ARICOM PLC

KURANAH TITANIUM-MAGNETITE PROJECT

EAST SIBERIA, RUSSIA

River Kuranah – main watercourse of the project area

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Foreword

This Environmental Impact Assessment Report for the Kuranah titanium-magnetite project located in the Amur oblast of Eastern Russia was prepared by independent consultant E.Vershinina for Aricom plc.

All environmental and other information on the Kuranah titanium-magnetite project, used in the preparation of this document, was provided by the company Aricom and in reports commissioned by them (and by others who have had an interest in this project) from a number of Russian and international consultants. The original sources of this information are referenced at the appropriate places in this document, with references given in brackets, and a list of the documents used is provided in the Attachment 1. The information has been accepted and has not been independently validated by E.Vershinina, who accepts no responsibility for any inaccuracies or errors in the information provided.

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Executive summary

1. Introduction

Aricom plc is a UK company, established with the objective of acquiring and developing deposits in Russia. Aricom currently owns 74 % of the company named Olekminskiy Rudnik (OR), which wholly owns the Kuranah titanium-magnetite deposit site. The company OR has held an exploration and mining licence since 1 June 2004, which is valid until 1 June 2026.

Kuranah deposit site is a high titanium and magnetite deposit site which was discovered for the first time in 1982, exploration works were undertaken by several organizations until 2001. The development of the Kuranah deposit was designed by the planning organization (design institute) VNIPIpromtechnology (VNIPI) at the beginning of 2006, together with Aricom specialists, and is now going through the permitting procedure.

The Kuranah project is based on reserve of 19,308,000 tonnes with 10.11 % TiO_2, 19.60 % magnetic iron and 0.39 % V_2O_5 and inferred resource of 658,350 tonnes with 10.97 % TiO_2, 19.77 % magnetic iron and 0.39 % V_2O_5 .

Operation will mine ilmenite and titanium-magnetite ores by open-pit method with ore processing by magnetic separation method. The planned annual ore production from the pit is 2,400,000 tons, the planned open pit life is 10 years. The finished products are titanium-magnetite and ilmenite concentrates.

EIA report is based on the project report, designed by VNIPIpromtechnology, a number of separate reports relating to different environmental aspects and two visits to the region of project and has been prepared to meet the requirements of the Equator Principles.

2. Project location

The Kuranah titanium-magnetite deposit site is located in the Tundinskiy district in north-west part of Amur oblast on the east of the Russian Federation. The Amur oblast borders the Republic of Saha in the north, Chita oblast to the west and the Jewish Autonomous Oblast and Khabarovsk Krai to the east which are the administrative units of Russia Federation and borders China to the south. The deposit is 40 km from Olekma railway station, which lies on the Baikal-Amur Railroad. Olekma is the nearest settlement to the deposit site. Olekma station is located 480 km from the district centre town of Tynda. The distance from Tynda to the regional centre of Blagoveshensk is 840 km.

3. Permitting procedure and standards

The Russian permitting procedure consists of two distinct phases – project initiation, which includes project development and construction, and operation. The first stage is provided for by the OVOS (the analogue of Environment Impact Assessment report) which is the main document for obtaining environmental permission for the operation.

Before operations have begun, several permits are required to be obtained from different authorities and the OVOS must be approved by state environmental experts. According to the laws, any proposed activity must be discussed with the interested public.

In general, the OVOS procedure is broadly compatible with Environmental Impact Assessment process applied internationally and incorporates: a description of the development, a characterisation of the existing environment, impact predictions, an assessment of the significance of impacts and details of proposed mitigation measures. Statutory and public consultations are expected throughout the preparation of the OVOS.

During the operation, the organization has to have regular permits for environmental pollution, namely for air emissions, water discharges and waste disposal.

The Russian system of environmental protection is based on a system of environmental standards, and covers aspects such as water quality, air quality, wastes, conservation areas and so on. The basis for evaluation is a range of maximum acceptable concentrations (MACs) covering

atmosphere (both for workplace environment and for ambient air quality and including average daily and maximum concentrations), water quality (for drinking water, recreational usage and fisheries protection), soils, and sediments.

4. Baseline conditions

- Climate

North of the Amur oblast is a district with a strongly continental climate with large temperature differences on a seasonal basis. Winter is cold and long with a little snow cover, summer is hot and short. Permafrost occurs throughout the area. Meteorological data are available from a meteorological station which is located 70 km to the south-east of deposit site in the settlement of Ust-Nukzha.

The absolute minimum temperature for the whole monitoring period was -54ºC; the absolute maximum temperature was +37ºC.

Average day temperature ranges from -32.3 in January till 17.6 in July. Average annual precipitations is 439 mm, more than 46 % of year norm precipitates in July and August.

Atmospheric circulation above Amur oblast is influenced by the Asiatic continent and Pacific Ocean. During the long winter a broad anticyclone defines western transfer of air, in summer, a field of high pressure situated above the Okhotskoye sea and a field of depression above China and Mongolia cause east and south-east air circulation.

- Geology, seismic and hydrogeology

The Kuranah deposit site belongs to the Kalanar massif, one of the andesine type massifs of the Amur region. The Kalanar massif consists of two branches – Imangakitskaya and Kuranahskaya, which are separated by tectonic blocks and zones of granitization. Both branches are formed mainly of feldspar rocks (labradorite, andesinite) with the presence of basic rock (gabbro, gabbro-norite, norite).

Rocks of various compositions occur in the geological subsurface of the Kuranah deposit. Metamorphic rocks are Lower and Upper Archaean and Lower Proterozoic in age, and intrusive rocks are Pre-Cambrian, Paleozoic and Mesozoic in age. Friable overburden is spread insignificantly.

The Kuranah deposit site is located within the Olekma seismic zone. Regionally, the deposit site is connected with Baikal seismic zone, reaching in a latitudinal direction for more than 1500 km. As is typical for earthquakes with an epicentre in the Amur region, the depth of the earthquake sources within the Olekma seismic zone is generally 5–10 km below ground level, and seldom 15–30 km below ground level. The area close to the proposed Kuranah mine site is characterized by increased seismic activity with possible earthquakes of magnitude 7 and more on the Richter scale.

Hydrogeological conditions of the deposit site is defined by the presence of permafrost due to a strongly continental climate with negative average annual temperature, and its location within the mountain system of Kalar mountain ridge. Exploration drilling showed that the rocks of the friable layer are frozen everywhere with permafrost thickness more than 300 m. Taking this fact into account, over permafrost, inter-permafrost and under permafrost ground waters were identified, associated with different hydrogeological formations.

Surface water

The River Kuranah and its tributaries form the drainage network of the study area, the general length of the River Kuranah is 78 km. The flow of the rivers and streams is very irregular throughout the year and practically absent in winter. Small rivers and streams freeze completely.

Water of all watercourses around the project area is soft and weakly acid. On the mining site widespread poor drainage associated with permafrost and a large amount of undecomposed

organic acids in the surface of the catchment area determine the elevated content of organics, ammonium, iron and manganese in surface water.

Rivers and streams of the project area have no much fishery meaning because of the freezing.

- soils

Inclement climatic conditions, permafrost and the composition of the rocks result in an acid and acid gley type of residual soil and low biological activity. Soils in these conditions are characterized by stoniness and a short profile. Because of the low biological activity and specifics of the bed rocks, the soils have a thin fertile layer. The results of the soil investigations showed that the land at the project area can be characterized by low potential fertility and is of low productivity.

The majority of the project area is covered by mountain taiga forest. The forest is light as the trees do not grow very close together, and almost everywhere the trees are not tall and their development is suppressed by permafrost. Many sites are rehabilitating naturally after fire or previous disturbance. The main species are Dahurian larch, birch, which is mainly present on disturbed sites, and mountain pine. Additional species are Archangel fir, alder-tree and others. Bushes such as Arctic birch, Labrador tea and great bilberry are prevalent. The flora of the project site is not diverse or site specific.

- wildlife

The climatic conditions, the geographical location of Amur oblast and the presence of vast areas of undisturbed forest define the diversity of wildlife. In total, 64 mammal species, 326 bird species, 10 reptile species, 7 amphibian species and 68 fish species inhabited the Amur oblast. Most of the mammal species are hunted. The most important species for hunting are ungulate animals – elk, roe deer, Manchurian deer, wild boar, bear, and fur-covered animals – sable, Siberian weasel, fox, lynx.

The project area constitutes habitat for wolf, fox, bear, bobcat, sable, weasel, ermine, Siberian weasel, otter, glutton, mountain hare, chipmunk, flying squirrel, squirrel, musk-deer, roe, elk, Manchurian deer, wild north deer, hazel grouse, willow grouse, partridge, and wood-grouse. Also five rare protected species of birds can be found on the area of the proposed project.

- natural reserve areas

A botanic reserve area named “Imangra” is located in close proximity to the proposed project site. This reserve area was established in 2002 to protect and conserve:

- mountain ecosystems;
- ecosystems of upper courses of mountain rivers and streams with fragments of mountain and forb meadows (meadow with many species of grass), mountain and valley forests;
- fauna of outcrops.

Most of the protected species in Imangra are mountain species and they are weakly represented in other reserve areas of Amur oblast.

- socio-economical issues

Reduction in industrial production began in Amur oblast in 1991, as well as generally in Russia and up to 1999, the volume of production decreased more than threefold. During the general decrease in industrial production, there were significant changes in structure and part of the extractive industry essentially increased and now it is about 50 % of general production. Mining of gold, coal and building materials (gravel, sand, kaolin, crushed stone and others) are

prevalent. The presence of vast forest resources define the role of the forestry industry in the economy of Amur oblast. However in spite of the great resources, wood processing has not developed in oblast.

Because of the features of the territory, the transport system plays an important role in the oblast's economy. Territory of the oblast is accessed by a network of railroads which covered 3,295 km. Trans-Siberian railroad and Baikal-Amur railroad go through the oblast and they have spare capacity.

The population of the oblast in 2002 was 989 800 people, with 64.7% of the population living in cities. The population density is 2.7 people per km^2. Currently the demographical situation in the oblast is characterized by decreasing living standards, worsening of the population's health, high death rate, and major migration of population away to other regions.

Tundinskiy district is a district of the project location occupies almost twenty percent of the Amur oblast. There are 23 settlements in the district, located mainly along the Baikal-Amur Railroad. Tundinskiy district is one of the main industrial districts of Amur oblast. Transport, logging, gold mining and the building industry form the basis of the economy. As for all Amur oblast, extractive industry is the main component in the economy of the district. During the last three years, there have been positive moves for industrial development in the district.

The nearest and the only settlement within a radius of 50 km from the deposit site is the settlement of Olekma which is located in 40 km from the mine site and 5 km from process plant site. The settlement was established in 1980 as a station settlement for Olekma Station on the Baikal-Amur Railroad. Population of the settlement is 517 people.

- indigenous people and cultural heritage

Amur oblast has a aboriginal communities of Evenks. Traditionally the main occupations of Evenks are deer farming and hunting. Evenks live around East Siberia and the Far East of Russia. In 2002 the population of indigenous people in Amur oblast was 1,501 people. The nearest settlement to the Kuranah deposit site with an indigenous population is Ust-Nyukzha, located 70 km south-east of the deposit site. The Kuranah deposit site is located on an area which is used by indigenous people from collective farm "Nyukzha" and forms a very small part of the total great area of deer pastures and hunting grounds.

There are no historical and cultural objects on the area of deposit site as well as objects of cultural heritage.

5. Project description

Kuranah mining will mine ilmenite and titanium-magnetite ores by open-pit method. The planned annual ore production from the pit is 2,400,000 tonnes, the planned open pit life is 10 years, including pit development and closure. The finished products are titanium-magnetite and ilmenite concentrate. The project will employ 793 employees, taking a two-shift working schedule into account.

The operational units of the project are divided between two sites, connected by road – the mine site, which includes the open pit, grinding-sorting factory, explosive materials storage and other auxiliary units; and process plant site, located in 35 km from mine site, which includes the process plant itself, tailings dump, camp and some auxiliary units. The mining area is connected with the process plant and Olekma station by the road.

Extraction of ore will be performed using strip mining technology to mine five-metre high benches, which will require drilling and blasting operations.

The open pit has been divided into four sections. The pit sections will be worked one after another with backfilling the worked-out areas with overburden and waste rock from next section. Overburden from first section will be taken out to the external dump.

Due to the complex relief and high capital investments into railway construction, the following procedure has been selected for ore processing:

- 2,400,000 tons of ore per annum are fed into the grinding-sorting factory, located near the open pit;
- after preliminary processing, 1,650,000 tons per annum are transported by motor transport to the process plant, located 4 km from Olekma railway station.

The grinding-sorting factory consists of a coarse breaking facility, secondary and fine crushing facility, grinding and separating facility. Dry magnetic separation will be implemented for ore concentrating at this stage. Tails of dry separation will be disposed in the damp.

The technology of further concentrating on the process plant will include two main processes – fine grinding and magnetic separation. In contrast to the preliminary processing at the grinding-sorting factory, wet magnetic separation is used for this stage.

Wet tails of wet magnetic separation will be disposed in the tailings damp which will be located near the process plant. The tailings dump site is bounded on three sides by a dam wall, and the estimated capacity of the facility is 5.2 million m^3; the facility will be filled by pouring tails in. The tails volume from the concentration plant is 530 000 tons per annum. The mineralogical composition of 80% of the tails is quartz and feldspar with small quantities of amphiboles, garnet, biotite, ilmenite and titanium-magnetite. There are no dangerous or poisonous chemicals in the tails.

Water recycling system with water from tailings dump will be used for process plant water supply. Water discharge from the tailings dump into the local drainage network will not occur.

External shipments will be carried out by railroad transport. An access railroad is planned to be constructed from Olekma station on the Baikal-Amur railroad line. Transportation of primary concentrate from the grinding-sorting facility to the process plant is carried out by trucks along a new road.

Heat for all sites is supplied from three autonomous boiler-houses.

Water for the operation will be supplied from underground water resources. Two borehole water intakes will be installed – one is for the process plant and camp and the other is for the mine site and grinding-sorting factory.

Electric power supply will be provided by local power networks. For power takeoff for the project, two electrical substations with capacities 220 and 35 kV will be built at the project location. One 220/35/6 kV substation with two power transformers will be built at the concentration plant and camp site. A second 35/6 kV substation with one power transformer will be built at the open pit and grinding-sorting factory site. The latter substation will be connected with the first substation at the concentration plant site by an overhead transmission line with a voltage of 35 kV and transmission lines with a voltage of 6 kV will be used within the mine site.

6. Impact assessment and measures

Assessment of environmental impact has been carried out separately for the construction phase and the operational phase at the most significant sites of the project, which are listed below. In some cases, minor auxiliary sites have been united with the more significant ones, where they constitute one common industrial area. In terms of impact, the following areas are examined:

- open pit;
- grinding-sorting factory with auxiliary works;
- the road from the station to the mining area and the high voltage line;
- the process plant;
- the tailings dump;
- camp.

Following a review of baseline conditions, the project description and regulatory and other requirements, the following issues have been identified as requiring consideration in the EIA for this project:

- hydrogeological environment and permafrost;
- land use;

- soils;
- vegetation;
- fauna;
- surface waterways;
- air quality;
- social-economical issues.

The following issues were not considered significant in respect to this project, and will not be assessed during the environmental assessment process:

- geology – the project is based upon the exploitation of a known mineral resource. The project has no impact on any other known mineral resources.
- topography/landscape – physical changes take place on site, but there is no significant and sensible landscape features and no local population using this area to a high degree.
- archeology/cultural heritage – analysis of baseline conditions showed no issues.
- aquatic ecology – climatic conditions result in a poor aquatic population which does not need separate assessment.
- Acid rock drainage – is not expected based on the composition of the ore and waste rock.

The environmental impact assessment has shown that on the whole, construction and operation of the Kuranah deposit will cause no significant consequences to the natural and social environment.

Definite positive impacts will occur in the socio-economic area. In addition, cooperation with representatives of indigenous people of the North may also produce some positive socio-economic effect on this group of people.

The main impact during the construction phase will be on soil cover and vegetation, which will be destroyed on an area of not less than 500 ha. Vegetation cover will be partially restored during the rehabilitation period. Because of the low capacity of the topsoil, it will not be removed and kept for re- use later for rehabilitation, thus loss of soils will be irreversible.

The main impact at the production phase will be on the following:

- fauna because of irreversible loss of animal natural habitat in the pit area;
- dust pollution of the components of the environment.

The assessment of impact has shown that there is some information that is unavailable, because no research work has been carried out on the issues, including the following:

- hydrological characteristics of small waterways on the mining works lands;
- hydrological and frozen ground conditions after the deposit has been worked out in the event of flooding of the void;
- engineering-geological conditions of the tailings dam site.

The impact assessment has shown that there is the need for a system of management to be developed on the following issues:

- frozen ground conditions;
- environmental monitoring;
- water management optimization and further hydrological characteristics research;
- dust control;
- waste management.

On the basis of the issues identified during the environmental impact assessment process environmental, health and safety management plan was prepared. The Plan describes the main commitments of company Olekminskiy Rudnik for the Kuranah mining and processing project in terms of mitigation measures to protect the environment, safety provisions and proposals on public consultation. On the basis of this plan, detailed procedures and instructions will be developed for employees on every component outlined.

7. Public consultation process

An initial Public consultation plan was developed in March 2006; it is shown in Attachment 6. In accordance with this plan, more investigations into social-economical conditions took place, and a public meeting on the project proposals was held in April 2006. The results of the consultation have been taken into account in the EIA report.

The EIA report will be presented for public consideration. Work on the public consultation process and information disclosure will be performed by the company OR. In the case of public interest in the project after consideration of the EIA materials, another public meeting or other events with public meetings can be organized.

8. Conceptual closure and rehabilitation plan.

According to World Bank and IFC's requirements, Plan of operation closure and rehabilitation was developed. The plan was provided to ensure the following:

- project complies with Russian law regarding enterprise closure and rehabilitation activities;
- conditions of maximum possible beneficial use and stable deposit site area after enterprise closure;
- safety for visitors to the site area after enterprise closure;
- reduction of possible negative impacts to the environment;
- prevention of negative social consequences after the enterprise closure;
- sufficient financial support for all planned activities for enterprise closure and rehabilitation.

Activities for mine closure and reclamation consider the following key aspects:

- Open pit reclamation;
- Waste rock dump reclamation;
- Liquidation of factory buildings and auxiliary facilities located at the project sites;
- Dry tails and tailings damp reclamation;
- Camp liquidation;
- Methods for access and internal roads reclamation, railways and power line liquidation;
- Solutions for social and economic issues;
- Post closure monitoring;
- Financial provision.

The Plan involves carrying out post-closure environmental monitoring, which is a standard International procedure; and also it is considered by the Olekminsky mine company to be a safety provision measure.