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INTERNATIONAL URANIUM RESOURCES EVALUATION PROJECT

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NATIONAL FAVOURABILITY STUDIES

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C O N T E N T S

A. INTRODUCTION AND GENERAL GEOGRAPHY

The Peoples Republic of Bangladesh is surrounded by Indian territory except for a short south-eastern frontier with Burma and the southern coast fronting the Bay of Bengal. It comprises the eastern two-thirds of the Ganges-Brahmaputra delta, stretches northward to include the triangular wedge of land between the Ganges and the Brahmaputra before they unite, and eastward to embrace the valley plain of the Surma.

The climate is tropical-monsoon with an average temperature from October to March of 19°C to 29° C from May to September. Three-quarters of the annual average rainfall (1880 mm), occurs between June and September.

The total area of Bangladesh is 143,998 sq km and the population 71,316,517 (1974 census).

Of some 5,600 km of roads, about 3,700 km are metalled. The railway system consists of about 2,800 route km. Inland water transport is also of major significance and there are about 8,000 km of navigable waterways, on which are located five major river ports. The chief seaports are Chalna and Chittageng and a modern seaport is being developed at Mangla.

B. GEOLOGY OF BANGLADESH IN RELATION TO POTENTIALLY FAVOURABLE URANIUM BEARING AREAS

The country, forming part of the foreland of the Himalayan Geosyncline, is a vast alluvial plain with the exception of the Tertiary hill ranges in the east and northeast and the Pleistocene terraces of Madhupur, Barind (North Bengal) and Lalmai Hills (Comilla). Bangladesh occupies the major part of the Bengal Basin, which lies between the Indian Foreland Shield in the west, the Shillong Plateau in the north and the Arakan-Chin Hills Geoanticline in the east. The Archean basement of the stabel shelf areas in the north and northwest of the country is overlaid by sediments ranging in age from Permain to Pleistocene..

The folded miogeosynclinal Tertiary hill sediments in the northeast and east comprise sandstones, siltstones, mudstones and shales of a maximum thickness over 15,000 m., ranging in age from Eocene to Mio-Pliocene.

Tipam and Dupi Tila group Tertiary sediments are of predominantly continental nature. The facies of the Tipam sediments is deltaic to fluvio-deltaic in the south and becoming gradually more continental in the north. It is subdivided into the two formations: Tipam Sandstone and Girujan Clay.

The former consists mainly of sandstones, highly crossbedded at places with alteration of mudstones, shales and clays. The lower part of the formation is mostly medium to coarse grained, whereas the sandstones of the upper parts show a fine grain size. Intercalations of grey soft clays and siltstones with lignite are frequent in the middle part of the formation.

The facies of the overlying Dupi Tila Group is fluviatile to fluvio-lacustrine. The lower part is composed of series of pink and grey, coarse-grained, profusely cross-bedded sandstones with intercalations of banded blue-grey clays. Dupi Tila Sandstones are characterized by the presence of silicified wood. The thickness of the Group varies between 0-300 m.

The tectonic structure of the country is relativey simple. A succession of synclines and anticlines without any major complications is the gneral rule. The fold axes are aligned NNW to SSE in Chittagong Hill Tracts and the southern Sylhet District and swing around to almost east-west direction in the northern sylhet District In the extreme north the sediments mentioned form a monocline fold along the southern margin of the Shillong Plateau.

C. PAST EXPLORATION

With the exception of the exploration activities in relation with the "Beach Sand Project" along the eastern Bay of Bengal, no systematic exploration for uranium had been done before December 1976, when a radiometric survey was implemented by the IAEA.

The outcrops of Tertiary sediments are mostly covered by dense jungle and those of older rocks can only be found along river..

Continuous reading with an analogue ratemeter were taken across the sedimentary sequences. As a result of this survey high radioactivity up to 450 cps was detected in placer Tipam deposits. The background of the terrain made up by Tertiary sediments is 160 - 170 cps. An anomaly was found in Kalipur Chara area which coincides with concentration of heavy minerals derived from Tipam Sandstones. A sample collected from the anomaly was analysed in the chemcial laboratory of the Bangledesh Atomic Energy Commission and found to contain 0.03% U_3O_8.

Another anomaly was found within a horizon of Tipam sandstone crossing Hari River. An isolated outcrop in the riverbed showed a count rate up to 4 times background. During the follow up work it was found that this steeply dipping mineralized band stretches (with interruptions) over a distance of at least 3km along a strike. Samples collected from three different spils showed concentration of uranium 50,60 and 140 ppm. The mineralized bed varies in thickness from a few cm to 2 m. It consists of alternating altered and unaltered sandstone.

Bangladesh and Australian experts have separated monazite, zircon, ilmenite, rutile and magnetite from local sands at Cox's Bazar, 96 km southeast of Dacca. Radioactive mineral content is around 3.1% and exploitation may be feasible.

D. URANIUM OCCURRENCES AND RESOURCES

No information is available in the IAEA.

E. PRESENT STATUS OF EXPLORATION

The technical assistance mission of the IAEA in the field of uranium exploration in Bangladesh is continuing with the objective to evaluate uranium potential in Chittongong and Sylhet district.

F. AREAS FAVOURABLE FOR URANIUM MINERALIZATION

A first priority should be given to areas of Hari River and Kalipur Chara where radioactive anomalies were detected. In general the area covered by Tipam Sandstone appears to be favourable for uranium mineralization.

G. POTENTIAL FOR NEW DISCOVERIES

The potential for new discoveries in Bangladesh appears to be not too bad. Speculative potential could be in the order of 1-10,000 tons uranium.

Compiled by S Simov
IAEA, Vienna
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