**Technical Specification**

**for the production and supply of self-propelled mining equipment**

**(Mobile Raise Boring Rig for drilling vertical (raise) openings without blasting)**

**for the Underground Operations of “Kumtor Gold Company” CJSC**

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| **Item No.** | **List of main data and requirements** | **Main data and requirements** |
| 1. | Delivery location | “KUMTOR GOLD COMPANY” CJSC, Kyrgyz Republic, Balykchy city, 9 Narynskoe Highway. |
| 2. | Customer | “Kumtor Gold Company” CJSC, Underground Operations. |
| 3. | General provisions | The subject of this Technical Specification is the procurement of one (1) mobile raise boring rig for constructing vertical mine workings without blasting. The mobile raise boring rig shall include:   * diesel chassis; * mobile platform with jacks; * cassette for drill rods and stabilizers; * drilling module with bracing cylinders (traditional pilot-hole with diameter reaming); * crane for feeding drill rods from the cassette to the pipe manipulator; * shelves/walkways and handrails around the equipment to ensure safe working conditions.   The equipment must be new, never previously used. |
| 4. | Geometric characteristics of workings | Maximum height:   * capital workings — 5,200 mm; * operating workings — 4,500 mm.   Maximum width:   * capital workings — 5,500 mm; * operating workings — 4,500 mm.   Minimum external turning radius: 7,400 mm.  Minimum internal turning radius: 4,200 mm.  Maximum ramp gradient: 15%.  Road surface: rock. |
| 5. | Ore and rock properties | 1. Ore type — gold-bearing.  2. Ores — as per geological data.  3. Rock type — carbonaceous-siliceous phyllites, metasomatites.  4. Ore strength: 4–10 (Protodyakonov scale).  5. Rock strength: 4–10 (Protodyakonov scale).  6. Fracturing of ores and rocks — from fractured to highly fractured.  7. Ore quality indicators (Zone 2): RQD 35%, Stability Category III–IV.  8. Rock quality indicators (Zone 3): RQD 50%, Stability Category III–IV. |
| 6. | Environmental conditions | 1. Elevation — 4,000 m above sea level.  2. Ambient air temperature: –35 °C to +40 °C.  3. Mine air temperature: +2 °C to +15 °C.  4. Relative humidity: ~70%.  5. Water supply — technical water.  6. Gas contamination — none.  7. Dust — none. |
| 7. | Equipment requirements |  |
| 7.1. | Technical specifications | 1.1. Model, brand, and manufacturer — to be determined based on selection results.  1.2. Fuel tank capacity — to be determined.  1.3. Year of manufacture — not earlier than 2025.  2. Engine:  2.1. Brand — to be determined.  2.2. Fuel — Diesel.  2.3. Engine displacement — to be determined.  2.4. Engine power — to be determined.  2.5. Turbocharger — required.  3. Equipment must be adapted for high-altitude operation and include an arctic package. |
| 7.2. | Requirements for electrical system | 1. Standard voltage — 380–390 V, 50–60 Hz.  2. Total power consumption — to be determined.  3. Power cable length — from 100 to 120 m.  4. Cable type: KGShV, flexibility class 5, or equivalent approved by the manufacturer.  5. Automatic cable reel — required.  6. Cable winding/unwinding control — from operator station + additional remote control at the rear side.  7. Front and rear lighting — LED (4,200 lm, 6,000 K).  8. Step and service area lighting — LED.  9. Built-in air compressor — required. |
| 7.3. | Hydraulic rotary drive | 1. Type of rotary drive — to be determined.  2. Pilot hole diameter — 100–350 mm.  3. Raise diameter — up to 1,600 mm.  4. Raise depth — up to 60 meters.  5. Drill rod — to be determined.  6. Recommended shank thread — to be determined. |
| 7.4. | Drilling module | 1. Mechanical rod handling system — required.  2. Capability to operate in mine workings with a cross-section of 4.5 × 4.5 m.  3. Capability of drilling without concrete foundation installation.  4. Borehole flushing — required. |
| 7.5. | Drill string | 1. The supply package must include drill rods totaling 60 meters in length.  2. The supply package must include drilling tools sufficient for 3,000 meters of drilling.  3. The supply package must include a reamer with a working diameter of 1,400–1,600 mm. |
| 7.6. | Control system | 1. Control system type — to be determined.  2. Drilling control — adjustment of drilling and start-up parameters.  3. Anti-jamming system — required.  4. Rotation — variable rotational speed and reversible direction. |
| 7.7. | Requirements for operator’s cabin | Cabin type — Enclosed.  Heating / Air conditioning — Required.  Protection against falling objects / rollover (ISO 3449 / ISO 3471), ROPS and FOPS — Required. |
| 7.8. | Fire protection system | 1. Automatic fire suppression system — Required.  2. Portable fire extinguisher — Required. |
| 7.9. | Spare parts and tools | 1. The Supplier must deliver a set of spare parts sufficient for at least 1,000 engine hours for the chassis.  2. Special tools for maintenance and servicing of the equipment. |
| 8. | Warranty period | 1. The Supplier must provide a warranty of not less than 24 months from the date of commissioning.  2. Presence of a service center and spare parts warehouse in the Kyrgyz Republic.  3. If no service center and warehouse exist in the Customer’s country, the Supplier must arrange necessary conditions to support maintenance and technical service in the Customer’s country. The equipment must be operable in continuous 24/7 mode.  4. The Supplier must conduct training for the Customer’s personnel at the Kumtor mine. |
|  | Commissioning | Acceptance of the equipment (quality and quantity) is carried out at the Kumtor mine with participation of the Supplier’s representative. |
| 9. | Commissioning | 1. All costs for additional work identified during equipment inspection shall be borne by the Supplier. |
| 10. | Quality evaluation criteria | 1. During the warranty period after commissioning, performance evaluation will be carried out. Performance must meet factory specifications.  2. If non-compliance is detected, the Supplier is responsible for all costs to correct deficiencies. |
| 11. | Payment terms and delivery time | 1. Payment terms — according to the Contract.  2. Delivery is performed at the Supplier’s expense and by the Supplier’s means.  3. Delivery terms: for non-residents of the Kyrgyz Republic — DAP; for residents of the Kyrgyz Republic — DDP.  4. Delivery location: Kyrgyz Republic, Balykchy, Narynskoe Highway, 9.  5. Delivery period: up to 180 calendar days from the signing date of the Contract by both Parties. Assembly and commissioning must be completed within the timeframe set by the Customer. |
| 12. | Technical regulations and standards | 1. The equipment must comply with the requirements of the current Technical Regulation of the Customs Union (TR CU 010/2011) “On safety of machinery and equipment” and other applicable EAEU regulations (if required).  2. Protection against falling objects / rollover (ISO 3449 / ISO 3471), ROPS and FOPS — Required. |
| 13. | Safety | 1. Brake interlock systems, overload protection, fire safety systems, and lighting must comply with technical documentation.  2. Moving parts posing a hazard to personnel must be guarded, except those that cannot be guarded due to their functional purpose. Guards must be supplied complete with necessary installation hardware. |
| 14. | Note | The requirements specified in this Technical Specification are indicative and may be adjusted during discussions with potential Suppliers. |