

Hole Number: ES2005-27

Units: METRIC

Project Name: Norway - Espedalen	Primary Coordinates Grid: UTM84-32N	Destination Coordinates Grid: UTM:	Collar Dip: -69.46
Project Number: 201	North: 6800996.30	North: 61.34	Collar Az: 228.60
Location: Surface	East: 535703.20	East: 9.67	Length: 134.00 (m)
	Elev: 961.05	Elev: 961.05	Start Depth: 0.00 (m)
Date Started: Apr 08, 2005	Collar Survey: Y	Plugged: N	Contractor: Arctic Drilling A/S
Date Completed: Apr 10, 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: 134.00 (m)

Comments: Purpose: Test UTEM conductor on L12000E, within centre of interpreted plate (conductance = 1849 Siemens).

Result: Intersected several cm to dm scale remobilized massive sulphide (po-pn-cpy) veinlets within ultramafic intrusives, mafic dykes and host anorthosites from 93.14-94.21m (1.07m) and 94.48-97.75m (3.27m)

Assays: 2.36%Ni, 1.01%Cu, 0.08%Co / 1.06m (93.15-94.21m)

Borehole UTEM: In-hole response centered @ 94m. Correlates with intersected mineralization.

Sample Averages

Average Type	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
WEIGHTED	93.15	98.24	5.09	0.7136	0.4229	0.0246

Survey Data

Depth (m)	Azimuth Decimal	Dip Decimal	Test Type	Flag	Comments	Depth (m)	Azimuth Decimal	Dip Decimal	Test Type	Flag	Comments
0.00	228.60	-69.46	MShot	OK		5.00	228.60	-68.93	MShot	OK	
10.00	228.60	-68.84	MShot	OK		15.00	228.58	-68.95	MShot	OK	
20.00	228.06	-68.97	MShot	OK		25.00	228.12	-69.00	MShot	OK	
30.00	227.68	-69.24	MShot	OK		35.00	227.38	-69.25	MShot	OK	
40.00	227.63	-69.61	MShot	OK		45.00	227.75	-69.66	MShot	OK	
50.00	227.77	-69.80	MShot	OK		55.00	227.75	-69.90	MShot	OK	
60.00	227.98	-69.95	MShot	OK		65.00	227.71	-70.10	MShot	OK	
70.00	226.97	-70.24	MShot	OK		75.00	226.29	-70.51	MShot	OK	
80.00	226.20	-70.72	MShot	OK		85.00	225.94	-70.93	MShot	OK	
90.00	225.52	-71.15	MShot	OK		95.00	224.29	-71.61	MShot	OK	
100.00	223.46	-71.41	MShot	OK		105.00	223.32	-71.42	MShot	OK	
110.00	222.45	-71.44	MShot	OK		115.00	222.24	-71.34	MShot	OK	
120.00	222.20	-71.45	MShot	OK		125.00	222.21	-71.46	MShot	OK	
130.00	222.21	-71.43	MShot	OK							

Detailed Lithology			Assay Data						
From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
0	11.50	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%
11.50	34.82	<p>4s, Sausseritized/Tectonized Anorthosite</p> <p>This unit consists of fine-grained, white to light gray, where altered also reddish or greenish, non-magnetic, on a meter-scale fairly homogeneous, foliated anorthosite. Major minerals are plagioclase and alteration minerals (chlorite, hematite, fuchsite, epidote?sericite). Depending on the abundance of alteration minerals and degree of foliation, the rock appears mottled white to light gray, greenish, or reddish; changes in appearance occur on a meter-scale. Locally, the unit is cross-cut by mm-scale quartz veinlets. At 31.56m the unit changes appearance from well-foliated to more massive/recrystallized; in the latter section, free quartz is abundant and locally the rock appears brecciated. Between 30.08m and 31.06m two mafic ?xenoliths occur, which contain mm-scale py-po plebs. The contacts of the xenoliths are gradational. The lower contact is sharp but irregular.</p> <p>This unit is not mineralized</p> <p>For a description of the intrusive rock, see comments of subunit.</p> <p>Alteration</p> <p>22.70 - 23.20 :EP Epidote, P Pervasive, M Moderate</p> <p>22.70 - 23.20 :Q Quartz, P Pervasive, M Moderate</p> <p>28.56 - 30.45 :ALT Alteration, P Pervasive, W Weak fuchsite</p> <p>31.55 - 34.82 :Q Quartz, P Pervasive, M Moderate locally brecciated</p> <p>31.55 - 34.82 :ALT Alteration, PT Patchy, W Weak fuchsite</p> <p>32.40 - 32.60 :HM Hematite, P Pervasive, S Strong</p> <p>13.50 - 28.00 :HM Hematite, P Pervasive, W Weak</p> <p>Structure</p> <p>19.84 - 19.85 : S1 First Foliation, 50 Deg to CA</p> <p>22.38 - 22.39 : S1 First Foliation, 90 Deg to CA</p> <p>26.76 - 26.77 : S1 First Foliation, 70 Deg to CA</p> <p>31.12 - 31.13 : S1 First Foliation, 65 Deg to CA</p> <p>RQD</p> <p>11.50 - 15.00 : 63.00 % RQD 100.00 % Core</p> <p>15.00 - 18.00 : 76.00 % RQD 100.00 % Core</p> <p>18.00 - 21.00 : 90.00 % RQD 100.00 % Core</p> <p>21.00 - 24.00 : 77.00 % RQD 100.00 % Core</p> <p>24.00 - 27.00 : 88.00 % RQD 100.00 % Core</p> <p>27.00 - 30.00 : 92.00 % RQD 100.00 % Core</p> <p>30.00 - 33.00 : 70.00 % RQD 100.00 % Core</p> <p>33.00 - 36.00 : 60.00 % RQD 100.00 % Core</p>							

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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: 11.5 - 12.55 MD, Mafic Dike Fine grained, black to greenish-black, non-magnetic, homogeneous, foliated mafic dyke/sill. The lower contact is very sharp at ~50 degrees tca.</p> <p>This subunit contains trace po.</p>							

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Detailed Lithology		Lithology	Assay Data						
From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
34.82	54.83	MD, Mafic Dike	PG03847	41.00	42.50	1.50	0.0250	0.0250	0.0100
		Fine-grained dark gray to greenish-black, non-magnetic, homogeneous, well foliated ultramafic rock, composed of amphibole/pyroxene, chlorite, and alteration minerals. The upper contact is sharp but irregular, the lower contact is sharp, slightly wavy at ~65 degrees tca.	PG03848	42.50	44.00	1.50	0.0250	0.0250	0.0100
		This unit contains trace po, locally parallel to the foliation.							
		Structure							
		36.93 - 36.94 : S1 First Foliation, 70 Deg to CA							
		41.36 - 41.37 : S1 First Foliation, 70 Deg to CA							
		RQD							
		36.00 - 39.00 : 81.00 % RQD 100.00 % Core							
		39.00 - 42.00 : 83.00 % RQD 100.00 % Core							
		42.00 - 45.00 : 97.00 % RQD 100.00 % Core							
		45.00 - 48.00 : 69.00 % RQD 100.00 % Core							
		48.00 - 51.00 : 87.00 % RQD 100.00 % Core							
		51.00 - 54.00 : 98.00 % RQD 100.00 % Core							
		54.00 - 57.00 : 84.00 % RQD 100.00 % Core							
		MINOR INTERVALS:							
		Minor Interval:							
		44.82 - 49.34 4s, Sausseritized/Tectonized Anorthosite							
		This subunit consists of a medium grained, white to light green, locally black (depending on alteration minerals), non-magnetic, rather inhomogeneous, recrystallized anorthosite. The unit is primarily composed of plagioclase; quartz, epidote, chlorite are abundant as alteration minerals. The upper and lower contacts are sharp at ~60 degrees tca. A ultramafic dark gray to black xenolith occurs between 47.39m and 47.74m with upper and lower contacts of ~60 and ~50 degrees tca.							
		This subunit is not mineralized.							
		Alteration							
		44.82 - 49.34 :Q Quartz, P Pervasive, M Moderate							
		44.82 - 49.34 :EP Epidote, P Pervasive, W Weak							
		44.82 - 49.34 :ALT Alteration, P Pervasive, W Weak							
		fuchsite							

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Detailed Lithology		Lithology	Assay Data						
From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
54.83	134.00	4s, Sausseritized/Tectonized Anorthosite	PG03849	92.00	93.15	1.15	0.0250	0.0250	0.0100
		This unit consists of fine-grained, white to medium dark gray, non-magnetic, homogeneous, foliated anorthosite. Major minerals are plagioclase and alteration minerals (chlorite and minor fuchsite and epidote?sericite). The upper ~20m of this unit contains numerous cm- to dm-scale mafic xenoliths with characteristic mm-scale biotite grains; the xenoliths seem to have be flattened parallel to the foliation. The contacts are gradational on a cm-scale and locally seem to be recrystallized. Locally, the xenoliths contain trace po. Below 93m this unit contains ~20% intrusive mafic and ultramafic dykes/sills. Locally, the rock changes abruptly from well foliated to recrystallized, coarse-grained, weakly to non foliated. Quartz (and minor epidote) is common in these recrystallized sections. The thickness of this unit is not known as the hole was shut down. This unit is not mineralized. For a description of the intrusive rock, see comments of subunit. Alteration 117.80 - 119.45 :EP Epidote, P Pervasive, W Weak weak to moderate 117.80 - 119.45 :Q Quartz, P Pervasive, W Weak weak to moderate Structure 55.53 - 55.54 : S1 First Foliation, 65 Deg to CA 58.67 - 58.68 : S1 First Foliation, 80 Deg to CA 67.47 - 67.48 : S1 First Foliation, 65 Deg to CA 73.19 - 73.20 : S1 First Foliation, 70 Deg to CA 79.07 - 79.08 : S1 First Foliation, 65 Deg to CA 85.09 - 85.10 : S1 First Foliation, 60 Deg to CA 89.85 - 89.86 : S1 First Foliation, 60 Deg to CA 94.41 - 94.42 : S1 First Foliation, 70 Deg to CA 102.45 - 102.46 : S1 First Foliation, 65 Deg to CA 115.92 - 115.93 : S1 First Foliation, 60 Deg to CA 128.67 - 128.68 : S1 First Foliation, 70 Deg to CA RQD 57.00 - 60.00 : 100.00 % RQD 100.00 % Core 60.00 - 63.00 : 89.00 % RQD 100.00 % Core 63.00 - 66.00 : 97.00 % RQD 100.00 % Core 66.00 - 69.00 : 97.00 % RQD 100.00 % Core 69.00 - 72.00 : 70.00 % RQD 100.00 % Core 72.00 - 75.00 : 79.00 % RQD 100.00 % Core 75.00 - 78.00 : 67.00 % RQD 100.00 % Core 78.00 - 81.00 : 94.00 % RQD 100.00 % Core	PG03851	93.15	94.21	1.06	2.3600	1.0100	0.0800
			PG03852	94.21	95.24	1.03	0.1600	0.0700	0.0100
			PG03853	95.24	96.35	1.11	0.2400	0.7300	0.0100
			PG03854	96.35	97.04	0.69	0.4200	0.1600	0.0100
			PG03855	97.04	97.36	0.32	0.0700	0.2100	0.0100
			PG03856	97.36	98.24	0.88	0.4400	0.0250	0.0100
			PG03857	98.24	99.50	1.26	0.0250	0.0250	0.0100

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
		RQD							
		81.00 - 84.00 : 97.00 % RQD 100.00 % Core							
		84.00 - 87.00 : 97.00 % RQD 100.00 % Core							
		87.00 - 90.00 : 84.00 % RQD 100.00 % Core							
		90.00 - 93.00 : 97.00 % RQD 100.00 % Core							
		93.00 - 96.00 : 57.00 % RQD 100.00 % Core							
		96.00 - 99.00 : 66.00 % RQD 100.00 % Core							
		99.00 - 102.00 : 80.00 % RQD 100.00 % Core							
		102.00 - 105.00 : 88.00 % RQD 100.00 % Core							
		105.00 - 108.00 : 69.00 % RQD 100.00 % Core							
		108.00 - 111.00 : 79.00 % RQD 100.00 % Core							
		111.00 - 114.00 : 33.00 % RQD 100.00 % Core							
		114.00 - 117.00 : 42.00 % RQD 100.00 % Core							
		117.00 - 120.00 : 67.00 % RQD 100.00 % Core							
		120.00 - 123.00 : 77.00 % RQD 100.00 % Core							
		123.00 - 126.00 : 98.00 % RQD 100.00 % Core							
		126.00 - 129.00 : 81.00 % RQD 100.00 % Core							
		129.00 - 132.00 : 72.00 % RQD 100.00 % Core							
		132.00 - 134.00 : 33.00 % RQD 100.00 % Core							
		MINOR INTERVALS:							
		Minor Interval:							
		74.18 - 78.38 MD, Mafic Dike							
		Fine to medium-grained, medium gray, non-magnetic, foliated mafic subunit; the upper and lower contacts are sharp at ~90 and ~60 degrees tca, respectively. The unit is finer-grained within ~20 cm of the upper and lower contact.							
		This unit is not mineralized.							

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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:</p> <p>Minor Interval: 93.14 - 94.21 6, Undivided Ultramafic Intrusive Fine-grained, black, non-magnetic, fairly homogeneous ultramafic subunit. The upper contact is sharp but irregular; the lower contact is characterized by recrystallization, assimilation, and tectonization of FW anorthosite over ~20 - 25 cm.</p> <p>This unit contains 10 - 15% cm scale remobilized sulfide veinlets (po, pn, cpy, py).</p> <p>Mineralization 93.14 - 94.21 : Cpy Chalcopyrite, FG Fine Grained, 3% remobilized veinlets 93.14 - 94.21 : Pn Pentlandite, FG Fine Grained, 2% in remobilized veinlets 93.14 - 94.21 : Po Pyrrhotite, VN Veins, 8% remobilized veinlets 93.14 - 94.21 : Py Pyrite, FG Fine Grained, 2% in remobilized veinlets</p> <p>Minor Interval: 95.24 - 97.04 MD, Mafic Dike Fine to medium-grained, medium gray, non-magnetic, foliated mafic subunit; the upper and lower contacts are sharp at ~80 and ~90 degrees tca, respectively. The unit is finer-grained within ~35 cm of the upper and lower contact.</p> <p>Remobilized massive sulfide veinlets, containing po, cpy, py, and pn up to ~3cm wide occur at 95.39 m, 95.76 m, 95.84 m, 96.05 m, and 97.01m.</p> <p>Minor Interval: 97.36 - 98.24 MD, Mafic Dike Fine-grained, medium gray, non-magnetic, mafic subunit; the upper and lower contacts are sharp at ~60 degrees tca. The unit is characterized by ~1 cm wide black ?chlorite-rich alteration "bands" parallel to subparallel to foliation.</p> <p>A 2 - 3 cm wide remobilized massive sulfide veinlet occurs at 97.75 m.</p> <p>Minor Interval: 103.27 - 103.89 MD, Mafic Dike Fine to medium-grained, medium gray, non-magnetic, foliated mafic subunit; the upper contact is sharp but irregular and the lower contact is sharp at ~80 derees tca. The unit is finer-grained within ~10 cm of the lower contact. The unit intruded into a recrystallized, coarse-grained section of anorthosite, where free quartz is common.</p> <p>This unit is not mineralized.</p>							

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Samples

Sample Number	From (m)	To (m)	Ni%	Cu%	Co%
Sample Type	ASSAY				
PG03847	41.00	42.50	0.0250	0.0250	0.0100
PG03848	42.50	44.00	0.0250	0.0250	0.0100
PG03849	92.00	93.15	0.0250	0.0250	0.0100
PG03851	93.15	94.21	2.3600	1.0100	0.0800
PG03852	94.21	95.24	0.1600	0.0700	0.0100
PG03853	95.24	96.35	0.2400	0.7300	0.0100
PG03854	96.35	97.04	0.4200	0.1600	0.0100
PG03855	97.04	97.36	0.0700	0.2100	0.0100
PG03856	97.36	98.24	0.4400	0.0250	0.0100
PG03857	98.24	99.50	0.0250	0.0250	0.0100