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TERMS OF REFERENCE OF THE INTERNATIONAL CALL FOR EXPRESSIONS OF INTEREST (AIMI) RELATING TO THE PRE-SELECTION OF TECHNICAL AND FINANCIAL PARTNERS FOR THE NATIONAL MINING CORPORATION (SONAMINES S.A.) FOR THE COMPLETION OF EXPLORATION WORKS AND THE COMMISSIONING OF THE AKONOLINGA RUTILE BLOCK IN THE CENTRAL REGION OF THE REPUBLIC OF CAMEROON

1 BACKGROUND

Cameroon has a significant geological potential that can boost economic growth through the development of the mining sector. The country is, among others, endowed with huge deposits of iron ore, gold, bauxite, rutile, limestone and cobalt, to name but a few. But with all this geological wealth, the mining sector has never really played a major role in the country's development.

At the technical level, the mining sector has, with the support of donors, been the subject of several projects that have whetted the interest of investors, resulting in the granting of more than a hundred exploration permits for various commodities. To date, 8 (eight) licences in total have been granted for the exploitation of marble, iron ore, gold and bauxite.

At the legislative and regulatory level, reforms in the mining sector have intensified since 2023 with the adoption of a new Mining Code and the enactment of its implementing texts, which, among other innovations, provide for the systematic transfer of deposits previously identified and abandoned or withdrawn from their discoverers to the National Mining Corporation (SONAMINES S.A). This provision applies to the *Akonolinga* rutile block, over which ERAMET Cameroon has carried out extensive research and developed a pre-feasibility study.

The Mining Code and its implementing texts can be downloaded in English and French from the website of SONAMINES S.A, www.sonamines.cm.

2 PURPOSE OF THE AIMI

These terms of reference aim to launch an International Call for Expressions of Interest (AIMI) for the pre-selection of technical and financial partners for SONAMINES S.A., with a view to finalising exploration works and commissioning the *Akonolinga* rutile block in the Central Region of the Republic of Cameroon.

3 OVERVIEW OF THE GEOLOGY AND MINERAL POTENTIAL OF CAMEROON

Cameroon can be divided into three major geo-tectonic units: the *Ntem* Complex, the vast Pan-African orogenic belt in Central Africa, which contains numerous granitoid intrusions, and the limited Phanerozoic cover units.

The *Ntem* Complex consists of Precambrian rocks that stretch out in the South of the country and correspond to the northern border of the *Congo* craton. It comprises the *Ntem* unit at the core and the *Nyong* unit at the west end. *The Ntem* unit is dominated by Archean magmatic rocks (2.8-2.9 Ga) of *charnockitic* and non-charnockitic TTG composition containing large xenoliths of *supracrustal* rocks, interpreted as remnants of greenstone belts and dated at ca 3.1 Ga. The TTGs were intruded by extensive young K-rich granitoids emplaced between 2.7 and 2.5 Ga (*Tchameni* et al., 2000; Shang et al., 2004).

The *Nyong* unit consists mainly of metasediments and Palaeoproterozoic *metavolcanics* affected by a metamorphism of granulite front and intersected by syn-to late-tectonic granitoids dated between 2.1 and 2.05 Ga. It probably represents the southern extension of the granulitic rocks that occurs in septa in the granitoids of the *Adamawa* Region (*Toteu* et al. 2001, 2004).

The Pan-African belt extends immediately to the north of the *Ntem* complex; it is of predominant Neoproterozoic (*Pan-African*) age and showcases three tectonic units separated by major shear zones: the *Tcholliré-Banyo* shear zone (TBSZ) which is SW-NE- oriented and the *Sanaga* shear zone. From the South to the North, these are i) the *Yaoundé* unit, which outcrops the south of the *Sanaga* Fault and consists of metasedimentary schists and gneisses, orthogneisses and ultrabasic rocks metamorphosed in green granulite front schists. ii) the *Adamawa* unit, which outcrops between the *Sanaga* Fault and the *Tcholliré-Banyo* Fault. It consists mainly of Pan-African granitoids containing metavolcano-sedimentary and metavolcanic formations in septa from metamorphosed Paleoproterozoic meso age to Pan-African age in amphibolite fronts with granulite, metavolcanics and Neoproterozoic schists of Lom; and iii) the West Cameroon unit which outcrops north of the *Tcholliré-Banyo* Fault (Toteu et al., 2004) and extends to eastern Nigeria. It includes Neoproterozoic schists and gneisses of volcanic-sedimentary and volcanic origin of medium to high degree of metamorphism and Pan-African pre-syn-to late-tectonic granitoids emplaced between 660 and 570 Ma. At the regional level, this latter tectonic unit is also intersected by alkaline post-tectonic granitoids dated 540 Ma and tertiary ring complexes. It is also unconformably overlain by numerous Palaeozoic non-metamorphic volcano-sedimentary basins (Mangbai type).

The Phanerozoic cover includes minor sedimentary and volcanic rocks of the Palaeozoic (lower level), Cretaceous sandstones and sequences of schists and Continental volcanic rocks from the Cenozoic era of the CVL (Cameroon Volcanic Line), which is a Y-shaped range of 1,500 km of length with recent tertiary (alkaline) volcanoes, such as Mount Cameroon, and high-level contemporary intrusions.

In terms of mineral potential, Cameroon is today a producer of energy substances (oil and gas), metalliferous substances (gold), useful substances (limestone, clay) iron ore and bauxite. The country still has numerous mineral resources that are still underdeveloped, namely cobalt, nickel, manganese, and rutile and a high potential of tin, mineralised sand and uranium. Generally, gold and diamonds are produced at the small-scale level in the East of the country, along the border with the Central African Republic (CAR), but equally in the Centre, the South and the North.

The lithological characteristics, the structural evolution and the geo-tectonic features of Cameroon highlight its mineral potential as underlined by the ongoing exploration activities. The Archean and Paleoproterozoic sequences of South Cameroon are rich in iron and possibly in gold; the Neoproterozoic / pan-African belts contain various deposits, particularly Co-enriched mafic and ultramafic deposits, and granitoids that control the location of rare and valuable metals (Sn-W-REE & UA), and uranium in addition to supergene deposits and non-metallic minerals such as rutile and nepheline; as for the Cenozoic sequences, they contain major lateritic deposits of bauxite.

4 PROJECT OVERVIEW

4.1 Geographical location

The rutile area of *Akonolinga* is located in the Central Region, *Nyong* and *Mfoumou* Division, the town and administrative centre of which is *Akonolinga*. Specifically, it is located about 125 km at the east of Yaoundé, the capital. From *Yaoundé*, the paved national road n° 10 is in very good condition right to *Ayos*. About 120 km away, a short-asphalted road leads to *Akonolinga*, 10 km drive at the southeast. This city is located on the north side of the Nyong River. On the right bank of this river there is an alluvial plain (lower levels). This plain is the place where sediments carried by the river pile up. These alluvions are of paramount economic and geological importance as they contain mineralised sands which are rich in rutile and kyanite.

From *Akonolinga*, the flats of rivers Yo*, Djaa* and Mfoumou can be reached; For the *Yo* and *Djaa*, one should cross the Nyong River on a concrete bridge, and drive southward for a few hundred meters to the meet point with the narrow P-22 secondary road that follows river *Nyong* towards the South, and leads to the *Yo* and *Djaa* rivers where the rutile deposits are found.

The approximate coordinates of area's landmark are:

(i) latitude: 3°42'N; (ii) longitude: 12°10'E; (iii) altitude: 650 m

The area is part of the vast South Cameroon plateau, which generally lies between 600 and 800 metres above sea level. The landscape is characterised by a deeply weathered ancient peneplain, dominated by a major hydrographic network that has accumulated alluvial deposits rich in heavy minerals on the banks of the *Nyong* River. These environments correspond to ancient erosion

surfaces, formed by the flattening of the bedrock over very long geological periods.

The geomorphology of the region is directly linked to its geological context (ancient basement) and is characterized by intense chemical weathering under an equatorial climate and the influence of the great *Nyong* River. This climate is characteristic of a very deep chemical weathering of the bedrock, leading to the formation of thick mantles of weathered material and ferralitic soils.

The climate is of equatorial type, with two rainy seasons and two dry seasons consisting of a small dry season from December to February, interspersed with some violent storms, and a long rainy season the rest of the year, with a decrease in precipitation in July and early August. The heaviest rains usually fall in September/October and April/May.

At the morphological level, the Akonolinga area corresponds to a plateau with a gentle relief and thalwegs that are heavily filled, often marshy and almost permanently flooded during the rainy seasons, which is particularly the case for the *Yo* and the *Djaa*.

With regard to vegetation, the entire area is covered by a secondary forest. At the edge of the slopes there are numerous plantations. The flats are occupied by a moderately dense forest, with some grassy areas.

4.2 Geology of the study area

Geologically and gitologically, the area of this study is included in the crystalline basement of South-west Cameroon, which consists of two major groups: the *Ntem* group and the Yaoundé group. It is in the most recent of the two, the Yaoundé group probably carted by the first, that the main rutile placers are found. These are more particularly associated to a set of micaschists containing two micas, grenat, kyanite and rutile, with inter-bedded quartzite. These fronts meet, in the N.NE of the project in the series of Yaoundé, but equally in the series of the Nisus mountains, which form a narrow north-south band at the west of the area concerned.

All the known and formerly mined deposits are alluvial deposits and their description shows no gitologic originality.

4.3 Summary of work on the *Akonolinga* rutile block

4.3.1 Historical background of the work

Rutile has been known in Cameroon since the beginning of the century, but it was only mined between 1935 and 1955. The total rutile production recorded was about 15,000 tons, with a maximum of 3,320 tons in 1944; mining remained essentially artisanal.

In the project area, the most important mining areas were grouped together:

- east of Yaoundé, in the Akonolinga area, with 30% of the total production;
- west of Yaoundé, *Eseka* and Sanaga Maritime area, with about 8% of the total production.

Cameroon crude rutile was appreciated on the market for its quality (95 to 98% of TiO2). It was operated only to the grain size equal to or higher than 1 millimetre. Mining grades ranged from 10 to 20 kg / m^3 in place, and sometimes more.

In 1950, the Department of Mines and the French Overseas Mining Office (BUMIFOM) created the Rutile Union. The organization launched a prospection program in an area found in the west of Yaoundé, where small-scale mining production was very limited. This work made it possible to delineate fifteen small deposits with small tonnages. A reorganization project was initiated to bring together the various small producers and plan the mining activity. In 1953, the union not being effective, its dissolution was pronounced. Small producers retreated a few years later and mining activities ceased.

- **From 1978 to 1980**

In 1978, the Bureau of Geological and Mining Research (BRGM) of France decided, despite the previous mishaps, to invest in Cameroon rutile. That year, the B.R.G.M. with their own financing, prospected the alluvials of the lower Nyong valley, at the mouth of the river in the coastal sedimentary basin of Douala. The results of this survey gave little hope (report 78 RDM 037 AF).

The following year, after a comprehensive metallogenic compilation, a strategic prospecting survey was launched in other sectors. Previous surveys of BUMIFOM and previous alluvial rutile mining sites were reviewed and it was found that some tributaries at the south of the *Nyong* River were richer in rutile and could have flats 200-300 m wide; it was the case for two tributaries of rivers *Djaa* and *Yo* in which two old mining permits produced 495 tons and 75 tons of rutile respectively.

As a result of this study, four areas (*Edea-Kribi*, *Campo*, *Otélé* and *Akonolinga*) were selected for a field audit focused on sinking wells in alluvium and eluvium.

The minimum economic objective was the delineation of a resource of 5 million tons of mineralized sand at an average grade of 1% rutile, within a radius of 50 km around a processing unit. As a result of this prospecting survey, only two areas were selected: *Otélé* and *Akonolinga*, where concentrates containing an average of more than 40% rutile were found.

➢ **From 1980 to 1985**

The work was carried out by the B.R.G.M. within the framework of the "Mining Research and Prospection in South-West Cameroon Project (South-East Mining Project)" financed by:

- the Government of the Republic of Cameroon;
- the Aid and Cooperation Fund (FAC) of France;
- the European Development Fund (EDF)

1980 - Strategic prospecting with the Banka 4 survey "(Report 81 RDM 047 AF)
Work carried out:

The *Yo* and *Djaa* flats were each tested by two lines 5 to 7 km apart. The Banka surveys are spanned from 30 to 100 m (30 surveys totalling 112.30 m) on each line. An auger sampling was carried out to test the eluvium on both sides of the flat.

Sampling was achieved in metric passes at sandy levels. About twenty centimetres of substratum were collected with the last sample.

Results obtained:

✓ **The *Yo* flat:**

On line A, the placer consists of 0 to 2 m of clay coverage, surmounting 1 to 2 m of more or less mineralized sand, with some basic gravels. On line B, the bed rock draws a channel with asymmetrical section. Under a clay covering of 0 to 2.5 m, is a sandy level, with little or no clay, of 1 to 4 m of power.

The dense fraction greater than 1 mm consists almost entirely of kyanite (80 to 85% on average). The dense fraction of less than 1 mm has an average of 47% rutile and 40% kyanite. The remainder consists mainly of staurolite, garnet, ilmenite, pyrite and zircon.

The rutile contents vary between a few kilograms and 42 kg/m^3 of abundant random sand. The contents of kyanite range from a few kilograms to over 400kg/m^3, with a distribution comparable to that of rutile, i.e significant levels in the middle part of the flat and above the bed rock.

By extrapolating the results obtained on two lines over 10 km of total development of the *Yo*, the potentials of the *Yo* flat could be:

- 70,000 tons of rutile at an average grade of about 15-16 kg / m^3 of blooming loose sand;
- 150 000 tons of Kyanite greater than 1 mm, with contents ranging from 28 to 34 kg / m^3 of blooming loose sand.

✓ **The *Djaa* Flat:**

The *Djaa* alluvium has a discontinuous clay covering of 0 to 2.8 m of power, overcoming a level of 1.5 to 4 m of more or less mineralized sand.

This sandy formation, fine at the top, becomes increasingly coarse down. The dense fraction which is greater than 1 mm consists almost entirely of kyanite (80 to 90%). The dense fraction of less than 1 mm averages 52% rutile and 31% kyanite; the accessory minerals are: staurolite, garnet, and ilmenite.

The rutile contents vary between a few kilograms and 41 kg / m^3 of blooming loose sand. The highest grades are found in the middle part of the flat, and at the base of the sandy level, near the bed rock. The contents of kyanite vary between a few kilograms and 104 kg / m^3.

By extrapolating the results obtained, the potentials of the Djaa could be:

- 150 000 tons of rutile at an average grade of 17-18 kg / m3 of blooming loose sand;
- 150,000 tons of kyanite at grades ranging from 13 to 39 kg / m3 of blooming loose sand
- Multiple.

1983 - Preliminary Recognition of the Yo and Djaa Flats (Report 83 RDM 036 AF)
Work carried out:

The Yo and Djaa flats were subsequently recognized through the Banka 4 "survey, with a cross-sectional profile on every 1000 m, including those of the 1980 survey, and a survey every 50 m on these profiles. A number of surveys was equally carried out downstream of the flat of their main tributaries, i.e about 139 surveys totalling 390.45 m.

Sampling, surveying and processing methods are comparable to those of the 1980 survey.

DEPOSIT'S RESERVES APPROACH

- **Geometry of the Flats**
  - ✓ **The *Djaa*:** the *Djaa* flat has been studied, over a length of 12.8 km, by 10 Banka survey profiles. Its width varies on its recognized part between 130 and 850 m (average 390 m). The thickness of the alluvium does not exceed 5.70 m.
  - ✓ **The *Yo*:** the *Yo* flat has been studied by 7 survey profiles, over a length of 8,120 km. Its width varies between 230 and 650 m in its recognized part. The thickness of the alluvium varies between 2 and 4 m with peaks at 8 meters.
- **Geometry of the mineralized body**
  - ✓ **The *Djaa***: The width deemed "useful" (concentration greater than 20 kg / m^3) of this flat oscillates between 60 and 400 m (average 170 m). The average thickness of the "mineralized" alluvium thus defined is 3.16 m, for a sterile clay covering of 1.06 m (0 to 2.40 m).

- ✓ **Tributaries of the Djaa:**
  - on the three upstream tributaries of the Djaa, only the profile performed on the Mbeteme flat is of interest, with a "useful" width of 190 m and a"mineralized" thickness of 2.02 m under a null overlap;
  - on the two tributaries of the centre of the Djaa, only the Toumbouflat is of interest, with a "useful" width of 45 m and a "mineralized" thickness of 0.85 m, under 0.25 m of sterile coverage.
  - the Nsoko flat has a "useful" width of 150 m, an ore thickness of 2.50 m under 0.55 m of coverage.
- ✓ **The *Yo*:** The "useful" width of this flat varies between 50 and 150 m (90 m on average). The average thickness of "mineralised" alluvium is 3.50 m under a sterile coverage of 0.75 m average (0 to 1.80 m).
- ✓ **Tributaries of the Yo:** On the two tributaries of the left bank downstream, only the Bilondo profile is of interest with 80 m of "useful" flat and a "mineralized" thickness of 1.80 m under a 0.40 m coverage average.

➢ **Measured contents**

As a general rule, flat parts with a concentrate content of less than 20 kg / m^3 are not taken into account.

✓ **Flats of the Djaa and its tributaries**

According to the profiles, the rutile contents vary from 12.650 kg / m^3 TVF1 to 19.900 kg / m^3 TVF for the Dja flat.

- *Mbeteme* profile: 19,600 kg / m^3 TVF (*)
- *Toumbou* profile: 17,500
- *Nsoko* profile: 17,900

The Kyanite contents vary much more strongly, from 7.6 kg / m^3 TVF to 49.650 kg / m^3 TVF in the Djaa alluvium.

✓ **Flats of the Yo and its tributaries**

The rutile contents vary in the *Yo* alluvial deposits and in rows of 15.8 kg / m^3. It is 19.7 kg / m^3 for the *Bilondo*.

The kyanite contents vary (except for profiles A and B of the 1980 survey) from 15.9 kg / m^3 to 45.2 kg / m^3, and are 4.550 kg / mi in the Bilondo alluvium (only one profile).

➢ **Estimated Cubage**

Reserves in rutile and kyanite were evaluated by the method of zones of influence attributed to each line. The volume is obtained by multiplying the half distances between lines with the area of the mineralised body at the level of the line.

The content used is that in T.V.F. The reserves are therefore expressed with a security equal to the expansion coefficient (see below).

The *Djaa* alluvial deposits and tributaries: The rutile reserves are estimated at 132,800 t with an overall content of 20.3 kg / m^3 (i.e. 107,500 t for the *Djaa* alluviums). The Kyanite reserves may be 136 000 t (fractions of less than or higher than 1 mm) with an average content of 25 kg / m^3 for the *Djaa* flat and 7.4 kg / m^3 for its tributaries.

The Yo alluvial deposits and tributaries: The rutile reserves are estimated at 50,700 t at an average of 22 kg / m^3 (45,500 t for the *Yo* alluvium). The Kyanite reserves would be 56 000 t with an overall content of 34 kg / m^3 for the Yo flat, and marginal (5.2 kg / m^3) for its tributary, the *Bilondo*.

The Akonolinga area: The rutile potential of this area is estimated at more than 500,000 tons.

MINING APPROACH

- **The materials**

The coverage is made of clay, supposedly sterile (it has not been sampled), and of very variable power. There appears not to be significant clay lenses within the mineral sands. Only survey n°7 of profile 3070 of the Yo seems to have found clay minerals in contact with the bed rock.

The sandy ore can be very schematically split into three fronts:

1. a higher level of medium to coarse sand (<1 mm), more or less clayey, and widespread, especially in the middle part of the deposit;
2. a lower level of fine-to-medium sand (<1 mm), more or less clayey, with some angular quartz gravels of 0.5 to 5 cm (less than 10-20%). It is located mainly in the overcrowded zones of the substratum (channels) and seems to be the most mineralized;
3. fine sands become locally clayey, especially in the lateral parts of the flat.

The substratum is composed of muscovite schists, which are very much altered.

- **From 1984 to 1985**

Further research works were carried out on concentrates collected in the Djaa and Yo flats with the aim to:

- prepare a preliminary technical-economic study to better specify the economic potential;
- value the data obtained in previous surveys with additional sampling;
- improve the treatment process and increase the percentage of gravimetric recovery of the smallest particles.

Nine (9) pits were dug during this season in the field; the samples collected were subjected to two processing phases:

- laboratory tests with granulochemical and mineralogical assays, Humphrey
- table test, concentration control through washing;
- pilot tests on 14 tons of ore to control the washing and gravimetric concentration problems of fine particles.

These laboratory tests showed 7% losses of TiO2. The table tests showed a recovery of:

- fraction 100 -500 µ = 72 to 85% of TiO2;
- fraction 32 - 100 µ = 74% TiO 2;
- fraction <32 µ = considered unrecoverable.

The average recovery is estimated at 65% TiO2. The crude ore content is about 2.1% TiO2 (dry product). This value was comparable to the values obtained on the nine (9) samples tested in the laboratory.

➢ **From 1988 to 1991**

On 28 February, 1988 the Ministry of Mines, Water and Energy (MINMEE) and the BRGM formed the Akonolinga Rutile Study Company (SERAK) with a capital of CFAF 460 million held by a wholly-owned subsidiary of BRGM (SEREM) and the State of Cameroon in respective proportions of 52% and 48%.

In the same year, SERAK undertook a pre-feasibility study on the Akonolinga rutile deposits. Pilot tests were carried out on four bulk samples taken from rivers *Djaa* and *Yo*; namely:

- BS No. 1: 70 tons;
- BS No 3: 163 tons
- BS No. 2: 106 tons;
- BS No. 4: 227 tons.

This study was mainly carried out in order to define the processing scheme for this type of ore and also, for a first estimate of the investment required for the construction of a processing unit with a capacity of 3 000 tons of rutile concentrate per year. This pilot plant produced a pre-concentrate at a grade of 60-65% TiO2; the pre-concentrate was refined by high intensity magnetic separation and electrostatic separation. The resulting concentrates were sent to different consumers to test the market.

In 1989, the second phase of the pre-feasibility study also included a geological and economic study.

The Rutiliferous alluvial deposits of the *Djaa* and *Yo* rivers were studied by 636 holes drilled with the Banka drill. Drilling was carried out on sections at an interval of 500 m and along sections at a spacing of 50 m. A "cross" with variable spacing was established on each section about 1/3 from

the mouth of the river. These crosses made it possible to establish variograms necessary for the geo-statistical analysis of the results.

A plan on a scale of 1/5000 was prepared. In both flats, 34 pits were dug. Each pit had a diameter of 1.25 m. They were dug on sections at a spacing of 1,000 m, in order to obtain a large volume of material and to control the contents obtained in the boreholes.

Since rutile is not the only mineral containing TiO2, 34 pit samples were used to determine the origin and proportion of TiO2 contained in other minerals.

Following this study, it was concluded that about 23% (*Yo* River) to 28% (*Djaa* River) of TiO2 comes from rutile needles contained in inclusions in other minerals.

In order to make an estimate of the reserves, the flats were cut into elementary panels. The average value of each panel was obtained from all surveys and holes drilled in this area. This method made it possible to evaluate the geological resources of each flat. Statistical analysis confirmed this assessment, with the introduction of a doubt factor related to the method and type of sampling. The results obtained by the two methods were presented as follows:

Flat	**Geostatistic Method**	**Conventional Method**
Djaa	290 226 tons (± 49 919 tons)	300 366 tons
Yo	242 335 tons (± 37 800 tons)	243 884 tons
TOTAL	**532 561 tons 544 250 tons**	**544 250 tons**

Taking into account the 65% recovery rate obtained in the 1988 pilot tests, mining operations would produce 195,000 tons and 158,000 tons of TiO2 from the *Djaa* and *Yo* rivers. The total tonnage is estimated at 353,000 tons of TiO2, which corresponds to 362,000 tons of rutile with 97.55% TiO2.

In 1989, it was concluded that the *Djaa* and *Yo* flats were not the only rutile-rich areas in the region; more rutile alluvia from other rivers such as the *Mfoumou* could be additional resources for the future.

In 1990, SERAK conducted a pilot study for the optimization of gravimetric circuits. The test consisted of using spirals for the +40 µ - 1000 µ fraction of the composite samples collected from the *Djaa* and *Yo* flats.

The results obtained from this study confirmed those obtained during the second phase.

In 1991, a second study to improve the gravimetric concentration was performed on concentrates obtained from spirals (40 µ to 1 mm) from the pilot plant. The tests carried out with rotor electrostatic separator did not

allow the separation between the rutile and the kyanite. The elimination of quartz has, however, remained very effective but with a result lower than that of the magnetic separation.

In the same year, the BRGM drafted a pre-feasibility study for a mining project of 30,000 tons per year.

During this pre-feasibility study, the meanders of the *Yo* (8 km) and the *Djaa* (12 km) were systematically explored using the Banka sounding machine on a 500 m by 50 m grid, for a total of 42 profiles and 405 drill holes plus a number of pits.

The respective widths of rivers Yo and Djaa are 400 m and 300 m. In both cases, the average thickness of the alluvium is about 3 m, of which 0.65 m consists of sterile clay. The specific dry density of the ore is 1.5.

All drill holes were sampled at an interval of 1 m and analysed for TiO2. In addition, a composite sample of each borehole was prepared and used to extract its rutile fraction in grain sizes of 40 to 1000 µm using the Clerici liquor.

The reserves were calculated assuming that a specially adapted dredge would be used to extract the ore and that the specific problems encountered in the alluvial survey had been taken into account.

The reserves were thus calculated at 19 928 554 cubic meters with a concentration of 24.62 kg / m^3 of rutile (1.64% TiO2), i.e 490 612 tons of rutile expressed in rutile TiO2. In the 40 - 1000 µm commercial fraction, the two flats combined contain 384,562 tons of rutile at an ore concentration of 1.65% rutile.

In addition to the *Djaa* and *Yo* River survey, prospecting and reconnaissance drilling was undertaken along the Mfoumou River. Reconnaissance made it possible to delimit the additional resources of 240,084 tons of rutile in the Mfoumou flats and 240,000 tons in its tributaries.

In the same period, reconnaissance was conducted on the *Sélé* and *Tédé* rivers in the *Nanga Eboko* area. The survey estimated resources at 723,000 tons of rutile and 174,680 tons of rutile, respectively. To date, the project has a potential of more than 3,000,000 tons of rutile, taking into account the mineralization of the Mfoumou River and its tributaries, the creeks of South Akonolinga and the *Tede* and Sele rivers located in the *Nanga Eboko* area.

The table below shows the distribution of inferred resources expressed in tonnage of commercial rutile.

MINERAL RESOURCES AND ESTIMATES OF THE MINERAL RESERVE

Calculated Resources	**Tons of Rutile**	**% Rutile**
Yo	136 000	1,71
Djaa	262 000	1,56
Mvingui	118 000	1,58
Lower Mfoumou	248 000	1,00
TOTAL	**764 000**	**1,35**
Indicated Resources		
South Akonolinga	947 000	0.81
Haut Mfoumou	240 000	1,00
Nanga Eboko	898 000	1,11
TOTAL	**2 085 000**	**0,94**
OVERALL TOTAL	**2 849 000**	**1,05**

The average content of the total resources calculated is 1.05% of rutile. This potential represents the world's second rutile resource, behind Sierra Leone.

In 1993, Consolidated Rutile Limited of Australia (CRL) drafted a marketing report for the SERAK project. Five conclusions were drawn by this Australian producer:

- the Akonolinga project with the additional resources of *Nanga Eboko* is a major new global resource in titanium;
- an analysis of mining operating costs indicates that, due to their shape and location, Cameroon rutile deposits are economically ranked, immediately behind those of North Stradbroke Island and Sierra Leone;
- in the global titanium market of the world (including ilmenite) there is strong competition among many fields in various countries to be known as new producers in the next cyclical market recovery;
- a competitive position in the market should be established by minimizing overall costs and developing effective market strategies for the success of the Akonolinga project;

In August 1993, C. Forristal Mining Consultant of England submitted to the BRGM an audit report on the pre-feasibility study, to determine the optimal capacity of the project, the preferred location for the dry treatment plant, the sequence and operating methods, wet processing, plant design, recovery factors, equipment selection and cost adjustments.

The consulting firm concluded that with measured and indicated resources of 2.85 million tons of rutile exploration potential, the Akonolinga Project (including Nanga Eboko) is a leading world-class rutile producer.

Apart from very shallow soil, which limits possibilities of mining methods, there are no outstanding technical characteristics and nothing apparent that could prove fatal to the success of the project.

4.3.2 Summary of Eramet's exploration work on the permit (from 2019 to 2023)

The most significant and recent work has been carried out by French mining group Eramet on several exploration permits of about 2,500 km² along the Nyong River.

- **Period of activity:** Eramet obtained the exploration permits in **2019** and officially launched exploration work in **February 2020**.
- **Initial objective:** The work aimed to confirm the potential for industrial mining and enter into a mining agreement. Mining was initially scheduled to begin around **2025** with an estimated production of **100,000 tons of rutile per year**.
- **Work carried out:** Exploration lasted around four years and included **technical, economic and environmental feasibility studies** as well as **drilling campaigns** (nearly 2,000 boreholes).
- **CSR aspects:** Eramet carried out social and environmental actions (CSR) in parallel, such as bringing its contribution to the *Akonolinga* hospital and achieving access to drinking water works in villages.

❖ **Initial exploration phase (by Eramet, 2019-2023)**

Objective of the Work	**Results of the Work**
Exploration and Geology	Confirmation of the presence of a large deposit of **alluvial rutile** (titanium ore) in the sands and alluvial deposits along the river.
Reserve Assessment	The total estimated potential of the area is over **500,000 tons of rutile**, making Cameroon the world's second largest source of rutile.
Feasibility Studies	Technical, economic and environmental studies (including nearly 2,000 surveys) were conducted to assess the profitability of industrial mining (initially planned for 2025).

❖ **Estimated resource volume and grades**

Exploration work has quantified the potential of the *Akonolinga* rutile block, confirming it as a strategic resource.

Characteristics	Estimated Data
Total Resources in Cameroon	Approximately **3 million tons** of rutile (making the country the world's second largest reserve after Sierra Leone).
Potential of the *Akonolinga* area	Over **500,000 tons** of rutile.
Total Calculated Resources	Approximately **2.85 million tons** for the entire block (*Akonolinga, Nanga Eboko, Haut Mfoumou*).
Average Grade	The average grade of the total calculated resources is **1.05% rutile** in alluvial sand.
Grades per Area	The deposit is characterised by higher grades in some areas, particularly at the base of the sand, near the '**bedrock'** (rocky substratum).

Despite the extensive research work and the identification of a significant potential, Eramet announced that it was dropping the mining project (October 2023) for internal reasons.

5 NATURE OF THE PARTNERSHIP

The desired partner will be required to finalise exploration work and commission the *Akonolinga* rutile block which consist *of 5 (five) mining titles covering a total area of about 2,500 km² (two thousand five hundred square kilometres)*. This will imply, in particular:

- assessing the resource;
- developing a detailed feasibility study in accordance with international standards;
- developing a detailed environmental and social impact assessment;
- developing the mine, operating and marketing the resource in accordance with approved international standards and current regulations in Cameroon;
- financing the project;
- proposing the desired partnership structure.

6 QUALIFICATION CRITERIA

The desired partner must be a mining company or group of mining companies (a Public Limited Company with a Board of Directors) with the technical and financial capabilities and proven experience in the responsible development of world-class mining projects. More specifically, it will be expected to:

- provide supporting references showing proven experience in exploration and mining, particularly with similar substances (the references requested must be presented in the form of contracts, mining titles, reports and any other legal documents or complementary documents);
- show proof that mining activities previously carried out complied with Environmental, Social and Governance standards;
- submit audited financial statements for the last three financial years;
- show proof of the ability to finance or raise the financial resources needed to carry out exploration, development and mining programmes;
- consider incorporating as a company under Cameroonian law;
- comply with the current laws and regulations in Cameroon;

7 SELECTION PROCESS

The selection of SONAMINES S.A.'s technical and financial partner for the completion of research work and the commissioning of the *Akonolinga* rutile block will be carried out in 2 (two) phases: a pre-selection of potential partners based on the AIMI, and a selection based on a Restricted International Call for Tenders (AOIR).

N.B.: It should be noted that SONAMINES S.A. is willing to provide, under conditions, additional information and access to sites deemed necessary to any applicant. Such applicant undertakes to use this information and access exclusively within the framework of the aforementioned call for expressions of interest covered by these terms of reference.

8 DELIVRABLES

The following items shall be expected from every bidder:

➢ **Administrative File**

Administrative documents (originals or certified true copies), dated less than 3 (three) months:

✓ **For national bidders:**

- a stamped and signed declaration of intent to bid;
- an up-to-date certificate of tax compliance;
- a certified copy of the trade register;
- a certificate of non-bankruptcy dated less than 90 (ninety) days issued by the court of the bidder's place of business;
- an authorisation to check references;
- the address and company name of the bidder;
- the articles of association or legal instruments attesting to the legal existence of the bidder’s company;

- a stamped statement on honour by the bidder certifying the accuracy and veracity of all the information provided in the expression of interest;
- a declaration of identity of the bidder's legal entity allowing an assessment of their general organisation (managers and experience of key staff) and of the grouping to which they belong (direct and indirect shareholders, affiliated companies, etc.);
- a stamped statement on honour by the bidder certifying that neither they nor their affiliated companies nor any person or entity acting on their own behalf or on the bidder's behalf, nor any of their shareholders or employees, has offered or made any offer, promise, gift, present or advantage of any kind to persons acting on behalf of the Ministries in charge of mines and finance, as well as SONAMINES S.A.;
- in the case of a grouping, each member must submit the required administrative documents and a single notarised deed of incorporation of the grouping shall suffice for all its members.

✓ **For international bidders:**

- a letter of interest duly signed by the bidder's legal representative;
- the address and company name of the bidder;
- the articles of association or legal instruments attesting to the legal existence of the bidder's company;
- the Grouping Agreement, where applicable;
- a certificate of non-bankruptcy dated less than 90 (ninety) days and issued by the competent authority of the bidder's place of business;
- a certificate signed by the tax authorities of the bidder's place of residence, certifying that they have filed the required tax returns for the current financial year;
- an authorisation to check references; this authorisation, duly signed by the Top Manager of the company or the representative of the grouping, must allow for any verifications deemed necessary to ensure the accuracy of the information relating to the references provided;
- a statement on honour by the bidder certifying the accuracy and truthfulness of all information provided in the expression of interest;
- a declaration of identity of the bidder's legal entity, enabling an assessment of its general organisation (managers and experience of key staff) and the grouping to which it belongs (direct and indirect shareholders, affiliated companies, etc.);
- a statement on honour by the bidder certifying that neither they nor their affiliated companies nor any person or entity acting on their own behalf or on the bidder's behalf, nor any of their shareholders or employees, has offered or proposed or made any offer, promise, gift, present or advantage of any kind to the persons authorised to act on behalf of the Ministries in charge of mines and finance as well as SONAMINES S.A.;
- in the case of a grouping, each member must submit the required administrative documents.

➢ **Technical File**

The technical file must include the following documents:

- the general presentation of the company/grouping in the mining sector (worldwide, in Africa and in the Republic of Cameroon) and a detailed description of the mining projects in which it has participated over the last 10 (ten) years;
- the technical references/experience;
- the financial capability references;
- proof of compliance of mining activities previously carried out with Environmental, Social and Governance (ESG) standards.
- a preliminary technical proposal indicating, in particular:
    - the overall methodological approach along with a work chronogram;
    - a methodological description of intended exploration and mining phases and the related costs;
    - the material and human resources envisaged;
    - the terms and conditions for reimbursing the expenses incurred;
    - the terms and conditions for developing previous studies/data;
    - a proposal for the desired partnership structure.

  It should be noted that the quality/consistency of the proposed work programme will take precedence over cost.

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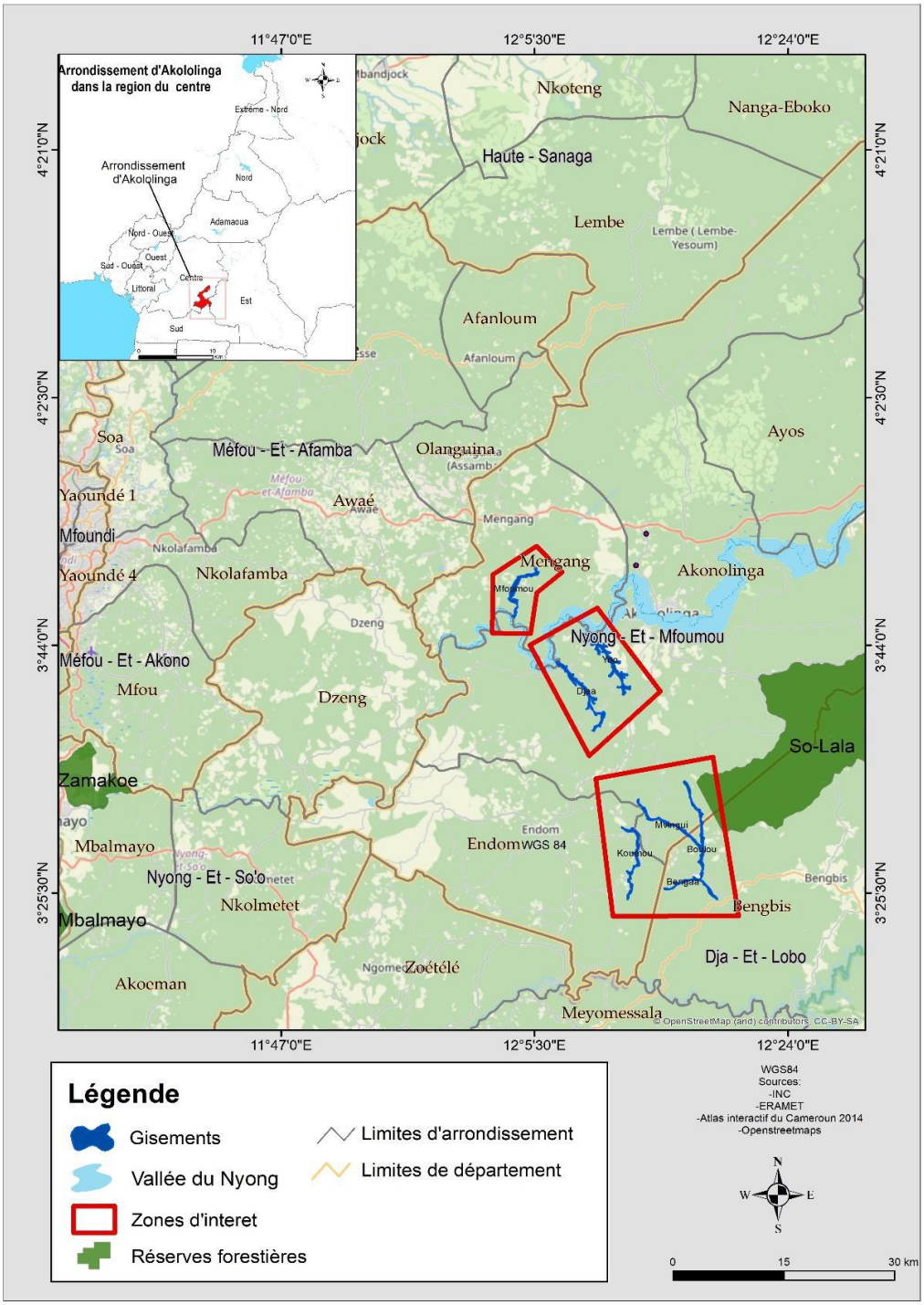
Appendix:



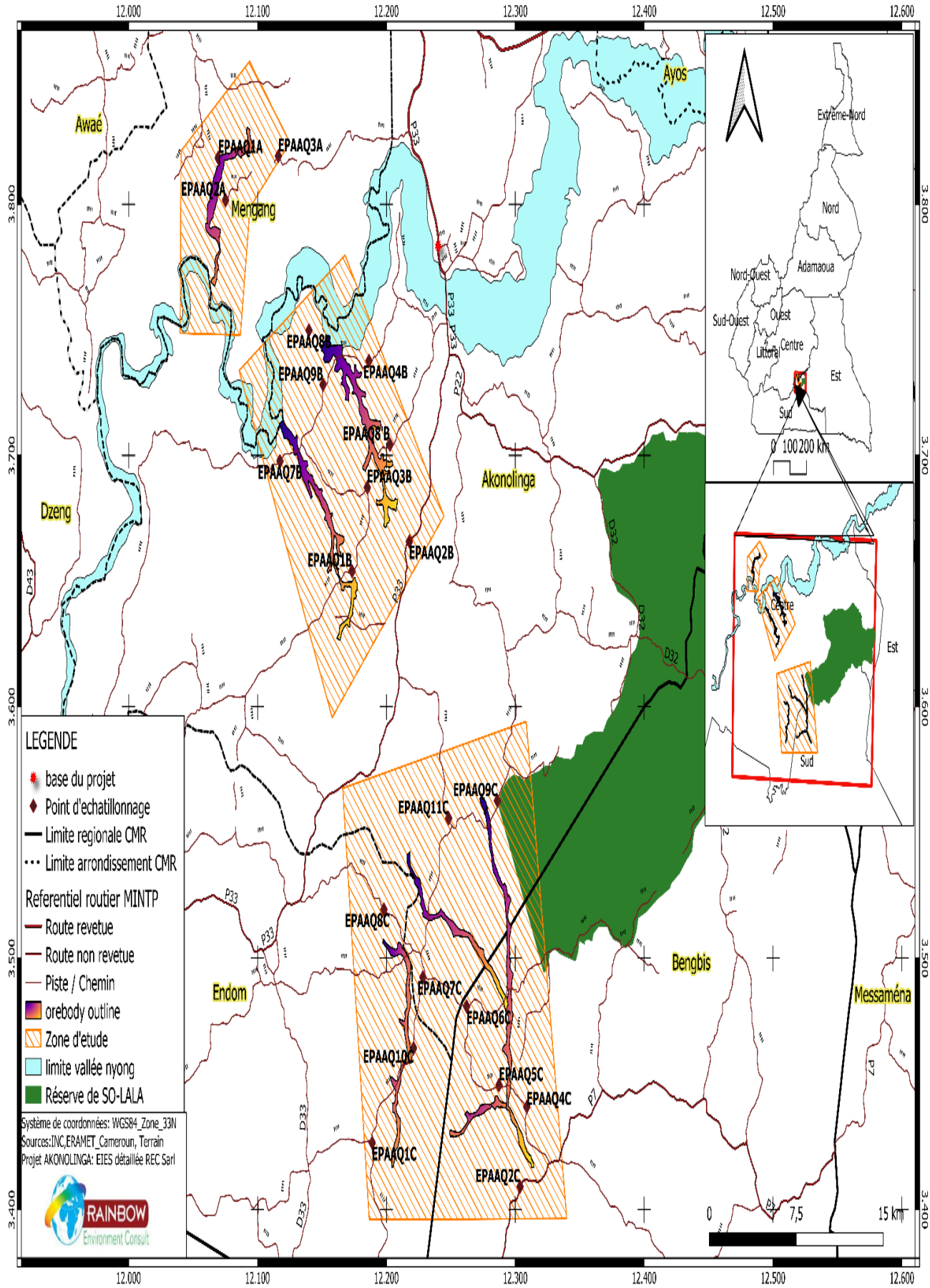


Figure 1: Location map of prospects in the Akonolinga rutile block