



**BUREAU
VERITAS**

MINERAL LABORATORIES
Canada

www.bureauveritas.com/um

Bureau Veritas Commodities Canada Ltd.

9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada

PHONE (604) 253-3158

Client:

Kanaroglu Madencilik Yapi Enerji Loj.Akary

Gazi Mustafa Kemal Bulvari NO:236/3

Yenisehir Mersin Turkey

Submitted By: Metin Kanar

Receiving Lab: Turkey-Ankara

Received: October 04, 2019

Report Date: October 17, 2019

Page: 1 of 2

CERTIFICATE OF ANALYSIS

ANK19000728.1

CLIENT JOB INFORMATION

Project: none given

Shipment ID:

P.O. Number

Number of Samples: 4

SAMPLE DISPOSAL

DISP-PLP Dispose of Pulp After 90 days

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
SLBHP	4	Sorting, labeling and boxing samples received as pulps			ANK
SHP01	4	Per sample shipping charges for branch shipments			ANK
MA270	3	4 Acid digestion - ICP-ES/ICP-MS analysis	0.5	Completed	VAN
EN001-MA	3	Environmental disposal fee - Multi-acid neutralization			VAN
LF300	1	LiBO2/Li2B4O7 fusion ICP-ES analysis	0.2	Completed	VAN

ADDITIONAL COMMENTS

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To: Kanaroglu Madencilik Yapi Enerji Loj.Akaryakit
Gazi Mustafa Kemal Bulvari NO:236/3
Yenisehir Mersin
Turkey

CC:


MAY LAI
Data Validation Specialist

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
*** asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



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Part: 1 of 4

CERTIFICATE OF ANALYSIS

ANK19000728.1

	Method Analyte Unit MDL	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
		Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca	P
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%
		0.5	0.5	0.5	5	0.5	0.5	1	5	0.01	5	0.5	0.5	5	0.5	0.5	0.5	10	0.01	0.01
1a	Rock Pulp	3.7	41.4	5.7	110	<0.5	89.3	51	1927	8.40	<5	<0.5	2.1	285	<0.5	<0.5	<0.5	247	6.28	0.11
2a	Rock Pulp	8.7	129.0	5.8	127	<0.5	119.8	70	2269	12.37	<5	<0.5	1.0	136	<0.5	0.7	<0.5	598	7.20	0.12
3d	Rock Pulp	4.2	5.0	1.7	127	<0.5	85.0	50	1168	>60	<5	<0.5	3.1	<5	<0.5	<0.5	<0.5	544	0.32	0.01
4a	Rock Pulp																			



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Part: 2 of 4

CERTIFICATE OF ANALYSIS

ANK19000728.1

	Method Analyte Unit MDL	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
		Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc	Li	S	Rb
		ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
		1	0.01	5	0.001	0.01	0.01	0.01	0.5	0.5	5	0.5	0.5	0.5	0.5	5	1	0.5	0.05	0.5
1a	Rock Pulp	189	4.38	161	0.390	8.92	2.34	0.83	<0.5	3.8	19	1.8	26.0	1.2	<0.5	<5	28	14.6	0.07	27.4
2a	Rock Pulp	196	4.97	60	0.939	7.27	1.29	0.53	0.9	4.0	21	1.9	28.2	1.4	<0.5	<5	50	10.7	0.16	10.9
3d	Rock Pulp	64	0.47	6	0.346	0.45	0.05	0.01	0.6	1.8	6	6.9	11.9	2.9	0.6	<5	8	1.7	<0.05	0.8
4a	Rock Pulp																			



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Page: 2 of 2 **Part:** 3 of 4

CERTIFICATE OF ANALYSIS

ANK19000728.1

	Method	MA270	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300
	Analyte	Se	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Ni	Sr	Zr	Y	Nb	Sc	LOI
	Unit	ppm	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	5	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	5	20	2	5	3	5	1	-5.1
1a	Rock Pulp	<5																			
2a	Rock Pulp	<5																			
3d	Rock Pulp	<5																			
4a	Rock Pulp		44.60	16.59	10.62	8.43	7.39	4.65	0.26	1.23	0.10	0.17	0.015	22	87	125	69	20	<5	30	5.7



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CERTIFICATE OF ANALYSIS

ANK19000728.1

	Method	LF300
	Analyte	Sum
	Unit	%
	MDL	0.01
1a	Rock Pulp	
2a	Rock Pulp	
3d	Rock Pulp	
4a	Rock Pulp	99.81



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QUALITY CONTROL REPORT

ANK19000728.1

	Method Analyte Unit MDL	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
		Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Th	Sr	Cd	Sb	Bi	V	Ca	P
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%
		0.5	0.5	0.5	5	0.5	0.5	1	5	0.01	5	0.5	0.5	5	0.5	0.5	0.5	10	0.01	0.01
Pulp Duplicates																				
3d	Rock Pulp	4.2	5.0	1.7	127	<0.5	85.0	50	1168	>60	<5	<0.5	3.1	<5	<0.5	<0.5	<0.5	544	0.32	0.01
REP 3d	QC	3.7	3.6	1.4	122	<0.5	79.2	52	1085	>60	<5	<0.5	3.1	<5	<0.5	<0.5	<0.5	524	0.31	<0.01
4a	Rock Pulp																			
REP 4a	QC																			
Reference Materials																				
STD OREAS605	Standard	4.7	49273.7	1421.0	2241	997.6	1637.8	103	101	3.81	428	3.1	5.2	405	13.5	339.8	19.8	39	0.27	0.06
STD OREAS927-MA	Standard	1.3	10713.9	222.1	753	5.6	33.6	33	1330	8.68	7	2.9	14.7	32	0.9	1.9	73.9	77	0.39	0.07
STD SO-19	Standard																			
STD SO-19	Standard																			
STD SO-19 Expected																				
STD OREAS605 Expected		4.82	50200	1358	2190	972	1568	100	91	3.91		2.79	5.12	373	14.5	324	19.3	39.9	0.276	0.0507
STD OREAS927-MA Expected		1.06	10800	223	772	4.6	31	31	1217	8.56	9.2	2.7	14.4	29.3	1.05	1.9	62.7	77	0.388	0.0542
BLK	Blank																			
BLK	Blank	<0.5	2.0	0.9	<5	<0.5	<0.5	<1	<5	<0.01	<5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<10	<0.01	<0.01



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QUALITY CONTROL REPORT

ANK19000728.1

	Method Analyte Unit MDL	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270	MA270
		Cr	Mg	Ba	Ti	Al	Na	K	W	Zr	Ce	Sn	Y	Nb	Ta	Be	Sc	Li	S	Rb	Hf
		ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
		1	0.01	5	0.001	0.01	0.01	0.01	0.01	0.5	0.5	5	0.5	0.5	0.5	0.5	5	1	0.5	0.05	0.5
Pulp Duplicates																					
3d	Rock Pulp	64	0.47	6	0.346	0.45	0.05	0.01	0.6	1.8	6	6.9	11.9	2.9	0.6	<5	8	1.7	<0.05	0.8	<0.5
REP 3d	QC	63	0.45	6	0.333	0.45	0.04	0.01	0.6	1.5	6	5.4	11.6	2.9	0.6	<5	9	2.6	<0.05	0.8	<0.5
4a	Rock Pulp																				
REP 4a	QC																				
Reference Materials																					
STD OREAS605	Standard	22	0.05	144	0.179	5.44	0.58	1.09	26.3	91.6	24	1.7	4.4	7.7	0.6	<5	5	20.8	7.99	32.4	2.5
STD OREAS927-MA	Standard	63	2.11	312	0.315	6.41	0.16	1.90	6.9	90.9	70	22.3	18.5	10.5	0.8	<5	9	31.7	1.61	117.6	2.5
STD SO-19	Standard																				
STD SO-19	Standard																				
STD SO-19 Expected																					
STD OREAS605 Expected		24	0.0476		0.177	5.43	0.58	1.04	27	84	25	2.73	4.26	6.92			5.03	21.7	8.34	29.2	2.58
STD OREAS927-MA Expected		63	2.11	314	0.3165	6.41	0.173	1.87	8.1	94	73	22.3	19.2	11	0.86	1.8	11	35.1	1.54	121	2.74
BLK	Blank																				
BLK	Blank	<1	<0.01	<5	<0.001	<0.01	<0.01	<0.01	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<5	<1	<0.5	<0.05	<0.5	<0.5



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QUALITY CONTROL REPORT

ANK19000728.1

	Method Analyte Unit MDL	MA270	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300	LF300
		Se	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	Cr2O3	Ba	Ni	Sr	Zr	Y	Nb	Sc	LOI
		ppm	%	%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
		5	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.002	5	20	2	5	3	5	1
Pulp Duplicates																					
3d	Rock Pulp	<5																			
REP 3d	QC	<5																			
4a	Rock Pulp		44.60	16.59	10.62	8.43	7.39	4.65	0.26	1.23	0.10	0.17	0.015	22	87	125	69	20	<5	30	5.7
REP 4a	QC		44.44	16.75	10.60	8.37	7.47	4.65	0.26	1.23	0.10	0.17	0.015	23	92	124	67	21	<5	30	5.7
Reference Materials																					
STD OREAS605	Standard	76																			
STD OREAS927-MA	Standard	15																			
STD SO-19	Standard		60.58	13.93	7.45	2.89	5.95	4.05	1.27	0.70	0.32	0.13	0.485	462	449	314	113	35	70	26	1.9
STD SO-19	Standard		60.37	13.97	7.52	2.92	5.97	4.07	1.29	0.71	0.32	0.13	0.490	465	458	316	115	34	69	26	1.9
STD SO-19 Expected			61.13	13.95	7.47	2.88	6	4.11	1.29	0.69	0.32	0.13	0.5	486	470	317.1	112	35.5	68.5	27	
STD OREAS605 Expected		79																			
STD OREAS927-MA Expected		16																			
BLK	Blank		0.05	<0.01	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<5	<20	<2	<5	<3	<5	<1	0.0
BLK	Blank	<5																			



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QUALITY CONTROL REPORT

ANK19000728.1

Method		LF300
Analyte		Sum
Unit		%
MDL		0.01
Pulp Duplicates		
3d	Rock Pulp	
REP 3d	QC	
4a	Rock Pulp	99.81
REP 4a	QC	99.81
Reference Materials		
STD OREAS605	Standard	
STD OREAS927-MA	Standard	
STD SO-19	Standard	99.88
STD SO-19	Standard	99.87
STD SO-19 Expected		
STD OREAS605 Expected		
STD OREAS927-MA Expected		
BLK	Blank	0.09
BLK	Blank	