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GEOLOGIA DA PORÇÃO EXTREMO NORTE DO BLOCO GUANHÃES, ORÓGENO ARAÇUAÍ (MINAS GERAIS)

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Orientador: Matheus Kuchenbecker

Coorientador: Antônio Carlos Pedrosa-Soares

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PROGRAMA DE PÓS-GRADUAÇÃO EM GEOLOGIA

FOLHA DE APROVAÇÃO

GEOLOGIA DA PORÇÃO EXTREMO NORTE DO BLOCO GUANHÃES, ORÓGENO ARAÇUAÍ

ÚRSULA ROXANNE LEANDRO

Dissertação submetida à Banca Examinadora designada pelo Colegiado do Programa de Pós-Graduação em GEOLOGIA, como requisito para obtenção do grau de Mestre em GEOLOGIA, área de concentração GEOLOGIA REGIONAL.

Aprovada em 23 de novembro de 2021, pela banca constituída pelos membros:

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Belo Horizonte, 23 de novembro de 2021.

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RESUMO

O Bloco Guanhães é um dos mais importantes *basement inliers* inseridos no Orógeno Araçuaí-Congo Ocidental. Esse segmento orogênico foi edificado na margem oriental do Cráton do São Francisco no limite Neoproterozoico-Cambriano. O Bloco Guanhães é composto por complexo TTG e sequências metavulcanossedimentares arqueanas a criogenianas, além de unidades ígneas Paleo a Neoproterozoicas e sedimentares Paleoproterozoicas. Novos dados de mapeamento, petrográficos, geoquímicos e geocronológicos (U-Pb; LA-ICP-MS) são apresentados para o Complexo Guanhães, a Formação Capelinha (Grupo Macaúbas) e unidades associadas. Pela primeira vez são apresentados dados geocronológicos, provenientes de grãos de zircão detrítico de quartzito da Formação Serra Negra, que compõe a porção noroeste do Bloco Guanhães. Os gnaisses da região de Pedra Menina integram o Complexo Guanhães, cujas idades de cristalização para protólitos são definidas por duas discórdias U-Pb com interceptos superiores em 2.86 e 2.7 Ga e interceptos inferiores em 521 e 607 Ma (interpretados como idades metamórficas). Esses gnaisses do embasamento apresentam composições graníticas a granodioríticas, afinidade magnesiana, peraluminosa, e plotam na série magmática subalcalina. As amostras do Complexo Guanhães são enriquecidas em LILE, Th e U, e apresentam anomalias negativas de Nb, P e Ti. Todas as amostras são enriquecidas em LREE em relação a HREE e correspondem a rochas metaígneas com afinidade TTG arqueanos. A Formação Serra Negra engloba uma sucessão sedimentar com idade de deposição máxima em 1.9 Ga (quartzito) que inclui uma camada estreita de xisto e metaconglomerados, seguida por extensos quartzitos sacaroidais, que parecem terem sido formados em ambientes sedimentares costeiros. A Formação Capelinha inclui quartzitos, xistos e lentes espessas de mármore. Os dados obtidos demonstram que essa unidade possui uma extensão territorial em direção ao sul muito mais abrangente do que postulada na sua definição original. Obteve-se idade máxima de deposição Esteniana, em 1.16 Ga, para xisto desta unidade. As análises químicas para os corpos de anfibolitos sugerem afinidade com basalto toleítico intraplaca continental como protólitos destas rochas. Os padrões de REE, normalizados segundo o condrito, apresentam enriquecimento em LREE (La/Yb = 2.4 a 8.21), e conteúdos relativamente baixos de HREE. Estes resultados integrados ao mapeamento e associações litológicas sugerem correlação com as rochas metamáficas da

Formação Capelinha em sua área-tipo e com os registros magmáticos relacionados ao evento de rifteamento Toniano, com possíveis correspondentes na África no contexto do Paleocontinente São Francisco-Congo. O leucogranito ediacarano que intrude a base da Formação Serra Negra apresenta idade de cristalização de 566 Ma, sendo interpretado como registro do magmatismo colisional do Orógeno Araçuaí-Congo Ocidental. Duas hipóteses foram levantadas para explicar o significado geotectônico da Formação Serra Negra: i) deposição em bacia sin-orogênica no final da orogenia Paleoproterozoica Minas-Bahia ou ii) deposição em bacia rifte Toniana, junto com a Formação Capelinha (ca. 957 Ma).

Palavras-chave: Bloco Guanhães. Rifteamento Toniano. Orógeno Araçuaí-Congo Ocidental. Orógeno Minas-Bahia. Orogenia Paleoproterozoica. Paleocontinente São Francisco-Congo.

ABSTRACT

The Guanhães Block is one of the most important basement inliers within the Araçuaí-West Congo Orogen. This orogenic segment was built on the eastern margin of the São Francisco Craton in the Neoproterozoic-Cambrian boundary. The Guanhães Block is composed by Archean TTG complexes and Archean to Cryogenic metavolcanosedimentary sequences, as well as Paleo to Neoproterozoic igneous and Paleoproterozoic sedimentary units. New field, petrographic, geochemical and geochronological (U-Pb; LA-ICP-MS) data are presented for the Guanhães Complex, the Capelinha Formation (Macaúbas Group) and associated units. For the first time are presented geochronological data from detrital zircon grains for the Serra Negra Formation, in the northwestern Guanhães Block. The gneiss of the Pedra Menina region integrate the Guanhães Complex, whose protholith crystallization ages are defined by two U-Pb discordias with upper intercepts at 2.86 and 2.7 Ga and lower intercepts at 521 and 607 Ma (interpreted as metamorphic ages). These basement gneisses present granitic to granodioritic compositions and magnesian, peraluminous affinity and plot as subalkaline magmatic series. The samples from the Guanhães Complex are enriched in LILE, Th and U, and present negative anomalies of Nb, P and Ti. All the samples are enriched in LREE in relation to HREE and correspond to metaigneous rock with Archean TTG affinity. The Serra Negra Formation is a sedimentary succession with maximum depositional age at 1.9 Ga (quartzite) that includes a narrow basal layer of schists and metaconglomerates, followed by extensive saccharoidal quartzites, which seems to be formed in coastal sedimentary environments. The Capelinha Formation includes quartzites, schists and expressive marbles lenses. The data obtained demonstrates that this unit has a wider territorial extension towards the south than postulated in their original definition. It was obtained a Stenian (1.16 Ga) maximum depositional age for schist from the Capelinha Formation. Chemical analyzes for the amphibolite bodies suggest affinity with continental intraplate tholeiitic basalt as protoliths of these rocks. The REE patterns, normalized to chondrite, show enrichment in the LREE (La/Yb = 2.4 to 8.21), and relatively low contents of HREE. These results integrated with mapping and geological associations suggest a correlation with metamafic rocks of Capelinha Formation type-area and with the magmatic record of the Tonian rifting event, with possible correspondent in the African counterpart in the context of the São Francisco-Congo paleocontinent. The Ediacaran leucogranite that intrude the base of

the Serra Negra Formation present a crystallization age at 566 Ma and is interpreted as a register of the collisional magmatism of the Araçuaí-West Congo Orogen. Two hypotheses were suggested for tectonic significance of the Serra Negra Formation: i) the deposition in a syn-orogenic basin at the end of the Paleoproterozoic Minas-Bahia orogeny or ii) the deposition in the Tonian rift basin, together with the Capelinha Formation (ca. 957 Ma).

Keywords: Guanhães Block. Tonian Rifting. Araçuaí-West Congo Orogen. Minas-Bahia Orogen. Paleoproterozoic Orogeny. São Francisco-Congo Paleocontinent.

SUMÁRIO

1. Apresentação

Esta dissertação de mestrado foi elaborada junto ao Programa de Pós-Graduação em Geologia da Universidade Federal de Minas Gerais (PPGEOL/UFMG), sob a orientação do professor Dr. Matheus Kuchenbecker (UFVJM) e coorientação do professor Dr. Antônio Carlos Pedrosa-Soares (UFMG). O financiamento do projeto foi concedido pelo CNPQ através dos projetos “Bacias Riacianas/Orosirianas da Serra do Espinhaço: Tectônica e Proveniência Sedimentar” (CNPq 205254/2016/4) e “A Formação Serra Negra: o mais antigo registro sedimentar do embasamento do Orógeno Araçuaí?” (CNPq 309106/2017-6) e pelo projeto “Evolução e Recursos Minerais do Orógeno Araçuaí” (CNPq 304279/2019-6, grant vinculado à bolsa Pq-1A concedida a A. C. Pedrosa Soares). O projeto foi desenvolvido no âmbito do Laboratório de Estudos Tectônicos do CEGEO/UFVJM e do Laboratório de Geotectônica do CPMTC/UFMG, e contou com o apoio do Laboratório de Laminação (LAMIN/CEGEO/UFVJM) e do Laboratório de Separação Mineral de Alta Pureza (SEPURA/CPMTC/UFMG). As análises geoquímicas foram realizadas no laboratório SGS/GEOSOL, Vespasiano/MG, e as análises geocronológicas foram realizadas pelo Laboratório de Geocronologia da UFOP. A dissertação foi escrita no formato de um artigo científico, nos termos do Art. 83 do Regulamento do Programa de Pós-Graduação em Geologia da UFMG.

2. Contextualização do problema

O Cráton do São Francisco, juntamente com sua contraparte africana, o Cráton do Congo, é o remanescente de um dos paleocontinentes envolvidos na série de eventos colisionais que, ao fim do Neoproterozoico, levaram à aglutinação do Supercontinente Gondwana (e.g. Almeida, 1977; Heilbron et al., 2017).

Neste contexto, o Orógeno Araçuaí foi formado pela inversão de um golfo parcialmente oceanizado, esculpido no Paleocontinente São Francisco - Congo durante o Neoproterozoico (Pedrosa-Soares et al., 2001, 2008). No curso da Orogenia Brasiliana (Ediacarano – Cambriano), peças continentais do embasamento da bacia precursora foram remobilizadas tectonicamente no interior do sistema orogênico Araçuaí – Congo Ocidental, estando hoje expostas como blocos soerguidos que foram exumados ao atual nível de erosão no Orógeno Araçuaí (Silva et al., 2016; Degler et al., 2018).

Estes blocos são constituídos por unidades arqueanas e paleoproterozoicas, que constituem importantes registros de eventos tectônicos ocorridos entre o Neoarqueano (e.g. Evento Jequié/Rio das Velhas - Neves et al., 1979; Grossi-Sad et al., 1990a) e o Paleoproterozoico (e.g. Orogênese Minas-Bahia - Alkmim & Marshak, 1998; Degler et al., 2018; Bruno et al., 2021, 2021a; Bersan et al., 2021).

Na porção centro-oeste do Orógeno Araçuaí, o Bloco Guanhães (Pedrosa-Soares et al., 1994) compreende uma área que excede os 30.000 km^2 e expõe parte do embasamento (Fig. 1). Esse bloco crustal é constituído por complexos TTG e sequências metavulcano-sedimentares do Arqueano, intrudidos por plútons paleoproterozoicos (e.g. Magalhães et al., 2018; Grochowski, 2019; Gomes et al., 2020; Grochowski et al., 2021) e cobertos por sequências supracrustais de naturezas diversas (e.g. Barrote et al., 2017; Magalhães, 2019).

Na porção setentrional do Bloco Guanhães aflora a Formação Serra Negra (Fig. 1 e 2), atribuída ao Grupo Guanhães (Grossi-Sad et al., 1990) e subdividida em Membro Inferior (biotita gnaisses, anfibolitos e quartzo-mica xistos) e Membro Superior (quartzitos, com algumas intercalações de formações ferríferas e, por vezes, com alguma cianita, além de mica-quartzo xisto) (Baars & Fonseca, 1997). Entretanto, a Formação Serra Negra foi interpretada como arqueana sem o suporte de dados geocronológicos analíticos. Dessa maneira, a sua idade e o significado geotectônico permanecem como lacunas na literatura geológica disponível até então. Corpos de anfibolito associados por Baars & Fonseca (1997) à Formação Serra Negra também carecem de estudos detalhados de campo e geocronológicos que comprovem sua origem e idade. Xistos e quartzitos que ocorrem sobre a Formação Serra Negra têm sido correlacionados à Formação Capelinha do Grupo Macaúbas (Baars & Fonseca, 1997; Baars et al., 1997; Souza & Grossi-Sad, 1997), a qual constitui um importante registro de um evento extensional toniano (Castro et al., 2019). Inexistem, no entanto, investigações específicas que comprovem tal correlação.

Mapeamento geológico 1:10.000 (Morais et al. 2021) recentemente realizado no extremo norte do Bloco Guanhães (Fig. 2), sob a coorientação da autora dessa dissertação, detalhou áreas anteriormente mapeadas (e.g. Baars & Fonseca, 1997), em diferentes escalas, trazendo a tona a necessidade da realização de estudos geológicos específicos na região.

3. Objetivos

A presente dissertação tem como objetivo investigar a evolução geológica registrada no extremo norte do Bloco Guanhães, por meio de mapeamento de campo detalhado, estudos geoquímicos e geocronológicos, visando contribuir para o entendimento desse compartimento tectônico do Orógeno Araçuaí-Congo Ocidental.

Referências

ALKMIM, F.F.; MARSHAK, S. (1998). **Transamazonian Orogeny in the Southern São Francisco Craton Region, Minas Gerais, Brazil: evidence for Paleoproterozoic collision and collapse in the Quadrilátero Ferrífero.** Precambrian Research 90: 29 - 58, 1998.

ALMEIDA, F.F.M. (1977). **O Cráton do São Francisco.** Revista Brasileira de Geociências (vol.7): 349 – 364, 1977.

BAARS, F. J.; FONSECA, E. (1997). **Geologia da Folha São Sebastião do Maranhão.** In: GROSSI-SAD, J. H.; LOBATO, L. M.; PEDROSA-SOARES, A. C. & SOARES-FILHO, B. S. (coordenadores e editores). PROJETO ESPINHAÇO EM CD-ROM (textos, mapas e anexos). Belo Horizonte, COMIG - Companhia Mineradora de Minas Gerais. p. 1807-1900. Belo Horizonte, 1997.

BAARS, F. J.; GROSSI-SAD, J. H. & FONSECA, E. da. (1997). **Geologia da Folha Capelinha.** In: GROSSI-SAD, J. H.; LOBATO, L. M.; PEDROSA-SOARES, A. C. & SOARES-FILHO, B. S. (coordinators and editors). PROJETO ESPINHAÇO EM CD-ROM (textos, mapas e anexos). Belo Horizonte, COMIG - Companhia Mineradora de Minas Gerais. p. 1373-1503. Belo Horizonte, 1997.

BARROTE, V.R.; ROSIERE, C.A.; ROLIM, V.K. SANTOS, J.O.S. McNAUGHTON, N.J. (2017). **The Proterozoic Guanhães banded iron formations, southeastern border of the São Francisco Craton, Brazil: evidence of detrital contamination.** Geologia USP, Série Científica 17(2): 303-324, 2017.

BERSAN, S.M.; DANDERFER, A.; STOREY, C.; BRUNO, H.; MOREIRA, H.; ABREU, F.; LANA, C.; GONÇALVES, L.; NAHAS, I. (2021). **A perspective on potassic and ultrapotassic rocks: Constraints on the Paleoproterozoic late to post-collisional event in the São Francisco paleocontinent.** Geoscience Frontiers, 101179, 2021.

BRUNO, H.; HEILBRON, M.; STRACHAN, R.; FOWLER, M.; VALERIANO, C.M.; BERSAN, S.; MOREIRA, H.; CUTTS, K.; DUNLOP, J.; ALMEIDA, R.; ALMEIDA, J.; STOREY, C. (2021). **Earth's new tectonic regime at the dawn of the Paleoproterozoic: Hf isotope evidence for efficient crustal growth and reworking in the São Francisco craton, Brazil.** Geology, 49

(10): 1214-1219, 2021.

BRUNO, H.; HEILBRON, M.; VALERIANO, C.M.; STRACHAN, R.; FOWLER, M.; BERSAN, S.; MOREIRA, H.; MOTTA, R.; ALMEIDA, J.; ALMEIDA, R.; CARVALHO, M.; STOREY, C. (2021a). **Evidence for a complex accretionary history preceding the amalgamation of Columbia: the Rhyacian Minas-Bahia Orogen, southern São Francisco Paleocontinent, Brazil**. Gondwana Research, 92: 149-171, 2021a.

CASTRO, M.P.; QUEIROGA, G.; MARTINS, M.; ALKMIM, F. PEDROSA-SOARES, A.; DUSSIN, I.; SOUZA, M.E. (2019). **An Early Tonian rifting event affecting the São Francisco-Congo paleocontinent recorded by the Lower Macaúbas Group, Araçuaí Orogen, SE Brazil.** Precambrian Research (331): 1-21, 2019.

DEGLER, R.; PEDROSA-SOARES, A.; NOVO, T.; TEDESCHI, M.; SILVA, L.C. DUSSIN, I.; LANA, C. (2018). **Rhyacian-Orosirian isotopic records from the basement of the Araçuaí-Ribeira orogenic system (SE Brazil): links in the Congo-São Francisco palaeocontinent.** Precambrian Research, 317: 179-195, 2018.

GOMES, S.D.; FIGUEIREDO E SILVA, R.C.; KEMP, A.I.S.; SANTOS J.O.S., HAGEMANN, S.; LOBATO, L.M.; ROSIERE, C.; NOVO, T.A. (2020**). Zircon U–Pb ages and Hf isotope compositions of Açucena Granite (Borrachudos Suite): Implications for Statherian-Cambrian tectono-magmatic evolution of the southern border of the São Francisco Craton, Brazil.** Journal of South American Earth Sciences 100(1-2): 1-16, 2020.

GROCHOWSKI, J.D. (2019). **Os plútons Felício e Mercês: registros da orogênese Riaciana-Orosiriana no Bloco Guanhães.** Dissertação de mestrado, UFVJM, 2019.

GROCHOWSKI, J.; KUCHENBECKER, M.; BARBUENA, D.; NOVO, T. (2021). **Disclosing Rhyacian/Orosirian orogenic magmatism within the Guanhães basement inlier, Araçuaí Orogen, Brazil: a new piece on the assembly of the São Francisco-Congo paleocontinent.** Precambrian Research 363 (106329), 2021.

GROSSI-SAD, J.H. (1997). **Geologia da Folha Guanhães.** In: GROSSI-SAD, J. H.; LOBATO, L. M.; PEDROSA-SOARES, A. C. & SOARES-FILHO, B. S.

(coordenadores e editores). PROJETO ESPINHAÇO EM CD-ROM (textos, mapas e anexos). Belo Horizonte, COMIG - Companhia Mineradora de Minas Gerais. p. 2317-2435. Belo Horizonte, 1997.

GROSSI SAD, J.H.; CHIODI FILHO, C.; SANTOS, J.F.; MAGALHÃES, J.M.M.; CARELOS, P.M. (1990). **Geoquímica e origem da formação ferrífera do Grupo Guanhães, Distrito de Guanhães, MG, Brasil**. Anais, 36° Congresso Brasileiro de Geologia, volume 3, 1241-1253. Natal: SBG, 1990.

GROSSI SAD, J.H.; CHIODI FILHO, C.; SANTOS, J.F.; MAGALHÃES, J.M.M. & CARELOS, P.M. (1990a). **Duas "suítes" graníticas do bordo sudeste do Craton São Francisco, em Minas Gerais: Petroquímica e Potencial Metalogenético.** Anais, 36º Congresso Brasileiro de Geologia, volume 4, 1836-1841. Natal: SBG, 1990a.

HEILBRON, M.; CORDANI, U; ALKMIM, F.F. (2017). **São Francisco Craton, Eastern Brazil Tectonic Genealogy of a Miniature Continent.** 1. ed. (v.1). Cham: Springer, 2017.

MAGALHÃES, J.R. (2019). **Eventos magmáticos e metamórficos no Bloco Guanhães (MG): caracterização petrogenética e significado geodinâmico dos registros estateriano, criogeniano e ediacarano na evolução do Paleocontinente São Francisco.** Tese de doutorado, UFMG. Belo Horizonte, 2019.

MAGALHÃES, J.R.; PEDROSA-SOARES, A.; DUSSIN, I.; MUNTENER, O.; PINHEIRO, M.A.P.; SILVA, L.C.; KNAUER, L.G.; BOUVIER, A.S.; BAUMGARTNER, L. (2018). **First Lu-Hf, δ ^{18}O and trace elements in zircon signatures from the Statherian Espinhaço anorogenic province (eastern Brazil): geotectonic implications of a silicic large igneous province.** Brazilian Journal of Geology, 48(4): 735-759, 2018.

MORAIS, G.F.; RIBEIRO, B.O.L; PALES, I.G.; PIMENTA, J.P.R.; AZEVEDO, V.A.; ROCHA, M.G.; Maximiano, P.F.; SANTOS, L.H.; LEANDRO, U.R.; KUCHENBECKER, M.; BARBUENA, D. (2021). **Mapeamento geológico, em escala 1:10.000, da região de Penha de França – Itamarandiba (MG): contribuições para a evolução do conhecimento do Bloco Guanhães, Orógeno Araçuaí.** In TOLEDO, C.; MA, J.B.C.; BARBOSA, P. (editoras). Contribuições à ciência e técnica dos (as) jovens geólogos (as) brasileiros

(as). 1ªEd.: 50ºCBG, 2021.

NEVES, B.B.B.; KAWASHITA, K.; CORDANI, U.G.; DELHAL, J. (1979). **A evolução geocronológica da Cordilheira do Espinhaço: dados novos e integração.** Revista Brasileira de Geociências 9(1): 71 - 85, 1979.

PEDROSA-SOARES, A.C.; ALKMIM, F.F.; TACK, L.; NOCE, C.M.; BABINSKI, M.; SILVA, L.C.; MARTINS-NETO, M.A. (2008). **Similarities and differences between the Brazilian and African counterparts of the Neoproterozoic Araçuaí-West Congo orogeny.** Geological Society, London, Special Publications (294): 153-172, 2008.

PEDROSA-SOARES, A.C.; DARDENNE, M.A.; HASUI, Y.; CASTRO, F.D.C.; CARVALHO, M.V.A.; REIS, A.C. (1994). **Nota explicativa dos mapas geológico, metalogenético e de ocorrências minerais do estado de Minas Gerais 1:1.000.000.** Companhia Mineradora de Minas Gerais, v.3000. 97p. Belo Horizonte, 1994.

PEDROSA-SOARES, A.C.; NOCE, C.M.; WIEDEMANN, C.M.; PINTO, C.P. (2001). **The Araçuaí-West-Congo Orogen in Brazil: an overview of a confined orogen formed during Gondwanaland assembly.** Precambrian Research (110), Issues 1-4: 307-323, 2001.

SILVA, L.C.; PEDROSA-SOARES, A.C.; ARMSTRONG, R.; PINTO, C.P.; MAGALHÃES, J.T.R.; PINHEIRO, M.A.P.; SANTOS, G.G. (2016). **Disclosing the Paleoarchean to Ediacaran history of the São Francisco Craton basement: the Porteirinha domain (northern Araçuaí Orogen, Brazil).** Journal of South American Earth Sciences (68): 50-67, 2016.

SOUZA, M.A.T.A.; GROSSI-SAD, J.H. (1997). **Geologia da Folha Rio Vermelho.** In: GROSSI-SAD, J. H.; LOBATO, L. M.; PEDROSA-SOARES, A. C. & SOARES-FILHO, B. S. (coordinators and editors). PROJETO ESPINHAÇO EM CD-ROM (textos, mapas e anexos). Belo Horizonte, COMIG - Companhia Mineradora de Minas Gerais. p. 1667-1806, 1997.

4. Artigo científico submetido ao Journal of South America Earth Sciences

A LONG LIVED HISTORY OF A BASEMENT INLIER OF THE ARAÇUAÍ OROGEN, SOUTHEAST BRAZIL: EVIDENCES FOR ARCHEAN TO NEOPROTEROZOIC CRUSTAL EVOLUTION OF THE NORTHERN GUANHÃES BLOCK

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ABSTRACT

The Guanhães Block is one of the most important basement inliers within the Araçuaí-West Congo Orogen. This orogenic segment was built on the eastern margin of the São Francisco Craton in the Neoproterozoic-Cambrian boundary. The Guanhães Block is composed by Archean TTG complexes and Archean to Cryogenic metavolcanosedimentary sequences, as well as Paleo to Neoproterozoic igneous and Paleoproterozoic sedimentary units. New field, petrographic, geochemical and geochronological (U-Pb; LA-ICP-MS) data are presented for the Guanhães Complex, the Capelinha Formation (Macaúbas Group) and associated units. For the first time are presented geochronological data from detrital zircon grains for the Serra Negra Formation, in the northwestern Guanhães Block. The gneiss of the Pedra Menina region integrate the Guanhães Complex, whose protholith crystallization ages are defined by two U-Pb discordias with upper intercepts at 2.86 and 2.7 Ga and lower intercepts at 521 and 607 Ma (interpreted as metamorphic ages). These basement gneisses present granitic to granodioritic compositions and magnesian, peraluminous affinity and plot as subalkaline magmatic series. The samples from the Guanhães Complex are enriched in LILE, Th and U, and present negative anomalies of Nb, P and Ti. All the samples are enriched in LREE in relation to HREE and correspond to metaigneous rock with Archean TTG affinity. The Serra Negra Formation is a sedimentary succession with maximum depositional age in 1.9 Ga (quartzite) that includes a narrow basal layer of schists and metaconglomerates, followed by extensive saccharoidal quartzites, which seems to be formed in coastal sedimentary environments. The Capelinha Formation includes quartzites, schists and expressive marbles lenses. The data obtained demonstrates that this unit has a wider territorial extension towards the south than postulated in their original definition. It was obtained a Stenian (1.16 Ga) maximum depositional age for schist from the Capelinha Formation. Chemical analyzes for the amphibolite bodies suggest affinity with continental intraplate tholeiitic basalt as protoliths of these rocks. The REE patterns, normalized to chondrite, show enrichment in the LREE (La/Yb = 2.4 to 8.21), and relatively low contents of HREE. These results integrated with mapping and geological associations suggest a correlation with metamafic rocks of Capelinha Formation type-area and with the magmatic record of the Tonian rifting event, with possible correspondent in the African counterpart in the context of the São Francisco-Congo paleocontinent. The Ediacaran leucogranite

that intrude the base of the Serra Negra Formation present a crystallization age at 566 Ma and is interpreted as a register of the collisional magmatism of the Araçuaí-West Congo Orogen. Two hypotheses were suggested for tectonic significance of the Serra Negra Formation: i) the deposition in a syn-orogenic basin at the end of the Paleoproterozoic Minas-Bahia orogeny or ii) the deposition in the Tonian rift basin, together with the Capelinha Formation (ca. 957 Ma).

Keywords: Guanhães Block. Tonian Rifting. Araçuaí-West Congo Orogen. Minas-Bahia Orogen. Paleoproterozoic Orogeny. São Francisco-Congo Paleocontinent.

INTRODUCTION

Basement inliers within orogenic belts are key pieces to understand the tectonic evolution of their parental continents, as well as petrogenetic processes that formed and transformed ancient sectors of the continental crust (Brito Neves et al., 2021).

On map view, a basement inlier mostly exposes ancient rocks surrounded by younger rock assemblages within a younger orogenic region. Largely exposed by erosion in present-day relief, basement inliers may represent former basin highs preserved as uplifted areas or basement blocks exposed by tectonic processes (e.g. terrane accretion, faulting and folding) during several orogenic stages, since the pre-collisional convergence, passing through the collisional thrust stacking to post-collisional gravitational collapse. Therefore, understanding the nature and tectonic significance of basement inliers is crucial to correctly interpret not only the geologic information they host, but also the orogenic history around them (Cordani et al., 2005; Noce et al., 2007b; Schijndel et al., 2014; Alessio et al., 2017; Valladares et al., 2017).

The Precambrian substrate of the South American platform presents several examples of Archean-Paleoproterozoic basement inliers within the intricate system of Neoproterozoic orogens formed during the amalgamation of Western Gondwana (Sato & Siga Júnior, 2000; Brito Neves et al., 2021).

The Ediacaran-Cambrian Araçuaí Orogeny (Pedrosa-Soares et al., 2001, 2011), located to the southeast of the São Francisco Craton (Fig. 1), comprises several Archean-Orosirian basement inliers, forming prominent blocks surrounded and locally covered by younger rock assemblages, and intruded by igneous bodies of several ages (Noce et al., 2007a, 2007b; Silva et al., 2016; Degler et al., 2018). One of the most important of those basement inliers, the Guanhães Block, located in the central-western domain of the Araçuaí Orogen (Fig. 1), mainly comprises Archean TTG complexes and metavolcano-sedimentary sequences, and Paleoproterozoic igneous and sedimentary units (Noce et al., 2007a; Barrote et al., 2017; Magalhães et al., 2018; Grochowski et al., 2021). The geotectonic interpretations on the Guanhães Block have been controversial since long time, varying from

a basement extension from the São Francisco Craton reworked within the Araçuaí Orogen (Noce et al. 2007a, 2007b; Silva et al., 2016; Degler et al., 2018; Magalhães et al., 2018; Grochowski et al., 2021; Brito-Neves et al., 2021) to a microcontinent amalgamated with the São Francisco Craton (Almeida et al., 2000). Despite that, a small number of tectonic investigations based on detailed field and analytical studies have been carried out on the Guanhães Block, and several of their rock units still lack robust geological information. In this context, our article presents new field, geochemical and geochronological data for several rock units occurring along the northwestern border of the Guanhães Block, aiming to untangle the intricate framework of this basement inlier of the Araçuaí Orogen. The results, interpreted in the light of current knowledge about the Araçuaí Orogen and São Francisco Craton, offer great advances in relation to previous studies, contributing to enhance the understanding of a key element of the Precambrian substrate of the South American Platform.

GEOLOGICAL CONTEXT

The Araçuaí Orogen, together with its counterpart located in Africa, the West Congo belt, evolved from the inversion of a confined basin almost completely surrounded by the São Francisco-Congo Paleocontinent, during the amalgamation of Gondwana, at the end of the Neoproterozoic (Pedrosa-Soares et al., 2001, 2008, 2011; Alkmim et al., 2017). As a result of the orogeny, borders of the São Francisco Paleocontinental Block were tectonically reworked, resting now as basement inliers within the Araçuaí Orogen (Fig. 1).

The Guanhães Block is a large basement inlier located in the southwestern portion of the Araçuaí Orogen (Fig. 1), bounded by regional thrusts, strike-slip shear zones and late orogenic normal-sense shear zones that juxtapose basement assemblages and younger metasedimentary units (Akmim et al., 2006, Noce et al., 2007a, Carvalho et al., 2014). Within the block, TTG orthogneisses and migmatites with ages ranging from 2.7 to 3.1 Ga are encompassed in the Guanhães Complex (Pedrosa-Soares et al., 1994; Souza & Grossi-Sad, 1997; Silva et al., 2002; Peixoto et al., 2015; Barrote, 2016), which is associated to several metavolcano-sedimentary sequences (e.g. Serro, Pedro Pereira, Morro do Pilar, Rio Mata Cavalo) that host Cr, Au and Fe deposits (e.g. Angeli et al., 2011; Suita and Strieder, 1996). The Archean basement hosts granitic plutons related to the Rhyacian-Orosirian Minas-Bahia orogeny (e.g. Grochowski et al., 2021) and voluminous anorogenic granites recording the Statherian Espinhaço rifting event (e.g. Magalhães et al., 2018; Gomes et al. 2020).

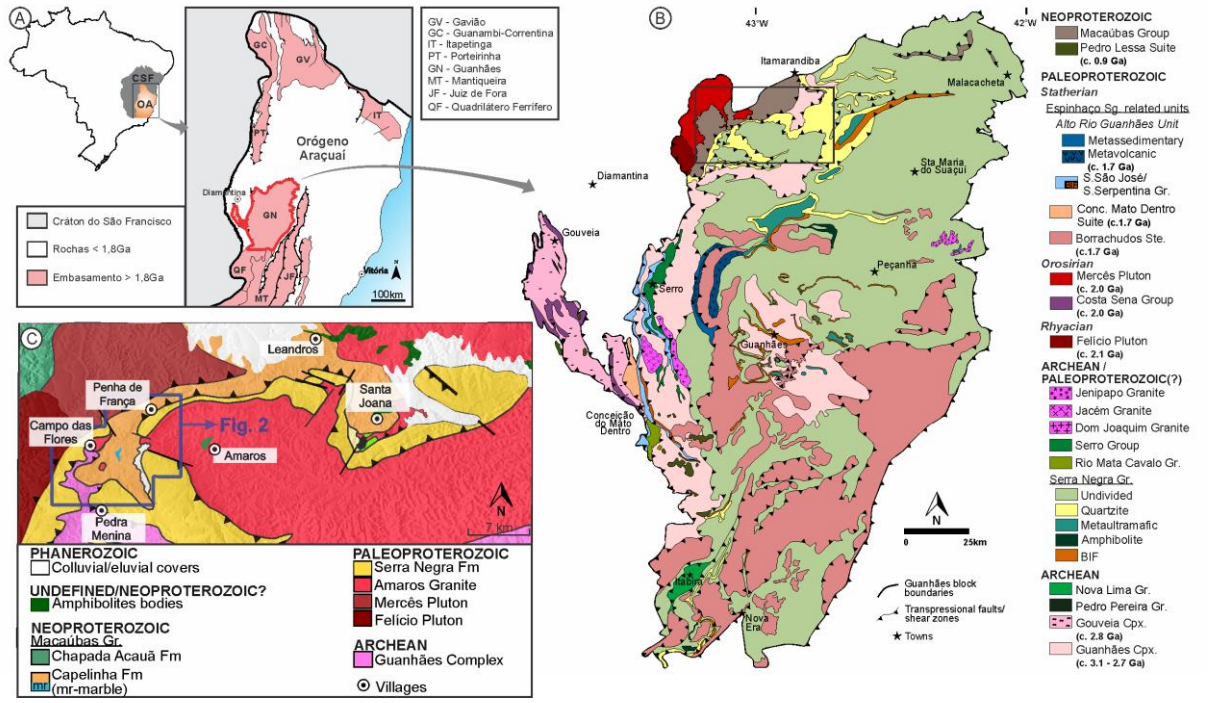

Fig.1. A) Tectonic context of the Guanhães Block (GN) within the Araçuaí Orogen (AO). B) Geological map of the Guanhães Block and units that border it (i.e. Espinhaço Supergroup, Serra de São José Group, Serra da Serpentina Group) (modified from Silva et al., 2020) with location of the studied area. C) Simplified geological map of the study area. Note the location of the Figure 2.

Metasedimentary units partially covering the Guanhães Block include paragneisses, schists, quartzites and banded iron formations that were formerly grouped in stratigraphic units tentatively assigned to the Archean (the Guanhães Group, Grossi-Sad, 1997; and Serra Negra Group, Pinto and Silva, 2014). However, recent studies in the southern Guanhães Block presented robust geochronological and geochemical data, showing that most of those rocks actually belong to Late Orosirian, and Statherian to Cryogenian sequences (e.g. Barrote et al., 2017; Magalhães et al., 2018; Silveira-Braga, 2019).

Along the northern border of the Guanhães Block (focus of our study), a metasedimentary succession named Serra Negra Formation was formerly considered as the uppermost sequence of the so-called Guanhães Group (Grossi-Sad, 1997; Souza & Grossi-Sad,1997). The Serra Negra Formation was divided, by Baars & Fonseca (1997), into a Lower Member, comprising biotite paragneisses, amphibolites, ultramafic rocks and schists, and an Upper Member mostly composed of quartzites, with rare iron formation and conglomerates.

Overlying the Serra Negra Formation, the Capelinha Formation (Macaúbas Group) comprises quartzite, micaschist, graphite schist and orthoamphibolite (metabasalt), recording the volcano-sedimentary infill of an Early Tonian rift (c. 957 Ma; Castro et al., 2019). This

rifting event is also recorded by mafic dykes of the Pedro Lessa Suite, cutting across units of the Guanhães Block (Chaves et al. 2018, Grochowski, 2019).

MATERIALS AND METHODS

Field and petrography

Aiming to constrain the relations between the geological units and guide the analytical procedures, a key-area on the Guanhães Block, located in the surroundings of Penha de França Village, was mapped in 1:10.000 scale by Morais et al. (2021) and the first authors (Fig. 2). Among the collected samples, 80 of them were selected for producing thin sections that were described using a Leica DM 2500 P petrographic microscope coupled to a Leica MC170 HD camera. The mineral abbreviations used in this manuscript follow Whitney and Evans (2010).

Whole-rock geochemistry

Six samples of amphibolite and three samples of gneiss were selected for whole-rock geochemistry analysis, which was performed at SGS-Geosol Laboratories, Brazil. The chosen samples are free from weathering and hydrothermal alterations, and were cleaned from coatings, fracture fillings and veins. The analyses were performed via ICP-OES to major elements and ICP-MS to trace elements after fusion with lithium tetraborate and digestion with diluted nitric acid. The Loss On Ignition (LOI) was determined by the weighing difference after ignition at 1000°C. Results are available in Supplementary Data A. Fe_2O_3 refers to total iron oxide. To interpret and plot the data we used the software GCDKit, version 6.0.

U-Pb geochronology

Four samples were selected for geochronologic analysis: a quartzite BG-19-28 (695336/7999319), a gneiss BG-19-25 (697896/7997002), a schist BG-19-26 (704378/8005421) and a granite BG-19-24 (704895/8001752). Zircon concentrates were obtained from the samples at the High-Purity Mineral Separation Laboratory (SEPURA-UFMG, Brazil), by using conventional granulometric (crushing, grinding, sieving, whilfley table), magnetic (Frantz/LB-1 separator) and gravimetric (bromoform) techniques. Final separation was achieved by hand picking. Grains were mounted in epoxy disks and polished to expose their cores. Cathodoluminescence (CL) images of the mounts were obtained in a JEOL/JSM-6510 scanning electron microscope equipped with a Centaurus cathodoluminescence at the Microanalysis Laboratory (L-Mic-UFOP, Brazil). The U-Pb ages were obtained by laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) at the Isotopic Geochemistry Laboratory of the UFOP using the Thermo-Finnigan/Element II,

a sector field ICP-MS coupled to a CETAC LSX-213 G2+(λ=213 nm) ultraviolet laser system (LA-SF-ICP-MS). Detailed description of method is given by Gerdes and Zeh (2006, 2009). Ablation was carried out in a low-volume cell with helium as carrier gas; laser beam parameters used were spot size of 30 μm, repetition rate of 10 Hz, and fluence of ~3 J cm^{-2}. Data were acquired in peak jumping mode during 20s background measurements followed by 20s sample ablation. Data were corrected for background signal, common Pb, laser-induced elemental fractionation, instrumental mass discrimination, and time-dependent elemental fractionation of Pb/U using the GLITTER® software package (Van Achterbergh et al., 2001). Common Pb correction was applied using the interference and background corrected ^{204}Pb signal and model Pb composition (Stacey and Kramers, 1975). Laser-induced elemental fractionation and instrumental mass discrimination were corrected by normalization to reference zircon GJ-1 (Jackson et al., 2004), which was routinely measured during each analytical session. Drift in inter-elemental fractionation (Pb/U) during 20s of sample ablation was corrected individually before normalization to GJ-1. Reported uncertainties (2σ) were propagated by quadratic addition of the external reproducibility obtained from zircon standard GJ-1 during the analytical session (2SD in %) and within-run precision of each analysis (standard error in %). Accuracy and reproducibility were checked by repeated analyses of reference zircon Plesovice (Sláma et al., 2008) and 91500 (Wiedenbeck et al., 2007). Concordia diagrams and histograms were prepared with Isoplot (Ludwig, 2001).

FIELD AND PETROGRAPHY

The detailed geological map (Fig.2) of the Penha de França area shows two basement assemblages (Guanhães Complex and Amaros Granite) covered by the metasedimentary rocks of the Serra Negra Formation and Capelinha Formation (Macaúbas Group), and intrusive bodies composed of orthoamphibolite and granite (Fig. 3).

Guanhães Complex

The orthogneisses ascribed to the Guanhães Complex are typically gray, fine-to-medium-grained, with well-defined compositional banding defined by the alternation of cm-to-m-thick biotite-rich and quartz-feldspathic bands (Fig. 4A). They are composed (in vol%) by quartz (35), biotite (15-20), microcline (15-20), plagioclase (5-10) and orthoclase (<2). Muscovite (<10), chlorite (<5) and epidote (<3) are alteration minerals (Fig. 4B). Biotite outlines the regional foliation. SE-verging asymmetric folds and shear zones are common features.

Amaros Granite

This granitic pluton intrudes the Guanhães Complex on the eastern border of the area. The Amaros Granite ranges in composition from monzogranite to alkali feldspar granite (Fig. 4C), presenting equigranular, inequigranular and porphyritic textures. Locally, the pluton exhibits foliation and compositional banding.

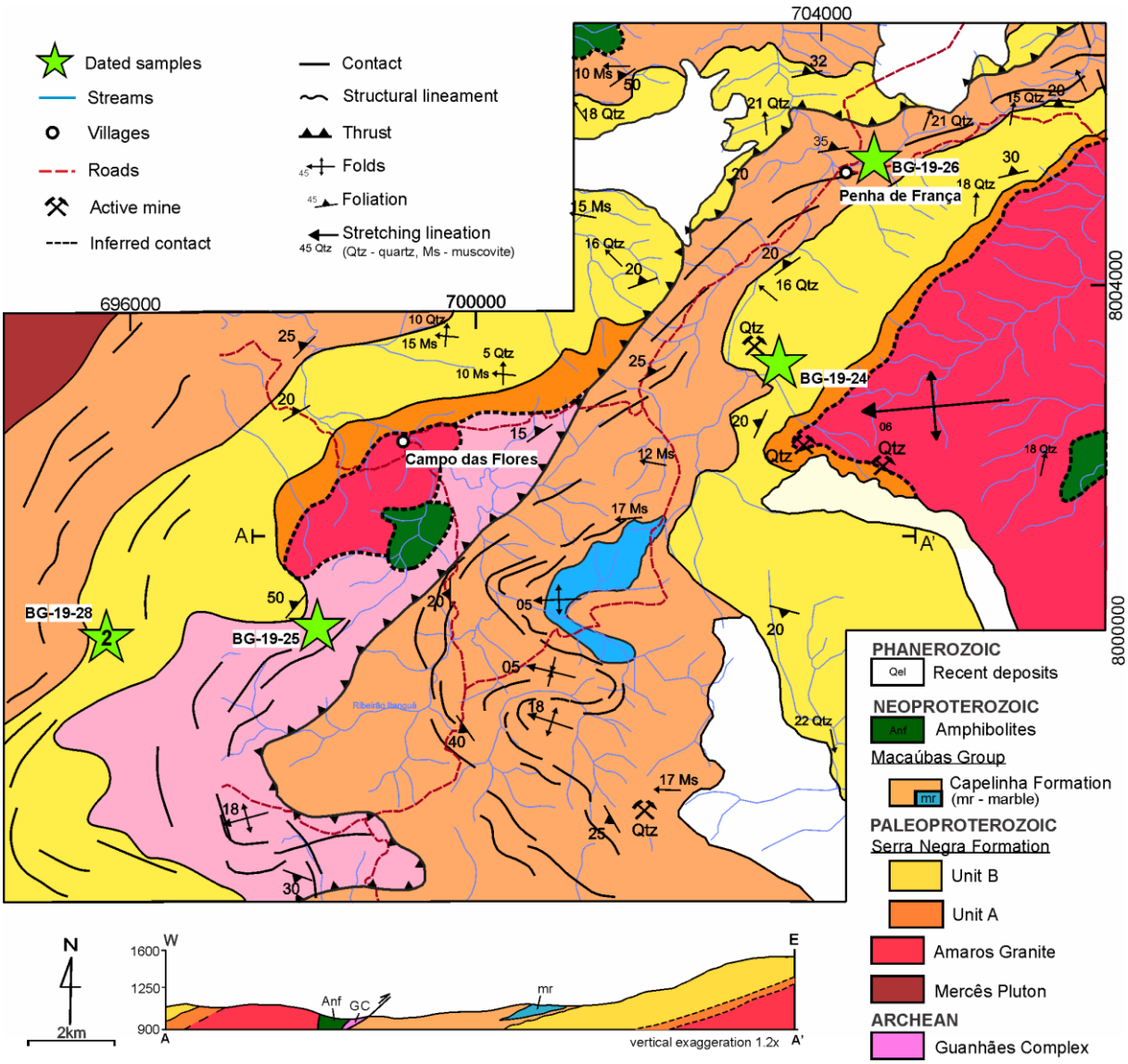

Fig.2. Detailed geological map of the Penha de França and Pedra Menina region, modified from Morais et al. (2021). See location in Figure 1.

Serra Negra Formation

The Serra Negra Formation crops out in two tectonically imbricated W-plunging anticlines at the western and eastern portions of the area (Fig.2), covering both the Guanhães Complex and the Amaros granite (Fig. 4I). The Serra Negra Formation is divided into two units: A and B.

The basal unit A occurs discontinuously and present decametric layers of quartz-muscovite schist with variable amounts of accessory minerals, such as biotite, chlorite, tourmaline and magnetite. At the uppermost part of the unit A discontinuously occurs m-thick layers of metaconglomerate composed of rounded to sub-rounded clasts of quartz, quartzite and some amphibolite, enclosed by sandy matrix. The clasts are commonly stretched, with quartz and amphibolite clasts reaching up to 30 cm-long. The metaconglomerate shows both plane-parallel and cross-bedding stratifications (Fig. 4F).

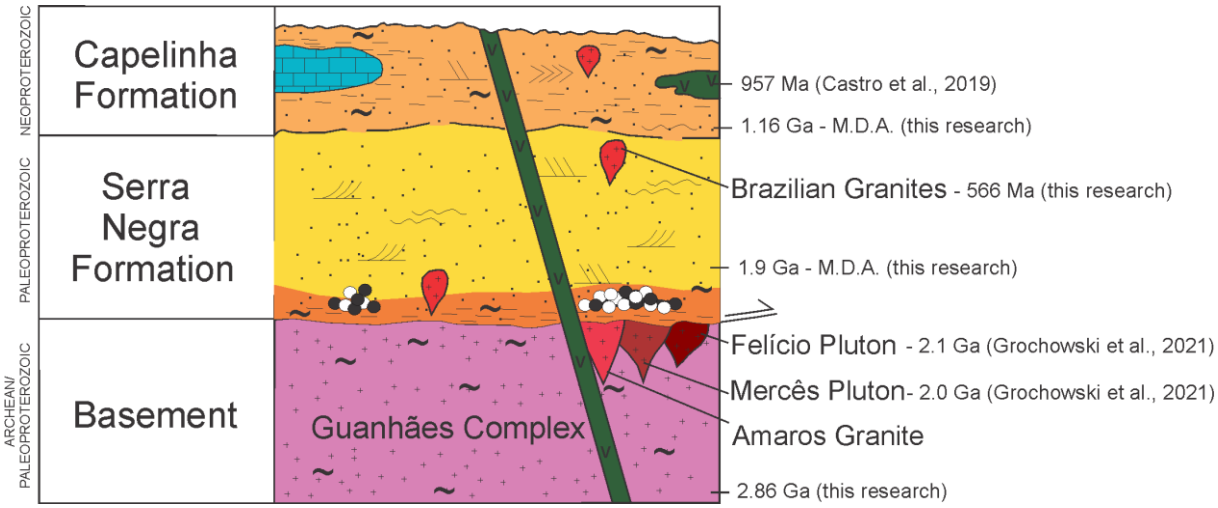

Fig.3. General stratigraphic column of the study area.

Making up the higher ranges that stand out along the northwestern border of the Guanhães Block, the unit B is much more expressive than the underlying unit A and reach up more than 200 m-thick. The unit B comprises fine-grained, micaceous to pure quartzite, at the base, which grades upwards to coarser-grained quartzite (Fig. 4D) locally with pelitic schist lenses. The most outstanding feature of this unit is the striking recrystallization of the quartz grains, forming a typical quartzite with saccharoidal texture (Fig. 4E). Locally, stretched quartz outlines a prominent lineation preserved in bedding plans of the saccharoidal quartzite. It shows a granoblastic texture with generally polygonal-shaped or, less commonly, inter-lobed quartz grains (85 to 95 vol%). Oriented muscovite (<10 vol%) and kyanite (<4%) outline the regional foliation (S1) commonly parallel to bedding (S0). Opaque minerals (<2%), apatite (< 2%) and zircon (<1%) are accessory components. Despite the intense recrystallization, sedimentary structures are commonly preserved, such as plane-parallel stratifications, tabular and through cross-bedding and asymmetric ripples (Fig. 4G-H).

Capelinha Formation

Overlying the upper unit B of the Serra Negra Formation, a km-thick alternating package of quartzite and pelitic schist characterizes the Capelinha Formation which occurs in the central and western portion of the detail area (Fig. 2). Both formations have been coherently involved in the same regional tectonics that formed folds and thrusts in several scales.

The Capelinha Formation typically shows intercalations of centimetric to metric layers of quartzite and pelitic schists, distinguishing it from the more massive packages of saccharoidal quartzite of the underlying Serra Negra Formation (Fig. 4O). The Capelinha quartzite is fine- to coarse-grained, consisting of granoblastic quartz (up to 95 vol%), muscovite (<15%), opaque minerals (<4%), tourmaline (<1%) and, locally, feldspar (<3%) (Fig. 4K). The coarser-grained quartzites of the Capelinha Formation also use to be intensely recrystallized, exhibiting prominent saccharoidal texture, similarly to the quartzites of the Serra Negra Formation. Sedimentary structures, such as tidal bundles, plane-parallel, herringbone and cross-bedding stratifications are commonly preserved in the Capelinha quartzite (Fig. 4J).

The Capelinha schist mostly comprises muscovite (20 to 80 vol%), quartz (5 to 65%), and biotite (20 to 45%). Less common but locally abundant minerals are garnet (< 50%), tourmaline (< 35%), staurolite (< 15%) and kyanite (< 4%). The mineral assemblage mica + garnet + staurolite + kyanite characterizes a medium-pressure metamorphic regime in the amphibolite facies.

Intercalated in Capelinha schist, a km-sized marble lens was identified in the central portion of the studied area (Fig. 2). It is an impure dolomitic marble with variable amounts of quartz and phlogopite, and disseminated tremolite and talc (Fig. 4M-N). The marble lens comprises metric bands and veins of tremolitite.

Orthoamphibolites

Several occurrences of orthoamphibolite were found in the studied area, some of them too small to be mapped on scale 1:10.000. The largest amphibolite bodies are located near the localities of Amaros and Campo das Flores, showing sharp contacts with the Amaros granite and the Guanhães Complex (Fig. 4L). Another important amphibolite body is hosted by the Capelinha quartzites, in the locality of Leandros (UTM: 720669 – 8013340; not in the detailed study area). This orthoamphibolite is a very dark-colored, fine- to medium-grained rock, showing a pervasive foliation outlined by oriented amphibole. The orthoamphibolite consists of hornblende (33 to 95%), quartz (< 20%) and plagioclase (10 to 20%), garnet (< 2%) and titanite (<1%). Epidote (< 5%) and biotite are alteration products (Fig. 4Q). Metamorphic fabrics show lepidonematoblastic, granonematoblastic, decussate

and nematoblastic textures. The Leandros body shows hornblende porphyroblasts up to 1 cm (Fig. 4P).

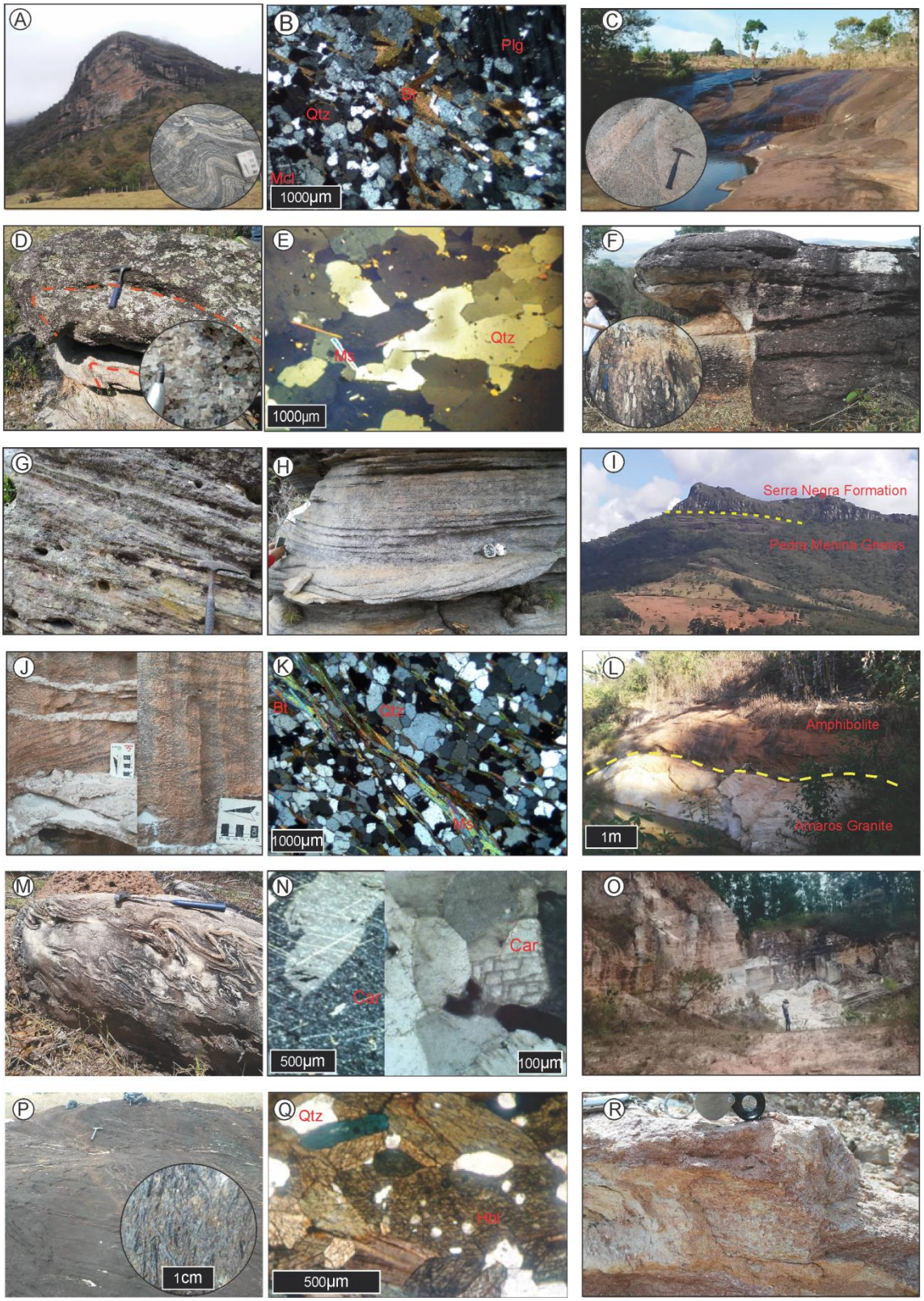

Fig.4. (A) Macro and (B) microscopic view of the Pedra Menina Gneiss from Guanhães Complex. (C)Amaros granitic body with a detail view of aplite intrusions. (D) Folded quartzite of the Serra Negra

Formation. See the recrystallized quartz grains in the detail. (E) Petrographic view of recrystallized quartz grains (subgrains and new grains). (F) Tabular crossbed preserved in the conglomerates from Serra Negra Formation. See the stretched clasts in the detail. Sedimentary structures preserved in quartzites from Serra Negra Formation: (G) tabular and (H) trough crossbed. (I) Tectonic contact between Guanhães Complex and Serra Negra Formation. (J) Primary structures (tabular and herringbone crossbed) preserved in quartzites from Capelinha Formation and (K) microscopic view of the Bt-rich quartzite. (L) Geological contact of Amaros Granite and a concordant amphibolite. (M) Marble block with sandy level. (N) Petrographic microscopic view of the marble. (O) Typical intercalation of quartzite and schist of the Capelinha Formation. (P) Amphibolite body and the detail of idiomorphic crystals of hornblende. (Q) Microscopic view of amphibolite. (R) Weathered granite that intrudes the base of Serra Negra Formation. Mineral abbreviations (Whitney and Evans, 2010): Bt (Biotite), Car (Carbonate), Hbl (Hornblende), Ms (Muscovite), Plg (Plagioclase), Qtz (Quartz).

Granites

Usually deeply weathered, small granitic bodies locally intrude rocks of the Serra Negra and Capelinha formations (Fig. 4R). They consist of medium-grained granite, composed by k-feldspar (< 27%), quartz (< 25 vol%), plagioclase (< 21%), biotite (< 20%) and muscovite (< 7%). Locally, there are pegmatitic bodies that present euhedral, often rutilated, quartz crystals, schorlite and muscovite, which are mined by hand.

Hydrothermal rocks

There is evidence of percolation of hydrothermal fluids throughout the studied area. Veins of milky and smoky quartz, often rutilated, for example, are widespread in the area. In the saccharoidal quartzites from Serra Negra Formation (and, subordinately, from Capelinha Formation), cm-sized, idiomorphic kyanite crystals suggest crystallization of Al-rich fluids (Fig. 5C). Occasionally, associated to the kyanite, there are veins and veinlets of magnetite and hematite (Fig. 5B), which often forms hydrothermal-like breccias (Fig. 5D). The talc-rich tremolitite veins and bands enclosed by marble lenses of the Capelinha Formation also could record hydrothermal circulation of H_2O-rich fluids. Similar rocks occur near Santa Joana locality, east of the detailed area (Fig. 5E).

Further evidence for hydrothermal activity is a thick and massive magnetitite body found near the Santa Joana locality (UTM 727722/8005128), which seems to be related to a strongly weathered amphibolite body (Fig. 5A). The area shows abundant blocks of lateritic gossan-like rocks (Fig. 5F), suggesting widespread percolation of Fe-rich fluids through several rocks that could also be related to hydrothermal processes before the modern weathering.

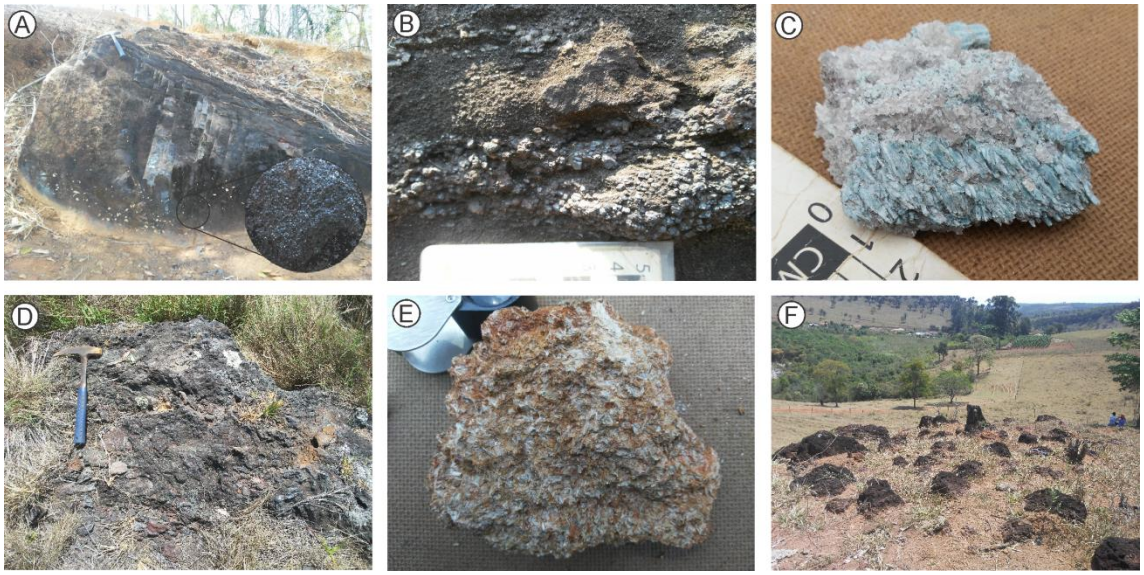

Fig.5. Evidence of Fe-fluid activity in a (A) massive magnetitite body and (B) idiomorphic crystals of magnetite in quartzite. Hydrothermal record in (C) kyanite level and (D) ferruginous breccia associated with quartzite of the Serra Negra Formation. (E) Tremolitite rock and (F) lateritic blocks close to them.

GEOCHEMISTRY

Guanhães Complex

Three orthogneiss samples from the Guanhães Complex were analyzed for major and trace elements (including Rare Earth Elements – REE) (Fig. 6). The analytical data are presented in the Supplementary Data A.

The orthogneiss samples have the following composition of major elements (in wt%): SiO_2 = 67.13 to 74.89; Al_2O_3 = 14.45 to 15.78; Fe_2O_3 = 2.78 to 3.61; MgO = 0.86 to 1.39; MnO < 0.05; CaO = 1.09 to 2.81; Na_2O = 3.52 to 4.01, and K_2O = 2.55 to 3.20.

Accordingly, the samples present granitic to granodioritic composition, magnesian to peraluminous affinity and belongs to subalkaline magmatic series (Fig. 6A-F). The relation $Na_2O+K_2O+Ca_2O$ versus SiO_2 shows a narrow trend between the calcic and calc-alkaline fields (Fig. 6E).

Compared to the primitive mantle (Sun and McDonough, 1989), the orthogneiss samples are enriched in large ion lithophile elements (LILE; i.e. Ba, K, Sr, Rb), Th and U, related to high field strength elements (HFSE; i.e. Ti, Th, Ta. Nb. Hf), whose values are close to the normalizing values (Fig. 6H). All the samples are enriched in light REE in relation to heavy REE, following the common trend of Archean TTG associations (Fig. 6G). On the Nb versus Y diagram, all samples plot in the volcanic arc to syn-collisional field (Fig. 6C).

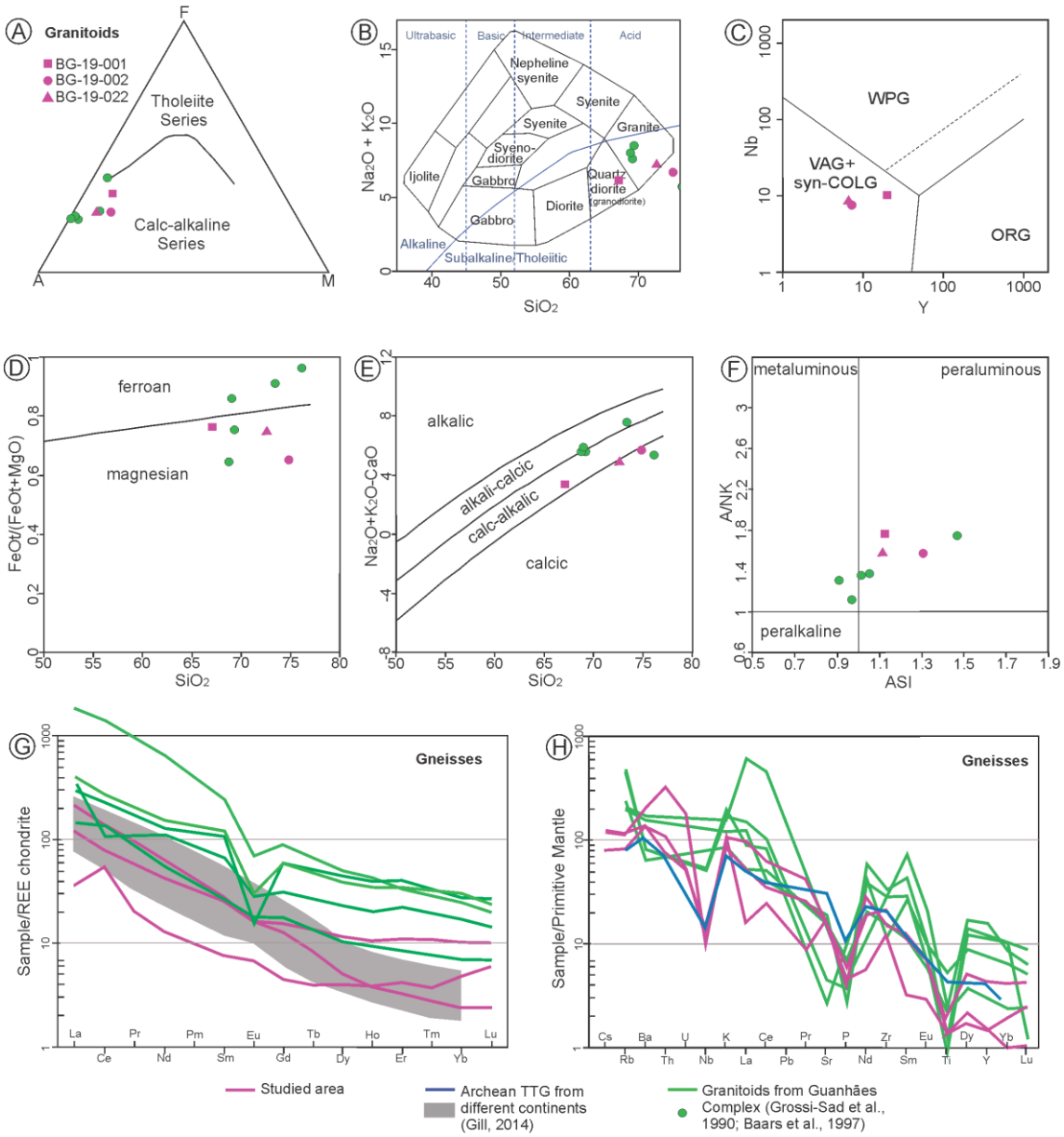

Fig.6. Geochemical classification diagrams for orthogneisses from the Guanhães Complex at Pedra Menina area (in pink) plotted at: (A) AFM (Alkalis-Iron-Magnesium) diagram (Irvine & Baragar, 1971) and (B) TAS (total alkali versus silica) diagram (Cox et al., 1979); (C) Nb versus Y trace elements (Pearce et al., 1984; VAG, volcanic arc granite; syn-COLG, sin-collisional granite; WPG, within plate granite; ORG, ocean ridge granite); (D) FeOt/(FeOt+MgO) versus SiO2, (E) Na_2O+K_2O-CaO versus SiO_2, and (F) A/NK versus ASI (Aluminum Saturation Index) (cf. and Frost et al., 2001); (G) REE normalized to chondrite (Boynton, 1984); and (H) Spider diagram for incompatible elements normalized to the primitive mantle (Sun & McDonough, 1989).

Amphibolites

Six amphibolite samples were analyzed for major and trace elements (including REE). Analytical data Results are presented in the Supplementary Data A. The amphibolite samples show the following composition for the main major elements (in wt%): SiO_2 = 49.42

to 54.10; TiO_2 = 1.15 to 2.05; Al_2O_3 = 13.31 to 14.99; Fe_2O_3 = 10.88 to 13.77; MgO = 2.01 to 6.73; CaO = 9.57 to 12.15; Na_2O = 0.86 to 1.89; K_2O = 0.10 to 2.16; and P_2O_5 = 0.07 to 0.37.

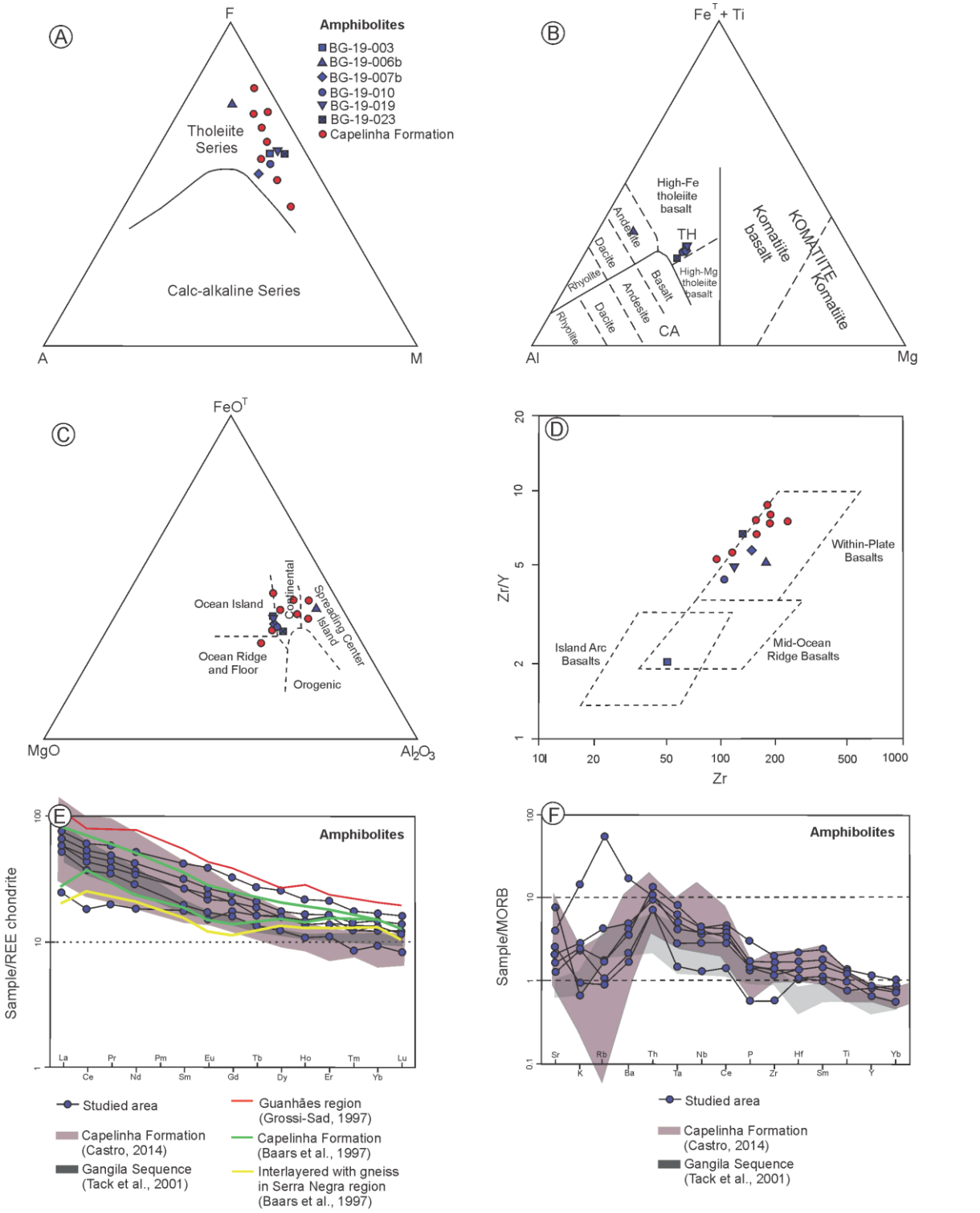

Fig.7. Classification of the amphibolites from Serra Negra region (in blue) plotted at (A) AFM (Alkalis-Iron-Magnesium) diagram of Irvine & Baragar (1971) and (B) Al - (Fe^T+Ti) - Mg diagram (Jensen, 1976). Tectonic discriminant diagrams (C) FeOT x MgO x Al_2O_3 (Pearce et al. 1977) and (D) Zr x Zr/Y (Pearce & Norry, 1979) with amphibolites from Capelinha Formation type-area, in red (Castro et al.,

2019). (E) Rare earth elements normalized to chondrite in Boynton (1984) and (F) Trace elements patterns normalized to MORB in Pearce (1983).

Mantle rock-forming elements (MRFE) are Cr_2O_3 < 0.03 wt%; Zn = 71 to 117 ppm, Cu = 6 to 101 ppm, and Ni = 20 to 102 ppm. Zr ranges from 51 to 179 ppm, and Hf from 2.61 to 5.30 ppm. All samples have LOI contents between 0.21 and 1.08 wt%. Most amphibolite samples represent tholeiitic magmas similar to the high-Fe tholeiitic basalts (Fig. 7A-B; after Irvine and Baragar, 1971; and Jensen, 1976) related to continental intraplate settings (Fig. 7C-D; after by Pearce et al. 1977, and Pearce and Norry, 1979). Normalized to the MORB, the spider diagram patterns (Fig. 7F; after Pearce 1983) show a strong positive Th anomaly, as well as a moderate enrichment of the LILE (e.g., Sr, K, Rb, Ba). Among the high-field strength elements (HFSE), Ta, Nb and Ce are also moderately enriched, while other contents (P to Yb) are close to the normalizing values (Fig. 7F). The REE patterns, normalized to chondrite, show enrichment in the LREE (La/Yb = 2.4 to 8.21), and relatively low contents of HREE (Fig. 7E; after Boynton 1984).

U-PB DATA

Guanhães Complex

Sample BG-19-25 (697896/7997002) is a gneiss collected from the Pedra Menina hill, an important landmark of the studied area. The zircon grains are predominantly subhedral elongated prisms ranging from 70 to 240μm, which in CL images exhibit typical igneous oscillatory zoning, with rare and thin metamorphic overgrowth rims (Fig. 8B).

The U/Pb isotope ratios from 54 zircon crystals define two distinct discordias (Fig. 8A), with upper intercepts at 2.86 Ga and 2.72 Ga and lower intercepts at 521 Ma and 607 Ma, respectively. The upper intercepts are interpreted as the crystallization ages of a multi-phase plutonic protolith, while the lower intercepts are most likely ages of partial loss of Pb during metamorphism.

Serra Negra Formation

Sample BG-19-28 (695336/7999319) is a coarse saccharoidal quartzite from the base of the Serra Negra Formation, collected at an important archaeological complex named Três Fronteiras (e.g. Fagundes et al., 2020). The detrital zircon grains recovered from it are transparent to translucent, rounded to well-rounded, and 60 to 220 μm-long. In the CL images, most of the grains show metamict texture and, minorly, exhibit internal oscillatory zoning and metamorphic overgrowth rims (Fig. 8D). Of the 87 analyzed zircons 35 had less than 15% discordance and was used to plot the histogram (Fig. 8C). The obtained ages

spans from 1909 to 3550 Ma, with a major Rhyacian peak, around 2.15 Ga (88%), and subordinate Orosirian (3%) and Archean (9%) peaks in 1.9 Ga, 2.6 Ga, 3.3 Ga and 3.5 Ga, respectively. The youngest zircon grain presented an age of 1909±37 Ma (concordant), which is interpreted as the maximum depositional age of the Serra Negra Formation in the studied region.

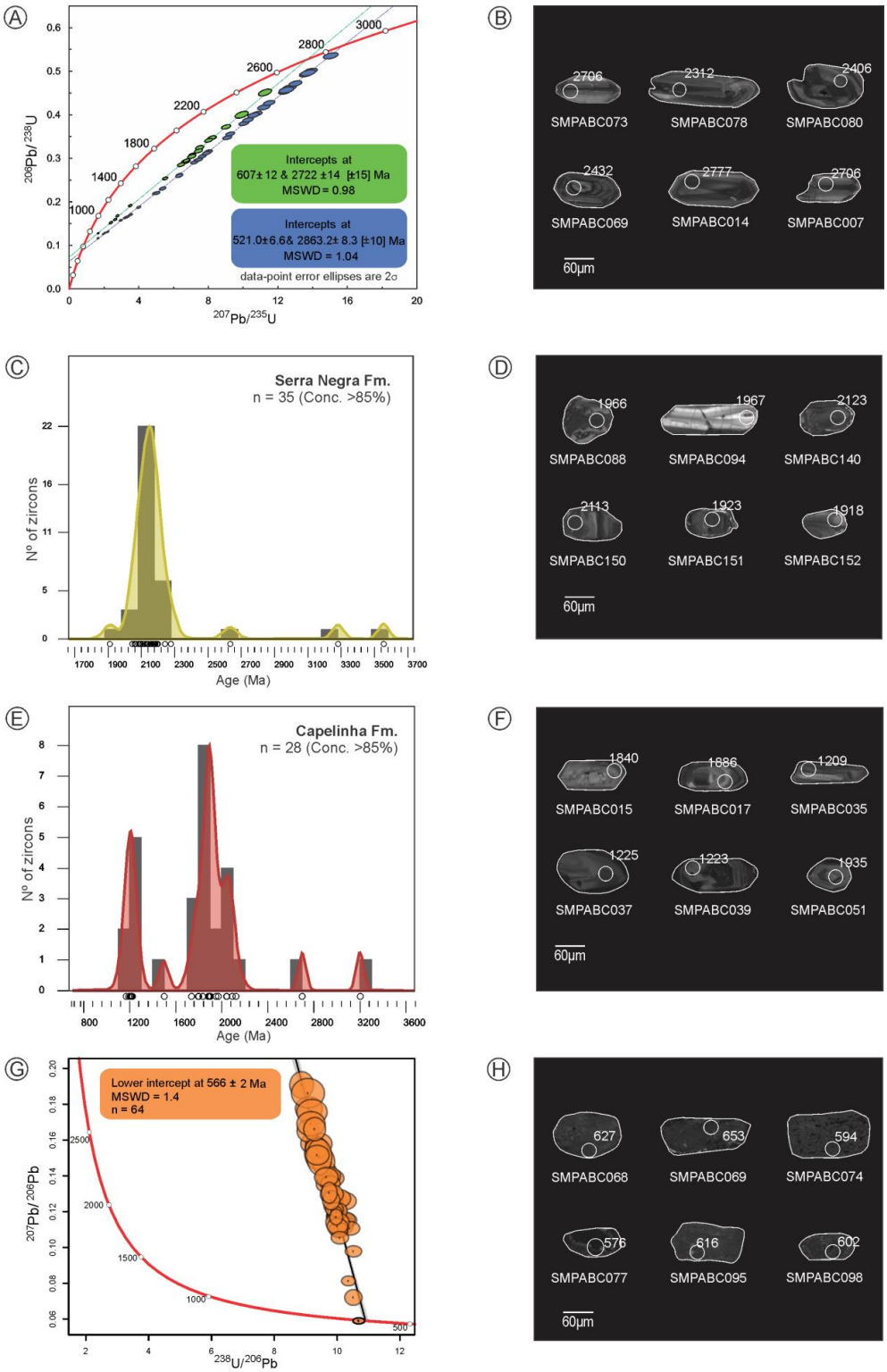

Fig.8. A) Concodia diagram (Wetherill, 1956) for the ratios $^{207}Pb/^{235}U$ versus $^{206}Pb/^{238}U$ for Pedra Menina Gneiss, Guanhães Complex. B) Cathodoluminescence (CL) zircons images of the Pedra Menina Gneiss. C) Distribution spectrum of detrital zircons versus age (Ma) of saccharoidal quartzite at the base of the Serra Negra Formation, close to the contact with the gneiss basement. D) Detrital zircons from the Serra Negra Formation. E) Distribution spectrum of detrital zircons versus age (Ma) of Capelinha Formation schist in the contact with quartzites from Serra Negra Formation. F) Detrital zircons from the Capelinha Formation. G) $^{238}U/^{206}Pb$ versus $^{207}Pb/^{206}Pb$ diagram of the granitic bodie that intruded the base of the Serra Negra Formation. The standard deviation used is 2σ. H) CL images of zircon grains of the granitic bodie.

Capelinha Formation

Sample BG-19-26 (704378/8005421) is a fine-grained schist collected within the Penha de França village, close to the basal contact with the saccharoidal quartzites of the Serra Negra Formation. The rock yielded predominantly translucent, sub-rounded to rounded detrital zircons, which range from 45 to 160 μm-long (Fig. 8F). In the CL images, most of the grains exhibit oscillatory zoning, and some of them are fractured and with metamict texture. 87 zircon grains were analyzed, but only 28 produced discordance ≤ 15% limit. The obtained ages spreads between 1170 and 3200 Ma, clustering into two main peaks around 1.2 (25%) and 1.9 Ga (64%) with subordinate peaks (<4%) at 1.5, 2.7 and 3.2 Ga (Fig. 8E). The youngest zircon grain was dated in 1169±45 Ma (99.8 concordant), which is interpreted as the maximum depositional age of the Capelinha Formation in the studied region.

Granite

Sample BG-19-24 (704895/8001752) is a granite bodie that intrudes the base of Serra Negra Formation, which was collected in a rudimentary quartz mine located south of the Penha de França village. The zircons recovered from it are predominantly brown, subhedral, short prisms ranging from 100 to 210 μm. In CL images, most of the grains show metamict “sponge-like” textures, and some of them exhibit homogeneus internal structure or oscillatory zoning (Fig. 8H). From the analyzed zircons, 63 of the 64 define a discordia anchored in a concordant zircon at 566 Ma (Fig. 8G), interpreted as the rock crystallization age.

DISCUSSIONS

The detaild field and petrography data from the northwestern portion of the Guanhães Block brought to light significant differences in relation to the regional maps (1:100.000) previously available for the region. In this regard, the following are noteworthy: (i) the gneiss of the Pedra Menina region is a metaigneous rock and it is the basement of the Serra Negra

Formation; (ii) large areas previously attributed to the Serra Negra Formation actually present granites, which seems to be a basement unit; (iii) The Serra Negra Formation includes a narrow basal succession of previously unknown schists and metaconglomerates; (iv) The Capelinha Formation extends to the south, and includes marbles lenses, an unprecedented lithotype for the unit. (v) leucogranite intrudes the base of the Serra Negra Formation; (vi) amphibolite bodies intrude the granites and gneisses and are locally interlayered with the Capelinha Formation schists; (vii) evidence of significant hydrothermal circulation is recognized throughout the area.

Previous mapping works (e.g. Souza & Grossi-Sad, 1997) has suggested a sedimentary origin for the gneisses that crop out in the western portion of the area. Our data, however, are coherent with an igneous origin, and indicate great similarity with the gneisses of the TTG Guanhães Complex that occur in the rest of the homonymous block (e.g. Grossi-Sad et al., 1990). The major, traces and REE signatures of the gneisses suggest slightly peraluminous granite to granodiorite as their igneous protoliths and are in good agreement with the characteristics of others Archean TTG complexes around the world (e.g. Gill, 2014).

Two distinct upper intercept ages obtained for the Guanhães Complex (2863 ± 8 Ma and 2722 ± 14 Ma) are interpreted as crystallization ages. The presence of these two sets of zircons in the same metamorphic rock may reflect the petrological history of the parental rock, which could have been a Neoarchean granite that intruded an older Mesoarchean magmatic rock (or formed by melting of the later), inheriting their zircons. This interpretation seems to be plausible and coherent with the regional geology, once both Mesoarchean and Neoarchean (e.g. Silva et al., 2002; Peixoto et al., 2013; Barrote, 2016; Rolim, 2016) metaigneous bodies have already been described within the Guanhães Complex. The Ediacaran-Cambrian ages of the lower intercepts (607 ± 12 Ma and 521 ± 7) are interpreted as metamorphic overprint caused by the collisional stage of the Araçuaí Orogen. Metamorphic records of such collisional event have been described in many areas of the Guanhães Block, in rocks from the Guanhães Complex and other units (e.g. Dussin et al., 2000; Silva et al., 2002; Peixoto et al., 2013; Silveira-Braga et al., 2020).

The observed contact relations indicate that the Amaros granite is part of the regional basement assemblage on which the Serra Negra Formation was deposited. The granite intrudes the gneiss of the Guanhães Complex, but the timing of its emplacement remains unclear. By their petrographical characteristics, the Amaros granite may be a correlative of the Orosirian Mercês pluton (2.0 Ga). Such a hypothesis is important to be tested in further research, because the Mercês pluton was recently identified as a magmatic record of the Paleoproterozoic Minas Bahia orogeny within the Guanhães Block (Grochowski et al., 2021).

The Serra Negra Formation unconformably lies on both the Guanhães Complex gneiss and the Amaros granite. Unlike previously suggested by the regional surveys, this formation does not present an extensive basal gneissic unit, but comprises a thin succession of schist and metaconglomerate, followed by a thick package of coarse saccharoidal quartzite. The presence of the metaconglomerate lenses with unidirectional structures amid fine grained rocks suggest the action of discrete high-energy channelized water flow in an overall low energy environment (fluvial? tidal flat?). In the main quartzite layer, on the other hand, the great extension and lateral homogeneity of the facies, as well as the presence of ripples and cross bedding would suggest a coastal environment.

Despite lacking geochronological data, Serra Negra Formation had been suggested as an Archean unit in previous studies (Baars & Fonseca, 1997; Souza & Grossi-Sad, 1997). The data produced in this research is the first geochronological investigation in the unit and indicate an Orosirian maximum depositional age in c.1900 Ma, also reveling a provenance pattern with a major Rhyacian and subordinate Archean peaks (Fig. 8C). Such age peaks match potential primary sources in the regional geologic scenario: the Archean zircons may have come from the various TTG complexes which occur in both the São Francisco Craton and Araçuaí Orogen basement domains. It is important to note that the oldest zircon grain was dated at 3555 ± 32 Ma, and rocks that old was not found so far in the context of the southern São Francisco Craton and Araçuaí Orogen, only occurring in the northernmost craton domains, such as the Gavião Block (e.g. Oliveira et al., 2020). The Paleoproterozoic grains, in turn, may have come from the various units related to the Minas-Bahia orogeny, such as those in the Mineiro Belt (e.g. Teixeira et al., 2017) or the closer Felício and Mercês plutons, just north of the area (Grochowski et al., 2021). The tectonic and basinal context in which the Serra Negra Formation was deposited will be further discussed in the text.

The Capelinha Formation (lower Macaúbas Group) had been mapped as a narrow strip at the northern end of the Guanhães Block, connecting the studied region and the type-area of the unit (Fig. 1). The performed mapping, however, have shown that the intercalation of schists and quartzites comprised in the Capelinha Formation extend far to south (Fig. 2). Within this newly mapped area, it was found a 40m-thick lense of marble, with metric intercalations of calcisilicatic schists. Although carbonaceous rocks had already been found in the Capelinha Formation in its type-area (Castro et al., 2019) these marbles represent the first occurrence of true carbonate rocks in the unit. Castro et al. (2019) considers that the Capelinha Formation was deposited in a distal sedimentary setting, in the context of the Tonian rift that hosted the basal units of the Macaúbas Group. In this context, the lithologies and sparse sedimentary structures found in the Capelinha Formation in the studied area suggest that the unit was formed in a shallow (shelf) marine environment.

The detrital zircon age pattern obtained for the Capelinha Formation schist is similar to those found by Castro et al. (2019) for quartzites and schists in the unit's type-area. This pattern is also common to other sedimentary units of the lower Macaúbas Group, such as the Matão-Duas Barras formation (e.g. Souza et al., 2019; Kuchenbecker et al., 2015), which were deposited during the same rifting event of the Capelinha Formation, in the Tonian. Potential primary sources for the Archean and Paleoproterozoic zircons are the Archean TTG complexes and plutonic units related to the Minas-Bahia orogeny, respectively, which are available both in the craton (e.g. Teixeira et al., 2017) and in basement inliers within the Araçuaí Orogen (e.g. Degler et al., 2018; Grochowski et al., 2021; Bruno et al., 2021). Primary sources for the Stenian zircons, however, are less obvious to track, since magmatic rocks with such ages in the region are limited to a few occurrences within the southern Espinhaço Range (e.g. Chaves et al., 2013). A more distant possibility is the Karagwe-Ankole belt, in the Congo Craton (e.g. Tack et al., 2010; Debruyne et al., 2015). It is also noteworthy that all the age peaks found in the Capelinha Formation match detrital zircon ages found in older metasedimentary units, such as the Espinhaço Supergroup, which could constitute a secondary source for them (e.g. Kuchenbecker et al., 2015).

The maximum depositional age reported for the Capelinha Formation in the studied area do not represent the true depositional age of the unit, which is well established in c. 950 Ma through dating of Tonian detrital zircons and syn-sedimentary volcanics (Castro et al., 2019). It is important to mention, though, that even in its type-area, some samples from the Capelinha Formation lacked Tonian zircons.

One of the most important features of the Capelinha Formation in its type-area is the presence of orthoamphibolites that record syn-sedimentary rift magmatism (Castro et al., 2019). In the studied area, amphibolite bodies were found interlayered with the schists of the Capelinha Formation, but also intruding the basement assemblages. The petrographic and geochemical features of these two sets of amphibolites are the same, and are coherent with tholeiitic basalt parent rocks, related to continental tectonic environments, and these characteristics match those described by Castro et al. (2019). Therefore, we interpret the amphibolites of the studied area as igneous records of the Tonian rift event, which is largely recorded both in the Araçuaí Orogen and in its African counterpart, the West Congo belt (e.g. Chaves et al., 2019; ; Victoria, 2017; Tack, 2001). In this sense, the amphibolite bodies that cut through the basement likely represents the feeding ducts of the syn-sedimentary volcanics found in the Capelinha Formation. It is important to mention that the Pedro Lessa Suite, another magmatic unit related to the Toninan rifting event, has been recognized in other portions of the Guanhães Block (e.g. Chaves et al., 2019; Grochowski et al., 2019), being therefore another correlative of the studied mafic rocks.

The U-Pb dating of the granitic that cut through the base of the Serra Negra Formation revealed a crystallization age of 566 Ma. Small bodies of Ediacaran to Cambrian granites, pegmatites and migmatite leucossomes were already described in different locations of the Guanhães Block (e.g. Dussin et al., 2000; Barrote, 2016; Silveira-Braga, 2019). These rocks are interpreted as magmatic records of the collisional to post-collisional stages of the Araçuaí Orogen, therefore correlatives of the voluminous granitic suites that dominate the inner portions of the orogen (e.g. Pedrosa-Soares et al., 2011).

Our data revealed the occurrence of an important hydrothermal circulation in the northernmost Guanhães Block, which is registered by the already described widespread field evidence. The poor quality of most of the zircon grains recovered from the Serra Negra and Capelinha formations and from the granitic might also be related to these hydrothermal processes. In fact, hydrothermal alteration has been recognized as an important source of disturbance to the U-Th-Pb system in zircons, which may cause significant loss of U, Th, and especially loss of radiogenic Pb over time (e.g. Geisler et al., 2002; Herrmann et al., 2021). Further research may focus on understanding the timing, extent, and mineral potential of such processes.

Finally, we need to discuss the implication of our findings to understanding the tectonic context in which Serra Negra Formation was deposited, considering the Orosirian (c. 1.9 Ga) maximum depositional age we obtained. In this regard, we envisage two possible scenarios: (i) if this date is near to the real depositional age of the unit, it would likely record a sedimentary basin related to the Minas-Bahia orogeny. This hypothesis is coherent with a commonly envisaged tectonic scenario of such orogeny (e.g. Aguilar et al., 2017; Degler et al., 2018), in which the entire Guanhães Block would be placed in the foreland domain of the orogen. In this case, the Serra Negra Formation might be a tectonic correlative of several Rhyacian/Orosirian syn-orogenic deposits recognized so far in the São Francisco Craton and Araçuaí Orogen, such as the Sabará Group (Reis et al., 2002), Itacolomi Group (Duque et al., 2020), Costa Sena Group (Fogaça et al., 1984), Saúde Complex (Zincone et al., 2017), for example. (ii) If the real depositional age is far from the obtained maximum depositional age, it would be possible that the Serra Negra Formation was deposited in the same rift as the Capelinha Formation, during the Tonian period. In fact, there is no direct evidence of a substantial erosional hiatus between the two units, and the presence of identical saccharoidal quartzites in both units might suggest a stratigraphic continuity. In this case, the absence of Neoproterozoic zircons in the Serra Negra Formation could be explained by changes in the provenance pattern during the basin fill. Such a situation is not uncommon and occurs in the Macaúbas Tonian rift itself: the Rio Peixe Bravo Formation, one of the admittedly chronocorrelatives of the Capelinha Formation, present an almost unimodal

provenance pattern with a major Paleoproterozoic source, and completely lacks Neoproterozoic zircons (Babinski et al., 2012; Kuchenbecker et al., 2015). Testing these hypotheses is a necessary step to advance in the understanding of the tectonic evolution of the Guanhães Block, and will be a major task of future research endeavours.

CONCLUSIONS

The integration of the new field, petrography, geochemistry, and geochronology data obtained in our investigation allow us to conclude that:

(i) The gneiss of the Pedra Menina region integrate the Guanhães Complex, and correspond to metaigneous rock with TTG affinity, whose protholith is likely a 2.7 Ga granite that intruded an older 2.9 Ga substrate. The rock was affected by the Araçuaí Orogen's Neoproterozoic metamorphism.

(ii) The Serra Negra Formation is not Archean, but a sedimentary succession with maximum depositional age in 1.9 Ga. The unit includes a narrow basal layer of schists and metaconglomerates, followed by extensive saccharoidal quartzites, which seems to be formed in coastal sedimentary environments. Its main sources of sediment were likely the Archean TTG complexes and Paleoproterozoic units of the Minas-Bahia orogen.

(iii) The Capelinha Formation extends further south than previously mapped and includes expressive marbles lenses. A Stenian maximum depositional age was obtained, and the unit present a provenance pattern coherent with the observed in its type-area, whose sources are probably related to the Archean TTG complexes and the Paleoproterozoic Minas-Bahia orogen, as well as to the reworking of older sedimentary succesions.

(iv) Ediacaran leucogranite intrudes the base of the Serra Negra Formation, registering the collisional magmatism of the Araçuaí Orogen.

(v) Tholeiitic amphibolite bodies intrude the granites and gneisses and occur intercalated to the Capelinha Formation schists. They are similar, both in petrography and geochemistry, to those observed within the Capelinha Formation in its type-area and were interpreted as another magmatic record of the Tonian rifting event.

(vi) Evidence of significant hydrothermal circulation is recognized throughout the area. This process seems to have disturbed the isotopic system of the zircons.

(vii) Two hypotheses were suggested for the tectonic significance of the Serra Negra Formation: (i) it may have been deposited in a syn-orogenic basin at the end of the Paleoproterozoic Minas-Bahia orogeny or (ii) it may have been deposited in

the Tonian rift basin, together with the Capelinha Formation. Further research is needed to evaluate the question.

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REFERENCES

AGUILAR, C.; ALKMIM, F.F.; LANA, C.; FARINA, F. (2017). **Palaeoproterozoic assembly of the São Francisco Craton, SE Brazil: new insights from U-Pb titanite and monazite dating.** Precambrian Research, 289: 95-115, 2017.

ALESSIO, B.L.; BLADES, M.L.; MURRAY, G.; THORPE, B.; COLLINS, A.S.; KELSEY, D.E.; FODEN, J.; PAYNE, J.;AL-KHIRBASH, S.; JOURDAN, F. (2017). **Origin and tectonic evolution of the NE basement of Oman: a window into the Neoproterozoic accretionary growth of India?** Geological Magazine 155 (5): 1150-1174, 2017.

ALKMIM, F.F.; KUCHENBECKER, M.; REIS, H.L.S.; PEDROSA-SOARES, A.C. (2017). **The Araçuaí Belt.** In: HEILBRON, M.; CORDANI, G.; ALKMIM, F.F. (editors). (2017). São Francisco Craton, eastern Brazil: tectonic genealogy of a miniature continent. Regional geology reviews. Ed.: Springer Berlin Heidelberg, New York, 2017.

ALKMIM, F.F.; MARSHAK, S.; PEDROSA-SOARES, A.C.; PERES, G.G.; CRUZ, S.C.P.; WHITTINGTON, A. (2006). **Kinematic evolution of the Araçuaí-West Congo orogeny in Brazil and Africa: nutcracker tectonics during the Neoproterozoic assembly of Gondwana**. Precambrian Research, 149 (1-2): 43-69, 2006.

ALMEIDA, F.F.M.; NEVES, B.B.B.; CARNEIRO, C.D.R. (2000). **The origin and evolution of the South American Platform.** Earth Science Reviews (50), issues 1-2: 77-111, 2000.

ANGELI, N.; PENHA, U.C.; KNAUER, L.G.; ITO, G.M. (2011). **The Rio Mata Cavalo Group: the gold mineralization and its origin.** Geociências, UNESP 30(2): 301-310, 2011.

BAARS, F. J.; FONSECA, E. (1997). **Geologia da Folha São Sebastião do Maranhão.** In: GROSSI-SAD, J. H.; LOBATO, L. M.; PEDROSA-SOARES, A. C. & SOARES-FILHO, B. S. (coordinators and editors). (1997). PROJETO ESPINHAÇO EM CD-ROM (textos, mapas e anexos). Belo Horizonte, COMIG - Companhia Mineradora de Minas Gerais. p. 1807-1900. Belo Horizonte, 1997.

BAARS, F. J.; GROSSI-SAD, J. H. & FONSECA, E. da. (1997). **Geologia da Folha**

Capelinha. In: GROSSI-SAD, J. H.; LOBATO, L. M.; PEDROSA-SOARES, A. C. & SOARES-FILHO, B. S. (coordinators and editors). PROJETO ESPINHAÇO EM CD-ROM (textos, mapas e anexos). Belo Horizonte, COMIG - Companhia Mineradora de Minas Gerais. p. 1373-1503. Belo Horizonte, 1997.

BABINSKI, M.; PEDROSA-SOARES, A.C.; TRINDADE, R.I.F.; MARTINS, M.S.; NOCE, C.M. (2012). **Neoproterozoic glacial deposits from the Araçuaí Orogen, Brazil : age, provenance and correlations with the São Francisco Craton and West Congo belt.** Gondwana Research, 21: 451-465, 2012.

BARROTE, V.R. (2016). **A sequência portadora de formações ferríferas de Guanhães, Minas Gerais, Brasil.** Masters dissertation, UFMG, 2016.

BARROTE, V.R.; ROSIERE, C.A.; ROLIM, V.K. SANTOS, J.O.S. McNAUGHTON, N.J. (2017). **The Proterozoic Guanhães banded iron formations, southeastern border of the São Francisco Craton, Brazil: evidence of detrital contamination.** Geologia USP, Série Científica 17(2): 303-324, 2017.

BOYNTON, W.V. (1984). **Geochemistry of rare earth elements: meteorite studies.** In: HENDERSON, P. (editor). Rare Earth Element Geochemistry: 63-114. Elsevier, New York, 1984.

BRITO-NEVES, B.B.; FUCK, R.A.; CRUZ, G.A. (2021). **Basement inliers of the Brasiliano structural provinces of South America.** Journal of South American Earth Sciences, 110 (3), 2021.

BRUNO, H.; HEILBRON, M.; VALERIANO, C.M.; STRACHAN, R.; FOWLER, M.; BERSAN, S.; MOREIRA, H.; MOTTA, R.; ALMEIDA, J.; ALMEIDA, R.; CARVALHO, M.; STOREY, C. (2021). **Evidence for a complex accretionary history preceding the amalgamation of Columbia: the Rhyacian Minas-Bahia Orogen, southern São Francisco Paleocontinent, Brazil.** Gondwana Research, 92: 149-171, 2021.

CARVALHO, R.P.; ROSIERE, C.A.; ROLIM, V.K.; LANA, C.C.; SANTOS, J.O.S. (2014). **A sequência orosiriana-estateriana e geometria transpressiva na região de Santa Maria de Itabira, Minas Gerais.** Geologia USP Série Científica, 14(2): 101-120, 2014.

CASTRO, M.P. (2014). **Caracterização geológica da Formação Capelinha como unidade basal do Grupo Macaúbas em sua área tipo, Minas Gerais.** Masters dissertation, UFOP, 2014.

CASTRO, M.P.; QUEIROGA, G.; MARTINS, M.; ALKMIM, F. PEDROSA-SOARES, A.; DUSSIN, I.; SOUZA, M.E. (2019). **An Early Tonian rifting event affecting the São Francisco-Congo paleocontinent recorded by the Lower Macaúbas Group, Araçuaí Orogen, SE Brazil.** Precambrian Research (331): 1 - 21, 2019.

CHAVES, A.O.; DUSSIN, I.A. (2018). **U-Pb Age and Geochemistry of the Tholeiitic Trachy-Andesite of Gouveia (MG) Compared with Regional Pedro Lessa and Formiga Tholeiitic Basic Rocks: Fragments of a Tonian Large Igneous Province (LIP).** Anuário do instituto de geociências, UFRJ, 41: 5-15, 2018.

CHAVES, A.O.; ERNST, R.E.; SODERLUNDD, U.; WANG, X.; NAERAAD, T. (2019). **The 920-900 Ma Bahia-Gangila LIP of the São Francisco and Congo cratons and link with Dashigou-Chulan LIP of North China craton: new insights from U-Pb geochronology and geochemistry.** Precambrian Research (329): 124-137, 2019.

CHAVES, M.L.S.C.; SILVA, M.C.R.; SCHOLZ, R.; BABINSKI, M. (2013). **Greenvillian age magmatism in the southern Espinhaço Range (Minas Gerais): evidence from U-Pb zircon ages.** Brazilian Journal of Geology, 43(3):477-486, 2013.

CORDANI, U.G.; CARDONA, A.; JIMENEZ, D.M.; LIU, D.; NUTMAN, A.P. (2005). **Geochronology of Proterozoic basement inliers in the Colombian Andes: tectonic history of remnants of a fragmented Grenville belt.** Geological Society, London, Special Publications, 246: 329-346, 2005.

COX, K.G.; BELL, J.D.; PANKHURST, R.J. (1979). **The interpretation of igneous rocks.** Ed.: Chapman & Hall, 1979.

DEBRUYNE, D.; HULSBOSCH, N.; VAN WILDERODE, J.; BALCAEN, L.; VANHAECKE, F.; MUCHEZ, P. (2015). **Regional geodynamic context for the Mesoproterozoic Kibara Belt (KIB) and the Karagwe-Ankole Belt: evidence from geochemistry and isotopes in the KIB.** Precambrian Research, 264: 82-97, 2015.

DEGLER, R.; PEDROSA-SOARES, A.; NOVO, T.; TEDESCHI, M.; SILVA, L.C. DUSSIN, I.; LANA, C. (2018). **Rhyacian-Orosirian isotopic records from the basement of the Araçuaí-Ribeira orogenic system (SE Brazil): links in the Congo-São Francisco palaeocontinent.** Precambrian Research, 317: 179-195, 2018.

DUQUE, T.R.F.; ALKMIM, F.; LANA, C.C. (2020). **Grãos detríticos de zircão do Grupo Itacolomi em sua área tipo, Quadrilátero Ferrífero, Minas Gerais: idades, proveniência e significado tectônico.** Geologia USP, Série Científica 20(1): 101-123, 2020.

DUSSIN, T.M.; DUARTE, P.; DUSSIN, I.A. (2000). **Registros da tectônica brasiliana na região de Guanhães (SE, Brasil): deformação e metamorfismo das rochas de idade pós-transamazônica.** Geonomos, volume 8, nº2: 55-59, 2000.

FAGUNDES, M.; KUCHENBECKER, M.; VASCONCELOS, A.M.C.; GONZAGA, A.P.D. (2020). **Paisagens e lugares - caracterização geoambiental e cultural dos sítios arqueológicos do Complexo Três Fronteiras, Alto Vale do Rio Araçuaí, Minas Gerais.** Raega: O espaço geográfico em análises, 47(1): 67-84, 2020.

FOGAÇA, A.C.C.; ALMEIDA-ABREU, P.A.; SCHORSCHER, H.D. (1984). **Estratigrafia da sequência supracrustal arqueana na porção mediana central da Serra do Espinhaço, MG.** Anais, 33º Congresso Brasileiro de Geologia: 2652-2667. Rio de Janeiro: SBG, 1984.

FROST, B.R.; BARNES, C.G.; COLLINS, W.J.; ARCULUS, R.J.; ELLIS, D.J.; FROST, C.D. (2001). **A geochemical classification for granitic rocks.** Journal of Petrology, 42(11): 2033-2048, 2001.

GEISLER, T.; PIDGEON, R.T.; BRONSWIJK, W.; KURTZ, R. (2002). **Transport of uranium, thorium, and lead in metamict zircon under low-temperature hydrothermal conditions.** Chemical Geology 191(1–3), 2002.

GERDES, A.; ZEH, A. (2006). **Combined U-Pb and Hf isotope LA-(MC)-ICP-MS analyses of detrital zircons: comparison with SHRIMP and new constraints for the provenance and age of an Armorican metasediment in Central Germany.** Earth and Planetary Science Letters, vol.249, issues 1-2: 47-61, 2006.

GERDES, A.; ZEH, A. (2009). **Zircon formation versus zircon alteration – New Insights from combined U-Pb and Lu-Hf in-situ LA-ICP-MS analyses, and consequences for the interpretation of Archean zircon from the Central Zone of the Limpopo Belt.** Chemical Geology, vol.261, issues 3-4: 230-243, 2009.

GILL, R. **Rochas e processos ígneos: um guia prático.** Translation by Nonnenmacher, F.J. Technical review: Borba, A.W. Ed.: Bookman. 427p. Porto Alegre, 2014.

GOMES, S.D.; FIGUEIREDO E SILVA, R.C.; KEMP, A.I.S.; SANTOS J.O.S., HAGEMANN, S.; LOBATO, L.M.; ROSIERE, C.; NOVO, T.A. (2020). **Zircon U–Pb ages and Hf isotope compositions of Açucena Granite (Borrachudos Suite): Implications for Statherian-Cambrian tectono-magmatic evolution of the southern border of the São Francisco Craton, Brazil.** Journal of South American Earth Sciences 100(1-2): 1-16, 2020.

GROCHOWSKI, J.D. (2019). **Os plútons Felício e Mercês: registros da orogênese Riaciana-Orosiriana no Bloco Guanhães.** Masters dissertation, UFVJM, 2019.

GROCHOWSKI, J.; KUCHENBECKER, M.; BARBUENA, D.; NOVO, T. (2021). **Disclosing Rhyacian/Orosirian orogenic magmatism within the Guanhães basement inlier, Araçuaí Orogen, Brazil: a new piece on the assembly of the São Francisco-Congo paleocontinent.** Precambrian Research 363 (106329), 2021.

GROSSI SAD, J. H., CHIODI FILHO, C., SANTOS, J. F., MAGALHÃES, J. M. M. & CARELOS, P. M. (1990). **Duas "suítes" graníticas do bordo sudeste do Craton São Francisco, em Minas Gerais: Petroquímica e Potencial Metalogenético.** Anais, 36º Congresso Brasileiro de Geologia, volume 4, 1836-1841. Natal: SBG,

1990.

GROSSI-SAD, J. H. (1997). **Geologia da Folha Guanhães.** In: GROSSI-SAD, J. H.; LOBATO, L. M.; PEDROSA-SOARES, A. C. & SOARES-FILHO, B. S. (coordinators and editors). PROJETO ESPINHAÇO EM CD-ROM (textos, mapas e anexos). Belo Horizonte, COMIG - Companhia Mineradora de Minas Gerais. p. 2317-2435. Belo Horizonte, 1997.

HERRMANN, M.; SÖDERLUND, U.; SCHERSTÉN, A.; NAERRA, T.; HOLM-ALWMARK, S.; ALWMARK, C. (2021). **The effect of low-temperature annealing on discordance of U–Pb zircon ages.** Scientific Reports (11) 7079, 2021.

IRVINE, T.N.; BARAGAR, W.R.A. (1971). **A Guide to the chemical classification of the common volcanic rocks.** Canadian Journal of Earth Science, 8: 523-548, 1971.

JACKSON, S.E.; PEARSON, N.J.; GRIFFIN, W.L.; BELOUSOVA, E.A. (2004). **The application of laser ablation-inductively coupled plasma-mass spectrometry to in situ U-Pb zircon geochronology.** Chemical Geology, vol.211, issues 1-2: 47-69, 2004.

JENSEN, L.S. (1976). **A new method of classifying alkali volcanic rocks.** Ontario Division Mineral, Miscellaneous Paper 66, 1976.

KUCHENBECKER, M.; PEDROSA-SOARES, A.C.; BABINSKI, M.; FANNING, M. (2015). **Detrital zircon age patterns and provenance assessment for pre-glacial to post-glacial successions of the Neoproterozoic Macaúbas Group, Araçuaí Orogeny, Brazil.** Precambrian Research, 266:12-26, 2015.

LUDWIG, K.R. (2001). **SQUID 1.02, a user manual, a geochronological toolkit for Microsoft Excel.** Berkeley Geochronology Center Special Publication. Berkeley, 2001.

MAGALHÃES, J.R.; PEDROSA-SOARES, A.; DUSSIN, I.; MUNTENER, O.; PINHEIRO, M.A.P.; SILVA, L.C.; KNAUER, L.G.; BOUVIER, A.S.; BAUMGARTNER, L. (2018). **First Lu-Hf, δ ^{18}O and trace elements in zircon signatures from the Statherian Espinhaço anorogenic province (eastern Brazil): geotectonic implications of a silicic large igneous province.** Brazilian Journal of Geology, 48(4): 735-759, 2018.

MORAIS, G.F.; RIBEIRO, B.O.L; PALES, I.G.; PIMENTA, J.P.R.; AZEVEDO, V.A.; ROCHA, M.G.; Maximiano, P.F.; SANTOS, L.H.; LEANDRO, U.R.; KUCHENBECKER, M.; BARBUENA, D. (2021). **Mapeamento geológico, em escala 1:10.000, da região de Penha de França – Itamarandiba (MG): contribuições para a evolução do conhecimento do Bloco Guanhães, Orógeno Araçuaí.** In TOLEDO, C.; MA, J.B.C.; BARBOSA, P. (editors). Contribuições à ciência e técnica dos (as) jovens geólogos (as) brasileiros (as). 1ªEd.: 50ºCBG, 2021.

NOCE, C.M.; PEDROSA-SOARES, A.C.; SILVA, L.C.; ALKMIM, F.F. (2007a). **O embasamento arqueano e paleoproterozoico do Orógeno Araçuaí.** Geonomos (15): 17-23, 2007a.

NOCE, C.M.; PEDROSA-SOARES, A.C.; SILVA, L.C. ARMSTRONG, R.; PIUZANA, D. (2007b). **Evolution of polycyclic basement complexes in the Araçuaí Orogen, based on U–Pb SHRIMP data: Implications for Brazil–Africa links in Paleoproterozoic time.** Precambriam Research (159), issue 1-2: 60-78, 2007b.

OLIVEIRA, E.P.; McNAUGHTON, N.J.; ZINCONE, S.A.; TALAVERA, C. (2020). **Birthplace of the São Francisco Craton, Brazil: evidence from 3.6 to 3.64 Ga gneisses of the Mairi gneiss complex.** Terra Nova, 32(4): 281-289, 2020.

PEARCE, T.H.; GORMAN, B.E.; BIRKETT, T.C. (1977). **The relationship between major element chemistry and tectonic environment of basic and intermediate volcanic rocks.** Earth and Planetary Science Letters 36: 121-132, 1977.

PEARCE, J. (1983). **Role of the sub-continental lithosphere in magma genesis at active continental margin.** In HAWKESWORTH, C.J.; NORRY, M.J. (editores). Continental basalts and mantle xenoliths. Nantwich, Cheshire: Shiva Publishing: 230-249, 1983.

PEARCE, J.A.; HARRIS, N.B.W.; TINDLE, A.G. (1984). **Trace element discrimination diagrams for the tectonic interpretation of granitic rocks.** Journal of Petrology, 25(4): 956-983, 1984.

PEARCE, J.A.; NORRY, M.J. (1979). **Petrogenetic implications of Ti, Zr, Y and Nb variations in volcanic rocks.** Contributions to Mineralogy and Petrology, 69: 33-47, 1979.

PEDROSA-SOARES, A.C.; ALKMIM, F.F.; TACK, L.; NOCE, C.M.; BABINSKI, M.; SILVA, L.C.; MARTINS-NETO, M.A. (2008). **Similarities and differences between the Brazilian and African counterparts of the Neoproterozoic Araçuaí-West Congo orogeny.** Geological Society, London, Special Publications (294): 153-172, 2008.

PEDROSA-SOARES, A.C.; CAMPOS, C.P.; NOCE, C.; SILVA, L.C.; NOVO, T.; RONCATO, J.; MEDEIROS, S.; CASTAÑEDA, C.; QUEIROGA, G.; DANTAS, E.; DUSSIN, I.; ALKMIM, F.F. (2011). **Late Neoproterozoic-Cambrian granitic magmatism in the Araçuaí Orogen (Brazil), the Eastern Brazilian Pegmatite Province and related mineral resources.** In: SIAL, A.N.; BETTENCOURT, J.S.; CAMPOS, C.P.; FERREIRA, V.P. (editors). Granite-related ore deposits. Geological Society, London, Special Publications, 350: 25-51, 2011.

PEDROSA-SOARES, A.C.; DARDENNE, M.A.; HASUI, Y.; CASTRO, F.D.C.; CARVALHO, M.V.A.; REIS, A.C. (1994). **Nota explicativa dos mapas geológico, metalogenético e de ocorrências minerais do estado de Minas Gerais**

1:1.000.000. Companhia Mineradora de Minas Gerais, v.3000. 97p. Belo Horizonte, 1994.

PEDROSA-SOARES, A.C.; NOCE, C.M.; WIEDEMANN, C.M.; PINTO, C.P. (2001). **The Araçuaí-West-Congo Orogen in Brazil: an overview of a confined orogen formed during Gondwanaland assembly.** Precambrian Research (110), Issues 1-4: 307-323, 2001.

PEIXOTO, E.; PEDROSA-SOARES, A.C.; ALKMIM, F.F.; DUSSIN, I.A. (2013). **Tectônica e cronoestratigrafia do segmento norte da zona de sutura do Orógeno Araçuaí a noroeste de Governador Valadares, MG.** In: XIV Simpósio Nacional de Estudos Tectônicos/VIII International Symposium on Tectonics, 2013, Chapada dos Guimarães. XIV Simpósio Nacional de Estudos Tectônicos/VIII International Symposium on Tectonics, 2013.

PEIXOTO, E.; PEDROSA-SOARES, A.C.; ALKMIM, F.F.; DUSSIN, I.A. (2015). **A suture-related accretionary wedge formed in the Neoproterozoic Araçuaí Orogen (SE Brazil) during western Gondwanaland assembly.** Gondwana Research, 27(2): 878-896, 2015.

REIS, L.A.; MARTINS NETO, M.A.; GOMES, N.S.; ISSAMU, E.; EVANGELISTA, H.J. (2002). **A bacia de antepaís paleoproterozóica Sabará, Quadrilátero Ferrífero, Minas Gerais.** Revista Brasileira de Geociências, 3: 27-42, 2002.

ROLIM, V.K. (2016). **As formações ferríferas da região de Conceição do Mato Dentro - MG: posicionamento estratigráfico, evolução tectônica, geocronologia, características geoquímicas e gênese dos minérios.** Doctoral thesis, UFMG, 2016.

SATO, K.; SIGA JÚNIOR, O. (2000). **Evidence of the superproduction of the continental crust during Paleoproterozoic in South American platform. Implications regarding the interpretative value of the Sm-Nd model ages.** Revista Brasileira de Geociências, 30(1): 126-129, 2000.

SCHIJNDEL, V.; CORNELL, D.H.; FREI, D.;SIMONSEN, S.L.; WHITEHOUSE, M.J. (2014). **Crustal evolution of the Rehoboth Province from Archaean to Mesoproterozoic times: insights from the Rehoboth Basement Inlier.** Precambrian Research, 240: 22-36, 2014.

SILVA, L.C.; ARMSTRONG, R.; NOCE, C.M.; CARNEIRO, M.A.; PIMENTEL, M.; PEDROSA-SOARES, A.C.; LEITE, C.A.; VIEIRA, V.S.; SILVA, M.A.; PAES, V.J.C.; CARDOSO FILHO, J.M. (2002). **Reavaliação da evolução geológica em terrenos Pré-cambrianos brasileiros com base em novos dados U-Pb SHRIMP, parte II: Orógeno Araçuaí, Cinturão Mineiro e Cráton São Francisco meridional.** Revista

Brasileira de Geociências 32(4): 513-528, 2002.

SILVA, L.C.; PEDROSA-SOARES, A.C.; ARMSTRONG, R.; PINTO, C.P.; MAGALHÃES, J.T.R.; PINHEIRO, M.A.P.; SANTOS, G.G. (2016). **Disclosing the Paleoarchean to Ediacaran history of the São Francisco Craton basement: the Porteirinha domain (northern Araçuaí Orogen, Brazil).** Journal of South American Earth Sciences (68): 50-67, 2016.

SILVA, M.A.; PINTO, C.P.; PINHEIRO, M.A.P.; MARINHO, M.S.; LOMBELLO, J.C.; PINHO, J.M.; GOULART, L.E.A.; MAGALHÃES, J.R. (2020). **Mapa geológico do Estado de Minas Gerais 1:100.000.** Projeto Geologia do Estado de Minas Gerais, CPRM, 2020. Available in <http://rigeo.cprm.gov.br/jspui/handle/doc/21828>. Acessed on Apr., 2021.

SILVEIRA BRAGA, F.C. (2019). **Gênese e controle dos depósitos hematíticos-magnetíticos encaixados no Complexo Guanhães.** Doctoral thesis, UFMG, 2019.

SILVEIRA BRAGA, F.C.; ROSIERE, C.A.; SANTOS, J.O.S.; HAGEMANN, S.G.; SALLES, P.V. (2019). **Depicting the 3D geometry of ore bodies using implicit lithological modeling: an example from the Horto-Baratinha iron deposit, Guanhães Block, MG.** REM International Engineering Journal, 72(3): 435-443, 2019.

SILVEIRA BRAGA, F.C.; SANTOS, J.O.S.; ROSIERE, C.A.; ROLIM, V.K.; ROBERTS, M.P.; EVANS, N.J.; HAGEMANN, S.G. (2020). **Ediacaran-Cambrian far-field hydrothermal event in the southeast of the São Francisco Craton, Brazil: evidence from zircon U-Pb SHRIMP, trace elements, Lu-Hf and oxygen isotopes.** Lithos, 356-357 (105365), 2020.

SLAMA, J.; KOSLER, J.; CONDON, D.J.; CROWLEY, J.L.; GERDES, A.; HANCHAR, J.M.; HORSTWOOD, M.S.A,; MORRIS, G.A.; NASDALA, L.; NORBERG, N.; SCHALTEGGER, U.; SCHOENE, B.; TUBRETT, M.N.; WHITEHOUSE, M.J. (2008). **Plesovice zircon - a new natural reference material for U-Pb and Hf isotopic microanalysis.** Chemical Geology, 249: 1-35, 2008.

SOUZA, M.A.T.A.; GROSSI-SAD, J.H. (1997). **Geologia da Folha Rio Vermelho.** In: GROSSI-SAD, J. H.; LOBATO, L. M.; PEDROSA-SOARES, A. C. & SOARES-FILHO, B. S. (coordinators and editors). PROJETO ESPINHAÇO EM CD-ROM (textos, mapas e anexos). Belo Horizonte, COMIG - Companhia Mineradora de Minas Gerais. p. 1667-1806, 1997.

SOUZA, M.E.; MARTINS, M.S.; QUEIROGA, G.N.; LEITE, M.; OLIVEIRA, R.G.; DUSSIN, I.; PEDROSA-SOARES, A.C.P. (2019). **Paleoenvironment sediment provenance and tectonic setting of Tonian basal deposits of the Macaúbas basin system, Araçuaí Orogen, southeast Brazil.** Journal of South American Earth Sciences

96(1): 102393, 2019.

STACEY, J.S.; KRAMERS, J.D. (1975). **Approximation of terrestrial lead isotope evolution by a two-stage model.** Earth and Planetary Science Letters 26(2): 207-221, 1975.

SUITA, M.T.F.; STRIEDER, A.J. (1996). **Cr-spinels from Brazilian mafic-ultramafic complexes: metamorphic modification.** International Geology Review, 38 (3): 245-267, 1996.

SUN, S.S.; McDONOUGH, W.F. (1989). **Chemical and isotopic systematics of oceanic basalts: implications for mantle composition and processes.** In: SAUNDERS, A.D; NORRY, M.J. (editors). Magmatism in ocean basins. Geological Society, London, Special Publications, 42: 313-345. London, 1989.

TACK, L. (1975). **Étude pétrochimique de la Formation des roches vertes de Gangila aux environs de Matadi (Bas-Zaire).** Annales de la Société Géologique de Belgique, 98: 229-249, 1975.

TACK, L.; WINGATE, M.T.D.;LIÉGEOIS, J.P.; FERNANDEZ-ALONSO, A.D. (2001). **Early neoproterozoic magmatism (1000-910 Ma) of the Zadinian and Mayumbian Groups (Bas-Congo): onset of Rodinia rifting at the western edge of the Congo Craton.** Precambrian Research (110): 277-306, 2001.

TACK, L.; WINGATE, M.T.D.; WAELE, B.D.; MEERT, J.; BELOUSOVA, E.; GRIFFIN, B.; TAHON, A.; FERNANDEZ-ALONSO, M. (2010). **The 1375 Ma "Kibaran event" in Central Africa: prominent emplacement of bimodal magmatism under extensional regime.** Precambrian Research, 2010.

TEIXEIRA, W.; OLIVEIRA, E.P.; PENG, P.; DANTES, E.L.; HOLLANDA, M.H.B.M. (2017). **U-Pb geochronology of the 2.0 Ga Itapecerica grafite-rich supracrustal succession in the São Francisco Craton: tectonic matches with the North China Craton and paleogeographic inferences.** Precambrian Researc, 293: 91-111, 2017.

VALLADARES, C.S.; DUARTE, B.P.; MACHADO H.T.; VIANA, S.M.; FIGUEIREDO, P.L.C. (2017). **Genesis and evolution of a Paleoproterozoic basement inlier within West Gondwana addressed by Sm-Nd isotopic geochemistry and Zr saturation thermometry.** Journal of South American Earth Sciences, 80: 95-106, 2017.

VAN ACHTERBERGH, E.; RYAN, C.; JACKSON, S.E.; GRIFFIN, W.L. (2001). **LA-ICP-MS in the Earth Sciences - Appendix 3, data reduction software for LA-ICP-MS.** Mineralogical Association of Canada Short Course Series, 29: 239-243, 2001.

VICTORIA, A.M. (2017). **A provincia anorogênica toniana da região sul da Bahia, divisa nordeste com Minas Gerais: novos dados para a bacia rifte precursora ao**

Orógeno Araçuaí-Oeste Congo. Dissertação de mestrado, UFMG, 2017.

WETHERILL, G.W. (1956). **Discordant uranium-lead ages, I.** Transactions, American Geophysical Union, 37(3): 320-326, 1956.

WHITNEY, D.L.; EVANS, B.W. (2010). **Abbreviations for names of rock-forming minerals.** American Mineralogist, 95 (1): 185-187, 2010.

WIEDENBECK, M.; ALLÉ, P.; CORFU, F.; GRIFFIN, W.L.; MEIER, M.; OBERLI, F.; von QUADT, A.; RODDICK, J.C.; SPIEGEL, W. (2007). **Three natural zircon standards for U-Th-Pb, Lu-Hf, trace element and REE analyses.** Geostandards and Geoanalytical Research, 19(1): 1-23, 2007.

ZINCONE, S.A.; BARBUENA, D.; OLIVEIRA, E.P.; BALDIM, M.R. **Detrital zircon U-Pb ages as evidence for deposition of the Saúde Complex in a Paleoproterozoic foreland basin, northern São Francisco Craton, Brazil.** Journal of South American Earth Sciences, 1: 537-548, 2017.

SUPPLEMENTARY MATERIAL

Supplementary Data A: Lithochemical Data

Major elements oxides (wt%)

Sample	Lithology	Al_2O_3	CaO	Fe_2O_3	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	LOI	TOTAL
BG_19_001	Gneiss	15.19	2.81	3.61	2.55	1.03	0.05	3.58	0.13	67.13	0.42	0.59	96.50
BG_19_002	Gneiss	15.78	2.37	2.78	3.20	0.86	0.05	4.01	0.10	72.59	0.30	0.29	102.04
BG_19_022	Gneiss	14.45	1.09	2.85	3.20	1.39	0.03	3.52	0.09	74.89	0.31	0.64	101.82
BG_19_003	Amphibolite	13.74	9.59	13.77	0.35	6.44	0.22	1.68	0.07	52.05	1.15	1.08	99.06
BG_19_006b	Amphibolite	14.97	11.72	12.80	0.10	2.01	0.19	1.77	0.37	54.10	2.05	0.95	100.08
BG_19_007b	Amphibolite	14.28	9.84	12.83	2.16	6.71	0.20	1.25	0.21	50.58	1.97	0.88	100.03
BG_19_010	Amphibolite	14.99	10.13	12.88	0.41	6.73	0.21	1.89	0.18	51.64	1.88	0.90	100.94
BG_19_019	Amphibolite	13.31	9.57	13.02	0.38	6.29	0.18	1.02	0.19	49.42	1.81	0.21	95.19
BG_19_023	Amphibolite	14.78	11.99	11.55	0.14	6.10	0.16	0.86	0.17	52.72	1.49	0.52	99.96

Rare Earth elements and Y (ppm)

Sample	Lithology	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Y
BG_19_001	Gneiss	37.1	63.9	7.25	25.6	5.0	1.18	3.98	0.65	3.76	0.76	2.33	0.35	2.1	0.32	20.21
BG_19_002	Gneiss	11.4	44.2	2.49	7.8	1.5	0.50	1.15	0.19	1.32	0.28	0.88	0.12	1.0	0.19	6.70
BG_19_022	Gneiss	66.4	113.1	11.95	39.2	5.7	1.24	3.34	0.41	1.64	0.27	0.68	0.09	0.5	0.08	7.28
BG_19_003	Amphibolite	7.4	14.4	2.33	10.8	3.4	1.08	4.39	0.74	5.08	1.04	3.32	0.44	3.0	0.44	25.21
BG_19_006b	Amphibolite	22.4	46.9	6.79	30.2	7.9	2.73	8.12	1.26	7.89	1.50	4.31	0.55	3.4	0.5	35.19
BG_19_007b	Amphibolite	20.0	42.3	5.65	24.3	6.0	1.92	6.04	0.95	5.51	1.16	3.24	0.39	2.7	0.37	26.07
BG_19_010	Amphibolite	16.5	38.0	5.20	21.2	5.0	1.70	5.28	0.85	5.03	0.97	2.88	0.42	2.5	0.38	23.93
BG_19_019	Amphibolite	17.0	34.5	4.63	19.8	5.0	1.56	5.19	0.77	4.89	0.94	2.82	0.39	2.5	0.36	23.97
BG_19_023	Amphibolite	15.6	29.2	4.10	16.7	3.7	1.23	4.04	0.62	3.85	0.76	2.25	0.27	1.9	0.26	19.64

Trace elements (ppm)

Sample	Lithology	Ba	Sr	Zn	Zr	V	Co	Cs	Cu	Ga	Hf	Mo	Nb	Ni	Rb	Sn	Ta	Th	Tl	U	W
BG_19_001	Gneiss	946	385	61	240	67	6,9	0,95	<5	21,1	5,13	<2	10,13	10	72,3	<0,3	0,35	6,4	<0,5	1,09	1,9
BG_19_002	Gneiss	922	369	48	137	37	4,5	0,62	<5	18,8	3,71	<2	8,2	<5	52,1	<0,3	0,74	9,3	<0,5	1,13	1,9
BG_19_022	Gneiss	1432	355	27	177	<5	6,9	0,91	<5	19	4,64	<2	7,37	7	69,4	<0,3	0,23	27,3	<0,5	3,76	37,4
BG_19_003	Amphibolite	43	151	104	51	208	48,5	<0,05	29	18,8	2,61	<2	4,5	70	2,1	<0,3	0,27	1,5	<0,5	0,39	5,1
BG_19_006b	Amphibolite	75	922	71	179	203	19,2	0,06	101	42,4	5,3	3	14,76	20	3,4	1,2	1,46	2,7	<0,5	0,57	17,1
BG_19_007b	Amphibolite	343	476	117	150	332	40,3	4,35	6	21,1	4,12	<2	15,28	57	107,6	<0,3	1,12	2,1	0,5	0,47	5,6
BG_19_010	Amphibolite	98	252	96	105	237	43,9	0,2	62	18,6	3,31	<2	12,95	72	8,8	<0,3	0,92	1,9	<0,5	0,34	4,4
BG_19_019	Amphibolite	86	199	115	119	301	43,8	0,32	76	19,5	3,25	<2	13,58	73	3,5	<0,3	0,77	2,2	<0,5	0,39	2,2
BG_19_023	Amphibolite	34	295	80	132	236	44,2	0,09	58	22,3	2,62	<2	10,17	102	1,8	<0,3	0,51	1,5	<0,5	0,27	1,2

Major elements oxides (wt%) for granitoids from Guanhães Complex in different regions

Sample	Lithology	Region	Reference	Al_2O_3	CaO	Fe_2O_3	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	FeO	TOTAL
1 (2)	Tonalite	Guanhães	Grossi-Sad et al., 1990	15.8	2.4	1.07	2.55	1.09	0.04	5.45	0.15	68.75	0.47	1.95	99.72
2 (2)	Granodiorite	Serro	Grossi-Sad et al., 1990	15.45	2.9	1.37	3.65	0.37	0.04	4.85	0.06	69.25	1.13	1.12	100.19
3 (9)	Quartz monzonite	Serro	Grossi-Sad et al., 1990	12.7	1.05	0.93	4.92	0.17	0.04	3.72	0.08	73.44	0.27	1.7	99.02
4 (3)	Granite	Guanhães	Grossi-Sad et al., 1990	11.27	0.65	1.04	5.9	0.03	0.03	0.07	<0.05	76.23	0.19	0.71	96.12
CP-L/7-4A	Quartz monzonite-granite trasition	Serra Negra	Baars et al., 1997	13.7	1.8	0.93	4.7	0.7	0.07	3	0.1	69	0.53	4.2	98.73

Rare Earth elements and Y (ppm) for granitoids from Guanhães Complex in different regions

Sample	Lithology	Region	Reference	La	Ce	Nd	Sm	Eu	Gd	Dy	Ho	Er	Yb	Lu	Y
1 (2)	Tonalite	Guanhães	Grossi-Sad et al., 1990	35.95	89.95	27.85	4.90	0.96	3.63	2.72	0.52	1.38	1.16	0.18	
2 (2)	Granodiorite	Serro	Grossi-Sad et al., 1990	84.55	70.65	56.12	11.80	1.65	7.73	6.55	1.24	4.02	3.22	0.38	
3 (9)	Quartz monzonite	Serro	Grossi-Sad et al., 1990	101.33	183.33	79.28	19.21	1.73	12.13	10.33	1.94	5.67	5.15	0.65	
4 (3)	Granite	Guanhães	Grossi-Sad et al., 1990	61.33	146.10	51.68	12.80	1.11	9.80	9.02	1.80	5.75	5.15	0.09	
CP-L/7-4A	Quartz monzonite-granite trasition	Serra Negra	Baars et al., 1997	417.30	813.10	257	31.80	3.479	17.290	12.490	2.382	5.832	4.22	0.469	72

Trace elements (ppm) for granitoids from Guanhães Complex in different regions

Sample	Lithology	Region	Reference	Ba	Sr	Zn	Zr	V	Ce	Cu	Ga	Nb	Ni	Rb	Sn
1 (2)	Tonalite	Guanhães	Grossi-Sad et al., 1990	445	325	67.5	172	37.5	89.95	6			10.5	150	
2 (2)	Granodiorite	Serro	Grossi-Sad et al., 1990	1100	405	137	127.5	70	70.65				7	125	
3 (9)	Quartz monzonite	Serro	Grossi-Sad et al., 1990	581	94	85	376	70	183.33	3	22	36	3	287	
4 (3)	Granite	Guanhães	Grossi-Sad et al., 1990	570	56	63	320	72	146.1		17	38		303	
CP-L/7-4A	Quartz monzonite-granite trasition	Serra Negra	Baars et al., 1997	1200		88		106	813.1	2			11	130	12

Major elements oxides (wt%) from Capelinha Formation (Castro et al., 2019) and Gangila Sequence (Tack et al., 2001 based on Tack, 1975)* metamafic rocks

Sample	Region	Al_2O_3	CaO	Fe_2O_3	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	TOTAL
4.66	Capelinha	14.83	9.98	10.71	0.10	9.32	0.14	2.94	0.16	48.51	1.45	98.14
CM93	Capelinha	15.28	10.32	12.57	0.48	7.64	0.19	1.87	0.19	47.05	1.68	97.27
CM-96B	Capelinha	15.91	15.84	12.11	0.13	3.01	0.16	0.82	0.49	47.14	2.77	98.38
CP-01	Capelinha	17.13	19.07	14.34	0.05	2.59	0.18	0.24	0.38	41.02	2.80	97.80
CP-03	Capelinha	13.50	8.74	15.99	0.14	6.52	0.23	2.43	0.42	46.16	3.05	97.18
CP047-1	Capelinha	14.23	7.84	13.33	0.17	3.13	0.16	2.88	0.30	54.10	2.70	98.84
CP047-2	Capelinha	13.47	11.44	14.39	0.11	3.62	0.18	1.03	0.33	51.42	2.86	98.85
GQ-06	Capelinha	14.57	7.82	15.71	0.38	5.88	0.22	1.10	0.43	45.30	3.51	94.92
432	Gangila	14.88	10.27	2.28	0.13	9.24	0.16	1.85	0.19	46.93	1.09	87.02
417	Gangila	13.98	14.41	5.96	0.15	7.22	0.18	0.71	0.12	47.68	0.70	91.11
2478	Gangila	7.24	13.46	6.11	0.13	6.98	0.16	1.50	0.12	50.16	0.81	86.67
431	Gangila	14.14	12.09	3.31	0.12	6.82	0.17	2.13	0.13	51.00	0.85	90.76
1315	Gangila	15.77	15.79	5.89	0.07	5.36	0.17	0.31	0.16	47.67	0.87	92.06
2485	Gangila	20.36	9.07	3.57	0.68	2.80	0.11	4.44	0.27	50.99	0.94	93.23

*It had not been considered FeO for TOTAL content (the contents are presented in the reference).

Trace elements (ppm) from Capelinha Formation (Castro et al., 2019) and Gangila Sequence (Tack et al., 2001 based on Tack, 1975) metamafic rocks

Sample	Region	Ba	Sr	Zr	V	Co	Sc	Hf	Nb	Ni	Rb	Ta	Th	U
4.66	Capelinha		379.8	89.4	274	41.9	37		8.70	122	1.3			
CM93	Capelinha		282.4	104.1	310	47.8	40		10.30	116	7.4			
CM-96B	Capelinha		879.3	184.4	382	22.5	26		62.70	59	1.6			
CP-01	Capelinha		1617.7	167.3	382	35.3	26		22.50	84	0.1			
CP-03	Capelinha		408.6	184.4	352	52.1	29		22.70	101	2.0			
CP047-1	Capelinha		1012.4	173.2	216	50.6	25		23.60	76	2.1			
CP047-2	Capelinha		918.8	153.1	380	40.1	26		18.30	79	0.9			
GQ-06	Capelinha		111.6	219.8	391	81.7	32		29.20	80	6.8			
432	Gangila		269	124		60	39	2.06			3	0.75	1.23	0.42
417	Gangila	74	108	53	248	49	37	0.96			4	0.14	0.37	0.17
2478	Gangila		209	84	246	51	38	1.37			4	0.20	0.75	0.15
431	Gangila	215	196	82	234	44	37	1.32			3	0.22	0.65	0.26
1315	Gangila		294	88	269	40	34	1.05			2	0.27	0.46	0.15
2485	Gangila		305	156		27	18	3.09			28	0.50	4.57	0.86

REE and Y (ppm) from Guanhães Block and Gangila (Tack et al., 2001 based on Tack, 1975) metamafic rocks

Sample	Region	Reference	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Y
4.66	Capelinha	Castro, 2014	10.5	21.3	2.72	12.6	3.10	1.12	3.51	0.52	3.31	0.68	1.68	0.26	1.49	0.25	10.5
CM93	Capelinha	Castro, 2014	13.4	29.2	3.70	15.2	3.57	1.30	4.01	0.60	3.51	0.73	2.01	0.29	1.94	0.28	18.7
CM-96B	Capelinha	Castro, 2014	26.5	65.0	7.59	31.0	6.71	2.12	6.28	0.85	5.14	0.99	2.22	0.35	2.16	0.34	24.1
CP-01	Capelinha	Castro, 2014	25.4	55.6	6.83	28.1	6.14	2.10	6.12	0.83	4.82	0.92	2.42	0.32	2.24	0.29	24.0
CP-03	Capelinha	Castro, 2014	29.8	60.6	7.82	31.2	7.11	2.44	6.59	0.91	4.62	0.94	2.63	0.35	2.17	0.30	24.1
CP047-1	Capelinha	Castro, 2014	30.2	67.1	7.74	32.7	6.13	2.06	5.87	0.81	4.53	0.89	2.28	0.32	1.93	0.27	20.2
CP047-2	Capelinha	Castro, 2014	25.1	50.9	6.42	25.8	5.26	1.98	4.94	0.72	3.70	0.76	1.80	0.26	1.66	0.23	19.2
GQ-06	Capelinha	Castro, 2014	42.8	89.7	11.97	49.3	9.64	2.98	7.89	1.20	6.54	1.13	2.96	0.41	2.72	0.39	29.1
432	Gangila	Tack et al., 2001	14.2	28.3		14.9	3.06	1.10		0.58		0.75			1.92	0.32	23
417	Gangila	Tack et al., 2001	4.46	10.1		6.07	1.57	0.68		0.36	2.51				1.64	0.37	16

2478	Gangila	Tack et al., 2001	7.46	16.4		10.3	2.11	0.91		0.43	2.58				1.62	0.28	17
431	Gangila	Tack et al., 2001	7.10	16.3		9.01	2.11	0.82		0.46	2.26				1.67	0.43	15
1315	Gangila	Tack et al., 2001	5.63	11.7		8.12	1.92	0.87		0.42	2.36				1.55	0.34	17
2485	Gangila	Tack et al., 2001	26.9	52.0		23.1	3.94	1.24		0.65		0.83			2.35	0.37	29
1 (N=7)	Guanhães	Grossi-Sad, 1997	25	49.64		32.52	7.90	2.34	7.47		6.76	1.62	3.97		3.37	0.49	
1	Capelinha	Baars et al., 1997	6.598	23.34		11.04	2.742	0.834	2.642		3.52	0.769	2.395		2.248	0.3	45
2	Capelinha	Baars et al., 1997	20.57	46.42		25.54	5.397	1.584	3.84		4.936	1.011	2.836		2.241	0.3	54
CP-N/7-12	Serra Negra	Baars et al., 1997	4.921	15.27		9.309	2.278	0.694	2.301		3.29	0.698	2.076		2.015	0.248	160

Supplementary Data B: Geochronological Data

BG-19-25: Pedra Menina Gneiss - Guanhães Complex

							Ratios (data not corrected for common-Pb)							
SPOT ID	**f206c**	**^{207}Pb**	**^{206}Pb**	**U (µg g^{-1}) [a]**	**Th/U**	**^{206}Pb/^{204}Pb**	**^{207}Pb/^{206}Pb**	**1*s***	**^{206}Pb/^{238}U**	**1*s***	**^{207}Pb/^{235}U**	**1*s***	**^{208}Pb/^{232}Th**	**1*s***
		CPS	CPS											
1.sSMPABC007	0,223125	222492,4	44072,87	128,5864	0,70096	32,550123	0,19853	0,00204	0,488547492	0,00342	13,37317	0,003982	0,12294	0,00231
1.sSMPABC008	0,285426	247908,6	34763,88	409,0811	0,567683	24,55076	0,14063	0,00155	0,171000523	0,00131	3,315711	0,002029	0,05405	0,00148
1.sSMPABC009	0,403293	165544,6	29710,84	168,1114	0,359224	20,391788	0,1802	0,002	0,277536183	0,00208	6,895657	0,002886	0,07685	0,00204
1.sSMPABC010	0,21575	186626,6	33849,94	176,7283	1,348651	23,956077	0,18177	0,00186	0,298185274	0,00213	7,473253	0,002828	0,04599	0,00078
1.sSMPABC011	0,167473	254841,8	48931,64	189,832	0,69518	36,680388	0,19233	0,00195	0,379253788	0,00273	10,05723	0,003355	0,0776	0,00119
1.sSMPABC012	0,318309	219648,2	17599,12	619,5172	0,314316	12,179322	0,08038	0,00082	0,10001064	0,00071	1,108397	0,001085	0,03003	0,00047
1.sSMPABC013	5,161714	194457,3	79785,62	92,42441	0,567243	16,043761	0,43263	0,00441	0,564648189	0,00428	33,68184	0,006145	0,67234	0,0119
1.sSMPABC014	0,298791	188009,8	37821,38	102,355	0,616166	28,91543	0,20177	0,00209	0,518236915	0,00385	14,41738	0,004381	0,13246	0,00259
1.sSMPABC015	1	128602,5	25218,93	86,05754	0,612329	22,357211	0,19586	0,00258	0,423397869	0,00366	11,43393	0,004478	0,09145	0,00455
1.sSMPABC016	0,204615	194656,3	35529,79	175,4657	0,566392	27,542471	0,1829	0,00186	0,313287651	0,00223	7,900567	0,002904	0,06853	0,00119
1.sSMPABC017	0,342276	212010,7	26921,93	427,8931	0,097676	19,43822	0,12742	0,00131	0,139730094	0,001	2,454872	0,001648	0,07458	0,00139
1.sSMPABC018	0,157364	177215,9	31379,78	186,101	0,855318	25,742229	0,17735	0,00191	0,269045953	0,00204	6,578986	0,002795	0,05937	0,00143
1.sSMPABC019	0,205537	200138,4	31998,26	264,4654	0,239233	26,57663	0,16021	0,0017	0,213709842	0,00166	4,720798	0,002376	0,0676	0,00139
1.sSMPABC020	0,111775	227073,8	42360,9	186,5293	0,529487	37,721196	0,18676	0,00194	0,344104948	0,00263	8,860864	0,003268	0,06621	0,00121

1.sSMPABC027	0,237856	143165,5	28883,5	78,20903	0,694774	26,843401	0,20223	0,00208	0,51677788	0,00385	14,40956	0,004376	0,12763	0,00251
1.sSMPABC028	0,179116	171984,1	33869,96	114,659	0,574808	31,654166	0,19729	0,00213	0,423699726	0,00336	11,52563	0,003978	0,1036	0,00274
1.sSMPABC029	1	69508,68	11180,01	95,77643	0,327577	12,604292	0,16057	0,01096	0,205719581	0,00568	4,554506	0,012344	0,0491	0,02516
1.sSMPABC030	0,147962	227800,1	39467,11	244,178	0,623659	36,274913	0,17351	0,00177	0,263609379	0,00193	6,306474	0,002619	0,06747	0,00132
1.sSMPABC031	1	168843,8	32855,28	114,838	0,72641	32,242674	0,19457	0,00209	0,416102463	0,00313	11,16291	0,003764	0,08279	0,00231
1.sSMPABC032	0,215421	199006,7	36204,74	178,3871	0,696535	32,705276	0,18232	0,00188	0,315009938	0,00236	7,918809	0,003017	0,07993	0,00167
1.sSMPABC033	0,254696	201184,4	22340,81	445,0538	0,230505	19,753151	0,11133	0,00138	0,127594193	0,00107	1,958594	0,001746	0,04854	0,00209
1.sSMPABC034	0,241406	238915,8	20239,75	641,3253	0,340835	18,135975	0,08492	0,00089	0,10516551	0,00079	1,231359	0,00119	0,03148	0,00071
1.sSMPABC035	0,458056	80034,6	14019,18	60,78758	0,468193	13,894131	0,17597	0,00191	0,370873374	0,00278	8,998406	0,003373	0,10202	0,00286
1.sSMPABC036	0,600841	136876,4	25326,45	115,9543	0,652202	21,870857	0,18615	0,00226	0,33203295	0,00264	8,522078	0,003475	0,0982	0,00453
1.sSMPABC037	0,112547	162781,2	31480,6	118,246	0,608259	32,155872	0,19361	0,002	0,389121563	0,00293	10,38758	0,003548	0,10236	0,00224
1.sSMPABC038	0,343003	226698,6	15565,96	676,0596	0,278843	12,104166	0,0689	0,00076	0,094564525	0,00075	0,898357	0,001068	0,03064	0,00084
1.sSMPABC039	0,304647	171185,5	25654,21	270,9597	0,298003	22,844357	0,15032	0,00159	0,178235351	0,00133	3,694128	0,002073	0,07057	0,00189
1.sSMPABC040	0,197089	114045,8	17909,73	160,0592	0,377868	17,714871	0,15735	0,00506	0,201232609	0,0028	4,365826	0,005783	0,04428	0,0099
1.sSMPABC047	0,317056	176031,1	15543,4	471,5837	0,369097	15,374281	0,08858	0,00092	0,105295094	0,0008	1,286012	0,001219	0,03007	0,00072
1.sSMPABC048	0,602705	94395,93	8496,035	242,728	0,385951	7,9700139	0,09055	0,00101	0,109386723	0,00088	1,365697	0,00134	0,02313	0,00064
1.sSMPABC049	0,242253	171716	32682,33	131,1108	0,556178	31,916335	0,19079	0,00198	0,369722163	0,00286	9,725958	0,003479	0,08418	0,0021
1.sSMPABC050	0,359922	171982	13784,44	493,7361	0,246904	12,634684	0,08044	0,00086	0,098215225	0,00078	1,089312	0,001161	0,02492	0,00068
1.sSMPABC051	0,814308	145311,3	22965,36	194,3577	0,776794	17,692878	0,15934	0,0018	0,209847168	0,00181	4,6103	0,002553	0,04337	0,00121
1.sSMPABC052	0,234553	195195,8	33781,2	215,5071	0,377205	33,479882	0,17347	0,0018	0,255708817	0,00198	6,116055	0,002676	0,07911	0,00204
1.sSMPABC053	0,278892	240016,4	30334,84	486,7768	0,21009	28,350317	0,12674	0,00135	0,139140862	0,00111	2,431474	0,001748	0,05523	0,00161
1.sSMPABC054	0,381358	143698	27095,43	116,2585	0,761538	26,538131	0,18928	0,00202	0,348436125	0,00284	9,09346	0,003485	0,08645	0,00247
1.sSMPABC055	0,98064	73459,37	9523,717	140,4756	0,297479	9,2643164	0,13093	0,00358	0,146528849	0,00199	2,645231	0,004096	0,04348	0,00665
1.sSMPABC056	0,29225	122163	23641,33	82,60199	0,631809	25,203973	0,19409	0,00204	0,417286905	0,0033	11,16707	0,00388	0,10323	0,00281
1.sSMPABC057	0,274205	154059,4	28430,53	135,2815	0,856012	28,659805	0,18505	0,00198	0,321376348	0,00259	8,199819	0,00326	0,08477	0,00259
1.sSMPABC058	0,227776	178715,1	34055,04	138,1094	0,437849	35,510996	0,19099	0,00199	0,365345929	0,00288	9,620911	0,003501	0,10947	0,00303
1.sSMPABC059	0,296863	114387,6	8334,628	336,376	0,078002	9,0104085	0,07308	0,00078	0,095944329	0,00075	0,966761	0,001082	0,04305	0,00122
1.sSMPABC060	0,305388	158832,1	29234,02	138,3434	0,465553	30,045245	0,18462	0,00199	0,323897826	0,00268	8,244951	0,003338	0,08734	0,00276
1.sSMPABC067	0,22543	128566,8	21667,27	151,1379	0,238167	23,02579	0,16891	0,00179	0,240177344	0,00195	5,593565	0,002647	0,06812	0,0021
1.sSMPABC068	0,116346	163862,6	15884,37	405,1192	0,196173	17,09835	0,09705	0,00124	0,114326831	0,00094	1,529836	0,001556	0,04444	0,00271
1.sSMPABC069	0,167576	207456,6	39655,16	155,1391	0,549221	41,350532	0,19147	0,0026	0,377775875	0,00344	9,973239	0,004312	0,09518	0,00593
1.sSMPABC070	0,271256	149769,3	8919,958	473,5395	0,537036	8,7968031	0,05972	0,00066	0,089257226	0,00072	0,734961	0,000977	0,02453	0,00087
1.sSMPABC071	0,329753	140354,8	21213,22	206,68	0,281584	20,319179	0,15164	0,00161	0,191536315	0,00156	4,004665	0,002242	0,06457	0,00207
1.sSMPABC072	0,314678	178829,7	34856,55	120,3714	0,805313	33,165125	0,19553	0,00231	0,419087061	0,00355	11,29845	0,004235	0,09198	0,00449

1.sSMPABC073	0,403316	112375,2	22291,5	66,50077	0,568474	22,516671	0,19917	0,00216	0,476261381	0,00404	13,07888	0,004581	0,11205	0,00382
1.sSMPABC074	0,281363	201415,7	14153,83	597,7633	0,946227	12,937686	0,07047	0,00086	0,09508172	0,00083	0,923852	0,001195	0,02363	0,00111
1.sSMPABC075	0,327054	155559,8	26781,96	167,5627	0,450135	25,826383	0,17273	0,00188	0,261850797	0,00222	6,236242	0,002909	0,06636	0,00234
1.sSMPABC076	0,25335	152579,6	14429,42	384,4795	0,419411	14,634299	0,09481	0,0012	0,112015488	0,00097	1,464312	0,001543	0,03322	0,0018
1.sSMPABC077	0,315387	147925,5	26750,54	133,2613	1,234635	25,820982	0,18141	0,00195	0,313129308	0,00264	7,832244	0,003282	0,05467	0,00186
1.sSMPABC078	0,189427	141024,1	26199,1	116,7386	0,864588	27,009382	0,18613	0,00199	0,341202443	0,00287	8,756485	0,003492	0,07369	0,00245
1.sSMPABC079	0,307104	163399,8	29886,9	144,6686	0,908443	31,459891	0,18347	0,00264	0,318638434	0,00304	8,060547	0,004026	0,06805	0,0048
1.sSMPABC080	0,503027	140448,5	26721,47	107,4603	0,866412	23,96544	0,19122	0,00316	0,367989553	0,00386	9,702197	0,004989	0,08144	0,00658
1.sSMPABC007	0,153214	312097,2	44595,8	394,3818	0,203026	174,88547	0,14311	0,00146	0,16308974	0,00081	3,218088	0,00167	0,06034	0,00067
1.sSMPABC008	0,3782	288107,6	29826,91	510,7951	0,086768	68,097969	0,10392	0,00107	0,115979699	0,00058	1,661814	0,001217	0,07666	0,00103
1.sSMPABC009	0,12162	261125,6	29453,05	427,8941	0,100587	105,56648	0,11293	0,00115	0,125806808	0,00063	1,958911	0,001311	0,06025	0,00062
1.sSMPABC010	0,053125	170231,4	34266,4	70,25065	0,645761	469,4027	0,2014	0,00205	0,499894292	0,00266	13,88158	0,003358	0,11763	0,00131
1.sSMPABC011	0	310957	54557,41	244,8797	0,220923	54557,406	0,17545	0,00178	0,2621	0,0013	6,340473	0,002204	0,10969	0,00122
1.sSMPABC012	0,00011	315878,3	52625,27	211,994	0,418673	1052,5055	0,1666	0,00169	0,307549661	0,0016	7,064664	0,002327	0,06094	0,00073
1.sSMPABC013	0,089062	350566,2	64558,82	229,4691	0,578608	471,23224	0,18432	0,00192	0,315049162	0,00165	8,006672	0,002532	0,082	0,00119
1.sSMPABC014	0,080453	328013,9	37986,23	525,7307	0,443164	241,95048	0,1159	0,00119	0,128676393	0,00064	2,056286	0,001351	0,04145	0,00049
1.sSMPABC015	0,125049	335817,9	50460,63	406,2501	0,360602	214,72608	0,15045	0,00156	0,170406642	0,00088	3,534923	0,001791	0,06319	0,00086
1.sSMPABC016	1	239604	40510,13	214,4732	0,215651	750,18755	0,16905	0,00173	0,23061889	0,00117	5,375407	0,002088	0,12373	0,00141
1.sSMPABC017	1	384234,7	64409,65	244,6413	0,582897	1497,8988	0,16763	0,0017	0,324181965	0,00168	7,492761	0,00239	0,07774	0,0009
1.sSMPABC018	0,027531	234345,5	28263,66	289,5194	0,279257	164,3236	0,12064	0,00139	0,167024003	0,00106	2,778251	0,001748	0,01925	0,00047
1.sSMPABC019	0	225693	30204,49	244,9087	0,250366	30204,494	0,13383	0,00146	0,19021	0,00114	3,509846	0,001852	0,03319	0,00069
1.sSMPABC020	1	253648,9	42609,07	172,3259	0,352929	747,5276	0,16778	0,00183	0,304180217	0,00168	7,036755	0,002484	0,09408	0,00208
1.sSMPABC027	0,02107	412615,9	81899,38	188,1287	0,494763	688,2301	0,19853	0,00202	0,452604616	0,00231	12,38929	0,003069	0,12486	0,00149
1.sSMPABC028	0	270848	46599,4	161,3213	0,290567	46599,398	0,17205	0,00178	0,34654	0,00187	8,22071	0,002582	0,09771	0,00143
1.sSMPABC029	0,114267	296396,7	53530,25	206,884	0,479288	334,56404	0,18081	0,00182	0,295372102	0,00153	7,363651	0,002378	0,07197	0,00078
1.sSMPABC030	0,180047	335423,9	51927,23	369,3415	0,239402	184,13913	0,15509	0,00156	0,187112502	0,00098	4,001178	0,001842	0,0652	0,00077
1.sSMPABC031	0	129169	24508,53	76,70048	0,314524	345,19051	0,18974	0,00193	0,3476	0,00185	9,093686	0,002673	0,0997	0,00116
1.sSMPABC032	0,092578	264893,2	43928,92	185,6922	0,475928	422,39348	0,16599	0,00168	0,294167413	0,00153	6,732522	0,002272	0,07247	0,00083
1.sSMPABC033	0,03249	275162,4	33693,69	432,8213	0,113901	401,11538	0,12249	0,0013	0,131177367	0,00068	2,215444	0,001467	0,04353	0,00086
1.sSMPABC034	0	290971	52208,93	206,6895	0,604759	52208,927	0,17943	0,00183	0,29057	0,00151	7,188646	0,002373	0,07507	0,00096
1.sSMPABC035	0	225743	30782,32	295,7061	0,210999	30782,315	0,13636	0,00146	0,15757	0,00087	2,962523	0,0017	0,057	0,00106
1.sSMPABC036	0,00092	341093,1	62112,49	236,9202	0,514997	1267,6018	0,1821	0,00184	0,297157266	0,00154	7,461009	0,002399	0,07605	0,00088
1.sSMPABC037	0,016721	250394,9	47261,64	145,1597	0,596765	492,30874	0,18878	0,00191	0,355980466	0,00187	9,265811	0,002673	0,09125	0,00107
1.sSMPABC038	1	256592,7	45241,03	203,6214	0,337717	983,50061	0,17628	0,00182	0,260151002	0,00136	6,323097	0,002272	0,09307	0,00138

1.sSMPABC039	0,008989	404532,4	73739,62	274,2835	0,400404	1474,7924	0,1823	0,00186	0,304392637	0,00159	7,651068	0,002447	0,0901	0,00123
1.sSMPABC040	0,030114	354011,6	55916,99	288,6189	0,395713	798,81414	0,158	0,00161	0,25309376	0,00136	5,513658	0,002108	0,05458	0,00077
1.sSMPABC047	0,084236	314323,8	51182,2	295,3291	0,236935	299,31108	0,16297	0,00166	0,219494949	0,00118	4,932118	0,002037	0,07221	0,00103
1.sSMPABC048	1	360739,6	71720,51	161,0015	0,414631	779,57075	0,19881	0,00203	0,462482044	0,00246	12,67752	0,003189	0,11837	0,00171
1.sSMPABC049	0	214669	25996,42	279,5853	0,3142	178,05764	0,1211	0,00166	0,15848	0,00108	2,646183	0,00198	0,05542	0,00262
1.sSMPABC050	1	254877	41708,8	184,7898	0,37512	786,95842	0,16363	0,00168	0,284712369	0,00152	6,423482	0,002266	0,07742	0,00117
1.sSMPABC051	1	368309,1	71665,4	182,1859	0,570561	1119,7718	0,19456	0,002	0,417311819	0,00223	11,19478	0,002995	0,10788	0,00166
1.sSMPABC052	0	267572	53522,43	117,0931	0,37864	53522,427	0,20003	0,00207	0,47166	0,00259	13,00845	0,003316	0,1335	0,00224
1.sSMPABC053	0,073301	378099,1	72443,59	205,194	0,527347	482,95727	0,19174	0,00194	0,380051215	0,00204	10,04746	0,002815	0,10557	0,00143
1.sSMPABC054	0,052468	178798,8	36446,88	68,93476	0,926073	409,51556	0,20395	0,00208	0,535079109	0,00294	15,04676	0,003601	0,12114	0,00171
1.sSMPABC055	0	215973	35950,87	202,2771	0,168791	422,95136	0,16646	0,0019	0,22038	0,00128	5,058053	0,002291	0,13283	0,00421
1.sSMPABC056	0	253366	43432	150,7174	0,423579	3102,2857	0,17142	0,00181	0,34698	0,00189	8,201007	0,002617	0,09492	0,00187
1.sSMPABC057	1	289732,8	33386,61	395,7266	0,210508	498,30758	0,11522	0,00119	0,151136279	0,00081	2,401032	0,00144	0,0472	0,00076
1.sSMPABC058	0	205999	35056,91	134,3799	0,334173	259,68081	0,17018	0,00195	0,31641	0,00188	7,424377	0,002709	0,105	0,00335
1.sSMPABC059	0,050079	243986,2	46885,29	129,7668	0,730899	450,82012	0,19226	0,00203	0,387885652	0,00214	10,28239	0,00295	0,09714	0,00199
1.sSMPABC060	0,04251	195608,2	38803,89	88,39118	0,458326	461,95109	0,19846	0,00247	0,456575828	0,00282	12,49359	0,003749	0,13095	0,00603
1.sSMPABC067	0	283590	55124,22	145,4666	0,446729	55124,224	0,19438	0,00201	0,40239	0,00222	10,7845	0,002995	0,10861	0,00195
1.sSMPABC068	0	318653	58482,39	211,0563	0,451659	1218,383	0,18353	0,00197	0,31163	0,0018	7,885833	0,002669	0,08892	0,00204
1.sSMPABC069	0,144484	211472,5	20244,58	343,9631	0,251403	110,02489	0,09587	0,00111	0,12671665	0,00074	1,675011	0,001334	0,02829	0,00092
1.sSMPABC070	1	261650,3	43476,25	184,6732	0,527399	1449,2082	0,16604	0,00199	0,292654307	0,00203	6,699909	0,002843	0,04575	0,00159
1.sSMPABC071	0,005992	255156,3	43453,06	154,5529	0,571521	987,56963	0,17031	0,00177	0,340739583	0,00189	8,001364	0,002589	0,08472	0,00157
1.sSMPABC072	0	28003	5062,662	12,81585	0,300223	5062,6624	0,18079	0,00212	0,451	0,00326	11,24222	0,003889	0,11521	0,00298
1.sSMPABC073	0,034414	206303	41324,77	86,2104	0,474159	794,70708	0,20038	0,00209	0,493760019	0,00279	13,6418	0,003486	0,13018	0,00249
1.sSMPABC074	0	258292	50436,68	124,8365	0,54173	50436,679	0,19527	0,00203	0,42706	0,0024	11,49809	0,003143	0,11906	0,00228
1.sSMPABC075	0,00045	247174,1	43423,35	137,1928	0,459223	668,05158	0,17568	0,00188	0,371868325	0,00211	9,007677	0,002826	0,10145	0,00241
1.sSMPABC076	0,160931	232866,8	34120,53	290,2112	0,20217	155,0933	0,14676	0,00154	0,165353466	0,00094	3,345972	0,001804	0,09273	0,00189
1.sSMPABC078	0,11362	178280,6	32016,64	92,04548	0,386089	186,14328	0,17979	0,00244	0,399325769	0,00325	9,899064	0,004064	0,03962	0,00182
1.sSMPABC079	0,032291	288412,1	57926,17	119,9879	0,45102	579,2617	0,20091	0,00219	0,495969794	0,00294	13,73909	0,003666	0,12678	0,00327
1.sSMPABC080	0,285515	210505	40557,65	108,8844	0,525495	123,65137	0,19322	0,00205	0,397900679	0,0024	10,60054	0,003156	0,07808	0,0017

	Ratios (data corrected for common-Pb)								
SPOT ID	**$^{207}Pb/^{206}Pb$**	**2*s* (%)**	**$^{207}Pb/^{235}U$**	**2*s* (%)**	**$^{206}Pb/^{238}U$**	**2*s* (%)**	**Rho**	**$^{208}Pb/^{232}Th$**	***2s* (%)**

	Data for Wetherill plot								
1.sSMPABC007	0,198087	2,071984	13,37317	2,500576	0,48964	1,399915	0,559837	0,12294	3,757931
1.sSMPABC008	0,1402286	2,247845	3,315711	2,738201	0,17149	1,56363	0,571043	0,05405	5,476411
1.sSMPABC009	0,1794733	2,273605	6,895657	2,735267	0,27866	1,520661	0,555946	0,07685	5,309044
1.sSMPABC010	0,1813778	2,064719	7,473253	2,513192	0,29883	1,432854	0,570133	0,04599	3,392042
1.sSMPABC011	0,1920079	2,038644	10,05723	2,495907	0,37989	1,43996	0,576929	0,0776	3,06701
1.sSMPABC012	0,0801241	2,195628	1,108397	2,688226	0,10033	1,551057	0,576982	0,03003	3,130203
1.sSMPABC013	0,4102989	3,309326	33,68184	4,003151	0,59538	2,25246	0,562672	0,67234	3,539876
1.sSMPABC014	0,2011671	2,099001	14,41738	2,571667	0,51979	1,485822	0,577766	0,13246	3,910615
1.sSMPABC015	0,1960999	2,822052	11,43393	3,344245	0,42288	1,794435	0,536574	0,09145	9,950793
1.sSMPABC016	0,1825258	2,050364	7,900567	2,497873	0,31393	1,426667	0,571153	0,06853	3,472932
1.sSMPABC017	0,1269839	2,132518	2,454872	2,611649	0,14021	1,507674	0,577288	0,07458	3,727541
1.sSMPABC018	0,1770709	2,164637	6,578986	2,644191	0,26947	1,518581	0,574309	0,05937	4,817248
1.sSMPABC019	0,1598807	2,142072	4,720798	2,651188	0,21415	1,562154	0,589228	0,0676	4,112426
1.sSMPABC020	0,1865512	2,083307	8,860864	2,583754	0,34449	1,528273	0,591493	0,06621	3,655037
1.sSMPABC027	0,201749	2,075406	14,40956	2,554467	0,51801	1,489292	0,583015	0,12763	3,933245
1.sSMPABC028	0,1969366	2,170767	11,52563	2,688092	0,42446	1,585436	0,5898	0,1036	5,289575
1.sSMPABC029	0,1608433	13,68478	4,554506	14,79253	0,20537	5,616552	0,379689	0,0491	102,4847
1.sSMPABC030	0,1732533	2,050378	6,306474	2,520796	0,264	1,466412	0,581726	0,06747	3,91285
1.sSMPABC031	0,1945899	2,381333	11,16291	2,857553	0,41606	1,579514	0,552751	0,08279	5,580384
1.sSMPABC032	0,1819272	2,080284	7,918809	2,565472	0,31569	1,501353	0,585215	0,07993	4,178656
1.sSMPABC033	0,1110464	2,527423	1,958594	3,056976	0,12792	1,719661	0,562537	0,04854	8,611454
1.sSMPABC034	0,084715	2,177085	1,231359	2,68249	0,10542	1,567181	0,584226	0,03148	4,510801
1.sSMPABC035	0,175164	2,24265	8,998406	2,704975	0,37258	1,512418	0,559125	0,10202	5,606744
1.sSMPABC036	0,1850315	2,527684	8,522078	3,00284	0,33404	1,621069	0,539845	0,0982	9,226069
1.sSMPABC037	0,1933921	2,071609	10,38758	2,560802	0,38956	1,505371	0,587851	0,10236	4,37671
1.sSMPABC038	0,0686637	2,428699	0,898357	2,986652	0,09489	1,73825	0,582006	0,03064	5,483029
1.sSMPABC039	0,1498621	2,16055	3,694128	2,645347	0,17878	1,526396	0,577011	0,07057	5,356384
1.sSMPABC040	0,1570399	6,449109	4,365826	7,024456	0,20163	2,784236	0,396363	0,04428	44,71545
1.sSMPABC047	0,0882992	2,204099	1,286012	2,740951	0,10563	1,629343	0,594444	0,03007	4,788826
1.sSMPABC048	0,0900043	2,613566	1,365697	3,253944	0,11005	1,938407	0,59571	0,02313	5,533939
1.sSMPABC049	0,1903278	2,096136	9,725958	2,606307	0,37062	1,548886	0,594284	0,08418	4,989309
1.sSMPABC050	0,0801505	2,326321	1,089312	2,906856	0,09857	1,742998	0,599616	0,02492	5,457464
1.sSMPABC051	0,1580425	2,50012	4,6103	3,125818	0,21157	1,876203	0,600228	0,04337	5,579894

1.sSMPABC052	0,1730631	2,097752	6,116055	2,611723	0,25631	1,555807	0,595701	0,07911	5,157376
1.sSMPABC053	0,1263865	2,181414	2,431474	2,729438	0,13953	1,640508	0,601042	0,05523	5,830165
1.sSMPABC054	0,1885582	2,180424	9,09346	2,72744	0,34977	1,6385	0,600746	0,08645	5,714286
1.sSMPABC055	0,129646	5,726176	2,645231	6,463697	0,14798	2,998382	0,46388	0,04348	30,58878
1.sSMPABC056	0,1935228	2,129804	11,16707	2,653784	0,41851	1,583195	0,59658	0,10323	5,444154
1.sSMPABC057	0,1845426	2,166326	8,199819	2,702897	0,32226	1,616381	0,598018	0,08477	6,110652
1.sSMPABC058	0,190555	2,102273	9,620911	2,628564	0,36618	1,577909	0,600293	0,10947	5,535763
1.sSMPABC059	0,0728631	2,290824	0,966761	2,838714	0,09623	1,676431	0,59056	0,04305	5,667828
1.sSMPABC060	0,1840562	2,187697	8,244951	2,746482	0,32489	1,660466	0,604579	0,08734	6,320128
1.sSMPABC067	0,1685292	2,14104	5,593565	2,691465	0,24072	1,63093	0,605964	0,06812	6,16559
1.sSMPABC068	0,0969371	2,569597	1,529836	3,05646	0,11446	1,655029	0,541485	0,04444	12,19622
1.sSMPABC069	0,1911491	2,726033	9,973239	3,277913	0,37841	1,82029	0,55532	0,09518	12,4606
1.sSMPABC070	0,059558	2,396213	0,734961	2,949228	0,0895	1,719335	0,582978	0,02453	7,093355
1.sSMPABC071	0,15114	2,174702	4,004665	2,735519	0,19217	1,659438	0,606626	0,06457	6,411646
1.sSMPABC072	0,1949147	2,392159	11,29845	2,93206	0,42041	1,695449	0,578245	0,09198	9,762992
1.sSMPABC073	0,1983667	2,215423	13,07888	2,791354	0,47819	1,698104	0,608344	0,11205	6,818385
1.sSMPABC074	0,0702717	2,575308	0,923852	3,164085	0,09535	1,838266	0,580979	0,02363	9,394837
1.sSMPABC075	0,1721651	2,216751	6,236242	2,798632	0,26271	1,708318	0,610412	0,06636	7,052441
1.sSMPABC076	0,0945698	2,593751	1,464312	3,148879	0,1123	1,785467	0,567017	0,03322	10,83685
1.sSMPABC077	0,1808379	2,184653	7,832244	2,763768	0,31412	1,692838	0,612511	0,05467	6,804463
1.sSMPABC078	0,1857774	2,152033	8,756485	2,731831	0,34185	1,682752	0,61598	0,07369	6,649478
1.sSMPABC079	0,1829066	2,906186	8,060547	3,478712	0,31962	1,911941	0,549612	0,06805	14,10727
1.sSMPABC080	0,1902581	3,363627	9,702197	3,967989	0,36985	2,104982	0,530491	0,08144	16,15914
1.sSMPABC007	0,1428907	2,054741	3,218088	2,289283	0,16334	1,009383	0,440917	0,06034	2,220749
1.sSMPABC008	0,103527	2,192419	1,661814	2,494319	0,11642	1,189508	0,476887	0,07666	2,68719
1.sSMPABC009	0,1127927	2,050511	1,958911	2,289656	0,12596	1,018787	0,444952	0,06025	2,058091
1.sSMPABC010	0,201293	2,037516	13,88158	2,298541	0,50016	1,063872	0,462846	0,11763	2,227323
1.sSMPABC011	0,17545	2,029068	6,340473	2,258574	0,2621	0,991988	0,43921	0,10969	2,224451
1.sSMPABC012	0,1665998	2,028814	7,064664	2,280063	0,30755	1,040481	0,456339	0,06094	2,395799
1.sSMPABC013	0,1841558	2,087433	8,006672	2,33576	0,31533	1,048046	0,448696	0,082	2,902439
1.sSMPABC014	0,1158068	2,059839	2,056286	2,290518	0,12878	1,001766	0,437353	0,04145	2,364294
1.sSMPABC015	0,1502619	2,083035	3,534923	2,329073	0,17062	1,041895	0,447343	0,06319	2,72195
1.sSMPABC016	0,1690712	2,363767	5,375407	2,714676	0,23059	1,334944	0,491751	0,12373	2,279156
1.sSMPABC017	0,167631	2,353154	7,492761	2,644278	0,32418	1,206179	0,456147	0,07774	2,31541

1.sSMPABC018	0,1206068	2,305463	2,778251	2,631811	0,16707	1,269357	0,482313	0,01925	4,883117
1.sSMPABC019	0,13383	2,181873	3,509846	2,489456	0,19021	1,198675	0,481501	0,03319	4,157879
1.sSMPABC020	0,1679845	2,482851	7,036755	2,796614	0,30381	1,287052	0,460218	0,09408	4,421769
1.sSMPABC027	0,1984882	2,035497	12,38929	2,277025	0,4527	1,020586	0,44821	0,12486	2,386673
1.sSMPABC028	0,17205	2,069166	8,22071	2,333711	0,34654	1,07924	0,462457	0,09771	2,927029
1.sSMPABC029	0,1806034	2,019434	7,363651	2,270439	0,29571	1,037679	0,457039	0,07197	2,16757
1.sSMPABC030	0,1548108	2,028742	4,001178	2,290415	0,18745	1,063112	0,464157	0,0652	2,361963
1.sSMPABC031	0,18974	2,034363	9,093686	2,296011	0,3476	1,064442	0,463605	0,0997	2,326981
1.sSMPABC032	0,1658363	2,029168	6,732522	2,280689	0,29444	1,041162	0,456512	0,07247	2,290603
1.sSMPABC033	0,1224502	2,123975	2,215444	2,363875	0,13122	1,03761	0,438944	0,04353	3,951298
1.sSMPABC034	0,17943	2,039793	7,188646	2,289317	0,29057	1,039336	0,453994	0,07507	2,557613
1.sSMPABC035	0,13636	2,14139	2,962523	2,40935	0,15757	1,104271	0,458327	0,057	3,719298
1.sSMPABC036	0,1820983	2,020887	7,461009	2,271183	0,29716	1,036479	0,456361	0,07605	2,314267
1.sSMPABC037	0,1887484	2,023935	9,265811	2,280315	0,35604	1,050486	0,460676	0,09125	2,345205
1.sSMPABC038	0,1763146	2,355599	6,323097	2,689554	0,2601	1,298021	0,482615	0,09307	2,96551
1.sSMPABC039	0,1822836	2,0408	7,651068	2,29262	0,30442	1,044626	0,455647	0,0901	2,7303
1.sSMPABC040	0,1579524	2,038945	5,513658	2,30481	0,25317	1,07464	0,46626	0,05458	2,821546
1.sSMPABC047	0,1628327	2,041526	4,932118	2,308204	0,21968	1,077024	0,466607	0,07221	2,85279
1.sSMPABC048	0,1988152	2,276426	12,67752	2,549691	0,46247	1,148392	0,450405	0,11837	2,889246
1.sSMPABC049	0,1211	2,741536	2,646183	3,061641	0,15848	1,362948	0,445169	0,05542	9,45507
1.sSMPABC050	0,1636429	2,389467	6,423482	2,70986	0,28469	1,278198	0,471684	0,07742	3,022475
1.sSMPABC051	0,1945795	2,298359	11,19478	2,579658	0,41727	1,171401	0,454091	0,10788	3,077494
1.sSMPABC052	0,20003	2,06969	13,00845	2,343025	0,47166	1,098249	0,468731	0,1335	3,355805
1.sSMPABC053	0,1915995	2,026503	10,04746	2,293251	0,38033	1,073445	0,468089	0,10557	2,709103
1.sSMPABC054	0,203843	2,041436	15,04676	2,318224	0,53536	1,098501	0,473855	0,12114	2,82318
1.sSMPABC055	0,16646	2,282831	5,058053	2,561386	0,22038	1,16163	0,453516	0,13283	6,338929
1.sSMPABC056	0,17142	2,111772	8,201007	2,37621	0,34698	1,0894	0,458461	0,09492	3,94016
1.sSMPABC057	0,1152324	2,697819	2,401032	3,190443	0,15112	1,703144	0,533827	0,0472	3,220339
1.sSMPABC058	0,17018	2,291691	7,424377	2,581469	0,31641	1,188332	0,460332	0,105	6,380952
1.sSMPABC059	0,1921637	2,113425	10,28239	2,384018	0,38808	1,103167	0,462734	0,09714	4,097179
1.sSMPABC060	0,1983756	2,490594	12,49359	2,779933	0,45677	1,234897	0,444218	0,13095	9,209622
1.sSMPABC067	0,19438	2,068114	10,7845	2,344057	0,40239	1,103407	0,470725	0,10861	3,59083
1.sSMPABC068	0,18353	2,146788	7,885833	2,437873	0,31163	1,155216	0,473862	0,08892	4,588394
1.sSMPABC069	0,0957315	2,338549	1,675011	2,623139	0,1269	1,188295	0,453005	0,02829	6,504065

1.sSMPABC070	0,1661617	2,680676	6,699909	3,095347	0,29244	1,547627	0,499985	0,04575	6,95082
1.sSMPABC071	0,1702998	2,078699	8,001364	2,356165	0,34076	1,109291	0,470803	0,08472	3,706327
1.sSMPABC072	0,18079	2,345262	11,24222	2,755038	0,451	1,445676	0,524739	0,11521	5,173162
1.sSMPABC073	0,200311	2,087038	13,6418	2,37322	0,49393	1,129801	0,476062	0,13018	3,825472
1.sSMPABC074	0,19527	2,079172	11,49809	2,363525	0,42706	1,123964	0,475545	0,11906	3,830002
1.sSMPABC075	0,1756792	2,140265	9,007677	2,422502	0,37187	1,134805	0,468443	0,10145	4,751109
1.sSMPABC076	0,1465238	2,113494	3,345972	2,406894	0,16562	1,151644	0,478477	0,09273	4,076351
1.sSMPABC078	0,1795857	2,72031	9,899064	3,169676	0,39978	1,626888	0,513266	0,03962	9,187279
1.sSMPABC079	0,2008451	2,181022	13,73909	2,482269	0,49613	1,185245	0,477484	0,12678	5,158542
1.sSMPABC080	0,1926683	2,14855	10,60054	2,466512	0,39904	1,211369	0,491126	0,07808	4,354508

*Concordance calculated as (^{206}Pb-^{238}U age/^{207}Pb-^{206}Pb age)*100

	Dates (data corrected for common-Pb)												
SPOT ID	**^{207}Pb/^{206}Pb**	**2*s***	**2s_{sys}**	**^{206}Pb/^{238}U**	**2*s***	**2s_{sys}**	**^{207}Pb/^{235}U**	**2*s***	**2s_{sys}**	**^{208}Pb/^{232}Th**	**2*s***	**2s_{sys}**	**% conc***
		abs	abs		abs	abs		abs	abs		abs	abs	
1.sSMPABC007	2810,4995	33,86452	37,63105	2569,118	29,73147	43,66464	2706,364	23,90306	29,57458	0	83,14	-2257,35	109,3955
1.sSMPABC008	2230,0334	38,91414	42,61965	1020,316	14,77236	20,49736	1484,756	21,58879	25,9222	0	56,92	-1006,18	218,5631
1.sSMPABC009	2648,0091	37,72386	41,23853	1584,61	21,39886	30,10466	2098,099	24,5503	29,49658	0	76,64	-1418,43	167,1079
1.sSMPABC010	2665,5092	34,20118	38,03063	1685,504	21,28673	30,86932	2169,787	22,76006	28,1075	0	30,26	-877,357	158,1431
1.sSMPABC011	2759,437	33,47492	37,31457	2075,77	25,60615	37,04266	2440,051	23,31671	28,86591	0	44,72	-1463,56	132,9356
1.sSMPABC012	1200,0452	43,28335	47,59428	616,3425	9,123495	12,70655	757,4028	14,45193	17,43983	0	18,54	-578,657	194,7043
1.sSMPABC013	3947,2546	49,63817	51,87249	3011,197	54,41732	65,47168	3600,768	40,26314	44,26262	0	287,76	-10092,4	131,0859
1.sSMPABC014	2835,6889	34,22841	37,9428	2698,29	32,84242	46,7611	2777,575	24,71699	30,29278	0	92,42	-2418,57	105,0921
1.sSMPABC015	2794,0083	46,19258	49,02908	2273,541	34,47112	44,99837	2559,201	31,71613	36,1291	0	168,46	-1598,62	122,8924
1.sSMPABC016	2675,9546	33,92991	37,77964	1760,017	22,01114	31,99342	2219,744	22,76673	28,17547	0	45,08	-1292,83	152,0414
1.sSMPABC017	2056,6311	37,63587	41,59872	845,8498	11,96252	16,89612	1258,857	19,01966	23,17678	0	52,28	-1399,64	243,1438
1.sSMPABC018	2625,6258	35,99268	39,67605	1538,111	20,8135	29,30047	2056,536	23,57779	28,62966	0	54,38	-1109,91	170,7046
1.sSMPABC019	2454,3993	36,22269	40,0044	1250,89	17,78635	24,69287	1770,938	22,46073	27,24682	0	52,82	-1267,89	196,2123
1.sSMPABC020	2711,993	34,35878	38,14091	1908,234	25,29239	35,49888	2323,779	23,85246	29,18462	0	46,04	-1248,18	142,1206
1.sSMPABC027	2840,3978	33,82939	37,58023	2690,735	32,84486	46,70933	2777,061	24,54879	30,1542	0	90	-2334,77	105,5622
1.sSMPABC028	2800,9758	35,50961	39,124	2280,695	30,5268	42,09775	2566,662	25,43117	30,72408	0	100,26	-1890,06	122,8124
1.sSMPABC029	2464,5449	231,1745	231,7958	1204,104	61,98562	64,17669	1740,985	131,2936	132,3364	0	969,58	24,72284	204,6788
1.sSMPABC030	2589,3213	34,21228	38,09399	1510,274	19,77411	28,3317	2019,354	22,33647	27,5543	0	50	-1268,01	171,4471

1.sSMPABC031	2781,3483	39,02363	42,35047	2242,568	29,9865	41,42567	2536,824	26,985	32,0077	0	86,08	-1519,89	124,0251
1.sSMPABC032	2670,518	34,44271	38,24455	1768,646	23,2644	32,94025	2221,823	23,39613	28,69295	0	62,58	-1489,85	150,9922
1.sSMPABC033	1816,6116	45,88839	49,37673	775,9886	12,58477	16,71793	1101,4	20,75931	24,15598	0	80,44	-876,749	234,1029
1.sSMPABC034	1309,0229	42,25505	46,53224	646,0941	9,641791	13,36183	814,9573	15,1432	18,28759	0	27,9	-597,945	202,6056
1.sSMPABC035	2607,6061	37,35446	40,92723	2041,529	26,51948	37,41546	2337,844	25,02469	30,17224	0	104,98	-1856,65	127,7281
1.sSMPABC036	2698,4942	41,74024	44,91261	1857,933	26,21998	35,77896	2288,281	27,66165	32,35954	0	166,7	-1724,9	145,2417
1.sSMPABC037	2771,2256	33,97949	37,76011	2120,787	27,26319	38,55549	2469,943	24	29,45361	0	82,02	-1885,3	130,6697
1.sSMPABC038	888,65273	50,1789	54,29778	584,3926	9,718688	12,84996	650,8489	14,45349	16,9141	610	32,96	33,51825	152,0643
1.sSMPABC039	2344,3527	36,95078	40,74585	1060,306	14,94083	20,97595	1570,099	21,36141	25,92864	0	71,2	-1305,56	221,1015
1.sSMPABC040	2424,0359	109,3919	110,7097	1184,071	30,18736	34,31441	1705,895	59,75707	61,76354	0	383,32	-488,738	204,7205
1.sSMPABC047	1389,0009	42,30548	46,48814	647,3187	10,04261	13,66542	839,5277	15,77857	18,929	0	28,12	-569,932	214,5776
1.sSMPABC048	1425,6199	49,91353	53,47002	673,0383	12,40019	15,6939	874,3186	19,25513	22,05599	0	25,26	-436,468	211,8186
1.sSMPABC049	2744,9963	34,46473	38,2145	2032,317	27,05582	37,7277	2409,166	24,28482	29,62958	0	78,46	-1553,6	135,0673
1.sSMPABC050	1200,693	45,85546	49,94413	606,0231	10,08955	13,32489	748,1694	15,50652	18,28408	0	26,68	-470,226	198,1266
1.sSMPABC051	2434,8249	42,36129	45,64968	1237,177	21,15514	27,11656	1751,134	26,42257	30,58334	0	46,94	-810,438	196,8049
1.sSMPABC052	2587,4889	35,00897	38,81237	1470,935	20,49429	28,51061	1992,54	23,05206	28,10254	0	76,46	-1460,89	175,9077
1.sSMPABC053	2048,3056	38,53543	42,42136	842,0042	12,96209	17,58438	1251,957	19,83015	23,82989	0	61,66	-1023,9	243,2655
1.sSMPABC054	2729,6263	35,90158	39,52505	1933,5	27,42906	37,24609	2347,452	25,26187	30,38057	0	92,04	-1582,38	141,1754
1.sSMPABC055	2093,1723	100,6408	102,1762	889,6301	24,96402	27,93011	1313,316	48,77975	50,69809	0	257,62	-600,841	235,2857
1.sSMPABC056	2772,3335	34,93048	38,6174	2253,712	30,18161	41,64927	2537,171	25,03757	30,37145	0	103,14	-1880,72	123,0119
1.sSMPABC057	2694,1238	35,7877	39,44465	1800,757	25,44534	34,76786	2253,322	24,76105	29,86075	0	96,56	-1546,58	149,6106
1.sSMPABC058	2746,9574	34,55939	38,29861	2011,401	27,32164	37,75955	2399,172	24,46952	29,77246	0	110,54	-1987,18	136,5694
1.sSMPABC059	1010,1463	46,45106	50,71674	592,2773	9,493633	12,75255	686,7929	14,26812	16,93651	0	47,14	-803,852	170,5529
1.sSMPABC060	2689,7631	36,15554	39,78152	1813,566	26,30209	35,499	2258,291	25,18049	30,21758	0	102,58	-1588,29	148,3135
1.sSMPABC067	2543,0889	35,88661	39,63666	1390,439	20,43054	27,79638	1915,108	23,45271	28,31687	0	79,64	-1251,3	182,8983
1.sSMPABC068	1566,0003	48,16025	51,70619	698,5978	10,96686	14,81736	942,4325	18,94288	22,04007	0	104,88	-773,326	224,1634
1.sSMPABC069	2752,0741	44,7923	47,7339	2068,852	32,29463	41,90844	2432,309	30,70999	35,14461	0	218,7	-1616,88	133,0242
1.sSMPABC070	587,55441	51,98851	56,36789	552,5794	9,111319	12,10364	559,4609	12,76557	14,98811	489,8	34,26	34,67662	106,3294
1.sSMPABC071	2358,8636	37,13656	40,90351	1133,12	17,26665	23,30498	1635,143	22,47284	26,99421	0	78,74	-1184,98	208,1743
1.sSMPABC072	2784,0814	39,19127	42,50341	2262,34	32,43055	43,3719	2548,077	27,72599	32,64843	0	166,26	-1610,74	123,062
1.sSMPABC073	2812,8052	36,20135	39,74564	2519,377	35,50981	47,46109	2685,359	26,67718	31,86132	0	138,74	-2005,79	111,6469
1.sSMPABC074	936,30333	52,81454	56,68653	587,1004	10,32386	13,33741	664,3952	15,54638	17,92457	472,1	43,66	44,1738	159,4793
1.sSMPABC075	2578,8027	37,02613	40,64702	1503,692	22,95266	30,58702	2009,547	24,78998	29,57897	0	88,76	-1208,86	171,4981
1.sSMPABC076	1519,5196	48,91246	52,44927	686,0915	11,63107	15,20641	915,7867	19,17869	22,14521	0	70,24	-589,688	221,4748

1.sSMPABC077	2660,5693	36,20477	39,84535	1760,949	26,13813	34,97458	2211,92	25,19554	30,17783	0	71,4	-1003,66	151,0872
1.sSMPABC078	2705,1354	35,51496	39,19014	1895,563	27,69508	37,15774	2312,974	25,20574	30,29781	0	92,3	-1343,61	142,7088
1.sSMPABC079	2679,4029	48,07664	50,86498	1787,873	29,92163	38,08132	2237,833	31,9203	36,04366	0	181,84	-1147,7	149,8654
1.sSMPABC080	2744,3941	55,30794	57,71939	2028,695	36,74145	45,17247	2406,914	37,19876	40,95051	0	245,9	-1334,54	135,2788
1.sSMPABC007	2262,5332	35,44686	39,45246	975,3114	9,142565	16,40559	1461,524	17,89089	22,84958	0	25,46	-1156,17	231,9806
1.sSMPABC008	1688,2928	40,44749	44,48724	709,9251	8,0012	12,89629	994,0679	15,9364	19,7164	0	38,86	-1451,62	237,8128
1.sSMPABC009	1844,8912	37,10145	41,31045	764,7768	7,351208	13,10583	1101,509	15,50942	19,80033	0	23,68	-1156,19	241,2326
1.sSMPABC010	2836,709	33,22273	37,03746	2614,484	22,90605	39,69364	2741,66	22,00747	28,07896	0	47,4	-2195,77	108,4998
1.sSMPABC011	2610,3235	33,7881	37,69844	1500,577	13,29369	24,15019	2024,068	20,00474	25,6924	0	44,5	-2054,88	173,9547
1.sSMPABC012	2523,7706	34,07038	38,01432	1728,639	15,79581	27,77344	2119,604	20,48593	26,21439	0	27,66	-1165,48	145,9975
1.sSMPABC013	2690,6576	34,49559	38,27853	1766,882	16,21718	28,37577	2231,777	21,30562	27,01403	0	44,4	-1545,85	152,2828
1.sSMPABC014	1892,4705	37,05716	41,22507	780,9019	7,37177	13,29605	1134,387	15,76962	20,1303	0	19,1	-800,225	242,3442
1.sSMPABC015	2348,9083	35,60813	39,52876	1015,526	9,796839	17,20369	1535,064	18,60354	23,6052	0	32,54	-1203,6	231,2996
1.sSMPABC016	2548,4689	39,59886	43,0231	1337,591	16,14552	24,32565	1880,944	23,51092	28,31106	0	50,64	-2302,32	190,5268
1.sSMPABC017	2534,1278	39,47672	42,92002	1810,111	19,06388	30,48207	2172,122	23,96877	29,10531	0	33,92	-1476,39	139,9985
1.sSMPABC018	1965,2186	41,12029	44,85063	995,9474	11,72461	18,17825	1349,709	19,84275	24,12137	0	18,64	-366,348	197,3215
1.sSMPABC019	2148,8223	38,10969	41,95115	1122,513	12,36078	19,83346	1529,434	19,86562	24,6057	0	26,92	-632,16	191,4297
1.sSMPABC020	2537,6606	41,63802	44,91374	1710,174	19,36217	29,78879	2116,084	25,1725	30,04295	0	76,86	-1738,4	148,3861
1.sSMPABC027	2813,8054	33,25823	37,08422	2407,245	20,53496	36,59501	2634,366	21,62233	27,68736	0	53,56	-2319,97	116,889
1.sSMPABC028	2577,6858	34,56478	38,41915	1918,055	17,92976	30,76684	2255,625	21,3491	27,07834	0	52,62	-1828,56	134,3906
1.sSMPABC029	2658,419	33,47353	37,38257	1670	15,28461	26,92297	2156,567	20,50286	26,27964	0	29,52	-1372,27	159,1867
1.sSMPABC030	2399,7559	34,49785	38,49154	1107,546	10,8276	18,75908	1634,435	18,77887	23,98198	0	29,12	-1244,88	216,6732
1.sSMPABC031	2739,9093	33,46477	37,31859	1923,128	17,72376	30,69327	2347,474	21,2239	27,08787	0	42,52	-1874,42	142,4715
1.sSMPABC032	2516,0541	34,10237	38,04871	1663,679	15,28502	26,86263	2076,9	20,36576	26,05739	0	31,28	-1379,95	151,2344
1.sSMPABC033	1992,2312	37,76405	41,77091	794,8216	7,763663	13,6698	1185,932	16,67382	21,03355	0	33,24	-826,824	250,6514
1.sSMPABC034	2647,609	33,84572	37,72375	1644,377	15,10262	26,57335	2135,095	20,61446	26,3377	0	36,06	-1424,26	161,0099
1.sSMPABC035	2181,4748	37,26804	41,16124	943,2585	9,69721	16,38441	1398,062	18,45699	23,12531	0	40,7	-1078,42	231,2701
1.sSMPABC036	2672,0741	33,45436	37,35584	1677,21	15,32469	27,01485	2168,318	20,54201	26,32659	0	33,02	-1445,43	159,3166
1.sSMPABC037	2731,2868	33,31981	37,19451	1963,376	17,80468	31,10758	2364,643	21,11655	27,02255	0	39,68	-1721,85	139,1118
1.sSMPABC038	2618,5057	39,19466	42,60655	1490,353	17,29488	26,47623	2021,661	23,85819	28,81411	0	50,92	-1744,74	175,697
1.sSMPABC039	2673,7576	33,77864	37,64536	1713,189	15,73493	27,59198	2190,875	20,7996	26,56003	0	45,54	-1695,04	156,069
1.sSMPABC040	2433,859	34,55067	38,5126	1454,803	14,01056	24,10445	1902,727	20,00558	25,49099	0	29,7	-1042,78	167,2982
1.sSMPABC047	2485,289	34,41536	38,35231	1280,184	12,51727	21,50196	1807,769	19,67564	25,05525	0	38,66	-1368,03	194,1353
1.sSMPABC048	2816,4947	37,1858	40,64212	2450,455	23,45281	38,66967	2655,992	24,2844	29,84748	0	61,9	-2195,65	114,9376

1.sSMPABC049	1972,4946	48,85648	52,0299	948,3243	12,03064	17,91558	1313,582	22,81581	26,54277	0	100,36	-989,056	207,9979
1.sSMPABC050	2493,6519	40,24718	43,65593	1614,939	18,28546	28,24381	2035,486	24,0925	29,02915	0	44	-1460,9	154,4115
1.sSMPABC051	2781,2611	37,66421	41,10129	2248,074	22,27092	36,26384	2539,481	24,33478	29,79211	0	60,48	-2006,9	123,7175
1.sSMPABC052	2826,4412	33,77846	37,54333	2490,837	22,73034	38,56941	2680,267	22,33625	28,29135	0	79,88	-2449,24	113,4736
1.sSMPABC053	2755,9398	33,28626	37,14777	2077,825	19,09496	32,88552	2439,153	21,40149	27,32796	0	52,38	-1972,68	132,6358
1.sSMPABC054	2857,2163	33,22575	37,02694	2763,996	24,73931	41,97653	2818,203	22,31539	28,37962	0	61,58	-2245,64	103,3727
1.sSMPABC055	2522,3606	38,3415	41,88612	1283,883	13,53689	22,14845	1829,099	21,95033	26,92991	0	150,08	-2368,17	196,4635
1.sSMPABC056	2571,5559	35,29756	39,08402	1920,161	18,11586	30,8951	2253,453	21,73636	27,38461	0	69,16	-1761,5	133,9239
1.sSMPABC057	1883,5212	48,58669	51,84245	907,2386	14,42969	19,25051	1242,909	23,13159	26,63068	0	29,26	-901,433	207,6104
1.sSMPABC058	2559,4139	38,35027	41,8695	1772,173	18,43894	29,75266	2163,913	23,3672	28,59777	0	122,46	-1893,65	144,4224
1.sSMPABC059	2760,7689	34,6986	38,41527	2113,918	19,91301	33,68538	2460,52	22,30456	28,06835	0	73,24	-1798,18	130,5996
1.sSMPABC060	2812,8787	40,69753	43,88011	2425,281	25,00909	39,43435	2642,245	26,47733	31,66106	0	215,46	-2269,29	115,9816
1.sSMPABC067	2779,5799	33,89628	37,67976	2180,035	20,44188	34,57611	2504,732	22,01847	27,88304	0	70,92	-2010,05	127,5016
1.sSMPABC068	2685,0305	35,49522	39,18548	1748,723	17,71765	29,0959	2218,062	22,20912	27,7211	0	75,86	-1644,13	153,5424
1.sSMPABC069	1542,5081	43,96572	47,84666	770,1563	8,631961	13,92211	999,0897	16,81646	20,45784	0	36,2	-527,236	200,2851
1.sSMPABC070	2519,3474	45,03698	48,09237	1653,711	22,61374	31,54168	2072,609	27,72285	32,17233	0	61,44	-841,984	152,3451
1.sSMPABC071	2560,5914	34,78196	38,62681	1890,325	18,20011	30,67438	2231,178	21,49213	27,16186	0	58,48	-1582,99	135,4578
1.sSMPABC072	2660,1307	38,86806	42,2802	2399,697	29,03193	41,91672	2543,424	26,01969	31,19753	0	107,94	-2093,66	110,8528
1.sSMPABC073	2828,7323	34,05457	37,79049	2587,657	24,12501	40,19515	2725,166	22,70343	28,61994	0	89,12	-2381,22	109,3164
1.sSMPABC074	2787,0647	34,05429	37,81709	2292,451	21,71944	36,30317	2564,427	22,32221	28,18101	0	82,26	-2188,33	121,5758
1.sSMPABC075	2612,4973	35,6323	39,35835	2038,194	19,86033	32,98901	2338,785	22,38473	28,00478	0	88,4	-1862,45	128,1771
1.sSMPABC076	2305,7475	36,29303	40,18025	987,9332	10,55718	17,36465	1491,851	18,9923	23,80646	0	70	-1720,27	233,391
1.sSMPABC078	2649,0483	45,13117	48,10712	2168,026	30,02257	40,9044	2425,422	29,66043	34,2193	0	70,9	-714,036	122,1871
1.sSMPABC079	2833,0763	35,57426	39,16281	2597,143	25,38676	41,04299	2731,891	23,77058	29,4859	0	117,26	-2292,74	109,0843
1.sSMPABC080	2765,0737	35,26136	38,92158	2164,617	22,31168	35,58737	2488,756	23,14748	28,77544	0	63,7	-1454,07	127,7396

BG-19-28: Quartzite - Serra Negra Formation

							Ratios (data not corrected for common-Pb)							
SPOT ID	**f206c**	**^{207}Pb**	**^{206}Pb**	**U (µg g^{-1}) [a]**	**Th/U**	**^{206}Pb/^{204}Pb**	**^{207}Pb/^{206}Pb**	**1*s***	**^{206}Pb/^{238}U**	**1*s***	**^{207}Pb/^{235}U**	**1*s***	**^{208}Pb/^{232}Th**	**1*s***
		CPS	CPS											
1.sSMPABC087	0,282206	467576,5	36013,69	927,9181	0,1855	14,94344	0,07724	0,00078	0,095639336	0,00058	1,018545	0,000972	0,03091	0,00034
1.sSMPABC088	0,118214	203149,2	26185,41	115,7613	0,449169	13,380381	0,12905	0,00171	0,33362514	0,00257	5,93633	0,003087	0,06976	0,00269

1.sSMPABC089	0,345431	282378,4	23452,13	561,7933	0,316159	9,6273095	0,08334	0,00104	0,095339526	0,00061	1,095539	0,001206	0,03377	0,00119
1.sSMPABC090	0,563256	323259,8	24660,8	675,7601	0,165884	9,4922248	0,07672	0,00081	0,090537156	0,00054	0,957716	0,000973	0,03961	0,00067
1.sSMPABC091	0,138695	368473,1	53100,6	171,7657	0,454315	25,249927	0,14431	0,00147	0,407743693	0,00249	8,113065	0,002892	0,09673	0,00123
1.sSMPABC092	0,577787	147661,2	10714,05	322,0122	0,057109	4,8833399	0,07298	0,00077	0,086775708	0,00057	0,873179	0,000958	0,05518	0,00074
1.sSMPABC093	0,327533	351424	89169	175,9023	0,231842	38,204369	0,25457	0,0028	0,379014523	0,00281	13,30345	0,003967	0,12852	0,003
1.sSMPABC094	0,674983	54605,58	7082,81	31,29507	0,408021	3,4925098	0,13059	0,0015	0,329868313	0,00251	5,939526	0,002924	0,07567	0,00129
1.sSMPABC095	0,149858	206550,5	26246,23	120,8434	0,480062	12,840621	0,12726	0,00133	0,324842468	0,00197	5,699884	0,002377	0,07045	0,00113
1.sSMPABC096	0,208629	231668,3	27941,02	210,6775	0,103628	13,472044	0,12086	0,0014	0,20886334	0,0014	3,480536	0,00198	0,09295	0,00253
1.sSMPABC097	0,509102	225718,1	16640,56	468,4579	0,141307	7,1572314	0,0741	0,0008	0,091243103	0,00055	0,932222	0,000971	0,04774	0,00089
1.sSMPABC098	0,16173	240122,4	17272,83	505,9661	0,071708	8,3808029	0,07205	0,00084	0,090183909	0,00057	0,89591	0,001015	0,06289	0,00177
1.sSMPABC099	0,234336	365279	57105,08	206,7741	0,718354	24,217593	0,1567	0,00163	0,335452067	0,00201	7,247709	0,002588	0,08797	0,00151
1.sSMPABC100	0,248049	283857,1	35852,83	208,3216	0,294027	16,919695	0,12662	0,00132	0,258706686	0,00156	4,516596	0,002044	0,07856	0,00131
1.sSMPABC107	0,424567	95536,62	12351,81	52,25453	0,325831	6,3701955	0,12984	0,0014	0,346512551	0,00245	6,203385	0,002822	0,09139	0,00149
1.sSMPABC108	0,320943	195644,9	25553,08	101,6106	0,500907	12,581525	0,13103	0,00132	0,365303806	0,00232	6,599731	0,002669	0,07995	0,00087
1.sSMPABC109	4,902164	316170,2	105048,4	392,4518	0,045264	13,533681	0,34938	0,00413	0,145823022	0,00119	7,024662	0,004298	1,57374	0,05133
1.sSMPABC110	0,45992	405737,1	30863,82	894,2375	0,506751	12,380193	0,07642	0,00078	0,085962813	0,00058	0,905772	0,000972	0,01555	0,0002
1.sSMPABC111	0,591811	223958,4	17572,42	472,5869	0,015062	8,1466957	0,07893	0,00088	0,089666186	0,00062	0,975825	0,001076	0,2613	0,00642
1.sSMPABC112	0,38946	322371,5	23614,87	660,9812	0,189065	11,060829	0,07354	0,0009	0,092468464	0,00068	0,937602	0,001128	0,03667	0,00118
1.sSMPABC113	0,419609	292709,2	21645,38	614,6634	0,287627	9,3784138	0,07426	0,00099	0,090259667	0,0007	0,924166	0,001212	0,02779	0,00105
1.sSMPABC114	0,167581	252197,6	20791,58	490,7205	0,038897	10,908489	0,08258	0,00091	0,097656072	0,00059	1,111925	0,001085	0,07304	0,00185
1.sSMPABC115	0,187874	186089,6	20117,5	202,0625	0,374918	11,096249	0,10831	0,00127	0,174960676	0,00122	2,612825	0,001761	0,04678	0,00126
1.sSMPABC116	0,436141	198483,7	22483	188,3655	0,224666	10,384757	0,11377	0,00381	0,199685275	0,00292	3,132385	0,0048	0,08113	0,02119
1.sSMPABC117	1,508509	41115,23	4821,74	33,45892	1,060286	2,4488266	0,11907	0,00175	0,230361749	0,00174	3,781934	0,002468	0,07052	0,00416
1.sSMPABC118	0,154433	363113,8	25538,23	786,6333	0,171131	12,878585	0,07044	0,00075	0,087724315	0,00055	0,852002	0,00093	0,02782	0,00052
1.sSMPABC119	0,152187	220095	13343,83	509,1393	0,261323	7,0415975	0,06072	0,00063	0,08215478	0,00051	0,687806	0,000811	0,02089	0,00029
1.sSMPABC120	0,224953	353364,9	62852,65	132,8895	0,548936	30,764882	0,17827	0,00216	0,504981469	0,00394	12,41238	0,004493	0,12098	0,00446
1.sSMPABC127	0,107988	226330,4	25084,24	239,2603	0,333522	13,951191	0,11095	0,00119	0,179855568	0,00119	2,751392	0,001683	0,06125	0,00123
1.sSMPABC128	0,24485	289174	20270,51	617,2504	0,089674	9,8687954	0,07027	0,00074	0,088951667	0,00055	0,861837	0,000922	0,04756	0,00081
1.sSMPABC129	0,176998	341957,3	33319,37	452,3684	0,361525	17,435567	0,09761	0,00103	0,143625336	0,00098	1,932977	0,001422	0,04198	0,0008
1.sSMPABC130	0,063134	490502,7	82656,34	242,3747	0,598511	43,252927	0,16862	0,0018	0,384946815	0,00256	8,949754	0,003129	0,09409	0,00219
1.sSMPABC131	0,364361	248484,4	29855,55	188,6764	0,322328	14,592156	0,12059	0,00131	0,249756657	0,00185	4,152691	0,002267	0,02879	0,00062
1.sSMPABC132-12.72197	82,32199	808,9146	-0,28743	0,043692	0,441236	-0,0001455	-0,00201	92,44375	0,6229589	0,01461	-0,17265	92,44375	0	0,59544
1.sSMPABC133	0,101369	595657,8	158159,4	170,8563	0,333887	80,36555	0,26579	0,00289	0,662897349	0,00465	24,29328	0,005475	0,14992	0,0042
1.sSMPABC134	0,65833	191181,6	20570,56	222,4794	0,228743	9,5058041	0,10831	0,00148	0,162483235	0,00116	2,426489	0,00188	0,07141	0,00325

1.sSMPABC135	0,254137	213279	26649,56	136,4618	0,507845	14,1753	0,12527	0,00134	0,296723993	0,002	5,125084	0,002407	0,06066	0,00126
1.sSMPABC136	0,299152	305861	22648,34	640,5847	0,021522	11,091253	0,07427	0,00081	0,090608131	0,00062	0,927859	0,00102	0,16933	0,0043
1.sSMPABC137	0,271348	227882,4	36466,78	132,6347	0,565723	18,933947	0,16046	0,00178	0,326132637	0,00218	7,215432	0,002814	0,09668	0,00251
1.sSMPABC138	0,204271	201616,8	26522,84	99,7451	0,381918	14,477534	0,13182	0,00137	0,383944107	0,0025	6,978315	0,002851	0,09839	0,0017
1.sSMPABC139	0,571597	161322,1	13298,76	323,2487	0,077664	6,4619845	0,08291	0,001	0,09444704	0,0007	1,079684	0,001221	0,08198	0,00266
1.sSMPABC140	0,164521	285939,4	37973,09	140,5012	0,307877	20,360904	0,13302	0,00166	0,386722713	0,00302	7,092803	0,003446	0,0996	0,00403
1.sSMPABC147	1	51,98773	261,6385	0,009368	0,544761	0,1593413	2,59048	10,45439	2,052182761	2,73553	732,9892	10,80636	0,03797	0
1.sSMPABC148	0,243138	266761,6	33599,43	175,5318	0,410601	18,10314	0,12626	0,00154	0,2885567	0,0022	5,023405	0,002685	0,08589	0,00342
1.sSMPABC149	0,058363	405518,7	35275,75	743,9497	0,226126	20,860878	0,08704	0,00129	0,103689449	0,00085	1,244385	0,001545	0,04113	0,00255
1.sSMPABC150	0,110071	316465,3	41894,99	156,7674	0,345936	24,174833	0,13253	0,00157	0,383807075	0,00296	7,013397	0,003351	0,06476	0,00211
1.sSMPABC151	0,157682	285930,9	36512,89	169,6052	0,258258	20,972368	0,1279	0,00133	0,320374029	0,00204	5,649749	0,002435	0,098	0,00189
1.sSMPABC152	0,45537	105086,5	13251,74	61,91916	0,239141	7,7495564	0,12668	0,00135	0,321559017	0,00213	5,616555	0,002522	0,09755	0,00202
1.sSMPABC153	0,267083	270843,4	36936,21	188,7563	0,334279	20,350528	0,13674	0,00154	0,272380569	0,00181	5,135385	0,002376	0,09844	0,00303
1.sSMPABC154	0,248968	163684,5	20540,25	113,2211	0,47697	12,262834	0,1258	0,00132	0,274484914	0,00177	4,761024	0,002208	0,06831	0,00135
1.sSMPABC155	0,345011	326040,9	27910,28	651,5886	0,124422	14,124638	0,0859	0,00091	0,094911412	0,0006	1,124121	0,00109	0,05204	0,00113
1.sSMPABC156	0,884973	54197,63	6711,527	36,51079	0,63935	3,945636	0,12494	0,00136	0,280039596	0,00193	4,824166	0,002361	0,08894	0,00167
1.sSMPABC157	0,268564	283800,2	33825,87	221,637	0,345728	17,418059	0,11951	0,0022	0,243065456	0,00253	4,005242	0,003353	0,01851	0,00112
1.sSMPABC158	0,637222	126545,4	8113,938	300,4008	0,039696	4,7729045	0,06453	0,00104	0,079669076	0,0007	0,708847	0,001254	0,04759	0,00278
1.sSMPABC159	0,12967	447796,7	141928,5	124,7903	0,766702	81,756031	0,31736	0,00331	0,682114356	0,00441	29,84768	0,005514	0,16949	0,00366
1.sSMPABC160	0,103278	274336,3	34911,61	173,816	0,404907	21,724712	0,12739	0,00136	0,300099742	0,00199	5,271112	0,00241	0,08023	0,00192
1.sSMPABC008	0,03107	286967,2	39075,65	237,8198	0,246398	322,93928	0,13621	0,00141	0,39353769	0,0025	7,390888	0,00287	0,10886	0,00177
1.sSMPABC011	0	279247	38008,31	228,858	0,347275	230,35339	0,13611	0,00189	0,39807	0,00345	7,470519	0,003934	0,0445	0,00165
1.sSMPABC012	0	51994	6996,313	42,75043	0,483144	76,046877	0,13456	0,00188	0,39678	0,00371	7,361512	0,004159	0,05021	0,00142
1.sSMPABC013	0,133212	62659,47	8434,619	51,41482	0,346199	210,86548	0,13479	0,0016	0,397060361	0,00294	7,379305	0,003347	0,10788	0,00283
1.sSMPABC014	0	201901	23602,23	193,2071	0,086884	23602,227	0,1169	0,00121	0,34092	0,00221	5,495007	0,00252	0,09499	0,00159
1.sSMPABC015	0	63759	9002,133	51,37885	0,457984	9002,1332	0,14119	0,00188	0,40485	0,00334	7,881327	0,003833	0,10962	0,00399
1.sSMPABC016	1	33155,68	4526,547	27,01947	0,442882	96,309511	0,13619	0,00166	0,401311822	0,00329	7,535784	0,003685	0,07394	0,00155
1.sSMPABC017	1,264761	18519,22	2376,136	21,12412	0,644508	16,972398	0,12995	0,00182	0,282392658	0,00259	5,059772	0,003166	0,08005	0,00182
1.sSMPABC018	0,126228	106999,1	13368,69	145,0063	0,203391	180,65792	0,1251	0,0014	0,240426132	0,0017	4,147059	0,002202	0,09343	0,00221
1.sSMPABC027	0	70685	9589,834	61,99163	0,268488	737,67953	0,13567	0,00231	0,37199	0,00311	6,958512	0,003874	0,11532	0,00951
1.sSMPABC030	1	26442,66	3640,491	21,33039	0,512656	84,662573	0,13746	0,00218	0,405062342	0,0042	7,67714	0,004732	0,11152	0,0047
1.sSMPABC031	0,136141	173949,8	14916,74	550,9112	0,101326	91,513714	0,08587	0,00093	0,102869761	0,00069	1,217953	0,001158	0,0511	0,00117
1.sSMPABC032	0,014267	82932,83	10436,44	110,1943	0,390164	267,60095	0,12586	0,00142	0,24549497	0,00171	4,260216	0,002223	0,07175	0,00183
1.sSMPABC034	0	162673	21910,43	133,4132	0,517497	2191,0426	0,13469	0,00142	0,39779	0,00269	7,387381	0,003042	0,10267	0,00211

1.sSMPABC035	0,062831	60769,18	8264,882	49,00104	0,325435	118,06974	0,13609	0,00199	0,404335791	0,00362	7,586993	0,004131	0,10826	0,00531
1.sSMPABC036	0	59420	8063,294	47,89892	0,506719	8063,294	0,1357	0,00159	0,40471	0,00317	7,572252	0,003546	0,08349	0,00205
1.sSMPABC037	0	60929	8063,344	58,63214	0,642514	8063,3439	0,13234	0,00166	0,33902	0,00262	6,186111	0,003102	0,0756	0,00257
1.sSMPABC038	0,338186	93965,78	12251,03	118,1006	0,321983	59,471026	0,13082	0,00137	0,25869217	0,00179	4,66615	0,002254	0,05891	0,00102
1.sSMPABC039	0,177238	47280,8	6289,472	44,64381	0,493726	89,849603	0,13326	0,00164	0,344897627	0,00252	6,337111	0,003007	0,07863	0,00318
1.sSMPABC040	0,046176	93430,14	12163,66	125,7504	0,463973	253,40952	0,13025	0,00151	0,242278073	0,00173	4,35104	0,002296	0,08023	0,00234
1.sSMPABC047	1	27963,41	3753,084	25,87509	0,230809	65,84358	0,13401	0,00175	0,353106999	0,00308	6,524464	0,003542	0,08382	0,00261
1.sSMPABC048	1	23903,03	3265,218	21,17099	0,385075	56,296863	0,13658	0,00269	0,368401107	0,0046	6,937601	0,005329	0,12191	0,00774
1.sSMPABC049	0,040076	30693,3	4213,422	24,36049	0,305562	156,05266	0,13733	0,00161	0,410885266	0,00325	7,780137	0,003627	0,0941	0,00243
1.sSMPABC050	0	81325	10770,68	77,90538	0,199988	10770,683	0,13244	0,00269	0,34056	0,0039	6,218907	0,004738	0,06981	0,00598
1.sSMPABC051	0,288637	127968,4	14294,92	271,023	0,329011	98,585627	0,11203	0,00147	0,153595383	0,00118	2,372541	0,001885	0,0464	0,00207
1.sSMPABC056	0	37337	5014,732	32,77762	0,318128	5014,7325	0,13431	0,00164	0,37162	0,00303	6,881905	0,003445	0,09898	0,00284
1.sSMPABC057	1	33819,4	4577,732	27,65915	0,354995	228,88662	0,13514	0,00178	0,399544023	0,00336	7,444745	0,003802	0,10098	0,00392
1.sSMPABC058	0	70707	9243,526	74,87242	0,279898	9243,5261	0,13073	0,00394	0,30809	0,00421	5,553338	0,005766	0,0966	0,016
1.sSMPABC059	1	142972,7	19013,88	138,2109	0,550112	279,61587	0,13298	0,00558	0,337504214	0,00626	6,188235	0,008386	0,10165	0,02306

	Ratios (data corrected for common-Pb)								
SPOT ID	**$^{207}Pb/^{206}Pb$**	**2*s* (%)**	**$^{207}Pb/^{235}U$**	**2*s* (%)**	**$^{206}Pb/^{238}U$**	**2*s* (%)**	**Rho**	**$^{208}Pb/^{232}Th$**	**2*s* (%)**
	Data for Wetherill plot								
1.sSMPABC087	0,077022	2,153882	1,018545	2,53935601	0,09591	1,345035	0,529675796	0,03091	2,199935
1.sSMPABC088	0,1288974	2,659605	5,93633	3,07351679	0,33402	1,540457	0,501203404	0,06976	7,712156
1.sSMPABC089	0,0830521	2,638984	1,095539	3,01859023	0,09567	1,465486	0,485486969	0,03377	7,047675
1.sSMPABC090	0,0762879	2,586489	0,957716	3,10285024	0,09105	1,713988	0,552391447	0,03961	3,382984
1.sSMPABC091	0,1441098	2,049171	8,113065	2,38564262	0,40831	1,221552	0,512043219	0,09673	2,543161
1.sSMPABC092	0,0725583	2,653512	0,873179	3,24038005	0,08728	1,859822	0,573951812	0,05518	2,682131
1.sSMPABC093	0,2537362	2,222065	13,30345	2,6742372	0,38026	1,487942	0,556398679	0,12852	4,668534
1.sSMPABC094	0,1297085	2,536258	5,939526	2,98037036	0,33211	1,565249	0,525185911	0,07567	3,409541
1.sSMPABC095	0,1270693	2,106592	5,699884	2,43165137	0,32533	1,214577	0,499486467	0,07045	3,207949
1.sSMPABC096	0,1206079	2,34721	3,480536	2,70902684	0,2093	1,352565	0,499280886	0,09295	5,443787
1.sSMPABC097	0,0737228	2,572485	0,932222	3,04777877	0,09171	1,634404	0,536260795	0,04774	3,72853
1.sSMPABC098	0,0719335	2,378386	0,89591	2,71619023	0,09033	1,311857	0,482976995	0,06289	5,628876
1.sSMPABC099	0,1563328	2,106735	7,247709	2,42634656	0,33624	1,203672	0,496084272	0,08797	3,432989
1.sSMPABC100	0,1263059	2,126747	4,516596	2,45089191	0,25935	1,21812	0,497011008	0,07856	3,335031
1.sSMPABC107	0,1292887	2,263092	6,203385	2,67653406	0,34799	1,429073	0,533926578	0,09139	3,260751

1.sSMPABC108	0,1306095	2,080181	6,599731	2,44148267	0,36648	1,278157	0,52351654	0,07995	2,17636
1.sSMPABC109	0,3322528	3,858508	7,024662	7,62747819	0,15334	6,579539	0,86261006	1,57374	6,523314
1.sSMPABC110	0,0760685	2,380742	0,905772	2,9337083	0,08636	1,714267	0,584334454	0,01555	2,572347
1.sSMPABC111	0,0784629	2,703165	0,975825	3,30437365	0,0902	1,900469	0,575137536	0,2613	4,913892
1.sSMPABC112	0,0732536	2,677418	0,937602	3,16527663	0,09283	1,688316	0,533386556	0,03667	6,435779
1.sSMPABC113	0,0739484	2,90812	0,924166	3,42054383	0,09064	1,800821	0,526472139	0,02779	7,556675
1.sSMPABC114	0,0824416	2,244745	1,111925	2,57126958	0,09782	1,254013	0,487701989	0,07304	5,065717
1.sSMPABC115	0,1081065	2,375104	2,612825	2,76128122	0,17529	1,408387	0,510048485	0,04678	5,386917
1.sSMPABC116	0,1132738	6,770995	3,132385	7,38338588	0,20056	2,944148	0,398753164	0,08113	52,23715
1.sSMPABC117	0,1172738	3,940236	3,781934	4,40490198	0,23389	1,969188	0,447044781	0,07052	11,79807
1.sSMPABC118	0,0703312	2,17751	0,852002	2,53626047	0,08786	1,30041	0,512727379	0,02782	3,738318
1.sSMPABC119	0,0606276	2,13804	0,687806	2,49896787	0,08228	1,293687	0,51768837	0,02089	2,776448
1.sSMPABC120	0,177869	2,44189	12,41238	2,89737805	0,50612	1,559479	0,538237877	0,12098	7,37312
1.sSMPABC127	0,1108302	2,156253	2,751392	2,53201838	0,18005	1,327287	0,524200983	0,06125	4,016327
1.sSMPABC128	0,0700979	2,223905	0,861837	2,60175249	0,08917	1,350319	0,519003509	0,04756	3,406224
1.sSMPABC129	0,0974372	2,14517	1,932977	2,55303798	0,14388	1,384286	0,542211353	0,04198	3,811339
1.sSMPABC130	0,1685135	2,13764	8,949754	2,51741764	0,38519	1,329618	0,528167548	0,09409	4,655117
1.sSMPABC131	0,1201506	2,263371	4,152691	2,71773229	0,25067	1,5044	0,553549622	0,02879	4,307051
1.sSMPABC132-12.72197	-0,0003553	-5,2E+07	-0,172646	52032933,5	3,52392	4,745192	9,11959E-08	0	#DIV/0!
1.sSMPABC133	0,2655206	2,178194	24,29328	2,5903079	0,66357	1,401843	0,541187785	0,14992	5,602988
1.sSMPABC134	0,107597	3,010893	2,426489	3,42424778	0,16356	1,63095	0,47629448	0,07141	9,102367
1.sSMPABC135	0,1249516	2,183063	5,125084	2,56962646	0,29748	1,35544	0,527485308	0,06066	4,154303
1.sSMPABC136	0,0740478	2,332213	0,927859	2,7810649	0,09088	1,51496	0,544741008	0,16933	5,07884
1.sSMPABC137	0,1600246	2,250359	7,215432	2,62091873	0,32702	1,34354	0,512621866	0,09668	5,192387
1.sSMPABC138	0,1315507	2,105872	6,978315	2,47688649	0,38473	1,303944	0,526444711	0,09839	3,455636
1.sSMPABC139	0,0824361	2,794491	1,079684	3,38079345	0,09499	1,902784	0,562821613	0,08198	6,489388
1.sSMPABC140	0,1328012	2,512226	7,092803	2,95801103	0,38736	1,561585	0,52791726	0,0996	8,092369
1.sSMPABC147	5,0326969	415,4588	732,9892	663,975574	1,05632	517,9359	0,780052621	0,03797	0
1.sSMPABC148	0,125953	2,475646	5,023405	2,91048086	0,28926	1,530384	0,525818337	0,08589	7,963674
1.sSMPABC149	0,0869892	2,968919	1,244385	3,39293372	0,10375	1,642412	0,484068447	0,04113	12,39971
1.sSMPABC150	0,1323841	2,377708	7,013397	2,83384333	0,38423	1,541809	0,544069856	0,06476	6,516368
1.sSMPABC151	0,1276983	2,097623	5,649749	2,45487307	0,32088	1,275296	0,519495715	0,098	3,857143
1.sSMPABC152	0,1261031	2,25963	5,616555	2,63145456	0,32303	1,348564	0,512478446	0,09755	4,141466
1.sSMPABC153	0,1363748	2,292196	5,135385	2,65505085	0,27311	1,339826	0,504632855	0,09844	6,156034

1.sSMPABC154	0,1254868	2,140901	4,761024	2,50424164	0,27517	1,299142	0,51877651	0,06831	3,952569
1.sSMPABC155	0,0856036	2,273752	1,124121	2,69859187	0,09524	1,453427	0,53858701	0,05204	4,342813
1.sSMPABC156	0,1238343	2,620572	4,824166	3,02097164	0,28254	1,502954	0,49750691	0,08894	3,755341
1.sSMPABC157	0,119189	3,719019	4,005242	4,26498383	0,24372	2,087817	0,489525286	0,01851	12,10157
1.sSMPABC158	0,0641188	3,804479	0,708847	4,47764055	0,08018	2,361187	0,527328417	0,04759	11,68313
1.sSMPABC159	0,3169485	2,09027	29,84768	2,45729198	0,683	1,29192	0,525749389	0,16949	4,318839
1.sSMPABC160	0,1272584	2,143537	5,271112	2,52085743	0,30041	1,326639	0,526265008	0,08023	4,78624
1.sSMPABC008	0,1361677	2,071479	7,390888	2,42991927	0,39366	1,27023	0,522745626	0,10886	3,251883
1.sSMPABC011	0,13611	2,777166	7,470519	3,27371308	0,39807	1,733363	0,529479352	0,0445	7,41573
1.sSMPABC012	0,13456	2,794293	7,361512	3,36231651	0,39678	1,870054	0,556180219	0,05021	5,656244
1.sSMPABC013	0,1346104	2,385455	7,379305	2,80750119	0,39759	1,480428	0,527311541	0,10788	5,24657
1.sSMPABC014	0,1169	2,070145	5,495007	2,44262015	0,34092	1,296492	0,53077915	0,09499	3,347721
1.sSMPABC015	0,14119	2,663078	7,881327	3,13280461	0,40485	1,649994	0,526682648	0,10962	7,279693
1.sSMPABC016	0,136524	2,838969	7,535784	3,31826726	0,40033	1,717892	0,517707604	0,07394	4,192589
1.sSMPABC017	0,1283064	3,45471	5,059772	3,9996735	0,28601	2,015532	0,503924117	0,08005	4,547158
1.sSMPABC018	0,1249421	2,250129	4,147059	2,65873444	0,24073	1,416259	0,532681546	0,09343	4,730815
1.sSMPABC027	0,13567	3,405322	6,958512	3,79369138	0,37199	1,672088	0,440754872	0,11532	16,49324
1.sSMPABC030	0,1376749	3,484173	7,67714	4,0863102	0,40443	2,135058	0,522490327	0,11152	8,428981
1.sSMPABC031	0,0857531	2,192135	1,217953	2,58264502	0,10301	1,365503	0,52872276	0,0511	4,579256
1.sSMPABC032	0,125842	2,256911	4,260216	2,652163	0,24553	1,392954	0,525214183	0,07175	5,101045
1.sSMPABC034	0,13469	2,108546	7,387381	2,50502414	0,39779	1,352472	0,539903942	0,10267	4,110256
1.sSMPABC035	0,1360045	2,927832	7,586993	3,43152358	0,40459	1,789735	0,521557075	0,10826	9,809717
1.sSMPABC036	0,1357	2,343405	7,572252	2,81880043	0,40471	1,566554	0,555751947	0,08349	4,910768
1.sSMPABC037	0,13234	2,50869	6,186111	2,94660839	0,33902	1,545632	0,524545959	0,0756	6,798942
1.sSMPABC038	0,1303776	2,164672	4,66615	2,57990466	0,25957	1,403603	0,54405246	0,05891	3,46291
1.sSMPABC039	0,1330238	2,480081	6,337111	2,87909244	0,34551	1,462317	0,507908881	0,07863	8,088516
1.sSMPABC040	0,1301899	2,320774	4,35104	2,7248963	0,24239	1,42796	0,52404197	0,08023	5,833229
1.sSMPABC047	0,1342141	3,003506	6,524464	3,52071607	0,35257	1,836952	0,521755274	0,08382	6,227631
1.sSMPABC048	0,1366027	4,201764	6,937601	4,918141	0,36834	2,55603	0,519714716	0,12191	12,69789
1.sSMPABC049	0,137275	2,346384	7,780137	2,82956846	0,41105	1,581436	0,55889666	0,0941	5,164718
1.sSMPABC050	0,13244	4,062217	6,218907	4,6633987	0,34056	2,290345	0,491132211	0,06981	17,13222
1.sSMPABC051	0,1117066	2,682149	2,372541	3,11152731	0,15404	1,577238	0,506901508	0,0464	8,922414
1.sSMPABC056	0,13431	2,442112	6,881905	2,93650895	0,37162	1,630698	0,555318596	0,09898	5,738533
1.sSMPABC057	0,1353582	3,016686	7,444745	3,49138444	0,3989	1,75766	0,503427762	0,10098	7,763914

1.sSMPABC058	0,13073	6,027691	5,553338	6,61832054	0,30809	2,732968	0,412939751	0,0966	33,12629
1.sSMPABC059	0,1329895	8,525328	6,188235	9,31640574	0,33748	3,756886	0,403254847	0,10165	45,37137

*Concordance calculated as (^{206}Pb-^{238}U age/^{207}Pb-^{206}Pb age)*100

	Dates (data corrected for common-Pb)												
SPOT ID	**^{207}Pb/^{206}Pb**	**2*s***	**2s_{sys}**	**^{206}Pb/^{238}U**	**2*s***	**2s_{sys}**	**^{207}Pb/^{235}U**	**2*s***	**2s_{sys}**	**^{208}Pb/^{232}Th**	**2*s***	**2s_{sys}**	**% conc***
		abs	abs		abs	abs		abs	abs		abs	abs	
1.sSMPABC087	1121,76	42,94959	47,38684	590,3953	7,592707	11,38779	713,1815	13,09461	16,09608	0	13,36	-600,638	190,0015
1.sSMPABC088	2082,9885	46,79789	50,02163	1857,837	24,91247	34,8292	1966,566	27,06632	31,46655	0	101,68	-1260,23	112,119
1.sSMPABC089	1270,441	51,50042	55,10193	588,9834	8,25418	11,82558	751,1912	16,15161	18,8501	0	46,66	-624,237	215,7006
1.sSMPABC090	1102,6349	51,72235	55,48267	561,744	9,227245	12,27426	682,1125	15,53084	17,99498	0	26,08	-757,963	196,2878
1.sSMPABC091	2277,1777	35,29545	39,30454	2207,19	22,87137	36,29647	2243,701	21,79762	27,42172	0	45,26	-1817,46	103,1709
1.sSMPABC092	1001,643	53,87496	57,60271	539,4306	9,631353	12,38495	637,292	15,45435	17,71516	0	28,28	-1055,33	185,6852
1.sSMPABC093	3208,2291	35,11296	38,53108	2077,498	26,47986	37,66695	2701,428	25,57474	30,94867	0	107,32	-2333,58	154,4275
1.sSMPABC094	2094,0192	44,57194	47,93747	1848,6	25,20532	34,96716	1967,034	26,23742	30,75238	0	48,66	-1423,75	113,2759
1.sSMPABC095	2057,8178	37,1733	41,17965	1815,707	19,24826	30,6476	1931,35	21,22567	26,51474	0	42,5	-1331,27	113,3343
1.sSMPABC096	1965,2344	41,86481	45,53418	1225,087	15,10847	22,5967	1522,813	21,59582	26,0168	0	93,48	-1701,09	160,4159
1.sSMPABC097	1033,8881	51,97491	55,79343	565,6424	8,856975	12,03453	668,8032	15,04141	17,50823	0	34,16	-907,014	182,7812
1.sSMPABC098	984,0589	48,41883	52,55646	557,4885	7,009951	10,66208	649,5394	13,11713	15,77597	0	67,42	-1164,28	176,5164
1.sSMPABC099	2416,3782	35,76308	39,61696	1868,556	19,55465	31,3072	2142,393	21,88375	27,3606	0	55,92	-1645,62	129,318
1.sSMPABC100	2047,1784	37,57457	41,55143	1486,515	16,19174	25,73188	1734,032	20,58204	25,63614	0	49,12	-1477,25	137,7166
1.sSMPABC107	2088,3204	39,79694	43,5378	1924,993	23,82621	34,60312	2004,926	23,6782	28,64016	0	55,1	-1709,77	108,4846
1.sSMPABC108	2106,1751	36,5069	40,53698	2012,816	22,13577	34,19724	2059,311	21,75989	27,14446	0	32,38	-1518,72	104,6382
1.sSMPABC109	3627,5065	59,10363	61,07187	919,6589	56,63936	58,10437	2114,555	70,16633	72,17973	0	806,16	-18275,2	394,4404
1.sSMPABC110	1096,8747	47,64879	51,71288	533,9736	8,790864	11,69282	654,8076	14,2574	16,76625	0	7,92	-303,334	205,4174
1.sSMPABC111	1158,6181	53,61111	57,18981	556,7198	10,14428	12,93508	691,4618	16,70747	19,06515	0	205,7	-4481,02	208,1151
1.sSMPABC112	1020,9766	54,20082	57,88658	572,2525	9,251652	12,38849	671,6263	15,67267	18,06866	0	45,96	-681,292	178,4137
1.sSMPABC113	1040,0596	58,70141	62,10157	559,3211	9,655003	12,57776	664,5607	16,81995	19,04413	0	41,22	-512,331	185,9504
1.sSMPABC114	1256,0278	43,89679	48,08782	601,6206	7,207084	11,252	759,1001	13,83983	16,94226	0	69,88	-1353,7	208,7741
1.sSMPABC115	1767,7492	43,38319	47,10035	1041,192	13,55529	19,83197	1304,249	20,48221	24,52785	0	48,82	-874,521	169,7813
1.sSMPABC116	1852,5896	122,3985	123,7368	1178,328	31,784	35,69549	1440,681	58,47984	60,25849	0	792,14	-768,278	157,2219
1.sSMPABC117	1915,0873	70,69513	72,95423	1354,854	24,10752	30,33966	1588,917	36,00423	38,97338	0	157,26	-1219,08	141,3501
1.sSMPABC118	938,03863	44,6445	49,16188	542,8684	6,773996	10,35471	625,7473	11,91706	14,65272	554,6	20,54	21,16301	172,793
1.sSMPABC119	626,04767	46,08924	50,91833	509,7175	6,343305	9,725053	531,4813	10,39333	12,84194	417,9	11,44	12,231	122,8225

1.sSMPABC120	2633,1003	40,57369	43,8696	2640,044	33,87131	47,08549	2636,115	27,5977	32,60629	0	160,76	-2145,33	99,73699
1.sSMPABC127	1813,0715	39,16632	43,20424	1067,248	13,0682	19,75048	1342,465	19,0336	23,43525	0	46,7	-1153,21	169,8829
1.sSMPABC128	931,22348	45,64388	50,08012	550,6265	7,130463	10,67108	631,1254	12,30291	14,99971	939,1	31,34	32,57925	169,1207
1.sSMPABC129	1575,6395	40,15472	44,3354	866,5656	11,23421	16,58789	1092,57	17,22998	21,15076	0	31,1	-799,061	181,8258
1.sSMPABC130	2542,9329	35,83017	39,58568	2100,482	23,87894	36,06902	2332,891	23,2567	28,70582	0	81,02	-1734,6	121,0642
1.sSMPABC131	1958,4571	40,40156	44,19837	1441,93	19,46689	27,53198	1664,74	22,48704	27,06586	0	24,46	-548,66	135,8219
1.sSMPABC132-12.72197	#NÚM!	#NÚM!	#NÚM!	9730,081	242,7929	254,9143	-192,438	-11773,6	-11773,6	0	0	#VALOR!	#NÚM!
1.sSMPABC133	3279,7635	34,22691	37,6881	3281,005	36,14767	53,06084	3280,234	25,58124	31,27944	0	147,78	-2672,94	99,96216
1.sSMPABC134	1759,1148	55,05539	58,03585	976,5304	14,79604	20,12718	1250,481	24,92549	28,22976	0	122,56	-1270,4	180,1393
1.sSMPABC135	2028,1117	38,65395	42,54621	1678,8	20,06464	29,97979	1840,273	22,06989	27,04774	0	47,9	-1140,86	120,8072
1.sSMPABC136	1042,7711	47,05728	51,2328	560,7395	8,141135	11,46976	666,5075	13,68266	16,33928	0	148,78	-3009,72	185,9636
1.sSMPABC137	2455,9203	38,04799	41,66328	1823,922	21,37892	32,10185	2138,411	23,64626	28,79561	0	92,6	-1770,88	134,6505
1.sSMPABC138	2118,7685	36,90562	40,88571	2098,341	23,39677	35,73308	2108,674	22,23939	27,60259	0	62,38	-1831,57	100,9735
1.sSMPABC139	1255,8968	54,6483	58,06859	584,9813	10,64962	13,57323	743,4795	17,9799	20,41203	0	99,22	-1491,76	214,6901
1.sSMPABC140	2135,3326	43,94567	47,32542	2110,573	28,16813	39,12507	2123,141	26,67104	31,32647	0	147,98	-1769,24	101,1731
1.sSMPABC147	7428,1693	5475,612	5475,628	4647,336	#VALOR!	#VALOR!	6699,999	#VALOR!	#VALOR!	0	0	-745,822	159,8372
1.sSMPABC148	2042,2337	43,76353	47,2258	1637,83	22,17243	31,0957	1823,275	24,95029	29,43377	0	127,44	-1536,75	124,6914
1.sSMPABC149	1360,2556	57,21247	60,39558	636,3479	9,959859	13,50328	820,8676	19,28324	21,876	0	98,82	-715,108	213,7597
1.sSMPABC150	2129,8291	41,61809	45,17652	2096,013	27,64794	38,64025	2113,129	25,50115	30,31713	0	80,02	-1187,09	101,6133
1.sSMPABC151	2066,5273	36,97834	40,99616	1794,025	20,0024	30,93896	1923,723	21,40187	26,64453	0	69,54	-1817,62	115,1894
1.sSMPABC152	2044,3391	39,93526	43,70015	1804,51	21,26076	31,85809	1918,642	22,93824	27,89478	0	74,34	-1804,66	113,2906
1.sSMPABC153	2181,6635	39,89178	43,55092	1556,569	18,55509	27,90167	1841,979	22,81944	27,67006	0	111,7	-1784,45	140,1585
1.sSMPABC154	2035,6757	37,8745	41,83278	1566,991	18,09744	27,69204	1778,053	21,2344	26,25114	0	51,04	-1282,81	129,9098
1.sSMPABC155	1329,2476	44,00614	48,10561	586,453	8,152597	11,72982	764,9468	14,60564	17,60437	0	43,44	-980,775	226,6589
1.sSMPABC156	2012,1928	46,48584	49,78099	1604,142	21,37927	30,25308	1789,121	25,73097	30,04743	0	62,02	-1657,9	125,4373
1.sSMPABC157	1944,1018	66,49732	68,87807	1406,007	26,4283	32,57744	1635,26	35,25896	38,3519	0	44,54	-326,053	138,2711
1.sSMPABC158	745,55173	80,41694	83,17028	497,1971	11,30835	13,4064	544,0616	19,03678	20,54412	939,8	107,42	108,0453	149,951
1.sSMPABC159	3555,0901	32,18104	35,70105	3355,861	33,88686	52,05304	3481,811	24,43372	30,41959	0	126,46	-3034,28	105,9368
1.sSMPABC160	2060,4421	37,81392	41,75661	1693,341	19,78661	29,92048	1864,196	21,74594	26,82377	0	71,94	-1486,31	121,6791
1.sSMPABC008	2179,0181	36,06105	40,07375	2139,78	23,17102	35,9283	2159,868	21,96848	27,45223	0	64,64	-2020,93	101,8337
1.sSMPABC011	2178,2805	48,34983	51,41265	2160,146	31,89424	42,24479	2169,459	29,74799	34,05171	0	63,74	-815,462	100,8395
1.sSMPABC012	2158,3188	48,75522	51,80709	2154,196	34,33604	44,08129	2156,307	30,51121	34,71078	0	54,5	-934,611	100,1914
1.sSMPABC013	2158,9728	41,61875	45,15507	2157,933	27,20679	38,80153	2158,466	25,4204	30,3044	0	103,22	-1965,3	100,0482
1.sSMPABC014	1909,3571	37,16758	41,30846	1891,094	21,28405	32,61057	1899,816	21,20318	26,44377	0	58,7	-1772,79	100,9657

1.sSMPABC015	2241,8541	46,04371	49,20748	2191,333	30,72552	41,59323	2217,547	28,62811	33,12308	0	145,2	-1955,16	102,3055
1.sSMPABC016	2183,5665	49,39711	52,39537	2170,559	31,73734	42,20019	2177,253	30,19025	34,44937	0	58,24	-1381,74	100,5993
1.sSMPABC017	2074,8985	60,84414	63,36167	1621,559	28,96143	36,14487	1829,387	34,48927	37,91013	0	68,12	-1486,61	127,957
1.sSMPABC018	2027,9763	39,84206	43,62857	1390,491	17,73826	25,87888	1663,63	21,98769	26,64734	0	81,86	-1721,65	145,8461
1.sSMPABC027	2172,6416	59,32268	61,84752	2038,757	29,29166	39,41324	2106,15	34,25159	38,00949	0	344,54	-1857,68	106,567
1.sSMPABC030	2198,1615	60,52661	62,98965	2189,405	39,75663	48,64993	2193,93	37,39002	40,95501	0	170,8	-1964,13	100,3999
1.sSMPABC031	1332,623	42,40648	46,64293	632,0245	8,225985	12,23548	808,8385	14,50343	17,72987	0	45,06	-961,203	210,8499
1.sSMPABC032	2040,6753	39,90395	43,67456	1415,382	17,72565	26,09096	1685,711	22,04777	26,74154	0	69,14	-1330,09	144,1784
1.sSMPABC034	2160,0036	36,78335	40,74069	2158,855	24,85969	37,1963	2159,444	22,65383	28,00752	0	77,38	-1895,65	100,0532
1.sSMPABC035	2176,9304	50,98047	53,89484	2190,14	33,31919	43,54074	2183,326	31,26179	35,40416	0	193,5	-1882	99,39687
1.sSMPABC036	2173,0268	40,82174	44,41084	2190,691	29,16102	40,44348	2181,581	25,60284	30,48609	0	76,52	-1542,55	99,19369
1.sSMPABC037	2129,2456	43,91359	47,30006	1881,953	25,2763	35,28046	2002,488	26,08815	30,67307	0	96,76	-1375,17	113,1402
1.sSMPABC038	2103,056	38,00303	41,89201	1487,642	18,67341	27,37475	1761,192	21,80515	26,68684	0	38,82	-1116,37	141,3685
1.sSMPABC039	2138,2626	43,36921	46,78847	1913,122	24,25214	34,80293	2023,603	25,56868	30,25819	0	119	-1409,45	111,7682
1.sSMPABC040	2100,526	40,75515	44,40574	1399,11	17,98443	26,12438	1703,093	22,75051	27,36135	0	87,48	-1470,81	150,133
1.sSMPABC047	2153,8269	52,43167	55,28371	1946,859	30,94165	40,00378	2049,205	31,48076	35,45505	0	97,44	-1528,07	110,6309
1.sSMPABC048	2184,5685	73,10125	75,15934	2021,585	44,50793	51,65838	2103,479	44,61252	47,59867	0	278,86	-2043,35	108,0622
1.sSMPABC049	2193,106	40,78363	44,36065	2219,72	29,76627	41,09735	2205,912	25,78329	30,66697	0	89,82	-1726,06	98,80101
1.sSMPABC050	2130,5677	71,09696	73,23646	1889,363	37,61777	45,01748	2007,111	41,63403	44,71857	0	225,94	-1136,31	112,7665
1.sSMPABC051	1827,3667	48,6337	51,92959	923,5702	13,58581	18,77227	1234,367	22,4728	26,03395	0	80	-836,106	197,859
1.sSMPABC056	2155,0735	42,62562	46,08761	2037,019	28,54422	38,84666	2096,329	26,37343	31,03889	0	104,56	-1801,35	105,7955
1.sSMPABC057	2168,6323	52,57566	55,41124	2163,972	32,39075	42,64867	2166,365	31,74402	35,8161	0	143,86	-1798,78	100,2153
1.sSMPABC058	2107,7938	105,7659	107,2232	1731,301	41,62883	47,52831	1908,894	58,60603	60,81733	0	589,9	-1264,99	121,7462
1.sSMPABC059	2137,8119	149,09	150,1204	1874,535	61,40074	66,15462	2002,788	84,88882	86,54067	0	846,24	-1092,11	114,0449

BG-19-26: Schist - Capelinha Formation

							Ratios (data not corrected for common-Pb)							
SPOT ID	**f206c**	**^{207}Pb**	**^{206}Pb**	**U (µg g^{-1}) [a]**	**Th/U**	**^{206}Pb/^{204}Pb**	**^{207}Pb/^{206}Pb**	**1*s***	**^{206}Pb/^{238}U**	**1*s***	**^{207}Pb/^{235}U**	**1*s***	**^{208}Pb/^{232}Th**	**1*s***
		CPS	CPS											
1.sSMPABC167	0,142876	257341,7	20640,15	279,6572	0,40756	13,205471	0,08032	0,0009	0,197137935	0,00143	2,183208	0,00169	0,04889	0,00104
1.sSMPABC168	0,347959	492140,4	48429,77	1143,421	0,88342	22,609601	0,09875	0,00102	0,092018694	0,00057	1,252894	0,001168	0,01297	0,00021
1.sSMPABC169	0,422816	265237,5	23371,62	726,649	0,234725	12,558638	0,08849	0,00117	0,077978893	0,00057	0,951421	0,001301	0,03237	0,00124
1.sSMPABC170	0,458456	364527,2	40875,73	522,4493	0,801446	18,183153	0,11265	0,00127	0,149003737	0,00114	2,314353	0,001707	0,00885	0,00019
1.sSMPABC171	0,396776	342018	34938,19	653,2212	0,509538	18,046587	0,10256	0,00107	0,111884302	0,00077	1,582153	0,001318	0,02192	0,00034

1.sSMPABC172	0,588345	478199,5	49093,11	900,3301	0,572296	20,219568	0,10327	0,00106	0,113279581	0,00071	1,612973	0,001276	0,03291	0,0005
1.sSMPABC173	0,464452	280745,9	29623,65	485,5777	0,3573	15,715462	0,10601	0,00108	0,123463894	0,00079	1,80463	0,001338	0,05013	0,00063
1.sSMPABC174	0,090243	293527,9	54321,11	127,2342	0,557302	35,4808	0,18523	0,00187	0,49449335	0,00321	12,62912	0,003715	0,11504	0,00134
1.sSMPABC175	0,4774	335759,9	30201,11	883,6325	0,233214	14,639413	0,09038	0,00099	0,081130824	0,00051	1,011019	0,001114	0,03075	0,00071
1.sSMPABC176	0,679631	123670,5	13722,57	188,6398	0,309112	8,0108392	0,11172	0,00115	0,139694099	0,00093	2,151841	0,001479	0,05772	0,00065
1.sSMPABC177	62,09986	139,8412	-58,6196	1,556899	0,008665	-0,0411077	-1,10603	1,37992	0,007303358	0,02453	-1,11376	1,380138	0,36483	2,22506
1.sSMPABC178	0,141866	249088,4	28572,19	311,2363	0,416775	18,175693	0,11487	0,00148	0,171456416	0,00121	2,715574	0,001912	0,01893	0,00077
1.sSMPABC179	0,650663	60213,79	6809,538	87,30893	0,617685	4,468201	0,11383	0,00122	0,146997278	0,00103	2,307105	0,001597	0,03464	0,00042
1.sSMPABC180	0,13281	162480,8	21042,53	100,2604	0,171653	14,324387	0,12968	0,00137	0,347218246	0,0025	6,208359	0,002851	0,06881	0,00117
1.sSMPABC187	0,252197	195356,7	22668,53	265,3983	0,529975	14,662697	0,11633	0,00127	0,157521731	0,00115	2,526582	0,001713	0,03708	0,00075
1.sSMPABC188	0,489917	315255,5	34451,74	587,6681	0,541791	17,971696	0,10982	0,00112	0,114526155	0,00075	1,734153	0,001348	0,04288	0,00057
1.sSMPABC189	0,338324	193983,3	20513,93	346,6066	1,531251	12,432684	0,10611	0,00109	0,119663774	0,0008	1,750734	0,001352	0,01209	0,00016
1.sSMPABC190	0,340877	345670,3	38507,32	541,9064	0,344139	21,694262	0,11178	0,00127	0,13638351	0,00092	2,101974	0,001568	0,05433	0,00151
1.sSMPABC191	0,261013	445888,8	51770,44	552,6646	0,242968	28,986807	0,11641	0,00125	0,172638213	0,00123	2,770949	0,001754	0,05552	0,00118
1.sSMPABC192	0,254842	260768,5	32408,96	211,6168	0,286169	20,788299	0,1246	0,00139	0,263696275	0,00199	4,530262	0,002427	0,06511	0,00155
1.sSMPABC193	0,338143	291544,8	35093,72	294,1767	0,306224	20,619105	0,12078	0,0013	0,211901041	0,00149	3,528819	0,001977	0,071	0,00144
1.sSMPABC194	1,294638	38554,14	4600,469	40,3128	0,936156	3,0486872	0,12089	0,00256	0,202523661	0,00247	3,375728	0,003557	0,0835	0,00477
1.sSMPABC195	3,094718	146502,9	34041,33	569,6019	1,871422	11,594457	0,23978	0,00337	0,053472335	0,00042	1,767842	0,003396	0,01121	0,00057
1.sSMPABC196	0,477556	227297,5	28070,65	265,6005	0,6849	15,655687	0,12409	0,00126	0,182723207	0,00122	3,126308	0,001754	0,05176	0,00063
1.sSMPABC197	0,803089	204273,5	24115,35	282,2302	1,45343	12,56008	0,11901	0,00137	0,154032963	0,00108	2,527542	0,001745	0,01961	0,00053
1.sSMPABC198	0,553212	447790,2	55165,37	512,7489	0,997593	24,301927	0,12388	0,00128	0,186323502	0,00121	3,182512	0,001761	0,05683	0,0009
1.sSMPABC199	0,195785	378419,9	29847,97	406,0314	0,51785	19,24434	0,07903	0,00088	0,199558528	0,0015	2,174521	0,001739	0,0352	0,00081
1.sSMPABC200	0,464467	120147	14915,14	117,4853	0,825467	9,7167036	0,12472	0,00134	0,218380958	0,00154	3,755365	0,002041	0,03456	0,00061
1.sSMPABC207	0,28652	382529	23664,1	1030,999	0,785798	13,977616	0,06204	0,00073	0,07937193	0,00061	0,678953	0,000951	0,24219	0,00652
1.sSMPABC208	0,532012	403323,7	47499,48	522,0127	0,949775	22,227176	0,1184	0,00144	0,164878137	0,0012	2,691634	0,001874	0,02969	0,00112
1.sSMPABC209	0,189604	566075,3	36148,83	1512,397	0,565851	20,931574	0,06398	0,00068	0,080147748	0,00057	0,707028	0,000887	0,33064	0,00641
1.sSMPABC210	0,634438	95025,88	7662,426	101,9952	0,609039	4,7066502	0,08115	0,00095	0,198611884	0,00153	2,222261	0,001801	0,04027	0,00085
1.sSMPABC211	0,421324	160452	20448,13	152,5043	0,362987	12,764128	0,12798	0,00136	0,224768987	0,00151	3,966247	0,002032	0,05751	0,00112
1.sSMPABC212	0,119674	241261,7	60942,07	92,20654	0,943367	41,204917	0,2529	0,00261	0,560678209	0,00386	19,55077	0,00466	0,08702	0,00146
1.sSMPABC213	0,932018	344051,6	35539,91	815,7894	0,527209	14,02522	0,10427	0,00109	0,08963671	0,0006	1,288684	0,001244	0,02755	0,00052
1.sSMPABC214	1	#VALOR!	2369,85	#VALOR!	#VALOR!	1,8314144	38,22339	0,01877	#VALOR!	1,05935	#VALOR!	1,059516	0,11807	0
1.sSMPABC215	0,792446	319022,1	33924,99	699,395	0,616061	15,267773	0,10719	0,00111	0,097084512	0,00068	1,434847	0,001302	0,01914	0,00032
1.sSMPABC216	5,598331	451931,6	176987,9	164,8118	0,813143	16,085419	0,41485	0,00425	0,555355578	0,00398	31,76607	0,005823	0,47472	0,00779
1.sSMPABC217	0,165839	189239,8	22848,71	113,2259	0,436317	15,944669	0,12094	0,00139	0,357975352	0,00246	5,969313	0,002826	0,08845	0,00266

1.sSMPABC218	0,177519	304703,9	36383,98	182,031	0,353156	24,175401	0,11962	0,00127	0,358482492	0,00251	5,912525	0,002813	0,08906	0,00179
1.sSMPABC219	0,24405	134085,2	10700,64	144,1066	0,335513	7,3746657	0,08	0,00164	0,199132827	0,00218	2,196515	0,002728	0,0478	0,00326
1.sSMPABC220	0,207191	124394,7	11632,88	107,0028	0,964101	8,1576986	0,09371	0,00103	0,248893244	0,00183	3,215884	0,0021	0,05583	0,0011
1.sSMPABC227	0,843902	338573,2	33769,67	753,6552	0,924749	13,828695	0,10059	0,00142	0,095566648	0,00084	1,325447	0,00165	0,00659	0,00027
1.sSMPABC228	0,810628	148724,6	20224,85	396,1669	0,691007	11,375059	0,1371	0,00157	0,07988712	0,00055	1,510134	0,001664	0,01359	0,00041
1.sSMPABC229	0,767936	194459,3	18462,99	467,4418	1,923846	9,5072023	0,09568	0,00102	0,088564618	0,00062	1,168376	0,001194	0,39097	0,00818
1.sSMPABC230	0,417845	96202,98	10471,05	151,8267	0,323139	6,9900196	0,1093	0,00118	0,135371982	0,00097	2,040094	0,001528	0,05216	0,00103
1.sSMPABC231	66,3397	445,6288	41,2425	0,142794	0,488107	0,0291466	0,27495	0,05231	0,225365827	0,6386	8,543642	0,640739	0,50856	0,15047
1.sSMPABC232	0,183646	303629,6	37405,15	354,1785	0,312587	24,722502	0,12342	0,0013	0,183582239	0,00129	3,124046	0,001831	0,07424	0,00152
1.sSMPABC233	0,532447	106099,9	11642,62	78,41605	0,928931	8,0238602	0,11032	0,00138	0,288734414	0,00216	4,391917	0,002563	0,06764	0,00253
1.sSMPABC234	0,680655	422084,9	39347,24	1347,126	0,756795	16,97465	0,09386	0,00098	0,066762464	0,00046	0,864001	0,001083	0,01394	0,00026
1.sSMPABC235	0,49177	154213,4	18618,7	170,884	1,184302	12,090062	0,12133	0,00273	0,192657885	0,00202	3,22297	0,003396	0,02759	0,00349
1.sSMPABC236	7,73068	977027,9	496310,2	190,6438	1,229299	16,485971	0,55054	0,00872	1,014491946	0,01047	77,00852	0,013626	0,77118	0,0559
1.sSMPABC237	0,558736	204005,9	22990,8	303,8973	0,378113	13,766948	0,11333	0,00123	0,143215309	0,00099	2,237874	0,001579	0,04608	0,0011
1.sSMPABC238	0,369653	112000	14743,86	61,98162	0,385325	10,070941	0,13213	0,00237	0,386236968	0,00432	7,036498	0,004927	0,03495	0,00192
1.sSMPABC239	1	276094,1	30978,08	201,5964	0,641153	25,496365	0,1122	0,00156	0,293823062	0,00244	4,545483	0,002896	0,06896	0,00366
1.sSMPABC240	0,170296	394128,2	48005,69	399,0374	2,390525	32,634731	0,12201	0,00134	0,211539143	0,00151	3,558668	0,002019	0,01306	0,00036
1.sSMPABC009	1	149065,1	17249,39	115,8603	0,322866	313,62528	0,11558	0,00124	0,257665354	0,00149	4,106199	0,001938	0,0881	0,00162
1.sSMPABC011	0,60971	553477,6	54955,29	1891,565	0,246124	40,11335	0,0999	0,00105	0,058173137	0,00036	0,801289	0,00111	0,01237	0,00022
1.sSMPABC012	1,005355	124942,1	19061,25	398,7305	0,256253	33,49956	0,15411	0,0017	0,062049844	0,00037	1,318478	0,00174	0,05144	0,00108
1.sSMPABC013	0,254465	302744,4	34829,68	347,5784	0,508359	89,078468	0,11534	0,00134	0,173786645	0,00105	2,763743	0,001702	0,05037	0,00153
1.sSMPABC014	0	272892	31710,05	218,401	0,433711	160,96472	0,1162	0,0012	0,24994	0,00142	4,004453	0,001859	0,06727	0,00101
1.sSMPABC015	0	231947	26792,2	144,1657	0,442596	461,93445	0,11551	0,00136	0,32183	0,00203	5,125632	0,002443	0,09699	0,00294
1.sSMPABC016	0,095834	250152,7	28834,96	171,3474	0,498552	155,02668	0,11538	0,00122	0,291750137	0,00171	4,641335	0,002101	0,07035	0,00134
1.sSMPABC017	1	137083,5	15887,97	80,98852	0,601745	467,29319	0,11567	0,00141	0,339253118	0,00224	5,410605	0,002647	0,09208	0,00281
1.sSMPABC018	0,081705	200638,9	22747,9	238,7095	0,282086	169,76043	0,11347	0,00117	0,16799263	0,00097	2,628286	0,00152	0,08081	0,00116
1.sSMPABC019	0,079954	503250,4	57772,21	415,4268	0,547603	224,79458	0,11489	0,00119	0,242126255	0,00144	3,83553	0,001868	0,04843	0,00088
1.sSMPABC020	0,260355	328899,3	38184,21	201,3663	0,23931	105,19065	0,1164	0,00124	0,325869369	0,00204	5,229953	0,002387	0,06426	0,00126
1.sSMPABC028	0,111543	365085,2	42262,53	218,3417	0,314272	223,61129	0,11589	0,00128	0,334096922	0,00211	5,338506	0,002468	0,09435	0,00246
1.sSMPABC030	0,083157	330937,2	38469,22	204,2456	0,389657	326,01031	0,11634	0,00138	0,323840479	0,00226	5,194712	0,002648	0,03339	0,00093
1.sSMPABC031	0	107832	12441,66	80,49656	0,524653	12441,656	0,11538	0,00147	0,26796	0,00194	4,262867	0,002434	0,05695	0,00202
1.sSMPABC032	0,204044	418472,9	47783,97	689,0681	0,350221	105,95114	0,11442	0,00129	0,121232127	0,00077	1,912586	0,001502	0,05174	0,00151
1.sSMPABC034	0,148543	275549,3	31740,15	171,3464	0,500447	136,22382	0,11536	0,00122	0,321202166	0,00191	5,108989	0,002266	0,0953	0,00206
1.sSMPABC035	0,051337	97502,05	7898,485	95,08819	0,377527	136,18077	0,08105	0,00097	0,205004702	0,0013	2,290963	0,001622	0,06045	0,00181

1.sSMPABC036	0,213871	342550,6	43451,9	228,9455	0,706825	104,95629	0,12712	0,00156	0,298649905	0,00212	5,234528	0,002632	0,02785	0,00089
1.sSMPABC037	0	304278	24603,92	289,5868	0,267719	24603,919	0,08086	0,00092	0,21018	0,00127	2,343292	0,001568	0,05984	0,00184
1.sSMPABC038	0,062893	145679,6	17003,22	135,5125	0,58071	188,92469	0,11679	0,00135	0,214904756	0,00137	3,460612	0,001923	0,06033	0,00184
1.sSMPABC039	0	159751	12960,6	152,9695	0,259061	96,004434	0,08113	0,00106	0,2089	0,0014	2,336798	0,001756	0,06257	0,00271
1.sSMPABC040	0,022981	238994,9	26281,01	148,1871	0,387925	410,64079	0,10999	0,00127	0,322535862	0,00199	4,891392	0,002361	0,08867	0,00288
1.sSMPABC047	0,136609	359710,4	41734,06	381,5549	0,197911	175,35321	0,11618	0,00139	0,188322383	0,00119	3,016717	0,00183	0,08192	0,00329
1.sSMPABC050	0,25645	196936	20912,04	128,1049	0,496691	80,430939	0,10646	0,0015	0,306721391	0,00249	4,502273	0,002907	0,03375	0,00139
1.sSMPABC051	0	288338	36221,02	174,3662	0,696791	136,16925	0,12562	0,00149	0,33078	0,00209	5,72927	0,002567	0,05752	0,00215
1.sSMPABC052	0	302010	34800,61	252,5044	0,620959	34800,612	0,11523	0,00208	0,23925	0,00209	3,801183	0,002949	0,05834	0,00477
1.sSMPABC054	1	198208,8	24902,44	119,5229	0,47242	319,26206	0,12556	0,00166	0,331924497	0,00236	5,746348	0,002885	0,05283	0,00248
1.sSMPABC055	0,973679	248911,6	35420,33	464,2886	0,516064	35,526906	0,1437	0,00163	0,106195827	0,00067	2,104096	0,001762	0,0329	0,0011
1.sSMPABC056	0,16035	563547,6	64490,26	425,5317	0,631952	156,9106	0,11462	0,00125	0,264485217	0,00163	4,179873	0,002054	0,05297	0,00151
1.sSMPABC057	0,678746	246674,3	27136,2	499,1681	0,411404	35,425849	0,11076	0,00208	0,09817906	0,00098	1,49935	0,002299	0,01116	0,00065
1.sSMPABC058	0,448242	249486,3	28249,38	342,1919	0,428806	56,498753	0,11374	0,00136	0,145186283	0,00093	2,27688	0,001648	0,04829	0,00183
1.sSMPABC059	0,412743	230981,4	26172,59	368,9211	0,281961	64,464497	0,11378	0,0015	0,12472308	0,00095	1,956654	0,001776	0,01495	0,00054
1.sSMPABC060	0,093687	371894,4	46840,8	225,7414	0,509852	272,33026	0,12607	0,00143	0,329231263	0,00211	5,722873	0,002549	0,07706	0,00249

	Ratios (data corrected for common-Pb)								
SPOT ID	**$^{207}Pb/^{206}Pb$**	**2*s* (%)**	**$^{207}Pb/^{235}U$**	**2*s* (%)**	**$^{206}Pb/^{238}U$**	**2*s* (%)**	**Rho**	**$^{208}Pb/^{232}Th$**	***2s* (%)**
	Data for Wetherill plot								
1.sSMPABC167	0,0802052	2,272346	2,183208	2,698741	0,19742	1,455901	0,539474	0,04889	4,254449
1.sSMPABC168	0,0984064	2,190341	1,252894	2,624831	0,09234	1,446424	0,551054	0,01297	3,238242
1.sSMPABC169	0,0881159	2,823681	0,951421	3,355364	0,07831	1,812538	0,540191	0,03237	7,661415
1.sSMPABC170	0,1121335	2,408228	2,314353	2,914575	0,14969	1,641702	0,563273	0,00885	4,293785
1.sSMPABC171	0,1021531	2,234288	1,582153	2,714893	0,11233	1,542271	0,568078	0,02192	3,10219
1.sSMPABC172	0,1026624	2,361784	1,612973	2,863089	0,11395	1,618411	0,565267	0,03291	3,03859
1.sSMPABC173	0,1055176	2,228318	1,80463	2,673712	0,12404	1,477611	0,552644	0,05013	2,513465
1.sSMPABC174	0,1850628	2,023287	12,62912	2,403655	0,49494	1,297639	0,539861	0,11504	2,329624
1.sSMPABC175	0,0899485	2,443832	1,011019	2,984912	0,08152	1,71388	0,574181	0,03075	4,617886
1.sSMPABC176	0,1109607	2,407723	2,151841	2,912029	0,14065	1,63792	0,562467	0,05772	2,252252
1.sSMPABC177	-0,419187	-659,046	-1,11376	956,3311	0,01927	692,985	0,724629	0,36483	1219,779
1.sSMPABC178	0,114707	2,592315	2,715574	2,955319	0,1717	1,419089	0,480181	0,01893	8,135235
1.sSMPABC179	0,1130893	2,445261	2,307105	2,948094	0,14796	1,646801	0,558599	0,03464	2,424942
1.sSMPABC180	0,1295078	2,125621	6,208359	2,567537	0,34768	1,440132	0,5609	0,06881	3,400669

1.sSMPABC187	0,1160366	2,231707	2,526582	2,683976	0,15792	1,491045	0,555536	0,03708	4,045307
1.sSMPABC188	0,109282	2,237266	1,734153	2,72559	0,11509	1,556754	0,571162	0,04288	2,658582
1.sSMPABC189	0,105751	2,158464	1,750734	2,59851	0,12007	1,44682	0,556788	0,01209	2,646816
1.sSMPABC190	0,111399	2,360796	2,101974	2,762122	0,13685	1,433862	0,519116	0,05433	5,558623
1.sSMPABC191	0,1161062	2,199643	2,770949	2,636147	0,17309	1,452873	0,551135	0,05552	4,25072
1.sSMPABC192	0,1242825	2,274123	4,530262	2,734087	0,26437	1,51776	0,555125	0,06511	4,761173
1.sSMPABC193	0,1203716	2,231851	3,528819	2,654563	0,21262	1,4372	0,541407	0,071	4,056338
1.sSMPABC194	0,1193249	4,808289	3,375728	5,523487	0,20518	2,718321	0,492138	0,0835	11,42515
1.sSMPABC195	0,2323595	3,938198	1,767842	11,98514	0,05518	11,31964	0,944473	0,01121	10,16949
1.sSMPABC196	0,1234974	2,182174	3,126308	2,607429	0,1836	1,427165	0,547346	0,05176	2,434312
1.sSMPABC197	0,1180542	2,690347	2,527542	3,20045	0,15528	1,733469	0,541633	0,01961	5,405405
1.sSMPABC198	0,1231947	2,263788	3,182512	2,67241	0,18736	1,420226	0,53144	0,05683	3,167341
1.sSMPABC199	0,0788753	2,285929	2,174521	2,74134	0,19995	1,513102	0,551957	0,0352	4,602273
1.sSMPABC200	0,1241407	2,284849	3,755365	2,714873	0,2194	1,466288	0,540095	0,03456	3,530093
1.sSMPABC207	0,0618622	2,53536	0,678953	3,04883	0,0796	1,693314	0,555398	0,24219	5,384202
1.sSMPABC208	0,1177701	2,607002	2,691634	3,050385	0,16576	1,58379	0,51921	0,02969	7,544628
1.sSMPABC209	0,0638587	2,210941	0,707028	2,669597	0,0803	1,496159	0,560444	0,33064	3,877329
1.sSMPABC210	0,0806352	2,833432	2,222261	3,282537	0,19988	1,657319	0,50489	0,04027	4,221505
1.sSMPABC211	0,1274408	2,234399	3,966247	2,630967	0,22572	1,389047	0,52796	0,05751	3,894975
1.sSMPABC212	0,2525973	2,068701	19,55077	2,484486	0,56135	1,375917	0,553803	0,08702	3,35555
1.sSMPABC213	0,1032982	2,776699	1,288684	3,703147	0,09048	2,450151	0,66164	0,02755	3,774955
1.sSMPABC214	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	0,11807	0
1.sSMPABC215	0,1063406	2,565049	1,434847	3,336735	0,09786	2,134086	0,639573	0,01914	3,343783
1.sSMPABC216	0,3916253	3,589545	31,76607	4,282292	0,58829	2,335207	0,545317	0,47472	3,281935
1.sSMPABC217	0,1207394	2,318808	5,969313	2,695948	0,35857	1,375231	0,510111	0,08845	6,014698
1.sSMPABC218	0,1194077	2,147847	5,912525	2,564573	0,35912	1,401353	0,546427	0,08906	4,019762
1.sSMPABC219	0,0798048	4,155289	2,196515	4,700716	0,19962	2,197794	0,467545	0,0478	13,64017
1.sSMPABC220	0,0935158	2,246961	3,215884	2,688845	0,24941	1,476839	0,549247	0,05583	3,940534
1.sSMPABC227	0,0997411	3,312251	1,325447	4,132323	0,09638	2,470848	0,597932	0,00659	8,194234
1.sSMPABC228	0,1359886	2,598634	1,510134	3,559544	0,08054	2,432582	0,683397	0,01359	6,033848
1.sSMPABC229	0,0949452	2,689473	1,168376	3,48209	0,08925	2,211715	0,635169	0,39097	4,184464
1.sSMPABC230	0,1088433	2,300181	2,040094	2,775854	0,13594	1,553876	0,559783	0,05216	3,949387
1.sSMPABC231	0,092549	182,5681	8,543642	264,7895	0,66953	191,7872	0,724301	0,50856	59,17493
1.sSMPABC232	0,1231933	2,131458	3,124046	2,559453	0,18392	1,416927	0,553606	0,07424	4,094828

1.sSMPABC233	0,1097326	2,695926	4,391917	3,101192	0,29028	1,532766	0,494251	0,06764	7,480781
1.sSMPABC234	0,0932211	2,559902	0,864001	3,539425	0,06722	2,444264	0,690582	0,01394	3,730273
1.sSMPABC235	0,1207333	4,59515	3,22297	5,072244	0,19361	2,147615	0,423405	0,02759	25,29902
1.sSMPABC236	0,5079795	4,588139	77,00852	5,162916	1,09949	2,36742	0,458543	0,77118	14,49726
1.sSMPABC237	0,1126968	2,397508	2,237874	2,870573	0,14402	1,578652	0,549943	0,04608	4,774306
1.sSMPABC238	0,1316416	3,64422	7,036498	4,275957	0,38767	2,236844	0,523121	0,03495	10,98712
1.sSMPABC239	0,1122012	3,302992	4,545483	3,759204	0,29382	1,794955	0,477483	0,06896	10,61485
1.sSMPABC240	0,1218022	2,217986	3,558668	2,641305	0,2119	1,434236	0,543003	0,01306	5,513017
1.sSMPABC009	0,1157171	2,753239	4,106199	3,08626	0,25736	1,394516	0,451847	0,0881	3,677639
1.sSMPABC011	0,0992909	2,445714	0,801289	3,440255	0,05853	2,419471	0,703282	0,01237	3,556993
1.sSMPABC012	0,1525606	2,589172	1,318478	4,28815	0,06268	3,418248	0,797138	0,05144	4,199067
1.sSMPABC013	0,1150465	2,371124	2,763743	2,675875	0,17423	1,240194	0,463472	0,05037	6,075045
1.sSMPABC014	0,1162	2,065404	4,004453	2,357331	0,24994	1,136273	0,482017	0,06727	3,002824
1.sSMPABC015	0,11551	2,354774	5,125632	2,671411	0,32183	1,261536	0,472236	0,09699	6,062481
1.sSMPABC016	0,1152694	2,123301	4,641335	2,425741	0,29203	1,17295	0,483543	0,07035	3,809524
1.sSMPABC017	0,1159	2,982938	5,410605	3,316269	0,33858	1,44904	0,436949	0,09208	6,103388
1.sSMPABC018	0,1133773	2,068932	2,628286	2,370936	0,16813	1,157955	0,488396	0,08081	2,870932
1.sSMPABC019	0,1147981	2,077879	3,83553	2,39468	0,24232	1,190342	0,497078	0,04843	3,634111
1.sSMPABC020	0,1160969	2,182724	5,229953	2,519747	0,32672	1,258905	0,499616	0,06426	3,921569
1.sSMPABC028	0,1157607	2,219839	5,338506	2,554215	0,33447	1,263459	0,494657	0,09435	5,214626
1.sSMPABC030	0,1162433	2,378638	5,194712	2,757794	0,32411	1,395532	0,506032	0,03339	5,57053
1.sSMPABC031	0,11538	2,548102	4,262867	2,930778	0,26796	1,447977	0,494059	0,05695	7,093942
1.sSMPABC032	0,1141865	2,287551	1,912586	2,636816	0,12148	1,311453	0,497362	0,05174	5,836877
1.sSMPABC034	0,1151886	2,133908	5,108989	2,443826	0,32168	1,191101	0,487392	0,0953	4,32319
1.sSMPABC035	0,0810084	2,398165	2,290963	2,713032	0,20511	1,268601	0,467595	0,06045	5,98842
1.sSMPABC036	0,1268481	2,482642	5,234528	2,861981	0,29929	1,423877	0,497514	0,02785	6,391382
1.sSMPABC037	0,08086	2,275538	2,343292	2,576532	0,21018	1,208488	0,469037	0,05984	6,149733
1.sSMPABC038	0,1167165	2,315806	3,460612	2,643845	0,21504	1,275523	0,48245	0,06033	6,099785
1.sSMPABC039	0,08113	2,61309	2,336798	2,936799	0,2089	1,340354	0,4564	0,06257	8,662298
1.sSMPABC040	0,1099647	2,31021	4,891392	2,619018	0,32261	1,23377	0,471081	0,08867	6,495996
1.sSMPABC047	0,1160213	2,407656	3,016717	2,722242	0,18858	1,270353	0,466657	0,08192	8,032227
1.sSMPABC050	0,106187	2,866197	4,502273	3,296294	0,30751	1,628026	0,493896	0,03375	8,237037
1.sSMPABC051	0,12562	2,372234	5,72927	2,687821	0,33078	1,26368	0,47015	0,05752	7,475661
1.sSMPABC052	0,11523	3,610171	3,801183	4,010709	0,23925	1,747126	0,435615	0,05834	16,35242

1.sSMPABC054	0,1256374	3,084968	5,746348	3,450384	0,33172	1,545353	0,447879	0,05283	9,388605
1.sSMPABC055	0,1423008	2,668531	2,104096	3,46119	0,10724	2,204265	0,636852	0,0329	6,68693
1.sSMPABC056	0,1144362	2,202525	4,179873	2,525899	0,26491	1,236547	0,489547	0,05297	5,70134
1.sSMPABC057	0,1100082	3,977781	1,49935	4,651898	0,09885	2,411931	0,518483	0,01116	11,64875
1.sSMPABC058	0,1132302	2,529298	2,27688	2,898582	0,14584	1,415779	0,488439	0,04829	7,579209
1.sSMPABC059	0,1133104	2,745997	1,956654	3,205697	0,12524	1,654085	0,515983	0,01495	7,22408
1.sSMPABC060	0,1259519	2,275576	5,722873	2,611771	0,32954	1,281835	0,490791	0,07706	6,462497

*Concordance calculated as (^{206}Pb-^{238}U age/^{207}Pb-^{206}age)*100

	Dates (data corrected for common-b)												
SPOT ID	**^{207}Pb/^{206}Pb**	**2*s***	**2s_{sys}**	**^{206}Pb/^{238}U**	**2*s***	**2s_{sys}**	**^{207}Pb/^{235}U**	**2*s***	**2s_{sys}**	**^{208}Pb/^{232}Th**	**2*s***	**2s_{sys}**	**% conc***
		abs	abs		abs	abs		abs	abs		abs	abs	
1.sSMPABC167	1202,0392	44,78279	48,95956	1161,446	15,49232	22,27606	1175,701	18,9702	22,87477	0	40,14	-923,555	103,4951
1.sSMPABC168	1594,1436	40,90129	44,99376	569,3614	7,886995	11,37601	824,7101	14,93118	18,15686	0	8,24	-251,691	279,988
1.sSMPABC169	1385,0112	54,22754	57,5537	486,0274	8,491118	11,03192	678,8421	16,74819	19,04457	0	48,72	-594,874	284,9657
1.sSMPABC170	1834,2803	43,63009	47,27021	899,2254	13,79397	18,70712	1216,695	20,87821	24,6113	0	7,52	-170,271	203,9845
1.sSMPABC171	1663,6068	41,3497	45,33295	686,2654	10,04799	14,03322	963,2162	17,03282	20,49645	0	13,36	-424,125	242,4145
1.sSMPABC172	1672,8062	43,65796	47,4393	695,6471	10,68109	14,57975	975,2639	18,10603	21,44661	0	19,72	-633,854	240,4677
1.sSMPABC173	1723,3524	40,92822	44,8911	753,7749	10,51992	15,00947	1047,136	17,62057	21,30686	0	24,14	-962,528	228,6296
1.sSMPABC174	2698,7736	33,41014	37,29771	2592,013	27,75464	42,51428	2652,392	22,87122	28,69672	0	48,6	-2147,95	104,1188
1.sSMPABC175	1424,437	46,6795	50,46561	505,1891	8,333146	11,08496	709,389	15,35267	17,97054	0	27,7	-583,646	281,9612
1.sSMPABC176	1815,2092	43,7226	47,3719	848,337	13,03278	17,69309	1165,646	20,39036	24,04109	0	24,76	-1107,01	213,9727
1.sSMPABC177	#NÚM!	#NÚM!	#NÚM!	123,0407	905,2556	905,2579	#VALOR!	#VALOR!	#VALOR!	0	0	#VALOR!	#NÚM!
1.sSMPABC178	1875,2873	46,7328	50,11562	1021,471	13,41942	19,55428	1332,724	22,1719	26,03843	0	30,74	-348,237	183,5869
1.sSMPABC179	1849,6431	44,21847	47,80093	889,5178	13,6974	18,54987	1214,472	21,10062	24,79479	0	16,34	-670,529	207,9377
1.sSMPABC180	2091,2965	37,36693	41,3258	1923,511	23,99504	34,70787	2005,627	22,70564	27,83646	0	44,1	-1298,85	108,7229
1.sSMPABC187	1896,0371	40,13199	44,00649	945,2074	13,12228	18,63834	1279,717	19,71503	23,81576	0	29,32	-705,765	200,5948
1.sSMPABC188	1787,4786	40,76585	44,68287	702,2409	10,36609	14,41211	1021,294	17,70664	21,28282	0	22,18	-825,002	254,5392
1.sSMPABC189	1727,4091	39,62502	43,70225	730,9665	10,00597	14,43137	1027,434	16,93333	20,66396	0	6,36	-236,064	236,3185
1.sSMPABC190	1822,3641	42,83295	46,54581	826,8253	11,13634	16,13788	1149,453	19,18485	22,9692	0	57,98	-1010,42	220,405
1.sSMPABC191	1897,1143	39,5503	43,47571	1029,114	13,83415	19,91212	1347,745	19,86177	24,13167	0	45,28	-1045,65	184,3444
1.sSMPABC192	2018,5985	40,31043	44,06445	1512,161	20,49035	28,853	1736,544	23,00008	27,63343	0	58,72	-1214,74	133,491
1.sSMPABC193	1961,7363	39,8236	43,66785	1242,761	16,26532	23,54591	1533,697	21,22257	25,73096	0	54,52	-1330,34	157,8531
1.sSMPABC194	1946,1387	85,95319	87,80713	1203,087	29,90259	34,17878	1498,779	44,21626	46,57663	0	178	-1441,51	161,762

1.sSMPABC195	3068,371	62,94275	64,95617	346,2457	38,27318	38,60995	1033,729	80,86373	81,81574	0	22,7	-202,408	886,1831
1.sSMPABC196	2007,3587	38,73082	42,63385	1086,612	14,28701	20,75685	1439,187	20,25993	24,70455	0	24,36	-993,799	184,7356
1.sSMPABC197	1926,9792	48,20173	51,4491	930,4931	15,03727	19,9083	1279,993	23,55564	27,09888	0	21,2	-371,142	207,0923
1.sSMPABC198	2003,0017	40,19963	43,97613	1107,058	14,46296	21,06674	1452,924	20,86024	25,23666	0	34,52	-1081,06	180,9302
1.sSMPABC199	1169,0066	45,26737	49,44143	1175,052	16,27394	22,9477	1172,927	19,24811	23,0982	0	31,66	-666,835	99,48555
1.sSMPABC200	2016,5754	40,51	44,24876	1278,704	17,02948	24,3981	1583,26	22,00622	26,49452	0	23,72	-661,939	157,7046
1.sSMPABC207	669,34985	54,26313	58,36322	493,7347	8,053361	10,7695	526,1417	12,59667	14,65832	0	212,04	-4166,55	135,5687
1.sSMPABC208	1922,6605	46,73239	50,07845	988,7074	14,53369	20,04302	1326,161	22,83793	26,59426	0	44,14	-546,959	194,462
1.sSMPABC209	736,95351	46,79887	51,39848	497,9132	7,173128	10,16889	542,9802	11,28974	13,64932	0	194,6	-5571,66	148,0084
1.sSMPABC210	1212,5666	55,75561	59,15267	1174,676	17,82199	24,06877	1188,083	23,25074	26,58521	0	32,96	-764,004	103,2257
1.sSMPABC211	2062,9678	39,40547	43,20107	1312,029	16,51087	24,33866	1627,318	21,56254	26,21954	0	42,66	-1085,95	157,235
1.sSMPABC212	3201,1187	32,70801	36,35688	2872,205	31,96835	47,39543	3069,4	24,28768	30,11973	0	54,36	-1629,76	111,4516
1.sSMPABC213	1684,2102	51,25333	54,50114	558,3753	13,11861	15,39206	840,714	21,39583	23,8364	0	20,58	-528,135	301,6269
1.sSMPABC214	#NÚM!	#NÚM!	#NÚM!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	0	0	-2234,32	#NÚM!
1.sSMPABC215	1737,6089	47,02895	50,50346	601,8555	12,27444	15,01526	903,5729	20,16465	22,96396	0	12,66	-369,949	288,7087
1.sSMPABC216	3877,233	54,07922	56,15495	2982,485	56,00029	66,64791	3543,071	43,05468	46,81794	0	213,52	-7627,26	130,0001
1.sSMPABC217	1967,179	41,34882	45,05861	1975,392	23,44095	34,75128	1971,383	23,72132	28,62698	0	98,84	-1612,67	99,58424
1.sSMPABC218	1947,3777	38,3894	42,3768	1978,001	23,91404	35,09418	1963,076	22,52105	27,62031	0	66,28	-1655,81	98,4518
1.sSMPABC219	1192,167	82,00861	84,36869	1173,279	23,61897	28,62308	1179,937	33,3397	35,76122	0	125,96	-817,257	101,6099
1.sSMPABC220	1498,3552	42,49254	46,54184	1435,432	19,03273	27,17015	1460,993	21,04262	25,40843	0	42,14	-1054,57	104,3836
1.sSMPABC227	1619,2599	61,64992	64,42011	593,1593	14,01723	16,40902	856,8943	24,20168	26,4441	0	10,92	-121,834	272,989
1.sSMPABC228	2176,7272	45,24936	48,50942	499,3451	11,69905	13,75343	934,4937	21,98037	24,6839	0	16,32	-256,251	435,9164
1.sSMPABC229	1526,9876	50,66727	54,08289	551,1	11,69289	14,13909	785,8847	19,232	21,69425	0	237,82	-6424,1	277,08
1.sSMPABC230	1780,1462	41,95021	45,77261	821,6632	11,9986	16,69757	1128,993	19,09266	22,8244	0	39,66	-986,822	216,6516
1.sSMPABC231	1478,6758	3461,692	3461,744	3304,059	9449,592	9450,251	2290,577	#VALOR!	#VALOR!	0	0	-3812,34	44,75331
1.sSMPABC232	2002,9824	37,84985	41,839	1088,354	14,20531	20,71676	1438,63	19,87996	24,39039	0	57,26	-1388,49	184,0377
1.sSMPABC233	1794,9734	49,07789	52,37104	1642,928	22,26779	31,20567	1710,82	25,97845	30,12914	0	95,84	-1226,02	109,2545
1.sSMPABC234	1492,3838	48,44932	52,04268	419,3852	9,9322	11,66063	632,3046	16,79646	18,87867	0	10,46	-269,075	355,8503
1.sSMPABC235	1967,0889	81,94124	83,87447	1140,901	22,4956	27,46616	1462,699	40,08789	42,60902	0	137,18	-412,23	172,4153
1.sSMPABC236	4264,5323	67,54221	69,14054	4781,27	80,42243	95,36568	4423,839	53,11676	56,36634	0	1275,92	-10233,1	89,19247
1.sSMPABC237	1843,3525	43,38802	47,03913	867,3546	12,82407	17,71176	1192,991	20,34785	24,08887	0	42,54	-867,073	212,5258
1.sSMPABC238	2119,9783	63,85668	66,236	2112,013	40,41014	48,7135	2116,052	38,74472	42,13303	0	75,06	-618,906	100,3771
1.sSMPABC239	1835,3724	59,83267	62,53597	1660,59	26,33091	34,36145	1739,335	31,77935	35,32238	0	138,3	-1208,37	110,5253
1.sSMPABC240	1982,7923	39,47889	43,33554	1238,932	16,18631	23,45683	1540,367	21,15506	25,69029	0	14,16	-247,656	160,0404
1.sSMPABC009	1891,0776	49,5399	52,73124	1476,321	18,42654	27,10694	1655,537	25,51823	29,6312	0	60,1	-1644,1	128,0939

1.sSMPABC011	1610,8348	45,57101	49,26174	366,6795	8,629878	10,1601	597,5556	15,65925	17,70629	0	8,7	-239,361	439,3032
1.sSMPABC012	2374,8271	44,14108	47,3438	391,9034	13,01027	14,21327	853,8466	25,068	27,23228	0	41,38	-971,12	605,9725
1.sSMPABC013	1880,6128	42,71794	46,38992	1035,375	11,87346	18,66336	1345,803	20,15002	24,36562	0	59,02	-933,509	181,6358
1.sSMPABC014	1898,5669	37,13021	41,28499	1438,166	14,66362	24,33046	1635,1	19,33596	24,42547	0	38,3	-1275,52	132,013
1.sSMPABC015	1887,8533	42,38657	46,07879	1798,66	19,83063	30,86844	1840,363	22,95445	27,77956	0	108,48	-1760,93	104,9589
1.sSMPABC016	1884,0996	38,23718	42,29669	1651,666	17,11311	27,83541	1756,735	20,46942	25,59013	0	50,5	-1321,74	114,0727
1.sSMPABC017	1893,9177	53,65472	56,61262	1879,835	23,67078	34,12862	1886,535	28,82547	32,89353	0	103,9	-1674,69	100,7492
1.sSMPABC018	1854,2402	37,39236	41,56293	1001,8	10,75291	17,62602	1308,585	17,59046	22,16787	0	43,36	-1524,69	185,0909
1.sSMPABC019	1876,7184	37,45239	41,59555	1398,747	14,98478	24,14997	1600,234	19,47226	24,45505	0	33,84	-920,681	134,1714
1.sSMPABC020	1896,9717	39,24676	43,19989	1822,464	20,0162	31,19586	1857,51	21,70871	26,7818	0	47,84	-1209,35	104,0883
1.sSMPABC028	1891,7554	39,93902	43,8344	1860,011	20,44638	31,79928	1875,05	22,08178	27,11722	0	91,02	-1729,59	101,7067
1.sSMPABC030	1899,236	42,75786	46,41099	1809,77	22,05816	32,44093	1851,75	23,75762	28,47029	0	36,36	-626,864	104,9435
1.sSMPABC031	1885,8261	45,87766	49,31078	1530,439	19,75649	28,49201	1686,222	24,39489	28,72102	0	77,1	-1041,32	123,2213
1.sSMPABC032	1867,0844	41,27944	45,0806	739,0765	9,164162	13,94228	1085,486	17,73533	21,54145	0	57,94	-960,648	252,624
1.sSMPABC034	1882,837	38,43403	42,47589	1797,928	18,71522	30,15558	1837,601	20,96728	26,14418	0	76,04	-1761,68	104,7226
1.sSMPABC035	1221,648	47,12876	51,09256	1202,713	13,93389	21,61317	1209,504	19,36037	23,30774	0	69,06	-1116,24	101,5744
1.sSMPABC036	2054,7433	43,82449	47,27279	1687,787	21,17824	30,8137	1858,255	24,69685	29,27436	0	34,98	-519,751	121,7419
1.sSMPABC037	1218,0439	44,74212	48,9039	1229,777	13,54435	21,62591	1225,523	18,50413	22,6484	0	70,26	-1103,46	99,04594
1.sSMPABC038	1906,5369	41,59215	45,33306	1255,613	14,56887	22,52705	1518,288	21,04345	25,54652	0	70,24	-1112,82	151,8411
1.sSMPABC039	1224,5953	51,33068	54,98943	1222,955	14,94821	22,46982	1223,548	21,10086	24,82148	0	103,12	-1122,63	100,1341
1.sSMPABC040	1798,8192	42,03624	45,83466	1802,463	19,4291	30,64492	1800,774	22,32277	27,18647	0	106,82	-1608,66	99,79785
1.sSMPABC047	1895,7995	43,29725	46,91125	1113,678	13,00612	20,15701	1411,855	20,97481	25,22889	0	122,92	-1467,19	170,2287
1.sSMPABC050	1734,9584	52,56779	55,69987	1728,442	24,73014	33,67781	1731,392	27,76319	31,72374	0	54,42	-616,072	100,377
1.sSMPABC051	2037,5523	41,95795	45,56136	1842,161	20,28015	31,5373	1935,794	23,506	28,3935	0	82,38	-1047,31	110,6066
1.sSMPABC052	1883,4835	65,0181	67,48577	1382,797	21,78056	28,74411	1592,996	32,76497	35,99467	0	182,16	-962,699	136,2083
1.sSMPABC054	2037,7974	54,56263	57,37971	1846,713	24,86234	34,70525	1938,368	30,28878	34,25871	0	95,36	-944,569	110,3473
1.sSMPABC055	2255,3937	46,07079	49,22392	656,699	13,7772	16,67784	1150,147	24,10632	27,23645	0	43,16	-610,697	343,4441
1.sSMPABC056	1871,0248	39,72626	43,65928	1514,914	16,71593	26,32689	1670,082	20,90999	25,77245	0	57,82	-984,301	123,507
1.sSMPABC057	1799,5388	72,37272	74,64264	607,6659	14,00209	16,50051	930,1221	28,73873	30,86346	0	26,18	-198,22	296,1395
1.sSMPABC058	1851,8931	45,72567	49,19667	877,6019	11,62674	16,96195	1205,15	20,65883	24,39006	0	70,52	-881,903	211,0174
1.sSMPABC059	1853,1732	49,63555	52,84942	760,6533	11,87884	16,05407	1100,734	21,77278	25,03449	0	21,56	-278,21	243,6291
1.sSMPABC060	2042,2179	40,22685	43,96852	1836,152	20,51388	31,63656	1934,828	22,82955	27,83044	0	93,42	-1405,66	111,2227

BG-19-24: Granite intruded in base of Serra Negra Formation

						Ratios (data not corrected for common-Pb)							

SPOT ID	f206c	^{207}Pb	^{206}Pb	U (µg g^{-1}) [a]	Th/U	$^{206}Pb/^{204}Pb$	$^{207}Pb/^{206}Pb$	1*s*	$^{206}Pb/^{238}U$	1*s*	$^{207}Pb/^{235}U$	1*s*	$^{208}Pb/^{232}Th$	1*s*
		CPS	CPS											
1.sSMPABC007	1,088826	739065,1	85090,5	964,4146	0,350075	15,976435	0,1164	0,00117	0,095904275	0,00048	1,53919	0,001265	0,03214	0,00026
1.sSMPABC008	0,949796	1404883	162086,5	1815,645	0,085999	21,956985	0,11648	0,0012	0,09697015	0,00051	1,557366	0,001304	0,14542	0,00208
1.sSMPABC009	1,641027	1126780	219020,1	1053,851	0,149662	22,795595	0,19762	0,00199	0,133060019	0,00067	3,625599	0,0021	0,20134	0,00198
1.sSMPABC010	0,69501	437848,1	42910,91	587,0339	0,073806	12,016496	0,09869	0,001	0,093714119	0,00047	1,275203	0,001105	0,11819	0,00121
1.sSMPABC011	3,416787	317081	73539,09	294,9234	1,723349	11,277272	0,24013	0,00252	0,131382144	0,00068	4,349948	0,00261	0,03053	0,00048
1.sSMPABC012	1,207884	598413,1	75080,5	757,5921	0,496237	14,112875	0,127	0,00127	0,098732841	0,00053	1,728887	0,001376	0,02748	0,00026
1.sSMPABC013	1,101364	841120,8	100596,5	1067,638	0,295575	17,187163	0,12093	0,00122	0,09858216	0,00053	1,643742	0,00133	0,03919	0,00041
1.sSMPABC014	2,040983	628654,7	111531,9	723,6835	0,507107	14,936639	0,18111	0,00181	0,107666756	0,00056	2,688595	0,001895	0,05357	0,00046
1.sSMPABC015	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	0.01147156	#VALOR!	0,0598	#VALOR!	#VALOR!	0	0
1.sSMPABC016	1,3072	844738,4	120719,2	1030,863	0,458421	18,730672	0,1448	0,00146	0,102324696	0,00052	2,042915	0,00155	0,03891	0,00037
1.sSMPABC017	1,010445	871659,6	107269,8	1086,348	0,418534	19,217084	0,12432	0,00129	0,100494197	0,00054	1,722595	0,001398	0,03932	0,00067
1.sSMPABC018	1,244005	544935	84738,04	640,6567	0,349542	16,756584	0,15746	0,00164	0,106281202	0,00055	2,307427	0,00173	0,07652	0,00128
1.sSMPABC019	0,939515	553996,9	65267,83	696,206	0,145461	14,877555	0,11893	0,0012	0,099734097	0,00051	1,635447	0,001304	0,08654	0,00087
1.sSMPABC020	1,825305	329403,6	81277,86	158,139	0,796254	16,897684	0,25133	0,00273	0,258739409	0,00138	8,966195	0,003059	0,09124	0,00213
1.sSMPABC027	1,539704	482391,4	76212,72	560,2037	0,42822	14,071773	0,16046	0,00162	0,107272492	0,00058	2,373321	0,001721	0,05825	0,00065
1.sSMPABC028	0,302023	319520	18718,29	542,6446	0,809889	6,5586166	0,05876	0,00067	0,074274993	0,00043	0,601763	0,000796	0,2041	0,00447
1.sSMPABC029	1,832323	271285,8	51715,71	304,4277	3,251266	12,117083	0,19419	0,00243	0,110684055	0,00071	2,963556	0,002532	0,01335	0,00051
1.sSMPABC030	1,575677	640094,8	106704,6	729,026	0,276942	17,004721	0,16937	0,00185	0,10933958	0,00058	2,553378	0,001939	0,09119	0,00245
1.sSMPABC031	1,493067	359166,6	45191,38	463,3286	1,210399	9,9452872	0,12773	0,00139	0,0966156	0,00063	1,701537	0,001526	0,01012	0,00021
1.sSMPABC032	0,996005	517165	58297,91	682,4561	0,248482	13,570278	0,11386	0,00115	0,094925031	0,00054	1,49023	0,00127	0,04098	0,00049
1.sSMPABC033	1,709651	246743,5	46128,26	211,425	0,530206	11,177188	0,1902	0,01131	0,145135529	0,00389	3,806147	0,01196	0,08209	0,03675
1.sSMPABC034	2,526626	302411,8	56268,84	347,0514	1,064428	10,858517	0,19089	0,00224	0,107464395	0,00067	2,828454	0,002338	0,03843	0,00133
1.sSMPABC035	1,823818	709593,7	111945	845,4731	0,570052	14,933966	0,16069	0,00167	0,104253287	0,00065	2,309829	0,001792	0,02509	0,00047
1.sSMPABC036	0,888428	378079	43047,83	483,7309	0,308858	11,829578	0,11488	0,00122	0,098011434	0,00053	1,552467	0,00133	0,05425	0,00113
1.sSMPABC037	1,195757	611648,8	84770,07	765,691	0,243789	16,233257	0,14027	0,00142	0,099861449	0,00059	1,931363	0,001538	0,05836	0,00081
1.sSMPABC038	0,867618	316232,7	35349,02	409,4882	0,310789	10,628088	0,11276	0,00127	0,09686225	0,00054	1,505951	0,00138	0,0459	0,00134
1.sSMPABC039	1,087291	403060,4	55340,49	493,6299	0,441242	13,497681	0,13881	0,00145	0,10218672	0,00056	1,955764	0,001554	0,04062	0,00074
1.sSMPABC040	0,974186	499677,8	56705,23	647,6933	0,185101	13,159718	0,1146	0,00117	0,096659097	0,00054	1,527315	0,001289	0,06938	0,00093
1.sSMPABC047	1,368291	361203,3	55163,45	426,8725	0,135075	13,311644	0,15484	0,00345	0,105595108	0,00112	2,254386	0,003627	0,16738	0,02472
1.sSMPABC048	1,103889	752541,2	101803,8	916,0544	0,170324	18,040718	0,13679	0,00143	0,102792617	0,00064	1,938731	0,001567	0,07718	0,00147
1.sSMPABC049	2,235765	519966,2	91272,63	605,117	1,284248	13,806176	0,17955	0,00185	0,106289276	0,00066	2,631335	0,001964	0,01995	0,00035
1.sSMPABC050	1,547348	559801,1	92370,9	641,9686	0,136659	16,661417	0,1676	0,00199	0,108622811	0,0007	2,510131	0,00211	0,18649	0,00701

1.sSMPABC051	0,984465	951533,5	167715	769,77	0,138273	28,659427	0,17801	0,00198	0,154860296	0,00096	3,800894	0,0022	0,1592	0,0048
1.sSMPABC052	1,202596	497650,7	73518,82	602,5346	0,080518	16,498837	0,14953	0,00304	0,103243287	0,001	2,128587	0,0032	0,28986	0,03937
1.sSMPABC053	0,991511	371344,9	41483,42	478,7459	0,394527	12,087243	0,11283	0,00167	0,097166931	0,00073	1,511626	0,001823	0,03752	0,00254
1.sSMPABC054	0,841114	716587,3	83938,45	898,2133	0,073758	19,256355	0,11813	0,00127	0,100090979	0,00061	1,630258	0,001409	0,17537	0,00425
1.sSMPABC055	0,933246	340674,3	38869,3	437,1557	0,189176	11,80003	0,11517	0,00117	0,097679819	0,00058	1,55112	0,001306	0,05978	0,00084
1.sSMPABC056	1,510682	542251,7	84210,58	641,196	0,092426	16,200573	0,15768	0,00177	0,10538357	0,00069	2,291136	0,0019	0,23771	0,00678
1.sSMPABC057	2,652273	969543,9	201007,3	1070,893	0,582278	16,823507	0,21297	0,00264	0,111511822	0,00084	3,274467	0,00277	0,27906	0,01265
1.sSMPABC058	0,897484	411996,6	45272,19	524,1056	0,437086	13,175842	0,11088	0,00112	0,098567363	0,00059	1,506911	0,001266	0,03512	0,00051
1.sSMPABC059	1,270572	202428	23369,16	261,4274	0,287749	7,6897539	0,11693	0,00131	0,096725221	0,00062	1,559434	0,001449	0,0482	0,00132
1.sSMPABC060	1,024717	490921,6	58049,4	619,03	0,144964	14,379341	0,11947	0,00129	0,099311799	0,00059	1,635916	0,001419	0,10353	0,0028
1.sSMPABC067	1,382747	262634,6	35858,97	327,7731	0,087066	10,348908	0,13845	0,01126	0,099978171	0,00391	1,908532	0,01192	0,3791	0,36633
1.sSMPABC068	2,195931	805705,7	197184,5	515,4798	1,120965	22,053964	0,25023	0,00261	0,193417328	0,0013	6,673229	0,002916	0,04701	0,001
1.sSMPABC069	1,039653	369658,2	40887,14	486,4854	0,181132	11,793234	0,11177	0,00116	0,095140477	0,0006	1,466195	0,001306	0,06586	0,00127
1.sSMPABC070	9,078987	1564036	868651,3	695,541	0,848887	15,376809	0,61085	0,00652	0,258679373	0,00176	21,78701	0,006753	0,2074	0,00563
1.sSMPABC071	1,570194	308022,6	43067,57	378,519	0,116544	11,054305	0,14205	0,00149	0,101343328	0,00066	1,984896	0,00163	0,15951	0,00333
1.sSMPABC072	1,198975	369094,3	55553,68	440,3939	0,17562	14,688968	0,15234	0,00397	0,104768607	0,00138	2,200627	0,004203	0,14804	0,02951
1.sSMPABC073	1,127444	315990,6	39790,83	393,2376	0,395346	11,644961	0,12736	0,00133	0,100523727	0,00065	1,765237	0,00148	0,05176	0,00105
1.sSMPABC074	1,22742	613453,7	78067,25	782,1903	0,645771	15,286322	0,12884	0,00162	0,098012031	0,00069	1,741131	0,001761	0,31743	0,01699
1.sSMPABC075	0,760057	315002,2	30798,14	419,1776	0,127457	10,450675	0,09852	0,00103	0,094357338	0,00061	1,281744	0,001197	0,07387	0,00153
1.sSMPABC076	1,023586	433995,3	52143,44	549,3289	0,254114	13,923482	0,12139	0,00174	0,098936824	0,00077	1,655931	0,001903	0,06436	0,00479
1.sSMPABC077	1,069162	583195,3	72270,01	747,6779	0,186298	16,193146	0,12526	0,0013	0,097634844	0,00064	1,686237	0,001449	0,07626	0,00159
1.sSMPABC078	1,035273	485210,2	65641,56	588,6552	0,199591	16,605505	0,1367	0,00195	0,103210314	0,00083	1,945328	0,002119	0,08979	0,00563
1.sSMPABC079	0,989873	426231,1	51650,05	534,4753	0,309667	13,967022	0,12239	0,00128	0,099901218	0,00066	1,685846	0,00144	0,05687	0,00123
1.sSMPABC080	0,944645	327167,6	35693,84	413,1612	0,076837	11,182281	0,11014	0,00129	0,099243561	0,00069	1,507123	0,001463	0,173	0,0067
1.sSMPABC067	0,761687	467500,9	50819,99	1973,108	0,059853	37,953688	0,10954	0,00114	0,098593264	0,00071	1,489091	0,001343	0,13148	0,00246
1.sSMPABC068	1,09788	422189,1	57225,78	1732,347	0,222247	34,225942	0,13705	0,0014	0,101068076	0,00072	1,909828	0,001574	0,0485	0,0008
1.sSMPABC069	1,585899	435759,7	66021,3	1711,331	0,548554	25,749338	0,15395	0,00158	0,105076736	0,00076	2,230425	0,001753	0,02954	0,00051
1.sSMPABC070	1,216082	159044,1	18130,49	667,2897	0,119275	21,635434	0,1154	0,00187	0,098724647	0,00089	1,570843	0,002071	0,10049	0,0066
1.sSMPABC071	0,906441	378902,5	41631,89	1594,68	0,151784	33,601204	0,11088	0,00136	0,098726912	0,00082	1,50935	0,001588	0,03988	0,00126
1.sSMPABC072	1,473612	200318,9	27880,06	810,928	0,60519	24,034537	0,14126	0,00157	0,102053633	0,00074	1,987691	0,001736	0,0281	0,00078
1.sSMPABC073	1,070216	232006	25924,62	973,4105	0,10528	28,394987	0,11295	0,00142	0,098870426	0,00083	1,539763	0,001645	0,07076	0,00255
1.sSMPABC074	0	242731	19724,32	1054,166	0,142744	46,192789	0,08126	0,00113	0,09655	0,00084	1,081759	0,001408	0,01983	0,00074
1.sSMPABC075	5,913488	267778	102669,3	675,2602	1,378071	16,745929	0,40751	0,00452	0,156447052	0,00119	8,790365	0,004674	0,41591	0,01243
1.sSMPABC076	0	225718	27000,39	944,3827	0,217312	31,359335	0,11962	0,00129	0,10022	0,00071	1,652949	0,001472	0,06727	0,00166

1.sSMPABC077	0,024416	381273,1	22474,37	1708,217	0,514197	335,4384	0,05896	0,00069	0,093567149	0,00067	0,760645	0,000962	0,20409	0,00708
1.sSMPABC078	0,515379	369693,3	49261,52	1242,916	0,078514	64,310084	0,13394	0,00173	0,12407722	0,00095	2,291414	0,001974	0,1596	0,00744
1.sSMPABC079	0	35799	2577,528	157,8435	13,82918	2577,528	0,072	0,00179	0,0951	0,00102	0,944092	0,00206	0,02905	0,00123
1.sSMPABC080	0,816358	286386,9	30168,84	1211,147	0,04046	34,597298	0,10621	0,00117	0,098340581	0,00076	1,440123	0,001395	0,14122	0,00368
1.sSMPABC087	1,395389	503665,1	81393,84	1723,737	0,060726	30,123552	0,16389	0,00178	0,120810369	0,00093	2,72997	0,002008	0,266	0,00722
1.sSMPABC088	1,28375	333385,8	43234,66	1373,61	0,802858	26,202821	0,13137	0,00172	0,100463528	0,00088	1,819726	0,001932	0,01129	0,00044
1.sSMPABC089	2,035158	157873	26680,4	606,7632	0,583955	22,648894	0,17251	0,00189	0,106879642	0,00081	2,542205	0,002056	0,04022	0,00113
1.sSMPABC090	0,742	137340,1	17345,48	564,8116	0,212259	37,463248	0,12724	0,00205	0,101203457	0,0009	1,775498	0,002239	0,07481	0,00523
1.sSMPABC091	0,54398	566149,7	85440,24	1420,493	0,09326	70,032985	0,15174	0,00163	0,1662109	0,00124	3,47745	0,002048	0,12444	0,00336
1.sSMPABC092	0	262734	34278,9	1073,859	0,060966	25,657863	0,13047	0,00239	0,10259	0,00108	1,845512	0,002623	0,10484	0,00673
1.sSMPABC093	1,206761	243010,6	31121,31	1348,736	0,424545	28,57788	0,12963	0,00143	0,074638292	0,00058	1,334039	0,001543	0,03045	0,00087
1.sSMPABC094	3,704845	198739	45847,95	684,8572	1,260125	15,72289	0,23957	0,00409	0,117171945	0,00126	3,870413	0,00428	0,01214	0,00066
1.sSMPABC095	0	236480	27651,61	988,2266	0,161791	25,183612	0,11693	0,00179	0,10034	0,00085	1,617712	0,001982	0,083	0,00576
1.sSMPABC096	1,10192	717739,9	135279,6	1802,025	0,146741	43,979061	0,19058	0,00222	0,165169683	0,00132	4,340192	0,002583	0,13868	0,00533
1.sSMPABC097	1,416436	218377,2	36245,21	849,9763	0,346015	30,103999	0,16836	0,00225	0,106204073	0,00085	2,465366	0,002405	0,05245	0,00278
1.sSMPABC098	1,354638	302529,2	31123,37	1295,484	0,369384	20,342071	0,10429	0,00167	0,096593538	0,00097	1,388967	0,001931	0,00721	0,00035
1.sSMPABC099	0	407385	104681,6	1376,479	0,10091	19,844862	0,25696	0,00507	0,1241	0,00123	4,396819	0,005217	0,43452	0,0415
1.sSMPABC100	1,258116	239230,8	39685,13	870,085	0,376265	33,832164	0,168	0,00212	0,113839518	0,00089	2,63696	0,002299	0,06831	0,00326

	Ratios (data corrected for common-Pb)								
SPOT ID	**$^{207}Pb/^{206}Pb$**	**2*s* (%)**	**$^{207}Pb/^{235}U$**	**2*s* (%)**	**$^{206}Pb/^{238}U$**	**2*s* (%)**	**Rho**	**$^{208}Pb/^{232}Th$**	***2s* (%)**
	Data for Wetherill plot								
1.sSMPABC007	0,1151326	2,776385	1,53919	3,705779	0,09696	2,454483	0,662339	0,03214	1,617922
1.sSMPABC008	0,1153737	2,652938	1,557366	3,447971	0,0979	2,202368	0,638743	0,14542	2,860679
1.sSMPABC009	0,194377	2,653971	3,625599	3,729715	0,13528	2,620538	0,702611	0,20134	1,966822
1.sSMPABC010	0,0980041	2,485204	1,275203	3,055811	0,09437	1,77813	0,581885	0,11819	2,047551
1.sSMPABC011	0,2319253	3,661151	4,349948	6,296025	0,13603	5,1221	0,813545	0,03053	3,144448
1.sSMPABC012	0,125466	2,793871	1,728887	3,843645	0,09994	2,639676	0,686764	0,02748	1,892285
1.sSMPABC013	0,1195981	2,748529	1,643742	3,683538	0,09968	2,452354	0,66576	0,03919	2,092371
1.sSMPABC014	0,1774136	3,075244	2,688595	4,928356	0,10991	3,851178	0,781433	0,05357	1,717379
1.sSMPABC015	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	0	#DIV/0!
1.sSMPABC016	0,1429072	2,7426	2,042915	3,858306	0,10368	2,713792	0,703364	0,03891	1,901825
1.sSMPABC017	0,1230638	2,663052	1,722595	3,490873	0,10152	2,257066	0,646562	0,03932	3,407935

1.sSMPABC018	0,1555012	2,647483	2,307427	3,660399	0,10762	2,527718	0,690558	0,07652	3,345531
1.sSMPABC019	0,1178126	2,587221	1,635447	3,347137	0,10068	2,123584	0,634448	0,08654	2,010631
1.sSMPABC020	0,2467425	2,661883	8,966195	3,17821	0,26355	1,736491	0,546374	0,09124	4,669005
1.sSMPABC027	0,1579894	2,829266	2,373321	4,138493	0,10895	3,020328	0,729813	0,05825	2,23176
1.sSMPABC028	0,0585825	2,509031	0,601763	2,8784	0,0745	1,410655	0,490083	0,2041	4,380206
1.sSMPABC029	0,1906318	3,192966	2,963556	4,727076	0,11275	3,485716	0,737394	0,01335	7,640449
1.sSMPABC030	0,1667013	2,915483	2,553378	4,199712	0,11109	3,022837	0,719772	0,09119	5,373396
1.sSMPABC031	0,1258229	3,242555	1,701537	4,629693	0,09808	3,304527	0,713768	0,01012	4,150198
1.sSMPABC032	0,1127259	2,699212	1,49023	3,587616	0,09588	2,363312	0,658742	0,04098	2,39141
1.sSMPABC033	0,1869482	12,23706	3,806147	13,5229	0,14766	5,755273	0,425595	0,08209	89,53588
1.sSMPABC034	0,1860669	3,629449	2,828454	5,971444	0,11025	4,741861	0,79409	0,03843	6,921676
1.sSMPABC035	0,1577593	3,135024	2,309829	4,808989	0,10619	3,646643	0,758297	0,02509	3,746513
1.sSMPABC036	0,1138594	2,651001	1,552467	3,377168	0,09889	2,092237	0,619524	0,05425	4,165899
1.sSMPABC037	0,1385927	2,678934	1,931363	3,760138	0,10107	2,638551	0,701717	0,05836	2,775874
1.sSMPABC038	0,1117817	2,751919	1,505951	3,456676	0,09771	2,091782	0,605143	0,0459	5,83878
1.sSMPABC039	0,1373007	2,640007	1,955764	3,546207	0,10331	2,367688	0,667668	0,04062	3,643525
1.sSMPABC040	0,1134836	2,683169	1,527315	3,522491	0,09761	2,282225	0,647901	0,06938	2,680888
1.sSMPABC047	0,1527213	4,860396	2,254386	5,876636	0,10706	3,303242	0,562097	0,16738	29,53758
1.sSMPABC048	0,13528	2,670769	1,938731	3,627852	0,10394	2,45526	0,676781	0,07718	3,809277
1.sSMPABC049	0,1755357	3,30636	2,631335	5,414976	0,10872	4,28835	0,791943	0,01995	3,508772
1.sSMPABC050	0,1650066	3,055381	2,510131	4,337422	0,11033	3,078616	0,70978	0,18649	7,517829
1.sSMPABC051	0,1762576	2,509098	3,800894	3,063899	0,1564	1,75838	0,573903	0,1592	6,030151
1.sSMPABC052	0,1477318	4,425894	2,128587	5,343118	0,1045	2,993388	0,560232	0,28986	27,16484
1.sSMPABC053	0,1117113	3,47711	1,511626	4,287925	0,09814	2,509184	0,585175	0,03752	13,53945
1.sSMPABC054	0,1171364	2,600861	1,630258	3,317034	0,10094	2,058699	0,620644	0,17537	4,846895
1.sSMPABC055	0,1140952	2,623446	1,55112	3,44238	0,0986	2,228792	0,647457	0,05978	2,810304
1.sSMPABC056	0,155298	2,996856	2,291136	4,314839	0,107	3,104301	0,719448	0,23771	5,70443
1.sSMPABC057	0,2073215	3,610058	3,274467	6,052063	0,11455	4,857464	0,802613	0,27906	9,066151
1.sSMPABC058	0,1098849	2,612238	1,506911	3,389445	0,09946	2,159757	0,637201	0,03512	2,904328
1.sSMPABC059	0,1154443	3,161616	1,559434	4,280839	0,09797	2,886134	0,674198	0,0482	5,477178
1.sSMPABC060	0,1182458	2,786512	1,635916	3,649574	0,10034	2,35685	0,645788	0,10353	5,40906
1.sSMPABC067	0,1365356	16,61777	1,908532	18,5227	0,10138	8,181691	0,441712	0,3791	193,263
1.sSMPABC068	0,2447351	2,787418	6,673229	3,798707	0,19776	2,580789	0,679386	0,04701	4,254414
1.sSMPABC069	0,110608	2,816643	1,466195	3,764185	0,09614	2,497121	0,66339	0,06586	3,856666

1.sSMPABC070	0,555391	4,025123	21,78701	7,646221	0,28451	6,501006	0,850225	0,2074	5,429122
1.sSMPABC071	0,1398195	3,096316	1,984896	4,531443	0,10296	3,308595	0,730142	0,15951	4,175287
1.sSMPABC072	0,1505135	5,510603	2,200627	6,500387	0,10604	3,447939	0,530421	0,14804	39,8676
1.sSMPABC073	0,1259241	2,769237	1,765237	3,77127	0,10167	2,560039	0,678827	0,05176	4,057187
1.sSMPABC074	0,1272586	3,194246	1,741131	4,272868	0,09923	2,837991	0,664189	0,31743	10,70472
1.sSMPABC075	0,0977712	2,618507	1,281744	3,32552	0,09508	2,05	0,616445	0,07387	4,142412
1.sSMPABC076	0,1201475	3,360444	1,655931	4,22615	0,09996	2,562765	0,606406	0,06436	14,88502
1.sSMPABC077	0,1239208	2,716548	1,686237	3,708967	0,09869	2,525233	0,680845	0,07626	4,169945
1.sSMPABC078	0,1352848	3,263899	1,945328	4,138635	0,10429	2,544654	0,614853	0,08979	12,54037
1.sSMPABC079	0,1211785	2,670607	1,685846	3,562778	0,1009	2,358229	0,661907	0,05687	4,325655
1.sSMPABC080	0,1090996	2,931068	1,507123	3,747564	0,10019	2,335182	0,62312	0,173	7,745665
1.sSMPABC067	0,1087056	2,522492	1,489091	3,279782	0,09935	2,096188	0,639124	0,13148	3,742014
1.sSMPABC068	0,1355454	2,625159	1,909828	3,673427	0,10219	2,569553	0,699498	0,0485	3,298969
1.sSMPABC069	0,1515085	2,955124	2,230425	4,425427	0,10677	3,294184	0,744376	0,02954	3,452945
1.sSMPABC070	0,1139966	3,91352	1,570843	4,940685	0,09994	3,015748	0,610391	0,10049	13,13564
1.sSMPABC071	0,1098749	2,975004	1,50935	3,856327	0,09963	2,453694	0,636277	0,03988	6,318957
1.sSMPABC072	0,1391784	3,094213	1,987691	4,439801	0,10358	3,183972	0,717143	0,0281	5,551601
1.sSMPABC073	0,1117412	3,182595	1,539763	4,180284	0,09994	2,710325	0,648359	0,07076	7,207462
1.sSMPABC074	0,08126	2,781196	1,081759	3,280665	0,09655	1,740031	0,53039	0,01983	7,463439
1.sSMPABC075	0,3834119	3,882561	8,790365	8,228808	0,16628	7,255274	0,881692	0,41591	5,977255
1.sSMPABC076	0,11962	2,15683	1,652949	2,580595	0,10022	1,416883	0,549053	0,06727	4,935335
1.sSMPABC077	0,0589456	2,342607	0,760645	2,746	0,09359	1,432727	0,521751	0,20409	6,938116
1.sSMPABC078	0,1332497	2,709403	2,291414	3,216315	0,12472	1,733152	0,538863	0,1596	9,323308
1.sSMPABC079	0,072	4,972222	0,944092	5,415209	0,0951	2,14511	0,396127	0,02905	8,468158
1.sSMPABC080	0,1053429	2,708588	1,440123	3,521122	0,09915	2,249855	0,63896	0,14122	5,211726
1.sSMPABC087	0,1616031	2,799141	2,72997	3,91514	0,12252	2,737358	0,699172	0,266	5,428571
1.sSMPABC088	0,1296835	3,309989	1,819726	4,506835	0,10177	3,058682	0,678676	0,01129	7,794508
1.sSMPABC089	0,1689991	3,286884	2,542205	5,189165	0,1091	4,015448	0,773814	0,04022	5,619095
1.sSMPABC090	0,1262959	3,452452	1,775498	4,141793	0,10196	2,288019	0,552422	0,07481	13,98209
1.sSMPABC091	0,1509146	2,277283	3,47745	2,794991	0,16712	1,62048	0,57978	0,12444	5,400193
1.sSMPABC092	0,13047	3,663677	1,845512	4,22558	0,10259	2,105468	0,498267	0,10484	12,83861
1.sSMPABC093	0,1280657	2,92216	1,334039	4,593689	0,07555	3,544427	0,771586	0,03045	5,714286
1.sSMPABC094	0,2306943	4,784264	3,870413	8,016241	0,12168	6,432024	0,802374	0,01214	10,87315
1.sSMPABC095	0,11693	3,061661	1,617712	3,499173	0,10034	1,69424	0,484183	0,083	13,87952

1.sSMPABC096	0,18848	2,629916	4,340192	3,340138	0,16701	2,05914	0,616484	0,13868	7,686761
1.sSMPABC097	0,1659753	3,203754	2,465366	4,434975	0,10773	3,066751	0,691492	0,05245	10,60057
1.sSMPABC098	0,1028772	4,180392	1,388967	5,390379	0,09792	3,403016	0,631313	0,00721	9,708738
1.sSMPABC099	0,25696	3,946139	4,396819	4,416041	0,1241	1,982272	0,44888	0,43452	19,10154
1.sSMPABC100	0,1658864	2,972166	2,63696	3,997613	0,11529	2,673414	0,668752	0,06831	9,544723

*Concordance calculated as (^{206}Pb-^{238}U age/^{207}Pb-^{206}age)*100

	Dates (data corrected for common-Pb)												
SPOT ID	**^{207}Pb/^{206}Pb**	**2*s***	**2s_{sys}**	**^{206}Pb/^{238}U**	**2*s***	**2s_{sys}**	**^{207}Pb/^{235}U**	**2*s***	**2s_{sys}**	**^{208}Pb/^{232}Th**	**2*s***	**2s_{sys}**	**% conc***
		abs	abs		abs	abs		abs	abs		abs	abs	
1.sSMPABC007	1881,9606	50,01099	53,18078	596,5687	14,00076	16,41935	946,1797	23,0691	25,6994	0	10,36	-627,412	315,4642
1.sSMPABC008	1885,7274	47,76576	51,07219	602,0903	12,67228	15,34422	953,4222	21,54722	24,36133	0	73,4	-2666,29	313,1968
1.sSMPABC009	2779,5547	43,49854	46,50732	817,9166	20,16128	23,2464	1555,167	30,12619	33,53254	0	66,78	-3632,74	339,8335
1.sSMPABC010	1586,4902	46,45374	50,10165	581,3303	9,892011	12,95441	834,7154	17,54129	20,40815	0	43,7	-2209,16	272,9069
1.sSMPABC011	3065,3811	58,52936	60,69042	822,1739	39,65942	41,33629	1702,886	53,35703	55,57178	0	18,84	-588,072	372,8385
1.sSMPABC012	2035,3823	49,4278	52,52268	614,0573	15,47963	17,81538	1019,337	25,03206	27,69725	0	10,24	-536,354	331,4646
1.sSMPABC013	1950,226	49,10919	52,28331	612,5333	14,34585	16,82812	987,1507	23,52507	26,23892	0	15,86	-759,292	318,3869
1.sSMPABC014	2628,8398	51,11813	53,77367	672,2252	24,63149	26,44387	1325,324	37,14636	39,613	0	17,68	-1034,31	391,0654
1.sSMPABC015	#NÚM!	#NÚM!	#NÚM!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	#VALOR!	0	0	#VALOR!	#NÚM!
1.sSMPABC016	2262,7317	47,3123	50,3831	635,9391	16,45511	18,81281	1129,934	26,64855	29,46782	0	14,54	-755,256	355,8095
1.sSMPABC017	2001,1141	47,29999	50,55015	623,3105	13,42375	16,13008	1016,993	22,67801	25,57323	0	26,14	-752,333	321,0461
1.sSMPABC018	2407,3198	44,98431	48,11063	658,911	15,85196	18,4453	1214,571	26,26644	29,33767	0	47,88	-1440,08	365,3482
1.sSMPABC019	1923,3078	46,37425	49,7439	618,3927	12,53407	15,35813	983,9596	21,31255	24,25583	0	32,44	-1641,37	311,0172
1.sSMPABC020	3163,9846	42,21214	45,11516	1507,979	23,39101	30,95141	2334,568	29,45612	33,96031	0	79,02	-1683,95	209,8162
1.sSMPABC027	2434,2556	47,94101	50,87031	666,647	19,15723	21,40102	1234,602	30,00348	32,78423	0	24,86	-1117,1	365,1491
1.sSMPABC028	551,61643	54,76746	58,98984	463,2099	6,308141	9,218776	478,3521	11,03995	13,04854	0	150,2	-3599,52	119,0856
1.sSMPABC029	2747,6202	52,48614	55,01993	688,699	22,80852	24,84164	1398,326	36,53769	39,16737	0	20,3	-247,518	398,9581
1.sSMPABC030	2524,793	48,95549	51,77721	679,075	19,51263	21,79452	1287,403	31,11431	33,91953	0	90,62	-1671,35	371,7988
1.sSMPABC031	2040,4064	57,33267	60,0183	603,1471	19,05529	20,93603	1009,109	30,04851	32,29229	0	8,34	-194,871	338,2933
1.sSMPABC032	1843,8208	48,84523	52,11504	590,2188	13,34301	15,8149	926,41	22,03708	24,70762	0	18,86	-791,127	312,3961
1.sSMPABC033	2715,4984	201,753	202,4309	887,833	47,91227	49,52468	1594,045	115,0146	116,0979	0	1372,88	-172,789	305,8569
1.sSMPABC034	2707,7048	59,88236	62,13147	674,1996	30,42631	31,92126	1363,112	45,81374	47,91516	0	51,86	-709,818	401,6177
1.sSMPABC035	2431,7858	53,13533	55,79388	650,5829	22,60615	24,45378	1215,309	34,66168	37,07227	0	18,52	-481,67	373,7857
1.sSMPABC036	1861,9051	47,86789	51,18607	607,9006	12,14889	14,96094	951,4753	21,07385	23,93523	0	43,3	-1023,19	306,2845

1.sSMPABC037	2209,6965	46,47956	49,63679	620,6764	15,63211	17,99278	1092,012	25,47206	28,30072	0	30,9	-1113,52	356,0142
1.sSMPABC038	1828,5842	49,89139	53,10836	600,9746	12,01408	14,796	932,8003	21,3146	24,08474	0	51,74	-854,459	304,2698
1.sSMPABC039	2193,4323	45,88559	49,09205	633,7776	14,30769	16,9495	1100,429	24,10941	27,0995	0	28,92	-774,944	346,0886
1.sSMPABC040	1855,9336	48,4837	51,767	600,3874	13,09676	15,68395	941,42	21,84807	24,58889	0	35,28	-1318,24	309,1227
1.sSMPABC047	2376,6216	82,84629	84,5955	655,6509	20,62572	22,66325	1198,156	42,1999	44,19345	0	856,16	-2252,9	362,4828
1.sSMPABC048	2167,6251	46,55209	49,73299	637,4575	14,91954	17,49555	1094,56	24,59727	27,51981	0	55,24	-1445,58	340,0423
1.sSMPABC049	2611,1365	55,0533	57,53572	665,3099	27,16506	28,78821	1309,438	40,64427	42,89542	0	13,82	-384,831	392,4692
1.sSMPABC050	2507,6213	51,392	54,09572	674,6641	19,75061	21,98162	1274,969	31,99328	34,70546	0	238,74	-3213,87	371,6844
1.sSMPABC051	2617,9676	41,75089	44,96957	936,7396	15,34888	20,1978	1592,935	24,93385	29,00616	0	167,56	-2815,54	279,4766
1.sSMPABC052	2319,8356	75,88878	77,81704	640,7268	18,283	20,4609	1158,127	37,59967	39,73374	0	1233,94	-3870,67	362,0631
1.sSMPABC053	1827,442	63,04764	65,6235	603,4994	14,47193	16,87183	935,0971	26,54799	28,8421	0	98,96	-645,001	302,8076
1.sSMPABC054	1912,9833	46,67594	50,03322	619,9153	12,17926	15,08204	981,9587	21,09313	24,05569	0	146,28	-3116,13	308,5879
1.sSMPABC055	1865,64	47,34899	50,69822	606,1991	12,90802	15,57103	950,9393	21,47773	24,29126	0	32,14	-1139,5	307,7603
1.sSMPABC056	2405,0974	50,93225	53,71472	655,3016	19,37183	21,52572	1209,557	30,96744	33,61771	0	221,36	-4084,42	367,0215
1.sSMPABC057	2884,7219	58,61311	60,83783	699,1184	32,26337	33,7759	1475,006	48,20138	50,35765	0	399,82	-4568,44	412,6228
1.sSMPABC058	1797,4973	47,53963	50,9303	611,2435	12,60714	15,36175	933,1892	20,90111	23,71942	0	19,76	-676,588	294,0722
1.sSMPABC059	1886,8294	56,91691	59,71808	602,5013	16,62253	18,74374	954,2429	26,8354	29,1621	0	50,94	-899,657	313,166
1.sSMPABC060	1929,883	49,90752	53,04847	616,4011	13,86962	16,4522	984,1405	23,26307	25,99393	0	102,64	-1886,6	313,0888
1.sSMPABC067	2183,7141	289,139	289,6662	622,4911	48,7323	49,55057	1084,072	131,5817	132,2491	0	0	8818,397	350,8024
1.sSMPABC068	3151,024	44,24919	47,03228	1163,276	27,52747	31,86452	2069,084	34,11128	37,84408	0	38,68	-888,81	270,8751
1.sSMPABC069	1809,4252	51,18454	54,3393	591,7481	14,13422	16,49912	916,5626	22,98109	25,52443	0	48,28	-1239,34	305,7763
1.sSMPABC070	4395,4163	58,83067	60,63334	1614,036	93,49847	95,9822	3174,281	77,08464	79,2937	0	188,6	-3616,78	272,3246
1.sSMPABC071	2224,9745	53,63204	56,3813	631,7323	19,94078	21,90444	1110,387	31,06719	33,48653	0	116,16	-2871,6	352,2021
1.sSMPABC072	2351,768	94,17206	95,72243	649,7087	21,34497	23,28756	1181,242	46,42709	48,23051	0	1039,22	-1723,32	361,9726
1.sSMPABC073	2041,8276	48,95581	52,07427	624,1883	15,24824	17,68438	1032,773	24,74395	27,47524	0	40,24	-978,392	327,1172
1.sSMPABC074	2060,4443	56,34936	59,06752	609,8948	16,53639	18,7146	1023,882	27,93909	30,37162	0	521,28	-5041,65	337,836
1.sSMPABC075	1582,0415	48,97392	52,45074	585,5112	11,48424	14,24222	837,6302	19,14751	21,82097	0	57,44	-1381,15	270,1983
1.sSMPABC076	1958,4103	59,98482	62,60504	614,1745	15,03082	17,42742	991,8212	27,11351	29,52352	0	182,04	-1077,55	318,8687
1.sSMPABC077	2013,4307	48,18144	51,36706	606,7272	14,63898	17,038	1003,342	23,92008	26,64423	0	59,78	-1423,92	331,8511
1.sSMPABC078	2167,6869	56,89008	59,521	639,501	15,51061	18,0167	1096,837	28,14172	30,74713	0	209	-1527,35	338,9654
1.sSMPABC079	1973,6492	47,58604	50,83797	619,6811	13,94817	16,5426	1003,194	22,96452	25,78578	0	46,96	-1069,62	318,4944
1.sSMPABC080	1784,4341	53,42789	56,47562	615,5223	13,72327	16,32243	933,275	23,13611	25,71849	0	230,72	-2990,97	289,9057
1.sSMPABC067	1777,838	46,01781	49,5292	610,5985	12,2234	15,04306	925,9457	20,12108	23,00617	0	87,94	-2405,54	291,1632
1.sSMPABC068	2171,0403	45,73987	48,9712	627,2304	15,37608	17,81576	1084,525	24,7809	27,65658	0	30,82	-924,996	346,1312

1.sSMPABC069	2363,0217	50,44171	53,27368	653,9621	20,51866	22,55625	1190,652	31,50896	34,07801	0	19,88	-567,555	361,3393
1.sSMPABC070	1864,0804	70,64604	72,93401	614,0573	17,68802	19,76543	958,7589	31,12531	33,1756	0	242,34	-1690,81	303,5678
1.sSMPABC071	1797,3328	54,14263	57,14295	612,2402	14,34714	16,82712	934,1767	23,82971	26,34934	0	48,86	-740,749	293,5666
1.sSMPABC072	2217,0099	53,64197	56,39539	635,355	19,29342	21,33761	1111,338	30,44395	32,90929	0	30,76	-528,939	348,9404
1.sSMPABC073	1827,9275	57,70402	60,50747	614,0573	15,89444	18,17716	946,4089	26,06506	28,42961	0	96,3	-1284,45	297,6803
1.sSMPABC074	1227,7397	54,60819	58,05774	594,1588	9,883982	13,06284	744,4921	17,45903	19,95739	0	29,26	-367,268	206,6349
1.sSMPABC075	3845,2676	58,61359	60,54178	991,5822	67,02937	68,45956	2316,494	77,9355	79,86799	0	354,94	-6666,16	387,7911
1.sSMPABC076	1950,5528	38,53556	42,50642	615,698	8,325444	12,13933	990,6807	16,4587	20,12974	0	62,88	-1251,63	316,8035
1.sSMPABC077	565,08758	51,01829	55,50682	576,734	7,909027	11,46459	574,3822	12,11796	14,52411	0	237,7	-3512,29	97,98063
1.sSMPABC078	2141,229	47,36373	50,51131	757,6736	12,40122	16,41855	1209,643	22,99417	26,41995	0	259,36	-2730,37	282,6057
1.sSMPABC079	985,94053	101,1946	103,2372	585,6289	12,01986	14,67874	675,0216	27,0593	28,54729	578,8	48,14	48,71723	168,3559
1.sSMPABC080	1720,3085	49,76855	53,07786	609,4256	13,09633	15,7521	905,7707	21,32313	23,99928	0	130,32	-2536,8	282,2836
1.sSMPABC087	2472,5025	47,24754	50,19511	745,0518	19,28911	22,00908	1336,651	29,52077	32,56268	0	230,5	-4531,48	331,8565
1.sSMPABC088	2093,6804	58,17164	60,78903	624,7734	18,23877	20,3243	1052,586	29,97052	32,32775	0	17,68	-209,176	335,1104
1.sSMPABC089	2547,755	55,06719	57,5791	667,5189	25,51322	27,24489	1284,205	38,53715	40,85376	0	44,1	-752,355	381,6753
1.sSMPABC090	2047,038	60,99759	63,52472	625,885	13,66161	16,34799	1036,534	27,26563	29,78504	0	196,74	-1260,01	327,0629
1.sSMPABC091	2356,3147	38,89861	42,51154	996,2235	14,97543	20,43194	1522,114	22,28421	26,59309	0	120,76	-2247,35	236,5247
1.sSMPABC092	2104,2999	64,31061	66,68192	629,5694	12,64106	15,53392	1061,83	28,21584	30,72597	0	246,26	-1766,66	334,2443
1.sSMPABC093	2071,5899	51,48423	54,43853	469,5063	16,06976	17,4562	860,6389	27,01573	29,06042	0	34,2	-571,595	441,2273
1.sSMPABC094	3056,8705	76,53839	78,20571	740,226	45,13731	46,35716	1607,533	66,83548	68,5709	0	26,4	-217,409	412,9645
1.sSMPABC095	1909,8178	54,96632	57,84653	616,4011	9,967263	13,32636	977,1039	22,19797	25,01845	0	215,06	-1394,9	309,8336
1.sSMPABC096	2728,9433	43,30541	46,35406	995,6159	19,02448	23,55996	1701,032	27,94531	31,83433	0	189,32	-2433,22	274,096
1.sSMPABC097	2517,4616	53,83505	56,41689	659,5512	19,25519	21,44615	1261,937	32,55341	35,19809	0	106,9	-925,722	381,6931
1.sSMPABC098	1676,6695	77,23721	79,43373	602,2078	19,59489	21,42332	884,2577	32,33159	34,13045	0	14,08	-131,08	278,4204
1.sSMPABC099	3228,1638	62,25833	64,24197	754,119	14,1229	17,72719	1711,743	37,20454	40,25973	0	1169,58	-6086,81	428,0709
1.sSMPABC100	2516,561	49,94797	52,721	703,397	17,83976	20,46899	1311,01	29,86531	32,823	0	123,3	-1211,16	357,7725

5. Considerações finais

A integração dos novos dados de campo, petrografia, geoquímica e geocronologia obtidos em nossa investigação nos permitem concluir que:

a) Os gnaisses da região de Pedra Menina integram o Complexo Guanhães, e correspondem à rocha metaígnea com afinidade TTG, cujo protólito é provavelmente um granito de 2,7 Ga que intrudiu um embasamento mais antigo de 2,9 Ga. A rocha foi afetada pelo metamorfismo Neoproterozóico do Orógeno Araçuaí.

b) A Formação Serra Negra não é arqueana, mas uma sequência sedimentar com idade máxima de deposição em 1,9 Ga. A unidade inclui uma estreita camada basal de xistos e metaconglomerados, seguida por espessos quartzitos sacaroidais, que parecem ter sido depositados em ambientes sedimentares costeiros. Suas principais fontes de sedimento foram provavelmente os complexos arqueanos TTG e unidades Paleoproterozóicas do Orógeno Minas-Bahia.

c) A Formação Capelinha se estende mais ao sul do que anteriormente mapeado e inclui lentes expressivas de mármores. Foi obtida idade máxima deposicional esteniana, e a unidade apresenta um padrão de proveniência coerente com o observado em sua área-tipo, cujas origens estão provavelmente relacionadas aos complexos arqueanos TTG e ao Orógeno Paleoproterozoico Minas-Bahia, bem como ao retrabalho de sucessões sedimentares mais antigas.

d) Leucogranitos ediacaranos intrudem a base da Formação Serra Negra, registrando o magmatismo colisional do Orógeno Araçuaí.

e) Corpos de anfibolitos toleíticos intrudem granitos e gnaisses e ocorrem intercalados aos xistos da Formação Capelinha. São semelhantes, tanto na petrografia quanto na geoquímica, aos anfibolitos observados na área-tipo da Formação Capelinha e foram interpretados como registro magmático do evento de rifteamento no Toniano.

f) Evidência de circulação hidrotermal significativa é reconhecida em toda a área. Este processo parece ter perturbado o sistema isotópico dos zircões.

g) Duas hipóteses foram sugeridas para o significado tectônico da Formação Serra Negra: (i) pode ter sido depositada em uma bacia sin-orogênica no final da orogenia Paleoproterozoica Minas-Bahia ou (ii) pode ter sido depositada na

bacia rifte Toniana, junto com a Formação Capelinha. Mais pesquisas são necessárias para avaliar a questão.