

Geology of COGEMA's Uranium Deposits in Niger and Gabon

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This paper describes the geological features of uranium deposits in Niger and Gabon. In both countries COGEMA through its subsidiaries COMUF, SOMAIR and COMINAK was producing uranium since 1961 (Gabon) and 1968 (Niger). The uranium deposits are hosted in sedimentary formations, however of different geological ages.

In Niger the host rocks are either of Lower Carboniferous age (Akokan, Arlit) or in the "Continental Intercalaire" cycle of Permian to Lower Cretaceous age (Imouraren). The first uranium showings in the Agades region were discovered in 1957. The discovery of the deposits of Arlit by the CEA led to the Arlit mining operation in 1968. Arlit occurs in the upper part of a cycle consisting of Tarat sandstones and Madaouela silts and shales of the Visean Upper Tagora Group. The deposit of Akokan is hosted in the lower part of Lower Tagora Group. Both groups are part of fluvio-deltaic cycles. The Jurassic Tchinezrine unit is host for the Imouraren deposit in channel sandstones of fluvio-lacustrine red beds.

The uranium deposits in Gabon occur in Lower Proterozoic sediments of the Francevillian Basin. The deposits are located mostly at the contact of silicified basal sandstones and conglomerates (FA) with overlying organic shales (FB). The association of pitchblende with migrated bitumens shows similarities with oil traps. At the Oklo deposit a natural fission reaction has occurred as a unique event.

The geological setting and models of uranium mineralization are briefly described for the individual deposits. A short account of their economic significance is given.