.74	16.41	4.76	3.19	2.25	.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	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	191	39	30	3.6	100.00
J91-20-74.8	49.69	10.77	14.85	6.84	6.40	.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	166	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	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	.00	.002	1119	38	26	162	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	.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	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	4.91	.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	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	103	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	.11	.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	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	521	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#	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 %
J91-27-71.0	49.23	16.77	12.81	2.90	[illegible]	2.18	3.39	2.25	.31	.11	.003	2653	174	34	233	42	51	8.8	99.81
J91-27-118.1	57.65	16.32	5.98	.88	[illegible]	2.87	3.79	3.87	.72	.02	.003	2739	158	20	225	36	20	5.6	99.87
J91-27-137.4	54.14	10.13	15.04	1.09	[illegible]	3.82	1.56	1.88	.46	.05	.002	795	196	23	170	18	98	8.1	99.87
J91-28-30.5	63.38	10.77	3.00	1.45	[illegible]	5.90	.43	.99	.15	.17	.013	287	442	10	68	10	20	6.1	99.86
J91-28-52.8	57.15	12.64	9.77	1.37	[illegible]	2.43	3.16	2.16	.48	.13	.002	586	173	16	155	26	44	5.2	99.87
J91-28-66.8	49.72	11.99	19.52	3.79	[illegible]	1.51	1.46	2.10	.45	.19	.002	248	124	24	218	35	89	4.8	99.88
RE J91-28-30.5	63.36	10.65	3.05	1.44	[illegible]	5.66	.37	1.00	.13	.17	.012	251	434	10	68	11	20	6.8	99.99
J91-28-80.1	55.37	13.22	13.89	2.29	[illegible]	2.24	1.65	1.02	.22	.20	.006	1161	88	52	248	31	25	8.9	100.32
J91-28-86.9	50.34	14.75	8.23	3.42	[illegible]	.07	5.35	2.41	.61	.25	.002	564	157	13	178	33	20	9.4	100.03
J91-28-109.85	66.21	13.30	6.45	2.84	[illegible]	.05	5.29	.63	.02	.14	.002	829	39	17	203	30	20	4.4	100.00
J91-28-115.7	59.18	14.76	9.93	3.60	[illegible]	.06	5.55	1.47	.35	.19	.004	904	59	10	151	24	20	4.4	100.14
STANDARD SO-4	67.71	10.41	3.43	.99	[illegible]	1.34	2.10	.56	.22	.13	.007	794	188	28	292	20	20	11.3	99.98

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

TOTAL P.003

GRANGES EXPLORATION LTD.

DIAMOND DRILL LOG

HOLE No. UNUK 11

T91-1 (TARN CREEK GRID)

PURPOSE

TO TEST DOWNDIP EXTENTION OF SHEAR ZONE IN ARGILLACEOUS TUFFS WITH QUARTZ VEINING, WITH VALUES UP TO 12,800 ppb Au OVER 1 m. ALSO TO TEST CONTINUITY OF POORLY-EXPOSED MINERALIZATION IN FOOTWALL ROCK TO SHOWING, ADJACENT TO THE "HOPE PLUG" – A FELSIC DOME POSSIBLY OF DILLWORTH AGE.

LOCATION	GROUND ELEV.	BEARING	TOTAL LENGTH
3275 N / 2575 E	1340 m (ALTIM.)	245°	114.6 m
DIP	**DIP TESTS**	**VERTICAL PROJECT.**	**HORIZONTAL PROJECT.**
−45°	108 m — 38°30'		
LOGGED BY DATE	**CONTRACTOR**	**CORE SIZE**	**DATE STARTED SEPT. 4**
C. ALLEN SEPT. 6/91	J.T. THOMAS	BQ TK	DATE COMPLETED SEPT. 5/91

SUMMARY LOG

INTERVAL	LITHOLOGY
0 - 3.05	CASING
2.05 - 7.55	MAFIC TUFF / LAPILLI TUFF
7.55 - 9.60	MAFIC TO INTERMEDIATE F-G PHYLLITIC TUFF
9.60 - 14.20	MAFIC TO INTERMEDIATE MEDIUM GRAINED TUFF
14.2 - 19.57	MAFIC TO INT. F-G PHYLLITIC TUFF
19.57 - 20.40	FAULT / QUARTZ VEIN ZONE
20.40 - 22.42	ARGILLACEOUS MAFIC TUFF
22.42 - 29.98	MAFIC TO INTERMEDIATE PHYLLITIC TUFF
29.98 - 41.02	ARGILLACEOUS TUFF / LAPILLI TUFF; * SULPHIDE ZONE
41.02 - 45.0	INTERMEDIATE COARSE-GRAINED PHYLLITIC TUFF
45.0 - 50.52	INTERMEDIATE TO MAFIC LAPILLI TUFF
50.52 - 53.0	INTERMEDIATE (?) FINE-GRAINED TUFF
53.0 - 58.52	ARGILLACEOUS FINE-GRAINED TUFF / ARGILLITE
58.52 - 59.65	MEDIUM-GRAINED SANDSTONE / TUFFACEOUS SDST.
59.65 - 62.45	ARGILLITE / ARGILLACEOUS SANDSTONE
62.45 - 81.00	INTERMEDIATE FINE TO MEDIUM-GRAINED PHYLLITIC TUFF
81.00 - 83.48	ARGILLITE AND TUFFACEOUS SEDIMENT
83.48 - 99.84	INTERMEDIATE FINE TO MEDIUM-GRAINED TUFF OR TUFFACEOUS SEDIMENT
99.84 - 103.85	INTERMEDIATE FINE-GRAINED TUFF
103.85 - 110.00	BRECCIATED INTERMEDIATE ASH TUFF(?) LAPILLI (?)
110.0 - 114.60	APHYRIC FELSIC INTRUSIVE (?); HOPE PLUG.

SIGNIFICANT MINERALIZED INTERVALS

29.98 - 37.5 7-10% PYRITE; DISSEMINATED, IN DISCONTINUOUS FOLIATION-PARALLEL BANDS AND IN STRINGERS

37.5 - 38.3 7-8% PYRITE IN SPORADICALLY SILICIFIED BRECCIA ZONE

38.92 - 40.4 5-8% PYRITE (AS 29.98 TO 37.5)

41.03 1.5 cm QUARTZ STRINGER WITH 20% EACH OF PYRITE AND SPHALERITE

103.85 - 114.60 5-10% DISSEMINATED AND FRACTURE-RELATED PYRITE. TRACES RED-BROWN SPHALERITE. TRACES GALENA.

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

T91-1

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
moderate chloritic ± sericitic alteration.										
2.4-2.6 - 2-3% pyrite concentrated along 1-2 mm foliation parallel bands.										
Rock composed largely of chlorite, sericite and calcite. Barren.										
1-2 cm white quartz-carbonate stringers 50-60° CA. Barren.										
	T91-1-1	18.55	19.57	1.02	3	0.2	4	3		
Shear zone. minor gouge. Quartz flooding.	2	19.57	20.40	0.83	3	0.8	16	7		
Quartz-carbonate stringers to 1 cm. Trace chalcopyrite	3	20.40	21.13	0.73	3	0.4	23	2		

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

T91-1

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	T91-1-4	21.13	22.87	1.74	6	0.6	24	2
	5	22.87	23.95	1.08	2	0.3	8	3
21.95 - 22.25 - 50% white quartz in stringers upto 2cm. Trace pyrite.								
22.50 - 22.70 - 50% white quartz as above. Trace pyrite.								
27.5 - 29.98 - Predominantly sericitic phyllite								
* SULPHIDE ENRICHED ZONE 27.5 - 44.6								
	6	27.43	28.97	1.54	45	0.9	42	6
27.5 - 29.0 1-2% fine-grained disseminated pyrite.	7	28.97	29.98	1.01	47	3.7	163	28
29.0 - 29.98 3-5% pyrite, disseminated and in foliation parallel bands to 2mm.	8	29.98	31.0	1.02	320	11.2	599	52
29.98 - 37.5 - 7-10% pyrite; disseminated in chloritic groundmass, disseminated in some lithic fragments and in discontinuous foliation-parallel bands upto 5mm thick. Pyrite typically associated with cryptocrystalline blue-grey quartz lenses and cumulated stringers upto 5mm.	9	31.0	32.0	1.0	49	3.8	361	20
	10	32.0	33.0	1.0	59	3.1	947	22
Pyrite stringers also cross cutting foliation at all angles to core. Cumulated stringers	11	33.0	34.0	1.0	47	3.3	1138	27
	12	34.0	35.0	1.0	150	2.3	998	34
37.5 - 38.3 - sporadically silicified breccia zone. 20% cumulated and crackle breccia-filling quartz stringers. 7-8% pyrite in masses to 5mm	13	35.0	36.0	1.0	44	2.2	391	19
	14	36.0	37.0	1.0	7	4.5	317	31
38.92 - 40.4 - 5-8% pyrite; disseminated in bands to 1cm parallel to foliation. Sporadically silicified.	15	37.0	37.5	0.5	32	4.8	252	43
	16	37.5	38.30	0.8	54	17.1	465	86
	17	38.30	38.92	0.62	1240	9.5	830	47
	18	38.92	40.0	1.08	590	9.4	2343	77

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. T91-1

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm
	DM-19	40.0	41.0	1.0	350	8.8	2458	52
41.03 - 1.5 cm quartz stringer parallel to foliation (50°CA) with 20% Q pyrite and sphalerite.	20	41.0	41.78	0.78	35	1.8	269	20
	21	41.78	42.07	0.29	660	18.2	6352	105
Rock groundmass composed predominantly of sericite ± chlorite.	22	42.07	43.0	0.93	170	3.5	1414	29
	23	43.0	44.0	1.00	57	3.6	188	26
	24	44.0	45.0	1.0	25	1.4	158	12
49.54 - 50.52 - 8-10% pyrite, disseminated and in irregular masses to 1 cm.	25	49.54	50.52	0.98	27	2.6	286	20
	26	50.52	51.00	0.48	8	1.4	42	14
50.52 - 50.9 - 5% pyrite in 1-2 mm bands parallel to bedding/foliation in rock.	27	51.00	52.18	1.18	6	0.4	26	4
51.68 - 51.83 - Quartz - chlorite vein 60°-90°CA. Barren.	28	52.18	52.78	0.60	3	0.3	80	19
52.18 - 52.78 - FAULT / GOUGE ZONE 5% pyrite in broken stringers.	29	52.78	54.35	1.57	8	0.3	32	6
	30	54.35	55.05	0.70	4	0.6	35	13
53.0 - 55.0 - Broken core. Sheared graphitic argillite. 2-3% fine-grained disseminated pyrite. 5-10% white quartz - carbonate stringers to 1 cm parallel to cleavage. 54.50 - 5 mm bed of fine-grained pyrite.	31	55.05	56.50	1.45	6	0.6	20	5
	32	56.50	57.60	1.10	7	0.6	32	16
57.6 - 58.52 - 3-5% very fine-grained disseminated and bedded (to 1 cm) pyrite.	33	57.60	58.52	0.98	4	0.9	57	28
	34	58.52	59.65	1.13	6	0.8	53	20
	35	59.65	60.53	0.88	3	0.2	18	9

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

T91-1

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
60 Pervasive sericitic alteration throughout unit. Weak to moderate										
62.0 - 64.0 - 2-3% very fine-grained diss. pyrite.										
Min sporadic disseminated pyrite to 2%.										
65										
70										
75										
80										

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No.

T91-1

MINERALIZATION ALTERATION	SAMPLE	FROM	TO	WIDTH	Au ppb	Ag g/t	As ppm	Sb ppm		
80										
B3.18 – 92.84 – Trace pyrite to lamin										
85										
90										
95										
100										

GRANGES EXPLORATION LTD

DIAMOND DRILL LOG

HOLE No. T91-1

MINERALIZATION ALTERATION	SAMPLE	FROM m	TO m	WIDTH (m)	Au ppb	Ag g/t	As ppm	Sb ppm
99.84 - 103.85 - pervasive moderate sericite alteration.								
	T91-1-36	100.45	101.75	0.5	9	1.1	14	5
101.7 - 101.8 5% pyrite in irregular masses to 1 cm within and along margins of shear bounded chunk of intrusive (?)								
103.85 - 105.37 - 5-8% pyrite; disseminated and in irregular masses to 1 cm. Pyrite in matrix in breccia and in small shears at 25° to CA.	37	103.85	104.70	0.85	220	1.9	270	15
	38	104.70	105.37	0.67	450	3.7	488	11
105.37 - 107.12 - 2-4% disseminated pyrite.	39	105.37	106.35	0.98	250	1.7	116	2
108.10 - 109.0 - 7-8% pyrite; disseminated and along fractures at 30° to CA.	40	106.35	107.12	0.77	38	0.9	94	3
* Trace sphalerite and galena in pyrite stringers.	41	107.12	108.10	0.98	31	3.3	147	11
	42	108.10	109.00	0.90	220	7.1	482	24
109.0 - 110.0 - 5-7% pyrite predominantly along fractures 30° to core axis.	43	109.00	110.0	1.0	240	4.9	287	14
110.0 - 114.60 - 5% pyrite along fractures predominantly at 30° CA.	44	110.0	111.0	1.0	20	0.6	42	3
Local concentrations to 10% across	45	111.0	112.0	1.0	36	1.5	50	5
* 10 cm. Trace red-brown sphalerite.	46	112.0	113.0	1.0	860	2.6	200	8
	47	113.0	114.0	1.0	45	1.4	1300	11
~~ 114.6 m E.O.H. ~~~	48	114.0	114.60	0.6	390	2.0	2565	23

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
J91-4-11	2	8	12	67	.5	15	26	974	6.46	17	5	ND	1	89	.2	13	2	18	3.37	.171	6	4	.48	56	.01	4	.88	.02	.16	1	35
J91-4-12	1	7	5	78	.2	13	26	1345	6.68	13	5	ND	1	127	.2	8	2	43	4.41	.184	6	5	.92	143	.01	3	1.89	.03	.22	1	11
J91-4-13	3	7	8	62	.4	10	21	1405	9.18	80	5	ND	1	125	.2	18	2	21	4.74	.170	5	7	1.33	76	.01	2	1.15	.03	.20	1	52
J91-4-41	1	6	4	88	.2	8	16	1351	7.48	12	5	ND	1	149	.2	3	2	27	3.61	.215	8	6	1.03	115	.02	2	2.00	.05	.18	1	25
J91-4-42	1	6	3	86	.2	13	22	1744	7.97	16	5	ND	1	215	.2	6	2	33	4.59	.210	8	7	1.05	131	.02	2	2.49	.05	.15	1	7
J91-4-43	1	5	2	111	.1	7	15	2055	8.78	7	5	ND	1	258	.2	2	2	46	5.48	.206	7	6	1.21	125	.02	2	2.68	.05	.13	1	4
J91-4-44	1	4	7	92	.2	11	20	1708	8.98	50	5	ND	1	182	.2	14	2	28	4.65	.181	6	6	1.39	80	.01	2	1.76	.03	.10	1	9
J91-4-45	1	4	5	83	.2	9	14	1413	7.56	14	5	ND	1	235	.2	6	2	26	5.11	.199	7	6	1.26	103	.01	2	1.98	.05	.15	1	14
J91-4-46	1	3	2	110	.2	10	15	1749	8.53	6	5	ND	1	368	.2	2	2	45	7.13	.181	7	6	1.85	99	.02	2	2.80	.05	.07	1	2
J91-4-47	1	7	9	92	.4	31	41	1012	6.76	54	5	ND	1	127	.2	34	2	52	4.88	.194	3	7	1.54	61	.01	2	1.11	.04	.16	1	8
J91-4-48	1	13	5	121	1.1	35	43	1102	7.08	128	5	ND	1	118	.4	62	2	27	4.55	.139	2	9	1.47	54	.01	3	.84	.02	.18	1	20
J91-4-49	4	5	7	48	3.7	19	27	1620	12.96	108	5	ND	1	115	.2	49	2	15	5.77	.105	2	7	1.43	31	.01	2	.70	.02	.14	1	410
J91-4-50	14	9	10	112	8.5	8	22	670	13.19	433	5	ND	1	58	.2	38	2	33	2.14	.116	4	6	.95	24	.01	2	1.41	.01	.20	1	9
RE J91-4-54	14	14	109	371	6.7	22	31	518	9.20	201	5	ND	1	57	3.9	34	2	26	1.71	.144	4	7	.82	28	.01	2	1.09	.01	.21	1	30
J91-4-51	2	11	16	141	7.5	7	30	406	6.55	100	5	ND	1	45	.3	24	2	20	1.80	.219	6	6	.41	41	.01	2	.92	.01	.33	1	230
J91-4-52	51	40	24	87	19.1	14	25	630	23.12	576	5	ND	1	67	.3	79	2	21	1.93	.124	4	5	.72	23	.01	2	1.03	.01	.19	1	380
J91-4-53	13	12	64	234	11.2	24	45	642	13.67	337	5	ND	1	53	2.1	59	2	31	2.61	.144	4	8	.50	22	.01	2	.92	.01	.28	1	64
J91-4-54	14	14	107	345	6.6	21	30	490	8.84	192	5	ND	1	54	3.6	35	2	25	1.63	.134	3	7	.78	28	.01	2	1.05	.01	.20	1	32
J91-4-55	28	29	37	37	9.2	23	40	571	15.67	342	5	ND	1	53	.3	53	2	37	1.46	.125	4	8	.95	27	.01	3	1.48	.01	.25	1	80
J91-4-56	37	30	27	43	7.2	20	38	394	15.13	319	5	ND	1	39	.2	39	2	29	1.17	.120	4	6	.61	21	.01	3	1.04	.01	.24	1	59
J91-4-57	37	27	16	56	5.9	12	27	751	12.44	181	5	ND	1	92	.2	15	2	47	2.26	.123	5	6	1.07	29	.01	2	1.48	.01	.22	1	41
J91-4-58	40	33	16	75	5.5	16	40	338	15.17	231	5	ND	1	34	.3	19	2	26	.93	.130	3	8	.49	22	.01	2	1.13	.01	.24	1	31
J91-4-59	11	17	26	120	5.9	16	31	901	8.88	239	5	ND	1	82	.5	25	2	35	2.39	.191	5	7	1.23	34	.01	2	1.39	.01	.25	1	87
J91-4-60	2	13	19	155	1.9	6	31	931	6.80	44	5	ND	1	77	.3	10	2	46	1.89	.170	4	8	1.69	33	.01	2	2.03	.01	.24	1	22
J91-4-61	1	6	10	146	.9	3	16	560	3.29	16	5	ND	1	29	.6	4	2	18	.73	.020	12	6	1.13	48	.01	5	1.08	.01	.31	1	2
J91-4-62	1	5	8	142	.7	3	18	487	3.66	19	5	ND	1	30	.4	5	2	24	.74	.050	11	6	1.29	48	.01	5	1.62	.01	.46	1	8
J91-4-63	1	9	7	166	1.1	4	26	992	6.92	26	5	ND	1	33	.2	8	2	62	.78	.166	6	7	2.72	41	.01	3	2.75	.01	.27	1	5
J91-4-64	1	10	6	51	1.7	8	19	2011	5.79	33	5	ND	1	372	.2	9	2	33	8.83	.119	6	6	1.35	43	.01	2	1.30	.01	.21	1	44
J91-4-65	1	9	7	55	.9	8	16	2264	4.98	17	5	ND	1	497	.2	5	2	40	12.36	.109	10	6	1.70	36	.01	2	1.91	.02	.16	2	16
J91-4-66	8	13	10	66	2.3	26	37	860	5.95	83	5	ND	1	78	.2	19	2	32	1.44	.116	4	8	1.65	69	.01	3	1.49	.01	.25	1	8
T91-1-1	1	91	6	64	.2	6	19	1285	5.41	4	5	ND	1	320	.2	3	2	97	6.10	.222	7	8	1.55	53	.01	3	2.37	.02	.26	1	3
T91-1-2	1	126	12	63	.8	9	23	1386	5.75	16	5	ND	1	331	.2	7	2	100	4.14	.253	6	4	2.52	506	.01	4	2.11	.01	.19	1	3
T91-1-3	1	105	16	81	.4	12	25	1604	6.83	23	5	ND	1	314	.2	2	2	166	2.99	.301	6	9	3.45	55	.01	2	3.36	.01	.10	1	3
T91-1-4	1	141	13	67	.6	12	25	2024	6.86	24	5	ND	1	297	.2	2	2	120	4.37	.305	5	8	2.91	135	.01	2	2.33	.01	.19	1	6
T91-1-5	1	167	2	80	.3	12	29	1203	6.72	8	5	ND	1	350	.2	3	2	102	4.97	.530	8	13	2.39	94	.01	4	3.02	.01	.31	1	2
T91-1-6	1	84	23	84	.9	12	22	2052	6.09	42	5	ND	1	211	.2	8	2	93	4.09	.254	6	8	3.12	121	.01	3	2.22	.01	.56	1	45
T91-1-7	1	152	26	42	3.7	13	24	1595	5.28	163	5	ND	1	177	.2	28	2	35	2.88	.281	5	7	1.48	60	.01	5	.79	.01	.59	1	47
T91-1-8	1	98	.321	621	11.2	17	26	114	4.09	599	5	ND	1	137	2.5	52	2	22	.66	.231	4	8	.17	50	.01	7	.62	.01	.35	3	320
STANDARD C/AU-R	17	58	37	131	6.6	70	34	1036	3.93	38	17	7	37	51	18.7	15	19	54	.47	.089	36	58	.88	176	.09	34	1.87	.06	.15	12	450

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
T91-1-12	1	52	30	34	.3	18	32	48	5.55	998	5	ND	2	186	.2	34	2	29	.72	.250	5	5	.20	41	.01	3	.68	.01	.37	1	150
T91-1-13	1	69	54	48	.2	16	32	196	6.97	391	5	ND	2	188	.2	19	2	47	.79	.243	5	5	.83	45	.01	4	1.29	.01	.33	1	44
T91-1-14	1	162	852	3979	.5	16	31	107	4.84	317	5	ND	2	180	16.5	31	2	29	.77	.244	5	11	.30	49	.01	4	.79	.01	.38	1	7
T91-1-15	1	99	42	61	.8	18	31	81	6.36	252	5	ND	2	179	.2	43	2	30	.69	.233	5	6	.22	27	.01	3	.71	.01	.40	1	32
T91-1-16	1	134	493	2272	1.3	11	15	41	2.85	465	5	ND	1	90	8.8	86	2	12	.37	.127	3	7	.05	55	.01	3	.30	.01	.18	1	54
T91-1-17	1	85	115	362	.5	12	18	72	3.11	830	5	ND	1	96	1.0	47	2	17	.44	.143	4	7	.06	53	.01	4	.41	.01	.27	1	1240
T91-1-18	2	194	110	1365	.4	13	18	69	4.51	2343	5	ND	1	118	3.9	77	2	19	.48	.144	4	9	.09	38	.01	3	.41	.01	.25	1	590
T91-1-19	2	448	109	405	.8	12	22	79	2.94	2458	5	ND	1	136	1.1	52	2	23	.62	.189	5	5	.10	78	.01	4	.49	.01	.31	1	350
T91-1-23	1	169	16	52	.6	13	27	674	4.24	188	5	ND	1	189	.2	26	2	23	1.27	.211	5	4	.45	24	.01	4	.80	.01	.41	1	57
T91-1-24	1	75	14	62	.4	10	26	1196	5.27	158	5	ND	2	229	.4	12	2	41	1.85	.181	8	5	1.70	97	.01	3	1.88	.01	.44	1	25
T91-1-25	1	136	19	112	.6	10	23	1355	5.42	286	5	ND	1	194	.8	20	2	35	2.00	.229	5	3	1.03	62	.01	2	1.08	.01	.32	1	27
T91-1-26	1	42	11	72	.4	6	14	152	2.21	42	5	ND	3	44	.4	14	2	8	.17	.009	10	3	.22	74	.01	4	.61	.01	.30	1	8
T91-1-27	1	38	7	83	.4	7	13	554	3.67	26	5	ND	3	145	.5	4	2	9	1.13	.016	12	2	1.08	42	.01	2	1.23	.01	.15	1	6
T91-1-28	1	30	10	72	.3	5	7	945	3.48	80	5	ND	2	213	.4	19	2	10	3.76	.014	9	3	2.21	89	.01	2	1.04	.01	.23	1	3
T91-1-29	1	29	33	221	.3	6	9	1161	3.66	32	5	ND	2	169	1.0	6	2	9	3.90	.045	8	2	2.16	58	.01	2	1.01	.01	.22	1	8
T91-1-30	5	25	18	47	.6	4	5	1846	2.42	35	10	ND	1	492	.8	13	2	10	11.69	.053	6	2	4.65	63	.01	2	.33	.01	.17	1	4
T91-1-31	2	16	6	20	.6	3	3	2074	1.90	20	11	ND	2	642	1.0	5	2	9	15.48	.041	5	1	6.51	86	.01	3	.15	.01	.08	1	6
RE T91-1-28	1	32	8	68	.2	5	8	965	3.45	82	5	ND	2	220	.5	22	2	10	3.94	.013	9	2	2.28	87	.01	3	1.03	.01	.24	1	2
T91-1-32	4	22	6	29	.6	4	4	2408	2.43	32	8	ND	3	280	.6	16	2	10	10.44	.037	5	2	4.17	75	.01	2	.23	.01	.13	1	7
T91-1-33	5	34	17	28	.9	4	7	2894	3.27	57	5	ND	1	181	.6	28	2	11	6.99	.065	4	1	2.87	56	.01	2	.28	.01	.18	1	4
T91-1-34	3	29	16	45	.8	4	8	1992	2.67	53	5	ND	1	169	.5	20	2	6	5.09	.072	5	1	1.47	68	.01	2	.55	.01	.27	1	6
T91-1-35	1	19	5	25	.2	3	4	1740	1.48	18	7	ND	1	480	.5	9	2	8	15.15	.103	4	1	5.29	46	.01	2	.21	.01	.12	1	3
T91-1-36	2	32	28	100	1.1	4	9	460	4.45	14	5	ND	3	97	1.0	5	2	21	1.66	.042	14	4	1.87	159	.01	3	2.05	.01	.17	1	9
T91-1-37	8	28	108	171	1.9	7	8	407	3.25	270	5	ND	1	220	.8	15	2	8	1.70	.036	4	3	1.13	86	.01	2	.60	.01	.18	1	220
T91-1-38	6	15	73	328	3.7	3	11	250	6.51	488	5	ND	2	111	2.0	11	2	29	1.23	.131	5	3	1.34	22	.01	2	1.46	.02	.21	1	450
T91-1-39	3	11	32	361	1.7	3	10	376	6.29	116	5	ND	2	136	2.7	2	2	41	1.38	.115	7	3	2.37	34	.01	2	2.34	.02	.17	1	250
T91-1-40	3	7	7	71	.9	3	13	232	6.62	94	5	ND	2	81	.3	3	2	59	.75	.177	10	2	2.05	38	.01	2	2.81	.03	.22	1	38
T91-1-44	7	7	19	95	.6	3	3	100	2.23	42	5	ND	3	26	.2	3	2	11	.13	.035	15	5	.71	40	.01	2	.93	.02	.12	1	20
T91-1-45	7	11	35	237	1.5	4	3	128	2.50	50	5	ND	3	20	.7	5	2	13	.17	.040	17	6	.73	42	.01	2	1.00	.02	.16	1	36
T91-1-46	19	13	59	480	2.6	4	2	75	2.04	200	5	ND	2	10	1.8	8	2	2	.05	.005	11	4	.22	28	.01	2	.37	.01	.11	1	860
T91-1-47	7	9	30	69	1.4	4	1	114	2.50	1300	5	ND	2	23	.2	11	2	1	.15	.002	14	7	.18	61	.01	2	.34	.02	.16	1	45
T91-1-48	8	14	44	131	2.0	4	1	104	2.84	2565	5	ND	2	23	.2	23	2	1	.05	.005	12	6	.23	43	.01	2	.30	.01	.17	1	390
STANDARD C/AU-R	19	60	40	133	7.0	70	33	1041	3.91	42	18	7	41	52	18.7	16	20	56	.48	.090	40	58	.86	175	.09	38	1.91	.06	.15	11	480

Samples beginning 'RE' are duplicate samples.