I. INTRODUCTION

In Bahia State, the main geological elements of interest to the present summary are a part of the São Francisco Craton, with some of its surrounding late Proterozoic (Brasiliano–Pan African) fold-belts. Very large areas of the State are covered by late Precambrian to Quaternary Sediments.

The term “São Francisco Craton” (SFC) was introduced by Almeida (1967) to indicate a region which became stabilised in the late Proterozoic. It is very widely used in Brazilian literature. The main elements in Bahia are (Mascarenhas and Sá, 1982; Bernasconi, 1983): (i) high-grade terrains, subdivided into toponymic complexes whose boundaries are often imprecise and mutual relationships obscure. These terrains have Archean elements with varying degrees of Proterozoic addition and reworking; (ii) granite-greenstone (s.l.) terrains, whose ages are still open to debate; (iii) early to middle Proterozoic fold belts in which mafic volcanic rocks form a small fraction, or are absent. The late Proterozoic fold belts have a restricted occurrence in the State. Part of the Sergipe fold belt extends into the extreme northeastern part, while the extreme southeastern and south-central parts of the State are on the fringes of the Araçuaí belt.

Granitoids and related rocks are encountered throughout the Precambrian. In this summary, a chronological presentation is generally adopted, though some older granitoids are described within what we believe to be their much younger geological context. The areas described are not all known personally to the authors. Published descriptions have widely different degrees of detail and in many cases, a detailed discussion of the granitoids and their genesis was not the principal aim of the study. The presentations vary, therefore, from purely descriptive to more analytic.

II. ARCHEAN

High-grade terrains of known or inferred Archean ages form a large part of the SFC Polyphase deformation, open-system metamorphism and anatexis are frequently intense, and the identification of many of the protoliths is consequently difficult.

Large areas of the Caraíba and Ilabuna complexes are believed to be derived from supracrustal rocks (Figueiredo, 1982; Sighinolfi, 1970; Sighinolfi et al., 1981; Oliveira et al., 1982) in which granitoids intrusive bodies are not a conspicuous feature.

The Jequié granulite complex preserves some nuclei with Rb/Sr whole-rock isochron ages of about 3.1 G.a, but was widely affected by a 2.7 G.a event (Mascarenhas and Sá, 1982). Augen and other gneisses with a wide range in composition from granite to norite and anorthosite form an important component of parts of this complex. Augen of alkali feldspar and/or sodic plagioclase are sometimes abundant, hypersthene is usually present, and most rocks contain traces of amphibole and/or biotite. Secondary quartz is often present, and localised retrograde metamorphism at low grade is not uncommon.

Most analysed samples from a prominent belt of these rocks are felsic (SiO₂ ~ 63%). Compared to many other granulite terrains, they are undepleted or even enriched in K, Rb, Ba, etc. REE patterns are moderately LREE-enriched with pronounced negative Eu anomalies and sometimes, negative Ce anomalies. (Sighinolfi et al., op. cit.; Oliveira et al., op. cit.).

The Paramirim gneiss-migmatite complex in the Paramirim River valley has orthogneisses of predominantly granodioritic composition and sodic affinities (Na₂O > K₂O in wt %; Sr/Rb >1). The rocks were metamorphosed at about 2.7 Ga. Low initial 87Sr/86Sr ratios have been interpreted in terms of short crus-
tal residence times. The 2.7 Ga metamorphism reached anate­xis, with the formation of potassic granites (Sr/Rb < 1) intruded as dikes and sills. REE patterns for both types are rather similar, with strong LREE enrichment and pronounced Eu anomalies. (Jardim de Sá, 1978).

Granitic rocks are also recorded from the Santa Isabel and Guanambi complexes, but few details are available.

III. TRANSAMAZÓNICO

A – The terranes whose tectonic history is related to the Transamazónico (Eburnean) form two great meridian belts. Almost aligned along the median axis of the SFC, that correspond respectively with the volcanogenic-sedimentary formations of the Serra de Jacobina, in the North and of the Contendas-Mirante complex, in the South.

The age of deposition of the later is still controversial. Isotope determinations Rb/Sr, on the metavolcanics and phyl­lite of the Contendas-Mirante complex indicate ages about 2.4 to 2.0 Ga (Cordani et al., 1985) but the authors do not rule out an original Archean age, at least for the volcanics.

The two principal continuous phases of deformation and the accompanying epizonal metamorphism are, on the other hand, attributed to Transamazónico events (Sabaté et al., 1979). The forced "mise en place" of the muscovite bearing granites occurred, according to the authors, during the second folding phase. The isotopic age of those intrusions is established between 1.9 and 1.8 Ga (Petta, 1979; Cordani et al., 1985).

An age of 2.3 Ga is advanced for the sedimentary deposits of the Jacobina Group (Brito Neves et al., 1980) but here again, the "mise en place" of the granites, which followed a tectonic episode of overthrusting is established around 1.9 Ga (Torquato et al., 1978).

The intrusions form a string of bodies aligned on the axis of the volcano-sedimentary belts or over an extension of nearly 600 km. They are composed of leucocratic granites where mus­covite is the characteristic varietal mineral. The crustal origin of these granites is argued. From their juxtaposition with the anatexis of the Jacobina Group (Brito Neves et al., 1980) but here again, the "mise en place" of the granites, which followed a tectonic episode of overthrusting is established around 1.9 Ga (Torquato et al., 1978).

The magmatic facies, with little modification of primary textures, the metasomatic zonations in the ultramafic host rocks and the Be, Mo, W related mineralizations of Socotê and Caranga are interpreted as the results of regional metamorphism, and the 1.8-2.2 Ga ages found (Figueiredo, 1976; Bartels et al., 1984) are considered as reflecting this event. A model emplacement age of 2.7 Ga has been calculated (Figueiredo, op. cit.).

(2) later intrusions.

1. Granitoid Domes. The Rio Itapicuru greenstone belt is laterally bounded by granites and granite-gneisses. Some of the granites are clearly intrusive into the greenstone and post-date the deformation, while others have been suggested to be sialic basement of the greenstone (Jardim de Sá, 1982, Silva, 1983). Recent studies further clarify the evolution of this greenstone.

In granite gneisses to the SW of the area, tectonic banding is usually discordant with the trend of the greenstone, no contact metamorphism is observed and no veins cut the greenstone. This gneiss complex is therefore believed to be the basement. In complete contrast, the Ambrósio and Pedra Alta domes within the greenstone show ample evidence to indicate that they were intruded as a near-solid crystal mush in which basement or supracrustal xenoliths are concentrated near the highly deformed margins, the cores of the domes consisting of weakly deformed biotite granodiorite.

2. The subcordont to discordant intrusions with late "mise en place" relative to tectonic strains are medium grained granitoids which pertain to three distinct calc-alcaline suites, respectively tonalitic, granodioritic and monzonitic (Machado et al., 1984; Sabaté et al., 1979).

C – The Syenite massif of Itiuba is a huge N-S aligned, 150 x 12 km batholith which occurs in the center-north region of the state, occupying a suture between granulite terrains to the west, and gneiss-migmatite terrains to the east. Structures and textures present have been interpreted as the results of regional metamorphism, and the 1.8-2.2 Ga ages found (Figueredo, 1976; Bartels et al., 1984) are considered as reflecting this event. A model emplacement age of 2.7 Ga has been calculated (Figueredo, op. cit.).

Work in progress on the southern part of the batholith (Conceição, unpublished) demonstrates that the principal rock types present are leuco to mesocratic oversaturated syenites. Overall, a distinction can be made between magmatic and tectonic facies. The magmatic facies, with little modification of primary textures, are observed in the central parts of the pluton. Intermediate and ultramafic enclaves are abundant. Bands of amphibole and clinopyroxene, often rich in apatite, magnetite and sphene, are wide distributed. Syenitic and alkali-feldspar granite pegmatite dykes are also present. The tectonic facies, composed of mylonitic and ultramylocytic gneisses, occur at the borders of the body and in close association with the faults which cross-cut the body.

At the western border, near the city of Itiuba, a granite dyke generation was intruded simultaneously with the deformation under NW-SE compression. On the other hand, the northern part of the Pedra Solta granite lacks signs of this deformation, nor does it have the deformations which are seen in the granulite terrain to the west.
There is some doubt, therefore, as to what extent the gneissic fabrics reported in other areas of the body are due to phenomena related to emplacement on the one hand, and later tectonic effects on the other.

Chemically, the syenites are miaskitic, and chemical variations observed correspond well with the mineralogical variation. The rocks are notable for very high Sr and Ba contents (Figueiredo, 1976, 1981). REE patterns show very strong enrichment of LREE relative to HREE and lack Eu anomalies, characteristics which are similar to Archean syenites believed to result from partial melting of a mixed garnet peridotite-eclogite mantle source (Figueiredo, 1981; Arth and Hanson, 1975).

**D** – The Transamazónico constitutes a major event of the SFC evolution. We can ascribe to it: (1) the deposition (at least) of supracrustal series; (2) the specific tectonometamorphic phenomena, responsible for the uplift, in distinct geotectonic conditions, of supracrustal complexes as Contendas-Mirante and Jacobina on one hand, and of the Rio Itapicuru on the other hand; (3) the specific magmatism associated with each of these complexes: leucogranitic intrusion of crustal origin for the median axis of the SFC, calc-alkaline intrusions with deep mantle-crustal (? contribution for the greenstone belt; (4) the fixation of petrogenetic processes: closing of isotopic systems, probably related to a quick uplift, and consequently, cooling, of the thus formed continental crust. This fixation of the processes is expressed by isotopic ages Rb/Sr and K-Ar (pro parte) of 2.0 to 1.8 Ba, widely distributed over the whole SFC.

We may also assign to this event a powerful remobilization of previous terrains. This is marked by the development of generalized anatectic processes, with production of important masses of migmatites, diatexites and enrootted granitoides. This found expression in the isotopic rejuvenation (Bartels et al., 1977; Jardim de Sá et al., 1978; Brito Neves et al., 1980) evidenced in the migmatites produced by anatexis of all the formations, including granulitic terms of the Archean crust.

### IV. ESPINHAÇO AND BRASILIANO

Located in centre-west Bahia, the Paramirim basin has been recognised as an intracontinental rift (Jardim de Sá, 1981) or aulacogene (Costa and Inda, 1982) established in late archean basement (see earlier). Initial intrusive activity in the central part of the rift has been dated in the interval 1.8-1.5 Ga (Jardim de Sá et al., 1976; Fernandes et al., 1982). The presence of a large negative gravity anomaly in the region (Motta et al., 1981) suggests that the exposed rocks may represent only the upper parts of a large batholith. Felsic volcanism accompanied the deposition of the sedimentary rocks on both sides of the basin, early products with a probable age of about 1.8 Ga being conformable with the basal sediments and later products cutting all but the uppermost sedimentary horizons. Early mafic magmatism may also be present, although this is still a debatable point (Feijão, 1981), but a prominent mafic episode with a minimum age of about 1.2 Ga is represented by intrusives within the sedimentary sequence. Late felsic volcanism is registered to the west of the rift, within the basement. This activity has a probable age of about 1.0 Ga (McReath et al., 1981). Dynamic metamorphism and hydothermal activity has caused severe textural, chemical and isotopic modifications of many of the rocks, and appears to have had one peak of latest Proterozoic age.

The granites have sub-alkaline mineralogical compositions (Fernandes et al., op. cit.), and mineralogical and chemical characteristics in common with some facies of rapakivi (Vorma, 1976). A suite of underformed enclaves includes gabbro, norite and charnockitic granite, the mafic members of which have suggested heavy introduction of potassium and other elements. Early felsic metavolcanics within the eastern sediments have many features of Phanerozoic continental tholeiitic rocks, while the later felsic volcanics to the west are weakly peralkaline (McReath et al., op. cit.).

The basin therefore has been the site of anorogenic magmatism over a relatively long time span (McReath, 1985). It is rich in mineral occurrences, although at present only barite from vein deposits is actively mined. Tin, including interesting occurrences of wood cassiterite, is associated with the felsic metavolcanics. Lead is found very rarely, in association with barite veins. Gold occurs within both host metavolcanic and quartz veins, although much production in earlier centuries probably came from the colluvia and alluvia associated with these mineralizations. Finally, uraniferous albitites of Lagoa Real are believed to have been formed as a result of the late Proterozoic hydrothermal activity (Lobato et al., 1982).

Several folded belts surround the SFC. These are the fold systems of Riacho do Pontal and Sergipano to the North, Araçuaí (Southern Espinhaço) to the south, which extend beyond the limits of the Bahia State. Granitic rocks are associated with them in Pernambuco, Sergipe and Minas Gerais states respectively.

In the Bahia State, the Piripá Massif has been attributed to the Brasiliano cycle (Lima et al., 1981). This is a porphyritic muscovite granite which seems to intrude and develop contact metamorphism in, the folded platform deposits of the Southern Espinhaço. Isotopic determinations, as yet unpublished (Mascarenhas com. pes.) assign to the massif a Transamazónico age. This may force a fundamental revision of the interpretative framework of this frontier region of southern Bahia. Studies on this massif are in progress (Granitoid project of Bahia).

It is also worth noting that there exists a spectacular alkaline and peralkaline rock suite which forms several dispersed bodies in the Itabuna-Itapé region (Fujimori, 1967; Barbosa de Deus, 1976; Fujimori, 1978). The isotopic determinations (Cordani et al., 1969, 1974; Bernart et al., 1977) indicate a “mise en place” age of 0.77 to 0.68 Ga, according to the body studied. A synthesis of data on this suite is presented (Fujimori, this Symposium).