KENNECOTT CANADA EXPLORATION INC.
LEGEND JV DIAMOND DRILL LOGS

Drill Hole:	98DHDR01	**Azimuth:**	N/A
Easting:	~ 350 875 m E (NAD 27)	**Dip:**	-90°(nominal)
Northing:	~ 6 357 480 m N (Z 12)	**Depth (EOH):**	193.2 m (EOH)
Collar Elevation:	~ 792.5 m amsl (Map)	**Diameter(s):**	NQ
Grid Location:	1200 E, 5100 N	**Geologist:**	Ian Graham
Drill Contractor:	Aggressive Drilling	**Geotech/Sampler:**	Chinta Unka
Contracted to:	Kennecott Canada	**Project Geologist:**	Theo Aravanis
Drill Type:	Boyles 25A	**Date Collared:**	12 October, 1998
Drill Foreman:	Mitch McLellan	**Date Completed:**	17 October, 1998

Summary Information

Drill-hole **98DH-DR01** is the first hole drilled on the Kennecott / Montello Resources Legend Joint Venture target LGD05 (Dragon) in the Birch Mountains area, northeast Alberta. The hole is sited to test an airborne geophysical target (negative magnetic feature) recognized as a potential kimberlite. The hole has intersected a relict kimberlite - mud fragment melange intercalated in Cretaceous? sediments beneath ~120 m of till sediment and unlithified sandy cover, and constitutes the discovery hole for the Dragon Kimberlite. It is anticipated that an intact `pipe' of kimberlite exists proximal to the kimberlite intersected in this hole, which is thought to comprise a marginal apron to such an occurrence.

NQ core recovered relict volcaniclastic kimberlite fragments (' lapilli') and altered kimberlitic matrix materials in re-sedimented, beds and seams in a laminated mud dominated sedimentary pile. Sandier sediments overly the main `kimberlite' bed. Only kimberlitic core has been split: half core has been sampled for detection of diamonds (by caustic fusion at Kennecott's micro-diamond facility in Thunder Bay, ON.) Samples have also been taken for indicator HM recovery / EPMA mineral chemistry, petrographic examination, geochronology and especially palynology (refer end of log). Visual logging has not identified any P or E -type indicator minerals / xenoliths (except relict olivine).

Casing remains down-hole between ~ 94.5m and 125m. PVC has been introduced into the hole (6.4 cm diameter to 91 m, and 5cm pipe to 134 m. The hole remains open to near EOH: a test dropping the overshot down-hole went to cleanly bottom.

Summary Log

APPENDICES

Detailed Log

0.0 - 121.9 m **Cased Till Overburden and Sandy Muds**

Drillers indicate boulder tills common throughout tri-cone drilling to set casing. Alternating sand and mud seams are common through the deeper segment of the till interval.

121.9 - 136.0 m **Black, Lithic Fragment-rich Sandy Mudstone**

The interval comprises a dominantly very stiff, competent black mudstone containing abundant (to 15%) poorly sized arkosic sand (moderately mature) and abundant polymict lithic fragments of grit and cobble sizes.
The lithic components includes several hard white super-mature quartzite fragments (generally sub-angular), a greenish quartzite fragment, a light grey-brown mudstones (displaying some plastic deformation), small rounded and polished hornfels cobbles, angular biotite granites / granite gneiss's (crystalline metamorphic basement rocks) and altered equivalents. A single large (20 cm) block of dark grey aphanitic (micritic?) carbonate is preserved.
Pyrite `roses' are found on partings in segments of the intersection rich in mud fragments.

121.9 - 122.3 m	White quartzite lithic clast
123.2 - 123.5 m	Soft, drill eroded mud-rich (i.e. sand poor) intersection
125.5 - 126.0 m	Softer, sand poor interval, though without drill erosion
132.9 m	Very soft mud seam (5 cm) - does not appear to be injected but is an interval devoid of sand
135.5 - 136.0 m	Stiff, sand-poor intersection approaching contact

136.0 - 152.6 m **Kimberlitic Mud Rock Breccia**

The interval is characterised by moderately stiff to soft, friable green to green-brown and light grey-green, matrix supported coarse fragment rich rock. The rock is rich in matrix and vein carbonate, and carbonate has replaced numerous lapilli-form fragments. These are interpreted as replaced kimberlite lapilli owing to the `kimberlitic' fragmental texture

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of apparent olivine relics (calcite & magnetite), unaltered light brown mica (inferred phlogopite) and lithics in an aphanitic (clay / carbonate replacement) matrix. Carbonate (aragonite?) veins, up to 8 mm thick, are pervasive over much of the interval.

Ochreous, iron oxide staining is widely developed, in places occurring as an aphanitic clay - goethite matrix in the rock. This reddish brown alteration matrix is variably carbonatised.

Intervals of mud-dominated matrix occur: these are distinguished by their black aphanitic matrix.

Lithic fragments (`lapilli') are ubiquitous, the xenolithic component being dominated by black to grey-black mud-rock fragments. These occur as sub-angular to slightly deformed and rounded clasts: lighter grey mud rock fragments also occur, and appear to be more diagenetically competent. These lighter grey, angular fragments have been somewhat carbonatised, and are easily confused with angular fragments of micritic limestone, which also occur.

The kimberlitic component of the rock is recognised on the basis of relict textures in inferred kimberlitic lapilli (relict olivines of two apparent generations supported in a secondary aphanitic clay / carbonate matrix) and the presence of fairly fresh to bleached mica (phlogopite). The possibility of these micas being authigenic exists, but is mitigated against on the basis of their colour, random orientation, distribution, grain size and the argillic nature of the secondary matrix.

136.0 - 136.l m	Sandy, greenish brown contact zone with some micas and quartzose sand - few large fragments
136.1 - 136.5 m	Greenish brown, highly altered kimberlitic mud fragment breccia
136.5 - 139.0 m	Green brown - light greenish brown soft but intact kimberlitic mud fragment breccia with numerous carbonate veins and some brownish staining. Medium grained micas are fairly common and stand out in the dark, clayey matrix. Mud fragments are typically sub-rounded in the interval
139.0 - 139.9 m	Very dark greenish black friable zone of entirely disintegrated kimberlitic / mud rock (breccia?). Components are as for the overlying interval, but this material has entirely crumbled to a fine, soft, sandy texture
139.9 - 140.7 m	Broken zone of kimberlitic breccia similar to the above interval, though somewhat more competent; a short yet more

	competent zone (139.9 - 140.1 m) displays some relict kimberlite `lapilli' features
140.7 - 140.9 m	Light greenish-grey, relict kimberlite lapillus rich rock (mud rich kimberlite breccia) characterised by abundant carbonate replacement of lapilli. Fractures display ochreous iron staining when broken, suggesting fluid migration has occurred on these fractures
140.9 - 142.2 m	Broken zone, similar to 140.7 - 140.9 m intersection but more mud rich and with more ochreous alteration, making the rock more friable
142.2 - 142.6 m	Light grey, more competent zone of mud-rich kimberlite breccia similar to the 140.7 - 140.9 m intersection
142.6 - 143.5 m	Rubble zone of ochreous, muddy kimberlite similar to the interval 140.9 - 142.2 m
143.5 - 143.7 m	Light grey, more competent zone of mud-rich kimberlite breccia similar to the 140.7 - 140.9 m and 142.2 - 142.6 m intersections
143.7 - 144.6 m	Rubble zone of ochreous, muddy kimberlite similar to the interval 142.6 -143.5 m
144.6 - 144.8 m	Light grey, more competent zone of mud-rich kimberlite breccia similar to the 143.5 -143.7 m intersection
144.8 - 146.6 m	Broken zone, grey to yellow-grey kimberlitic mud rock breccia
146.6 - 146.8 m	Large light grey mud rock fragment
146.8 - 148.2 m	Rubble zone with well developed and abundant carbonate veins
148.2 - 149.6 m	Light grey-green zone containing abundant kimberlitic materials and fairly abundant small mud fragments (both black and lighter types). The interval is a carbonatised, mud fragment rich kimberlite breccia. Ochreous staining observed on fractures
149.6 - 150.2 m	Broken rubble zone of mud fragment rich kimberlite breccia with abundant ochreous alteration
150.2 - 150.4 m	Competent medium grey carbonatised, mud fragment / lapillus rich kimberlite. The kimberlitic component occurs as relict lapilli and as a clay - carbonate component in the matrix which has an ochreous colour: the matrix also has a host rock derived mud component
150.4 - 150.7 m	Rubble / muck zone of inferred kimberlitic mud rock
150.7 -151.6 m	Competent medium grey carbonatised, mud fragment / lapillus rich kimberlite as in the 150.2 - 150.4 m interval. The kimberlitic component occurs as relict lapilli and as a clay - carbonate component in the matrix, which has an ochreous colour: the matrix also has a host rock derived mud component. This is the last kimberlite / kimberlitic interval in

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which the kimberlitic component is prolific until the interval at EOH

151.5 - 152.6 m — Dark grey - black mud rock with some possible kimberlitic fragments (possibly fracture introduced?) some ochreous alteration on fractures

152.5 - 187.2 m **Dark Grey, Massive Stiff Mudstone**

An apparently `undisturbed' interval of dark grey to grey Cretaceous? mudstone, with laminations (typically mud-dominated but matrix supported silty, carbonate-bearing partings). The amount of silt varies slightly from trace to not evident throughout.
Decompression and desiccation fractures (frequently on silty partings) affect the entire intersection.
The interval shows few variations except at ...

161.0 - 161.1 m — 10cm medium grained unconsolidated sand seam. Appears to have a mud matrix, but this may be drill induced owing to its unconsolidated nature

173.8 – 174.2 m — Broken zones are infrequent, and are observed at 173.5 - 173.7 m and 174.2 m.

187.2 -187.3 m **Grey Relict Kimberlite Seam**

A grey, carbonatised mud-fragment rich `relict' kimberlite seam. Highly carbonatised, the rock is very similar to overlying kimberlite zones.

187.4 - 188.3 m **Grey Massive Mud Rocks**

Inferred Cretaceous mud rocks identical to the 152.6 - 187.2 m interval.

188.3 -188.4 m **Dark Grey, Sandy Kimberlitic Seam**

A dark grey, mud-matrix supported silty-sand interval with some mica and other (minor) probable kimberlitic relics.

188.4 - 191.6 m **Grey Massive Mud Rocks**

Cretaceous mud rocks identical to the 152.6 - 187.2 m interval.
Underlain by a kimberlitic breccia, but sampled from 190.8 m to ensure that all kimberlitic material is sampled.

191.6 - 193.2 m **Grey Kimberlitic Mud Rock Breccia**

Light grey to generally dark grey kimberlitic mud rock breccia very similar to that observed in the 142.2 - 142.6 m and 142.6 - 143.5 m intervals previously described.
Mud fragments and matrix mud remains abundant throughout the interval: the hole ends in a mud - dominated kimberlitic material.

193.2 m **E.O.H.**

Representative (`Rep') Samples

#	Depth in Hole	Geological Unit	#	Depth in Hole	Geological Unit
1	122.0	Black Sandy Mudstone -Qzite clast	8	147.2	K'ic Mud Rock Breccia + Bitumen
2	124.9	Black Sandy Mudstone (Breccia)	9	150.4	Kimberlitic Mud Rock Breccia
3	131.2	Black Sandy Mudstone - Mudclast	10	157.3	Grey Mudstone
4	138.9	Kimberlitic Mud Rock Breccia	11	173.2	Dark Grey Mudstone
5	142.0	Kimberlitic Mud Rock Breccia	12	187.2	Grey Relict Kimberlite
6	144.6	Kimberlitic Mud Rock Breccia	13	191.9	Grey Kimberlitic Mud Rock Bx
7	146.7	Kimberlitic Mud Rock Breccia	14	192.6	Grey Kimberlitic Mud Rock Bx

Heavy Mineral / Micro-diamond Sample List

Sample No.	From (m)	To (m)	Interval (m)	Mass (kg)	Shipped
VR87853A	Composite	Sample	-	5	22 October, 1998
VR87854A	135.9	141.0	5.1	10	22 October, 1998
VR87855A	141.0	147.1	6.1	10	22 October, 1998
VR87856A	147.1	152.7	5.6	10	22 October, 1998
VR87857A	187.1-187.3	190.8-193.2	2.6	5	22 October, 1998
VR87871A	136.0	148.6	12.6	15	10 November, 1998
	148.6	152.7	4.1		
VR87872A	187.2	187.4	0.2	7	10 November, 1998
	190.8	193.5	2.7		
VR87900A	136.0	152.7	16.7	18.5	19 November, 1998
	190.8	192.3	1.5		

Shipped by KCEI Consignment No. B 0508, 509,511

Notable Mantle Nodules

No mantle nodules or their xenocrysts were recognised during logging. A composite sample for indicator mineral chemistry has been submitted (VR 87853A).

Petrology Samples

Petrographic Samples

Sample No.	Depth	Sampled by	Submitted to
VR31092A	144.6	Ian Graham	Roger Mitchell

Palynology Samples

Sample No.	Depth	Sampled by	Submitted to
VR31089A	132.8	Ian Graham	Dolby Associates, Calgary
VR31090A	138.0	Ian Graham	Dolby Associates, Calgary
VR31091 A	160.0	Ian Graham	Dolby Associates, Calgary

Geochronology Samples

Sample No.	Depth	Sampled by	Submitted to
VR31088A	142.5	Ian Graham	ROM for Rb/Sr in mica

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