

Quadrilátero Ferrífero samples

(these are the original field numbers; the samples were re-numbered for publication)

- Sample QF1. Mamona Granodiorite.
Sample QF2. Mylonite from Mamona Granodiorite.
Sample QF3. Quartzite from lower member of Moeda Fm.
Sample QF4. Quartzite from upper member of Moeda Fm.
Sample QF5. Sandstone (quartzite?), Nova Lima Group, Rio das Velhas Supergroup.
Sample QF6. Sandstone, Nova Lima Group, Rio das Velhas Supergroup.
Sample QF7. Glaura Granodiorite, Bação Complex.
Sample QF8. Tonalite, paleosome of injection migmatite, Bação Complex.
Sample QF9. Granodiorite, neosome of injection migmatite, Bação Complex.
Sample QF10. Mafic dyke intrusive into iron ore and deformed by shear zone, Timbopeba Mine.
Sample QF11. Sandstone, Itacolomi Group.

QF1 – Mamona Granodiorite, Bonfim Complex, 50 m to the west of the contact with the lowest quartzite from the Moeda Fm. (Minas Group). The sample is coarse grained, subvertical magmatic foliation to NNE, which is the general structural direction of the Bonfim Complex and of the Moeda syncline. Only one age expected from the zircons, and this will be the magmatic age of the granodiorite.

UTM N- 7.756.360 UTM E- 608.678

QF2 – Mylonite of the Mamona Granodiorite near the contact with the Moeda Fm. Two ages expected from the zircons, the oldest (in the cores) corresponding to the magmatic age (already known from QF1) and the youngest corresponding to the age of mylonitization. This youngest age is important, because it is considered the age of generation of the Moeda syncline (in which the iron ores are contained). High quality BSE and CL images required (not CCI images), in order to identify the two internal structures in the zircons. Sample A – Mount B-79.

UTM N- 7.756.360 UTM E- 608.678

QF3 – Coarse grained quartzite, conglomeratic with 1 cm-diameter quartz pebbles. This is the lowest quartzite member of the Moeda Formation, and may hold the key for the determination of the age of the Minas Group (and iron ores). Sample A – Mount A-95.

UTM N- 7.756454 UTM E- 609.047

QF4 – Quartzite from the upper member of the Moeda Fm. This sample is about 50 m from the top of the Moeda Fm and contact with the Batatal Fm., a banded iron formation. The Moeda Fm. and the Batatal Fm. are concordant in structure and metamorphism (low grade). Sample B – Mount A-95.

UTM N- 7.758.108 UTM E- 608.640

QF5 – Sandstone (quartzite?) from the Nova Lima Group, Rio das Velhas Supergroup, considered a 2.7 Ga greenstone belt. The trend of the sandstone body is about N60E, nearly at right angle to the trend of the Moeda syncline. This sample is strongly recrystallized, and may thus yield the age of the source areas and of regional metamorphism of this Rio das Velhas unit. The age of metamorphism is considered

about 2.7 Ga, known as the Rio das Velhas Orogeny (Nuno Machado). Sample D – Mount B-78.

UTM N- 7.769.623 UTM E- 625.002

QF6 – Sandstone from the same Nova Lima Group. Outcrop shows abundant, well-preserved cross-bedding. Dating of this sample would yield the age of the source area. Comparison of zircon ages with sample QF5 would help to identify the age of metamorphism from the SHRIMP results of sample QF5. Sample B – Mount B-78.

UTM N- 7.770.065 UTM E- 625.700

QF7 – Glaucra Granodiorite from the Bação Complex. Although the complex is known to be Archean, this granodiorite could be younger (Paleoproterozoic?), related to the magmatic-sedimentary environment of iron ore formation. Sample C – Mount B-78.

UTM N- 7.754.753 UTM E- 641.606

QF8 – Tonalite from an injection migmatite, Bação Complex. This is the oldest granitic phase in the railroad cut. Sample A – Mount B-78.

UTM N- 7.749.294 UTM E- 640.843

QF9 – Granodiorite from the same injection migmatite, Bação Complex. This is the youngest and volumetrically dominant granitic phase. It is a homogenous rock. The foliation is subvertical, and the lineation is subhorizontal; these structural characteristics are the same as those observed in the Rio das Velhas meta-volcanic and metasedimentary rocks. The age results from SHRIMP would therefore date the deformation of the granite-greenstone terrain. Sample D – Mount B-79.

UTM N- 7.749.294 UTM E- 640.843

QF10 – Medium grained mafic rock from a 10 m thick dyke intrusive in the iron ore of the Timbopeba Mine. It was collected at a location visited by Mark Barley (as mentioned by the mine geologist Ricardo Souza), where the dyke is seen to intrude the iron ore and the two rocks were later deformed by a subvertical shear zone. This rock may have igneous zircon and baddeleyite and metamorphic zircon (from recrystallization of baddeleyite in the shear zone). It may therefore be an important marker on the evolution of the iron ore. I think it is worth the effort. Sample A – Mount A-94.

UTM N- 7.759.000 UTM E- 654.400

QF11 – Sandstone from the Itacolomi Group, stratigraphical well above the iron ores. Sample collected 50 m above contact with Sabará Fm. meta-turbidites. The Sabará Fm. may be a *flysch* deposit and the Itacolomi a *molasse* deposit, formed in a foreland basin at the end of the Trans-Amazonian Cycle (2.15 Ga?). This sandstone has been dated at 2.15 Ga (Nuno Machado), but it may yield other results on the SHRIMP. Sample C – Mount B-79.

UTM N- 7.742.347 UTM E- 656.167

LAT LONG
QF1 -20.287 -43.959
QF2 "
QF3 -20.285 -43.956
QF4 -20.272 -43.960
QF5 -20.163 -43.804
QF6 -20.162 -43.797
QF7 -20.299 -43.644
QF8 -20.349 -43.651 QF11 "
QF9 -20.260 -43.522
QF11 -20.411 -43.503