UNITED NATIONS REVOLVING FUND FOR NATURAL RESOURCES EXPLORATION

PROJECT RECOMMENDATION BY THE ADMINISTRATOR

Exploration for Kaolin in Benin (BEN/NR/78/001)

I. Background

1. In 1976-1977 OBEMINES, the State mineral exploration organization, identified an area containing favourable kaolin clay indications near Kétou in the southeastern part of Benin. The area is approximately 130 kilometres northeast of Cotonou and is accessible by a national highway.

2. In 1976-1977, reconnaissance pitting at depths revealed a continuous kaolin bed 1-3 metres thick at depths of 5-8 metres. Follow-up pitting during 1977-1978 near the village of Adjouzoumé delineated 45,000 tons of exploitable kaolin under thin cover, sufficient reserves for a local ceramic factory for 25 years. Further work is now planned to explore for export quality kaolinite over a large area of approximately 800 square kilometres, where wells and exposures indicate the continuity of the bed.

3. The kaolinite horizon is of a Middle Maastrichtian age, i.e. uppermost Cretaceous, and outcrops in the area. The lowermost Maastrichtian beds rest directly on a Pre-Cambrian basement. Locally, the Maastrichtian is overlaid by Paleocene, Eocene and Recent formations, but more usually by the "Continental Terminal": such areas however, are unlikely to be of industrial interest due to the stripping ratio.
4. Structurally, the Kétou area is characterised by a gentle monoclinal structure dipping at 1-2° to the south-southeast.

5. The company Ceramique Industrielle du Benin (CIB) produces tiles, sanitary ware, artware and dinnerware and is modern in every respect, being only four years old. The equipment is in excellent condition and includes a spray dryer, pebble mills, presses, spray line, casting room, etc. Kétou kaolin is used when available to replace kaolin imported from West Germany at $300 per ton delivered. As indicated above CIB represents a potential market for almost 2,000 tons per annum for Kétou kaolin. Presumably, if supplies could be ensured on a relatively long-term basis, the plant could expand from time to time in response to market forces.

6. More significantly, there could be a regional market for kaolin from Benin. Implicit in such a possibility would be the proving of sufficient reserves of kaolin of superior quality so as to be able to provide reasonable guarantees of delivery and uniformity. In any case, there are six ceramic plants in Nigeria which are reported to consume about 17,000 tons per annum, most of which is imported. There are also two plants in Ghana and one in Togo.

7. Based on an evaluatory mission conducted by the Fund in February 1980, the present project was formulated, which consists in a sampling programme to verify previous work and extend the exploration to unknown areas.

II. The Project

8. The objective of the project is to determine the presence of commercial grade kaolin in an area of approximately 275 square kilometres located at about 130 kilometres from Cotonou. The target will be to indicate about 300,000 tonnes of such kaolin.

9. The Minimum Work programme approved by the Administrator in September 1980 will include the following activities: (a) Mobilization of drilling equipment and crews to carry out the required drilling; (b) sinking of pits to examine the accuracy of the drilling and to determine the comparative costs of the two methods; (c) supervision of the programme with the aim of ensuring that the samples will be representative; (d) sample analysis and testing; and (e) on the basis of the results of the work described above, a preliminary analysis to determine the mineral reserves, the methods of production, logistics and marketing possibilities.

10. In carrying out the Minimum Work, the Fund will expend not less than the equivalent of US$100,000 spread out over a period of approximately four months to finance all required inputs. This expenditure constitutes an obligation of the Revolving Fund to the Government of Benin.
11. If the results of the Minimum Work justify additional work, it is estimated that an additional expenditure of $500,000 may be required to carry out subsequent phases, which would attempt to define a potentially economic deposit through: (a) drilling or pitting, or a combination of the two; and (b) detailed laboratory testing. This would bring total possible expenditure for this project to the equivalent of $600,000. Further activities which may be required beyond the Minimum Work will only be carried out if justified according to the Fund's operational procedures.

III. Financial Data

12. Revolving Fund Allocation

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<tr>
<td>Minimum Work</td>
<td>100 000</td>
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<td>Possible additional expenditures for further activities following the Minimum Work</td>
<td>500 000</td>
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<td>Total possible cost of the project</td>
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The financial assets of the Fund are adequate to meet the cost of the Minimum Work Programme.

IV. Recommendation

13. In light of the above, the Administrator recommends that:

The Governing Council,

(a) Note the approval by the Administrator of the Minimum Work at a cost of $100,000, as an obligation of the United Nations Revolving Fund for Natural Resources Exploration;

(b) Approve this project involving a total possible expenditure of $600,000;

(c) Decide that this approval shall be cancelled unless the Government of Benin and the Fund shall have signed a project agreement within a period of nine months after the date of approval of the Minimum Work, it being understood that the Governing Council shall be notified of any such cancellation at the Council's first session after such action has been taken.