

Hole Number: ES2005-24

Units: METRIC

Project Name: Norway - Espedalen	Primary Coordinates Grid: UTM84-32N	Destination Coordinates Grid: UTM:	Collar Dip: -59.44
Project Number: 201	North: 6801165.60	North: 61.34	Collar Az: 233.90
Location: Surface	East: 535437.50	East: 9.66	Length: 134.55 (m)
	Elev: 966.86	Elev: 966.86	Start Depth: 0.00 (m)
Date Started: Mar 31, 2005	Collar Survey: Y	Plugged: N	Contractor: Arctic Drilling A/S
Date Completed: Apr 02, 2005	Multishot Survey: Y	Hole Size: TT46	Core Storage: Strand Fjellstue
Logged By: Lars Weiershaeuser	Pulse EM Survey: Y	Casing: Left in Hole, capped	Final Depth: 134.55 (m)

Comments: Purpose: Test centre of UTEM conductor on L11700E, 100m grid east of holes ES2004-09 (1.74% Ni, 0.79%Cu, 0.06%Co / 14.60m (80.40-95.00m)).

Result: Intersected well mineralized ultramafic (60% net textured po-pn-cpy) from 104.76-106.44m (1.68m) as well as cm scale remobilized massive sulphide (po-pn-cpy) veinlets within an undivided ultramafic, from 110.80-111.83m (1.03m).

Assays: 1.19%Ni, 0.42%Cu, 0.05%Co / 8.91m (104.76-113.67m) including 4.30%Ni, 1.29%Cu, 0.13%Co / 1.68m (104.76-106.44m) and 2.11%Ni, 0.57%Cu, 0.07%Co / 1.03m (110.80-111.83m).

Borehole UTEM: In-hole responses @ 106m & 112m. Correlates with intersected mineralization.

Sample Averages

Average Type	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
WEIGHTED	104.76	106.44	1.68	4.2950	1.2879	0.1346
WEIGHTED	110.84	113.67	2.83	0.9801	0.3365	0.0447

Survey Data

Depth (m)	Azimuth Decimal	Dip Decimal	Test Type	Flag	Comments	Depth (m)	Azimuth Decimal	Dip Decimal	Test Type	Flag	Comments
0.00	233.90	-59.44	MShot	OK		5.00	233.90	-59.30	MShot	OK	
10.00	233.90	-59.37	MShot	OK		15.00	233.95	-59.28	MShot	OK	
20.00	232.89	-59.30	MShot	OK		25.00	232.66	-59.32	MShot	OK	
30.00	232.45	-59.34	MShot	OK		35.00	232.37	-59.37	MShot	OK	
40.00	232.01	-59.50	MShot	OK		45.00	231.98	-59.65	MShot	OK	
50.00	231.91	-59.65	MShot	OK		55.00	232.19	-59.56	MShot	OK	
60.00	232.48	-59.48	MShot	OK		65.00	232.56	-59.22	MShot	OK	
70.00	232.52	-59.14	MShot	OK		75.00	232.36	-59.03	MShot	OK	
80.00	232.01	-59.22	MShot	OK		85.00	231.85	-59.32	MShot	OK	
90.00	231.39	-59.50	MShot	OK		95.00	230.32	-59.51	MShot	OK	
100.00	230.03	-59.58	MShot	OK		105.00	229.83	-59.68	MShot	OK	
110.00	229.93	-59.62	MShot	OK		115.00	229.87	-59.77	MShot	OK	
120.00	229.83	-59.78	MShot	OK		125.00	229.84	-59.83	MShot	OK	
130.00	229.80	-59.90	MShot	OK							

DETAILED LOG

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Detailed Lithology		Assay Data							
From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
0	14.40	C, Casing RQD 0.00 - 14.40 : 100.00 % RQD 100.00 % Core 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%
14.40	104.35	4s, Sausseritized/Tectonized Anorthosite	PG03812	51.00	52.25	1.25	0.0250	0.0250	0.0100
		Fine-grained white to gray , non-magnetic, heterogeneous, foliated anorthosite. The rock is composed of plagioclase and alteration minerals (chlorite, hematite, minor fuchsite and epidote, ?sericite). The rock is intruded by two different types of fine-grained, dark gray to black, non-magnetic, moderately foliated, homogeneous mafic dykes/sills (for intervals and contact relationships see minor units).	PG03813	52.25	52.70	0.45	0.2300	0.0800	0.0600
			PG03814	52.70	54.00	1.30	0.0250	0.0250	0.0100
			PG03815	103.00	104.35	1.35	0.0250	0.0250	0.0100
		Apart from a 5cm wide po-py veinlet, the anorthosite is unmineralized							
		Mineralization							
		95.46 - 95.56 : Cpy Chalcopyrite, VN Veins, 1%							
		95.46 - 95.56 : Po Pyrrhotite, VN Veins, 10%							
		52.69 - 52.74 : Py Pyrite, VN Veins, 30%							
		52.69 - 52.74 : Po Pyrrhotite, VN Veins, 30%							
		Alteration							
		100.65 - 102.05 :HM Hematite, P Pervasive, W Weak							
		99.54 - 100.65 :EP Epidote, P Pervasive, S Strong							
		99.07 - 99.54 :EP Epidote, P Pervasive, W Weak							
		98.20 - 98.55 :EP Epidote, PT Patchy, W Weak							
		93.50 - 95.12 :HM Hematite, P Pervasive, W Weak							
		69.30 - 71.40 :HM Hematite, P Pervasive, W Weak							
		57.00 - 64.50 :EP Epidote, PT Patchy, W Weak							
		57.00 - 64.50 :HM Hematite, P Pervasive, W Weak							
		48.50 - 51.00 :EP Epidote, PT Patchy, W Weak							
		48.50 - 51.00 :HM Hematite, P Pervasive, W Weak							
		45.75 - 46.50 :HM Hematite, P Pervasive, S Strong							
		42.70 - 43.10 :HM Hematite, P Pervasive, S Strong							
		38.00 - 42.00 :HM Hematite, P Pervasive, M Moderate							
		23.12 - 26.00 :ALT Alteration, P Pervasive, W Weak							
		fuchsite							
		22.04 - 22.58 :ALT Alteration, P Pervasive, W Weak							
		fuchsite							
		14.40 - 16.40 :ALT Alteration, P Pervasive, W Weak							
		fuchsite							
		Structure							
		14.93 - 14.94 : S1 First Foliation, 80 Deg to CA							
		25.14 - 25.15 : S1 First Foliation, 70 Deg to CA							
		29.72 - 29.73 : S1 First Foliation, 75 Deg to CA							
		32.62 - 32.63 : S1 First Foliation, 60 Deg to CA							
		37.65 - 37.66 : S1 First Foliation, 75 Deg to CA							
		51.18 - 51.19 : S1 First Foliation, 70 Deg to CA							
		59.31 - 59.32 : S1 First Foliation, 70 Deg to CA							

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Detailed Lithology		Assay Data							
From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
		Structure							
64.32	64.33	: S1 First Foliation, 70 Deg to CA							
69.02	69.03	: S1 First Foliation, 65 Deg to CA							
73.30	73.31	: S1 First Foliation, 60 Deg to CA							
79.17	79.18	: S1 First Foliation, 60 Deg to CA							
83.75	83.76	: S1 First Foliation, 85 Deg to CA							
89.82	89.83	: S1 First Foliation, 75 Deg to CA							
94.26	94.27	: S1 First Foliation, 80 Deg to CA							
102.64	102.65	: S1 First Foliation, 50 Deg to CA							
		RQD							
14.40	18.00	: 38.00 % RQD 100.00 % Core							
18.00	21.00	: 70.00 % RQD 100.00 % Core							
21.00	24.00	: 81.00 % RQD 100.00 % Core							
24.00	27.00	: 79.00 % RQD 100.00 % Core							
27.00	30.00	: 61.00 % RQD 100.00 % Core							
30.00	33.00	: 74.00 % RQD 100.00 % Core							
33.00	36.00	: 86.00 % RQD 100.00 % Core							
36.00	39.00	: 88.00 % RQD 100.00 % Core							
39.00	42.00	: 66.00 % RQD 100.00 % Core							
42.00	45.00	: 45.00 % RQD 100.00 % Core							
45.00	48.00	: 67.00 % RQD 100.00 % Core							
48.00	51.00	: 72.00 % RQD 100.00 % Core							
51.00	54.00	: 68.00 % RQD 100.00 % Core							
54.00	57.00	: 64.00 % RQD 100.00 % Core							
57.00	60.00	: 71.00 % RQD 100.00 % Core							
60.00	63.00	: 74.00 % RQD 100.00 % Core							
63.00	66.00	: 69.00 % RQD 100.00 % Core							
66.00	69.00	: 67.00 % RQD 100.00 % Core							
69.00	72.00	: 45.00 % RQD 100.00 % Core							
72.00	75.00	: 49.00 % RQD 100.00 % Core							
75.00	78.00	: 65.00 % RQD 100.00 % Core							
78.00	81.00	: 56.00 % RQD 100.00 % Core							
81.00	84.00	: 44.00 % RQD 100.00 % Core							
84.00	87.00	: 87.00 % RQD 100.00 % Core							
87.00	90.00	: 76.00 % RQD 100.00 % Core							
90.00	93.00	: 96.00 % RQD 100.00 % Core							
93.00	96.00	: 73.00 % RQD 100.00 % Core							
96.00	99.00	: 73.00 % RQD 100.00 % Core							
99.00	102.00	: 60.00 % RQD 100.00 % Core							

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
		<p>RQD 102.00 - 105.00 : 62.00 % RQD 100.00 % Core</p> <p>MINOR INTERVALS: Minor Interval: 16.4 - 22.04 MD, Mafic Dike Fine-grained homogeneous dark gray to black mafic dyke. The upper contact is sharp at ~70 degrees tca, the lower contact is sharp at ~70 degrees tca. This dyke is unmineralized. Structure 19.43 - 19.44 : S1 First Foliation, 85 Deg to CA Minor Interval: 22.55 - 23.12 MD, Mafic Dike Fine-grained homogeneous dark gray to black mafic dyke. The upper contact is sharp at ~80 degrees tca, the lower contact is sharp at ~90 degrees tca. This dyke is unmineralized. Minor Interval: 26.26 - 27.28 MD, Mafic Dike Fine-grained homogeneous dark gray to black mafic dyke. The upper contact is sharp at ~60 degrees tca, the lower contact is sharp at ~80 degrees tca. This dyke is unmineralized. Minor Interval: 35.22 - 37.28 MD, Mafic Dike Fine-grained homogeneous dark gray to black mafic dyke. The upper contact is sharp at ~60 degrees tca, the lower contact is diffuse on a mm to cm-scale at ~80 degrees tca. This dyke is unmineralized Minor Interval: 42.08 - 48.49 MD, Mafic Dike Fine-grained homogeneous dark gray to black mafic dyke. The upper contact is sharp at ~70 degrees tca, the lower contact is diffuse on a mm to cm-scale at ~85 degrees tca. This dyke is unmineralized. Structure 43.26 - 43.27 : S1 First Foliation, 65 Deg to CA Minor Interval: 52.23 - 52.61 MD, Mafic Dike Fine-grained fairly homogeneous medium to dark gray mafic dyke. Upper and lower contacts are diffuse on a mm to cm-scale at ~50 degrees tca. This unit is coarser grained compared to other mafic units; it appears to contain digested wall rock fragments. A small amount of massive (magnetic) pyrrhotite mineralization with trace to minor amounts of pyrite and chalcopyrite is contained in this unit. Mineralization 52.25 - 52.40 : Cpy Chalcopyrite, TR Trace, 1% 52.25 - 52.40 : Py Pyrite, TR Trace, 1% 52.25 - 52.40 : Po Pyrrhotite, M Massive, 85%</p>							

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
		<p>MINOR INTERVALS:</p> <p>Minor Interval: 55.85 - 56.93 MD, Mafic Dike</p> <p>Fine-grained fairly homogeneous medium to dark gray mafic dyke. Upper and lower contacts are diffuse on a mm to cm-scale at ~90 and ~89 degrees tca respectively. This unit is coarser grained compared to other mafic units; it appears to contain digested wall rock fragments. Locally, it is brecciated. This unit contains trace amounts of pyrrhotite</p> <p>Mineralization 55.85 - 56.93 : Po Pyrrhotite, TR Trace, 0.5%</p> <p>Minor Interval: 90.1 - 92.68 MD, Mafic Dike</p> <p>Fine-grained homogeneous dark gray to black mafic dyke. The upper contact is sharp at ~45 degrees tca, the lower contact is sharp at ~80 degrees tca. This dyke is unmineralized.</p>							

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
104.35	113.67	MV, Mafic Volcanic	PG03816	104.35	104.76	0.41	0.0250	0.1100	0.0100
		This unit is highly variable and consists of mafic and ultramafic subunits. It contains the main mineralization encountered in this hole. The upper and lower contacts are sharp, but irregular.	PG03817	104.76	105.78	1.02	6.3500	1.8200	0.1700
		For detailed descriptions see subunits.	PG03818	105.78	106.14	0.36	0.4100	0.2700	0.0300
		RQD	PG03819	106.14	106.44	0.30	1.9700	0.7000	0.1400
		105.00 - 108.00 : 67.00 % RQD 100.00 % Core	PG03820	106.44	107.94	1.50	0.1200	0.1300	0.0100
		108.00 - 111.00 : 77.00 % RQD 100.00 % Core	PG03821	107.94	109.44	1.50	0.0900	0.1400	0.0100
		111.00 - 114.00 : 58.00 % RQD 100.00 % Core	PG03822	109.44	110.84	1.40	0.1600	0.1700	0.0100
		MINOR INTERVALS:	PG03823	110.84	111.83	0.99	2.1100	0.5700	0.0700
		Minor Interval:	PG03824	111.83	113.24	1.41	0.0800	0.0800	0.0100
		104.35 - 104.76 MD, Mafic Dike	PG03826	113.24	113.67	0.43	1.3300	0.6400	0.1000
		Fine-grained homogeneous dark gray mafic dyke. The upper contact is sharp but irregular. The hanging wall host rock is brecciated on a cm-scale. Stretched white plagioclase grains form a well-developed foliation. The lower contact is sharp but irregular. This dyke is unmineralized.							
		Minor Interval:							
		104.76 - 106.44 6, Undivided Ultramafic Intrusive							
		This ultramafic unit is host to the semi-massive sulfide mineralization consisting of fine grained po, exsolution pn, cpy with gangue minerals occurring as mm scale black, semi-rounded to semi-angular biotite/chlorite clasts. A recrystallized anorthosite xenolith (105.78-106.20m), cut by sulfide stringers/veinlets, is contained in this unit. The upper and lower contacts are sharp but irregular.							
		Mineralization							
		104.76 - 106.44 : Pn Pentlandite, MG Medium Grained, 5% excluding 48cm wide 4s xeno							
		104.76 - 106.44 : Cpy Chalcopyrite, PAT Patchy, 5% excluding 48cm wide 4s xeno							
		104.76 - 106.44 : Po Pyrrhotite, FG Fine Grained, 50% excluding 48cm wide 4s xeno							
		Minor Interval:							
		106.44 - 110.8 MD, Mafic Dike							
		This subunit is medium gray in color, fine grained, non- to weakly magnetic mafic unit; white plagioclase grains form a fairly well-developed foliation, which gives the rock a mottled appearance. Characteristic for this unit are cm-scale biotite porphyroblasts, some of which are elongated along the foliation. The upper and lower contacts of this unit are sharp but irregular.							
		This unit contains trace amounts po.							
		Mineralization							
		106.44 - 110.80 : Po Pyrrhotite, TR Trace, 0.5% trace amounts throughout the unit							

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
		<p>MINOR INTERVALS:</p> <p>Minor Interval: 110.8 - 111.83 6, Undivided Ultramafic Intrusive Fine grained, black to grey-green, locally weakly foliated ultramafic? unit containing cm scale recrystallized anorthositic xenoliths (digested). Sulfide mineralization occurs as recrystallized stringers, some of which are up to ca. 8cm wide thus appearing massive. The sulfides consists mainly of fine grained po, coarser grained py and trace wispy chalcopyrite; pn is less abundant compared to the upper ultramafic unit. The upper and lower contacts are sharp but irregular.</p> <p>Mineralization 110.80 - 111.83 : Cpy Chalcopyrite, TR Trace, 0.5% 110.80 - 111.83 : Py Pyrite, MG Medium Grained, 1% 110.80 - 111.83 : Po Pyrrhotite, FG Fine Grained, 5%</p> <p>Minor Interval: 111.83 - 113.67 MD, Mafic Dike Fine-grained, homogeneous, dark gray to black, well foliated mafic dyke. The upper and lower contacts are sharp but irregular.</p> <p>Mineralization consists of a ca. 8cm wide remobilized section, containing mainly po. 2cm wide remobilized sulfide veinlet occurs along the footwall contact (po and cpy).</p> <p>Mineralization 113.24 - 113.32 : Py Pyrite, D Disseminated, 3% 113.24 - 113.32 : Po Pyrrhotite, FG Fine Grained, 95%</p> <p>Structure 112.04 - 112.05 : S1 First Foliation, 70 Deg to CA</p>							

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From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
113.67	134.55	4s, Sausseritized/Tectonized Anorthosite Fine-grained white to gray , non-magnetic, heterogeneous, foliated anorthosite. The rock is composed of plagioclase and alteration minerals (chlorite, hematite, minor fuchsite and epidote, ?sericite). The lower contact is unknown, as the hole was shutdown. This anorthosite is unmineralized Alteration 121.70 - 124.60 :HM Hematite, P Pervasive, W Weak 119.00 - 120.00 :EP Epidote, PT Patchy, W Weak 119.00 - 119.78 :HM Hematite, P Pervasive, W Weak Structure 118.83 - 118.84 : S1 First Foliation, 80 Deg to CA 122.24 - 122.25 : S1 First Foliation, 80 Deg to CA 127.35 - 127.36 : S1 First Foliation, 70 Deg to CA 134.49 - 134.50 : S1 First Foliation, 75 Deg to CA RQD 114.00 - 117.00 : 75.00 % RQD 100.00 % Core 117.00 - 120.00 : 70.00 % RQD 100.00 % Core 120.00 - 123.00 : 62.00 % RQD 100.00 % Core 123.00 - 126.00 : 54.00 % RQD 100.00 % Core 126.00 - 129.00 : 77.00 % RQD 100.00 % Core 129.00 - 132.00 : 63.00 % RQD 100.00 % Core 132.00 - 134.55 : 79.00 % RQD 100.00 % Core	PG03827	113.67	115.00	1.33	0.0250	0.0250	0.0100

Samples

Sample Number	From (m)	To (m)	Ni%	Cu%	Co%
Sample Type	ASSAY				
PG03812	51.00	52.25	0.0250	0.0250	0.0100
PG03813	52.25	52.70	0.2300	0.0800	0.0600
PG03814	52.70	54.00	0.0250	0.0250	0.0100
PG03815	103.00	104.35	0.0250	0.0250	0.0100
PG03816	104.35	104.76	0.0250	0.1100	0.0100
PG03817	104.76	105.78	6.3500	1.8200	0.1700
PG03818	105.78	106.14	0.4100	0.2700	0.0300
PG03819	106.14	106.44	1.9700	0.7000	0.1400
PG03820	106.44	107.94	0.1200	0.1300	0.0100
PG03821	107.94	109.44	0.0900	0.1400	0.0100
PG03822	109.44	110.84	0.1600	0.1700	0.0100

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Samples

Sample Number	From (m)	To (m)	Ni%	Cu%	Co%
Sample Type	ASSAY				
PG03823	110.84	111.83	2.1100	0.5700	0.0700
PG03824	111.83	113.24	0.0800	0.0800	0.0100
PG03826	113.24	113.67	1.3300	0.6400	0.1000
PG03827	113.67	115.00	0.0250	0.0250	0.0100