CDN Resource Laboratories Ltd.

Certificate of Analysis

REFERENCE MATERIAL: CDN-PGMS-33

Recommended values and the "Between Lab" Two Standard Deviations

Precious Metals and Targeted Major Base Metals				
Gold	0.46 gpt	± 0.04 gpt	30 g Fire Assay, ICP or AA finish	Certified value
Platinum	0.96 gpt	± 0.10 gpt	30 g Fire Assay, ICP or AA finish	Certified value
Palladium	2.05 gpt	± 0.12 gpt	30 g Fire Assay, ICP or AA finish	Certified value
Copper	8.508 %	± 0.441 %	4 Acid digestion / ICP finish	Certified value
Copper	8.484 %	± 0.293 %	Fusion / ICP finish	Certified value
Nickel	1.609 %	± 0.098 %	4 Acid digestion / ICP finish	Certified value
Nickel	1.589 %	± 0.098 %	Fusion / ICP finish	Certified value
Cobalt	159 ppm	± 16 ppm	4 Acid digestion / ICP finish	Certified value
Cobalt	158 ppm	± 15 ppm	Fusion / ICP finish	Certified value
Specific Gravity	3.29	± 0.08	Gas pycnometer	Certified value

Major Oxides			
SiO_2	35.29 %	± 1.40 %	Certified value
Al_2O_3	8.89 %	± 0.42 %	Certified value
Fe_2O3	25.63 %	± 0.60 %	Certified value
Cr_2O3	0.058 %	± 0.008 %	Provisional value
Na_2O	2.19 %	± 0.10 %	Certified value
CaO	3.57 %	± 0.08 %	Certified value
MnO	0.11 %	± 0.01 %	Certified value
MgO	2.44 %	± 0.14 %	Certified value
K_2O	0.73 %	± 0.03 %	Certified value
TiO_2	0.38 %	± 0.03 %	Certified value
Total S	12.96 %	± 0.96 %	Certified value

Note 1: Standards with an RSD of near or less than 5% are certified; RSD's of between 5% and 15% are Provisional; RSD's over 15% are Indicated. Provisional and Indicated values cannot be used to monitor accuracy with a high degree of certainty.

PREPARED BY: AMIS African Mineral Standards
PRODUCTION AND QUALITY CONTROLED BY: Mike McWha, BSc (Hons), FGSSA, MAusIMM, Pr.Sci.Nat
CERTIFIED BY: Ali Alizadeh, MSc, MBA, P Geo
INDEPENDENT GEOCHEMIST: Dr. Barry Smee., Ph.D., PGeo
DATE OF CERTIFICATION: July 23rd, 2012

Note: Production of CDN-PGMS-34 was carried out by AMIS African Mineral Standards.
All QAQC procedures and statistical analyses and lab results were reviewed and certified by Ali Alizadeh, MSc, MBA, PGeo, FGC, from CDN.

ORIGIN OF REFERENCE MATERIAL:

Standard CDN-PGMS-33 was prepared by AMIS African Mineral Standards, using material provided by Quandra FNX Mining Ltd. and SGS Minerals Services from FNX's project located in Sudbury, ON. Canada. The vast bulk

of sulfides in the Sudbury ores consist of varying proportions of pyrrhotite, chalcopyrite and pentlandite with varying amounts of other Cu-, Ni-, Co-, PGM-bearing minerals and gold.

METHOD OF PREPARATION:

The material was crushed, dry-milled and air-classified to <54um. Wet sieve particle size analysis of random samples confirmed the material was 98.5% <54um. It was then blended in a bi-conical mixer, systematically divided and then sealed into 1kg Laboratory Packs. Explorer Packs are subdivided from the Laboratory packs as required. Samples were randomly selected for homogeneity testing and third party analysis. Statistical analysis of both homogeneity and the consensus test results were carried out by independent statisticians.

Assay Procedures:

Au, Pt, Pd:	30 gr. fire assay pre-concentration, AA or ICP finish.
Cu, Ni, Co:	4-acid digestion, AA or ICP finish.
Cu, Ni, Co:	Fusion, ICP MS or OES finish.
TS:	LECO IR Combustion
Specific Gravity:	Gas pycnometer
Major Oxides:	Fusion, XRF Finish

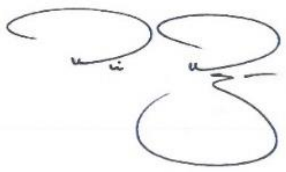
Statistical Procedures:

The final limits were calculated after first determining if all data was compatible within a spread normally expected for similar analytical methods done by reputable laboratories. Data from any one laboratory was removed from further calculations when the mean of all analyses from that laboratory failed a t test of the global means of the other laboratories. The means and standard deviations were calculated using all remaining data. Any analysis that fell outside of the mean ±2 standard deviations was removed from the ensuing database. The mean and standard deviations were again calculated using the remaining data. This method is different from that used by Government agencies in that the actual "between-laboratory" standard deviation is used in the calculations. This produces upper and lower limits that reflect actual individual analyses rather than a grouped set of analyses. The limits can therefore be used to monitor accuracy from individual analyses, unlike the Confidence Limits published on other standards.

LEGAL NOTICE:

This certificate and the reference material described in it have been prepared with due care and attention. However, CDN Resource Laboratories Ltd. nor Barry Smee accept any liability for any decisions or actions taken following the use of the reference material. Our liability is limited solely to the cost of the reference material.

Certified by



Ali Alizadeh, MSc, MBA, P.Geo.

Geochemist

Dr. Barry Smee, PhD, FGC

APPENDIX I: Participating Laboratories: (not in same order as table of assays)

Activation Labs, Thunder Bay, Ontario, Canada	SGS Australia Pty Ltd (Newburn) WA
ALS, Brisbane, Australia	SGS Chelopech (Bulgaria)
ALS, Perth, Australia	SGS Durango (Mexico)
ALS, Johannesburg, South Africa	SGS Geosol Laboratories Ltda (Brazil)
ALS Canada, North Vancouver, BC, Canada	SGS Mineral Services Lakefield (Canada)
Genalysis Laboratory Services (South Africa) Pty	SGS South Africa (Pty) Ltd - Booysens JHB
Genalysis Laboratory Services (W Australia P)	SGS Toronto (Canada)
Intertek Utama Services (Indonesia)	SGS Townsville (Australia)
Set Point Laboratories (Isando) SA	Ultra Trace (Pty) Ltd WA

APPENDIX II: Results from round-robin assaying:

Standard	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11	Lab 12	Lab 13	Lab 14	Lab 15	Lab 16	Lab 17	Lab 18
	Au by Fire Assay, 30g sample size and ICP or AA finish																	
PGMS-33	0.43	-	0.438	0.474	0.450	0.51	0.476	0.437	0.530	0.48	0.411	-	0.452	0.482	0.487	-	0.480	0.47
	0.47	-	0.422	0.495	0.463	0.50	0.431	0.450	0.540	0.46	0.494	-	0.447	0.480	0.553	-	0.533	0.45
	0.44	-	0.438	0.479	0.458	0.50	0.449	0.451	0.530	0.45	0.325	-	0.451	0.473	0.455	-	0.541	0.49
	0.46	-	0.447	0.495	0.449	0.49	0.449	0.453	0.500	0.47	0.408	-	0.427	0.480	0.474	-	0.529	0.44
	0.43	-	0.458	0.478	0.459	0.48	0.438	0.463	0.510	0.45	0.525	-	0.473	0.503	0.555	-	0.556	0.48
	0.45	-	0.449	0.475	0.463	0.51	0.426	0.448	0.600	0.45	0.496	-	0.429	0.507	0.552	-	0.512	0.47
	0.47	-	0.453	0.484	0.450	0.48	0.462	0.436	0.515	0.46	0.525	-	0.448	0.467	0.486	-	0.496	0.48
	0.46	-	0.412	0.438	0.467	0.50	0.461	0.462	0.540	0.47	0.453	-	0.473	0.464	0.504	-	0.484	0.46
Mean	0.45	-	0.440	0.477	0.457	0.50	0.449	0.450	0.533	0.46	0.455	-	0.450	0.482	0.508	-	0.516	0.47
Std. Devn.	0.02	-	0.02	0.02	0.01	0.01	0.02	0.01	0.03	0.01	0.07	-	0.02	0.02	0.04	-	0.03	0.02
% RSD	3.89	-	3.58	3.74	1.52	2.41	3.78	2.21	5.74	2.44	15.34	-	3.80	3.24	7.83	-	5.39	3.57
	Pt (ppm) by Fire Assay, 30g sample size and ICP or AA finish																	
PGMS-33	0.98	-	0.87	0.96	1.01	0.96	0.91	0.94	0.95	0.91	-	-	0.97	1.04	1.00	-	-	1.03
	1.02	-	0.90	0.95	0.97	0.95	0.90	0.95	0.94	0.90	-	-	0.94	1.02	1.00	-	-	1.01
	1.01	-	0.87	0.93	0.98	0.97	0.89	0.96	0.96	0.91	-	-	0.91	1.00	0.92	-	-	1.00
	0.99	-	0.87	0.94	0.99	0.99	0.90	0.99	0.94	0.90	-	-	0.94	1.00	1.03	-	-	0.96
	1.00	-	0.91	0.93	0.96	0.95	0.90	1.00	0.95	0.91	-	-	0.91	1.02	1.15	-	-	1.08
	1.04	-	0.89	0.94	0.98	0.99	0.90	0.97	0.94	0.90	-	-	0.93	1.01	1.14	-	-	1.08
	1.05	-	0.92	0.95	0.97	1.00	0.89	0.95	0.96	0.90	-	-	0.84	1.03	1.00	-	-	1.07
	1.02	-	0.87	0.88	0.97	0.98	0.91	1.01	0.97	0.90	-	-	0.92	0.99	1.16	-	-	1.04
Mean	1.01	-	0.89	0.94	0.98	0.97	0.90	0.97	0.95	0.90	-	-	0.92	1.01	1.05	-	-	1.03
Std. Devn.	0.03	-	0.02	0.02	0.015	0.02	0.01	0.02	0.01	0.01	-	-	0.04	0.02	0.09	-	-	0.04
% RSD	2.47	-	2.55	2.63	1.49	1.97	0.95	2.55	1.21	0.57	-	-	4.08	1.66	8.50	-	-	4.13
	Pd (ppm) by Fire Assay, 30g sample size and ICP or AA finish																	
PGMS-33	2.00	-	1.85	2.05	2.00	2.08	2.08	2.03	2.03	1.97	-	-	2.02	2.11	1.97	-	-	2.09
	2.04	-	1.91	2.06	1.99	2.12	1.96	2.02	2.04	1.95	-	-	1.99	2.06	2.02	-	-	2.09
	2.06	-	1.85	2.00	2.00	2.10	2.12	2.02	2.04	1.95	-	-	1.68	2.12	2.10	-	-	2.10
	1.99	-	1.88	2.04	2.02	2.10	2.16	2.21	2.03	1.95	-	-	1.98	2.06	2.01	-	-	2.02
	2.04	-	1.92	2.02	2.00	2.09	2.00	2.21	2.05	1.95	-	-	1.66	2.09	2.05	-	-	2.18
	2.11	-	1.89	2.02	2.01	2.08	1.97	2.06	2.07	1.97	-	-	1.91	2.11	2.24	-	-	2.15
	2.19	-	1.95	2.03	1.98	2.10	1.99	2.02	2.05	1.97	-	-	1.65	2.09	2.23	-	-	2.21
	2.12	-	1.86	1.94	2.00	2.08	2.05	2.18	2.04	1.96	-	-	1.93	2.07	2.24	-	-	2.13
Mean	2.07	-	1.89	2.02	2.00	2.09	2.04	2.09	2.04	1.96	-	-	1.85	2.09	2.11	-	-	2.12
Std. Devn.	0.07	-	0.04	0.04	0.01	0.01	0.07	0.09	0.01	0.01	-	-	0.16	0.02	0.11	-	-	0.06
% RSD	3.25	-	1.99	1.87	0.61	0.67	3.58	4.20	0.64	0.51	-	-	8.62	1.13	5.37	-	-	2.81

Standard	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11	Lab 12	Lab 13	Lab 14	Lab 15	Lab 16	Lab 17	Lab 18
	Cu (%) by 4Acid digestion ICP finish																	
PGMS-33	8.43	8.08	8.72	8.67	8.69	8.25	-	8.64	8.64	8.53	-	8.18	-	8.19	-	7.67	-	-
	8.79	8.18	8.85	8.46	8.46	8.24	-	8.57	8.59	8.34	-	8.27	-	8.69	-	7.54	-	-
	8.88	8.08	8.78	8.44	8.86	8.23	-	8.70	8.60	8.24	-	8.46	-	8.54	-	7.66	-	-
	8.61	8.17	8.78	8.48	8.76	8.21	-	8.76	8.60	8.56	-	8.22	-	8.45	-	7.86	-	-
	8.37	8.26	8.83	8.72	8.79	8.34	-	8.68	8.60	8.34	-	8.07	-	8.56	-	7.79	-	-
	8.43	8.44	8.89	8.72	8.53	8.39	-	8.67	8.53	8.69	-	8.34	-	8.34	-	7.57	-	-
	8.33	8.46	8.77	8.82	8.80	8.60	-	8.76	8.53	8.28	-	8.23	-	8.76	-	7.78	-	-
	8.57	8.20	9.13	8.70	8.68	8.29	-	8.44	8.53	8.30	-	8.20	-	8.56	-	7.93	-	-
Mean	8.55	8.23	8.84	8.63	8.70	8.32	-	8.65	8.58	8.41	-	8.25	-	8.51	-	7.73	-	-
Std. Devn.	0.20	0.15	0.13	0.14	0.14	0.13	-	0.11	0.04	0.16	-	0.12	-	0.18	-	0.14	-	-
% RSD	2.34	1.78	1.44	1.68	1.59	1.55	-	1.22	0.49	1.92	-	1.40	-	2.16	-	1.78	-	-
	Cu (%) by Fusion ICP finish																	
PGMS-33	-	8.73	8.61	8.17	8.44	8.18	-	8.40	8.56	8.53	-	-	-	8.88	8.62	-	-	-
	-	8.53	8.71	8.35	8.41	8.52	-	8.48	8.55	8.41	-	-	-	8.58	8.50	-	-	-
	-	8.56	8.63	8.22	8.40	8.25	-	8.43	8.59	8.78	-	-	-	8.50	8.57	-	-	-
	-	8.47	8.46	8.22	8.33	8.06	-	8.41	8.57	8.69	-	-	-	8.93	8.52	-	-	-
	-	8.36	8.62	8.17	8.39	8.25	-	8.40	8.55	8.60	-	-	-	8.47	8.54	-	-	-
	-	8.55	8.48	8.31	8.59	8.28	-	8.42	8.50	8.54	-	-	-	8.65	8.72	-	-	-
	-	8.50	8.58	8.28	8.50	8.76	-	8.48	8.61	8.56	-	-	-	8.66	8.57	-	-	-
	-	8.54	8.65	8.21	8.31	8.33	-	8.45	8.61	8.32	-	-	-	8.46	8.62	-	-	-
Mean	-	8.53	8.59	8.24	8.42	8.33	-	8.43	8.57	8.55	-	-	-	8.64	8.58	-	-	-
Std. Devn.	-	0.10	0.08	0.07	0.09	0.22	-	0.03	0.04	0.15	-	-	-	0.18	0.07	-	-	-
% RSD	-	1.21	0.98	0.80	1.07	2.61	-	0.39	0.43	1.70	-	-	-	2.08	0.82	-	-	-
	Ni (%) by 4Acid digestion ICP finish																	
PGMS-33	1.67	1.55	1.61	1.67	1.64	1.54	-	1.463	1.60	1.59	-	-	-	1.52	-	1.43	-	-
	1.60	1.58	1.62	1.71	1.58	1.55	-	1.428	1.59	1.59	-	-	-	1.63	-	1.44	-	-
	1.60	1.55	1.60	1.66	1.73	1.58	-	1.442	1.61	1.56	-	-	-	1.63	-	1.38	-	-
	1.53	1.56	1.61	1.70	1.71	1.58	-	1.458	1.60	1.57	-	-	-	1.69	-	1.40	-	-
	1.60	1.60	1.63	1.65	1.66	1.58	-	1.443	1.60	1.57	-	-	-	1.61	-	1.45	-	-
	1.54	1.64	1.60	1.70	1.61	1.56	-	1.465	1.58	1.57	-	-	-	1.68	-	1.45	-	-
	1.63	1.62	1.61	1.71	1.68	1.59	-	1.468	1.61	1.58	-	-	-	1.67	-	1.41	-	-
	1.52	1.58	1.64	1.68	1.67	1.53	-	1.410	1.59	1.59	-	-	-	1.69	-	1.40	-	-
Mean	1.59	1.58	1.61	1.68	1.66	1.56	-	1.447	1.60	1.58	-	-	-	1.64	-	1.42	-	-
Std. Devn.	0.05	0.03	0.02	0.02	0.05	0.02	-	0.02	0.01	0.01	-	-	-	0.06	-	0.03	-	-
% RSD	3.30	2.13	0.98	1.32	2.99	1.41	-	1.42	0.65	0.74	-	-	-	3.50	-	1.84	-	-
	Ni (%) by Fusion ICP finish																	
PGMS-33	-	1.57	1.59	1.77	-	1.50	-	1.53	-	1.59	-	-	-	1.66	1.65	-	-	-
	-	1.52	1.58	1.70	-	1.65	-	1.57	-	1.59	-	-	-	1.62	1.66	-	-	-
	-	1.54	1.58	1.68	-	1.56	-	1.58	-	1.58	-	-	-	1.65	1.54	-	-	-
	-	1.54	1.56	1.71	-	1.52	-	1.61	-	1.57	-	-	-	1.66	1.65	-	-	-
	-	1.51	1.57	1.75	-	1.66	-	1.60	-	1.57	-	-	-	1.66	1.64	-	-	-
	-	1.51	1.56	1.77	-	1.59	-	1.60	-	1.59	-	-	-	1.74	1.63	-	-	-
	-	1.52	1.57	1.77	-	1.63	-	1.63	-	1.58	-	-	-	1.75	1.70	-	-	-
	-	1.53	1.57	1.75	-	1.57	-	1.58	-	1.58	-	-	-	1.64	1.66	-	-	-
Mean	-	1.53	1.57	1.73	-	1.59	-	1.59	-	1.58	-	-	-	1.67	1.64	-	-	-
Std. Devn.	-	0.02	0.01	0.04	-	0.06	-	0.03	-	0.01	-	-	-	0.05	0.05	-	-	-
% RSD	-	1.37	0.61	2.11	-	3.71	-	1.87	-	0.53	-	-	-	2.80	2.79	-	-	-

T 604-882-8422 F 604-882-8466 E info@cdnlabs.com TOLL FREE 1-888-882-0242
A No. 2, 20148 - 102 Avenue, Langley, B.C., Canada, V1M 4B4
WWW.cdnlabs.com

Standard	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11	Lab 12	Lab 13	Lab 14	Lab 15	Lab 16	Lab 17	Lab 18
	Co (%) by 4Acid digestion ICP finish																	
PGMS-33	162	-	160	159.5	150.0	150	-	181.3	159	166	-	152	111.4	155	166	141	150	-
	163	-	160	162.5	145.5	160	-	176.0	162	164	-	150	116.0	153	169	144	151	-
	161	-	160	167.5	148.0	170	-	170.3	159	167	-	153	118.0	153	167	144	151	-
	158	-	160	169.5	150.5	160	-	171.1	162	163	-	158	117.2	158	171	137	139	-
	158	-	160	173.0	149.0	170	-	168.5	164	167	-	155	118.1	156	169	141	148	-
	157	-	170	161.0	153.0	160	-	179.3	162	164	-	157	117.2	154	167	140	152	-
	159	-	160	163.0	145.5	165	-	174.8	163	165	-	163	112.2	153	163	143	156	-
	159	-	170	167.5	149.0	160	-	168.0	164	165	-	157	112.1	153	168	143	166	-
Mean	160	-	163	165.4	148.8	162	-	173.7	162	165	-	156	115.3	154	168	142	152	-
Std. Devn.	2.13	-	4.63	4.66	2.52	6.51	-	4.98	1.96	1.46	-	4.07	2.88	1.85	2.39	2.39	7.58	-
% RSD	1.34	-	2.85	2.81	1.69	4.02	-	2.87	1.21	0.88	-	2.61	2.49	1.20	1.43	1.69	5.00	-
	Co (%) by Fusion ICP finish																	
PGMS-33	180	170	150	170.0	155.5	145	-	167	133	161	-	160	-	154	178	-	132	-
	160	160	160	170.0	153.5	158	-	163	134	159	-	158	-	157	183	-	143	-
	170	160	160	166.5	153.5	147	-	167	135	160	-	158	-	158	181	-	143	-
	160	160	150	171.5	153.0	145	-	164	135	160	-	159	-	158	180	-	142	-
	160	160	160	164.5	153.0	159	-	162	135	163	-	159	-	158	175	-	145	-
	150	170	150	167.5	154.5	149	-	164	135	160	-	151	-	159	176	-	145	-
	170	170	160	166.5	158.0	159	-	165	135	158	-	158	-	156	168	-	137	-
	150	160	160	166.0	148.5	151	-	162	135	159	-	147	-	157	168	-	144	-
Mean	163	164	156	167.8	153.7	152	-	164	135	160	-	156	-	157	176	-	141	-
Std. Devn.	10.35	5.18	5.18	2.42	2.69	6.16	-	1.98	0.74	1.51	-	4.65	-	1.55	5.64	-	4.57	-
% RSD	6.37	3.16	3.31	1.44	1.75	4.06	-	1.21	0.55	0.94	-	2.98	-	0.99	3.20	-	3.23	-
	Total S (%) LECO																	
PGMS-33	-	12.7	-	12.6	13.25	13.3	-	-	-	-	-	-	-	-	12.5	13.9	12.4	-
	-	12.9	-	12.7	13.20	13.3	-	-	-	-	-	-	-	-	12.5	13.9	12.7	-
	-	12.9	-	12.6	13.00	13.1	-	-	-	-	-	-	-	-	12.2	13.9	12.7	-
	-	13.1	-	12.8	12.95	13.3	-	-	-	-	-	-	-	-	12.7	13.9	11.2	-
	-	13.1	-	12.8	12.80	13.3	-	-	-	-	-	-	-	-	12.4	14.0	13.2	-
	-	12.8	-	12.6	13.10	13.3	-	-	-	-	-	-	-	-	12.6	13.8	11.9	-
	-	13.2	-	12.5	13.45	13.3	-	-	-	-	-	-	-	-	12.6	13.9	11.3	-
	-	13.0	-	12.7	13.10	13.3	-	-	-	-	-	-	-	-	12.7	14.0	12.4	-
Mean	-	13.0	-	12.7	13.11	13.3	-	-	-	-	-	-	-	-	12.5	13.9	12.2	-
Std. Devn.	-	0.17	-	0.11	0.20	0.07	-	-	-	-	-	-	-	-	0.17	0.06	0.70	-
% RSD	-	1.30	-	0.84	1.52	0.53	-	-	-	-	-	-	-	-	1.33	0.46	5.76	-
	Specific Gravity Pycnometer																	
PGMS-33	-	-	-	3.28	3.43	3.33	3.25	3.33	-	3.32	-	-	-	-	-	3.30	-	-
	-	-	-	3.24	3.29	3.33	3.16	3.29	-	3.33	-	-	-	-	-	3.28	-	-
	-	-	-	3.23	3.40	3.30	3.28	3.29	-	3.30	-	-	-	-	-	3.30	-	-
	-	-	-	3.23	3.28	3.28	3.26	3.29	-	3.32	-	-	-	-	-	3.27	-	-
	-	-	-	3.27	3.28	3.32	3.27	3.29	-	3.30	-	-	-	-	-	3.28	-	-
	-	-	-	3.17	3.19	3.36	3.22	3.31	-	3.34	-	-	-	-	-	3.30	-	-
	-	-	-	3.22	3.28	3.32	3.21	3.26	-	3.30	-	-	-	-	-	3.27	-	-
	-	-	-	3.37	3.28	3.30	3.26	3.35	-	3.33	-	-	-	-	-	3.29	-	-
Mean	-	-	-	3.25	3.30	3.32	3.24	3.30	-	3.32	-	-	-	-	-	3.29	-	-
Std. Devn.	-	-	-	0.06	0.08	0.02	0.04	0.03	-	0.02	-	-	-	-	-	0.01	-	-
% RSD	-	-	-	1.80	2.30	0.73	1.23	0.85	-	0.48	-	-	-	-	-	0.40	-	-

Standard	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11	Lab 12	Lab 13	Lab 14	Lab 15	Lab 16	Lab 17	Lab 18
	SiO2 (%) XRF																	
PGMS-33	-	35.5	35.51	-	-	35.81	-	-	-	34.34	-	-	-	-	35.3	36.1	-	-
	-	35.5	34.66	-	-	35.75	-	-	-	34.34	-	-	-	-	35.5	36.3	-	-
	-	35.6	33.59	-	-	35.77	-	-	-	34.26	-	-	-	-	35.3	35.7	-	-
	-	35.5	35.73	-	-	35.80	-	-	-	34.37	-	-	-	-	35.4	36.4	-	-
	-	35.3	34.02	-	-	35.81	-	-	-	34.63	-	-	-	-	35.3	36.0	-	-
	-	35.4	30.59	-	-	35.74	-	-	-	34.62	-	-	-	-	35.5	35.9	-	-
	-	35.4	33.37	-	-	35.75	-	-	-	34.39	-	-	-	-	35.4	35.7	-	-
	-	35.3	34.66	-	-	35.76	-	-	-	34.83	-	-	-	-	35.3	36.5	-	-
Mean	-	35.4	34.02	-	-	35.77	-	-	-	34.47	-	-	-	-	35.4	36.1	-	-
Std. Devn.	-	0.11	1.62	-	-	0.03	-	-	-	0.20	-	-	-	-	0.09	0.31	-	-
% RSD	-	0.30	4.75	-	-	0.08	-	-	-	0.57	-	-	-	-	0.25	0.85	-	-
	Al2O3 (%) XRF																	
PGMS-33	-	8.81	8.96	9.24	9.09	8.77	-	-	-	8.12	-	-	-	-	8.540	9.03	-	-
	-	8.82	9.11	9.32	9.11	8.83	-	-	-	8.15	-	-	-	-	8.630	8.84	-	-
	-	8.89	8.99	8.62	9.03	8.77	-	-	-	8.04	-	-	-	-	8.560	8.80	-	-
	-	8.83	8.90	8.84	9.16	8.80	-	-	-	8.13	-	-	-	-	8.570	9.11	-	-
	-	8.79	9.01	8.88	9.18	8.84	-	-	-	8.22	-	-	-	-	8.560	8.93	-	-
	-	8.80	8.56	9.22	9.24	8.83	-	-	-	8.16	-	-	-	-	8.550	9.02	-	-
	-	8.79	9.05	9.24	8.96	8.81	-	-	-	8.27	-	-	-	-	8.560	8.93	-	-
	-	8.77	8.96	8.69	9.28	8.80	-	-	-	8.15	-	-	-	-	8.560	9.07	-	-
Mean	-	8.81	8.94	9.01	9.13	8.81	-	-	-	8.16	-	-	-	-	8.57	8.97	-	-
Std. Devn.	-	0.04	0.17	0.28	0.107	0.03	-	-	-	0.07	-	-	-	-	0.03	0.11	-	-
% RSD	-	0.41	1.87	3.10	1.17	0.30	-	-	-	0.84	-	-	-	-	0.32	1.23	-	-
	CaO (%) XRF																	
PGMS-33	-	3.56	3.57	3.37	3.61	3.56	-	-	-	3.60	-	-	-	-	3.51	3.59	-	-
	-	3.54	3.60	3.41	3.53	3.56	-	-	-	3.69	-	-	-	-	3.52	3.61	-	-
	-	3.56	3.60	3.51	3.60	3.55	-	-	-	3.68	-	-	-	-	3.52	3.60	-	-
	-	3.55	3.58	3.47	3.55	3.56	-	-	-	3.62	-	-	-	-	3.50	3.52	-	-
	-	3.54	3.60	3.62	3.58	3.56	-	-	-	3.66	-	-	-	-	3.50	3.69	-	-
	-	3.56	3.58	3.37	3.65	3.56	-	-	-	3.63	-	-	-	-	3.55	3.61	-	-
	-	3.55	3.60	3.39	3.54	3.56	-	-	-	3.66	-	-	-	-	3.52	3.60	-	-
	-	3.55	3.61	3.54	3.60	3.56	-	-	-	3.69	-	-	-	-	3.51	3.68	-	-
Mean	-	3.55	3.59	3.46	3.58	3.56	-	-	-	3.65	-	-	-	-	3.52	3.61	-	-
Std. Devn.	-	0.01	0.01	0.09	0.041	0.00	-	-	-	0.03	-	-	-	-	0.02	0.05	-	-
% RSD	-	0.23	0.36	2.65	1.144	0.10	-	-	-	0.92	-	-	-	-	0.45	1.48	-	-
	Cr2O3 (%) XRF																	
PGMS-33	-	0.06	0.06	0.06	0.05	0.06	-	-	-	0.06	-	-	-	-	0.06	0.08	-	-
	-	0.06	0.06	0.05	0.05	0.06	-	-	-	0.06	-	-	-	-	0.06	0.07	-	-
	-	0.06	0.06	0.05	0.05	0.06	-	-	-	0.06	-	-	-	-	0.06	0.07	-	-
	-	0.06	0.06	0.05	0.05	0.06	-	-	-	0.06	-	-	-	-	0.06	0.07	-	-
	-	0.07	0.06	0.05	0.05	0.06	-	-	-	0.06	-	-	-	-	0.06	0.08	-	-
	-	0.07	0.06	0.05	0.05	0.06	-	-	-	0.06	-	-	-	-	0.06	0.08	-	-
	-	0.07	0.06	0.05	0.05	0.06	-	-	-	0.06	-	-	-	-	0.06	0.07	-	-
	-	0.07	0.06	0.05	0.05	0.06	-	-	-	0.06	-	-	-	-	0.06	0.07	-	-
Mean	-	0.1	0.06	0.05	0.05	0.06	-	-	-	0.06	-	-	-	-	0.1	0.1	-	-
Std. Devn.	-	0.01	0.00	0.00	0.00	0.00	-	-	-	0.00	-	-	-	-	0.00	0.01	-	-
% RSD	-	8.22	1.82	4.08	1.77	1.47	-	-	-	0.00	-	-	-	-	0.00	7.02	-	-

T 604-882-8422 F 604-882-8466 E info@cdnlabs.com TOLL FREE 1-888-882-0242
A No. 2, 20148 - 102 Avenue, Langley, B.C., Canada, V1M 4B4
WWW.cdnlabs.com

Standard	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11	Lab 12	Lab 13	Lab 14	Lab 15	Lab 16	Lab 17	Lab 18
	Fe2O3 (%) XRF																	
PGMS-33	-	25.5	26.09	25.09	25.73	25.87	-	-	-	26.57	-	-	-	-	25.6	25.5	-	-
	-	25.4	26.16	25.31	25.16	25.75	-	-	-	26.49	-	-	-	-	25.6	25.5	-	-
	-	25.5	26.16	24.95	25.59	25.76	-	-	-	26.29	-	-	-	-	25.6	25.5	-	-
	-	25.4	26.16	25.23	25.45	25.79	-	-	-	26.67	-	-	-	-	25.6	25.5	-	-
	-	25.4	26.09	25.73	25.45	25.87	-	-	-	26.85	-	-	-	-	25.5	26.0	-	-
	-	25.3	26.16	25.09	26.02	25.75	-	-	-	26.39	-	-	-	-	25.7	25.6	-	-
	-	25.4	26.09	25.31	25.23	25.74	-	-	-	26.85	-	-	-	-	25.6	25.5	-	-
	-	25.5	26.23	25.23	25.59	25.77	-	-	-	26.54	-	-	-	-	25.5	26.0	-	-
Mean	-	25.4	26.15	25.24	25.53	25.79	-	-	-	26.58	-	-	-	-	25.6	25.6	-	-
Std. Devn.	-	0.07	0.05	0.23	0.27	0.05	-	-	-	0.20	-	-	-	-	0.06	0.23	-	-
% RSD	-	0.28	0.19	0.93	1.07	0.21	-	-	-	0.76	-	-	-	-	0.25	0.88	-	-
	K2O (%) XRF																	
PGMS-33	-	0.72	0.71	0.73	0.73	0.72	-	-	-	0.69	-	-	-	-	0.73	0.74	-	-
	-	0.73	0.72	0.73	0.72	0.73	-	-	-	0.69	-	-	-	-	0.73	0.75	-	-
	-	0.73	0.71	0.75	0.72	0.72	-	-	-	0.72	-	-	-	-	0.72	0.77	-	-
	-	0.73	0.72	0.76	0.73	0.73	-	-	-	0.71	-	-	-	-	0.71	0.72	-	-
	-	0.73	0.72	0.76	0.72	0.73	-	-	-	0.72	-	-	-	-	0.71	0.78	-	-
	-	0.73	0.70	0.73	0.75	0.73	-	-	-	0.77	-	-	-	-	0.72	0.75	-	-
	-	0.73	0.71	0.73	0.72	0.73	-	-	-	0.70	-	-	-	-	0.72	0.77	-	-
	-	0.73	0.75	0.75	0.73	0.73	-	-	-	0.72	-	-	-	-	0.71	0.77	-	-
Mean	-	0.73	0.72	0.74	0.73	0.73	-	-	-	0.72	-	-	-	-	0.72	0.76	-	-
Std. Devn.	-	0.00	0.01	0.01	0.01	0.00	-	-	-	0.03	-	-	-	-	0.01	0.02	-	-
% RSD	-	0.49	1.99	1.44	1.23	0.29	-	-	-	3.59	-	-	-	-	1.16	2.64	-	-
	MgO (%) XRF																	
PGMS-33	-	2.50	2.40	2.35	2.37	2.54	-	-	-	2.43	-	-	-	-	2.40	2.53	-	-
	-	2.51	2.44	2.37	2.32	2.54	-	-	-	2.43	-	-	-	-	2.42	2.48	-	-
	-	2.50	2.44	2.34	2.37	2.55	-	-	-	2.41	-	-	-	-	2.40	2.46	-	-
	-	2.51	2.40	2.37	2.34	2.55	-	-	-	2.46	-	-	-	-	2.40	2.57	-	-
	-	2.48	2.44	2.40	2.35	2.54	-	-	-	2.46	-	-	-	-	2.40	2.50	-	-
	-	2.48	2.35	2.35	2.40	2.54	-	-	-	2.46	-	-	-	-	2.42	2.51	-	-
	-	2.49	2.44	2.35	2.34	2.54	-	-	-	2.46	-	-	-	-	2.42	2.48	-	-
	-	2.48	2.42	2.35	2.37	2.55	-	-	-	2.45	-	-	-	-	2.42	2.55	-	-
Mean	-	2.49	2.42	2.36	2.36	2.54	-	-	-	2.45	-	-	-	-	2.41	2.51	-	-
Std. Devn.	-	0.01	0.03	0.02	0.03	0.01	-	-	-	0.02	-	-	-	-	0.01	0.04	-	-
% RSD	-	0.52	1.20	0.84	1.11	0.20	-	-	-	0.79	-	-	-	-	0.44	1.51	-	-
	MnO (%) XRF																	
PGMS-33	-	0.12	0.12	0.10	0.11	0.11	-	-	-	0.11	-	-	-	-	0.11	0.11	-	-
	-	0.12	0.12	0.10	0.11	0.11	-	-	-	0.11	-	-	-	-	0.11	0.11	-	-
	-	0.12	0.12	0.11	0.11	0.10	-	-	-	0.11	-	-	-	-	0.11	0.11	-	-
	-	0.12	0.12	0.11	0.11	0.11	-	-	-	0.11	-	-	-	-	0.11	0.11	-	-
	-	0.12	0.12	0.11	0.11	0.11	-	-	-	0.11	-	-	-	-	0.11	0.11	-	-
	-	0.12	0.12	0.10	0.11	0.11	-	-	-	0.11	-	-	-	-	0.11	0.11	-	-
	-	0.11	0.12	0.10	0.11	0.11	-	-	-	0.11	-	-	-	-	0.11	0.11	-	-
	-	0.12	0.12	0.11	0.11	0.11	-	-	-	0.11	-	-	-	-	0.11	0.12	-	-
Mean	-	0.1	0.12	0.11	0.11	0.11	-	-	-	0.11	-	-	-	-	0.1	0.1	-	-
Std. Devn.	-	0.00	0.00	0.00	0.00	0.00	-	-	-	0.00	-	-	-	-	0.00	0.00	-	-
% RSD	-	2.98	0.00	3.42	1.11	3.25	-	-	-	0.00	-	-	-	-	0.00	3.18	-	-

T 604-882-8422 F 604-882-8466 E info@cdnlabs.com TOLL FREE 1-888-882-0242
A No. 2, 20148 - 102 Avenue, Langley, B.C., Canada, V1M 4B4
WWW.cdnlabs.com

Standard	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11	Lab 12	Lab 13	Lab 14	Lab 15	Lab 16	Lab 17	Lab 18
	Na2O (%) XRF																	
PGMS-33	-	2.05	2.14	2.12	2.24	-	-	-	-	2.49	-	-	-	-	2.19	2.27	-	-
	-	2.19	2.17	2.12	2.18	-	-	-	-	2.52	-	-	-	-	2.21	2.23	-	-
	-	2.17	2.17	2.17	2.24	-	-	-	-	2.47	-	-	-	-	2.18	2.17	-	-
	-	2.14	2.16	2.25	2.20	-	-	-	-	2.49	-	-	-	-	2.21	2.25	-	-
	-	2.13	2.16	2.25	2.20	-	-	-	-	2.55	-	-	-	-	2.19	2.22	-	-
	-	2.14	2.16	2.10	2.28	-	-	-	-	5.66	-	-	-	-	2.23	2.23	-	-
	-	2.17	2.16	2.12	2.21	-	-	-	-	2.57	-	-	-	-	2.22	2.24	-	-
	-	2.16	2.17	2.20	2.24	-	-	-	-	2.52	-	-	-	-	2.22	2.28	-	-
Mean	-	2.14	2.16	2.17	2.22	-	-	-	-	2.91	-	-	-	-	2.21	2.24	-	-
Std. Devn.	-	0.04	0.01	0.06	0.03	-	-	-	-	1.11	-	-	-	-	0.02	0.03	-	-
% RSD	-	1.99	0.44	2.86	1.39	-	-	-	-	38.23	-	-	-	-	0.80	1.51	-	-
	TiO2 (%) XRF																	
PGMS-33	-	0.38	0.38	0.39	0.39	0.41	-	-	-	0.38	-	-	-	-	0.37	0.38	-	-
	-	0.38	0.37	0.39	0.38	0.39	-	-	-	0.37	-	-	-	-	0.38	0.39	-	-
	-	0.38	0.35	0.39	0.39	0.40	-	-	-	0.37	-	-	-	-	0.37	0.38	-	-
	-	0.39	0.35	0.40	0.39	0.41	-	-	-	0.37	-	-	-	-	0.38	0.37	-	-
	-	0.39	0.35	0.40	0.39	0.40	-	-	-	0.38	-	-	-	-	0.37	0.39	-	-
	-	0.39	0.32	0.39	0.40	0.40	-	-	-	0.36	-	-	-	-	0.38	0.38	-	-
	-	0.38	0.37	0.39	0.38	0.40	-	-	-	0.38	-	-	-	-	0.38	0.38	-	-
	-	0.39	0.35	0.39	0.39	0.40	-	-	-	0.37	-	-	-	-	0.38	0.39	-	-
Mean	-	0.4	0.35	0.39	0.39	0.40	-	-	-	0.37	-	-	-	-	0.4	0.4	-	-
Std. Devn.	-	0.01	0.02	0.00	0.00	0.01	-	-	-	0.01	-	-	-	-	0.01	0.01	-	-
% RSD	-	1.39	5.48	1.09	1.13	1.60	-	-	-	1.90	-	-	-	-	1.38	1.85	-	-
	LOI (%) XRF																	
PGMS-33	-	5.81	-	-	-	6.92	-	-	-	4.15	-	-	-	-	5.56	6.79	-	-
	-	6.03	-	-	-	6.96	-	-	-	4.08	-	-	-	-	5.05	6.66	-	-
	-	5.86	-	-	-	6.97	-	-	-	4.31	-	-	-	-	5.71	6.83	-	-
	-	5.82	-	-	-	6.94	-	-	-	4.28	-	-	-	-	5.32	6.81	-	-
	-	5.88	-	-	-	6.96	-	-	-	4.21	-	-	-	-	5.41	6.81	-	-
	-	5.77	-	-	-	6.92	-	-	-	4.17	-	-	-	-	4.94	6.80	-	-
	-	5.96	-	-	-	6.96	-	-	-	4.27	-	-	-	-	5.21	6.83	-	-
	-	5.37	-	-	-	6.91	-	-	-	4.32	-	-	-	-	5.45	6.83	-	-
Mean	-	5.8	-	-	-	6.94	-	-	-	4.22	-	-	-	-	5.3	6.8	-	-
Std. Devn.	-	0.20	-	-	-	0.02	-	-	-	0.09	-	-	-	-	0.26	0.06	-	-
% RSD	-	3.40	-	-	-	0.33	-	-	-	2.02	-	-	-	-	4.82	0.83	-	-

Notes: Highlighted assay results were removed for failing the t test.

T 604-882-8422 F 604-882-8466 E info@cdnlabs.com TOLL FREE 1-888-882-0242
A No. 2, 20148 - 102 Avenue, Langley, B.C., Canada, V1M 4B4
WWW.cdnlabs.com

APPENDIX IV: Uncertified trace element statistics- 4Acid digestion ICP finish

Analyte	Unit	Mean	2SD	RSD%	No. of assays
Al	%	10.8	1.58	7.28	52
As	ppm	4.66	0.60	6.45	104
Ba	ppm	4.66	5.97	64.0	66
Be	ppm	175	258	73.7	97
Bi	ppm	0.40	0.21	25.6	52
Ca	%	3.56	8.62	121	64
Cd	ppm	2.50	0.26	5.13	98
Ce	ppm	12.5	2.44	9.78	101
Cr	ppm	36.3	6.76	9.31	52
Cs	ppm	327	137	21.0	96
Dy	ppm	0.29	0.03	4.97	40
Er	ppm	5.73	15.2	133	32
Eu	ppm	0.76	0.18	12.1	24
Fe	%	0.77	0.09	5.79	23
Ga	ppm	18.1	1.56	4.33	88
Gd	ppm	10.6	2.7	12.9	56
Ge	ppm	2.05	0.24	5.96	22
Hf	ppm	0.96	0.31	16.1	29
Ho	ppm	0.80	0.12	7.62	44
In	ppm	0.38	0.37	48.8	30
K	%	2.49	0.42	8.41	52
La	ppm	0.60	0.04	3.66	104
Li	ppm	17.7	2.87	8.11	83
Lu	ppm	7.00	1.51	10.8	88
Mg	%	0.08	0.02	9.98	23
Mn	ppm	1.45	0.13	4.38	108
Mo	ppm	854	70.3	4.12	107
Na	%	2.50	3.30	66	50
Nb	ppm	1.63	0.12	3.53	103
Nd	ppm	2.28	0.78	17.1	45
P	ppm	14.9	0.64	2.14	15
Pb	ppm	552	177	16.1	88
Pr	ppm	68.7	20.8	15.2	96
Rb	ppm	4.16	0.21	2.48	22
Re	ppm	11.7	5.99	25.5	57

T 604-882-8422 F 604-882-8466 E info@cdnlabs.com TOLL FREE 1-888-882-0242
A No. 2, 20148 - 102 Avenue, Langley, B.C., Canada, V1M 4B4
WWW.cdnlabs.com

Analyte	Unit	Mean	2SD	RSD%	No. of assays
S	%	12.2	2.11	8.61	38
Sb	ppm	1.46	0.41	14.0	56
Sc	ppm	8.57	2.65	15.4	99
Se	ppm	60.0	27.8	23.1	64
Si	%	16.5	0.97	2.94	15
Sm	ppm	2.58	0.19	3.58	16
Sn	ppm	5.13	1.05	10.2	62
Sr	ppm	309	32.4	5.24	109
Ta	ppm	0.14	0.10	35.4	37
Tb	ppm	1.63	4.86	149	32
Te	ppm	4.98	1.91	19.1	48
Th	ppm	1.40	0.30	10.7	51
Ti	%	0.23	0.03	6.64	80
Tl	ppm	0.26	0.07	13.7	48
Tm	ppm	0.11	0.04	17.1	25
U	ppm	0.52	0.09	8.27	55
V	ppm	80.4	18.26	11.3	104
W	ppm	0.47	0.47	50.1	49
Y	ppm	6.71	1.44	10.7	91
Yb	ppm	0.61	0.11	9.30	32
Zn	ppm	1130	134	5.94	96
Zr	ppm	21.9	16.4	37.6	80

APPENDIX IV: General Notes

Intended Use

This Certified Reference Material, fit for use as a control sample in routine assay laboratory quality control when inserted within runs of test samples and measured in parallel to test samples. This material can also be used for method development, use as independent calibration verification check standard or for validation of accuracy in a method validation exercise.

This CRM can also be used to assess inter-laboratory or instrument bias and establish within-laboratory precision and within-laboratory reproducibility. The certified concentrations and expanded uncertainty for this material are property values based on an inter-laboratory measurement campaign and reflect consensus results from the laboratories that took part in the exercise.

Handling

Do not use if the seal is broken or there are any signs of contamination.

The material is packaged in either Tin Tie envelopes, foil envelopes or jars that must be shaken before use.

Storage information

The material should be stored in a dry place, in such a way that it does not compromise the integrity of the CRM. The material should be stored in conditions which will ensure it does not absorb moisture.

Certificate is not valid if re-packaged by a third party.

Metrological Traceability

The values quoted herein are based on the consensus values derived from statistical analysis of the data from an inter-laboratory measurement program. Traceability to SI units is via the standards used by the individual laboratories majority of which are accredited to the ISO17025 general requirements for the competence of testing and calibration laboratories and who have maintained measurement traceability during the analytical process.

Period of Validity

The certified values are valid for this product, while still sealed in its original packaging, until notification to the contrary. The material's stability will undergo regular testing every five years throughout its inventory duration. Should product stability become an issue, all customers will be notified and notification to that effect will be placed on the http://www.cdnlabs.com/ website.

Minimum Sample Size

Most of the laboratory's reporting used a 0.5g sample size for the ICP and a 30g sample size for the fire assay. Our certified gold values are based on 30 g Fire Assay determinations. For optimal results, we strongly recommend you assay our standards with similar methods using "at least" 30 g of material. Using a smaller sample weight may result in erratic values. These are the recommended minimum sample sizes for the use of this material.