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www.alsglobal.com/geochemistry

An INAB accredited testing laboratory Reg. No. 173T. Accredited methods are listed in the Scope of Accreditation available on request.

To: GEOLOGICAL SURVEY OF NORWAY (NGU)  
POSTBOKS 6315 TORGARDEN  
NO-7491 TRONDHEIM  
NORWAY

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Plus Appendix Pages  
Finalized Date: 4-JAN-2019  
Account: ONUSEG

## QC CERTIFICATE PI18302129

Project: Not provided

P.O. No.: 379500

This report is for 204 1/4 Core samples submitted to our lab in Pitea, Sweden on 28-NOV-2018.

The following have access to data associated with this certificate:

NOLWENN COINT

SVEN DAHLGREN

HENRIK SCHIELLERUP

## SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-31	Fine crushing - 70% <2mm
SPL-22Y	Split Sample - Boyd Rotary Splitter
PUL-31	Pulverize split to 85% <75 um
LOG-24	Pulp Login - Rcd w/o Barcode
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test

## ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION
ME-MS61	48 element four acid ICP-MS
ME-MS81h	High grade REE by fusion/ICPMS ICP-MS

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

\*\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*\*

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

Signature:

Andrey Tairov, Technical Manager, Ireland



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## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS81h Ce ppm 3	ME-MS81h Dy ppm 0.3	ME-MS81h Er ppm 0.2	ME-MS81h Eu ppm 0.2	ME-MS81h Gd ppm 0.3	ME-MS81h Hf ppm 1	ME-MS81h Ho ppm 0.05	ME-MS81h La ppm 3	ME-MS81h Lu ppm 0.05	ME-MS81h Nb ppm 1	ME-MS81h Nd ppm 0.5	ME-MS81h Pr ppm 0.2	ME-MS81h Rb ppm 1	ME-MS81h Sm ppm 0.2	ME-MS81h Sn ppm 5
STANDARDS																
AMIS0304		7950	135.5	33.9	150.0	347	26	17.70	3310	2.02	>5000	3700	967	11	554	23
AMIS0304		8270	135.5	34.2	153.0	355	27	18.70	3510	1.94	>5000	4070	1055	10	587	24
AMIS0304		8220	135.5	33.4	154.5	345	29	18.20	3380	1.86	>5000	3940	1040	11	592	22
Target Range - Lower Bound		7520	122.5	31.4	139.5	319	25	16.70	3350	1.81	4830	3600	956	9	535	15
Upper Bound		8660	141.5	36.6	160.5	367	31	19.30	3870	2.19	>5000	4150	1100	13	615	36
EMOG-17																
EMOG-17																
EMOG-17																
Target Range - Lower Bound																
Upper Bound																
GRE-04		6410	93.7	26.5	97.3	216	21	12.55	2910	1.75	4030	2810	770	1	403	81
GRE-04		6310	90.4	26.5	95.4	209	22	12.60	2770	1.66	3730	2750	758	1	388	79
GRE-04		6250	93.9	27.4	100.0	223	22	13.60	2790	1.68	3780	2690	755	1	392	78
Target Range - Lower Bound		5700	89.5	26.4	93.3	216	18	12.50	2540	1.59	3300	2510	670	<1	363	59
Upper Bound		6560	103.5	30.8	108.0	249	23	14.50	2930	1.93	3800	2890	772	2	418	81
GRE-3		4490	86.3	27.9	71.7	177.5	18	12.95	2210	1.64	3690	1840	492	1	279	44
GRE-3		4310	86.7	27.2	74.7	182.5	19	13.40	2170	1.67	3760	1765	479	1	272	46
GRE-3		4110	88.2	27.3	73.5	179.0	18	12.60	2110	1.65	3340	1745	493	<1	262	41
GRE-3		4070	86.9	26.7	71.1	177.5	18	13.00	2090	1.69	3700	1765	463	<1	269	43
Target Range - Lower Bound		4050	85.6	26.6	69.8	177.5	17	12.55	2070	1.63	3280	1705	462	<1	260	34
Upper Bound		4660	99.1	31.1	80.7	205	22	14.55	2380	1.99	3770	1965	532	3	299	56
MRGeo08																
MRGeo08																
MRGeo08																
Target Range - Lower Bound																
Upper Bound																
OGGeo08																
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**QC CERTIFICATE OF ANALYSIS PI18302129**

Sample Description	Method Analyte Units LOD	ME-MS81h Ta ppm 0.5	ME-MS81h Tb ppm 0.05	ME-MS81h Th ppm 0.3	ME-MS81h Tm ppm 0.05	ME-MS81h U ppm 0.3	ME-MS81h W ppm 5	ME-MS81h Y ppm 3	ME-MS81h Yb ppm 0.2	ME-MS81h Zr ppm 10	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01
<b>STANDARDS</b>																
AMIS0304		11.9	34.9	431	3.35	23.2	<5	380	16.5	1100						
AMIS0304		11.8	36.8	425	3.48	23.7	12	402	18.4	1100						
AMIS0304		12.4	36.4	446	3.47	23.1	6	406	17.0	1110						
Target Range - Lower Bound		11.6	32.5	406	3.21	22.0	<5	378	15.6	1030						
Upper Bound		14.4	37.5	468	3.80	26.0	15	442	18.4	1210						
EMOG-17											68.1	4.76	574	610	1.81	6.10
EMOG-17											64.4	4.65	572	710	1.81	5.71
EMOG-17											67.5	4.63	572	530	1.98	5.86
Target Range - Lower Bound											60.9	4.18	515	310	1.60	5.31
Upper Bound											74.5	5.13	629	440	2.06	6.51
GRE-04		126.5	23.4	134.5	2.80	123.5	<5	321	14.5	930						
GRE-04		126.5	23.3	130.0	2.83	123.0	9	324	14.1	940						
GRE-04		130.0	23.6	138.0	2.99	129.0	<5	310	14.9	970						
Target Range - Lower Bound		113.0	22.7	123.5	2.75	116.0	<5	294	13.8	870						
Upper Bound		131.0	26.2	142.5	3.27	134.0	10	345	16.3	1020						
GRE-3		158.5	21.5	112.5	2.84	104.5	<5	308	14.3	1000						
GRE-3		167.0	20.8	114.0	2.91	116.0	8	301	14.6	970						
GRE-3		160.0	20.5	106.0	2.84	105.5	<5	297	14.6	910						
GRE-3		158.0	21.3	106.0	2.92	105.0	<5	304	14.3	990						
Target Range - Lower Bound		149.5	20.1	109.0	2.81	103.5	<5	295	14.2	890						
Upper Bound		173.5	23.2	126.0	3.35	120.0	13	346	16.8	1050						
MRGeo08											4.47	7.39	33.7	1100	3.32	0.71
MRGeo08											4.57	7.42	32.1	1100	3.34	0.68
MRGeo08											4.44	7.55	32.3	1100	3.42	0.70
Target Range - Lower Bound											4.00	6.64	29.5	920	2.98	0.60
Upper Bound											4.92	8.14	36.5	1270	3.76	0.76
OGGeo08											19.80	6.89	126.0	830	3.01	10.50
OGGeo08											20.0	6.89	119.0	960	2.77	10.40
OGGeo08											20.4	6.78	118.0	940	2.97	10.30
OGGeo08											19.35	6.41	117.0	780	2.93	9.73
Target Range - Lower Bound											18.15	6.07	106.0	700	2.59	9.44
Upper Bound											22.2	7.44	130.0	980	3.27	11.55

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS61 Ca %	ME-MS61 Cd ppm	ME-MS61 Ce ppm	ME-MS61 Co ppm	ME-MS61 Cr ppm	ME-MS61 Cs ppm	ME-MS61 Cu ppm	ME-MS61 Fe %	ME-MS61 Ga ppm	ME-MS61 Ge ppm	ME-MS61 Hf ppm	ME-MS61 In ppm	ME-MS61 K %	ME-MS61 La ppm	ME-MS61 Li ppm
		0.01	0.02	0.01	0.1	1	0.05	0.2	0.01	0.05	0.05	0.1	0.005	0.01	0.5	0.2
STANDARDS																
AMIS0304																
AMIS0304																
AMIS0304																
Target Range - Lower Bound																
Upper Bound																
EMOG-17		1.92	20.3	51.2	762	53	7.14	8260	4.87	12.80	0.47	1.9	0.913	1.68	26.0	26.4
EMOG-17		1.93	20.2	47.6	763	55	7.02	8320	4.92	12.60	0.41	1.9	0.917	1.67	23.9	24.4
EMOG-17		2.05	20.6	48.8	760	53	7.31	8300	4.93	12.40	0.44	1.8	0.919	1.67	25.6	27.6
Target Range - Lower Bound		1.72	18.15	42.9	686	49	6.56	7750	4.42	10.75	0.07	1.6	0.823	1.49	20.7	23.9
Upper Bound		2.12	22.2	52.5	838	62	8.12	8910	5.42	13.25	0.29	2.2	1.015	1.85	26.4	29.7
GRE-04																
GRE-04																
GRE-04																
Target Range - Lower Bound																
Upper Bound																
GRE-3																
GRE-3																
GRE-3																
GRE-3																
Target Range - Lower Bound																
Upper Bound																
MRGeo08		2.62	2.28	67.9	19.5	88	11.50	632	3.95	19.25	0.19	3.3	0.180	3.11	31.6	33.6
MRGeo08		2.65	2.23	68.3	19.2	91	11.85	651	4.03	19.35	0.18	3.4	0.177	3.15	31.6	30.2
MRGeo08		2.66	2.28	68.2	19.6	91	11.95	633	3.99	18.75	0.18	3.0	0.174	3.18	32.8	34.0
Target Range - Lower Bound		2.35	2.00	66.2	17.7	81	11.20	587	3.55	17.50	<0.05	2.8	0.155	2.79	31.1	29.5
Upper Bound		2.90	2.48	81.0	21.9	102	13.80	675	4.37	21.5	0.27	3.6	0.201	3.43	39.1	36.5
OGGeo08		2.20	19.45	66.0	98.0	85	10.75	8530	5.41	18.00	0.73	3.2	1.465	2.95	31.6	31.2
OGGeo08		2.23	20.1	71.9	96.2	81	10.95	8370	5.36	17.70	0.53	3.0	1.455	2.89	35.6	31.7
OGGeo08		2.21	19.00	66.4	95.3	88	10.80	8370	5.37	17.40	0.48	2.8	1.425	2.89	31.5	32.0
OGGeo08		2.14	18.95	66.2	95.3	81	10.95	8340	5.32	16.65	0.81	2.8	1.445	2.84	32.2	31.9
Target Range - Lower Bound		1.98	16.70	64.8	87.2	78	9.85	7800	4.81	16.05	0.25	2.5	1.320	2.59	31.0	29.7
Upper Bound		2.44	20.5	79.2	107.0	98	12.15	8980	5.91	19.75	0.49	3.3	1.620	3.19	39.0	36.7

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## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS61 Mg %	ME-MS61 Mn ppm	ME-MS61 Mo ppm	ME-MS61 Na %	ME-MS61 Nb ppm	ME-MS61 Ni ppm	ME-MS61 P ppm	ME-MS61 Pb ppm	ME-MS61 Rb ppm	ME-MS61 Re ppm	ME-MS61 S %	ME-MS61 Sb ppm	ME-MS61 Sc ppm	ME-MS61 Se ppm	ME-MS61 Sn ppm
		0.01	5	0.05	0.01	0.1	0.2	10	0.5	0.1	0.002	0.01	0.05	0.1	1	0.2
STANDARDS																
AMIS0304																
AMIS0304																
AMIS0304																
Target Range - Lower Bound																
Upper Bound																
EMOG-17		0.97	756	1110	1.11	15.5	7670	830	7290	117.0	0.331	3.26	764	8.2	8	2.6
EMOG-17		0.97	730	1090	1.13	15.6	7560	810	7310	113.5	0.304	3.25	754	7.7	7	2.7
EMOG-17		0.97	748	1100	1.11	15.6	7550	830	7320	116.0	0.311	3.24	752	7.9	8	2.5
Target Range - Lower Bound		0.86	670	997	0.99	12.7	6820	700	6570	98.9	0.286	2.91	643	7.2	4	2.2
Upper Bound		1.08	830	1220	1.23	15.7	8330	880	8030	121.0	0.354	3.57	869	9.0	9	3.2
GRE-04																
GRE-04																
GRE-04																
Target Range - Lower Bound																
Upper Bound																
GRE-3																
GRE-3																
GRE-3																
GRE-3																
Target Range - Lower Bound																
Upper Bound																
MRGeo08		1.32	557	14.75	1.99	21.1	691	1040	1080	174.5	0.009	0.32	4.61	11.3	1	4.0
MRGeo08		1.36	569	13.75	2.10	21.1	701	1040	1100	197.0	0.012	0.31	4.32	11.1	2	4.1
MRGeo08		1.34	568	13.90	2.04	21.7	697	1040	1090	184.5	0.008	0.31	4.42	11.6	1	3.9
Target Range - Lower Bound		1.17	497	13.65	1.76	19.0	622	930	971	173.5	0.005	0.27	3.89	11.1	<1	3.5
Upper Bound		1.45	619	16.75	2.18	23.4	760	1160	1185	212	0.013	0.35	5.39	13.7	4	4.7
OGGeo08		1.26	526	941	1.87	17.9	9120	870	7550	177.5	1.335	2.85	27.1	9.8	10	14.0
OGGeo08		1.26	504	915	1.89	17.7	8880	850	7220	181.5	1.325	2.80	27.2	10.1	11	14.0
OGGeo08		1.26	503	920	1.81	16.9	8880	880	7250	181.0	1.355	2.81	26.3	9.7	10	13.9
OGGeo08		1.25	486	856	1.78	17.9	8800	810	7280	173.0	1.310	2.80	26.6	9.3	12	13.6
Target Range - Lower Bound		1.11	447	841	1.62	15.4	8000	760	6520	164.5	1.285	2.51	22.8	9.2	8	12.5
Upper Bound		1.38	557	1030	2.00	19.0	9770	950	7970	201	1.575	3.09	31.0	11.4	14	15.7

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STANDARDS													
AMIS0304													
AMIS0304													
AMIS0304													
Target Range - Lower Bound													
Upper Bound													
EMOG-17		209	1.01	1.29	11.55	0.320	2.26	3.3	73	4.1	16.7	7520	66.5
EMOG-17		204	1.01	1.29	11.00	0.319	2.18	3.1	72	4.5	15.5	7550	68.2
EMOG-17		205	0.98	1.42	11.50	0.317	2.16	3.5	74	4.0	15.9	7560	63.4
Target Range - Lower Bound		184.5	0.78	1.10	10.35	0.294	1.89	2.8	67	3.3	14.3	6800	55.6
Upper Bound		226	1.08	1.46	12.65	0.370	2.61	3.7	84	4.7	17.7	8320	76.4
GRE-04													
GRE-04													
GRE-04													
Target Range - Lower Bound													
Upper Bound													
GRE-3													
GRE-3													
GRE-3													
GRE-3													
Target Range - Lower Bound													
Upper Bound													
MRGeo08		305	1.63	<0.05	17.25	0.490	1.17	4.9	107	5.0	24.4	801	108.0
MRGeo08		307	1.68	0.05	18.35	0.498	1.04	5.0	109	4.4	24.4	804	108.0
MRGeo08		307	1.54	<0.05	17.95	0.499	1.06	5.2	109	4.8	25.0	803	105.5
Target Range - Lower Bound		277	1.39	<0.05	17.90	0.443	0.89	4.9	97	4.1	23.8	722	92.2
Upper Bound		339	1.81	0.14	21.9	0.553	1.25	6.2	121	5.8	29.3	886	126.0
OGGeo08		251	1.34	0.17	17.00	0.404	1.78	4.6	86	5.6	21.8	7280	97.7
OGGeo08		249	1.36	0.17	16.95	0.394	1.72	5.3	86	4.8	23.3	7190	93.7
OGGeo08		249	1.31	0.18	16.60	0.390	1.72	4.8	87	4.7	22.0	7210	88.0
OGGeo08		246	1.28	0.15	17.05	0.396	1.75	4.7	81	4.3	21.2	7100	91.6
Target Range - Lower Bound		224	1.19	0.09	16.90	0.353	1.43	4.5	77	3.9	21.1	6500	78.6
Upper Bound		274	1.57	0.31	20.7	0.443	1.98	5.8	97	5.4	26.0	7950	107.5

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Project: Not provided

**QC CERTIFICATE OF ANALYSIS PI18302129**

Sample Description	Method Analyte Units LOD	ME-MS81h Ce ppm 3	ME-MS81h Dy ppm 0.3	ME-MS81h Er ppm 0.2	ME-MS81h Eu ppm 0.2	ME-MS81h Gd ppm 0.3	ME-MS81h Hf ppm 1	ME-MS81h Ho ppm 0.05	ME-MS81h La ppm 3	ME-MS81h Lu ppm 0.05	ME-MS81h Nb ppm 1	ME-MS81h Nd ppm 0.5	ME-MS81h Pr ppm 0.2	ME-MS81h Rb ppm 1	ME-MS81h Sm ppm 0.2	ME-MS81h Sn ppm 5
<b>STANDARDS</b>																
OREAS 920																
OREAS 920																
OREAS 920																
OREAS 920																
OREAS 920																
Target Range - Lower Bound																
Upper Bound																
REE-1		3910	866	732	25.0	455	500	219	1660	96.1	3800	1455	438	1030	396	521
REE-1		4130	881	709	24.7	463	491	222	1740	94.5	3890	1505	457	1060	383	524
Target Range - Lower Bound		3680	787	652	21.7	402	444	193.5	1540	85.9	3770	1355	404	973	354	458
Upper Bound		4240	907	750	25.3	464	514	223	1780	98.9	4330	1560	466	1120	408	538
<b>BLANKS</b>																
BLANK																
BLANK																
BLANK																
BLANK																
BLANK																
BLANK																
BLANK																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<3	<0.3	<0.2	<0.2	<0.3	<1	<0.05	<3	<0.05	<1	<0.5	<0.2	<1	<0.2	<5
BLANK		<3	<0.3	<0.2	<0.2	<0.3	<1	<0.05	<3	<0.05	<1	<0.5	<0.2	<1	<0.2	<5
BLANK		<3	<0.3	<0.2	<0.2	<0.3	<1	<0.05	<3	<0.05	<1	<0.5	<0.2	<1	<0.2	<5
BLANK		<3	<0.3	<0.2	<0.2	<0.3	<1	<0.05	<3	<0.05	<1	<0.5	<0.2	<1	<0.2	<5
BLANK		<3	<0.3	<0.2	<0.2	<0.3	<1	<0.05	<3	<0.05	<1	<0.5	<0.2	<1	<0.2	<5
BLANK		<3	<0.3	<0.2	<0.2	<0.3	<1	<0.05	<3	<0.05	<1	<0.5	<0.2	<1	<0.2	<5
BLANK		<3	<0.3	<0.2	<0.2	<0.3	<1	<0.05	<3	<0.05	<1	<0.5	<0.2	<1	<0.2	<5
Target Range - Lower Bound		<3	<0.3	<0.2	<0.2	<0.3	<1	<0.05	<3	<0.05	<1	<0.5	<0.2	<1	<0.2	<5
Upper Bound		6	0.6	0.4	0.4	0.6	2	0.10	6	0.10	2	1.0	0.4	2	0.4	10

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

\*\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*\*



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To: GEOLOGICAL SURVEY OF NORWAY (NGU)  
POSTBOKS 6315 TORGARDEN  
NO-7491 TRONDHEIM  
NORWAY

Page: 3 - B  
Total # Pages: 6 (A - E)  
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Account: ONUSEK

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS81h Ta ppm 0.5	ME-MS81h Tb ppm 0.05	ME-MS81h Th ppm 0.3	ME-MS81h Tm ppm 0.05	ME-MS81h U ppm 0.3	ME-MS81h W ppm 5	ME-MS81h Y ppm 3	ME-MS81h Yb ppm 0.2	ME-MS81h Zr ppm 10	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01
STANDARDS																
OREAS 920											0.08	7.90	5.1	560	2.82	0.71
OREAS 920											0.10	7.86	5.1	560	2.74	0.67
OREAS 920											0.12	7.70	5.0	540	2.88	0.75
OREAS 920											0.08	7.86	5.2	560	2.67	0.62
OREAS 920											0.10	7.44	4.9	520	2.59	0.65
Target Range - Lower Bound											0.08	6.91	4.4	450	2.54	0.61
Upper Bound											0.13	8.47	5.8	640	3.22	0.77
REE-1		222	107.5	800	113.0	140.5	15	5790	715	19600						
REE-1		229	110.5	771	112.0	142.0	6	5480	724	20400						
Target Range - Lower Bound		214	98.7	668	98.5	127.0	<5	5090	630	17750						
Upper Bound		248	113.5	770	113.5	147.0	20	5870	726	20400						
BLANKS																
BLANK											<0.01	<0.01	<0.2	<10	<0.05	<0.01
BLANK											<0.01	<0.01	<0.2	<10	<0.05	0.01
BLANK											0.01	<0.01	<0.2	<10	<0.05	<0.01
BLANK											<0.01	<0.01	<0.2	<10	<0.05	0.01
BLANK											<0.01	<0.01	<0.2	<10	<0.05	<0.01
BLANK											0.01	<0.01	<0.2	<10	<0.05	<0.01
BLANK											<0.01	<0.01	<0.2	<10	<0.05	<0.01
BLANK											0.01	<0.01	0.2	<10	<0.05	<0.01
Target Range - Lower Bound											<0.01	<0.01	<0.2	<10	<0.05	<0.01
Upper Bound											0.02	0.02	0.4	20	0.10	0.02
BLANK		<0.5	<0.05	<0.3	<0.05	<0.3	<5	<3	<0.2	<10						
BLANK		<0.5	<0.05	<0.3	<0.05	<0.3	<5	<3	<0.2	<10						
BLANK		<0.5	<0.05	<0.3	<0.05	<0.3	7	<3	<0.2	<10						
BLANK		<0.5	<0.05	<0.3	<0.05	<0.3	7	<3	<0.2	<10						
BLANK		<0.5	<0.05	<0.3	<0.05	<0.3	<5	<3	<0.2	<10						
BLANK		0.9	<0.05	<0.3	<0.05	<0.3	<5	<3	<0.2	<10						
BLANK		0.9	<0.05	<0.3	0.10	<0.3	<5	<3	<0.2	<10						
Target Range - Lower Bound		<0.5	<0.05	<0.3	<0.05	<0.3	<5	<3	<0.2	<10						
Upper Bound		1.0	0.10	0.6	0.10	0.6	10	6	0.4	20						

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

\*\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*\*





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POSTBOKS 6315 TORGARDEN  
NO-7491 TRONDHEIM  
NORWAY

Page: 3 - C  
Total # Pages: 6 (A - E)  
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Account: ONUSEK

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Project: Not provided

**QC CERTIFICATE OF ANALYSIS PI18302129**

Sample Description	Method Analyte Units LOD	ME-MS61 Ca %	ME-MS61 Cd ppm	ME-MS61 Ce ppm	ME-MS61 Co ppm	ME-MS61 Cr ppm	ME-MS61 Cs ppm	ME-MS61 Cu ppm	ME-MS61 Fe %	ME-MS61 Ga ppm	ME-MS61 Ge ppm	ME-MS61 Hf ppm	ME-MS61 In ppm	ME-MS61 K %	ME-MS61 La ppm	ME-MS61 Li ppm
		0.01	0.02	0.01	0.1	1	0.05	0.2	0.01	0.05	0.05	0.1	0.005	0.01	0.5	0.2
<b>STANDARDS</b>																
OREAS 920		0.49	0.08	96.2	15.1	80	8.47	109.0	4.06	21.0	0.23	4.7	0.083	2.91	47.0	28.8
OREAS 920		0.51	0.05	96.3	15.2	81	8.42	108.0	4.07	20.3	0.17	4.5	0.086	2.85	47.2	28.5
OREAS 920		0.50	0.06	95.4	15.3	87	8.49	108.0	3.97	20.9	0.16	4.7	0.086	2.81	45.7	29.6
OREAS 920		0.51	0.05	102.5	15.2	84	8.41	107.5	4.08	20.5	0.15	4.6	0.089	2.82	50.3	28.4
OREAS 920		0.49	0.06	96.4	15.0	80	8.65	110.5	4.02	19.20	0.18	4.5	0.079	2.75	46.8	27.9
Target Range - Lower Bound		0.44	0.04	84.6	13.9	70	7.72	104.0	3.72	18.65	0.06	4.0	0.070	2.59	41.0	26.0
Upper Bound		0.56	0.12	103.5	17.3	88	9.54	120.0	4.56	22.9	0.28	5.2	0.098	3.19	51.2	32.2
REE-1																
REE-1																
Target Range - Lower Bound																
Upper Bound																
<b>BLANKS</b>																
BLANK		<0.01	<0.02	0.01	<0.1	1	<0.05	0.3	<0.01	<0.05	<0.05	<0.1	<0.005	<0.01	<0.5	0.2
BLANK		<0.01	<0.02	<0.01	<0.1	<1	<0.05	<0.2	<0.01	<0.05	<0.05	<0.1	<0.005	<0.01	<0.5	<0.2
BLANK		<0.01	<0.02	0.01	<0.1	<1	<0.05	0.3	<0.01	<0.05	<0.05	<0.1	<0.005	<0.01	<0.5	<0.2
BLANK		<0.01	<0.02	<0.01	<0.1	<1	<0.05	<0.2	<0.01	<0.05	<0.05	<0.1	<0.005	<0.01	<0.5	0.3
BLANK		<0.01	<0.02	<0.01	<0.1	<1	<0.05	0.3	<0.01	<0.05	<0.05	<0.1	<0.005	<0.01	<0.5	<0.2
BLANK		<0.01	<0.02	<0.01	<0.1	<1	<0.05	0.2	<0.01	<0.05	<0.05	<0.1	<0.005	<0.01	0.5	<0.2
BLANK		<0.01	<0.02	<0.01	<0.1	<1	<0.05	0.2	<0.01	<0.05	<0.05	<0.1	<0.005	<0.01	<0.5	<0.2
BLANK		<0.01	<0.02	0.01	0.1	1	<0.05	0.3	<0.01	<0.05	<0.05	<0.1	<0.005	<0.01	<0.5	0.2
Target Range - Lower Bound		<0.01	<0.02	<0.01	<0.1	<1	<0.05	<0.2	<0.01	<0.05	<0.05	<0.1	<0.005	<0.01	<0.5	<0.2
Upper Bound		0.02	0.04	0.02	0.2	2	0.10	0.4	0.02	0.10	0.10	0.2	0.010	0.02	1.0	0.4
BLANK																
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BLANK																
BLANK																
BLANK																
Target Range - Lower Bound																
Upper Bound																

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

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NORWAY

Page: 3 - D  
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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS61 Mg %	ME-MS61 Mn ppm	ME-MS61 Mo ppm	ME-MS61 Na %	ME-MS61 Nb ppm	ME-MS61 Ni ppm	ME-MS61 P ppm	ME-MS61 Pb ppm	ME-MS61 Rb ppm	ME-MS61 Re ppm	ME-MS61 S %	ME-MS61 Sb ppm	ME-MS61 Sc ppm	ME-MS61 Se ppm	ME-MS61 Sn ppm
		0.01	5	0.05	0.01	0.1	0.2	10	0.5	0.1	0.002	0.01	0.05	0.1	1	0.2
STANDARDS																
OREAS 920		1.32	595	0.53	0.64	17.1	40.0	760	22.5	181.5	<0.002	0.04	1.50	13.5	1	4.9
OREAS 920		1.37	600	0.45	0.67	18.3	39.0	740	23.8	183.0	<0.002	0.04	1.48	13.8	1	4.9
OREAS 920		1.34	601	0.52	0.62	17.7	43.3	780	23.8	173.0	<0.002	0.03	1.57	13.5	1	4.9
OREAS 920		1.34	601	0.61	0.61	17.4	40.3	760	22.2	184.0	0.002	0.03	1.52	13.3	1	4.7
OREAS 920		1.33	549	0.28	0.62	16.9	39.3	680	21.7	175.0	0.002	0.04	1.49	13.2	2	4.6
Target Range - Lower Bound		1.23	535	0.34	0.56	15.6	37.4		20.7	158.5	<0.002	<0.01	1.22	12.8	<1	4.3
Upper Bound		1.53	665	0.58	0.71	19.2	46.2		26.4	193.5	0.004	0.05	1.76	15.8	2	5.7
REE-1																
REE-1																
Target Range - Lower Bound																
Upper Bound																
BLANKS																
BLANK		<0.01	<5	0.10	<0.01	<0.1	<0.2	<10	<0.5	0.1	<0.002	<0.01	<0.05	<0.1	1	<0.2
BLANK		<0.01	<5	<0.05	<0.01	<0.1	<0.2	<10	<0.5	<0.1	<0.002	<0.01	0.05	<0.1	1	<0.2
BLANK		<0.01	<5	<0.05	<0.01	0.1	<0.2	<10	<0.5	<0.1	<0.002	<0.01	0.05	<0.1	1	<0.2
BLANK		<0.01	<5	0.05	<0.01	0.1	<0.2	<10	<0.5	<0.1	<0.002	<0.01	<0.05	<0.1	<1	<0.2
BLANK		<0.01	<5	<0.05	<0.01	<0.1	0.2	<10	<0.5	<0.1	<0.002	<0.01	<0.05	<0.1	<1	<0.2
BLANK		<0.01	<5	0.05	<0.01	<0.1	<0.2	<10	<0.5	<0.1	<0.002	<0.01	<0.05	0.1	1	<0.2
BLANK		<0.01	<5	<0.05	<0.01	0.1	0.2	<10	<0.5	<0.1	<0.002	<0.01	0.07	<0.1	1	<0.2
BLANK		<0.01	<5	<0.05	<0.01	0.1	<0.2	<10	<0.5	<0.1	<0.002	<0.01	<0.05	<0.1	1	<0.2
Target Range - Lower Bound		<0.01	<5	<0.05	<0.01	<0.1	<0.2	<10	<0.5	<0.1	<0.002	<0.01	<0.05	<0.1	<1	<0.2
Upper Bound		0.02	10	0.10	0.02	0.2	0.4	20	1.0	0.2	0.004	0.02	0.10	0.2	2	0.4
BLANK																
BLANK																
BLANK																
BLANK																
BLANK																
BLANK																
Target Range - Lower Bound																
Upper Bound																

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

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Project: Not provided

**QC CERTIFICATE OF ANALYSIS PI18302129**

Sample Description	Method Analyte Units LOD	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5
<b>STANDARDS</b>													
OREAS 920		80.2	1.34	0.07	19.30	0.474	0.92	3.6	98	3.0	32.1	124	156.0
OREAS 920		81.6	1.37	<0.05	17.75	0.471	0.91	3.8	96	3.2	32.4	126	157.5
OREAS 920		81.9	1.37	0.05	18.30	0.479	0.90	3.7	97	3.2	32.9	118	153.0
OREAS 920		80.6	1.42	<0.05	19.30	0.472	0.88	3.6	97	2.9	33.7	121	157.5
OREAS 920		78.4	1.28	<0.05	19.65	0.468	0.85	3.8	89	3.1	30.9	118	155.5
Target Range - Lower Bound		73.6	1.08	<0.05	17.35	0.434	0.76	3.3	86	2.5	29.8	102	128.0
Upper Bound		90.4	1.43	0.10	21.2	0.542	1.08	4.2	108	3.7	36.6	130	174.0
REE-1													
REE-1													
Target Range - Lower Bound													
Upper Bound													
<b>BLANKS</b>													
BLANK		<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1	<1	0.1	<0.1	<2	<0.5
BLANK		0.2	<0.05	<0.05	<0.01	<0.005	<0.02	0.1	<1	0.2	<0.1	<2	<0.5
BLANK		0.3	<0.05	<0.05	0.02	<0.005	<0.02	0.1	<1	<0.1	<0.1	<2	<0.5
BLANK		<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1	<1	<0.1	<0.1	2	<0.5
BLANK		<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1	<1	<0.1	<0.1	<2	<0.5
BLANK		<0.2	<0.05	<0.05	0.02	<0.005	<0.02	<0.1	<1	0.1	<0.1	<2	<0.5
BLANK		0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1	<1	<0.1	<0.1	<2	<0.5
BLANK		0.2	<0.05	<0.05	0.01	<0.005	<0.02	0.1	<1	0.1	<0.1	<2	<0.5
Target Range - Lower Bound		<0.2	<0.05	<0.05	<0.01	<0.005	<0.02	<0.1	<1	<0.1	<0.1	<2	<0.5
Upper Bound		0.4	0.10	0.10	0.02	0.010	0.04	0.2	2	0.2	0.2	4	1.0
BLANK													
BLANK													
BLANK													
BLANK													
BLANK													
BLANK													
BLANK													
Target Range - Lower Bound													
Upper Bound													

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS81h Ce ppm 3	ME-MS81h Dy ppm 0.3	ME-MS81h Er ppm 0.2	ME-MS81h Eu ppm 0.2	ME-MS81h Gd ppm 0.3	ME-MS81h Hf ppm 1	ME-MS81h Ho ppm 0.05	ME-MS81h La ppm 3	ME-MS81h Lu ppm 0.05	ME-MS81h Nb ppm 1	ME-MS81h Nd ppm 0.5	ME-MS81h Pr ppm 0.2	ME-MS81h Rb ppm 1	ME-MS81h Sm ppm 0.2	ME-MS81h Sn ppm 5
ORIGINAL DUP Target Range - Lower Bound Upper Bound		DUPLICATES														
198609 DUP Target Range - Lower Bound Upper Bound		6790 6660 6490 6960	13.0 13.1 12.3 13.8	1.9 1.8 1.6 2.1	33.8 35.5 33.2 36.1	62.6 65.3 61.4 66.5	<1 <1 <1 2	1.25 1.24 1.15 1.34	4360 4240 4150 4450	0.05 <0.05 <0.05 0.10	447 466 440 473	2070 2030 1980 2120	665 654 636 683	1 1 <1 2	181.0 173.5 171.0 183.5	7 5 <5 10
198612 DUP Target Range - Lower Bound Upper Bound																
198624 DUP Target Range - Lower Bound Upper Bound		3720 3770 3610 3880	6.5 6.6 6.0 7.1	2.0 2.0 1.7 2.3	10.4 10.7 10.0 11.1	16.8 19.6 17.3 19.1	<1 <1 <1 2	0.83 0.94 0.80 0.97	2330 2420 2290 2460	0.09 0.13 0.06 0.16	859 878 837 900	989 1005 962 1030	330 337 322 345	1 1 <1 2	64.5 69.2 64.3 69.4	<5 <5 <5 10
198628 DUP Target Range - Lower Bound Upper Bound																
198644 DUP Target Range - Lower Bound Upper Bound		5380 5300 5150 5530	21.1 21.1 20.1 22.1	2.7 2.5 2.3 2.9	60.7 59.9 58.0 62.6	134.5 139.0 131.5 142.0	<1 <1 <1 2	1.91 1.79 1.74 1.96	2920 2930 2820 3030	0.23 0.15 0.13 0.25	289 241 255 275	2120 2120 2050 2190	582 580 560 602	1 1 <1 2	265 260 253 272	<5 <5 <5 10
198647 DUP Target Range - Lower Bound Upper Bound																
198658 DUP Target Range - Lower Bound Upper Bound		5970 6040 5790 6220	20.8 19.4 19.1 21.1	5.5 5.3 5.0 5.8	27.8 26.3 25.9 28.2	56.3 55.1 53.5 57.9	1 1 <1 2	2.59 2.50 2.41 2.68	3900 3980 3800 4080	0.72 0.64 0.61 0.75	853 871 831 893	1620 1635 1570 1685	527 545 517 555	2 2 <1 3	133.5 139.0 131.5 141.0	5 <5 <5 10

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

\*\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*\*



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NORWAY

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS81h Ta ppm 0.5	ME-MS81h Tb ppm 0.05	ME-MS81h Th ppm 0.3	ME-MS81h Tm ppm 0.05	ME-MS81h U ppm 0.3	ME-MS81h W ppm 5	ME-MS81h Y ppm 3	ME-MS81h Yb ppm 0.2	ME-MS81h Zr ppm 10	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01
DUPLICATES																
ORIGINAL											0.02	6.33	1.0	800	2.41	0.19
DUP											0.03	6.38	0.4	820	2.46	0.20
Target Range - Lower Bound											<0.01	6.03	0.5	740	2.26	0.18
Upper Bound											0.04	6.68	0.9	880	2.61	0.21
198609		4.4	8.30	513	0.10	2.5	<5	25	0.8	10						
DUP		4.6	8.17	478	0.11	2.5	<5	25	0.7	10						
Target Range - Lower Bound		3.8	7.90	478	<0.05	2.1	<5	21	0.5	<10						
Upper Bound		5.2	8.57	513	0.16	2.9	10	29	1.0	20						
198612											0.52	0.53	5.6	2630	0.59	0.38
DUP											0.47	0.52	5.0	2570	0.56	0.45
Target Range - Lower Bound											0.46	0.49	4.8	2400	0.50	0.38
Upper Bound											0.53	0.56	5.8	2810	0.65	0.45
198624		7.7	3.31	70.4	0.13	6.1	<5	20	0.9	10						
DUP		7.7	3.37	75.1	0.15	6.5	<5	20	1.3	10						
Target Range - Lower Bound		6.9	3.17	69.9	0.09	5.8	<5	16	0.9	<10						
Upper Bound		8.5	3.51	75.6	0.19	6.8	10	24	1.3	20						
198628											<0.01	0.10	0.2	520	0.86	0.23
DUP											<0.01	0.11	0.2	520	0.77	0.23
Target Range - Lower Bound											<0.01	0.09	<0.2	470	0.72	0.21
Upper Bound											0.02	0.12	0.4	570	0.91	0.25
198644		3.9	9.24	654	0.23	2.3	<5	34	1.2	30						
DUP		3.0	9.88	646	0.23	2.3	<5	34	1.0	30						
Target Range - Lower Bound		2.8	9.18	627	0.17	1.9	<5	30	0.9	20						
Upper Bound		4.1	9.94	673	0.29	2.7	10	38	1.3	40						
198647											0.34	0.33	0.6	1270	0.51	0.22
DUP											0.38	0.32	0.8	1250	0.44	0.22
Target Range - Lower Bound											0.33	0.30	0.5	1160	0.40	0.20
Upper Bound											0.39	0.35	0.9	1360	0.55	0.24
198658		12.6	5.70	168.5	0.72	8.4	<5	59	4.5	70						
DUP		13.0	5.41	170.0	0.71	8.7	<5	60	4.5	60						
Target Range - Lower Bound		11.9	5.31	163.0	0.64	8.0	<5	54	4.1	50						
Upper Bound		13.7	5.80	175.5	0.79	9.1	10	65	4.9	80						

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS61 Ca %	ME-MS61 Cd ppm	ME-MS61 Ce ppm	ME-MS61 Co ppm	ME-MS61 Cr ppm	ME-MS61 Cs ppm	ME-MS61 Cu ppm	ME-MS61 Fe %	ME-MS61 Ga ppm	ME-MS61 Ge ppm	ME-MS61 Hf ppm	ME-MS61 In ppm	ME-MS61 K %	ME-MS61 La ppm	ME-MS61 Li ppm
		0.01	0.02	0.01	0.1	1	0.05	0.2	0.01	0.05	0.05	0.1	0.005	0.01	0.5	0.2
DUPLICATES																
ORIGINAL		0.35	0.06	103.0	0.4	3	0.56	2.7	1.12	15.80	0.13	1.1	0.066	2.18	48.1	2.7
DUP		0.36	0.05	108.0	0.4	3	0.57	3.2	1.16	16.45	0.16	1.3	0.064	2.20	50.8	2.6
Target Range - Lower Bound		0.33	0.03	100.0	0.3	2	0.49	2.6	1.07	15.25	0.09	1.0	0.057	2.07	46.5	2.3
Upper Bound		0.38	0.08	111.0	0.5	4	0.64	3.3	1.21	17.00	0.20	1.4	0.073	2.31	52.4	3.0
198609																
DUP																
Target Range - Lower Bound																
Upper Bound																
198612		17.70	0.60	>500	14.9	13	0.26	6.0	8.71	28.9	3.48	0.4	0.446	0.01	4170	4.7
DUP		17.65	0.64	>500	15.5	11	0.27	6.0	8.63	27.9	3.30	0.4	0.454	0.01	4120	4.7
Target Range - Lower Bound		16.80	0.57	475	14.3	10	0.20	5.6	8.23	26.9	3.17	0.3	0.423	<0.01	3940	4.3
Upper Bound		18.55	0.67	>500	16.1	14	0.33	6.4	9.11	29.9	3.61	0.5	0.478	0.02	4350	5.1
198624																
DUP																
Target Range - Lower Bound																
Upper Bound																
198628		19.80	0.51	>500	4.8	8	<0.05	2.8	6.70	11.30	1.15	0.3	0.436	0.01	1340	2.3
DUP		20.0	0.51	>500	5.0	8	<0.05	2.5	6.86	11.20	1.14	0.3	0.443	0.01	1320	2.3
Target Range - Lower Bound		18.90	0.46	475	4.6	7	<0.05	2.4	6.43	10.65	1.04	0.2	0.413	<0.01	1265	2.0
Upper Bound		20.9	0.56	>500	5.2	9	0.10	2.9	7.13	11.85	1.25	0.4	0.466	0.02	1395	2.6
198644																
DUP																
Target Range - Lower Bound																
Upper Bound																
198647		18.75	3.71	>500	7.4	10	0.06	4.4	7.98	18.45	2.06	0.4	0.584	0.02	2910	6.0
DUP		18.60	3.75	>500	7.3	9	0.05	4.7	7.93	18.35	2.01	0.4	0.556	0.02	2890	5.7
Target Range - Lower Bound		17.75	3.52	475	6.9	8	<0.05	4.2	7.55	17.45	1.88	0.3	0.537	<0.01	2750	5.4
Upper Bound		19.60	3.94	>500	7.8	11	0.10	4.9	8.36	19.35	2.19	0.5	0.604	0.03	3050	6.3
198658																
DUP																
Target Range - Lower Bound																
Upper Bound																

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS61 Mg %	ME-MS61 Mn ppm	ME-MS61 Mo ppm	ME-MS61 Na %	ME-MS61 Nb ppm	ME-MS61 Ni ppm	ME-MS61 P ppm	ME-MS61 Pb ppm	ME-MS61 Rb ppm	ME-MS61 Re ppm	ME-MS61 S %	ME-MS61 Sb ppm	ME-MS61 Sc ppm	ME-MS61 Se ppm	ME-MS61 Sn ppm
		0.01	5	0.05	0.01	0.1	0.2	10	0.5	0.1	0.002	0.01	0.05	0.1	1	0.2
DUPLICATES																
ORIGINAL		0.05	195	0.31	3.70	15.0	1.0	70	19.5	67.7	0.003	0.01	0.21	5.3	<1	2.7
DUP		0.05	200	0.33	3.81	16.1	1.1	70	20.3	70.9	0.002	0.01	0.26	5.4	<1	2.6
Target Range - Lower Bound		0.04	183	0.25	3.56	14.7	0.8	60	18.4	65.7	<0.002	<0.01	0.17	5.0	<1	2.3
Upper Bound		0.06	212	0.39	3.95	16.4	1.3	80	21.4	72.9	0.004	0.02	0.30	5.7	2	3.0
198609																
DUP																
Target Range - Lower Bound																
Upper Bound																
198612		6.49	9980	62.8	0.05	222	18.0	6710	45.3	1.1	0.003	0.69	0.13	19.8	2	0.8
DUP		6.44	9910	64.9	0.05	231	18.7	6570	49.5	1.1	0.004	0.70	0.14	19.6	1	0.9
Target Range - Lower Bound		6.13	9440	60.6	0.04	215	17.2	6300	44.5	0.9	<0.002	0.65	0.07	18.6	<1	0.6
Upper Bound		6.80	10450	67.1	0.06	238	19.5	6980	50.3	1.3	0.004	0.74	0.20	20.8	2	1.1
198624																
DUP																
Target Range - Lower Bound																
Upper Bound																
198628		7.58	10250	135.5	0.02	>500	3.5	3530	7.2	0.2	0.003	0.07	0.13	14.3	2	1.2
DUP		7.67	10400	137.0	0.02	>500	4.0	3690	7.2	0.2	0.003	0.09	0.12	14.6	2	1.3
Target Range - Lower Bound		7.23	9800	129.5	<0.01	475	3.4	3420	6.3	<0.1	<0.002	0.07	0.07	13.6	<1	1.0
Upper Bound		8.02	10850	143.0	0.03	>500	4.1	3800	8.1	0.3	0.004	0.09	0.18	15.3	3	1.5
198644																
DUP																
Target Range - Lower Bound																
Upper Bound																
198647		7.15	11600	66.4	0.08	319	10.0	3440	9.3	0.8	0.003	0.31	0.12	15.0	<1	1.0
DUP		7.14	11600	68.6	0.08	304	9.6	3450	10.3	0.8	0.006	0.30	0.10	14.7	1	1.0
Target Range - Lower Bound		6.78	11000	64.1	0.07	296	9.1	3260	8.8	0.7	<0.002	0.28	<0.05	14.0	<1	0.8
Upper Bound		7.51	12200	70.9	0.09	327	10.5	3630	10.8	0.9	0.007	0.33	0.17	15.7	2	1.3
198658																
DUP																
Target Range - Lower Bound																
Upper Bound																

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

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**QC CERTIFICATE OF ANALYSIS PI18302129**

Sample Description	Method Analyte Units LOD	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5
DUPLICATES													
ORIGINAL		50.7	1.06	<0.05	14.30	0.069	0.48	2.6	3	0.4	41.9	26	28.4
DUP		52.5	1.16	<0.05	15.00	0.071	0.50	2.7	3	0.4	43.1	26	29.7
Target Range - Lower Bound		48.8	1.00	<0.05	13.90	0.062	0.43	2.4	2	0.3	40.3	23	26.4
Upper Bound		54.4	1.22	0.10	15.40	0.079	0.55	2.9	4	0.5	44.7	29	31.7
198609													
DUP													
Target Range - Lower Bound													
Upper Bound													
198612		2510	4.20	0.12	316	0.017	0.04	4.7	15	1.4	64.5	91	9.8
DUP		2490	3.76	0.08	330	0.017	0.05	4.9	16	1.3	63.3	90	10.2
Target Range - Lower Bound		2370	3.73	<0.05	307	0.011	<0.02	4.5	14	1.1	60.6	84	8.8
Upper Bound		2630	4.23	0.16	339	0.023	0.07	5.1	17	1.6	67.2	97	11.3
198624													
DUP													
Target Range - Lower Bound													
Upper Bound													
198628		2580	2.04	0.12	95.5	0.006	0.02	6.0	9	2.0	18.7	82	22.0
DUP		2650	2.03	0.14	94.6	0.007	0.02	6.4	9	2.0	18.9	84	22.5
Target Range - Lower Bound		2480	1.88	0.07	90.3	<0.005	<0.02	5.8	8	1.8	17.8	77	20.1
Upper Bound		2750	2.19	0.19	99.8	0.010	0.04	6.6	10	2.3	19.8	89	24.4
198644													
DUP													
Target Range - Lower Bound													
Upper Bound													
198647		1810	3.36	0.17	103.5	0.017	0.02	2.8	10	1.0	24.7	959	23.7
DUP		1770	3.14	0.18	105.5	0.017	0.03	2.8	11	0.9	24.6	979	24.5
Target Range - Lower Bound		1700	3.04	0.12	99.3	0.011	<0.02	2.6	9	0.8	23.3	919	21.8
Upper Bound		1880	3.46	0.23	109.5	0.023	0.04	3.0	12	1.1	26.0	1020	26.4
198658													
DUP													
Target Range - Lower Bound													
Upper Bound													

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## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS81h Ce ppm 3	ME-MS81h Dy ppm 0.3	ME-MS81h Er ppm 0.2	ME-MS81h Eu ppm 0.2	ME-MS81h Gd ppm 0.3	ME-MS81h Hf ppm 1	ME-MS81h Ho ppm 0.05	ME-MS81h La ppm 3	ME-MS81h Lu ppm 0.05	ME-MS81h Nb ppm 1	ME-MS81h Nd ppm 0.5	ME-MS81h Pr ppm 0.2	ME-MS81h Rb ppm 1	ME-MS81h Sm ppm 0.2	ME-MS81h Sn ppm 5
DUPLICATES																
198678		2910	33.5	12.4	26.4	63.5	2	5.35	1740	1.11	314	933	279	1	107.5	<5
DUP		3010	33.0	12.0	26.8	62.8	2	5.11	1790	1.22	329	943	281	1	110.5	<5
Target Range - Lower Bound		2850	31.8	11.6	25.5	60.6	<1	5.00	1700	1.07	309	905	270	<1	105.0	<5
Upper Bound		3070	34.7	12.8	27.7	65.7	3	5.46	1830	1.26	334	971	290	2	113.0	10
198681																
DUP																
Target Range - Lower Bound																
Upper Bound																
198693		2010	8.2	2.1	12.8	23.9	2	1.09	1120	0.15	353	695	207	1	61.2	8
DUP		2040	8.2	2.4	12.2	22.0	2	1.17	1160	0.16	331	677	202	1	62.3	7
Target Range - Lower Bound		1950	7.6	2.0	11.9	21.8	<1	1.04	1095	0.10	329	661	197.0	<1	59.4	<5
Upper Bound		2100	8.8	2.5	13.1	24.1	3	1.22	1185	0.21	355	711	212	2	64.1	10
198712		4280	5.4	1.7	19.0	20.7	<1	0.76	2410	0.17	441	1260	407	1	104.5	<5
DUP		4340	5.9	1.9	18.5	24.6	<1	0.87	2440	0.15	491	1290	411	1	104.5	<5
Target Range - Lower Bound		4160	5.2	1.5	17.9	21.6	<1	0.74	2340	0.10	449	1230	394	<1	100.5	<5
Upper Bound		4460	6.1	2.1	19.6	23.7	2	0.89	2510	0.22	483	1320	424	2	108.5	10
198715																
DUP																
Target Range - Lower Bound																
Upper Bound																
198727		1650	8.5	2.1	20.5	41.8	1	1.05	840	0.23	371	883	216	2	104.0	<5
DUP		1620	7.4	1.8	20.8	40.1	1	0.92	814	0.20	370	894	206	2	107.0	<5
Target Range - Lower Bound		1575	7.4	1.7	19.7	39.2	<1	0.90	795	0.16	357	857	203	<1	101.5	<5
Upper Bound		1695	8.5	2.2	21.6	42.7	2	1.07	859	0.27	384	920	219	3	109.5	10
198740		5550	15.8	3.6	21.8	44.3	3	2.01	3530	0.31	514	1495	502	2	113.5	<5
DUP		5410	15.4	3.3	21.1	44.5	2	1.83	3470	0.17	509	1505	504	2	110.5	<5
Target Range - Lower Bound		5290	14.8	3.1	20.5	42.5	<1	1.80	3370	0.18	493	1445	485	<1	108.0	<5
Upper Bound		5670	16.4	3.8	22.4	46.3	4	2.04	3630	0.30	530	1555	521	3	116.0	10
198762		3280	10.8	2.0	25.5	48.9	<1	1.15	2100	0.14	596	1005	307	<1	112.5	<5
DUP		3300	10.2	2.1	24.5	45.7	<1	1.11	2070	0.13	575	1020	310	1	112.5	<5
Target Range - Lower Bound		3170	9.8	1.8	23.9	45.3	<1	1.04	2010	0.08	564	977	298	<1	108.5	<5
Upper Bound		3410	11.2	2.3	26.1	49.3	2	1.22	2160	0.19	607	1050	319	2	116.5	10

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

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POSTBOKS 6315 TORGARDEN  
NO-7491 TRONDHEIM  
NORWAY

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS81h Ta ppm 0.5	ME-MS81h Tb ppm 0.05	ME-MS81h Th ppm 0.3	ME-MS81h Tm ppm 0.05	ME-MS81h U ppm 0.3	ME-MS81h W ppm 5	ME-MS81h Y ppm 3	ME-MS81h Yb ppm 0.2	ME-MS81h Zr ppm 10	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01
DUPLICATES																
198678		31.4	8.26	153.5	1.48	83.1	8	131	9.5	200						
DUP		32.3	8.15	145.5	1.47	78.9	7	128	9.7	210						
Target Range - Lower Bound		30.2	7.87	144.0	1.37	77.9	<5	122	9.1	190						
Upper Bound		33.5	8.54	155.0	1.58	84.1	10	137	10.1	220						
198681											0.19	0.41	1.3	5080	0.54	0.28
DUP											0.39	0.40	1.6	5060	0.54	0.28
Target Range - Lower Bound											0.27	0.37	1.2	4680	0.46	0.26
Upper Bound											0.31	0.44	1.7	5460	0.62	0.30
198693		4.0	2.97	69.1	0.24	2.2	9	29	1.8	90						
DUP		4.0	3.03	67.0	0.28	2.4	9	28	1.7	90						
Target Range - Lower Bound		3.4	2.85	65.4	0.20	1.9	<5	25	1.5	80						
Upper Bound		4.6	3.16	70.7	0.32	2.7	10	32	2.0	100						
198712		12.4	3.54	135.5	0.23	11.8	7	24	1.3	10						
DUP		13.1	3.80	133.5	0.19	11.7	9	23	1.2	10						
Target Range - Lower Bound		11.8	3.49	129.5	0.15	11.0	<5	20	1.0	<10						
Upper Bound		13.7	3.85	139.5	0.27	12.5	10	27	1.5	20						
198715											0.43	0.44	7.9	1220	1.47	0.52
DUP											0.49	0.43	7.1	1340	1.43	0.58
Target Range - Lower Bound											0.43	0.40	6.9	1170	1.33	0.51
Upper Bound											0.49	0.47	8.1	1390	1.57	0.59
198727		3.6	3.75	270	0.20	4.8	9	21	1.4	30						
DUP		4.7	3.53	262	0.26	5.3	9	21	1.4	30						
Target Range - Lower Bound		3.5	3.46	256	0.17	4.6	<5	17	1.2	20						
Upper Bound		4.8	3.82	276	0.29	5.5	10	25	1.6	40						
198740		5.5	7.05	236	0.41	5.1	<5	41	2.1	90						
DUP		4.9	7.25	231	0.39	5.2	<5	41	1.8	80						
Target Range - Lower Bound		4.5	6.85	225	0.34	4.7	<5	37	1.7	70						
Upper Bound		5.9	7.45	242	0.46	5.6	10	45	2.2	100						
198762		6.2	4.57	244	0.21	5.8	6	25	1.1	20						
DUP		6.6	4.57	244	0.21	6.0	6	25	1.3	20						
Target Range - Lower Bound		5.7	4.36	235	0.15	5.4	<5	21	1.0	<10						
Upper Bound		7.1	4.78	253	0.27	6.4	10	29	1.4	30						

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS61 Ca %	ME-MS61 Cd ppm	ME-MS61 Ce ppm	ME-MS61 Co ppm	ME-MS61 Cr ppm	ME-MS61 Cs ppm	ME-MS61 Cu ppm	ME-MS61 Fe %	ME-MS61 Ga ppm	ME-MS61 Ge ppm	ME-MS61 Hf ppm	ME-MS61 In ppm	ME-MS61 K %	ME-MS61 La ppm	ME-MS61 Li ppm
		0.01	0.02	0.01	0.1	1	0.05	0.2	0.01	0.05	0.05	0.1	0.005	0.01	0.5	0.2
198678 DUP Target Range - Lower Bound Upper Bound		DUPLICATES														
198681 DUP Target Range - Lower Bound Upper Bound		17.80 17.55 16.80 18.55	1.77 1.68 1.62 1.83	>500 >500 475 >500	7.5 8.1 7.3 8.3	9 7 7 9	0.08 0.07 <0.05 0.10	4.7 4.8 4.4 5.1	8.26 8.12 7.77 8.61	22.3 21.7 20.9 23.2	1.97 1.92 1.80 2.09	0.9 0.8 0.7 1.0	0.438 0.470 0.426 0.482	0.01 0.01 <0.01 0.02	2960 2850 2760 3050	8.6 9.0 8.2 9.4
198693 DUP Target Range - Lower Bound Upper Bound																
198712 DUP Target Range - Lower Bound Upper Bound																
198715 DUP Target Range - Lower Bound Upper Bound		27.2 26.6 25.5 28.3	0.16 0.14 0.12 0.18	>500 >500 475 >500	16.0 17.2 15.7 17.5	11 10 9 12	0.21 0.21 0.15 0.27	1.6 1.7 1.4 1.9	4.69 4.59 4.40 4.88	6.65 6.87 6.37 7.15	0.98 0.96 0.87 1.07	0.5 0.5 0.4 0.6	0.122 0.125 0.112 0.135	0.06 0.05 0.04 0.07	370 361 347 384	13.3 13.1 12.3 14.1
198727 DUP Target Range - Lower Bound Upper Bound																
198740 DUP Target Range - Lower Bound Upper Bound																
198762 DUP Target Range - Lower Bound Upper Bound																

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS61 Mg %	ME-MS61 Mn ppm	ME-MS61 Mo ppm	ME-MS61 Na %	ME-MS61 Nb ppm	ME-MS61 Ni ppm	ME-MS61 P ppm	ME-MS61 Pb ppm	ME-MS61 Rb ppm	ME-MS61 Re ppm	ME-MS61 S %	ME-MS61 Sb ppm	ME-MS61 Sc ppm	ME-MS61 Se ppm	ME-MS61 Sn ppm
		0.01	5	0.05	0.01	0.1	0.2	10	0.5	0.1	0.002	0.01	0.05	0.1	1	0.2
198678 DUP Target Range - Lower Bound Upper Bound		DUPLICATES														
198681 DUP Target Range - Lower Bound Upper Bound		7.29 7.14 6.84 7.59	10400 10200 9780 10800	138.5 136.5 130.5 144.5	0.01 0.02 <0.01 0.02	>500 >500 475 >500	6.0 6.1 5.5 6.6	810 790 750 850	13.5 13.9 12.5 14.9	0.7 0.6 0.5 0.8	0.003 0.003 <0.002 0.004	0.36 0.36 0.33 0.39	0.15 0.15 0.09 0.21	16.4 16.7 15.6 17.5	1 1 <1 2	2.6 2.5 2.2 2.9
198693 DUP Target Range - Lower Bound Upper Bound																
198712 DUP Target Range - Lower Bound Upper Bound																
198715 DUP Target Range - Lower Bound Upper Bound		3.29 3.26 3.10 3.45	3870 3880 3680 4070	13.20 13.30 12.55 13.95	0.05 0.05 0.04 0.06	260 290 261 289	9.3 10.1 9.0 10.4	>10000 >10000 9490 >10000	29.8 31.8 28.8 32.8	2.4 2.4 2.2 2.6	0.009 0.008 0.006 0.011	1.50 1.46 1.40 1.56	0.30 0.36 0.26 0.40	16.0 16.1 15.1 17.0	1 <1 <1 2	2.3 2.4 2.0 2.7
198727 DUP Target Range - Lower Bound Upper Bound																
198740 DUP Target Range - Lower Bound Upper Bound																
198762 DUP Target Range - Lower Bound Upper Bound																

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS61 Sr ppm 0.2	ME-MS61 Ta ppm 0.05	ME-MS61 Te ppm 0.05	ME-MS61 Th ppm 0.01	ME-MS61 Ti % 0.005	ME-MS61 Tl ppm 0.02	ME-MS61 U ppm 0.1	ME-MS61 V ppm 1	ME-MS61 W ppm 0.1	ME-MS61 Y ppm 0.1	ME-MS61 Zn ppm 2	ME-MS61 Zr ppm 0.5
198678 DUP Target Range - Lower Bound Upper Bound		DUPLICATES											
198681 DUP Target Range - Lower Bound Upper Bound		2550 2510 2400 2660	14.30 15.15 13.95 15.50	0.10 0.10 <0.05 0.16	245 241 231 255	0.007 0.008 <0.005 0.010	0.06 0.05 0.03 0.08	10.8 11.2 10.4 11.7	16 16 14 18	1.5 1.6 1.3 1.8	23.2 22.5 21.6 24.1	398 368 362 404	47.6 46.2 42.9 50.9
198693 DUP Target Range - Lower Bound Upper Bound													
198712 DUP Target Range - Lower Bound Upper Bound													
198715 DUP Target Range - Lower Bound Upper Bound		6010 5900 5660 6250	7.22 6.48 6.46 7.24	0.06 0.11 <0.05 0.10	272 278 261 289	0.042 0.046 0.037 0.051	0.16 0.19 0.14 0.21	129.5 129.0 122.5 136.0	24 24 22 26	1.6 1.7 1.4 1.9	267 266 253 280	57 57 52 62	1.7 5.4 2.8 4.3
198727 DUP Target Range - Lower Bound Upper Bound													
198740 DUP Target Range - Lower Bound Upper Bound													
198762 DUP Target Range - Lower Bound Upper Bound													

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS81h Ce ppm 3	ME-MS81h Dy ppm 0.3	ME-MS81h Er ppm 0.2	ME-MS81h Eu ppm 0.2	ME-MS81h Gd ppm 0.3	ME-MS81h Hf ppm 1	ME-MS81h Ho ppm 0.05	ME-MS81h La ppm 3	ME-MS81h Lu ppm 0.05	ME-MS81h Nb ppm 1	ME-MS81h Nd ppm 0.5	ME-MS81h Pr ppm 0.2	ME-MS81h Rb ppm 1	ME-MS81h Sm ppm 0.2	ME-MS81h Sn ppm 5
DUPLICATES																
198765 DUP Target Range - Lower Bound Upper Bound																
198781 DUP Target Range - Lower Bound Upper Bound		3220 3350 3170 3400	12.7 12.4 11.8 13.3	3.8 4.0 3.6 4.2	20.5 19.9 19.3 21.1	39.2 38.3 37.1 40.4	2 2 <1 3	1.78 1.86 1.71 1.93	1890 1910 1830 1970	0.41 0.40 0.34 0.47	638 637 614 661	952 975 929 998	302 309 295 316	2 2 <1 3	95.5 96.5 92.4 99.6	7 6 <5 10
198784 DUP Target Range - Lower Bound Upper Bound																
198799 DUP Target Range - Lower Bound Upper Bound																
199300 DUP Target Range - Lower Bound Upper Bound		10900 10650 10400 11150	20.8 19.7 19.2 21.3	3.4 3.1 2.9 3.6	42.0 40.9 39.8 43.1	85.4 84.1 81.5 88.0	1 2 <1 2	2.04 2.09 1.94 2.19	7230 7190 6950 7470	0.24 0.29 0.21 0.32	387 365 362 390	2850 2750 2700 2900	934 901 885 950	1 2 <1 2	203 198.5 193.5 208	<5 <5 <5 10
PREP DUPLICATES																
198651 198651 PREP DUP		8280 7710	7.4 7.2	2.5 2.4	21.1 20.5	31.5 30.9	1 1	1.04 1.09	5350 4900	0.28 0.21	506 428	2110 1995	765 729	1 1	134.5 124.5	<5 <5
198701 198701 PREP DUP		1670 1760	90.1 105.0	27.6 31.0	85.1 96.3	205 238	1 1	13.20 14.85	683 756	1.84 2.08	472 527	1015 1060	222 229	2 2	276 297	<5 <5
198751 198751 PREP DUP		3780 3910	18.4 18.2	4.0 4.1	30.9 30.8	68.5 71.9	<1 <1	2.11 2.28	2190 2330	0.25 0.29	530 476	1225 1195	361 371	<1 <1	137.0 144.0	<5 <5

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Sample Description	Method Analyte Units LOD	ME-MS81h Ta ppm 0.5	ME-MS81h Tb ppm 0.05	ME-MS81h Th ppm 0.3	ME-MS81h Tm ppm 0.05	ME-MS81h U ppm 0.3	ME-MS81h W ppm 5	ME-MS81h Y ppm 3	ME-MS81h Yb ppm 0.2	ME-MS81h Zr ppm 10	ME-MS61 Ag ppm 0.01	ME-MS61 Al % 0.01	ME-MS61 As ppm 0.2	ME-MS61 Ba ppm 10	ME-MS61 Be ppm 0.05	ME-MS61 Bi ppm 0.01
DUPLICATES																
198765											0.47	0.30	8.8	1710	0.92	1.05
DUP											0.50	0.28	8.0	1320	0.94	1.09
Target Range - Lower Bound											0.45	0.27	7.8	1390	0.83	1.01
Upper Bound											0.52	0.31	9.0	1640	1.03	1.13
198781		9.2	4.46	181.5	0.53	6.3	<5	42	3.1	90						
DUP		8.3	4.30	182.0	0.51	6.3	<5	42	3.3	100						
Target Range - Lower Bound		7.9	4.18	175.0	0.45	5.8	<5	38	2.9	80						
Upper Bound		9.6	4.58	188.5	0.59	6.8	10	46	3.5	110						
198784											0.23	0.43	1.6	3550	0.54	0.49
DUP											0.31	0.43	0.7	3430	0.54	0.50
Target Range - Lower Bound											0.25	0.40	0.9	3220	0.46	0.46
Upper Bound											0.29	0.46	1.4	3760	0.62	0.53
198799											0.62	0.42	<0.2	5730	0.81	0.63
DUP											0.45	0.40	<0.2	5550	0.76	0.61
Target Range - Lower Bound											0.50	0.38	<0.2	5210	0.70	0.58
Upper Bound											0.57	0.44	0.4	6070	0.87	0.66
199300		7.5	12.25	225	0.34	8.6	<5	37	2.0	20						
DUP		7.9	11.75	220	0.39	8.4	<5	36	2.0	40						
Target Range - Lower Bound		6.9	11.55	214	0.30	7.9	<5	32	1.7	20						
Upper Bound		8.5	12.45	231	0.43	9.1	10	41	2.3	40						
PREP DUPLICATES																
198651		6.3	2.58	126.5	0.35	3.8	<5	25	2.1	60	0.51	0.43	<0.2	6370	0.45	0.31
198651 PREP DUP		5.1	4.98	125.0	0.31	3.2	<5	23	2.0	50	0.27	0.42	<0.2	5690	0.47	0.27
198701		6.1	21.4	660	3.03	22.4	9	295	15.9	70	0.99	2.02	4.8	1490	1.26	0.37
198701 PREP DUP		7.5	23.9	769	3.47	25.2	<5	333	17.9	60	0.81	2.14	4.9	1560	1.49	0.35
198751		11.4	7.05	342	0.41	6.1	<5	58	2.4	40	0.66	0.50	4.2	420	0.88	1.15
198751 PREP DUP		11.4	6.58	351	0.45	6.7	<5	58	2.1	40	0.37	0.52	2.7	520	0.85	1.24

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Sample Description	Method Analyte Units LOD	ME-MS61 Ca %	ME-MS61 Cd ppm	ME-MS61 Ce ppm	ME-MS61 Co ppm	ME-MS61 Cr ppm	ME-MS61 Cs ppm	ME-MS61 Cu ppm	ME-MS61 Fe %	ME-MS61 Ga ppm	ME-MS61 Ge ppm	ME-MS61 Hf ppm	ME-MS61 In ppm	ME-MS61 K %	ME-MS61 La ppm	ME-MS61 Li ppm
		0.01	0.02	0.01	0.1	1	0.05	0.2	0.01	0.05	0.05	0.1	0.005	0.01	0.5	0.2
DUPLICATES																
198765		17.25	3.74	>500	8.1	17	0.12	3.7	10.95	30.0	3.24	0.3	0.495	0.01	4110	3.5
DUP		16.95	3.65	>500	7.8	19	0.12	3.9	10.80	29.9	3.26	0.3	0.481	0.01	4010	3.6
Target Range - Lower Bound		16.25	3.49	475	7.5	16	0.06	3.5	10.30	28.4	3.04	0.2	0.459	<0.01	3860	3.2
Upper Bound		17.95	3.90	>500	8.4	20	0.18	4.1	11.45	31.5	3.46	0.4	0.517	0.02	4260	3.9
198781																
DUP																
Target Range - Lower Bound																
Upper Bound																
198784		18.90	1.12	>500	8.1	18	0.06	6.7	8.30	14.45	1.43	0.5	0.409	0.02	1900	7.6
DUP		18.10	1.12	>500	8.0	15	0.05	6.1	7.98	13.60	1.33	0.5	0.370	0.02	1770	7.5
Target Range - Lower Bound		17.55	1.04	475	7.5	15	<0.05	6.0	7.72	13.25	1.26	0.4	0.365	<0.01	1745	7.0
Upper Bound		19.45	1.20	>500	8.6	18	0.10	6.8	8.56	14.80	1.50	0.6	0.414	0.03	1925	8.1
198799		18.40	0.68	>500	8.5	12	0.05	5.7	8.49	28.9	3.17	0.3	0.333	0.02	4510	7.1
DUP		17.75	0.74	>500	7.7	11	0.05	5.7	8.15	29.2	3.14	0.3	0.331	0.02	4470	7.0
Target Range - Lower Bound		17.15	0.65	475	7.6	10	<0.05	5.3	7.89	27.5	2.95	0.2	0.310	<0.01	4270	6.5
Upper Bound		19.00	0.77	>500	8.6	13	0.10	6.1	8.75	30.6	3.36	0.4	0.354	0.03	4720	7.6
199300																
DUP																
Target Range - Lower Bound																
Upper Bound																
PREP DUPLICATES																
198651		18.00	1.39	>500	8.7	14	0.05	5.9	7.88	27.5	2.94	0.6	0.430	0.03	4790	9.8
198651 PREP DUP		18.85	1.30	>500	9.0	16	0.05	4.7	8.17	27.2	2.62	0.5	0.421	0.03	4710	10.0
198701		17.45	0.32	>500	13.5	58	0.17	55.7	9.09	17.40	1.55	1.9	0.315	0.04	540	16.1
198701 PREP DUP		17.70	0.32	>500	13.6	59	0.18	50.0	9.18	16.30	1.63	1.8	0.359	0.04	560	18.5
198751		28.1	0.40	>500	11.5	12	0.08	3.2	4.52	16.45	1.60	0.6	0.432	<0.01	1870	3.1
198751 PREP DUP		28.6	0.33	>500	12.3	12	0.07	2.8	4.65	15.45	1.53	0.5	0.458	<0.01	1970	3.1

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

\*\*\*\*\* See Appendix Page for comments regarding this certificate \*\*\*\*\*





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To: GEOLOGICAL SURVEY OF NORWAY (NGU)  
POSTBOKS 6315 TORGARDEN  
NO-7491 TRONDHEIM  
NORWAY

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Account: ONUSEK

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS61 Mg %	ME-MS61 Mn ppm	ME-MS61 Mo ppm	ME-MS61 Na %	ME-MS61 Nb ppm	ME-MS61 Ni ppm	ME-MS61 P ppm	ME-MS61 Pb ppm	ME-MS61 Rb ppm	ME-MS61 Re ppm	ME-MS61 S %	ME-MS61 Sb ppm	ME-MS61 Sc ppm	ME-MS61 Se ppm	ME-MS61 Sn ppm
		0.01	5	0.05	0.01	0.1	0.2	10	0.5	0.1	0.002	0.01	0.05	0.1	1	0.2
DUPLICATES																
198765		6.12	13300	6.90	0.12	272	10.7	3190	71.6	0.6	0.002	0.71	0.23	13.1	<1	6.8
DUP		6.04	13100	6.91	0.10	277	10.7	3110	76.3	0.5	<0.002	0.72	0.24	12.8	<1	6.1
Target Range - Lower Bound		5.77	12550	6.51	0.09	261	10.0	2980	69.8	0.4	<0.002	0.67	0.17	12.2	<1	5.9
Upper Bound		6.39	13850	7.30	0.13	288	11.4	3320	78.1	0.7	0.004	0.76	0.30	13.7	2	7.0
198781																
DUP																
Target Range - Lower Bound																
Upper Bound																
198784		7.66	11100	56.7	0.01	347	13.9	3030	17.9	0.9	0.003	0.23	0.11	17.5	1	2.6
DUP		7.20	10500	54.7	0.01	339	12.8	2890	18.6	0.9	0.003	0.21	0.13	17.0	1	2.5
Target Range - Lower Bound		7.05	10250	52.9	<0.01	326	12.5	2800	16.8	0.8	<0.002	0.20	0.06	16.3	<1	2.2
Upper Bound		7.81	11350	58.5	0.02	360	14.2	3120	19.7	1.0	0.004	0.24	0.18	18.2	2	2.9
198799		7.67	12500	116.0	0.01	342	13.9	2010	17.3	0.8	0.007	0.29	0.15	18.1	<1	1.5
DUP		7.46	12200	113.5	0.01	341	13.4	1970	17.6	0.7	0.007	0.24	0.13	18.3	1	1.5
Target Range - Lower Bound		7.18	11750	109.0	<0.01	324	12.8	1880	16.1	0.6	0.005	0.24	0.08	17.2	<1	1.2
Upper Bound		7.95	12950	120.5	0.02	359	14.5	2100	18.8	0.9	0.009	0.29	0.20	19.2	2	1.8
199300																
DUP																
Target Range - Lower Bound																
Upper Bound																
PREP DUPLICATES																
198651		7.40	11800	81.2	<0.01	371	13.6	3090	9.3	1.0	0.004	0.40	0.17	11.0	1	1.3
198651 PREP DUP		7.61	11600	81.1	0.01	354	14.6	3390	9.1	1.0	0.004	0.39	0.16	10.5	1	1.4
198701		5.58	6310	60.8	0.13	420	40.7	>10000	16.6	1.9	0.008	0.22	0.24	21.1	1	3.7
198701 PREP DUP		5.83	6350	63.6	0.04	439	42.3	>10000	17.4	1.9	0.009	0.23	0.29	22.0	1	3.8
198751		2.36	5610	113.0	0.04	490	18.1	5170	24.9	0.4	0.010	0.32	0.37	21.4	1	2.1
198751 PREP DUP		2.51	5530	119.5	0.01	361	18.3	5540	24.6	0.3	0.006	0.32	0.39	21.3	<1	1.9

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

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Account: ONUSEG

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Project: Not provided

## QC CERTIFICATE OF ANALYSIS PI18302129

Sample Description	Method Analyte Units LOD	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	ME-MS61	
		Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr
		ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		0.2	0.05	0.05	0.01	0.005	0.02	0.1	1	0.1	0.1	2	0.5
DUPLICATES													
198765		1190	2.64	<0.05	720	0.027	0.03	2.2	42	7.9	28.1	1170	9.1
DUP		1170	2.76	<0.05	730	0.027	0.02	2.2	42	8.1	27.4	1150	9.0
Target Range - Lower Bound		1120	2.52	<0.05	689	0.021	<0.02	2.0	39	7.3	26.3	1100	7.9
Upper Bound		1240	2.89	0.10	761	0.033	0.04	2.4	45	8.7	29.2	1220	10.2
198781													
DUP													
Target Range - Lower Bound													
Upper Bound													
198784													
DUP		1890	3.40	0.13	324	0.018	0.02	2.8	11	1.8	20.9	317	28.2
		1820	3.26	0.09	312	0.017	0.02	2.8	11	1.7	20.1	305	29.9
Target Range - Lower Bound		1760	3.11	<0.05	302	0.012	<0.02	2.6	9	1.5	19.4	293	26.4
Upper Bound		1950	3.55	0.17	334	0.023	0.04	3.0	13	2.0	21.6	329	31.7
198799													
DUP		1560	4.08	0.24	720	0.011	0.04	3.3	13	1.7	37.8	172	7.5
		1550	4.53	0.22	710	0.011	0.04	3.3	12	1.7	37.9	171	8.0
Target Range - Lower Bound		1475	4.04	0.17	679	<0.005	<0.02	3.0	11	1.5	35.9	161	6.7
Upper Bound		1635	4.57	0.29	751	0.017	0.06	3.6	14	1.9	39.8	182	8.8
199300													
DUP													
Target Range - Lower Bound													
Upper Bound													
PREP DUPLICATES													
198651		1950	3.13	0.17	128.5	0.026	0.06	3.7	9	0.7	24.0	335	47.5
198651 PREP DUP		2030	3.46	0.21	140.5	0.026	0.06	3.3	7	0.6	25.0	349	44.8
198701		4650	6.84	0.13	650	0.179	0.08	22.4	38	1.5	292	196	49.3
198701 PREP DUP		4760	6.51	0.09	670	0.179	0.07	24.0	37	1.6	304	200	55.2
198751		1010	7.37	0.15	356	0.010	0.07	5.8	14	2.2	57.7	163	29.8
198751 PREP DUP		1070	6.58	0.17	361	0.009	0.09	5.6	14	1.7	58.3	157	30.6

Comments: Samples were received on 27-Nov-2018. and the SSF/Request on 28-Nov-2018. please increase DL for Ag (from 0.01 to 0.1), as there is some negative results due interference for samples - 111, 114, 119, 120, 126.

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Project: Not provided

**QC CERTIFICATE OF ANALYSIS PI18302129**

## CERTIFICATE COMMENTS

### ANALYTICAL COMMENTS

Applies to Method: REE's may not be totally soluble in this method.  
ME-MS61

### ACCREDITATION COMMENTS

Applies to Method: The methods immediately below this line are ISO 17025:2005 Accredited. INAB Registration No: 173T  
ME-MS61



### LABORATORY ADDRESSES

Applies to Method: Processed at ALS Pitea located at Hammarvagen 22, SE-943 36, Ojebyn, Sweden.  
CRU-31 CRU-QC LOG-22 LOG-24  
PUL-31 PUL-QC SPL-22Y WEI-21

Applies to Method: Processed at ALS Loughrea located at Dublin Road, Loughrea, Co. Galway, Ireland.  
ME-MS61 ME-MS81h