

DETAILED LOG

Hole Number: ES2004-13

Units: METRIC

Project Name: Norway - Espedalen	Primary Coordinates Grid: UTM84-32N	Destination Coordinates Grid: UTM:	Collar Dip: -79.00
Project Number: 201	North: 6809641.55	North: 61.42	Collar Az: 51.00
Location: Surface	East: 531072.31	East: 9.58	Length: 97.60 (m)
	Elev: 1214.64	Elev: 1214.64	Start Depth: 0.00 (m)
Date Started: Sep 11, 2004	Collar Survey: Y	Plugged: N	Contractor: Geo Drilling A/S
Date Completed: Sep 13, 2004	Multishot Survey: N	Hole Size: TT46	Core Storage: Strand Fjellstue
Logged By: P.Tirschmann	Pulse EM Survey: N	Casing: Left in Hole, capped	Final Depth: 97.60 (m)

Comments: Purpose: To test UTEM conductor ESP_11_11. Two conductive plates modelled, one with conductance of 100 siemens and the other of 50 siemens.

Result: Peridotite intersected between 2.15m and 31.30m locally contains trace to 3% disseminated pyrrhotite but no obvious conductor was intersected.

Assays: All nickel values <0.10%.

Lithological interpretation: Pyroxenitic to peridotitic bodies intruding anorthositic country rocks, in turn cross-cut by younger gabbroanorites.

Sample Averages

Detailed Lithology		Assay Data							
From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
0	2.15	C, Casing							

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Detailed Lithology		Lithology	Assay Data						
From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
2.15	31.30	PRDT, Peridotite	PG03097	14.25	15.25	1.00	0.0700	0.0250	0.0100
		Weakly to moderately foliated, medium grained, dark green, strongly magnetic oikocrystic peridotite. Typically consists of 80-85% dark grey medium grained olivine-rich groundmass, 10-20% 0.5-2.5cm light grey pyroxene (now altered to amphibole) oikocrysts and 3% very fine grained magnetite. Weak (trace -3%) disseminated pyrrhotite mineralization locally. Very fine grained pyrrhotite laminae in sheared UM between 31.1-31.2m. Sheared over a 40cm interval adjacent to sharp downhole contact with norite; downhole contact at 57 degrees to CA. Magnetic susceptibility: 50-100 Conductivity: Non-conductive Interpretation: Oikocrystic ultramafic similar to that seen in ES2004-12 between 47m and 87.05m. Structure 7.30 - 7.31 : Sm General Foliation, 43 Deg to CA 19.20 - 19.21 : Sm General Foliation, 32 Deg to CA 25.60 - 25.61 : Sm General Foliation, 45 Deg to CA RQD 2.15 - 5.00 : 28.00 % RQD 100.00 % Core 5.00 - 8.00 : 41.00 % RQD 100.00 % Core 8.00 - 11.00 : 46.00 % RQD 100.00 % Core 11.00 - 14.00 : 59.00 % RQD 100.00 % Core 14.00 - 17.00 : 71.00 % RQD 100.00 % Core 17.00 - 20.00 : 64.00 % RQD 100.00 % Core 20.00 - 23.00 : 27.00 % RQD 100.00 % Core 23.00 - 26.00 : 59.00 % RQD 100.00 % Core 26.00 - 29.00 : 90.00 % RQD 100.00 % Core 29.00 - 32.00 : 30.00 % RQD 100.00 % Core	PG03098	21.85	23.00	1.15	0.0800	0.0250	0.0100
			PG03099	25.50	26.50	1.00	0.0800	0.0250	0.0200
			PG03101	26.50	27.25	0.75	0.0800	0.0250	0.0200
			PG03102	30.00	30.80	0.80	0.0700	0.0250	0.0100
			PG03103	30.80	31.30	0.50	0.0800	0.0250	0.0100

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From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
31.30	43.80	<p>GAB, Gabbro</p> <p>Medium grained, well foliated (sheared?), light grey leuco-gabbro. Consists of 70-75% plagioclase, 25-30% pyroxene and 1-2% chlorite. Several percent serpentinized fractures and slips. Downhole contact unchilled, sharp, but irregular.</p> <p>Magnetic susceptibility: < 1 Conductivity: non-conductive</p> <p>Interpretation: Leuconorite as seen in ES2004-12 between 87.05 and 90.25m, but foliated.</p> <p>Mineralization 39.90 - 40.75 : Po Pyrrhotite, D Disseminated, 3% 3% disseminated, fracture-controlled and blebby po in sheared norite.</p> <p>Structure 34.50 - 34.51 : Sm General Foliation, 60 Deg to CA 39.60 - 39.61 : Sm General Foliation, 60 Deg to CA 42.30 - 42.31 : Sm General Foliation, 28 Deg to CA</p> <p>RQD 32.00 - 35.00 : 62.00 % RQD 100.00 % Core 35.00 - 38.00 : 40.00 % RQD 100.00 % Core 38.00 - 41.00 : 56.00 % RQD 100.00 % Core 41.00 - 44.00 : 57.00 % RQD 100.00 % Core</p>	PG03104	39.90	40.75	0.85	0.0250	0.0250	0.0300

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From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
43.80	70.10	<p>PYXT, Pyroxenite</p> <p>Fine grained dark green pyroxenite with inhomogenous appearance due to presence of 5-10% white and green cm to dm scale anorthositic inclusions and schlieren-like bands. Foliation evident in anorthositic intervals. Between 66.5m and 67.8m pyroxenite contains cm scale inclusions of dark grey, aphanitic, mafic rock, some of which contain trace pyrrhotite along fractures. Reaction rims evident on some inclusions. Downhole contact with sheared anorthositic rocks sharp and estimated at 60 degrees to CA.</p> <p>Magnetic susceptibility: Typically between 0.5 and 3.5 Conductivity: Non-conductive</p> <p>Interpretation: Pyroxenite body intruding older anorthositic rocks.</p> <p>RQD</p> <p>44.00 - 47.00 : 35.00 % RQD 100.00 % Core 47.00 - 50.00 : 55.00 % RQD 100.00 % Core 50.00 - 53.00 : 49.00 % RQD 100.00 % Core 53.00 - 56.00 : 56.00 % RQD 100.00 % Core 56.00 - 59.00 : 63.00 % RQD 100.00 % Core 59.00 - 62.00 : 74.00 % RQD 100.00 % Core 62.00 - 65.00 : 79.00 % RQD 100.00 % Core 65.00 - 68.00 : 36.00 % RQD 100.00 % Core 68.00 - 71.00 : 48.00 % RQD 100.00 % Core</p>							

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From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
70.10	87.70	4, Anorthosite / Anorthosite Gabbro Inhomogenous interval of tectonized, mottled white and green, medium to coarse grained anorthositic gabbro. Consists of 65-85% plagioclase and 15-35% pyroxene. Unit is sheared and contains 3-10% serpentine and chlorite fracture fillings and veinlets which locally disrupt and brecciate the host rock. Trace po along fractures in ultramafic dykelet at 71.25m. Rare trace po, disseminated and along fractures in anorthositic gabbro. Magnetic susceptibility: <1 Conductivity: Non-conductive Mineralization 81.00 - 81.40 : Po Pyrrhotite, STR Stringers, 4% One 1-5mm wide stringer of po, minor py sub-parallel to CA Structure 72.65 - 72.66 : Sm General Foliation, 40 Deg to CA 78.10 - 78.11 : Sm General Foliation, 0 Deg to CA 83.60 - 83.61 : Sm General Foliation, 65 Deg to CA 87.55 - 87.56 : Sm General Foliation, 15 Deg to CA RQD 71.00 - 74.00 : 37.00 % RQD 100.00 % Core 74.00 - 77.00 : 20.00 % RQD 100.00 % Core 77.00 - 80.00 : 40.00 % RQD 100.00 % Core 80.00 - 83.00 : 78.00 % RQD 98.00 % Core 83.00 - 86.00 : 75.00 % RQD 100.00 % Core 86.00 - 89.00 : 65.00 % RQD 100.00 % Core	PG03105	81.00	81.40	0.40	0.0250	0.0250	0.0100

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From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
87.70	97.60	PYXT, Pyroxenite Inhomogeneous unit ranging from fine grained dark green pyroxenite to fine grained green and white melanogabbro. Foliation evident in melanogabbro. Broken core at uphole contact with sheared anorthositic rocks but contact is sharp and estimated at 50 degrees to CA. Magnetic susceptibility: 0.3-3 Conductivity: Non-conductive Interpretation: Pyroxenitic to melanogabbroic body intruding older anorthositic rocks. Structure 88.65 - 88.66 : Sm General Foliation, 17 Deg to CA 90.60 - 90.61 : Sm General Foliation, 0 Deg to CA 94.50 - 94.51 : Sm General Foliation, 50 Deg to CA 97.50 - 97.51 : Sm General Foliation, 45 Deg to CA RQD 89.00 - 92.00 : 85.00 % RQD 100.00 % Core 92.00 - 95.00 : 58.00 % RQD 100.00 % Core 95.00 - 97.60 : 48.00 % RQD 100.00 % Core							

Samples

Sample Number	From (m)	To (m)	Ni%	Cu%	Co%
Sample Type	ASSAY				
PG03097	14.25	15.25	0.0700	0.0250	0.0100
PG03098	21.85	23.00	0.0800	0.0250	0.0100
PG03099	25.50	26.50	0.0800	0.0250	0.0200
PG03101	26.50	27.25	0.0800	0.0250	0.0200
PG03102	30.00	30.80	0.0700	0.0250	0.0100
PG03103	30.80	31.30	0.0800	0.0250	0.0100
PG03104	39.90	40.75	0.0250	0.0250	0.0300
PG03105	81.00	81.40	0.0250	0.0250	0.0100