

Hole Number: ES2005-47

Units: METRIC

Project Name: Norway - Espedalen	Primary Coordinates Grid: UTM84-32N	Destination Coordinates Grid: UTM:	Collar Dip: -60.00
Project Number: 201	North: 6801685.83	North: 61.35	Collar Az: 230.00
Location: Surface	East: 534666.17	East: 9.65	Length: 334.20 (m)
	Elev: 1001.70	Elev: 1001.70	Start Depth: 0.00 (m)
Date Started: Sep 01, 2005	Collar Survey: Y	Plugged: N	Contractor: Arctic Drilling A/S
Date Completed: Sep 10, 2005	Multishot Survey: N	Hole Size: TT46	Core Storage: Strand Fjellstue
Logged By: blairt	Pulse EM Survey: N	Casing: Left in Hole, capped	Final Depth: 334.20 (m)

Comments: Purpose: Hole proposed to test the interpreted extension of the Stormyra zone, below a vertical depth of 230m (surface geophysical penetration depths). This hole will also be used as a geophysical platform (BHEM) to search for conductors at depth along the interpreted Stormyra trend.

Result: The hole intersected a thick anorthosite body which was locally crosscut by dolerite dykes from surface to a depth of 192m. An unmineralized peridotite was intersected from 252.20-267.13m (14.93m) within a thick package of volcaniclastic rocks. The latter is interpreted by M. Heim to lie outside of the Espedalen Complex but within the Jøtun Nappe.

Assays: No samples taken.

Borehole UTEM: Survey to be conducted in November 2005.

Lithological interpretation: Anorthositic terrain locally crosscut by dolerite dykes, which overly a thick package of volcaniclastic rocks (thought to lie outside of the Espedalen Complex but within the Jøtun Nappe).

Sample Averages

Detailed Lithology		Assay Data							
From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
0	3.20	C, Casing							

DETAILED LOG

Hole Number: ES2005-47

Units: METRIC

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: 33.08 - 33.22 MD, Mafic Dike See major unit for description.</p> <p>The upper and lower contacts of this unit are sharp at 60 and 80 degrees to the ca, respectively.</p> <p>Minor Interval: 34.06 - 36.5 MD, Mafic Dike See major unit for description. This unit contains cm scale, concordant anorthositic units intermixed with mafic sills/dykes.</p> <p>The upper and lower contacts of this unit are sharp at 60 and 45 degrees to the ca, respectively.</p> <p>Structure 35.05 - 35.06 : S1 First Foliation, 60 Deg to CA</p>							

Hole Number: ES2005-47

Units: METRIC

Detailed Lithology		Assay Data							
From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
39.50	51.30	<p>MD, Mafic Dike</p> <p>This unit is fine grained, green, homogenous, well foliated, weakly magnetic dykes/sills composed of 75% mafic minerals (chlorite, pyroxenes) and 25% plagioclase.</p> <p>Rare cubic pyrite occurs, parallel to foliation planes.</p> <p>The lower contact of this unit is sharp at 60 degrees to the ca, along a sheared, undulating anorthosite.</p> <p>Structure</p> <p>40.25 - 40.26 : S1 First Foliation, 70 Deg to CA</p> <p>46.25 - 46.26 : S1 First Foliation, 60 Deg to CA</p> <p>50.50 - 50.51 : S1 First Foliation, 60 Deg to CA</p> <p>RQD</p> <p>42.00 - 45.00 : 81.00 % RQD 100.00 % Core</p> <p>45.00 - 48.00 : 81.00 % RQD 100.00 % Core</p> <p>48.00 - 51.00 : 24.00 % RQD 100.00 % Core</p> <p>51.00 - 54.00 : 38.00 % RQD 100.00 % Core</p> <p>MINOR INTERVALS:</p> <p>Minor Interval:</p> <p>47.01 - 48.11 4s, Sausseritized/Tectonized Anorthosite</p> <p>Anorthositic raft? or finger within mafic dyke/sill. This anorthosite appears as a well foliated, grey-green-white, homogenous, non-magnetic, unmineralized unit composed of 50% mafic minerals (chlorite, pyroxenes; variably altered) and 50% plagioclase.</p> <p>47.58-47.70m: Mafic dyklet.</p> <p>The upper and lower contacts of this unit are both sharp at 60 degrees to the ca.</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%
51.30	77.67	<p>4s, Sausseritized/Tectonized Anorthosite</p> <p>Fine grained, white-grey-green, homogenous, non-magnetic, well foliated (50-75 degrees to the ca), unmineralized sausseritized anorthosite composed of 60-75% plagioclase and 25-40% variably altered (sausserite, fuchsite, epidote) mafics.</p> <p>This unit contains several dm to m scale, concordant mafic sills/dykes. These units appear as fine grained, green, homogenous, well foliated, weakly magnetic dykes/sills composed of 75% mafic minerals (chlorite, pyroxenes) and 25% plagioclase. See minor intervals for actual lengths and contact relationships.</p> <p>The lower contact of this unit is sharp at 80 degrees to the ca.</p> <p>Alteration 51.30 - 59.14 :HM Hematite, F Fracture Controlled, M Moderate Parallel to foliation planes, mafics preferentially hematite altered</p> <p>Structure 52.00 - 52.01 : F Fractured, 70 Deg to CA Poorly consolidated core, rocks sheared downhole with undulating foliations 53.25 - 53.26 : S1 First Foliation, 65 Deg to CA 58.60 - 58.61 : S1 First Foliation, 75 Deg to CA 65.30 - 65.31 : S1 First Foliation, 50 Deg to CA 75.22 - 75.23 : S1 First Foliation, 75 Deg to CA</p> <p>RQD 54.00 - 57.00 : 58.00 % RQD 100.00 % Core 57.00 - 60.00 : 78.00 % RQD 100.00 % Core 60.00 - 63.00 : 72.00 % RQD 100.00 % Core 63.00 - 66.00 : 62.00 % RQD 100.00 % Core 66.00 - 69.00 : 85.00 % RQD 100.00 % Core 69.00 - 72.00 : 94.00 % RQD 100.00 % Core 72.00 - 75.00 : 75.00 % RQD 100.00 % Core 75.00 - 78.00 : 81.00 % RQD 100.00 % Core</p> <p>MINOR INTERVALS: Minor Interval: 67.07 - 70.05 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are both sharp at 80 degrees to the ca. Minor Interval: 72.3 - 72.83 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are sharp at 50 and 75 degrees to the ca, respectively.</p>							

DETAILED LOG

Hole Number: ES2005-47

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
77.67	82.50	DIA, Diabase Fine to medium grained, grey-green, well foliated (approximately 75 degrees to the ca), lineated, weakly magnetic, homogenous diorite composed of 50% plagioclase and 50% mafic minerals (pyroxenes, chlorite, biotite?). This unit appears finer grained and more mafic proximal to contacts but more felsic within the central portions of this finger. This unit contains trace pyrite. The upper and lower contacts of this unit are both sharp at 80 degrees to the ca. Structure 78.50 - 78.51 : S1 First Foliation, 75 Deg to CA RQD 78.00 - 81.00 : 100.00 % RQD 100.00 % Core 81.00 - 84.00 : 86.00 % RQD 100.00 % Core							

Hole Number: ES2005-47

Units: METRIC

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: 88.1 - 89.95 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are sharp at 55 and 65 degrees to the ca, respectively.</p> <p>Structure 89.25 - 89.26 : S1 First Foliation, 70 Deg to CA</p> <p>Minor Interval: 91.88 - 92 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are sharp at 70 and 60 degrees to the ca, respectively.</p> <p>Minor Interval: 96.03 - 96.55 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are both sharp at 70 degrees to the ca.</p> <p>Minor Interval: 100.82 - 103.85 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are both sharp at 70 degrees to the ca.</p> <p>Structure 102.35 - 102.36 : S1 First Foliation, 70 Deg to CA</p> <p>Minor Interval: 111.17 - 111.9 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are sharp at 65 and 70 degrees to the ca, respectively.</p> <p>Minor Interval: 112.06 - 112.32 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are sharp at 75 and 65 degrees to the ca, respectively.</p>							

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Hole Number: ES2005-47

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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: 113.47 - 115.15 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are sharp at 75 and 80 degrees to the ca, respectively.</p> <p>Minor Interval: 126.52 - 127.03 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are sharp at 75 and 70 degrees to the ca, respectively.</p> <p>Minor Interval: 128.96 - 129.31 MD, Mafic Dike As described in the major interval.</p> <p>The upper and lower contacts of this unit are sharp at 70 and 80 degrees to the ca, respectively.</p> <p>Minor Interval: 129.6 - 131.06 MD, Mafic Dike As described in the major interval. This unit contains 20% cm scale intermixed anorthositic horizons.</p> <p>The upper and lower contacts of this unit are sharp at 80 and 90 degrees to the ca, respectively.</p>							

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
134.11	144.10	<p>DIA, Diabase</p> <p>Fine to medium grained, grey-green, well foliated (approximately 70 degrees to the ca), lineated, weakly magnetic, homogenous diorite composed of 40-60% plagioclase and 40-60% mafic minerals (pyroxenes, chlorite, biotite?). This unit appears finer grained and more mafic proximal to contacts but more felsic within the central portions of this finger.</p> <p>This unit contains rare trace pyrite.</p> <p>The upper and lower contacts of this unit are both sharp at 65 degrees to the ca.</p> <p>Structure</p> <p>134.40 - 134.41 : S1 First Foliation, 70 Deg to CA</p> <p>143.50 - 143.51 : S1 First Foliation, 70 Deg to CA</p> <p>RQD</p> <p>135.00 - 138.00 : 95.00 % RQD 100.00 % Core</p> <p>138.00 - 141.00 : 84.00 % RQD 100.00 % Core</p> <p>141.00 - 144.00 : 100.00 % RQD 100.00 % Core</p> <p>144.00 - 147.00 : 95.00 % RQD 100.00 % Core</p>							

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
144.10	165.37	<p>4s, Sausseritized/Tectonized Anorthosite</p> <p>Fine grained, white-grey-green (locally hematite stained), homogenous, non-magnetic, well foliated (70-85 degrees to the ca), unmineralized sausseritized anorthosite composed of 60-75% plagioclase and 25-40% variably altered (sausserite, fuchsite, epidote) mafics minerals.</p> <p>This unit contains several dm to m scale, concordant mafic sills/dykes. These units appear as fine grained, green, homogenous, well foliated, weakly magnetic dykes/sills composed of 75% mafic minerals (chlorite, pyroxenes) and 25% plagioclase. See minor intervals for actual lengths and contact relationships.</p> <p>The lower contact of this unit is sharp at 70 degrees to the ca, although highly contorted (over 8cm) with downhole diorite.</p> <p>Structure 148.40 - 148.41 : S1 First Foliation, 70 Deg to CA 152.10 - 152.11 : S1 First Foliation, 85 Deg to CA 159.80 - 159.81 : S1 First Foliation, 80 Deg to CA</p> <p>RQD 147.00 - 150.00 : 85.00 % RQD 100.00 % Core 150.00 - 153.00 : 81.00 % RQD 100.00 % Core 153.00 - 156.00 : 76.00 % RQD 100.00 % Core 156.00 - 159.00 : 82.00 % RQD 100.00 % Core 159.00 - 162.00 : 87.00 % RQD 100.00 % Core 162.00 - 165.00 : 83.00 % RQD 100.00 % Core 165.00 - 168.00 : 96.00 % RQD 100.00 % Core</p> <p>MINOR INTERVALS: Minor Interval: 150 - 150.6 MD, Mafic Dike As described within the major unit.</p> <p>The upper and lower contacts of this unit are both sharp at 55 degrees to the ca. Minor Interval: 154.7 - 154.98 MD, Mafic Dike As described within the major unit. 1% pyrite is present.</p> <p>The upper and lower contacts of this unit are sharp at 80 and 75 degrees to the ca, respectively. Minor Interval: 159.05 - 159.45 MD, Mafic Dike As described within the major unit. 2% pyrite is present.</p> <p>The upper and lower contacts of this unit are sharp at 80 and 75 degrees to the ca, respectively.</p>							

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
		<p>MINOR INTERVALS: Minor Interval: 160.42 - 161.9 MD, Mafic Dike As described within the major unit.</p> <p>The upper and lower contacts of this unit are both sharp at 80 degrees to the ca.</p>							
165.37	174.10	<p>DIA, Diabase</p> <p>Fine to medium grained, grey-green, foliated, lineated, weakly magnetic, homogenous diorite composed of 40-60% plagioclase and 40-60% mafic minerals (pyroxenes, chlorite, biotite?). The upper contact of this unit is convoluted as foliation angles are irregular within the uphole anorthosite is folded ptymatically over 8cm, and a 1cm wide dioritic finger is located within this zone. The downhole contact is sharp at 80 degrees to the ca, along a finer grained horizon.</p> <p>This unit contains rare trace pyrite.</p> <p>RQD 168.00 - 171.00 : 80.00 % RQD 100.00 % Core 171.00 - 174.00 : 90.00 % RQD 100.00 % Core 174.00 - 177.00 : 63.00 % RQD 100.00 % Core</p>							

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
174.10	192.00	<p>4s, Sausseritized/Tectonized Anorthosite</p> <p>Fine grained, white-grey-green, homogenous, non-magnetic, well foliated (~80 degrees to the ca), unmineralized sausseritized anorthosite composed of 60-75% plagioclase and 25-40% variably altered (sausserite, fuchsite, epidote) mafics.</p> <p>This unit contains several dm to m scale, concordant mafic sills/dykes. These units appear as fine grained, green, homogenous, well foliated, weakly magnetic dykes/sills composed of 75% mafic minerals (chlorite, pyroxenes) and 25% plagioclase. See minor intervals for actual lengths and contact relationships.</p> <p>The lower contact of this unit is sharp at 80 degrees to the ca.</p> <p>Structure 176.50 - 176.51 Difficult to determine angle, 1cm wide fault gouge. Competent core up- and downhole. 177.85 - 177.86 : S1 First Foliation, 80 Deg to CA 186.70 - 186.71 : S1 First Foliation, 80 Deg to CA</p> <p>RQD 177.00 - 180.00 : 85.00 % RQD 100.00 % Core 180.00 - 183.00 : 87.00 % RQD 100.00 % Core 183.00 - 186.00 : 89.00 % RQD 100.00 % Core 186.00 - 189.00 : 75.00 % RQD 100.00 % Core 189.00 - 192.00 : 93.00 % RQD 100.00 % Core</p> <p>MINOR INTERVALS: Minor Interval: 174.3 - 174.4 MD, Mafic Dike As described within the major unit; may also be a dolerite (proximity to uphole unit).</p> <p>The upper and lower contacts of this unit are sharp at 80 and 90 degrees to the ca, respectively. Minor Interval: 174.83 - 175.05 MD, Mafic Dike As described within the major unit; may also be a dolerite (proximity to uphole unit).</p> <p>The upper and lower contacts of this unit are both sharp at 80 degrees to the ca. Minor Interval: 181.59 - 181.84 MD, Mafic Dike As described within the major unit.</p> <p>The upper and lower contacts of this unit are sharp at 80 and 90 degrees to the ca, respectively.</p>							

Hole Number: ES2005-47

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
		RQD 240.00 - 243.00 : 100.00 % RQD 100.00 % Core 243.00 - 246.00 : 96.00 % RQD 100.00 % Core 246.00 - 249.00 : 94.00 % RQD 100.00 % Core 249.00 - 252.00 : 100.00 % RQD 100.00 % Core 252.00 - 255.00 : 42.00 % RQD 100.00 % Core							
252.20	267.13	PRDT, Peridotite Fine grained, strongly magnetic, homogenous, highly broken, black peridotite composed of ~15-20% (locally up to 40% dark grey pyroxenes in a strongly serpentinized olivine groundmass. This unit contain 5-10% finely disseminated magnetite. This unit is composed of extremely broken core, at low angles (15-25 degrees) to the ca, along black serpentine veinlets (feels like glass to touch). This unit is unmineralized. The upper contact of this unit (252.20-253.15m) is coarser grained, light to medium green in colour, weakly magnetic unit composed primarily of tremolite-actinolite, chlorite, serpentine and/or pyroxenes. Possible pyroxenitic phase of ultramafic body. RQD 255.00 - 258.00 : 31.00 % RQD 100.00 % Core 258.00 - 261.00 : 63.00 % RQD 100.00 % Core 261.00 - 264.00 : 14.00 % RQD 100.00 % Core 264.00 - 267.00 : 20.00 % RQD 100.00 % Core 267.00 - 270.00 : 100.00 % RQD 100.00 % Core							

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From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
		RQD							
		306.00 - 309.00 : 98.00 % RQD 100.00 % Core							
		309.00 - 312.00 : 84.00 % RQD 100.00 % Core							
		312.00 - 315.00 : 98.00 % RQD 100.00 % Core							
		315.00 - 318.00 : 79.00 % RQD 100.00 % Core							
		318.00 - 321.00 : 88.00 % RQD 100.00 % Core							
		321.00 - 324.00 : 89.00 % RQD 100.00 % Core							
		324.00 - 327.00 : 99.00 % RQD 100.00 % Core							
		327.00 - 330.00 : 90.00 % RQD 100.00 % Core							
		330.00 - 334.20 : 100.00 % RQD 100.00 % Core							
		MINOR INTERVALS:							
		Minor Interval:							
		287.1 - 290.14 PYXT, Pyroxenite							
		Minor Interval:							
		290.14 - 291.27 PRDT, Peridotite							
		Minor Interval:							
		291.27 - 298.08 PYXT, Pyroxenite							
		Minor Interval:							
		298.08 - 302.08 10d, Volcaniclastics							
		Minor Interval:							
		302.08 - 304.18 PRDT, Peridotite							
		Minor Interval:							
		304.18 - 308.84 10d, Volcaniclastics							
		Minor Interval:							
		308.84 - 310.52 PRDT, Peridotite							
		Minor Interval:							
		310.52 - 312.48 PYXT, Pyroxenite							