Summary Logs

Kelso DDH No. 1

0 - 24 m		No core except for 3 m of basalt (core loss 87%)
24 - 54.5 m		Basalt, vesicular, fine-grained to glassy (core loss 44%)
54.9 - 55.2 m		Claystone
55.2 - 58.4 m		Black carbonaceous mudstone
58.4 - 59.4 m		Claystone and poorly sorted tuffaceous sandstone
59.4 - 59.9 m		Basalt
59.9 - 61.6 m		Tuffaceous sandstone and claystone
61.6 - 68.6 m		Decomposed dolerite (core loss 37%)
68.6 - 69.0 m		Claystone
69.5 - 85.0 m		Decomposed dolerite (core loss 48%)
85.0 - 250.0 m		Dolerite

Kelso DDH No. 2

0 - 4.4 m		Alluvium(?) (core loss 84%)
4.4 - 7.3 m		Basalt
7.3 - 10.8 m		Claystone and micaceous siltstone (core loss 23%)
10.8 - 11.3 m		Lignite
11.3 - 12.8 m		Claystone
12.8 - 13.3 m		Siltstone, poorly sorted, micaceous
13.3 - 13.8 m		Claystone
13.8 - 14.3 m		Palaeosoil(?)
14.3 - 19.3 m		Basalt
19.3 - 19.7 m		Tuff(?), weathered
19.7 - 32.2 m		Basalt
32.2 - 32.6 m		Mudstone/siltstone, gritty, poorly sorted
32.6 - 33.0 m		Basalt
33.0 - 41.2 m		Mudstone/siltstone, gritty, poorly sorted, dolerite-derived
41.2 - 88.0 m		Dolerite

KELSO DRILL HOLE No. 1

BOXES 1 & 2	NQ core, diameter 47 mm.
0 - 24 m	Only about 3 m of core, largely broken. A few rounded pebbles and cobbles (≤50 mm) of quartzite and basalt at top. Passes downward into ... Basalt; fine-grained to glassy, medium-grey, vesicular. Vesicles rounded, sub-cylindrical to flattened or irregular, often ≤5 mm across, several cm long, some with amygdaloidal fillings. About 1.5 m of competent core, remaining 1.5 m at bottom of interval is very vesicular, weathered, brown and crumbly.
24 - 27 m	Basalt; fine-grained to glassy, very vesicular, rather weathered. Core mostly competent, except for very crumbly zone at c.26 m.
27 - 27.9 m	Basalt; very vesicular, weathered, green-brown, very crumbly.
27.9 - 28.1 m	Basalt; very vesicular, medium-grey, competent.
28.1 - 33.0 m	Basalt; vesicular, weathered, crumbly. Core loss 3.4 m.
33.0 - 37.5 m	Basalt; less vesicular, less weathered, medium-grey. More competent, but some very vesicular, glassy crumbly zones, may have iridescent lustre. Calcite amygdales towards bottom of interval. Only 1.5 m of core, maximum unbroken length 0.3 m, core loss c.3 m.
37.5 - 40.5 m	Basalt; fine-grained, moderately vesicular, medium-grey, with minor glassy zones. Only c.1 m of mostly broken core, core loss c.2 m.
40.5 - 43.0 m	Basalt; moderately vesicular, grey or sometimes bluish tinted. Less than 1 m of broken core, core less c.2 m.
Box 3 43.0 - 46.5 m	Basalt; fine-grained, medium grey. No glassy zones, becoming less vesicular, in places nearly massive. Olivine phenocrysts (<1 mm) conspicuous in places. About 1.5 m of mainly broken core, core loss c.2 m.
46.5 - 51.5 m	Basalt. At top of interval c.1.3 m of glassy and very vesicular, to fine-grained and moderately vesicular, broken core. Followed by c.2.7 m of massive, fine-grained, somewhat weathered competent basalt, with olivine phenocrysts (< 1 mm) locally conspicuous.

Total core recovery c.4 m, core loss c.1 m.

51.5 - c.53.5 m — Basalt as above, massive, fine-grained. Broken zone at c.52 m. Sample at 51.55 (Petrography).

BOX 4

c.53.5 - 54.5 m — Basalt as above, massive, fine-grained.

54.5 - 54.9 m — Claystone, soft but competent, pale brown, containing abundant black to dark brown carbonised plant material. At top of interval (54.5-54.6) claystone is intermixed with fragments of greenish basaltic glass.

Sample at 54.7 m (palynology).

54.9 - 55.2 m — ~~Coal, poor quality, or~~ Black carbonaceous mudstone. Hackly fracture, dull lustre.
Sample at 55.0 m.

55.2 - 57.5 m — Basalt, weathered, grey-green. Some rounded vesicles, also amygdales filled with spairy calcite in upper 0.3 m.

57.5 - 58.4 m — Basalt as above, weathered, grey-green, occasional vesicles. Possible also minor intercalated basaltic tuff. Pyritic encrustation on fracture surface near 58.0 m.

58.4 - 58.5 m — Tuffaceous sandstone (?), very poorly sorted, dirty brown-green in colour. Contains subrounded quartz granules ≤7 mm, commonly 1-3 mm, white.

58.5 - 59.4 m — Claystone, intermixed with poorly sorted tuffaceous sandstone/siltstone, as above. All khaki brown-green. Dark brown woody plant material present, notably near 59.2 m.

59.4 - 59.9 m — Basalt, weathered, dark grey to black, in places glassy. Probably some intercalated basaltic tuff.

59.9 - 60.5 m — Tuffaceous sandstone/siltstone, very poorly sorted, brown-grey to dull brown-green, with subrounded quartz granules. Claystone intermixed. Minor dark brown plant material present.

60.5 - c.61.6 m — Tuffaceous sandstone as above, pale brown claystone intermixed, dark brown woody plant material abundant. Glassy weathered basalt, probable clast, c.61.0 - 61.1 m.

BOX 5

61.6 - 66.5 m — Only about 3.0 m of core, core loss about 1.9 m.

Dolerite (?) (1.6 m) - coarse-grained, massive, weathered but tough, medium-grey. Possible boulder. SAMPLE at c.61.8 m. Followed by ...

	Decomposed dolerite (?)(1.4 m) - soft, clayey pale grey-green decomposed rock, probable relict coarse igneous texture.
66.5 - 69.5 m	Decomposed dolerite (?) as above; soft, grey-green to khaki-green. Near 68.6-69.0 m is a fine-grained khaki-green claystone, possibly of Tertiary age, suggesting Tertiary weathering of dolerite. About 2.3 m of core, core los 0.7 m. SAMPLE 68.8 m (palynology).
69.5-76.5 m	Only about 3.3 m of core, core loss about 3.7 m. Decomposed dolerite as above, soft, crumbly, pale khaki-green, suggestion of relict igneous texture.

BOX 6

76.5-81.5 m	Only about 3.1 m of core, core loss about 1.9 m. Decomposed dolerite as above, soft, very crumbly, khaki-green. Near middle of interval is a pseudobreccia, consisting of angular pseudoclasts (5-30 mm) of khaki-green decomposed dolerite with relict igneous texture, and a finer grained pale green to off-white very weathered matrix.
81.5-87.5 m	About 4.1 m of core, core loss about 1.9 m. Decomposed dolerite and clay (c.1.7 m). Followed abrupt at c.85 m by ... Dolerite (c.2.4 m). Competent, hard but weathered, medium-grained, with conspicuous dark brown weathering for about 2-3 mm on either side of fractures. Calcite veinlets 1-2 mm wide present.

BOXES 7 & 8

87.5-90.5 m	Nearly 100% core recovery below this point. Dolerite, hard and mostly competent, but weathered. Calcite veinlets present. More weathered and broken, deep brown to khaki-brown zone from 87.7-89.6. SAMPLE 90.5 m (petrology).
90.5-93.5 m	Dolerite as above, hard but weathered. White veinlets ≤5 mm wide of calcite and minor zeolite present. Core somewhat broken below 91.7 m.
93.5-94.1 m	Dolerite, broken, weathered, dull brown-green with some zeolite veinlets ≤10 mm.
94.1-96.5 m	Dolerite, competent, fairly fresh medium-coarse. Weathering more intense near calcite/zeolite veinlets, and near joints.

96.5-99.5 m	Dolerite as above, hard and competent, medium-coarse, but more weathered and oxidised near joints. Some fractures with 1-2 mm wide off-white to pale green lining of calcite ± zeolite, usually planar. SAMPLE of zeolite at 98.1 m
99.5-102.4 m	Dolerite as above, veinlets and joint linings of calcite ± zeolite. More weathered, brownish, partly decomposed zone from 101.2-101.5 m.

BOXES 9 & 10

102.4-111.5 m	Dolerite, fairly fresh, coarse-grained. Near 108.0 in large fracture at 30° to core axis, lined with a 3 mm veinlet of off-white finely crystalline zeolite - SAMPLE. Narrow (≤1 mm) calcite ± zeolite fracture linings present elsewhere.
111.5-117.5 m	Dolerite as above. Fractured zone 114.9-115.0. Calcite veinlet, 2 mm, 80° to core axis at 115.5 m.

BOX 11

117.5-123.7 m	Dolerite as above. Zeolite veinlet 1-2 mm, 20° to core axis at 118.0-118.3 m. Joint lined with dark green to off-white substance including calcite, 20° to core axis, near 123.3. Several minor wavy zeolite veinlets also present.
123.7-126.8	Dolerite as above. Off-white veinlet, mainly of calcite, 5 mm wide, 15° to core axis, near 125.1 m.

BOX 12

126.8-134.1	Dolerite as above. Zeolite veinlet 2 mm, 40° near 128.1. Joint 30° near 129.4, with 4 mm lining of off-white calcite on both sides. Zeolite veinlet 5 mm, 50° at 130.5 m - SAMPLE. Zeolite veinlet 3 mm, 35° near 133.9 m.

BOX 13

134.1-137.0 m	Dolerite as above. Calcite veinlet 1-2 mm, 20° at 134.2. Zeolite veinlet 1-2 mm, 45° near 136.0.
137.0-139.3 m	Change to BQ core (36 mm diameter). Dolerite as above. Calcite veinlet 2 mm, 45° at 137.4. Several veinlets with margins of zeolite and central zones of calcite, e.g. 2 mm wide and 40° to core axis at 137.8; 4 mm 50° at 137.9; 2 mm, 30° at 138.0. Large veinlet of off-white calcite, 12 mm wide, 40° to core axis at 139.3. Zone of weathered dolerite with calcite veinlets near 139.5.

BOX 14

139.3-142.07	Dolerite as above, medium coarse, fresh. Broken zone 139.3 - 139.6. White wavy zeolite veinlet at high angle to core axis is cut by off-white calcite veinlet, 2 mm, 75° near 140.8 m. Implies calcite veinlet is later.

142.07-144.0 m — Dolerite as above, medium-coarse. Zeolite veinlet 4 mm, 75° near 143.0. Numerous narrow pale white zeolite veinlets present.

144.0 - 145.07 m — Dolerite becomes slightly finer-grained.

145.07 - 148.07 m — Only 1 m of core, core loss 2.03 m.

Medium-grained broken dolerite with a few zeolite veinlets.

BOX 15

148.07 - 154.07 — Dolerite, medium-coarse. Off-white calcite +(?) zeolite veinlet 10 mm, 50° near 150.0 m. SAMPLE. Several minor narrow off-white to paley grey zeolite veinlets.

154.07 - 158.18 — Dolerite, medium-coarse. Calcite veinlet 5 mm, 30° at 154.9. Broken, weathered zone 155.9-156.0. Calcite veinlet 4 mm, 15° at 157.7 m.

BOX 16

158.18 - 163.15 m — Dolerite, medium-grained. Calcite veinlet 7 mm, 35° at 158.8. Zeolite veinlet 2 mm, 60°, also at 158.8. Parallel calcite veinlets, 2 mm and 10 mm wide, 15 mm apart, at 40° to core axis near 159.8. Veinlet of well crystallised zeolite, 6 mm, 25° at 160.3 m (SAMPLE). Calcite veinlet 10 mm, 30° at 161.2.

163.15 - 168.15 m — Dolerite, medium-grained. Calcite veinlet 2 mm, 20° at 167.8. Calcite veinlet 2 mm, 45° at 168.0. Also several minor veinlets.

BOX 17

168.15 - 172.1 m — Dolerite, medium-grained. SAMPLE at 172.0 m. Zeolite veinlet 1 mm, 70° at 168.6. Calcite veinlet, 3 mm, with narrow zeolite margins <1 mm, at 168.9. Zeolite veinlet 3 mm, 25° at 169.8. Calcite veinlet 5 mm, 70° at 170.2. Irregular calcite veinlet 2-3 mm wide at 170.9.

172.1 - 178.07 m — Dolerite, medium-grained, fresh. Calcite veinlet 2 mm, 75° at 175.15 m. Zeolite veinlet 2 mm, 45° at 175.4. Zeolite veinlet 2 mm, 45° at 175.8. Zeolite veinlet with central calcite, 2 mm, 20° at 176.8. Zeolite veinlet 1 mm, 45° at 177.7 m.

BOX 18

178.07 - 188.03 m — Dolerite, medium-grained. Zeolite veinlets 1 mm, 50° at 179.7 and 1 mm, 60° at 179.9. Calcite veinlet 3 mm, 45° at 181.7. Zeolite veinlet 1 mm, 60° at 184.15. Calcite veinlet 1 mm, 60°, 185.55. Zeolite veinlet 1 mm, 45° at 185.65. Calcite veinlet 1 mm, 45° at 186.1.

BOX 19

188.02 - 192.96 m Dolerite, medium-grained, fresh, massive, grey as above. Calcite veinlet 1 mm wide, 20° to core axis at 189.55 - 189.71. Calcite veinlet 10 mm, 70° at 190.34. Calcite veinlet 0.5 mm, 45° at 190.61. Zeolite veinlet 1 mm, 45° at 191.5. Calcite veinlet 2 mm, 60° at 192.58.

192.96 - 198.26 m Dolerite, medium-grained, as above. Veinlet of coarsely crystalline calcite (5-10 mm crystals), 15 mm wide near 193.7 m. Fracture at 60° to core axis, lined with fine-grained calcite, at 194.30. Fracture lined with zeolite at 194.66. Calcite veinlets 1 mm, 70° at 196.35; ≤1 mm, 45° at 196.53; 1 mm, 75° at 197.709. Zeolite veinlet 1 mm, 60° at 197.78.

BOX 20

198.26 - 202.06 M Dolerite, medium-grained, fresh, as above. Broken zone with calcite ± zeolite on fracture surfaces from 199.12-199.22. Calcite veinlets 2 mm, 60° at 199.52; 1 mm, 45° at 202.08. Veinlet of coarsely crystalline calcite (2-3 mm crystals), 3 mm wide, 60° at 200.7.

202.06 - 208.29 m Dolerite as above. Zeolite veinlets <1 mm, 75°, at 202.25; 1 mm, 80° at 202.86. Calcite veinlets <1 mm, 45° at 203.14; 2 mm, 80° at 204.43. Veinlet of more coarsely crystalline calcite, 2 mm, 80° at 204.43. Veinlets of fine calcite, ≤1 mm, 75° at 206.0; 2 mm, 80° at 206.03 m.

BOX 21

208.29 - 214.13 m Dolerite, medium-grained, as above. Calcite veinlet 3 mm, 85° at 208.71. Zeolite veinlet, ≤1 mm, 40° at 211.30. Slightly weathered and broken zone of dolerite near 213.0. Calcite veinlet, 1-2 mm, 5° to core axis at 214.0 - 214.2 m.

214.13 - 218.37 m Dolerite as above. Calcite veinlets 1 mm, 80° at 214.20; 1 mm, 70° at 216.31; 1 mm, 75° at 216.39. Possible traces of zeolite on fracture at 55° to core axis near 217.65. Zeolite(?) veinlet <1 mm, 30° near 218.3.

BOX 22

218.37 - 223.14 m Dolerite, medium-grained, as above. Zeolite veinlet <1 mm, 45° at 218.61. Veinlet of calcite ± zeolite, 1 mm, 5° to core axis from 218.7 - 219.0. traces of zeolite on fractures at 70° to core axis at 220.61, 75° at 220.92, 85° at 221.11. Calcite veinlet 2 mm, 75° at 221.57. Wavy zeolite veinlet, 0.5-1 mm at about 20° from 221.73 - 221.92. Several small calcite veinlets nearly parallel to core axis from 222.5 - 223.1 m.

223.14 - 228.30 m Dolerite as above. Calcite veinlet 1-2 mm, 20° at 223.15 - 223.45. Veinlet of well crystallised calcite, 4 mm, 40° at 225.8 m. Zeolite ± calcite veinlet, 2 mm, 90° to core axis at 226.85. Zeolite veinlet ≤0.,5 mm, 45° at 227.8 m (SAMPLE). Several other very minor zeolite veinlets.

BOX 23

228.30 - 232.16 m Dolerite, medium-grained, as above. Zeolite(?) veinlet 1 mm, 75° at 229.03. Calcite veinlet 2 mm, 80° at 229.07. Fracture lined with scaly off-white zeolite at 40° to core axis at 229.3. Zeolite veinlets 0.5 mm, 30° at 229.85; 0.5 mm, 30° at 230.3.

232.16 - 236.24 Dolerite as above. Zeolite veinlet 0.5 mm, 40° near 232.7. Calcite veinlets 0.5 mm, 20° at 234.05; 1 mm, 45° at 234.2. Veinlets of well crystallised sugary calcite 1.5 mm, 40° at 234.8; also 1 mm, 70° at 235.65.

BOX 24

236.24 - 237.95 m Dolerite, medium-grained, as above. Four veinlets, 1-2 mm wide at low angles to core axis (5-20°) in interval 236.35 - 237.4. Fracture with a trace of zeolite encrustation, 70°, at 237.55. Zeolite veinlet 0.5 mm, 30°, 237.7.

237.95 -241.08 m Dolerite as above, last 100 mm (241.0 - 241.1) is very broken. Zeolite veinlet 0.5 mm, 30° at 238.05. Very minor zeolite veinlets, ≤0.5 mm wide, 25° to core axis from 238.2 - 238.8. Zeolite veinlet 0.5 mm, 20°, 239.7 m. Zeolite encrustation on joint at 65° to core axis at 240.8.

241.08 - 244.23 m Dolerite as above. Calcite veinlet 0.5 mm, 20°, near 242.15. Zeolite veinlet 1 mm, 15° at 243.9 m.

BOX 25

244.23 - 247.09 m Dolerite, medium-grained, as above. Very narrow zeolite veinlet <0.5 mm, 10° to core axis from 244.3 - 244.5. Calcite lined fracture at 90° at 244.9. Zeolite veinlet 0.5 mm, 15° to core axis from 244.9 - 245.0.

247.09 - 250.07 Dolerite, medium-grained as above. White zeolite lining fracture, 65°, at 247.95. Calcite veinlet 0.5 - 1 mm, 10°, from 248.3 - 248.6.

Sample of dolerite at 250.0 m.

END OF HOLE.