The Shell Company of Australia Limited
METALS DIVISION

509055

DRILL LOG SHEET

Hole No : DDH CD 1

PROJECT : LOONGANA

LOCATION CODE : ME 02

COLLAR CO-ORDINATES : 11750E/19000N

COLLAR R.L. :

LOCATION : CHALLENGER TWO

MAP/PHOTO REFERENCE : 5419000mN, 411750mE

DATE STARTED	28-9-81	HOLE SIZE		FROM	TO	TOTAL	CORE STORAGE	Devonport
DATE FINISHED	12-10-81	NON CORE					Nº OF TRAYS	28
TOTAL DEPTH	197.80m						SAMPLE STORAGE	
LOGGED BY	J.J. LAWTON	CORE	HQ	0	6	6m	ASSAY LAB.	Comlabs
CONTRACTOR	A.D.D.		NQ	6	16	10m	ASSAY REPORTS	
RIG	MINDRILL		BO	16	197.80	181.80m		
DRILL CREW	K. Brooker/P. Febey	CASING					MIN. & PET. LAB.	
							MIN & PET. REPORTS	
		CASING LEFT						

HOLE SURVEY DATA

INSTRUMENT :

DEPTH	INSTRUMENT INCL.	INSTRUMENT AZ.	ACID ETCH INCL.	ACID ETCH AZ.	REMARKS
COLLAR	+60	270°			
46.5	+60	255°			
94.0	+64	250°			
118.0	+60	245°			
195.0	+58	252°			

GRAPHIC/LETTER SYMBOL LOGGING KEY

STRUCTURE / ALTERATION CODE

B BEDDING
J JOINTING
C CLEAVAGE
F FOLIATION
sh SHEARING
q QUARTZ VEINS
O OXIDATION

DRILLING SUMMARY :

055

[redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted]E S[redacted]COM[redacted] OF [redacted]RAL [redacted]O. - [redacted]ALS [redacted]SION[redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted]

CHALLENGER TWO

DIAMOND DRILL LOG - SAMPLING RECORD

HOLE NO: DDH CD 1

From (m)	To (m)	Interval (m)	Core Recd	% Rec	Sample No.	Composite No.	Assays Cu	Pb	Zn	Ni	Bi	Cd	Susceptibility x 10^{-5} S.I.	% Estimate	Core Angles	H/P/O	Description
0	1.0			20	2701		28	44	530	22	<4	<1					Strongly weathered volcaniclastic = volcanomict conglomerate: predominantly pebble clasts of sandstone, tuff clastic magnetite, dacite? in matrix of similar components.
1.0	2.0			20													Secondary Fe and Mn.
2.0	3.0			20									25				Magnetite hematised in part.
3.0	4.0			20									1500				
4.0	5.0			20									2000				
5.0	6.0			20									3500				
6.0	7.0			20													
7.0	8.0			20													
8.0	9.0			20													
9.0	10.0			20													
10.0	11.0			20									3000				
11.0	12.0			50									4000				
12.0	13.0			50													
13.0	14.0			50									3500				
14.0	15.0			50									4500				Moderately weathered volcanoclastic.
15.0	16.0			90	2702		28	44	350	14	<4	<1	6500				As above. Clasts upto 40cm diam.
16.0	17.0			100									5500				
17.0	18.0			100									5000				Gritty to pea stone volcanomict sandstone, clasts of rhyolite (with qz, plag phenocrysts) clastic magnetite, qz sst, tuff.
18.0	19.0			100									4500				Secondary Fe and CO_3 gash vein fillings CO_3 cement
19.0	20.0			100									5500				Weak banding developed parallel to hole
20.0	21.0			100	2703		20	32	440	10	<4	<1	6000				
21.0	22.0			100									6000				
22.0	23.0			100									5500				
23.0	24.0			100									3500				
24.0	25.0			100									3500				
25.0	26.0			100	2704		44	24	300	20	<4	<1	5000				
26.0	27.0			100									3500				
27.0	28.0			100									1000				27.40m Volcanomict conglomerate
28.0	29.0			100									450				Pebbles up to 10cm diam consisting of rhyolite (with qz, plag phenocrysts) dacite with phenocrysts, qz and sst (f.g.), tuff.
29.0	30.0			100									100				CO_3 matrix and veining common.
30.0	31.0			100	2705		60	16	240	18	<4	<1	500				Some brecciation
31.0	32.0			100									250				Secondary Fe
32.0	33.0			70									150				Pebbles well rounded in immature matrix.
33.0	34.0			70									200				20 cm Mg CO_3? vein at 52.30m
34.0	35.0			70									850				
35.0	36.0			100	2706		50	16	250	16	<4	<1	1500				
36.0	37.0			100									1200				
37.0	38.0			100									1500				
38.0	39.0			100									500				
39.0	40.0			100									1000				
40.0	41.0			100	2707		36	20	310	16	<4	<1	800				
41.0	42.0			100									2000				
42.0	43.0			100									2500				
43.0	44.0			100									3000				
44.0	45.0			100									4500				
45.0	46.0			100	2708		32	28	310	18	<4	<1	5000				
46.0	47.0			100									4500				
47.0	48.0			100									4500				
48.0	49.0			100									1500				49.0m
49.0	50.0			100									1500				Pred. volcanoclastic pebble congl with only minor pebbles. Sand size matrix
50.0	51.0			100	2709		16	28	260	12	<4	<1	700				
51.0	52.0			100									1500				52.0m Volcanoclastic = conglomerate with some zones of only minor pebbles
52.0	53.0			100									2000				Clasts = rhyolite, tuff, qz, feldspar, granite (f?) intermediate = basic
53.0	54.0			100									3000				volcanic, sediment. CO_3 cement and veining moderate to intense with
54.0	55.0			100									3000				some brecciation (CO_3 predom. dolomite)
55.0	56.0			100	2710		22	28	270	14	<4	<1	6000				Trace pyrite as coatings on fractures
56.0	57.0			100									4500				Trace obsidian?
57.0	58.0			100									5000				Clasts mature
58.0	59.0			100									1000				Secondary Fe obliterates texture in part
59.0	60.0			100									450				

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THE SHELL COMPANY OF AUSTRALIA LTD. - METALS DIVISION

PROJECT CHALLENGER TWO

DIAMOND DRILL LOG - SAMPLING RECORD

HOLE NO: DDH CL 1

From	To	Interval (m)	Core Recovered	%	Sample No.	Composite No.	Assays Cu	Pb	Zn	Ni	Bi	Cd	Susceptibility x 10^{-3} SI	% Estimates	Core Angles	Alt	T.S / P.S	Description
60.0	61.0				2711		-						70					
61.0	62.0						18	16	135	4	<4	<1	600					
62.0	63.0												2500					
63.0	64.0												2500					T.S. 5384 (63.15m)
64.0	65.0												2000					
65.0	66.0				2712		8	24	230	<4	<4	<1	1500					Fractures generally in 2 principal planes = parallel to ?bedding and
66.0	67.0												2000					approx. 45° to core axis.
67.0	68.0												2500					Veins up to 20cm thick.
68.0	69.0												3500					
69.0	70.0												3500					
70.0	71.0				2713								3000					
71.0	72.0						14	28	320	8	<4	<1	3000					
72.0	73.0												1500					
73.0	74.0												1500					
74.0	75.0												2000					
75.0	76.0				2714								600					
76.0	77.0						10	24	130	6	<4	<1	800					
77.0	78.0												850					
78.0	79.0												500					
79.0	80.0												2000					
80.0	81.0				2715								2000					
81.0	82.0						16	24	130	10	<4	<1	250					
82.0	83.0												150					
83.0	84.0												50					
84.0	85.0												150					
85.0	86.0				2716								150					
86.0	87.0						18	44	125	8	<4	<1	150					Core fragmented (weathered) between 86-92m.
87.0	88.0												50					Strong dolomite veining.
88.0	89.0												50					
89.0	90.0												20					
90.0	91.0				2717								20					
91.0	92.0						14	36	150	8	<4	<1	30					
92.0	93.0												150					
93.0	94.0												3000					
94.0	95.0												3500					
95.0	96.0				2718								2000					
96.0	97.0						8	20	370	8	<4	<1	3000					
97.0	98.0												4000					
98.0	99.0						-						3500					
99.0	100.0												3500					
100.0	101.0				2719								1000					
101.0	102.0						14	28	330	<4	<4	<1	3500					
102.0	103.0												2500					
103.0	104.0												2500					
104.0	105.0												3000					
105.0	106.0				2720								2500					
106.0	107.0						26	24	320	10	<4	<1	1200					
107.0	108.0												3000					Pebbles becoming more scarce downward
108.0	109.0												2500					Granite pebbles up to ~20cm diam. and tuff? CO_3 cement and vein
109.0	110.0												1500					filling
110.0	111.0				2721								2500					Intraformational congl.?
111.0	112.0						34	24	350	8	<4	<1	3500					
112.0	113.0												1500					
113.0	114.0												2500					
114.0	115.0												3500					114.50m - Gradational contact - crystal lithic tuff (or pebbly volcanomict
115.0	116.0				2722								3000					sandstone)
116.0	117.0												3000					Qz veins (10cm wide) at 120.5 and 121.0m.
117.0	118.0						82	28	460	10	<4	<1	2000					CO_3 (dolomite) cement.
118.0	119.0												3000					CO_3 veins decreasing to few (Chloritic material in? veins.
119.0	120.0												3500					
120.0	121.0				2723								3000					

PROJECT: CHALLENGER TWO

DIAMOND DRILL LOG – SAMPLING RECORD

HOLE NO: DDF CD 1

From	To	Inter. (m)	Core Rec'd	% Rec	Sample No.	Compos No.	Cu	Pb	Zn	Ni	Bi	Cd	Susceptibility $\times 10^{-5}$ S.I.	% Estimates	Core Angles	Alt	T.S P.S	Description
121.0	122.0			100									1500					
122.0	123.0			100									1500					
123.0	124.0			100			50	60	460	24	<4	<1	30					
124.0	125.0			100	2724								30					
125.0	126.0			100									30					
126.0	127.0			100			30	24	450	65	<4	<1	20					T.S. 5385 (126.40m).
127.0	128.0			100									20					
128.0	129.0			100									25					Sharp contact between laminated tuffaceous siltstone unit and overlying?
129.0	130.0			100	2725								25					poorly sorted tuff.
130.0	131.0			100			50	24	150	60	<4	<1	25					Well laminated green chloritic siltstone with thin interbeds of f.g.
131.0	132.0			100									30					sand, interlayered with poorly sorted tuff.
132.0	133.0			100									30					
133.0	134.0			100									35					
134.0	135.0			100	2726								25					Bedding parallel core axis.
135.0	136.0			100			65	95	500	66	<4	<1	30					
136.0	137.0			100									1500					CO_3 veins (calcite) present but not common.
137.0	138.0			100									800					
138.0	139.0			100	2727								3000					Gradational contact with vitric, crystal tuff poorly sorted, some
139.0	140.0			100			18	20	440	10	<4	<1	3500					reworking
140.0	141.0			100									3000					Glass shards
141.0	142.0			100									3500					Passing into c.g. crystal tuff at 138.50m. with pervasive alteration (Fe)
142.0	143.0			100									3000					
143.0	144.0			100									3000					5cm qtz vein at 140.5m
144.0	145.0			100									4000					CO_3 cement throughout
145.0	146.0			90	2728								2500					Trace sulphide (py, cpy) assoc. with small CO_3 (dolomite) stringers.
146.0	147.0			90			20	16	440	10	<4	<1	6500					
147.0	148.0			90									5000					Detrital magnetite throughout.
148.0	149.0			90									4500					Reworking again obvious from ~147.0m but not intense. Lithology
149.0	150.0			100									3000					remains poorly sorted crystal tuff. (with minor shards?)
150.0	151.0			100	2729								5000					8cm dolomite vein at 149.25m.
151.0	152.0			100			22	16	350	12	<4	<1	3000					Thin randomly oriented carbonate veining throughout
152.0	153.0			100									3000					
153.0	154.0			100									2500					
154.0	155.0			100									3000					T.S. 5386 (154.60m)
155.0	156.0			100	2730								4000					
156.0	157.0			100			16	20	430	12	<4	<1	3000					
157.0	158.0			100									450					
158.0	159.0			100									5000					Qtz vein ~10 cm thick at 158.20m.
159.0	160.0			100									1500					
160.0	161.0			100	2731								2500					Predom. strongly altered (Fe) crystal tuff.
161.0	162.0			100			28	12	410	6	<4	<1	5000					CO_3 cement decreasing towards base of interval
162.0	163.0			100									4000					Minor CO_3 stringers and qtz veins at 165.30 (15cm)
163.0	164.0			100									450					
164.0	165.0			100									150					
165.0	166.0			100	2732								350					
166.0	167.0			100			40	<4	185	14	<4	<1	400					Pred. crystal tuff with rounded clasts (i.e. reworking)
167.0	168.0			100									20					
168.0	169.0			100									50					Thin tuffaceous slst gradational contact with crystal tuffs. Bedding
169.0	170.0			100									1500					approx. 70-80 to core axis, grading into crystal-vitric tuff at 168.80m
170.0	171.0			100	2733								1000					showing weak banding of shards.
171.0	172.0			100			55	4	165	14	<4	<1	1500					
172.0	173.0			100									15					Lithic clasts (predom. granite (?) or rhyolite) from ~169m
173.0	174.0			100									1500					Abrupt transition to laminated tuffaceous slst at 172.80m.
174.0	175.0			100									200					
175.0	176.0			100	2734								250					Gradational change to crystal tuff, CO_3 cement decreasing to negligible.
176.0	177.0			100			55	<4	200	12	<4	<1	300					
177.0	178.0			100									1500					Scapolite? and shearing common. Talc.
178.0	179.0			100									400					Qtz veining more common.
179.0	180.0			100									600					Clasts rare to ~185m.
180.0	181.0			100	2735								650					

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THE SHELL COMPANY OF AUSTRALIA LTD. - METALS DIVISION

PROJECT: CHALLENGER TWO

DIAMOND DRILL LOG - SAMPLING RECORD

HOLE NO: DDH CD 1

From	To	Interval (m)	Core Rec'd	% Rec	Sample No.	Composite No.	Assays Cu	Pb	Zn	Ni	Bi	Cd	Susceptibility x 10^{-6} S.I.	% Estimates	Core Angles	Alt	I.S P.S	Description
181.0	182.0			100			44	8	210	12	<4	<1	300					
182.0	183.0			100									850					
183.0	184.0			100									800					
184.0	185.0			100									300					
185.0	186.0			100	F736								3000					Volcaniclastic - crystal tuff.
186.0	187.0			100			44	4	190	12	<4	<1	700					Veining predom. qtz (non oriented) with no CO_3 cement or veining.
187.0	188.0			100									35					
188.0	189.0			100									50					Clasts generally acid volcanic
189.0	190.0			100									30					
190.0	191.0			100	F737								50					
191.0	192.0			100			100	<4	175	28	<4	<1	25					
192.0	193.0			100									35					
193.0	194.0			100									40					TS 5387 (193.25m) volcanomict pebbly sandstone
194.0	195.0			90									40					
195.0	196.0			90	F738		130	44	240	50	<4	<1	70					
196.0	197.0			90									100					
197.0	197.80			90														

SHELL COMPANY OF AUSTRALIA LTD.
Geophysical Log

PAGE.......OF...... PAGES

DIAMOND DRILL HOLE N° : DDH CD1

PROJECT	: CHALLENGER II	STATE	:	IP / RESISTIVITY LOGGING —			
ANOMALY N°	:	GRID COORDS	:	CONTRACTOR	: SCINTREX	DATE LOGGED	: 13-10-81
INCLINATION	:	AZIMUTH	:	ARRAY	: 3 ARRAY	ELECTRODE SPACINGS	: 2.5m, 5m, 10m
DATE DRILLED	:	TOTAL DEPTH	:	SUSCEPTIBILITY LOGGING		——— 10m x——x 5 m Δ- - -Δ 2.5m	
CASING	:			BY	:	DATE LOGGED	:

GROUND GEOPHYSICAL ANOMALIES :

5 cm

DEPTH metres	LITHO'GIC LOG	ASSAYS	GEOLOGICAL DESCRIPTION	DENSITY gms/cc / CHARGEABILITY ms	SUSCEPTIBILITY 10^{-6} cgs / RESISTIVITY Ohm m
50m					
100m					
			TUFFACEOUS SILTSTONE		
150m					
200m					
250m