

"APPROVED"**Manager of the Mill of KGC CJSC**
Dzhanybekov E.

" ___ " _____ 2023

TERMS OF REFERENCE**Annual testing the metering and protective relays of high-voltage electrical equipment and 6.3 CB
at MILL Upper Substation, Kumtor mine Site.**

№	Basic requirements	Basic data and requirements
1.	Construction site	Issyk-Kul region, Jeti-Oguz district, Mill of the Kumtor mine, KGC CJSC.
2.	The customer of the project	KGC Gold Company CJSC.
3.	Contractor	Determined by the customer.
4.	Purpose of the object	Power supply of gold production at the Mill.
5.	Special conditions for the performance of work	<ol style="list-style-type: none"> 1. Mine site is located at an altitude of 4020 m above sea level. 2. Testing of electrical equipment will be carried out during the Mill shutdown. 3. Internal schedule: 11-hour working day, on a rotational basis for 14 days.
6.	Requirements and scope of work performed	<p>In accordance with this Terms of Reference (TOR), to provide electrical tests of the equipment listed in the Appendix.</p> <ol style="list-style-type: none"> 1. Protective Relays <ul style="list-style-type: none"> • Clean and inspect case. • Inspect all connections for secure terminations. • Clean and inspect all contact surfaces. • Test operation of all active features. • Verify trip contacts/outputs. • Verify time characteristics of all relays. Adjust as required to attain Manufacturer' specified operating characteristics. • Verify all metering parameters are displayed and measuring correctly. • Verify relay trips breaker. 2. 6.3kV Breaker Testing <ul style="list-style-type: none"> • Inspect and clean as required. • Contact resistance test. • Vacuum bottle integrity test with breaker open. • Insulation resistance test with breaker closed phase-to-phase and ground. • Attended to listed deficiencies as necessary/required. 3. Conduct orientation for local Electrical maintenance personnel with methods of <ul style="list-style-type: none"> • Setting up protective Relays and test equipment. • Troubleshooting and rectification.
7.	Requirements for the contractor	<ol style="list-style-type: none"> 1. To perform this work, the Contractor must have:

		<ul style="list-style-type: none"> - appropriate licenses and permits, as well as qualified specialists with experience in testing the similar equipment. - Software and other necessary tools for connecting and configuring relay protection and metering devices. <ol style="list-style-type: none"> 2. Equipping and providing employees with personal protective equipment (PPE) required on the territory of the Mine (high boots with a protective tray and protection of the sole from puncture, safety glasses, helmets, etc.) 3. The qualification of the personnel and the technical equipment of the contractor must correspond to the amount of work performed under this TOR.
8.	Requirements for documentation provided by the Contractor	<ol style="list-style-type: none"> 1. The contractor will provide an estimate for each item of the scope of work. 2. The estimate should contain the cost of labor costs for each amount of work. 3. The commercial offer should be sufficiently detailed. 4. Provide a preliminary schedule of work, indicating the number of personnel and the deadline for the work. 5. Provide an approved map of the settings of the relay protection and metering devices electrical equipment in the form of a table (in paper and electronic versions).
9.	Payment terms	<ol style="list-style-type: none"> 1. Consider separately in the contract. 2. Final payment will only be done if all the up-to-date documents is sent to Customer.
10.	Materials and services provided by the Customer	<ol style="list-style-type: none"> 1. Present TOR. 2. Other documentation at the request of the Supplier. 3. Additional equipment and consumables, if necessary, for testing. 4. Accommodation of the Contractor's employees in the city of Bishkek, transport to the Mine and back, as well as accommodation in the residential camp of the mine. 5. If necessary, means of communication and access to the Internet. 6. Round-trip airfare from the country of departure to Bishkek shall be purchased by the Supplier.

Customer's authorized representatives



Baisalov Bolot

Momunaliev Rustam

Kydyraliev Erik

Appendix.

Elcetrical Room # 1		
Cell	Name	Relay & CB
	110 KV Main control panel Relay	1 x SEL 2407
	110 KV Main control panel Relay	1 X SEL 2730U
	110 KV Main control panel Relay	1 X SEL 2240
	110 KV Main control panel Relay	6 X SEL 751A
	110 KV Main control panel Relay	2 X SEL 735
	110 KV Main control panel Relay	1 X SEL735
	110 KV Main control panel Relay	1 X SEL 734
	110 KV Main control panel Relay	5 X MVTU
1A	Air Comprtrssor # 1 CIL	6.3kV Breaker and SEL 710
2A	Capacitors Bank A	6.3kV Breaker and SEL 751A
3A	Megashop	6.3kV Breaker and SEL 751A
4A	Floatation, El. Room #3, Unit Sub A	6.3kV Breaker and SEL 751A
5A	Boiler, Unit Sub A	6.3kV Breaker and SEL 751A
6A	Process Air Compreser # 005	6.3kV Breaker and SEL 710
7A	Main Breaker-A (7B)	O/L
8A	Potenital Transfomer - A	6.3kV Breaker and SEL 734
9A	Sag Mill	6.3kV Breaker and SEL 710
10A	1 MVA Transfomer- Ball Mill Cyclone Pump 003	6.3kV Breaker and SEL 787
11A	SEL- Communication / Sync.-6.3KV-110KV	2 X SEL2730U
11A	SEL- Communication / Sync.-6.3KV-110KV	1 X SEL-3400
12A	Bus Tie	6.3kV Breaker
13A	Ball Mill	6.3kV Breaker and SEL 710
14A	1 MVA Transfomer-Ball Mill Cyclon Pum004	6.3kV Breaker and SEL 787
15A	Main Breaker-B	
16A	Potenital Transfomer - B	6.3kV Breaker and SEL 734
17A	Kiln, El. Room #7	6.3kV Breaker and SEL 751A
18A	Boiler, Unit Sub B	6.3kV Breaker and SEL 751A
19A	Floatation, El. Room #3, Unit Sub B	6.3kV Breaker and SEL 751A
20A	Capacitors Bank C	6.3kV Breaker and SEL 751A
21A	Transfomer 3MVA-Assay Lab	6.3kV Breaker and SEL 787
1B	3MVA CIL Tanks	6.3kV Breaker and SEL 751A
2B	Capacitors Bank B	6.3kV Breaker and SEL 751A
3B	Pebble Crusher Motor Starter	6.3kV Breaker and SEL 710
4B	Grinding, El. Room #1	6.3kV Breaker and SEL 751A
5B	Carbon Stripping, El. Room #6	6.3kV Breaker and SEL 751A
6B	Crusher Building	6.3kV Breaker and SEL 751A
7B	Main Breaker-B (7A)	O/L
8B	Regrind Mill	6.3kV Breaker and SEL 710
9B	Sag Mill direction (Spaer)	
10B	Power Supply From Diesel Gen A	6.3kV Breaker and SEL 751A
11B	Process Air Compressor # 009	6.3kV Breaker and SEL 710
12B	Tie Breaker (Empty)	
13B	Power Supply From Diesel Gen B	6.3kV Breaker and SEL 751A
14B	Process Air Compressor # 008	6.3kV Breaker and SEL 710
15B	Main Breaker- (15A)	

Cell	Name	Relay & CB
16B	Carbon Stripping, El. Room #6	6.3kV Breaker and SEL 751A
17B	Emulsion Plant / Tower Mill	6.3kV Breaker and SEL 751A
18B	ISA Mill	6.3kV Breaker and SEL 710
19B	Refinery, El. Room #8	6.3kV Breaker and SEL 751A
20B	Capacitors Bank D	6.3kV Breaker and SEL 751A
21B	Air Comptrssor # 2 CIL	6.3kV Breaker and SEL 710
Petrov Lake Pump station		
	Petrov Lake Elect Rm	6.3kV Bus PT
	Petrov Lake Elect Rm	6.3kV Pump #7 Breaker
	Petrov Lake Elect Rm	Pump #7 Relay SEL710
	Petrov Lake Elect Rm	6.3kV Pump #8 Breaker
	Petrov Lake Elect Rm	Pump #8 Relay SEL710
	Petrov Lake Elect Rm	6.3kV Pump #9 Breaker
	Petrov Lake Elect Rm	Pump #9 Relay SEL710
	Petrov Lake Elect Rm	6.3kV Pump #10 Breaker
	Petrov Lake Elect Rm	Pump #10 Relay SEL710
Primary Crusher		
	Crusher Elec Room	6.3kV Gyrotory Crusher Breaker
	Crusher Elec Room	6.3kV Gyrotory Crusher Starter
	Crusher Elec Room	6.3kV Gyrotory Crusher Starter Relay MPR3000
	Crusher Elec Room	6.3kV Crusher MCC Feeder Breaker
	Crusher Elec Room	6.3kV Crusher MCC Feeder Relay DigiTrip MV
	Crusher Elec Room	6.3kV Conveyor Breaker
	Crusher Elec Room	6.3kV Conveyor Relay MPR2000
	Crusher Elec Room	6.3kV Baghouse Breaker
	Crusher Elec Room	6.3kV Baghouse Relay MPR2000

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