

Hole Number: ES07-92

Units: METRIC

Project Name: Norway - Espedalen	Primary Coordinates Grid: UTM84-32N	Destination Coordinates Grid: UTM:	Collar Dip: -71.80
Project Number: 201	North: 6808390.13	North: 61.41	Collar Az: 235.40
Location: Storgruva	East: 532252.74	East: 9.60	Length: 179.21 (m)
	Elev: 1241.13	Elev: 1241.13	Start Depth: 0.00 (m)
Date Started: Sep 09, 2007	Collar Survey: N	Plugged: N	Contractor: Geo Drilling A/S
Date Completed: Sep 14, 2007	Multishot Survey: N	Hole Size: TT46	Core Storage: Tyrstrand
Logged By: J. Grant	Pulse EM Survey: N	Casing: Left in Hole	Final Depth: 179.21 (m)

Comments: Storgruva. Testing 30 m northeast of the 13 m intersection in ES07-91. The hole intersected 2% PO-CP in bands within a shear zone over 35 cm at 171.4-171.75 m.

Sample Averages

Detailed Lithology		Assay Data							
From (m)	To (m)	Lithology	Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
0	1.15	O/B, Overburden							
1.15	19.15	ANOR, Anorthosite ANORTHOSITE Light grey, fine-grained plagioclase with 0-10%, 2x4 to 4 x10 mm mafic clots. The mafic clots appear to outline what were larger (1 cm) plagioclase grains that have been deformed to fine-grained material. Non-magnetic. A well defined foliation at 20 DCA is defined by the alignment of the elongate mafic patches. 1 cm wide, minor shears occur every 5 m or so, at 55 DCA.							
19.15	20.80	FLT, Fault SHEAR ZONE Anorthosite, strongly foliated at 55 DCA. Some folding over 10 cm intervals							
20.80	49.70	ANOR, Anorthosite ANORTHOSITE As above the shear zone. Foliated at 20 DCA. Up to 50 cm bands of up to 5 cm, oval patches of medium-grained biotite in anorthosite occur at: 37.0, 37.6, 39.2, 39.6 and 40.4 m. Up to 30 cm dykes of fine-grained, non-magnetic, green gabbro occur at: 45.8, 46.1, 46.6, 47.8 and 48.8 m. The dykes have irregular, unchilled contacts and appear to have pre-dated the deformation of the anorthosite.							

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Detailed Lithology		Lithology	Assay Data						
From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
49.70	54.85	<p>GAB, Gabbro LEUCOGABBRO</p> <p>The anorthosite grades into leucogabbro over 10 cm.</p> <p>The leucogabbro is non-magnetic, with 40% irregular mafic clots to 2x5 mm in fine plagioclase. Alignment of the elongate mafic clots defines a weak foliation at 60 DCA.</p> <p>54.60-54.85: Anorthosite.</p>							
54.85	63.25	<p>FLT, Fault SHEAR ZONE</p> <p>Intensely foliated, leucogabbro (54.85-59.90 m) and anorthosite (59.90-63.25 m). Both are too deformed to recognise primary mineralogy or texture, but the sheared leucogabbro is distinctly greener than the sheared anorthosite.</p> <p>The foliation is at 80 DCA at the top of the interval, but is at 70 DCA from 58.0 m on. Minor open to tight folds are common, with axes at 70-80 DCA.</p> <p>Below 61.0 m, the shearing dissipates into crackled looking anorthosite cut by tightly spaced, wispy, white fractures and a few shears. The end of the shear is arbitrarily placed at a 1 cm wide, strong shear at 85 DCA.</p>							
63.25	94.00	<p>ANOR, Anorthosite ANORTHOSITE</p> <p>Typical non-magnetic anorthosite, with 0 to 15% mafic clots to 8x15 mm partially outlining centimetre-scale plagioclase grains. The clots appear to have been altered to biotite, which has - in turn - been altered to chlorite over 20-100 cm intervals. Chloritisation rims some of the biotite clots.</p> <p>The abundance of mafic clots decreases steadily from 78 to 86 m, below which clots are absent but for in a few short intervals.</p> <p>Alignment of the clots defines a weak foliation at 70 DCA.</p> <p>The lower contact with the ultramafic is across mismatched core, suggesting some lost core.</p>							

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From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
94.00	100.60	<p>UM, Ultramafic ULTRAMAFIC</p> <p>Dark grey to black and probably a coarse-grained pyroxenite, but the mineralogy and texture are difficult to identify due to alteration and weak deformation. The 6-10 mm light grey patches are probably orthopyroxene.</p> <p>No sulphides.</p> <p>94.0-95.3 m: Non-magnetic. Ultramafic-related gabbro with coarse, oval mafic patches to 1 cm long in fine plagioclase, becoming medium-grained gabbro. Several 1-3 mm talc-chlorite slips at various low angles to core axis.</p> <p>95.3-99.8 m: Strongly magnetic, typical coarse ultramafic.</p> <p>99.8-100.6 m: Non magnetic, ultramafic-related gabbro as above.</p> <p>Broken core along talc-chlorite slips at various angles to the core axis, but commonly at 50 CA: 94.4-96.4, 95.1-95.2 and 99.2-99.3.</p> <p>100.7-100.8: Broken core along a talc-chlorite slip at 15 DCA.</p>							
100.60	106.00	<p>ANOR, Anorthosite ANORTHOSITE</p> <p>Mafic-poor anorthosite, foliated at 75 DCA and cut by several minor shears at 60-70 DCA.</p>							
106.00	122.70	<p>UM, Ultramafic ULTRAMAFIC</p> <p>Dark grey ultramafic as above. The upper contact is sheared at 70 DCA; the lower contact is chilled at 80 DCA. Strongly magnetic, except at the contacts (106.0-106.5 and 122.1-122.7 m). The transitions from non- to strongly magnetic are abrupt, over a centimetre.</p> <p>No sulphides.</p> <p>A weak foliation at 110.0 m becomes moderate below 114.0 m, and gives the rock a finer-grained appearance than above 110.0. The foliation is consistent at 60 DCA.</p> <p>Much of the unit has talc-chlorite breaks parallel to the foliation and at less than 10 cm intervals.</p>							

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From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
122.70	136.50	ANOR, Anorthosite ANORTHOSITE Very light grey anorthosite with no mafic minerals. Crackled-looking, with 2-10 cm spaced, anastomosing, irregular, fine, white fractures. Cut by non-magnetic, green gabbro dykes at 128.2-128.4 and 132.9-133.8 m.							
136.50	136.90	FLT, Fault SHEAR ZONE Moderate shearing at 70 DCA in anorthosite (136.5-136.8 m) and gabbro (136.8-136.9 m).							
136.90	145.75	GAB, Gabbro GABBRO Medium-grained, green, non-magnetic, ophitic-textured gabbro. There is no recognisable foliation, but narrow shear, up to 1 cm wide, are common and at 60-80 DCA.							
145.75	147.30	ANOR, Anorthosite ANORTHOSITE Weakly foliated at 60 DCA.							
147.30	154.50	GAB, Gabbro GABBRO Grey-green, medium-grained, ophitic-textured, non-magnetic gabbro. 150.1-150.9 m: Anorthosite, bounded by 10 cm of sheared gabbro at each contact. Both shears are at 45 DCA, but at opposite angles to the core axis.							

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From (m)	To (m)		Sample Number	From (m)	To (m)	Length (m)	Ni%	Cu%	Co%
154.50	172.10	FLT, Fault SHEAR Strong shearing which appears as contortions and folding in the anorthosite and as a strong foliation at 65 DCA in the gabbro. 154.5-154.8: Sheared gabbro. 154.8-155.1: Sheared anorthosite. 155.1-155.8: Sheared gabbro. 155.8- 160.0: Sheared anorthosite. 160.0-163.0: Sheared gabbro. 163.0-166.5: Less sheared to massive gabbro. 166.5-168.0: Sheared gabbro. 168.0-168.3: Sheared anorthosite. 168.3-170.6: Complex jumble of sheared anorthosite and gabbro. 170.6-171.1: Sheared gabbro with minor disseminated marcasite. 171.1-171.3: Anorthosite. 171.3-172.0: 2% PO and 0.3% CP in 1-3 mm bands along the foliation in the sheared gabbro. 172.0-172.1: Sheared gabbro. Mineralization 170.80 - 171.40 : PY Pyrite, DIS Disseminated, 1% Minor 0.5 mm marcasite, disseminated and on fracture surfaces. 171.40 - 171.75 : CP Chalcopyrite, STR Stringers, 2% PO>CP in 1-3 mm stringers along the foliation in the shear zone.	PG07949	170.00	170.80	0.80	0.0060	0.0060	0.0030
			PG07951	170.80	171.40	0.60	0.0130	0.0080	0.0040
			PG07952	171.40	171.75	0.35	0.2720	0.0510	0.0160
			PG07953	171.75	172.10	0.35	0.0940	0.0450	0.0090
172.10	175.50	ANOR, Anorthosite ANORTHOSITE Weakly foliated and crackled, low-mafic anorthosite.	PG07954	172.10	172.90	0.80	0.0100	0.0050	0.0020
175.50	179.20	GAB, Gabbro GABBRO Green, medium-grained, non-magnetic, ophitic-textured gabbro. Upper contact chilled and weakly foliated at 50 DCA.							
179.20	179.21	EOH, End of Hole							

Samples

Sample Number	From (m)	To (m)	Ni%	Cu%	Co%
Sample Type	ASSAY				
PG07949	170.00	170.80	0.0060	0.0060	0.0030
PG07951	170.80	171.40	0.0130	0.0080	0.0040
PG07952	171.40	171.75	0.2720	0.0510	0.0160
PG07953	171.75	172.10	0.0940	0.0450	0.0090

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Sample Type ASSAY PG07954	172.10	172.90	0.0100	0.0050	0.0020