



KENNECOTT CANADA EXPLORATION INC.
LEGEND JV DIAMOND DRILL LOGS



Drill Hole:	98DH-XE01	Azimuth:	N/A
Easting:	376 850 E (NAD 27)	Dip:	-90° at EOH
Northing:	6 347 300 N (Z 12)	Depth (EOH):	182.9m (E.O.H.)
Collar Elevation:	~710 m amsl (GPS)	Diameter(s):	NQ
Grid Location:	1090 E, 5030 N	Geologist:	Richard Beck
Drill Contractor:	Aggressive Drilling	Geotech/Sampler:	Floyd Thompson
Contracted to:	Kennecott Canada	Project Geologist:	Theo Aravanis
Drill Type:	Boyles 25A	Date Collared:	16 November, 1998
Drill Foreman:	Mitch McLelland	Date Completed:	20 November, 1998

Summary Information

Drill-hole 98DH-XE01 is the initial hole drilled on the Kennecott / Montello Resources Legend Joint Venture target (Xena) in northeast Alberta. The hole is sited to test an airborne geophysical target (Magnetic) recognized as a potential kimberlite. The hole intersected kimberlite beneath ~ 85m of till sediment cover, and constitutes the discovery hole for the **Xena Kimberlite**.

PVC pipe was placed in the hole from surface to 97.5m.

NQ core recovered mudstone and mud rich relic kimberlite. The 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 palynology (refer end of log). Visual logging has identified a single chromium diopside crystal and olivines.

The kimberlite as logged appears to have few HM kimberlitic indicators. Magnetism thought to be a result of locally prolific serpentine + magnetite alteration of the: some (particularly the smaller) olivine grains in more magnetic intervals appear to be mantled by a black magnetite-bearing alteration rim.

Komex International Ltd. completed logging of XE01 down to 120m, prior to the NW steel casing being removed. PVC was inserted into the hole to a depth of 97.5m. Re-logging of the hole after the casing was removed was only able to attain a depth of 100 metres.

Summary Log

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Detailed Log**0.0 -85.95 m****Cased Overburden**

Drill timesheets indicate abundant sand and occasional clay with few boulders and gravel. While triconing to set the drill casing, water was encountered causing difficulty in descent.

85.95 - 87.17 m**Light grey carbonate rich rock**

This unit consists of competent hard, light grey carbonate rich rock. The top of the interval consists entirely of disrupted carbonate, becoming more mud rich with depth. This carbonate rich zone may be indicative of a cap over the underlying kimberlite.

87.17 - 89.60m**Green weathered kimberlite**

This interval is druse green, serpentinized kimberlite with vugs of relic olivine and occasional phlogopite mica. Dark green xenolith rock fragments are typically sub-angular and sub-rounded. The contact with the overlying interval is complex, suggestive of intercalation or faulting. Contact with the underlying interval occurs along a white carbonate vein commencing at 88.7m. Some xenolith rock fragments elongated parallel to the fault, i.e. 89.6m.

87.7m

Possible mantle nodules are observed. One nodule is black, 1cm in length, ovoid shaped and contains possible chromium diopside. Immediately adjacent to this black nodule lies another, flattened nodule (1cm) containing predominantly fresh olivine. Both nodules are interpreted as being mantle nodules. These are found in a veined carbonate, kimberlitic/black mud fault breccia. Samples have been sent to the Thunder Bay lab (VR31100A).

89.60 - 101.0 m**Mudstone with carbonate rich rock**

This unit consists of dark grey mudstone in a fault zone (presumably) with a veined, carbonate rich rock. The contact with the overlying unit occurs along the carbonate vein, almost parallel to it. The vein contains dark yellow crystals of calcite. The mudstone, which is predominantly aphanitic, is host to sulphides (pyrite). This vein continues into the mudstone becoming thicker with depth. The carbonate vein has an unusual textural appearance, similar to that of snowflake obsidian, but without the conchoidal fractures.

96.60 - 98.50m Kimberlite occurs again containing previously described material. Complex faulted contact with mudstone and carbonate vein.

99.10 - 99.30m Kimberlite clast hosted by light green marls.

101.0 - 119.0m

Black mudstone

This unit is entirely made up of black mudstone. Throughout the interval pyrite crystals are observed (< 1 %). Desiccation fractures occur over the whole unit grading through a black mudstone to a light grey mudstone with stress fractures occurring in local zones. Banded features present through the unit 45 degree @ tca. This is suggestive of stress related pressure as a result of the assumed faulting (mudstone shows fractures parallel tca in local sections whilst the majority of the fracturing is random to perpendicular tca.)

117.8 -119.0m Contains fine-grained sand. Competent with no desiccation.

119.0 -163.7m

Black mudstone with relic kimberlite

Black, moderately competent rock, rich with a mud matrix. The rock is locally broken with rubble zones throughout entire unit. Local sections are carbonate rich, however, the matrix is only minor carbonate rich throughout. Relic olivines are numerous (~10%) and are the dominant mineral in this core, set in an aphanitic mud matrix. Olivines range in size from 2mm to 4mm, yellow with a sugary carbonate replaced matrix.

Veined carbonate exists in local sections. Pyrite is again, abundant throughout.

Local zones exhibit altered autolith lapilli with fine-grained olivine and black mafic minerals set in a light brown matrix. Autoliths are observed at 137.0m and 138.0m.

Country rock fragments are infrequent throughout, but exist as sub-angular black mud and sub-angular leucocratic argillites. Fragments become more abundant below 153.0 metres. Large black mud xenoliths with clean, sharp contacts occur at 136.7m and 144.0m (both are >5cm).

119.0 - 119.7m Carbonate rich igneous vein. Similar to that seen at the beginning of the 89.6 - 101.0m interval.

143.8 - 144.3m Veined carbonate mudstone

150.0 - 151.3m Abundant faliment type carbonate veins in mudstone parallel tca.

153.0 - 158.8m Hand competent core of kimberlite. This section happens to be the only section of competent core throughout this unit and coincidentally, it also happens to be the section of core that has the highest magnetic

susceptibility reading (average = 2.87×10^{-3} SI; - the background is an average of $.20 \times 10^{-3}$ SI).

- 157.4 - 157.6m Abundant phlogopite mica in a medium grey competent kimberlite. Relic olivine is not as abundant as previous sections and the core contains black angular xenoliths with few angular green marls.
- 160.0 - 160.1m Hard competent core with dark grey/brown autolithic lapilli forms and small veined carbonate. A single rounded black xenolith (3mm) is observed. This is noted because no other black mud xenolith has yet to be seen without the typical sub-angular form.

163.7 - 164.4m Light grey relic kimberlite

Light grey competent relic kimberlite with abundant carbonate veining. This unit is strongly mud rich containing white, carbonate replaced olivine and pyrite crystals (pyrite vein 3mm x 60mm is present at 164.1 m). Country rock xenoliths are infrequent angular black mudstone and striated leucocratic argillites with light green marls to a lesser degree.

- 164.2 - 164.4m The contact with the underlying mudstone unit is approximately 30 degrees tea and has a stronger mud matrix with more frequent relic olivine. The rock remains competent until 164.5m when it abruptly turns to rubble.

164.4 - 182.9m Black mudstone with kimberlite fragments

This interval is of the same colour and composition as the previously described mudstone, however, this interval of mudstone shows signs of soft sediment deformation.

- 167.9 - 168.6m Grey relic kimberlite the same as the 163.4 - 164.3m interval
- 176.1 - 176.3m Black fractured mudstone intersecting a light grey mudstone parallel tca. The muds adjacent to this section fracture perpendicular tea, suggesting stress through soft sediment deformation. This feature is also observed at 178.2 - 178.3m.
- 181.1 - 182.3m Black mudstone intercalated with small beds of fine-grained light brown sand. Bedding is 30 degrees tca.

182.9m E.O.H.

Representative ('Rep') Samples

#	Depth in Hole	Geological Unit	#	Depth in Hole	Geological Unit
1	86.0m	Lt. Grey ign. Carbonate rich rock	13	128.0m	Black mudstone w/ relic kimberlite
2	87.3m	Green weathered kimberlite	14	131.4m	Black mudstone w/ relic kimberlite
3	88.4m	Green weathered kimberlite	15	136.7m	Black mudstone w/ relic kimberlite
4	89.4m	Green weathered kimberlite	16	143.3m	Black mudstone w/ relic kimberlite
5	90.3m	Mudstone w/ ign. Carb. Rich rock	17	151.0m	Black mudstone w/ relic kimberlite
6	94.5m	Mudstone w/ ign. Carb. Rich rock	18	157.5m	Black mudstone w/ relic kimberlite
7	97.8m	Mudstone w/ ign. Carb. Rich rock	19	160.0m	Black mudstone w/ relic kimberlite
8	100.0m	Mudstone w/ ign. Carb. Rich rock	20	164.0m	Black mudstone w/ relic kimberlite
9	100.9m	Mudstone w/ ign. Carb. Rich rock	21	164.3m	Light grey relic kimberlite
10	104.5m	Black mudstone	22	170.6m	Black mudstone w/ kim. fragments
11	119.3m	Black mudstone	23	181.9m	Black mudstone w/ kim. fragments
12	119.7m	Black mudstone w/ relic kimberlite			

Petrology Samples**Petrographic Samples**

Sample No.	Depth	Sampled by	Submitted to
VR31099A	144.9m	Richard Beck	
VR31100A	87.7m	Richard Beck	

Geochronology Samples

Sample No.	Depth	Sampled by	Submitted to
VR31098A	157.4m	Richard Beck	ROM

Heavy Mineral / Micro-diamond Sample List

Sample No.	From (m)	To (m)	Interval (m)	Mass (kg)	Shipped
VR87896A	HM	COMP.	-	15	Nov. 24, 1998
VR87897A	85.8	92.7	6.9	15	Nov. 26, 1998
VR87898A	92.7	97.5	4.8	15	Nov. 26, 1998
VR87899A	97.5	102.7	5.2	15	Nov. 26, 1998
	116.3	116.8	.50		
	119.0	119.8	.80		
VR88451A	119.8	125.3	5.5	15	Nov. 26, 1998
VR88452A	125.3	132.3	7.0	15	Nov. 26, 1998
VR88453A	132.3	139.3	7.0	15	Nov. 26, 1998
VR88454A	139.3	146.0	6.7	15	Nov. 26, 1998
VR88455A	146.0	156.8	10.8	15	Nov. 26, 1998
VR88456A	HM	COMP.	-	11	Nov. 24, 1998
VR88457A	156.8	167.9	11.1	15	Nov. 26, 1998
	167.9	168.5	.60		
	178.3	181.5	3.2		

Notable Mantle Nodules

Mantle nodules were recognized during logging and samples have been submitted for analysis (VR31100A). A composite sample for indicator mineral chemistry has been submitted (VR87896A & VR88456A).