

Hole Number: ES2005-20

Units: METRIC

Project Name: Norway - Espedalen	Primary Coordinates Grid: UTM84-32N	Destination Coordinates Grid: UTM:	Collar Dip: -64.79
Project Number: 201	North: 6801243.80	North: 61.34	Collar Az: 235.25
Location: Surface	East: 535221.00	East: 9.66	Length: 132.40 (m)
	Elev: 969.48	Elev: 969.48	Start Depth: 0.00 (m)
Date Started: Mar 10, 2005	Collar Survey: Y	Plugged: N	Contractor: Arctic Drilling A/S
Date Completed: Mar 12, 2005	Multishot Survey: Y	Hole Size: TT46	Core Storage: Strand Fjellstue
Logged By: Trevor Blair	Pulse EM Survey: Y	Casing: Left in Hole, capped	Final Depth: 132.40 (m)

Comments: Purpose: Test centre of UTEM conductor on L11500E, located between holes ES2004-08 (2.07%Ni, 1.20%Cu, 0.07%Co / 2.70m (56.30-59.00m)) and ES2004-09 (1.74%Ni, 0.79%Cu, 0.06%Co / 14.60m (80.40-96.00m)).

Result: Intersected 25-30% net textured sulphides (po-pn-cpy) within a pyroxenitic ultramafic from 65.43-69.00m (3.57m), 15% stringer sulphides (po-pn-cpy) in an ultramafic schist from 72.08-73.44m (1.36m) and massive sulphides (po-pn-cpy) from 73.44-75.60m (2.16m). A massive sulphide vein was also intersected from 83.95-85.06m (1.11m).

Assays: 2.81%Ni, 1.11%Cu, 0.08%Co / 10.17m (65.43-75.60m)
6.72%Ni, 1.87%Cu, 0.20%Co / 1.11m (83.95-85.06m)

Borehole UTEM: Multi-peaked responses @ 70m, 74m & 84m. Correlates with intersected mineralization.

Sample Averages

Average Type	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
WEIGHTED	64.00	85.06	21.06	1.7548	0.6600	0.0565
WEIGHTED	65.43	74.52	9.09	2.2302	0.9812	0.0666
WEIGHTED	73.44	75.60	2.16	7.7550	2.2850	0.2050
WEIGHTED	75.60	85.06	9.46	0.8490	0.2614	0.0364

Survey Data

Depth (m)	Azimuth Decimal	Dip Decimal	Test Type	Flag	Comments	Depth (m)	Azimuth Decimal	Dip Decimal	Test Type	Flag	Comments
0.00	235.25	-64.79	MShot	OK		5.00	235.25	-64.72	MShot	OK	
10.00	235.26	-64.60	MShot	OK		15.00	236.36	-64.55	MShot	OK	
20.00	236.67	-64.74	MShot	OK		25.00	236.52	-64.77	MShot	OK	
30.00	236.59	-64.79	MShot	OK		35.00	236.89	-64.89	MShot	OK	
40.00	237.68	-64.80	MShot	OK		45.00	237.85	-64.85	MShot	OK	
50.00	237.51	-64.84	MShot	OK		55.00	237.83	-64.97	MShot	OK	
60.00	237.86	-65.10	MShot	OK		65.00	237.70	-65.15	MShot	OK	
70.00	237.30	-65.16	MShot	OK		75.00	237.36	-64.85	MShot	OK	
80.00	237.70	-64.98	MShot	OK		85.00	237.40	-64.80	MShot	OK	
90.00	236.89	-64.97	MShot	OK		95.00	236.66	-65.08	MShot	OK	
100.00	236.81	-65.00	MShot	OK		105.00	236.97	-64.99	MShot	OK	
110.00	236.79	-65.10	MShot	OK		115.00	236.82	-65.15	MShot	OK	
120.00	237.57	-65.03	MShot	OK		125.00	238.21	-65.01	MShot	OK	
130.00	238.15	-64.99	MShot	OK							

Hole Number: ES2005-20

Units: METRIC

Detailed Lithology		Lithology	Assay Data						
From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	NI%	Cu%	Co%
0	3.07	C, Casing RQD 3.00 - 6.00 : 83.00 % RQD 100.00 % Core							
3.07	10.56	4s, Sausseritized/Tectonized Anorthosite Medium grained, non-magnetic, green-grey-white, heterogenous, well foliated sausseritized anorthosite composed of plagioclase (sausseritized). This unit contains cm to dm scale mafic intrusives (dykes/sills). This unit is unmineralized. The lower contact of this unit is sharp at 70 degrees to the ca. RQD 6.00 - 9.00 : 88.00 % RQD 100.00 % Core 9.00 - 12.00 : 89.00 % RQD 100.00 % Core MINOR INTERVALS: Minor Interval: 3.5 - 4.19 MD, Mafic Dike The upper contact is sharp but irregular (approximately 30 degrees to the ca) with an irregular downhole contact.							
10.56	18.80	MD, Mafic Dike Fine grained, weakly to moderately foliated, dark green, homogenous, non- to weakly magnetic mafic intrusive (dyke/sill). Mm scale, white quartz veinlets occur throughout the unit roughly parallel to foliation planes. This unit contains trace disseminated pyrite (cubic). The lower contact of this unit is sharp at 65 degrees to the ca. Structure 18.20 - 18.21 : S1 First Foliation, 70 Deg to CA RQD 12.00 - 15.00 : 96.00 % RQD 100.00 % Core 15.00 - 18.00 : 91.00 % RQD 100.00 % Core 18.00 - 21.00 : 93.00 % RQD 100.00 % Core							

Hole Number: ES2005-20

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Detailed Lithology		Assay Data							
From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
18.80	61.26	<p>4s, Sausseritized/Tectonized Anorthosite</p> <p>Medium grained, highly tectonized, white-green, non-magnetic, heterogenous anorthosite. This unit contains patchy to pervasive (banded) sausseritization, epidotization and possibly sericitization. The unit contains 65-80% plagioclase (variably altered) and 20-35% alteration minerals (chlorite, hematite, sericite?, fuchsite?)</p> <p>This unit contains dm to m scale mafic dykes/sills which locally contain xenoliths of country rock (anorthosite). These mafic intervals are generally well foliated, fine grained, light to dark green, homogenous units that are unmineralized. See minor units for intervals as well as contact relationships.</p> <p>The anorthosite is unmineralized.</p> <p>The lower contact of this unit is sharp but irregular with the downhole mafic intrusive.</p> <p>Structure</p> <p>22.50 - 22.51 : S1 First Foliation, 60 Deg to CA</p> <p>RQD</p> <p>21.00 - 24.00 : 98.00 % RQD 100.00 % Core</p> <p>24.00 - 27.00 : 94.00 % RQD 100.00 % Core</p> <p>27.00 - 30.00 : 95.00 % RQD 100.00 % Core</p> <p>30.00 - 33.00 : 94.00 % RQD 100.00 % Core</p> <p>33.00 - 36.00 : 74.00 % RQD 100.00 % Core</p> <p>36.00 - 39.00 : 70.00 % RQD 100.00 % Core</p> <p>39.00 - 42.00 : 71.00 % RQD 100.00 % Core</p> <p>42.00 - 45.00 : 82.00 % RQD 100.00 % Core</p> <p>45.00 - 48.00 : 95.00 % RQD 100.00 % Core</p> <p>48.00 - 51.00 : 90.00 % RQD 100.00 % Core</p> <p>51.00 - 54.00 : 90.00 % RQD 100.00 % Core</p> <p>54.00 - 57.00 : 94.00 % RQD 100.00 % Core</p> <p>57.00 - 60.00 : 97.00 % RQD 100.00 % Core</p> <p>60.00 - 63.00 : 93.00 % RQD 100.00 % Core</p> <p>MINOR INTERVALS:</p> <p>Minor Interval:</p> <p>43.1 - 46.6 MD, Mafic Dike</p> <p>The upper and lower contacts of this unit are sharp at 80 and 70 degrees to the ca, respectively.</p>							

Hole Number: ES2005-20

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Detailed Lithology		Assay Data							
From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
		<p>MINOR INTERVALS: Minor Interval: 52.22 - 54.55 MD, Mafic Dike The upper and lower contacts of this unit are sharp at 80 and 75 degrees to the ca, respectively. Structure 53.00 - 53.01 : S1 First Foliation, 70 Deg to CA</p>							
61.26	65.43	<p>MD, Mafic Dike Fine grained, grey-green, moderately foliated, non- to weakly magnetic mafic intrusive (dyke/sill). This unit contains <5% cm scale intermixed anorthositic bands +- sweats? (digested xenoliths?). This unit is unmineralized. The lower contact of this unit is sharp and sheared but irregular along the downhole ultramafic unit. RQD 63.00 - 66.00 : 100.00 % RQD 100.00 % Core</p>	PG03758	64.00	65.43	1.43	0.2200	0.0700	0.0100
65.43	69.00	<p>PYXT, Pyroxenite Fine grained, dark green to black, heterogenous, moderately magnetic, moderately to highly sheared pyroxenite. This unit is composed of dm scale intercalated ultramafic to mafic units with intermixed cm scale anorthositic xenoliths (semi-angular to semi-rounded). This unit is mineralized with pyrrhotite, chalcopyrite, pentlandite and pyrite. Mineralization is throughout the unit as net-textured sulphides with localized remobilized stringers (cpy-rich) proximal to (although not restricted to) ultramafic fragments. Pyrite occurs within heavier concentrated sulphide horizons as mm scale cubes. The lower contact of this unit is gradational over 5cm with the downhole mafic unit and was based on the appearance of discernible plagioclase. Mineralization 65.43 - 69.00 : Py Pyrite, CG Coarse Grained, 1% 65.43 - 69.00 : Cpy Chalcopyrite, NT Net-Textured, 4% 65.43 - 69.00 : Po Pyrrhotite, NT Net-Textured, 20% 65.43 - 69.00 : Pn Pentlandite, EY Eyes, 2% Structure 68.65 - 68.86 : S1 First Foliation, 70 Deg to CA RQD 66.00 - 69.00 : 90.00 % RQD 100.00 % Core</p>	PG03759	65.43	66.45	1.02	1.2800	0.7000	0.0400
			PG03760	66.45	67.40	0.95	2.5700	1.1600	0.0700
			PG03761	67.40	68.65	1.25	3.7600	1.4000	0.1000
			PG03762	68.65	69.00	0.35	1.0600	0.8400	0.0500

Hole Number: ES2005-20

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Detailed Lithology		Assay Data							
From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
69.00	72.08	MD, Mafic Dike Fine grained, well foliated, weakly magnetic, grey-green, homogenous mafic interval composed of chlorite, pyroxenes (tremolite?) and plagioclase. This unit contains dm scale, intermixed sausseritized anorthosite rafts. This unit contains trace cubic pyrite. The lower contact of this unit is sharp along downhole ultramafic unit at 65 degrees to the ca. RQD 69.00 - 72.00 : 87.00 % RQD 100.00 % Core 72.00 - 75.00 : 95.00 % RQD 100.00 % Core	PG03763	69.00	70.50	1.50	0.1900	0.1100	0.0100
			PG03764	70.50	72.08	1.58	0.0250	0.0500	0.0100
72.08	75.60	6e, Ultramafic Schist Fine grained, dark green to black, moderately to strongly foliated ultramafic schist composed of sepeentine, pyroxene and chlorite. This unit is highly mineralized with the lower ~2m composed of massive sulphides. The upper ultramafic contains net-textured to stringer sulphides (po-cpy-pn-py) throughout the unit giving a brecciated appearance. Massive sulphides are composed of 85% fine grained pyrrhotite, 5% fine grained to patchy chalcocopyrite, 5% mm scale pentlandite 'eyes' and 5% semi-angular to rounded ultramafic fragments. The lower contact of this unit is gradational over 15cm and was based on the lack of stringer sulphides. Mineralization 73.44 - 75.60 : Cpy Chalcocopyrite, FG Fine Grained, 5% 73.44 - 75.60 : Po Pyrrhotite, FG Fine Grained, 85% 72.08 - 73.44 : Po Pyrrhotite, D Disseminated, 15% 73.44 - 75.60 : Pn Pentlandite, EY Eyes, 5% 72.08 - 73.44 : Py Pyrite, CG Coarse Grained, 1% 72.08 - 73.44 : Cpy Chalcocopyrite, D Disseminated, 2% 72.08 - 73.44 : Pn Pentlandite, D Disseminated, 1% RQD 75.00 - 78.00 : 81.00 % RQD 100.00 % Core	PG03765	72.08	72.77	0.69	1.8300	2.5000	0.0700
			PG03766	72.77	73.44	0.67	2.1700	0.8400	0.0900
			PG03767	73.44	74.52	1.08	7.7900	2.3400	0.2000
			PG03768	74.52	75.60	1.08	7.7200	2.2300	0.2100

Hole Number: ES2005-20

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From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
75.60	83.00	MD, Mafic Dike	PG03769	75.60	76.18	0.58	0.2300	0.1500	0.0300
		Fine grained, grey-green, massive to weakly foliated, non- to weakly magnetic mafic intrusive composed of pyroxenes, plagioclase and chlorite. This unit contains dm to m scale intermixed sausseritized anorthosite units (see minor units for intervals). This unit contains two separate cm scale remobilized massive sulphide veinlets at 70-80 degrees to the ca (@82.25m and 82.45m). The lower contact of this unit is sharp at 35 degrees to the ca. Structure 81.60 - 81.61 : S1 First Foliation, 65 Deg to CA RQD 78.00 - 81.00 : 94.00 % RQD 100.00 % Core 81.00 - 84.00 : 81.00 % RQD 100.00 % Core MINOR INTERVALS: Minor Interval: 76.18 - 78.4 4s, Sausseritized/Tectonized Anorthosite	PG03770	76.18	77.40	1.22	0.0250	0.0250	0.0100
			PG03771	77.40	78.40	1.00	0.0250	0.0250	0.0100
			PG03772	78.40	79.90	1.50	0.0250	0.0250	0.0100
			PG03773	79.90	81.40	1.50	0.0250	0.0250	0.0100
			PG03774	81.40	82.20	0.80	0.0250	0.0250	0.0100
			PG03776	82.20	82.50	0.30	0.5400	0.2100	0.1000
			PG03777	82.50	83.00	0.50	0.0250	0.0600	0.0100

Hole Number: ES2005-20

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
83.00	132.40	4s, Sausseritized/Tectonized Anorthosite	PG03778	83.00	83.95	0.95	0.1200	0.0700	0.0100
		Medium grained, non-magnetic, green-grey-white, heterogenous, well foliated sausseritized anorthosite composed of plagioclase (sausseritized). This unit contains cm to dm scale mafic intrusives (dykes/sills).	PG03779	83.95	85.06	1.11	6.7200	1.8700	0.2000
		This unit is unmineralized.	PG03780	85.06	86.06	1.00	0.1600	0.1600	0.0200
		The lower contact of this unit is unknown as the drillhole was shutdown.							
		Structure							
		87.70 - 87.71 : S1 First Foliation, 75 Deg to CA							
		113.15 - 113.16 : S1 First Foliation, 70 Deg to CA							
		RQD							
		84.00 - 87.00 : 94.00 % RQD 100.00 % Core							
		87.00 - 90.00 : 93.00 % RQD 100.00 % Core							
		90.00 - 93.00 : 83.00 % RQD 100.00 % Core							
		93.00 - 96.00 : 75.00 % RQD 100.00 % Core							
		96.00 - 99.00 : 96.00 % RQD 100.00 % Core							
		99.00 - 102.00 : 87.00 % RQD 100.00 % Core							
		102.00 - 105.00 : 89.00 % RQD 100.00 % Core							
		105.00 - 108.00 : 70.00 % RQD 100.00 % Core							
		108.00 - 111.00 : 64.00 % RQD 100.00 % Core							
		111.00 - 114.00 : 41.00 % RQD 100.00 % Core							
		114.00 - 117.00 : 89.00 % RQD 100.00 % Core							
		117.00 - 120.00 : 69.00 % RQD 100.00 % Core							
		120.00 - 123.00 : 87.00 % RQD 100.00 % Core							
		123.00 - 126.00 : 77.00 % RQD 100.00 % Core							
		126.00 - 129.00 : 75.00 % RQD 100.00 % Core							
		129.00 - 132.40 : 74.00 % RQD 100.00 % Core							
		MINOR INTERVALS:							
		Minor Interval:							
		83.95 - 85.06 MS, Massive Sulphide							
		Massive sulphide vein 80% fine grained pyrrhotite, 7% chalcopyrite (fine grained, patchy, remobilized), 5% mm scale pentlandite eyes, 8% mm scale semi-angular to rounded gangue fragments (anorthosite).							
		84.80-85.00m: anorthosite fragment.							
		Mineralization							
		83.95 - 85.06 : Pn Pentlandite, EY Eyes, 5%							
		83.95 - 85.06 : Cpy Chalcopyrite, PAT Patchy, 7%							
		83.95 - 85.06 : Po Pyrrhotite, M Massive, 80%							

Hole Number: ES2005-20

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
		MINOR INTERVALS: Minor Interval: 121.35 - 122.85 MD, Mafic Dike The upper and lower contacts are sharp at 40 and 50 degrees to the ca, respectively. Minor Interval: 123.85 - 125.3 MD, Mafic Dike The upper and lower contacts are sharp at 70 and 60 degrees to the ca, respectively.							

Samples

Sample Number	From (m)	To (m)	Ni%	Cu%	Co%
Sample Type	ASSAY				
PG03758	64.00	65.43	0.2200	0.0700	0.0100
PG03759	65.43	66.45	1.2800	0.7000	0.0400
PG03760	66.45	67.40	2.5700	1.1600	0.0700
PG03761	67.40	68.65	3.7600	1.4000	0.1000
PG03762	68.65	69.00	1.0600	0.8400	0.0500
PG03763	69.00	70.50	0.1900	0.1100	0.0100
PG03764	70.50	72.08	0.0250	0.0500	0.0100
PG03765	72.08	72.77	1.8300	2.5000	0.0700
PG03766	72.77	73.44	2.1700	0.8400	0.0900
PG03767	73.44	74.52	7.7900	2.3400	0.2000
PG03768	74.52	75.60	7.7200	2.2300	0.2100
PG03769	75.60	76.18	0.2300	0.1500	0.0300
PG03770	76.18	77.40	0.0250	0.0250	0.0100
PG03771	77.40	78.40	0.0250	0.0250	0.0100
PG03772	78.40	79.90	0.0250	0.0250	0.0100
PG03773	79.90	81.40	0.0250	0.0250	0.0100
PG03774	81.40	82.20	0.0250	0.0250	0.0100
PG03776	82.20	82.50	0.5400	0.2100	0.1000
PG03777	82.50	83.00	0.0250	0.0600	0.0100
PG03778	83.00	83.95	0.1200	0.0700	0.0100
PG03779	83.95	85.06	6.7200	1.8700	0.2000
PG03780	85.06	86.06	0.1600	0.1600	0.0200