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Trairão Iron Ore Project, Pará, Brazil
(Latitude 7° 30′ S, Longitude 50° 35′ E)

Third Independent Technical Report on Mineral Resources

Prepared by Coffey Mining Pty Ltd on behalf of:

Talon Metals Corp

Effective Date: August 3th, 2011

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1 SUMMARY

1.1 Introduction

Coffey Mining Pty Ltd (Coffey Mining), through its Brazilian office in Belo Horizonte, has been commissioned by Talon Metals Corp (Talon) to prepare an Independent Technical Report on Exploration and a Mineral Resource Estimate for the Trairão Iron Ore Project, in Pará State, Brazil.

The Talon's mineral property is considered to represent an Exploration Project which is inherently speculative in nature. However, Coffey Mining considers the property has been acquired based on sound technical merit. The property is also considered to be sufficiently prospective in general, subject to varying exploration risk degrees, to warrant further exploration and assessment of its economic potential, consistent with the programs proposed.

The report complies with disclosure and reporting requirements set forth in the Toronto Stock Exchange Manual, National Instrument 43-101 Standards of Disclosure for Mineral Project (NI 43-101), Companion Policy 43-101CP to NI 43-101, and Form 43-101F1 of NI 43-101 (30 June 2011) and Mineral Resource estimation and classification requirements set forth in CIM Defintion Standards (November 2010). The report complies with Canadian National Instrument 43-101, for the Standards of Disclosure for Mineral Projects of December 2005 (the Instrument) and the Mineral Resource and Reserve classifications adopted by CIM Council in December 2005.

This report has been compiled by Mr. Viana, who is a professional geologist with ten years experience in exploration and mining geology. Most of his experience has been in exploration and evaluation of iron ore properties in Brazil. He is Operations Manager Geology & Resources of Coffey Mining´s operations in Brazil. Mr. Viana is also a Member of the Australian Institute of Geosciences (AIG). Mr. Viana has visited the Trairão Iron Ore Project site between the 25th and 27th August 2010 and between 07th and 10th November 2010.

1.2 Property Description and Ownership

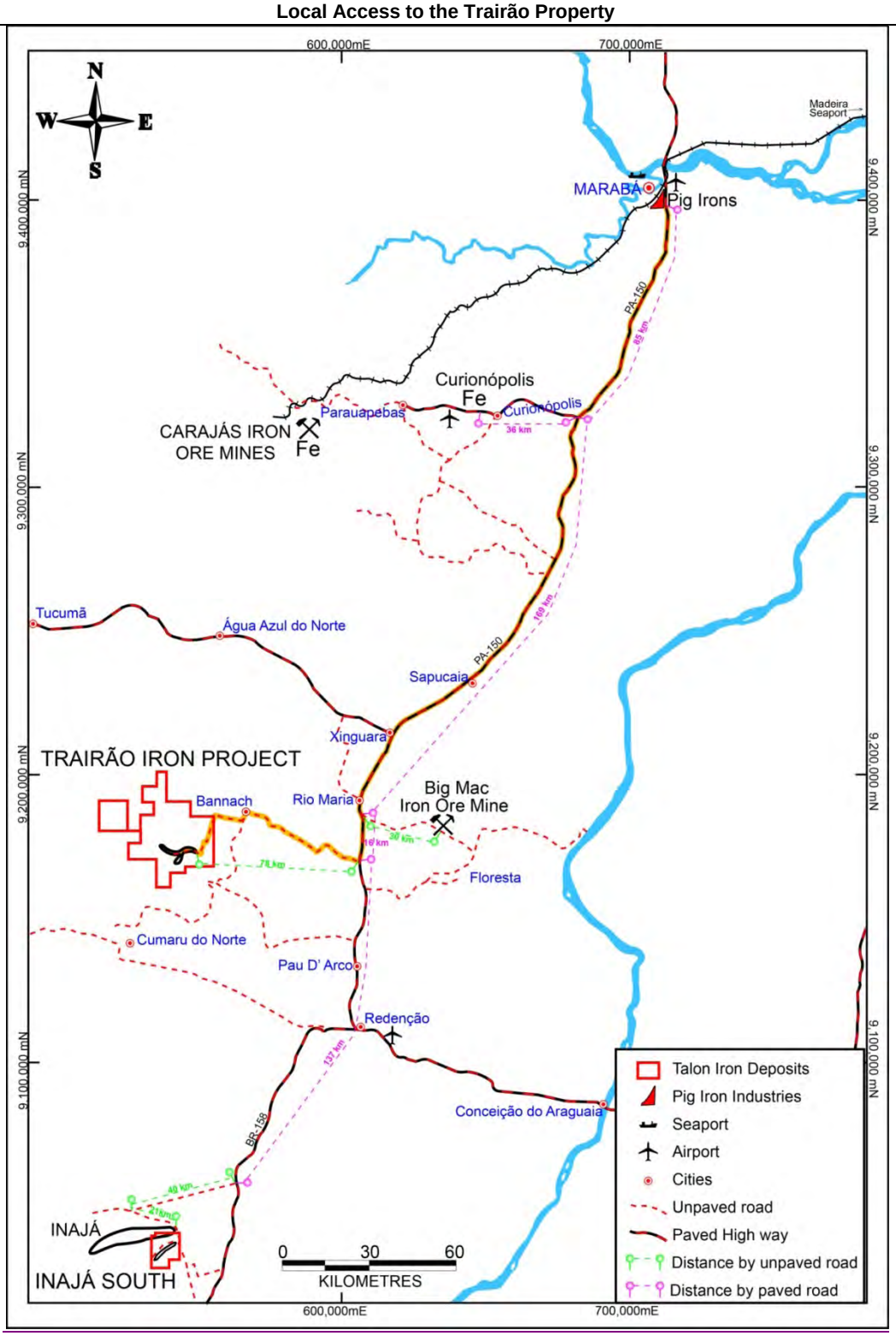
The Trairão Iron Ore Project is located in Serra do Trairão region near the city of Bannach, approximately 175km directly south-southwest of Parauapebas city, and 165km from the Carajás railway that connects the mining district with the port 'da Madeira' in São Luis, Maranhão State, the Capital (Figures 1.2_1 and 1.2_2).

The property comprises 8 exploration licenses (DNPM exploration titles, or research titles: 850.103/2008, 850.148/2001, 850.163/2001, 850.164/2001, 850.165/2001, 850.185/2001, 850.186/2001 and 850.187/2001; totaling 51,635.35 hectares) plus two areas under tender process (850.355/2000 and 851.040/1992; with area of 17,869.42 hectares) and two additional areas under applications for exploration licenses (850.963/2010 and 850.034/2011; with area of 7,017.57 hectares).

Figure 1.2_1

Trairão Iron Ore Project

Local Access to the Trairão Property



Since 29th September 2010, Talon owns 100% of the rights for two iron ore projects in Pará State, Brazil, through concluding two separate agreements respectively with Codelco do Brasil Mineração Ltda. ("Codelco") and Barrick International (Barbados) Corp. ("Barrick Barbados").

Talon Metals Corp owns 100% of the Rancover Holdings Limited, which owns 100% of Talon Iron Cayman Limited and 99.9% of the Brazpot Mineração Ltda. Talon Iron Cayman Limited owns 99.9% of Talon Iron Mineração Ltda, which is the owner of all the projects acquired from Barrick Iron. Brazpot Mineração Ltda is the owner of all the Projects acquired from Codelco Iron Projects.

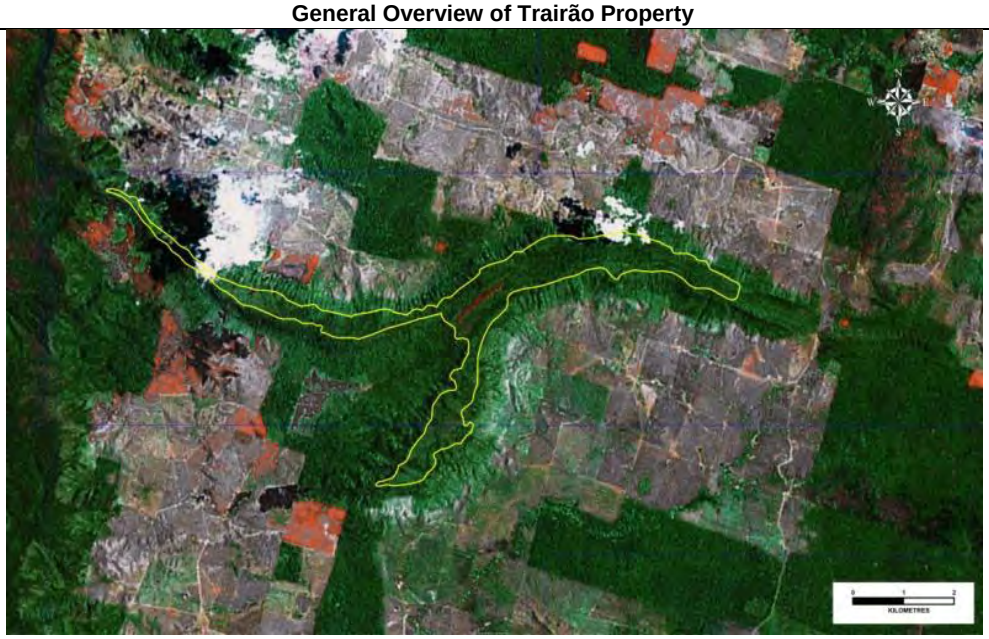
The land surface of the principal target area at Trairão Project belongs to 5 different farmers. Talon has the necessary agreements with the surface owners to run the proposed exploration program

This region is booming economically, due to the development of two large nickel laterite projects, namely Onça Puma and Vermelho, owned by Vale, who also own the developing iron ore project at Serra Sul. With increasing activity in the mining sector, significant improvements can be expected in the regional infrastructure in the next few years.

Figure 1.2_2

Trairão Iron Ore Project

General Overview of Trairão Property



1.3 Geology and Mineralization

The Trairão Iron Ore Project area is part of the Serra da Seringa Greenstone belt of Southern Para domain. The banded iron formations ("BIF's") are part of a large volcano sedimentary sequence and are stratigraphically located in the Intermediate and Upper Units of the Tucumã Group (Archean).

Both units are formed by clastic and carbonate and/or siliceous meta-sedimentary rocks, in which the Intermediate Unit is formed mainly by carbonate meta-silts, whereas the Upper Unit is mainly composed of ferruginous meta-silts, which are the host rocks of the BIF oxide layers (Figure 1.3_1).

From a geomorphologic perspective, the Carajás ranges and the Trairão iron formations are at an altitude susceptible for lateritic soils development, increasing the possibility for the formation of ferric supergene enrichment near surface.

Besides the favorable geomorphologic conditions for developing secondary mineralization, the geological reconnaissance suggests the ferriferous formations were affected by metamorphic and hydrothermal processes that may have concentrated the primary epigenetic mineralization.

The BIF strata lie within the upper metasedimentary units of the Seringa greenstone belt. Numerous individual BIF horizons form a substantial surface outcrop area with several kilometers strike length, including major fold closures, which are thought to be synclinal keels. The overall geotectonic setting is similar to that of the giant iron ore deposits of the Carajás region, however prospectivity depends on the total volume of BIF, 3D geometry, and degree of supergene enrichment; all these factors are yet to be determined.

The Carajás iron deposits are hosted within Archaean iron formations. The volcanic sequence has been weathered to a depth of between 100m and 150m, while oxidation is observed to a depth of up to 500m in the BIFs of the Carajás ore zone.

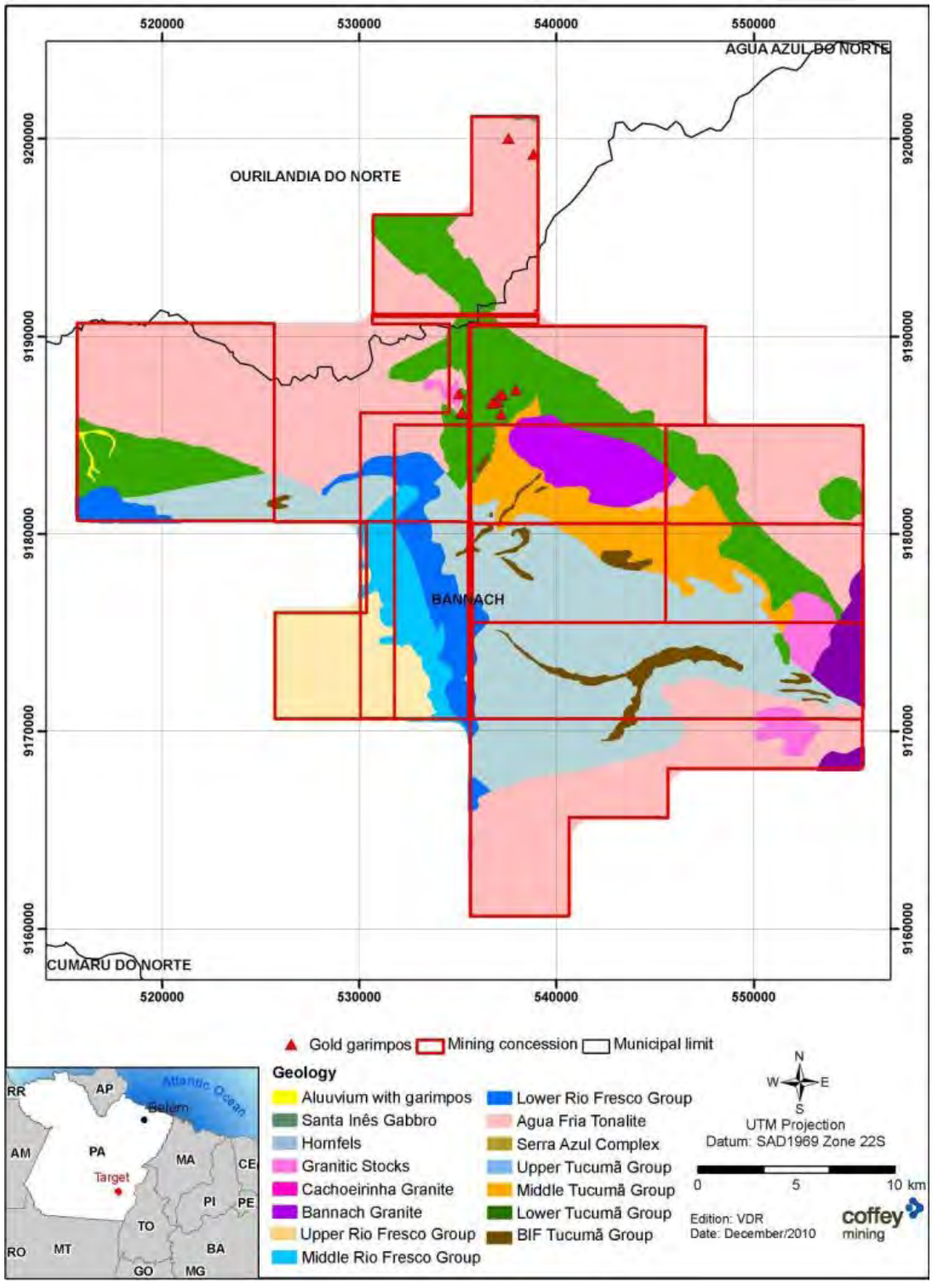
Banded iron formations (BIF) are chemical sediments which precipitated from seawater, and are defined by fine layering of silica or silicate minerals and iron minerals (oxides, carbonates, silicates or sulfides). Oxide facies iron formations, containing magnetite and/or hematite, are the most economically relevant of the facies types, and may contain up to 35% Fe. Supergene enrichment, particularly under tropical weathering conditions, can concentrate the iron in these rocks up to 65% Fe, and such enriched ore bodies form a potentially more valuable target.

Enrichment occurs commonly due to groundwater percolation through the BIF, and some of the world's richest ore bodies are within synclinal keels, where Fe has been concentrated by downward-moving waters. This is particularly true where the underlying rocks are impervious to fluids.

Figure 1.3_1

Trairão Iron Ore Project

Local Semi-Detail Geological Map



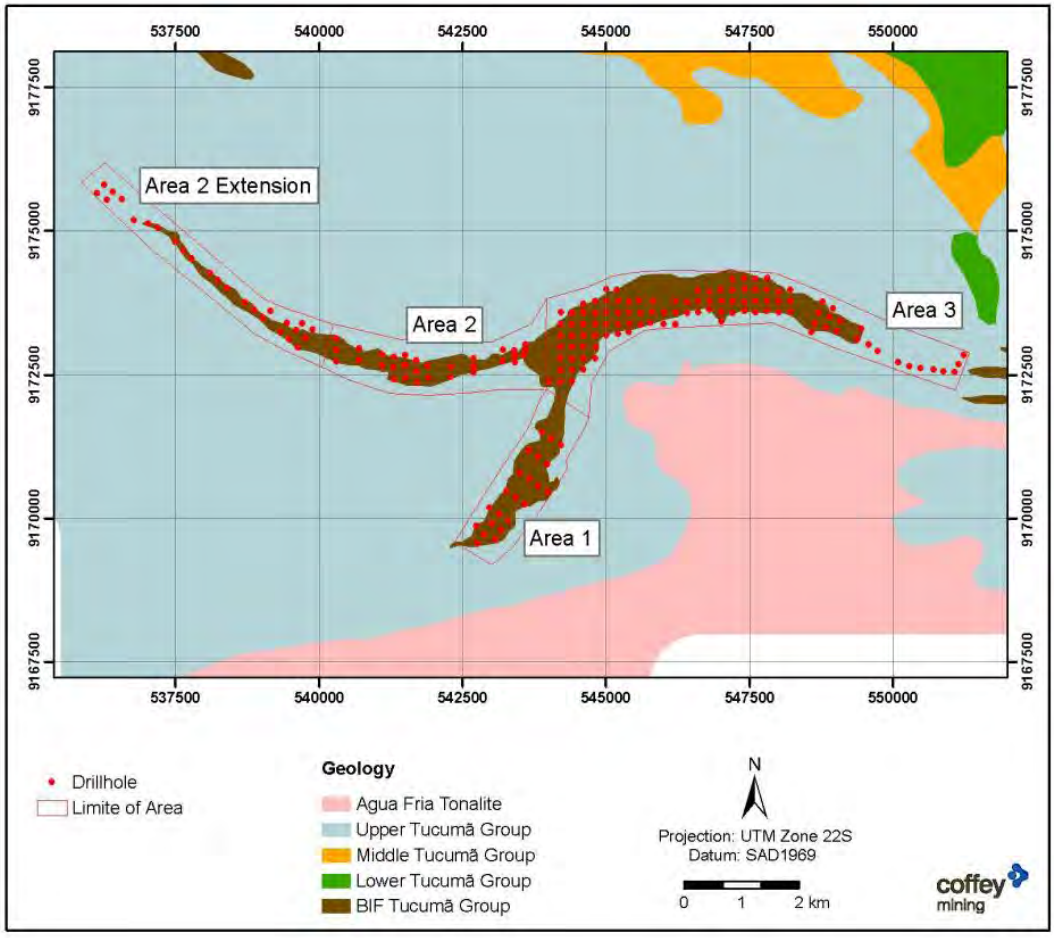
1.4 Status of Exploration

Based on the Codelco exploration data, Talon has defined thirteen target areas of iron mineralization, associated with BIFs of which 3 Target Areas (Target Area 1, Target Area 2 and Target Area 3) are considered the most important and are the first to be investigated by both reverse circulation ("RC") and diamond drilling. The RC drilling program started in October 2010 at the Trairão Property with the objective to delineate iron mineralization in two areas which are part of Target Areas 1 and 2. The proposed exploration program also involved undertaking a ground magnetic survey and the interpretation of that data, geological mapping as well as the RC drilling campaign. Subsequently, the RC drilling program has been extended to include most of the areas of the potential on the Trairão ridge which includes the original areas drilled on Target Area 1 and 2 as well as the North West extension to Target Area 2 and Target Area 3. RC drilling was planned to test the potential of the supergene enriched material.

Figure 1.4_1

Trairão Iron Ore Project

Current RC Drilling Executed Program



The drilling program has to date tested a strike length of 18,200m, including drilling over 2,400m of strike was completed in the Target Area 1, 3,000m of strike in the Target Area 2, in the drilling program completed during 2010. Thereafter, the drilling which was completed between January and July 2011 was done over 5000 m of strike on the extension to Target Area 2 and over 7,800 m of strike in Target Area 3. All the RC drill holes were drilled vertically, with the exception of 10 RC drill holes in the Target Area 2 where the lithologies dipped at 60 degrees. The drilling over all three Target Areas was undertaken on orthogonal grids initially with a spacing of 200m x 400m which in some areas were closed up to a spacing of 200m x 200m (Figure 1.4_1).

A total of 186 RC drill holes (11,242m) were completed in the areas distributed as shows the Table 1.4_1.

Table 1.4_1
Trairão Iron Ore Project
Summary of RC Drilling

Area	Drill hole	Footage
Target Area 1	22	1,054
Target Area 2	31	1,505
Target Area 2 Extension	26	2,366
Target Area 3	107	6,317
Total	***186***	***11,242***

Talon started a diamond drilling campaign in the first quarter of 2011 to obtain more accurate samples and to add confidence to the mineral resource estimates, as well as to provide samples for mineralogical and metallurgical testwork. The diamond drilling has also been drilled, in part, to deeper levels to intersect the fresh rock at depth. The results are under evaluation and will be released in subsequent reports. Also, Talon has commenced preliminary metallurgical studies aiming establish the optimum extractive metallurgy process to generate a marketable concentrate. This program is being undertaken by Talon in association with Coffey.

1.5 Mineral Resource Estimates

Based on current drilling results of the RC drilling, Coffey Mining carried out a Mineral Resources Estimation of the areas drilled by RC drilling on a Target Areas 1, 2 and 3. Resources were estimated using ordinary kriging. The Table 1.5_1 below presents the results.

Coffey Mining has estimated Inferred Mineral Resources for the Target Areas 1, 2 and 3 on the Trairão Iron Project in accordance with the guidelines as set out in the NI43-101. The in situ resources are wholly contained within the current license boundary and do not take into account any elements which may sterilize areas of the deposit for mining operations.

Table 1.5_1 presents the total aggregated Inferred Mineral Resources for all Target Areas and lithologies at cut-off grades of 25%Fe and 35%Fe respectively. A cut-off grade of 25%Fe is

preferred under the assumptions discussed at section 14 of this report. The total aggregated Inferred Mineral Resource with 25%Fe cut-off grade applied is 1,102.7Mt at 35.5%Fe, 31.8%SiO2 10.3%Al2O3 0.11%Mn, 0.04%P and 6.2%LOI.

Table 1.5_1
Trairão Iron Ore Project
Total Aggregated Inferred Mineral Resources (all Target Areas) – 3th Aug 2011

Cut Off Grade (Fe %)	Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	Mn (%)	P (%)	LOI (%)
25	1,102.72	35.52	31.79	10.27	0.11	0.04	6.20
35	520.00	42.58	19.85	11.05	0.10	0.05	7.43

In general, is possible the iron content enrichment but the mass yield varies a lot. It is necessary some testwork to allow a assessment of the commercial feasibility to implant a beneficiation and concentration plant.

The results of the inferred mineral resource estimate presented here demonstrate a potential of in excess than 1Bt of iron mineralized weathered material within the parts of Target Areas 1, 2 and 3 which have been RC drilled. There are, however, additional target areas within the Talon license area, with additional iron mineralization associated with BIFs, which have been mapped and annotated as Target Areas 4 to 13. In addition within Target Areas 1, 2 and 3, there are gaps in the drilling and in certain areas the RC drilling only penetrated to 50 meters and in other areas drilling of certain holes stopped within mineralization. It is possible that further iron mineralization and inferred mineral resources may be delineated in the “gap” areas and at depth. The aim of the current diamond drilling program is to add confidence to the drilling data within the weathered zone, to intersect and to investigate the iron potential within the fresh rock, where the initial diamond drilling data indicates the presence of lower grade BIF hosted mineralization.

The iron deposits, as dilled to date, are likely to be amenable to be mined as an open cast operation, which is a method well established in the Brazilian iron industry. Furthermore, as the mineralization extends to surface, the strip ratio in any future open cast mining operation is likely to be low.

The main iron products that maybe be considered for this kind of deposit are:

- Lump Ore: >6.3mm;
- Coarse Sinter Feed: >1mm and < 6.3mm;
- Fine Sinter Feed: >0.1mm and <1mm;
- Pellet Feed: <0.1mm.

In these types of deposit, the iron content, in general, may decrease with the decrease in the product size. For direct sales to the local market, represented by small to medium pig iron

producers, the opportunity is only for Lump Ore and the Coarse Sinter Feed. Access to this market depends on a lower CAPEX and OPEX than for a fine sinter and/or pellet feed project. Typically, the fines produced as a co-product, would be stockpiled for future concentration and reclamation.

In general, in consideration of the beneficiation process, iron enrichment through concentration is possible, but the mass yield may vary . Metallurgical testwork will be required to allow an assessment of the commercial feasibility of a beneficiation and concentration plant.

The project profitability is direct related to the development of an integrated project, including mine, railroad/pipeline, pellet plant and port facilities. The costs may be higher than the current costs practiced by the others iron ore producers in the region. The project aim will be to be competitive within the world market where the iron ore prices remain attractive, due the lack of high quality pellet feed suppliers and it is considered that the project may support higher costs.

The main iron ore producer in Brazil (Vale) recently declared publically that the price will maintain above USD150 per tonnage for, at least, five years. Vale also reported that the big iron ore companies, e.g. Vale, BHP and Rio Tinto, may have difficulties meeting the demand from its Asian clients. Other important recent information came from Credit Suisse, which estimated that there may be a deficit of more than 90Mt of iron ore in the market.

The independent qualified person responsible for the mineral resource estimate in this report, as summarized in Table 1.5_1 is Bernardo Viana, a geologist with 10 years of geological and mining related experience ranging from execution, management and coordination of geology projects, to resource estimation in a variety of commodities including Au, Cu, Fe, Al, U, Ni, Zn, Mn and diamond in Brazil, Angola and Chile. He is a member of the Australian Institute of Geoscientists (“MAIG”) and is independent of Talon as that term is defined in Section 1.5 of the Instrument.

Mineral resources which are not mineral reserves do not have a demonstrated economic viability. The estimate of mineral resources may be materially affected by environmental, permitting, legal, marketing, or other relevant issues.

1.6 Conclusions and Recommendations

The Serra do Trairão Iron Project contains a large prospective tonnage of supergene iron mineralization, which to date has been demonstrated mainly in Target Areas 1, 2, and 3 (previously referred to as BIF’s 1 and 2 and 3 by Codelco), where RC drilling programs have been undertaken by Talon.

All the RC drill holes intersected the mineralization and the majority of the holes ended in the Saprolite or Saprock lithologies. There are no drill holes indicating the lateral limits of mineralization and there are few indications about the depth of weathering.

Density measurements along the different lithotypes are currently being obtained by Talon using the diamond core. As density measurements are not available at this time, Coffey Mining applied a density value of 2.7t/m^3, which is supported by public data and bibliographic research, related to other iron deposits located within the same geological environment. This number needs to be reviewed with further in situ and diamond core hole density tests.

The contaminant grades, mainly the P grade, are considered high in comparison with the current industrial standards. A metallurgical testwork program is being undertaken to address this issue and evaluate possible applicability of this mineralization as a source for use by local pig iron producers and the international market.

Given all these positive geological and prospective indications, Coffey Mining considers the Trairão Property to be prospective for hosting economic iron ore deposits. Talon personnel have also provided comprehensive work programs and budgets covering proposed exploration for 18 months Talon's proposed exploration strategy is considered to be consistent with the potential of the Trairão Iron Ore Project, providing that target priorities are clearly adhered to and exploration is appropriately staged to permit continual assessment of progressive exploration results.

It is for this reason that Coffey Mining recommends the continuity of the current follow up exploration program and an additional exploration budget to:

- Complete the regional geological mapping of all the property and detailed mapping of individual target areas;
- Continue with the ground magnetic surveys over the targeted areas;
- Continue with the RC drilling program over the entire area, including more exploration and infill drilling;
- Continue with the extensive diamond drilling program over all the target areas to validate RC drilling results, research the fresh rock material and so improve the categories of the actual mineral resources classification;
- Complete exploratory RC drill holes or detail mapping outside of external limits of the deposit to confirm these limits;
- Complete a unique topographic survey of the Areas with more adherent detail;
- Continue with the program to determine in situ and drill hole core dry bulk density determinations;
- Complete a multivariate study to define litho-chemical types to be used in the next modeling and in the selection of metallurgical samples;
- Conduct metallurgical tests to evaluate the feasibility of processing the supergene material, as well as the mineralized fresh rock.

- To continue and improve the current QA/QC program
- Undertake a trial mining and bulk sampling program.
- The Trairão Iron Project has Cu-Au and Ni targets that should be assessed in the future;
- Continue with the program to undertake specialist environmental, infrastructure and logistic studies as well as conceptual mining, engineering, marketing and financial studies

The proposed exploration program presented aims to evaluate the iron potential of the Serra do Trairao Project and provide enough data that will support further NI 43-101-compliant mineral resource estimates. The iron mineralization at the Trairão Project is associated with a hematite-goethite supergene enrichment zone and fresh rock over a sequence of interbedded BIF and magnetite-rich metasiltstones that belong to the upper portion of Tucumã Group. It is believed that the supergene process leached a significant amount of silica from the country rocks and transformed the magnetite into hematite-goethite creating a resistant cap rock, which supports the actual prominent topography along the Trairão Ridge. The Trairão Ridge is underlain by a folded succession of Archean age iron formations and related rocks and extends for a total length of 19km. In addition to the Trairão Range, other targets exist within the project area adding an additional cumulative length of up to 31km of prospective targets. According to this, the exploration program was delineated to investigate a total of 13 discreet target areas that have been identified to date.

2 INTRODUCTION

2.1 Scope of Work

Coffey Mining Pty Ltd (Coffey Mining), through its Brazilian office in Belo Horizonte, has been commissioned by Talon Metals Corp (Talon) to prepare an Independent Technical Report on Exploration and a Mineral Resource Estimate for the Trairão Iron Ore Project, in Pará State, Brazil.

The report complies with disclosure and reporting requirements set forth in the Toronto Stock Exchange Manual, National Instrument 43-101 Standards of Disclosure for Mineral Project (NI 43-101), Companion Policy 43-101CP to NI 43-101, and Form 43-101F1 of NI 43-101 (30 June 2011) and Mineral Resource estimation and classification requirements set forth in CIM Defintion Standards (November 2010)..

2.2 Principal Sources of Information

In addition to site visits undertaken by Bernardo Viana to the Trairão Iron Ore Project between the 25th and 27th August 2010 and 07th and 10th November 2010 and the geologist Marcela Tainã between 16th and 20th June 2011, the author of this report have relied on the information provided by Talon, regarding technical reports by previous project owners (Barrick do Brasil Mineração and Codelco do Brasil Mineração), followed by extensive discussions, as well as other relevant published and unpublished data. A list of the principal information sources is included at the end of this Independent Technical Report. We have endeavored, by making all reasonable enquiries, to confirm the authenticity and completeness of the technical data on which the Independent Technical Report is based on.

Coffey Mining has made all reasonable enquiries to establish the completeness and authenticity of the information provided and identified, and a final draft of this report was provided to Talon along with a written request to identify any material errors or omissions prior to lodgment.

2.3 Qualifications and Experience

Coffey Mining is a highly respected international consulting firm specializing in the areas of geology, mining and geotechnical engineering, metallurgy, hydrogeology, hydrology, tailings disposal, environmental science and social and physical infrastructure.

This report has been compiled by Mr. Viana, who is a professional geologist with nine years experience in exploration and mining geology. Most of his experience has been in exploration and evaluation of iron ore properties in Brazil. He is Mineral Exploration and Resources Manager of Coffey Mining´s operations in Brazil. Mr. Viana is also a Member of the Australian Institute of Geosciences (MAIG). Mr. Viana has visited the Trairão Iron Ore Project site between the 25th and 27th August 2010 and between 07th and 10th November 2010.

Neither Coffey Mining nor the author of this report has or has had any previous material interest in Talon or related entities or interests. Our relationship with Talon is solely one of professional association between client and independent consultant. This report is prepared in return for fees based on agreed commercial rates and the payment of these fees is in no way contingent on the results of this report.

2.4 Units of Measurements and Currency

Metric units are adopted in this report unless noted otherwise. Universal Transverse Mercator coordinate system (Zone 22 South) and South American 1969 datum were adopted for the project.

Currency adopted is American Dollars ("US$"). Exchange rate in 10/08/2011 at the time of preparation of this report was R$1.62 (Brazilian Reais) per US$1.00 and R$1.64 (Brazilian Reais) per CD$1.00. Talon uses CD$ for most of its official costs and budget numbers and US$ for costs of acquisitions; for this reason Coffey Mining did not convert any currency figures during this study.

3 RELIANCE ON OTHER EXPERTS

The Trairão Iron Ore Project property consists of 8 exploration authorizations or exploration licenses (DNPM exploration titles, or research titles: 850.103/2008, 850.148/2001, 850.163/2001, 850.164/2001, 850.165/2001, 850.185/2001, 850.186/2001 and 850.187/2001) with the total of 51,635.35 hectares. There are two additional areas under tender process (850.355/2000 and 851.040/1992), with the total of 17,869.42 hectares and two areas under applications for exploration licenses (850.963/2010 and 850.034/2011) covering 7,017.57 hectares. In total, the area to which Talon may eventually hold mineral rights at the Trairão Iron Ore Project is therefore 76,522.34 hectares.

Coffey Mining has not independently verified, nor is it qualified to verify, the legal status of these concessions. The current status of tenements listed in this report is based on information and copies of documents provided by Talon and public information available from National Department of Mineral Production (DNPM), and the report has been prepared based on the assumption that the tenements will prove lawfully accessible for evaluation. Neither Coffey Mining nor the authors of this report are qualified to provide extensive comment on legal issues relating to the Trairão Iron Ore properties.

Similarly, neither Coffey Mining nor the authors of this report are qualified to provide comments on environmental issues associated with the Trairão Iron Ore Project. No warranty or guarantee, be it express or implied, is made by Coffey Mining with respect to the completeness or accuracy of the legal or environmental aspects of this document. Coffey Mining does not undertake or accept any responsibility or liability in any way whatsoever to any person or entity in respect of these parts of this document, or any errors in or omissions from it, whether arising from negligence or any other basis in law whatsoever.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Background Information on Brazil

The Brazilian land surface has a total area of 8.5 million square kilometers approximately, a little more extensive than the area of Australia. The prevailing climate is tropical, with temperate regions towards the south. The topography is mostly flat, with rolling lowlands in the north, some plains and a narrow coastal belt. The total population is about 186 million and literacy is about 86%. The official language is Portuguese, while English, Spanish and French are also spoken. The capital is Brasilia, located in the central region of the country.

The political environment in Brazil is generally stable. Brazil has been a member of the World Trade Organization since 1995 and is a founding member of Mercosul, a trade liberalization program for the South American continent.

The fundamentals of Brazilian macro-economic policy are based primarily on fiscal austerity, inflation control and free foreign exchange. Since 2004, the increasing strength of the global economy and the high level of liquidity in international financial markets have accelerated production, led to more intense global trading activity, and have created favorable conditions for foreign investment and recovery of the local economy.

The Brazilian economy, aided by a favorable international environment, grew approximately 5.2% in 2008, had a slowdown of 0.2% due to the Global Financial Crisis (GFC) in 2008 and has confirmed a significant growth of 7.5 % in 2010. (Note: In early 2007, Brazilian Institute of Geography and Statistics (IBGE) reviewed its methodology for computing gross domestic product and announced reviewed figures for 2000-2006). Sustained growth has been associated with booming exports, re-organization of external accounts, moderate inflation, decreasing unemployment indexes, and reductions in the debt-to-GDP ratio.

Brazil has made progress but significant vulnerabilities remain. Despite registering year-on-year declines from 2004 to 2006, Brazil's (largely domestic) government debt remains high, at 50% of GDP. Total foreign debt, while falling, is still large compared to the export base. Over time this concern will be reduced by healthy export growth, which has anchored the positive trade and current accounts in recent years. Personal incomes improved since 2004 after a significant decline over the previous decade. Income and land distribution remains skewed.

Sustaining high growth rates in the longer term depends on the impact of the structural reform program and efforts to build a more welcoming climate for investment, both domestic and foreign. Judicial reform and an overhaul of the bankruptcy law were approved in late 2004, along with tax measures to create incentives for long-term savings and investments.

Legislation promoting public-private partnerships, a key effort to attract private investment to infrastructure, was also approved in 2004. Labor reform and proposals to increase autonomy for the Central Bank are still pending. Despite this well-considered reform agenda, much remains to be done to improve the regulatory climate for investments, particularly in the

energy sector; to simplify tax systems at the state and federal levels; and to further reform the pension system. The legislation apparently will continue the same with the new President Dilma Roussef command (2011-2014).

Brazil's production from resources, oil and gas reached US$28billion (or 4.2% of GDP) in 2004. Brazil is the world's largest producer of niobium and iron ore, the second largest producer of tantalum, and the third largest producer of aluminum, graphite and manganese.

The 1995 constitutional amendment provided a landmark in Brazilian mining legislation by granting foreign companies the right to hold majority ownership in Brazilian projects and equality of fiscal and economic treatment. Nowadays, numerous multi-national major and junior mining companies operate in Brazil.

4.2 Mineral Tenure

Tenements in Brazil are granted subject to various conditions prescribed by the Mining Code, including rental payment and reporting requirements, and each tenement is granted subject to standard conditions that regulate the holder's activities or are designed to protect the environment.

Mineral tenements in Brazil generally comprise Prospecting Licenses, Exploration Licenses and Mining Licenses.

The holder of a granted Prospecting License, Exploration License or Mining License is not required to spend a set annual amount per hectare in each tenement on exploration or mining activities. Therefore, there is no statutory or other minimum expenditure requirement in Brazil. However, annual rental payments are made to the DNPM and the holder of an Exploration License must pay rates and taxes, ranging, based on current exchange rate, from US$1.18 to US$1.8 per hectare, to the Local Government.

Lodging a caveat or registering a material agreement against the tenement may protect various interests in a Mining License.

If a mineral tenement is located on private land, then the holder must arrange or agree with the landowners to access the property.

4.2.1 Prospecting Licenses

A Prospecting License entitles the holder, to the exclusion of all others, to explore for minerals in the area of the License, but not to conduct commercial mining. A Prospecting License may cover a maximum area of 50 hectares and remains in force for up to 5 years. The holder may apply for a renewal of the Prospecting License which, is subject to approval by DNPM. The period of renewal may be up to a further 5 years.

4.2.2 Exploration Licenses

An Exploration License entitles a holder, to the exclusion of all others, to explore for minerals in the area of the License, but not to conduct commercial mining. The maximum area of an Exploration License is 2,000 hectares outside of the Amazonia region and 10,000 hectares within the Amazonia region (Amazonas, Para, Mato Grosso, Amapá, Rondônia, Roraima and Tocantins States). An Exploration License remains in force for a maximum period of 3 years and can be extended by no more than a further 3 year period. Any extension is at DNPM's discretion and will require full compliance with the conditions stipulated by the Mining Code that must be outlined in a report to DNPM applying for the extension of the License.

Once all legal and regulatory requirements have been met, exploration authorization is granted under an Exploration License, granting its holder all rights and obligations relating to public authorities and third parties. An Exploration License is granted subject to conditions regulating the conduct of activities, which includes the obligation to commence exploration work no later than 60 days after the Exploration License has been published in the Federal Official Gazette and not to interrupt it without due reason for more than 3 consecutive months or 120 non-consecutive days, to perform exploration work under the responsibility of a geologist or mining engineer, legally qualified in Brazil, to inform DNPM of the occurrence of any other mineral substance not included in the exploration permit and to inform DNPM of the start or resumption of the exploration work and any possible interruption.

If the holder of an exploration License proves the existence of a commercial ore reserve on the granted Exploration License, the DNPM cannot refuse the grant of a Mining License with respect to that particular tenement if the License holder has undertaken the following:

- An exploration study to prove the existence of an ore reserve.
- A feasibility study on the commercial viability of the ore reserve.
- The grant of an environmental License to mine on the particular tenement.

4.2.3 Mining Licenses

A Mining License entitles the holder to work, mine and take minerals from the mining lease subject to obtaining certain approvals.

Mining rights can be denied in very occasional circumstances, where a public authority considers that a subsequent public interest exceeds that of the utility of mineral exploration, in which case the Federal Government must compensate the mining concession holder.

In Brazil, a Mining License covers maximum areas ranging from 2,000 hectares to 10,000 hectares, depending on the geographical area, as detailed above, and remains in force indefinitely. The holder must report annually on the status and condition of the mine.

As with other mining tenements, a Mining License is granted subject to conditions regulating activities. Standard conditions regulating activities include matters such as:

- The area intended for mining must lie within the boundary of the exploration area.
- Work described in the mining plan must be commenced no later than 6 months from the date of official publication of the grant of the Mining License, except in the event of a force majeure.
- Mining activity must not cease for more than 6 consecutive months once the operation has begun, except where there is proof of force majeure.
- The holder must develop the deposit according to the mining plan approved by the DNPM.
- The holder must undertake the mining activity according to environmental protection standards detailed in an environmental License obtained by the holder.
- The holder must pay the landowner's share of mining proceeds according to values and conditions of payments set forth by law, which is a minimum of 50% of CFEM (see below), but it is usually agreed to be higher under a contract between the holder of the Mining License and the landowner.
- The holder must pay financial compensation to States and local authorities for exploring mineral resources by way of a Federal royalty, the CFEM, which is a maximum of 3% of revenue, but varies from state to state.

An application for a Mining License is granted solely and exclusively to individual firms or companies incorporated under Brazilian law, which will have a head office, management and administration in Brazil, and are authorized to operate as a mining company.

4.3 Project Location

The Trairão Iron Ore Project (76,522.34 hectares) is located in Serra do Trairão region near the town of Bannach, approximately 175km directly south-southwest of Parauapebas city, and from the Carajás railway that connects the mining district with the port 'da Madeira' in São Luis, Maranhão State, the Capital (Figure 4_3.1).

The access to the project is from Marabá city, which has regular flights to the main cities of Brazil. Rio Maria is located 260km south from Marabá, by the paved state highway PA-150. Bannach is located 60km west of Rio Maria; the last 40km stretch of road access is not paved.

Geographical coordinates for the project are Latitude 07°30' S, Longitude 50°35' W.

Figure 4.3_1
Trairão Iron Ore Project
Project Location

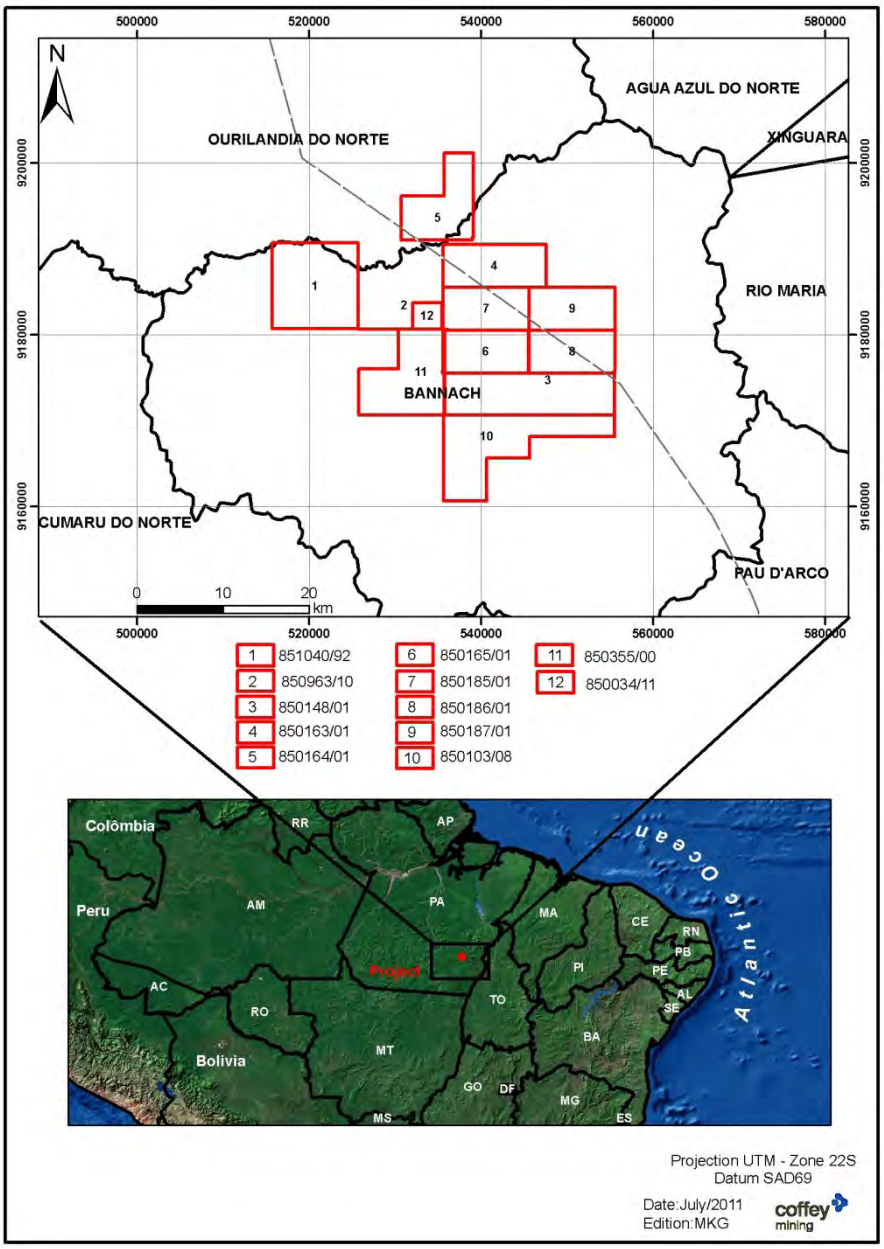
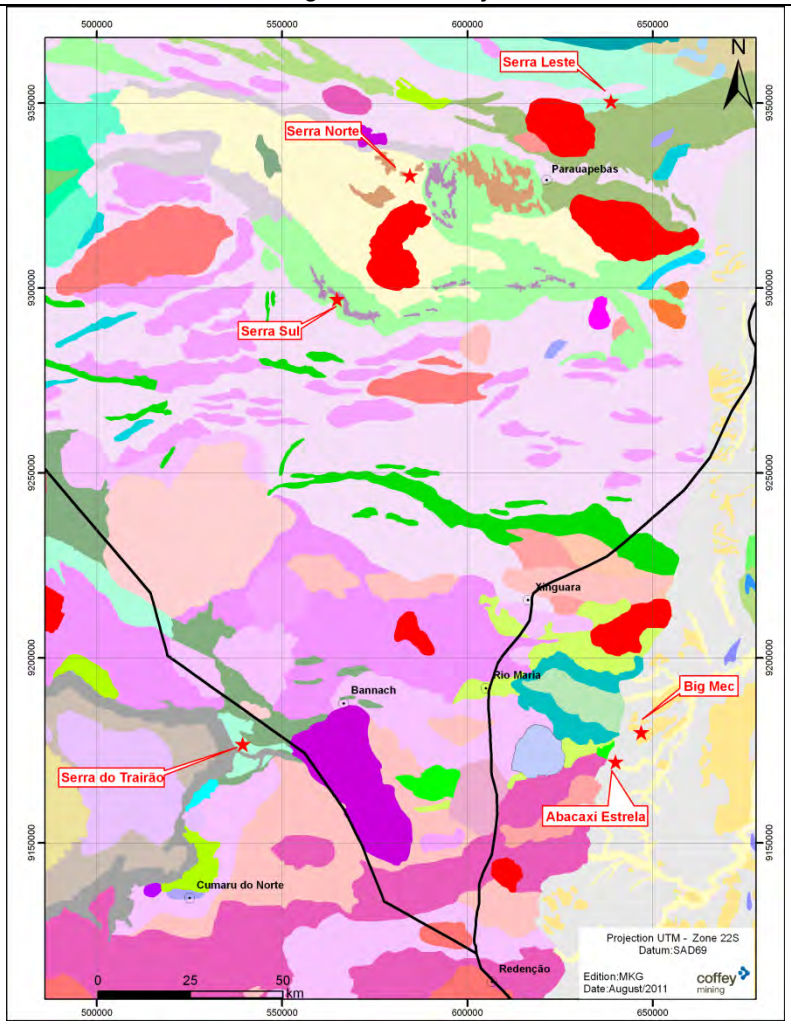


Figure 4.3_2
Trairão Iron Ore Project
Para State Larges Iron Ore Projects Location



The Trairão Iron Ore Project is located on the southern margin of Carajás Mineral Province. Several iron deposits exist in the province (Figure 4.3_2).

4.4 Tenement Status

The property comprises 8 exploration licenses (DNPM exploration titles, or research titles: 850.103/2008, 850.148/2001, 850.163/2001, 850.164/2001, 850.165/2001, 850.185/2001, 850.186/2001 and 850.187/2001;) totaling 51,635.35 hectares and in addition two areas under tender process (850.355/2000 and 851.040/1992; with area of 17,869.42 hectares) and an additional two under applications for exploration licenses (850.963/2010 and 850.034/2011; with area of 7,017.57 hectares) as published by DNPM - National Department of Mineral Production:

https://sistemas.dnpm.gov.br/SCM/Extra/site/admin/dadosProcesso.aspx

The research was completed by Coffey Mining on 05-July-2011. Details of the concession holding in the Trairão region are shown in Table 4.4_1:

Table 4.4_1
Trairão Iron Ore Project
Summary of Talon Concession Status in the Trairão Region

Municipality	DNPM process no.	Stage	Mineral	Actual Owner	Size (hectares)	License Number.	Expired Date
Bannach	850.103/08	Exploration License	Gold	Barrick do Brasil Mineração Ltda	9 966.90	5290	07/05/2012
Bannach	850.148/01	Exploration License	Gold	Brazpot Mineração Ltda	9 703.53	6714	16/10/2011
Bannach	850.163/01	Exploration License	Gold	Brazpot Mineração Ltda	6 000.00	6719	11/11/2012
Ourilandia do Norte / Bannach	850.164/01	Exploration License	Gold	Brazpot Mineração Ltda	5 964.92	6720	11/11/2012
Bannach	850.165/01	Exploration License	Gold	Brazpot Mineração Ltda	5 000.00	6721	16/10/2011
Bannach	850.185/01	Exploration License	Gold	Codelco do Brasil Mineração Ltda	5 000.00	6729	16/10/2011
Bannach	850.186/01	Exploration License	Gold	Brazpot Mineração Ltda	5 000.00	6730	11/11/2012
Bannach	850.187/01	Exploration License	Gold	Codelco do Brasil Mineração Ltda	5 000.00	6731	11/11/2012
Bannach	850.355/00	Tender Process	Copper	Codelco do Brasil Mineração Ltda	7 869.42	7165	14/08/2004
Bannach / Ourilandia do Norte	851.040/92	Tender Process	Nickel	Codelco do Brasil Mineração Ltda	10 000.00	1072	03/03/2001
Ourilandia do Norte / Bannach	850.963/10	Application	Iron	Brazpot Mineração Ltda	5 948.83	---	---
Bannach	850.034/11	Application	Iron	Brazpot Mineração Ltda	1 068.74	---	---

Brazpot Mineração Ltda. is Talon's Brazilian Subsidiary. The DNPM website shows 4 exploration licenses owned by Codelco do Brasil Mineração Ltda, but the total rights were already transferred to Brazpot Mineração Ltda.

The DNPM title 850.103/08 is still registered under Barrick do Brasil Mineração Ltda. at DNPM website, but a Royalty Agreement dated 27th September 2010 has been made between Talon Iron Mineração Ltda. and Barrick Barbados (as defined below). The tender process numbers 851.040/92 and 850.355/00 were registered at DNPM by Codelco do Brasil Mineração Ltda.

The property boundaries are currently not physically marked on the ground, with the boundaries delineated based on the property description described on the exploration licenses.

Talon applied to the DNPM on 29 November 2010 to have the commodities included in the licence to include iron ore in all exploration licenses held by the Company.

4.5 Royalties and Landowner Agreements

On September 29, 2010, Talon completed the acquisition of 100% of the rights to two iron ore projects in Pará State, Brazil, by concluding two separate agreements respectively with Codelco do Brasil Mineração Ltda. ("Codelco") and Barrick International (Barbados) Corp. ("Barrick Barbados").

The agreement with Codelco resulted in Talon acquiring a 70.05% interest in the Trairão Iron Ore project ("Trairão Project"). Talon separately acquired Barrick do Brasil Mineração Ltda., ("Barrick Brasil"), which holds the remaining 29.95% interest in the Trairão Project, from Barrick Barbados. With this acquisition, Barrick Brasil became a wholly owned subsidiary of Talon and was renamed Talon Iron Mineração Ltda. Barrick Brasil (now named Talon Mineração Ltda.) also has a 100% interest in an exploration license with potential for iron ore in the Inajá greenstone belt ("Inajá South Project") and a 33.69% interest in the Terra Escura Nickel Project, also in Pará State.

Under the agreement with Codelco, Talon paid Codelco a nominal purchase price and will pay royalties of US$0.7005 per tonne of iron mined and sold, in the event of mining in the future on the licenses.

Under the agreement with Barrick Barbados, Talon paid Barrick Barbados a nominal purchase price and is obliged to pay certain production related royalties, at varying levels in respect of specific metals, in the event of mining on any of the rights to projects held by Barrick Brasil.

For the Trairão Project, royalties payable to Barrick Barbados are valued at US$0.2995 per tonne of iron mined and sold. However, Talon has the right to buy back this royalty for US$598,000 during the 12 month period following commencement of commercial production. For the Inajá South Project, Barrick will receive a net smelter royalty of 0.5% for any base

metals that may be produced and sold and 1.0% for any precious metals that may be produced and sold. There are also provisions for Talon to buy back the base metal royalty and for Barrick Barbados to buy back up to 50% interest in any future gold mining operation that exceeds a reserve of three million ounces.

4.6 Brazil Environmental Legislation

Article 225 of the Brazilian Constitution requires reclamation and rehabilitation of mined out areas by the operators. All possible polluting activities are required to be licensed under the terms of the Brazilian National Environmental Policy (Federal Law 6.938 of 31 August 1981). Regulations for the administration are established by National Council of the Environment (CONAMA)'s Resolution 237 issued on 19 December 1997. CONAMA sets the conditions, limits and the control and use measures for natural resources, and permits implementation and operation of projects. Licenses are issued by either a federal, state or a municipal agency.

The areal extent of the proposed impact is considered by CONAMA in determining the issuance of a license and is based on regulations set forth by Resolution 237/97, listed below:

- Federal entities are responsible for licensing activities which may cause national or regional-level environmental impact (more than two federal States).
- State entities and Federal District Entities are responsible for the activities which may cause State-level environmental impact (two or more cities).
- Municipal entities are responsible for licensing the activities, which may cause local environmental impact (within city limits).

The license may be issued in one of the forms described in Table 4.6_1.

Table 4.6_1
Trairão Iron Ore Project
Main Environmental Licensing Stages of Brazilian Mining Projects

License	Description
Preliminary License (LP*)	Indicates environmental viability of project. Location and concept approval, subject to a specific environmental impact assessment and a formal public hearing
Installation License (LI*)	Authorizes project initiation. Permits the engineering work, subject to an environmental control plan.
Operation License (LO*)	Authorizes the start of operations. Requirement to demonstrate establishment of all the environmental programs and control systems.

* Brazilian abbreviation

The license will be subject to approval by the relevant municipality to confirm compliance with the Organic Act and the Municipal Law of Use and Occupation of the Terrain. This will be particularly important for the LP.

In addition to the environmental license process and according to Resolution 237/97, requirements of the preliminary licensing phase also include:

- Approval for water resources use.
- The Authorization for Forest Exploration (APEF) which is required in the cases where there is change in the Surficial Deposit usage or vegetation suppression.
- The Authorization for disturbance of vegetation in Permanent Protected Areas (APP) or in Units of Conservation (UC) by the Authorized Environmental entity.

4.7 Environmental Permits

Talon (through its Brazilian subsidiary Brazpot Mineração Ltda.) has the Operation License (LO) No 4920/2010 approved and valid until 15-Aug-2013. The LO authorizes environmentally the iron ore exploration program in 19,670.43 hectares within the DNPM numbers 850.148/2001 and 850.103/2008 which cover the main iron targets. At the end of the exploration program Talon is responsible for the rehabilitation of the environment in the areas of field work.

4.8 Environmental Liabilities

No environmental liabilities have been identified within the mineral titles.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Project Access

The Trairão Iron Ore Project is located in the municipality of Bannach, approximately 175km directly south-southwest of Parauapebas city, and 165km from the Carajás railway that connects the mining district with the port 'da Madeira' in São Luis, Maranhão State Capital.

The regional vegetation consists in typical Amazon Rain forest. The Amazon Rain forest is a moist broadleaf forest that covers most of the Amazon Basin of South America. Reflecting environmental conditions as well as past human influence, the Amazon is made up of a mosaic of ecosystems and vegetation types including rainforests, seasonal forests, deciduous forests, flooded forests, and savannas. The project vegetation type consists in rain forests on the top of most of the Trairão ridges and grasslands on the plains below where forest has been cleared to establish cattle ranching farms in the surrounding area (Figure 5.4_1).

The exploration properties can be accessed by plane or/and car. There are regular flights from Brasilia to Redenção and Marabá cities.

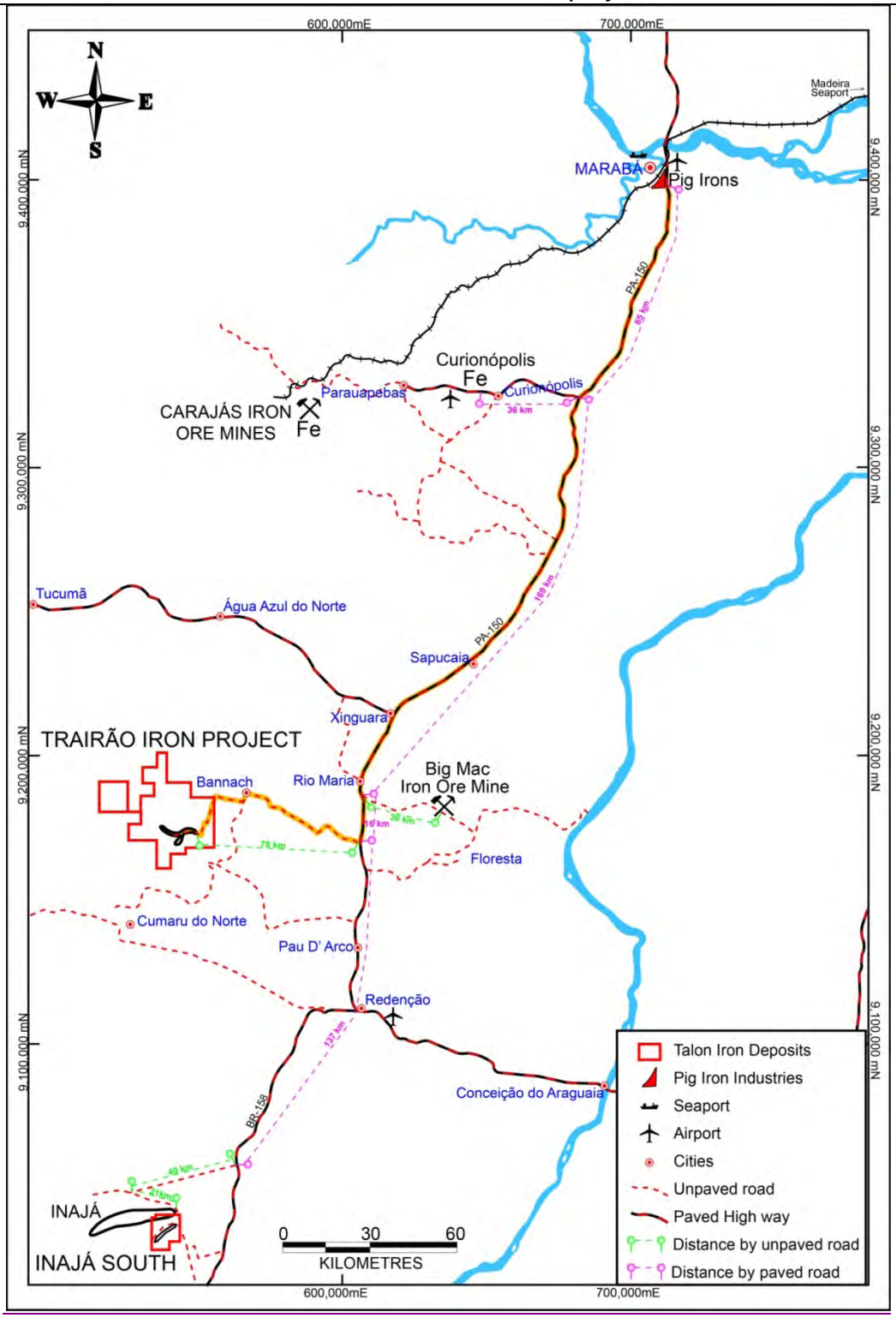
From Redenção city, access can be made using the paved highway PA-150 for about 61km in the north direction, turning west on the unpaved road for 53km to Bannach, and turning southwest for a further 25km to the project area.

From Marabá city, access can be made using the paved highway PA-150 for about 270km heading south, turning west on the unpaved road for 53km to Bannach, and turning southwest for a further 25km to the project area.

Figure 5.1_1

Trairão Iron Ore Project

Local Access to the Trairão Property



5.2 Climate

The climate is characterized by two well defined seasons, a wet season from December to April (summer–autumn) and a dry season from May to November (winter-spring). Ninety percent of the annual precipitation of 1,500 to 2,500mm falls in the wet season.

The temperature ranges from 17ºC to 38ºC. Annual average temperature is 26ºC. Highest temperatures occur from July to September.

Besides being hot, and at times humid, the climate is not a major problem for running surface mining of any type, including iron ore.

5.3 Local Resources and Infrastructure

For a long time this area was considered almost inaccessible. Nevertheless the implementation of the Carajás iron ore project in the middle of the 1970s brought investment in infrastructure to the region, including federal and state roads, a modern railroad and power plant. Large-scale mining enterprises raised interest in smaller mining ventures, mainly artisanal and small-scale mining for gold and cassiterite. The Carajás mining district proved to be very rich in metals other than iron, and deposits of manganese, gold, nickel and copper are being currently developed. Mine development was also followed by timber exploitation, cattle farms and commerce, using the new infrastructure.

The city of Marabá, with almost 200,000 inhabitants, is the major regional town, accessible by paved road (PA 150) from the major agricultural centres of the region: Xinguara city (238km from Maraba city), Rio Maria city (266km), and Redenção city (353km). Redenção city is also linked to Conceição do Araguaia city by paved road.

The closest major commercial airport is located in Marabá city, which has daily flights to various major cities in Brazil. Other important airstrips are located at Ourilândia do Norte city and Carajás. The railway connecting the iron mine operations at Carajás to the port of São Luis crosses Marabá city area.

A major dam and power station at Tucuruí, on the Rio Tocantins, about 185km north of Marabá city has installed capacity of about 6,000MW, expandable to 12,000MW. This energy source supplies power to the region, including Vale's iron ore mining project at Carajás. A major transmission line runs south from Tucuruí, passing by Marabá city. From Marabá city, two 1,000kV lines follow the highway BR 150 contour to Xinguara, Rio Maria and Redenção cities. From Redenção city a distribution line runs to Cumaru do Norte.

This region is booming economically, which has accelerated due to the implantation of two big nickel laterite projects, namely Onça Puma and Vermelho. With increasing activity in the mining sector, significant improvements can be expected in the regional infrastructure in the next few years.

5.4 Physiography and Geomorphology

Landscape forms depend strongly on the lithologies underlying the area and weathering effects. The topographic variation ranges from 420m above sea level at the base of the mountains up to an elevation of 750 metres at the top of the mountains.

Granitic basement of the Xingu Complex forms strongly eroded low elevation terrain with small rounded hills. Large granitic batholiths form erratically distributed hills, which vary between those with rounded outline to completely irregular forms, varying in size from a few hundred square meters to 20km². Highly deformed areas like the Trairão ridge show a strong structural control on relief, with topographic features oriented along northeast or northwest trends (Figure 5.4_1). Ridges, from a few hundred meters to kilometers in length, are formed by resistant units such quartz veins, chert units and Banded Iron Formations (BIF). Ridges and valleys commonly reflect the underlying lithological distribution, and are a reflection of folds, faults and sedimentary basins. Drainage patterns reflect the topography, and may be controlled by rock fracturing and other structural features.

Figure 5.4_1

Trairão Iron Ore Project

Trairão Project General Overview

6 HISTORY

In the past, the project was explored by a joint venture ("JV") between Codelco do Brasil Mineração Ltda. ("Codelco"), which had a 70% interest, and Barrick do Brasil Mineração Ltda. ("Barrick"), which had a 30% interest. Under this JV agreement, both companies developed an exploration program in phases from 2001 to 2009 which focused on iron-copper-gold (IOCG) mineralization. During the referred exploration program, the potential for iron ore was identified on a target area known as Trairão. The identification and evaluation of the areas with a potential for iron ore was based on the reinterpretation of an aeromagnetic survey. The highest priority magnetic anomalies were subjected to limited follow-up exploration that included geochemical grid sampling, geological mapping and limited exploration drilling.

At that time the Trairão Iron Ore Project was named by the JV as "Prospecto Serra do Trairão".

The Codelco-Barrick JV has undertaken several exploration stages. At the beginning, the aim was to discover IOCG mineralization. In the years 2005 to 2006 the Santa Fé and Santa Cruz (Terra Escura Project) areas were explored for lateritic nickel deposits. This report is only concerned with the work relevant to iron potential of the prospect. Historical activities carried out on the project area included:

- Landsat and radar imagery interpretation;
- Airborne geophysics - Aeromagnetic flight with 250m line spacing; this included a gamma-spectrometry survey;
- Regional and detailed geological mapping, rock grab sampling and stream sediment and soil geochemistry;
- Semi detailed profile geological mapping;
- Geological reconnaissance and geochemical sampling of the ferriferous formations.
- Auger and diamond drilling.

Identification and evaluation of the areas with potential for iron ore was based on the reinterpretation of the aeromagnetic survey. The best categorized magnetic anomalies were subjected to follow-up exploration that included geochemical grid sampling, geological mapping and exploration drilling.

The geological reconnaissance carried out over the area of the aeromagnetic anomalies provided the indication of the potential for iron ore on the Trairão ridge, based on a 58% Fe iron grade obtained from hand rock samples. These areas were subject to systematic rock geochemistry sampling along profiles and reinterpretation and modeling of the aeromagnetic data that in conjunction allowed the establishment of a potential iron ore area within the Trairão project.

Three of the largest and strongest aeromagnetic anomalies, which indicated the potential for iron mineralization, were subjected to rock geochemical sampling along 800m x 200m and 400m x 200m grids. For the geochemical sampling and geological mapping, a total of 29km of access roads needed to be built. Overall, exploration activities developed in the project area are summarized on Table 6_1.

Table 6_1
Trairão Iron Ore Project
Previous Exploration Activities Undertaken by Codelco from 2001 to 2009

ACTIVITIES	AMOUNT	COMMODITY	PERÍOD
TOPOGRAPHY			
Opening trail (km)	112.90	Cu-Au-Fe	2001-2008
Opening roads (km)	29.00	Fe	2008
GEOCHEMICAL			
Stream sediment assay	156	Cu-Au	2001-2002
Soil assay	1,196		2001-2008
Rock assay	246	Cu-Au-Fe	
GEOPHYSICS			
Airborne geophysical survey - MAG & GAMMA (km)	1,500	Cu-Au	2001
GEOLOGY			
Regional Geological Mapping (km²)	300.00	Cu-Au	2001-2002
Semi detail Geological Mapping (ha)	3,260.00	Cu-Au-Fe	2001-2008
DRILLING			
Auger Drilling(m)	59.00	Cu	2008-2009
Auger Drilling (n° bore holes/ m)	12 / 61		
Diamond Drilling (m)	754.40	Fe	2008-2009
Diamond Drilling (n° drill holes / m)	03 / 256		

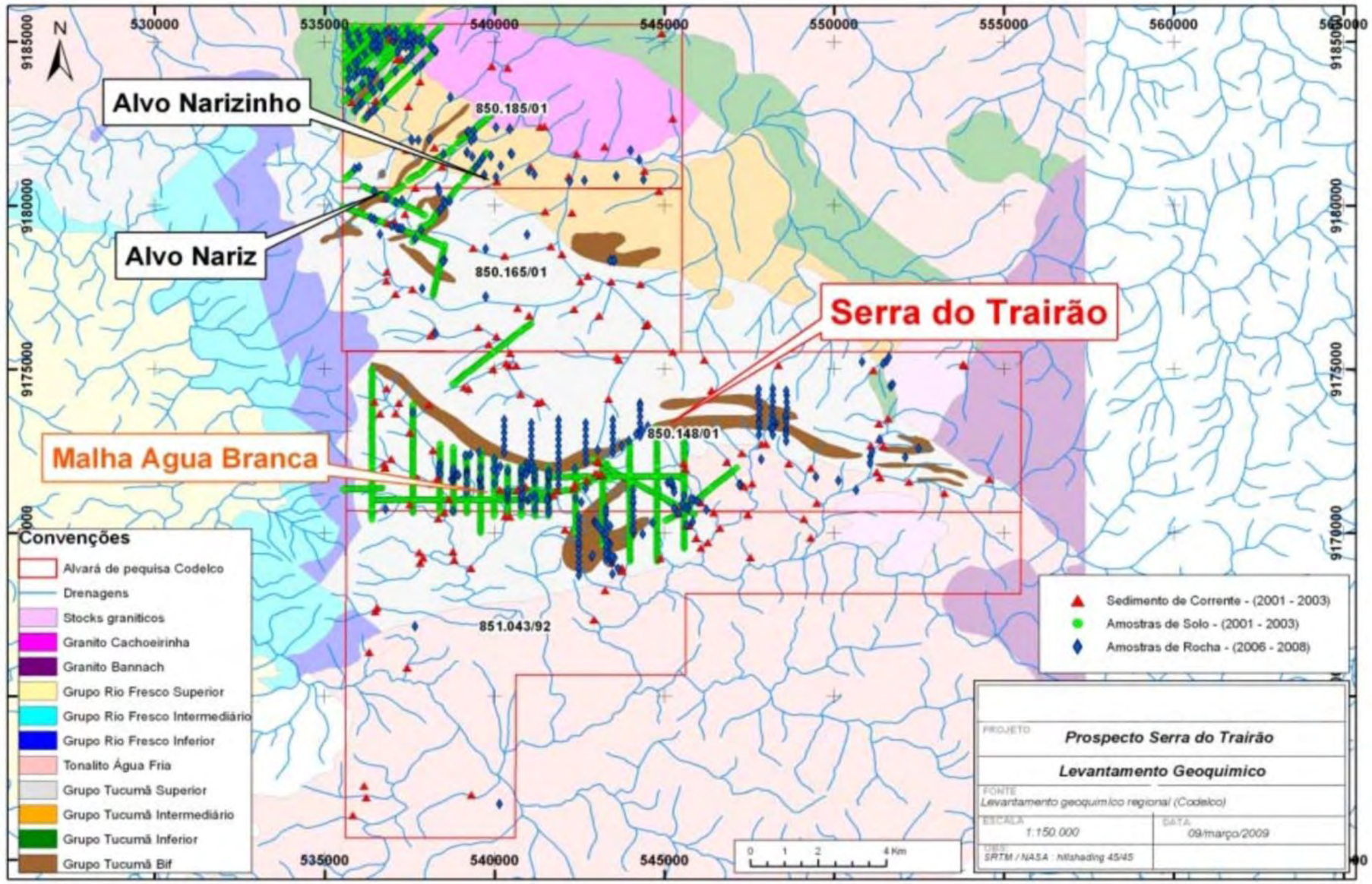
6.1 Geochemistry History

Codelco carried out a sampling program that included 156 stream sediment samples, 1,196 soil samples in regular 200m x 50m grids and cross sections, and rock chip sampling for IOCG exploration located at Trairão, Nariz and Narizinho targets (Figure 6.1_1).

Figure 6.1_1

Trairão Iron Ore Project

Codelco Geochemical Survey



From results of the sampling campaign, Codelco defined 11 main iron ore potential targets (BIFs) (Figure 6.1_2). The 3 main targets (BIF01, BIF02 and BIF03) are located in the south of the Trairão project area.

Rock Sampling was done with the specific aim of identifying occurrences of iron, over the two major magnetic anomalies (BIF01 and BIF02) and over a geologically favorable area (BIF 3). The sampling was performed along cross sections and regular grids of 800m x 200m and 400m x 200m (Figure 6.3_1).

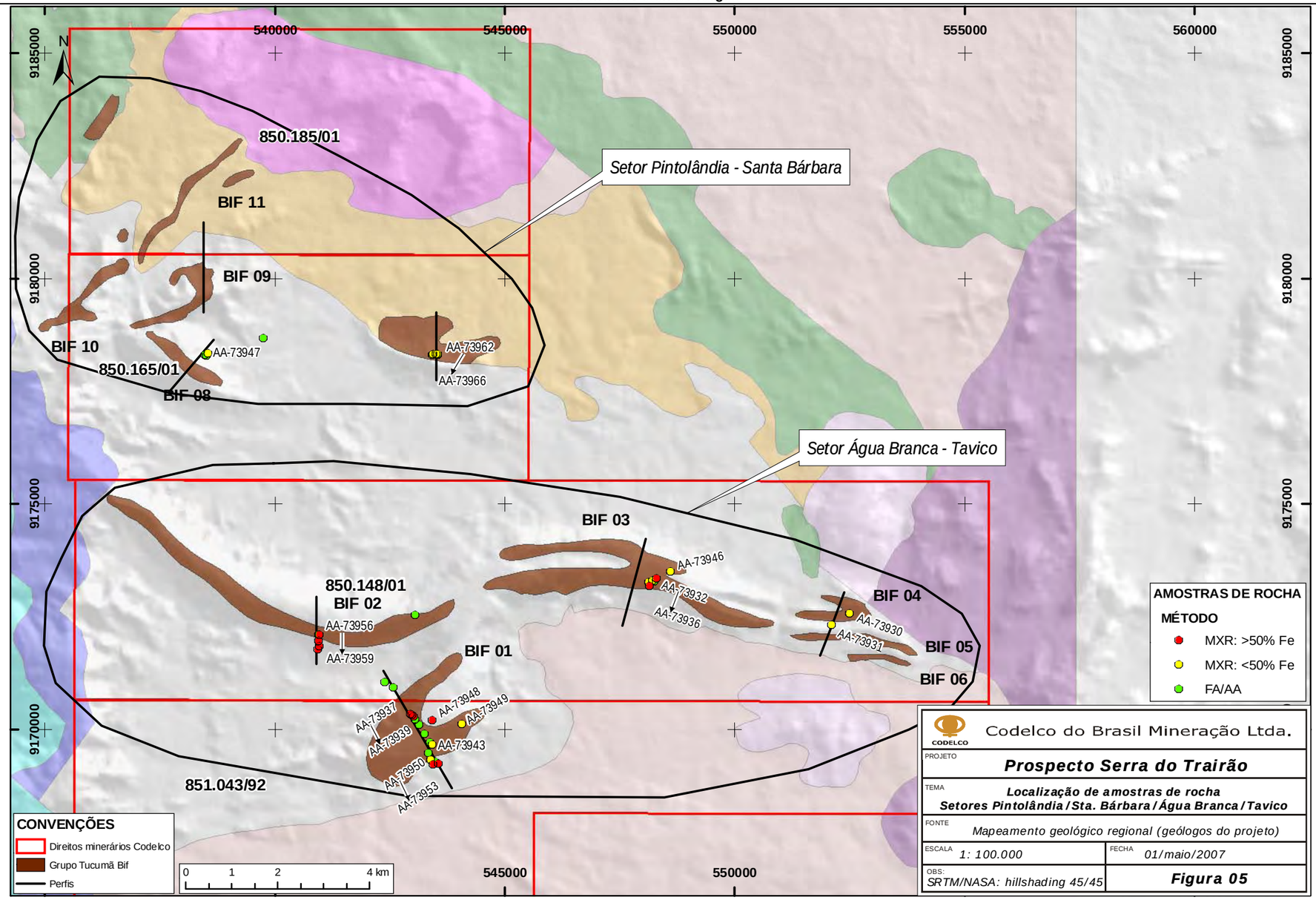
Samples were analyzed for iron according to the following industry accepted three grain sizes: > 32mm: coarse material; 32mm to 6mm: granulated and < 6mm: extra fine sinter or pellet feed.

Iron assaying was done by X-Ray Fluorescence and the results are expressed in weight percent of Al_2O_3, CaO, Fe_2O_3, MgO, MnO, P_2O_5, SiO_2, TiO_2, K_2O, and Na_2O. Metallic Fe was obtained by means of stoichiometric calculations, dividing the resulting Fe_2O_3 by a specific constant. Likewise, the amount of phosphorous was obtained by dividing the P_2O_5 by a pre-determined constant.

Figure 6.1_2

Trairão Iron Ore Project

Iron Ore Potential Targets



6.2 Aeromagnetic Survey History

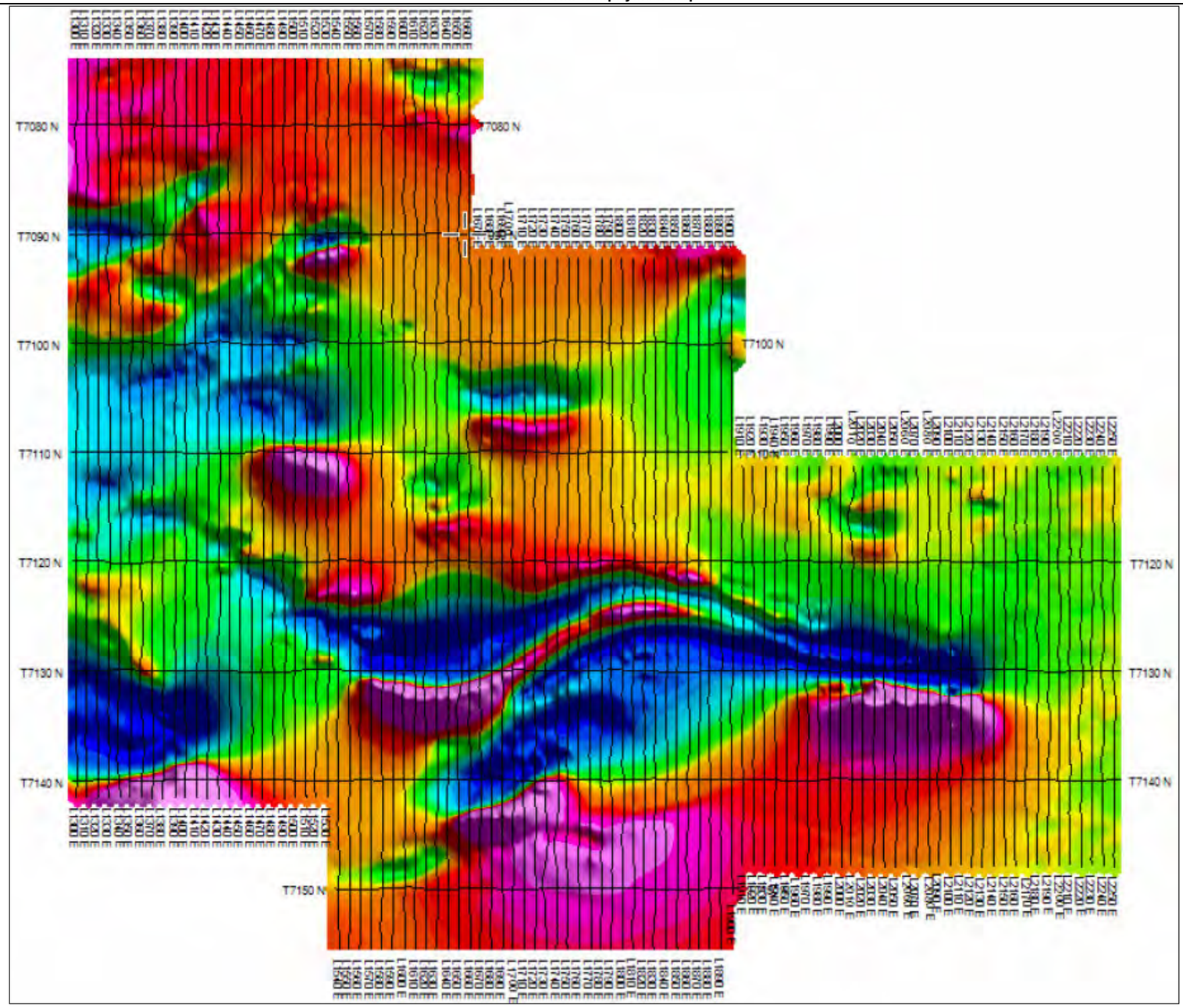
The Codelco (2001) aeromagnetic and gamma-spectometric survey shows strong positive anomalies over the whole area underlain by iron formation (Figure 6.2_1). These anomalies assisted with the identification of the iron formations and show a strong contrast and are fairly readily identifiable within the Upper Unit of the Tucumã Group that allows the Middle Clastic Unit to be mapped. All stratigraphic definitions were based on an informal field work definition, from geological field notes.

The gamma-spectometry (thorium channel) shows an excellent correlation between the lateritic crusts over the BIF and the thorium high values, reflecting the higher duricrust concentrations.

Figure 6.2_1

Trairão Iron Ore Project

Codelco TMI Geophysical Map



The 3D analysis of the magnetic data gives a fairly good approximation to the magnetic sources related with BIF anomalies (Reconsult, 2007). Based on their relative size, BIF numbers 1 and 2 were selected for diamond core drilling, and more detailed rock sampling was carried out at outcrop in these areas (Figure 6.3_1).

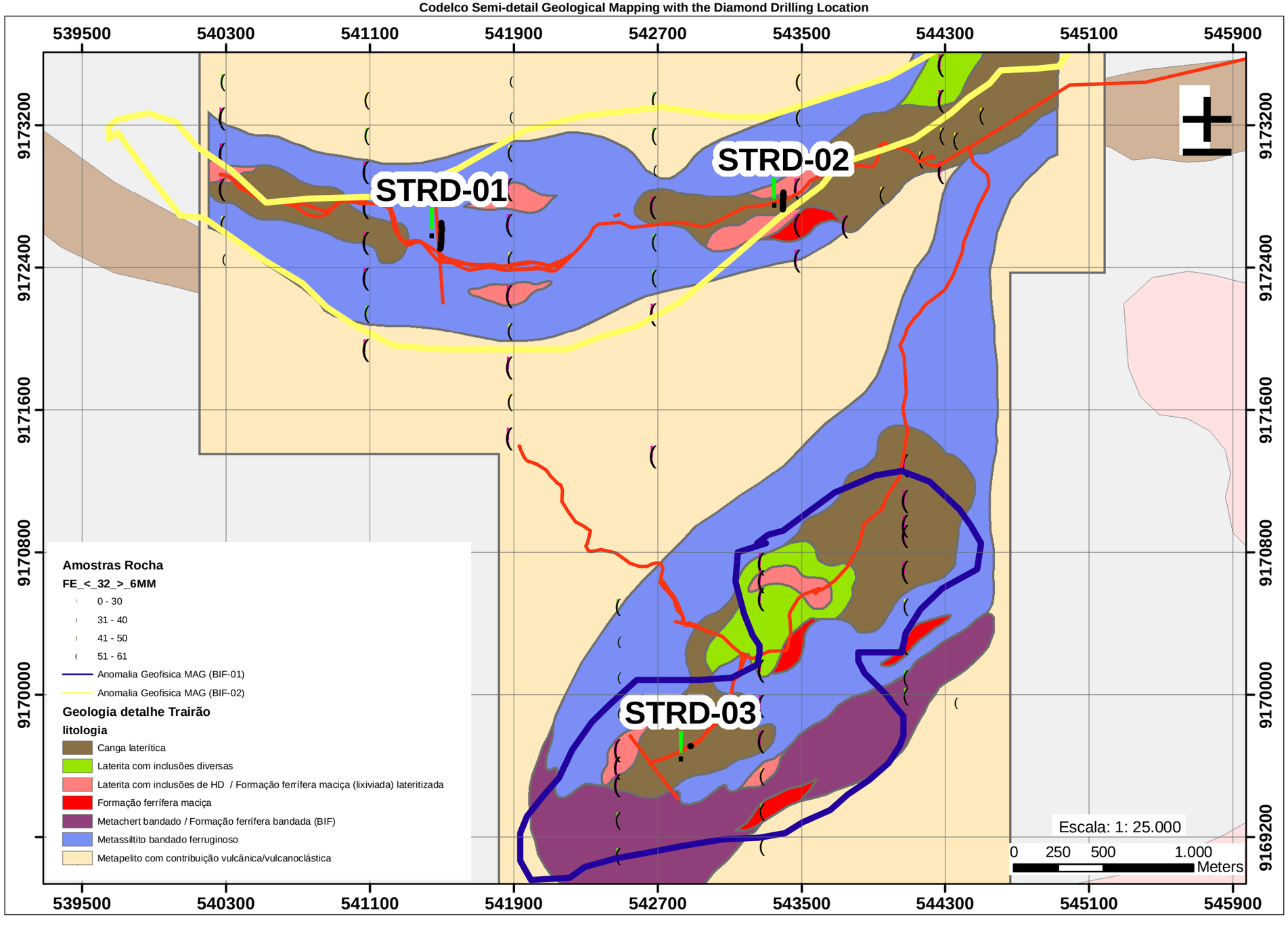
6.3 Geological Mapping History

Regional geological mapping, on a 1:100,000 scale, was undertaken and succeeded in identifying the iron formations in the Trairão ranges and Pintolândia region. Semi-detail mapping was done over limited areas based on the trenches dug for geochemical rock sampling. The main objective of such mapping was to identify the areas with the greatest hematite concentrations above BIF 1 and 2 magnetic anomalies. A structurally favorable zone (BIF 3) with similar geochemical data to that found in BIF 1 and 2 was also mapped (Figure 6.3_1).

Figure 6.3_1

Trairão Iron Ore Project

Codelco Semi-detail Geological Mapping with the Diamond Drilling Location



6.4 Diamond Drilling History

Codelco's total drilling program in Trairão Iron Project was 754.4m (Table 6.4_1) divided into three drill holes (Table 6.4_1). Drill holes aimed to test the magnetic anomalies in depth obtained from 3D magnetic modeling.

Table 6.4_1
Trairão Iron Ore Project
Codelco Drill Holes Location

Drill Hole	X	Y	Z	Depth (m)	Azimuth	Dip	BIF
STRD-01	541,499.98	9,172,649.71	769.76	282.6	180	-60	BIF-02
STRD-02	543,400.00	9,172,821.82	712.30	211.4	180	-60	BIF-02
STRD-03	542,882.54	9,169,710.95	734.50	260.4	0	-90	BIF-01

Figure 6.4_1

Trairão Iron Ore Project

Codelco Drill Holes – SRTD-01, SRTD-02 and SRTD-03

Drill hole STRD-01 intercepted a vertical section from 0m to 28.40m with average grade of 47% Fe. This interval comprises an unconsolidated material, composed of pebble martite plates, clay and ferruginous phyllite fragments. The drill hole shows a decrease in the iron grades as it penetrated the fresh rock, suggesting that the BIF of the area has lower levels of iron grades, compared to the oxidized and enriched deposits near surface.

Drill hole STRD-02 intercepted a vertical section from 0.0m to 61.65m with average grade of 45% Fe. This interval comprises an unconsolidated material composed of pebble martite plates, clay and ferruginous phyllite fragments, underlain by saprolite and saprock. This drill hole shows the same characteristics observed in drill hole SRTD-01, with a decrease in the iron grades in the fresh rock.

Drill hole STRD-03 intercepted a vertical section from 0.0m to 31m with an average grade of 51.85%Fe. This interval comprises a more fine-grained unconsolidated material composed of fine pebble martite plates, clay and ferruginous phyllite fragments at surface. Massive iron fragments were observed locally together with brecciated BIFs. The drill hole also shows a decrease in the iron grades as drilling penetrated the fresh rock lower in the drill holes.

7 GEOLOGICAL SETTING AND MINERALISATION

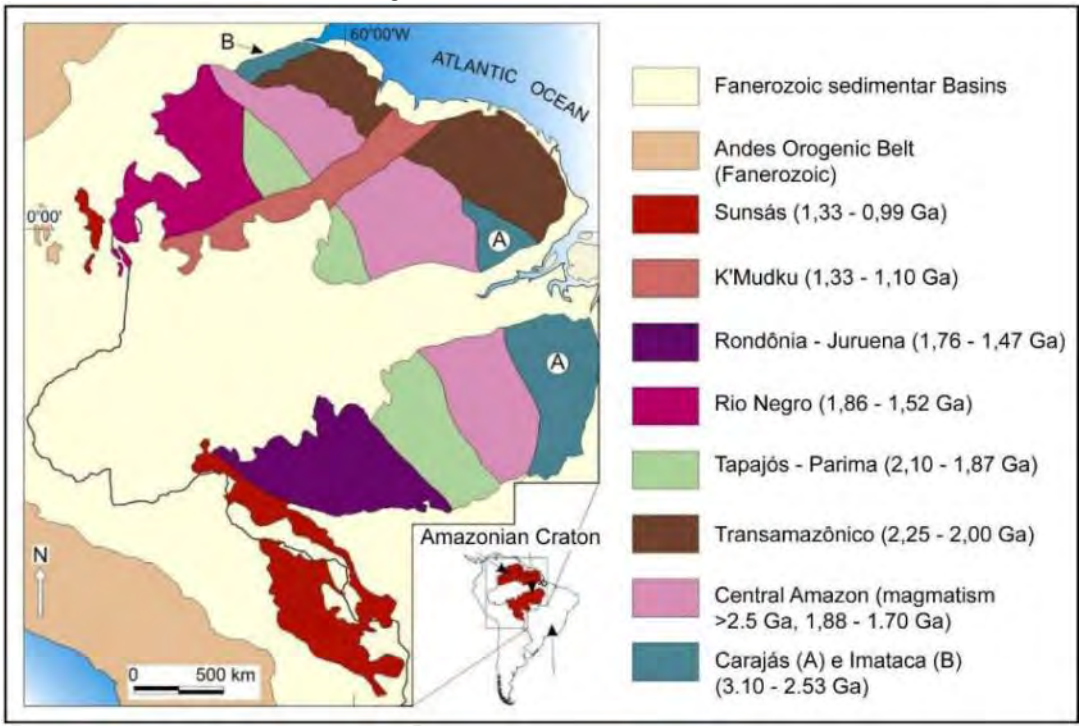
7.1 Regional Geology

The Trairão Iron Ore Project is located within the Serra dos Carajás mineral province that covers an approximate area of 6,000km² in the eastern part of the Amazon Craton (Figure 7.1_1).

Figure 7.1_1

Trairão Iron Ore Project

Geochronological Provinces of the Amazonian Craton



The Carajás province was originally identified in the late 1960s as one of the world's largest iron ore fields. Following the discovery of extensive iron ore reserves within this previously unexplored, densely rainforest-covered area, numerous other metalliferous deposits have been identified including; manganese, alumina, nickel, tin, gold, platinum group elements and copper. More recently, the area was recognized as a major copper-gold province, after the discovery of a number of world-class IOCG deposits, and an emerging nickel laterite district, making Carajás an important and under-explored metallogenic province.

The Carajás province lies at the southeastern margin of the Southern Amazonian Craton, and is represented by granitoid-greenstone terrains, intracratonic basins, and high grade metamorphic complexes. The province comprises two Archaean tectonic blocks; the northern Itacaiúnas belt, a tectonic block that hosts Carajás basin, and the southern Rio Maria granitoid-greenstone terrain represented by the Andorinhas Supergroup.

The Andorinhas Supergroup comprises seven individual greenstone belts, including the Seringa greenstone belt, which occurs in the Trairão Iron Project area. The Supergroup has been divided into a lower Babaçu Group and an upper Lagoa Seca Group. The Supergroup evolves upwards, with lithological distribution suggesting greenstone belt accretion from south to north. It has been suggested that the greenstone belts were deposited in a series of transtensional basins formed during dextral transcurrent movement on east-west, north-south and northeast-southwest faults.

The Rio Maria granitoid-greenstone terrain and the Itacaiúnas belt can be differentiated in terms of both their geological setting and associated mineral deposits.

The Itacaiúnas belt and Carajás basin form a structural province consisting of the major east-west to northwest-southeast trending Carajás and Cinzento strike-slip fault systems.

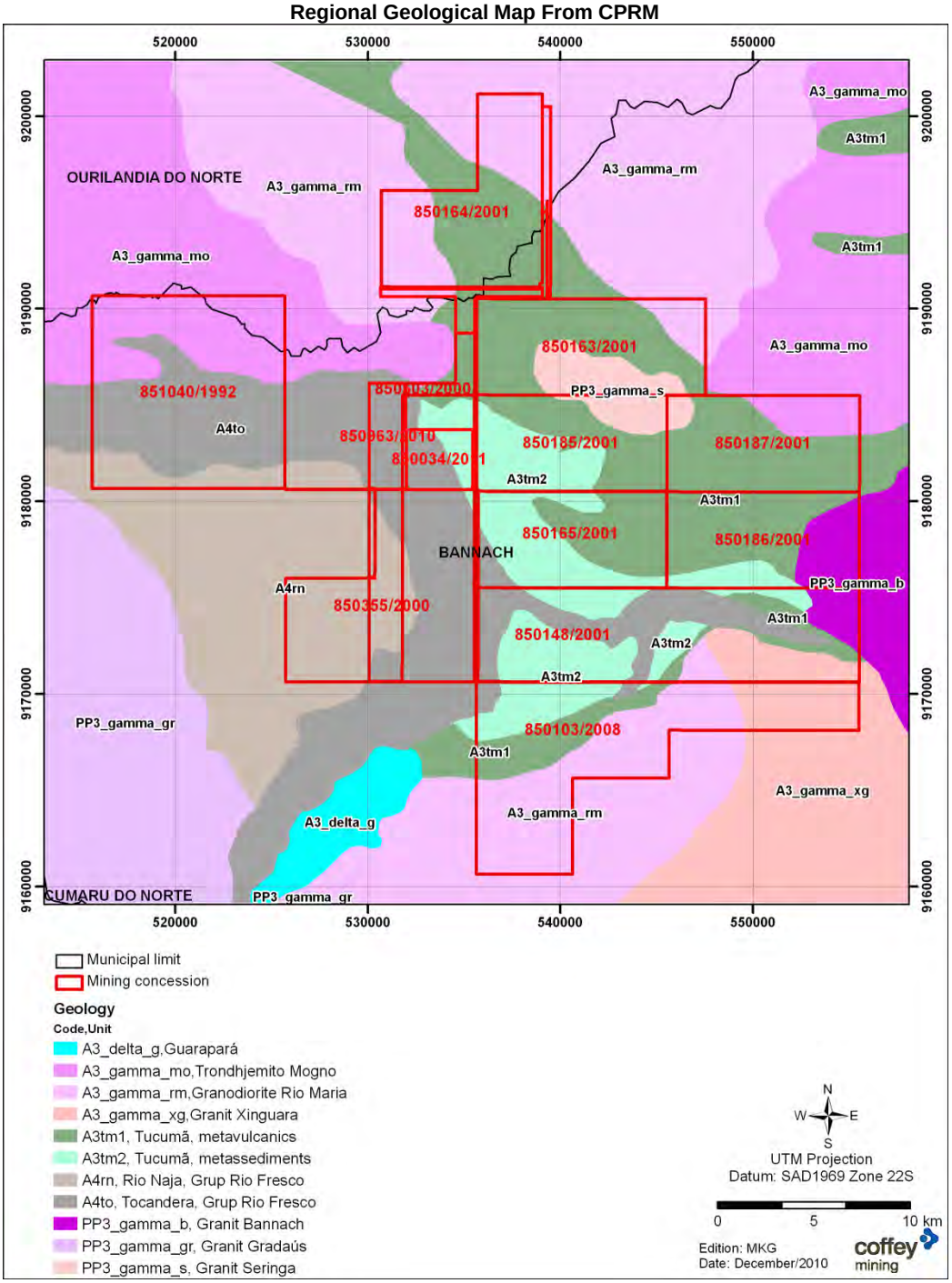
The Rio Maria granitoid-greenstone terrain is composed largely of east, northwest, and northeast trending shear zones around dextral strike-slip faults that have chiefly affected the supracrustal rocks. Synformal structures along the shear directions, previously interpreted as *synclinoria*, are considered to be transpressive duplexes. The larger duplexes are related to east trending shear zones consisting of sedimentary rock cores bordered by thrust faults.

Figure 7.1_2 shows the regional geology within the project tenements from CPRM (the Brazilian Geological Survey).

Figure 7.1_2

Trairão Iron Ore Project

Regional Geological Map From CPRM



7.2 Local and Project Geology

The oldest rocks within Trairão Iron Project area are the Archean tonalitic gneisses that form the basement to the Seringa Greenstone belt, which have been dated at 3.002Ga. The greenstone belt comprises a lower ultramafic to mafic volcanic sequence, passing up into intermediate to acid volcanic rocks, and an upper unit of siliceous metasediments. The metasediments contain abundant units of BIF, some of them attaining considerable thickness, including those comprising the Trairão Iron Project (Figure 7.2_1). Tonalitic rocks, providing younger radiometric ages than the greenstone belt are probably intrusive, although they are not everywhere distinguished from the basement gneisses.

Metasedimentary rocks of the Proterozoic Rio Fresco Group occur in the western portion of the area. Basal conglomerates and quartzites pass up into psammites and pelites, which become finer upwards; the uppermost units of the Group are carbonates and siltstones.

BIFs form part of a larger volcano-sedimentary sequence, stratigraphically located in the Intermediate and Upper Units of Tucumã Group. Both units are formed by clastic and carbonaceous and/or siliceous meta-sedimentary rocks, in which the Intermediate Unit is mainly formed by carbonate meta-siltstones, whereas the Upper Unit is composed mainly of ferruginous meta-siltstones that are host rocks of the BIF oxide layers.

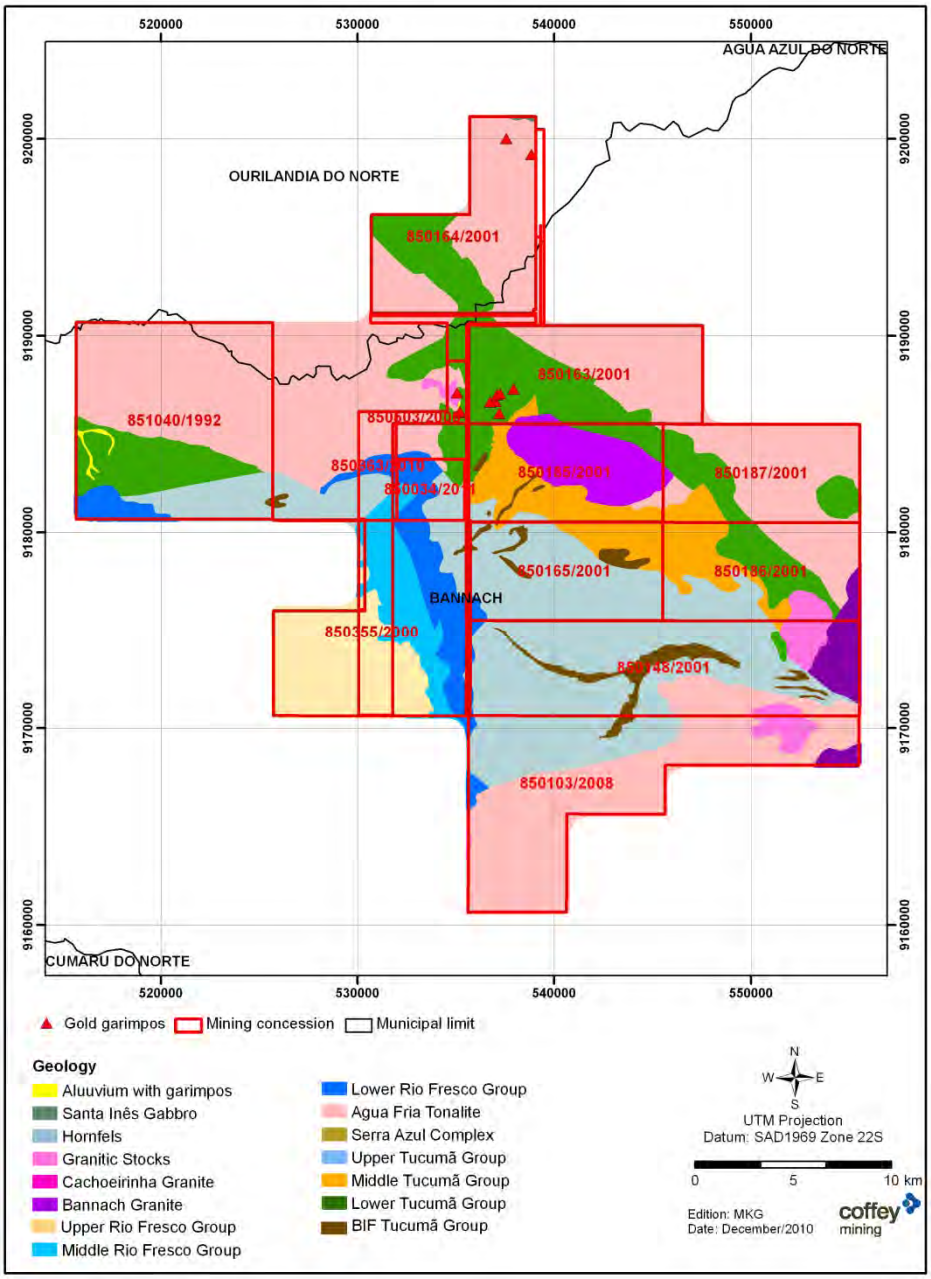
From a geomorphologic point of view, the Carajás ranges and the Trairão iron formations are at an altitude in which lateritic soils develop, enhancing the possibility for the formation of ferric supergene enrichment near surface.

Besides the favorable geomorphologic conditions for developing secondary mineralization, the geological mapping suggests that the iron formations were affected by metamorphic and hydrothermal processes that may have concentrated the primary epigenetic mineralization.

Figure 7.2_1

Trairão Iron Ore Project

Local Semi-Detail Geological Map



7.3 Mineralization

The iron mineralization in the near surface units at the Trairão property is associated with hematite-goethite-rich overburdens, as well as within a supergene enrichment zone over a sequence of inter-bedded BIFs and magnetite-rich phyllite that belong to the upper portion of Tucumã Group (Figure 7.3_1). The supergene enrichment process is believed to have leached a significant amount of silica from the country rocks and transformed the magnetite into hematite-goethite creating a resistant cap rock which is manifest as the prominent topography along the Trairão Ridge. The Trairão Ridge presents a folded pattern and its total length is 19km, over Target Areas 1, 2 and 3.

BIFs are chemical sediments which precipitated from seawater, and are characterized by fine layering of silica and iron minerals (which commonly occur as various facies of oxides, carbonates, silicates or sulphide). Oxide facies iron formations, containing magnetite and/or hematite, are the most significant in economic terms, and may contain up to 35% Fe. Supergene enrichment, particularly under tropical weathering conditions, may concentrate the iron in these rocks up to grades of 65% Fe.

Enrichment occurs commonly due to groundwater percolation through BIF, and some of the world richest ore bodies are within synclinal keels, where iron has been concentrated by downward-moving waters. This is particularly true where the underlying rocks are impervious to fluids.

Figure 7.3_1

Trairão Iron Ore Project

Mineralization

Assay results from samples from Codelco diamond drill holes show a supergene iron enrichment in all the three drill holes; which in some cases, as in the STRD-02 drill hole, is more than 60m thick (Figure 7.3_2).

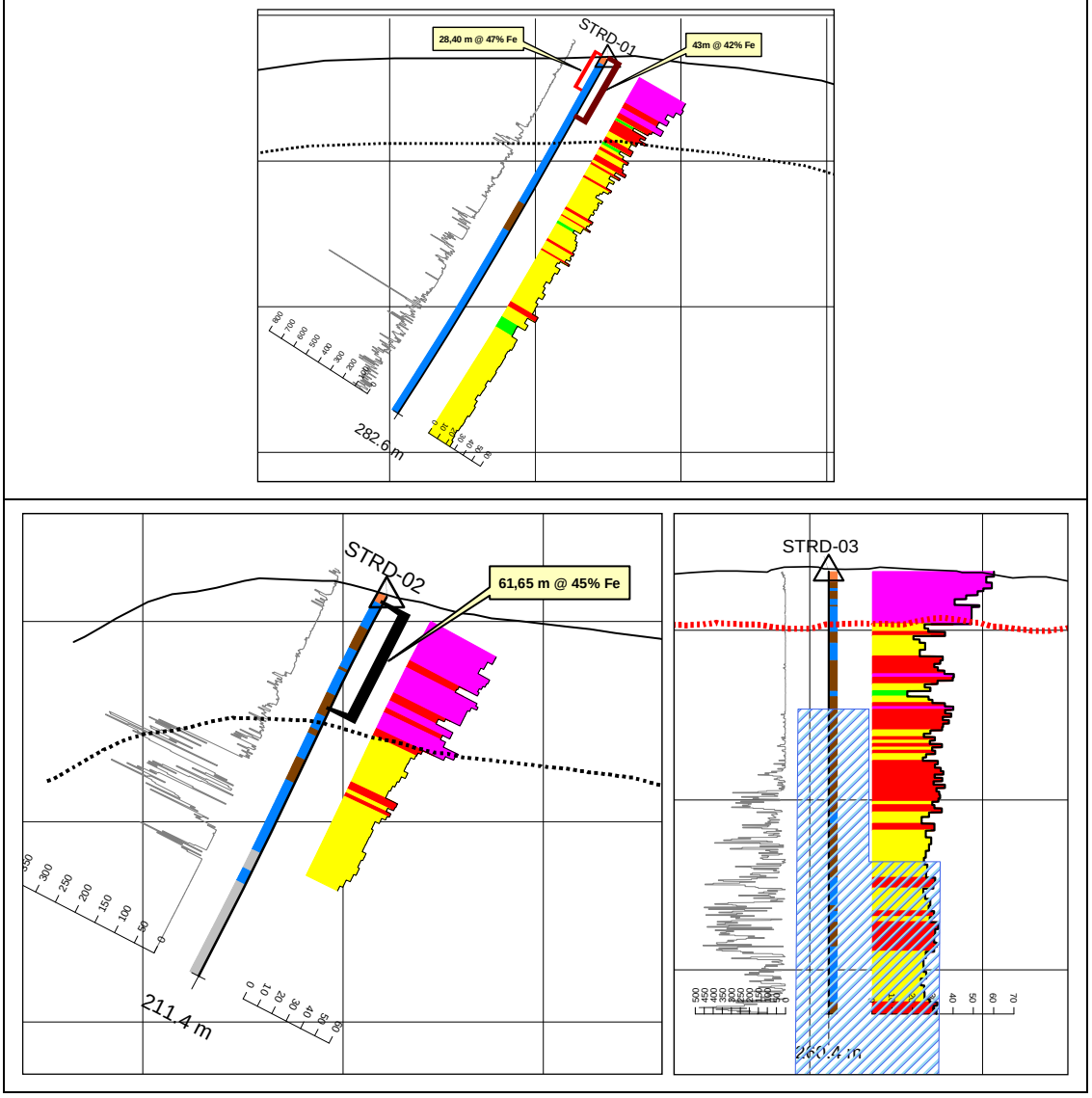
The potentially economic supergene iron mineralization (Fe >30%) of the Serra do Trairão Iron Project is, provisionally identified as overburden with local enrichment zones with thicknesses ranging from 20m to 60m. This iron mineralization has characteristics which are common to these types of deposits, such as:

- Mineralization has a fine grain size;
- Oxidized mineralization is associated with contamination element associations of Al_20_3, MnO, P_2O_5, SiO_2 and moisture) and has higher grades at surface;
- Fe and P grades decrease with depth;
- Such shallow near surface mineralization deposits are commonly amenable to simple surface mining techniques.

Figure 7.3_2

Trairão Iron Ore Project

Codelco Drill Holes with Supergene Fe Enrichment



8 DEPOSIT TYPES

The BIF strata lie within the upper metasedimentary units of the Seringa greenstone belt. Numerous individual BIF horizons form a substantial surface outcrop area with several kilometers strike length, including major fold closures, which are thought to be synclinal keels. The overall geotectonic setting is similar to that of the giant iron ore deposits of Carajás region, however prospectivity depends on the total volume of BIF, three dimensional geometry, and degree of supergene enrichment; these factors are being and will be, investigated and determined in the current and proposed exploration program.

The Carajás Mine is the world's largest iron ore mine and is located in the state of Para in Northern Brazil. The Carajás ores are found within Archean iron formations. The volcanic sequence has been weathered to a depth of between 100m and 150m, while oxidation is observed to a depth of up to 500m in the BIFs of the ore zone. The upper 80% of the reserve comprises a soft, friable enriched limonite near surface passing down into hematite to a vertical depth of around 300m. Hematite rich, but harder and more siliceous pods occur within the soft hematite, but also as a transition to the un-enriched BIF at depth. The Carajás District contains known reserves of the order of 18 billion tons with an average grade of 65.4%Fe.

In terms of geomorphology, both the Carajás hill iron formations and the Trairão Project have elevations compatible with the South American Surface Planing, which indicates the maturity of the laterite profile and therefore suggests the possibility of supergene enrichment of iron in their upper portions.

The preliminary geological reconnaissance suggests that the iron formations of Trairão Project area were affected by metamorphism and hydrothermal alteration processes, followed by supergene enrichment zones mainly along and structural features which about 14% of the area.

There is insufficient information to determine the iron content in the fresh rocks, as there are only three deeper diamond drill holes in the area; RC drill holes show enrichment at surface.

This type of deposit is commonly known for lower iron grades at depth and higher phosphorous and aluminum oxide grades near surface.

9 EXPLORATION

The initial phase of Talon's exploration program comprised geological field mapping and remote satellite data interpretation and evaluation, rock sampling, and geophysical exploration which included a reinterpretation of the original airborne magnetic survey data as well as undertaking a ground magnetic survey over the drilling areas on Target Areas 1, 2 and 3 followed by RC drilling.

The exploration work initially focused on three areas, Target Area 1, Target Area 2 and Target Area 3. In the first phase of exploration during 2010, two areas, comprising 2,400 metres of strike on Target Area 1 and 3,000 metres of strike on Target Area 2 were selected as test areas to confirm Codelco's exploration results and hence the potential of the iron mineralization and to test the various exploration methods to be applied within the proposed Talon program.

The exploration program was aimed at evaluating the first part of the Trairão Iron Ore Project potential for iron ore and providing sufficient data that would support an initial NI 43-101 compliant mineral resource estimate within the limited areas.

Subsequently during 2011, additional parts of Target Areas 1, 2 and 3 have been covered by grid RC drilling and diamond drilling. In addition, all of Target Areas 1 to 13 have been mapped on surface, a program of surface rock sampling has been undertaken and an interpretation of a suite of satellite based imagery is nearing completion. This interpretation will result in lithological and structural plans on a regional scale (1:75,000) throughout Talon's licence area and in addition each of the thirteen target areas will have been mapped on a detailed scale, varying from 1:15,000 to 1:20,000 scales. A program of diamond drilling commenced during the first quarter of 2011, initially on Target Area 1 and subsequently it has spread to Target Areas 2 and 3. RC drilling on a grid basis has been completed on Target Areas 4, 5 and 6 and is now focusing on the remaining target areas including Target Areas 7, 8, 10 and 13.

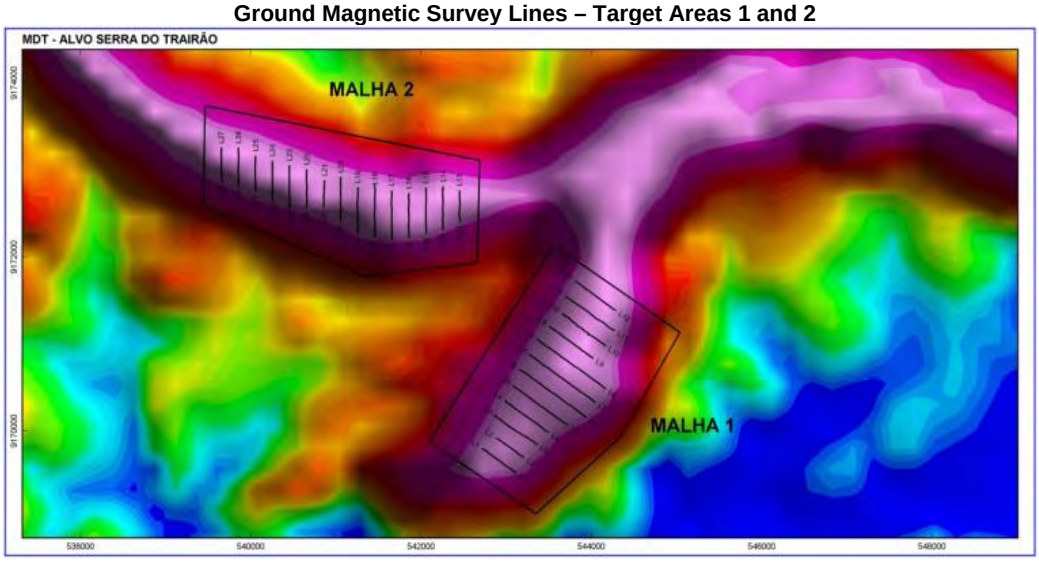
9.1 Ground Magnetic Survey

Coffey Mining carried out a ground magnetic survey in Trairão Iron Project (Area 1 and Area 2; the Area 3 and the rest of the project is currently under execution) at the request of Talon. It was conducted near the district/municipality of Bannach, state of Pará. Coffey Mining completed the acquisition of 16.2km linear ground magnetic data from two targets (Target Area 1/Malha 1 and Target Area 2/Malha 2). The Figure 9.1_1 shows the line locations.

Figure 9.1_1

Trairão Iron Ore Project

Ground Magnetic Survey Lines – Target Areas 1 and 2



The magnetometry focused on identifying the lateral continuity of saprolite and to determine its thickness. The study of magnetic susceptibility showed a great contrast between saprolite (considered in this work up to 50m deep) and metasiltite which is present in the Trairão area. It was interpreted that the source of the magnetic anomalies was the metasiltite (and BIFs), and that the anomalies reflect the near surface and shallow geological units of saprolite and saprock that was the focus of Talon's program. The parameters used in the survey are described below:

- Inclination of the geomagnetic field: -7.05º
- Declination of the geomagnetic field: -19.50°
- Magnetic DATUM: 25036nT
- Magnetometers: Scintrex Navimag SM5 w / GPS and Scintrex ENVIMAG
- Sensor's orientation (cesium vapor): Horizontal (90° / 0°)
- Orientation lines: N-S (Area 1), 125 AZ (Area 2)
- Extension lines: from 300m to 900m
- Spacing between lines: 200m
- Sampling preprocessed: Navimag 1Hz and 0.5 Hz ENVIMAG

- Sampling final average: 0.6m
- Bandwidth filter: 4
- Sensor height: 2m

Acquisition lines were programmed to cross structures at 90 degrees that were observed in the field. Access was along 27 cutlines with directions Az 125 (Malha 1) and Az 0 (Malha 2). The lines ranged from 300m to 900m in length.

Two Scintrex magnetometers were used for data acquisition; one NAVMAG SM5 cesium vapor coupled with GPS, used as mobile magnetometer, and one ENVIMAG precession proton magnetometer used as the base station. The magnetometer's internal GPS was used for georeferencing of lines. The mobile magnetometer was used with SM5 "hands-free" configuration, acquiring data continuously every 1 second.

CSAZ software was used for sensor’s orientation. This software uses geomagnetic field parameters and calculates the direction in order to amplify the signal and reduce noise.

Data processing consisted of reducing the total magnetic intensity to anomalous magnetic intensity, and after calculating the amplitude of analytic signal (AAS) and the first vertical derivative, using the algorithms distributed by Geosoft in the package MAGMAP. Results are shown in the Figures 9.1_2 and 9.1_3.

Figure 9. 1_2

Trairão Iron Ore Project

Total Magnetic Intensity – Target Area 1

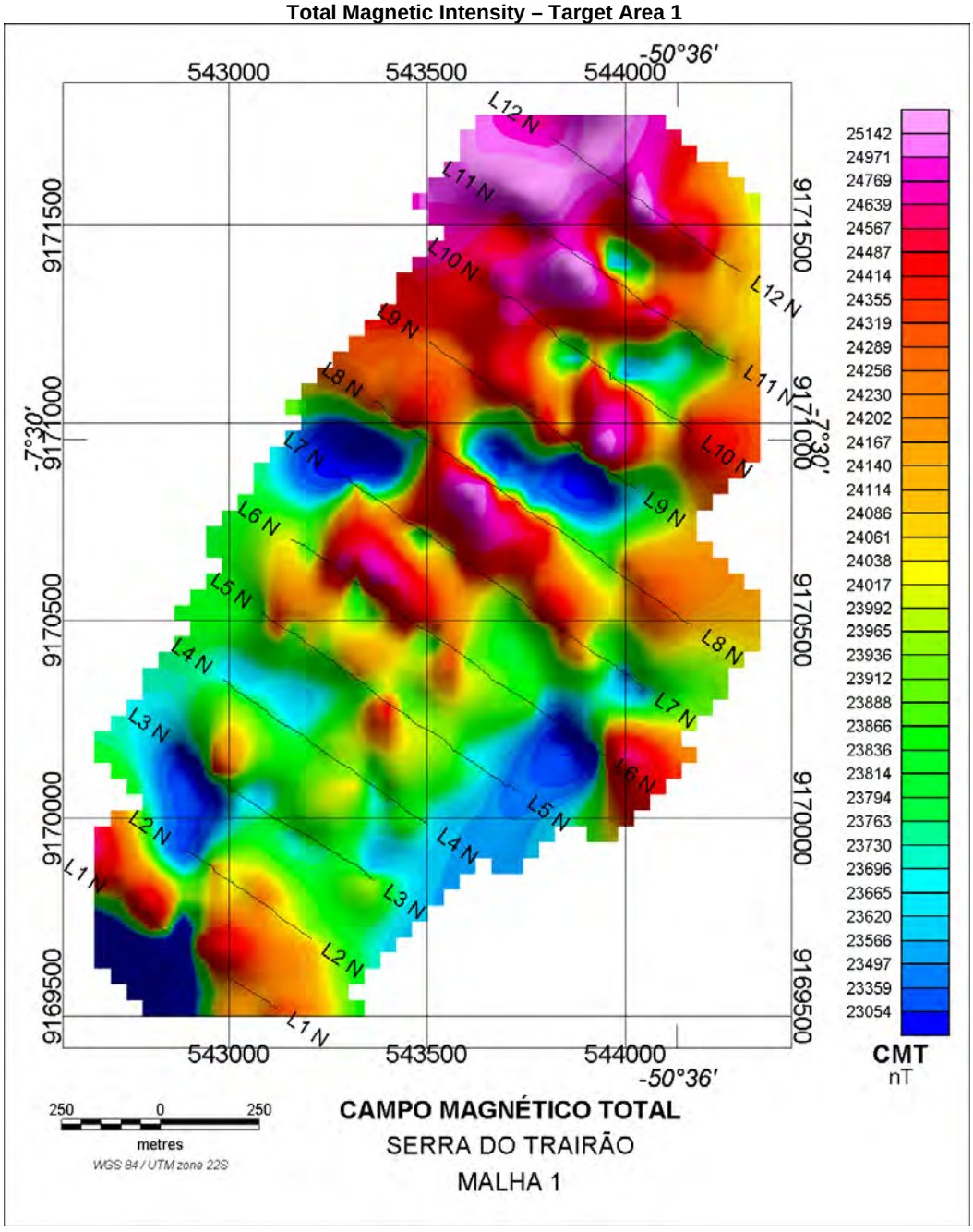
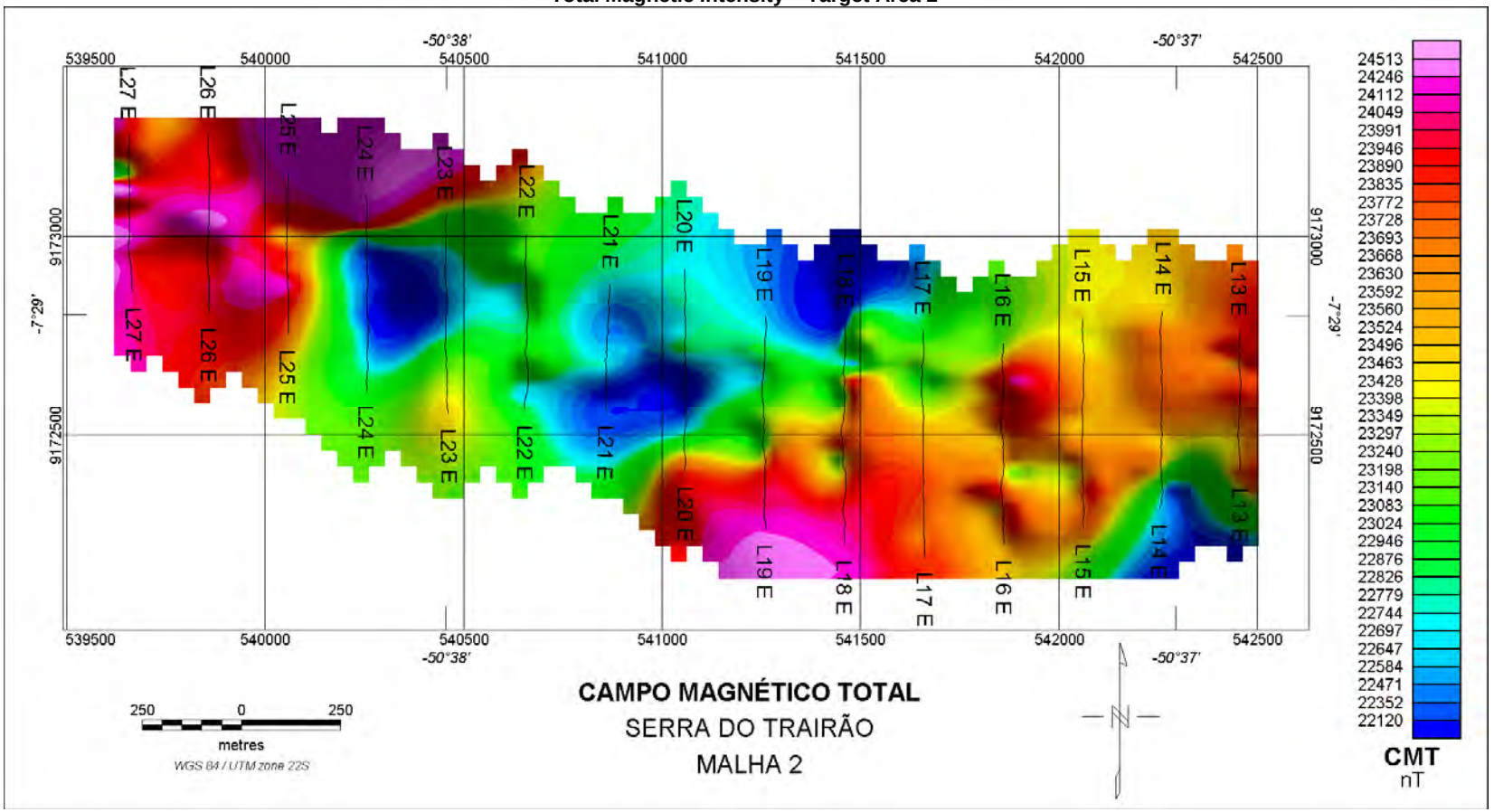


Figure 9.1_3

Trairão Iron Ore Project

Total Magnetic Intensity – Target Area 2



From the anomalous magnetic intensity three more products were generated through field transformation to assist interpretation. Figures 9.1_4 and 9.1_5 show the amplitude of the analytical signal obtained for Target Areas 1 and 2.

Figure 9.1_4

Trairão Iron Ore Project

Amplitude of Analytic Signal – Target Area 1

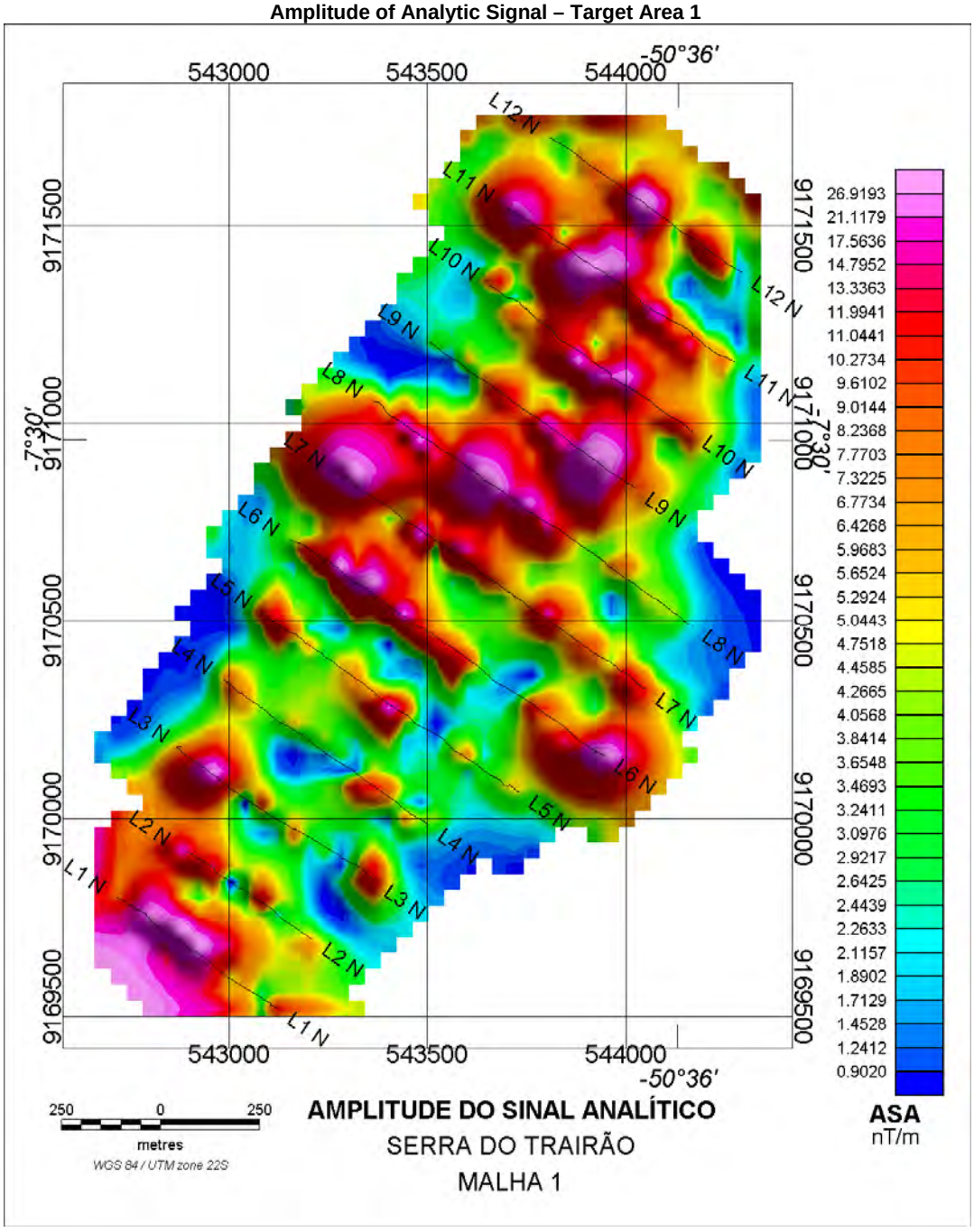
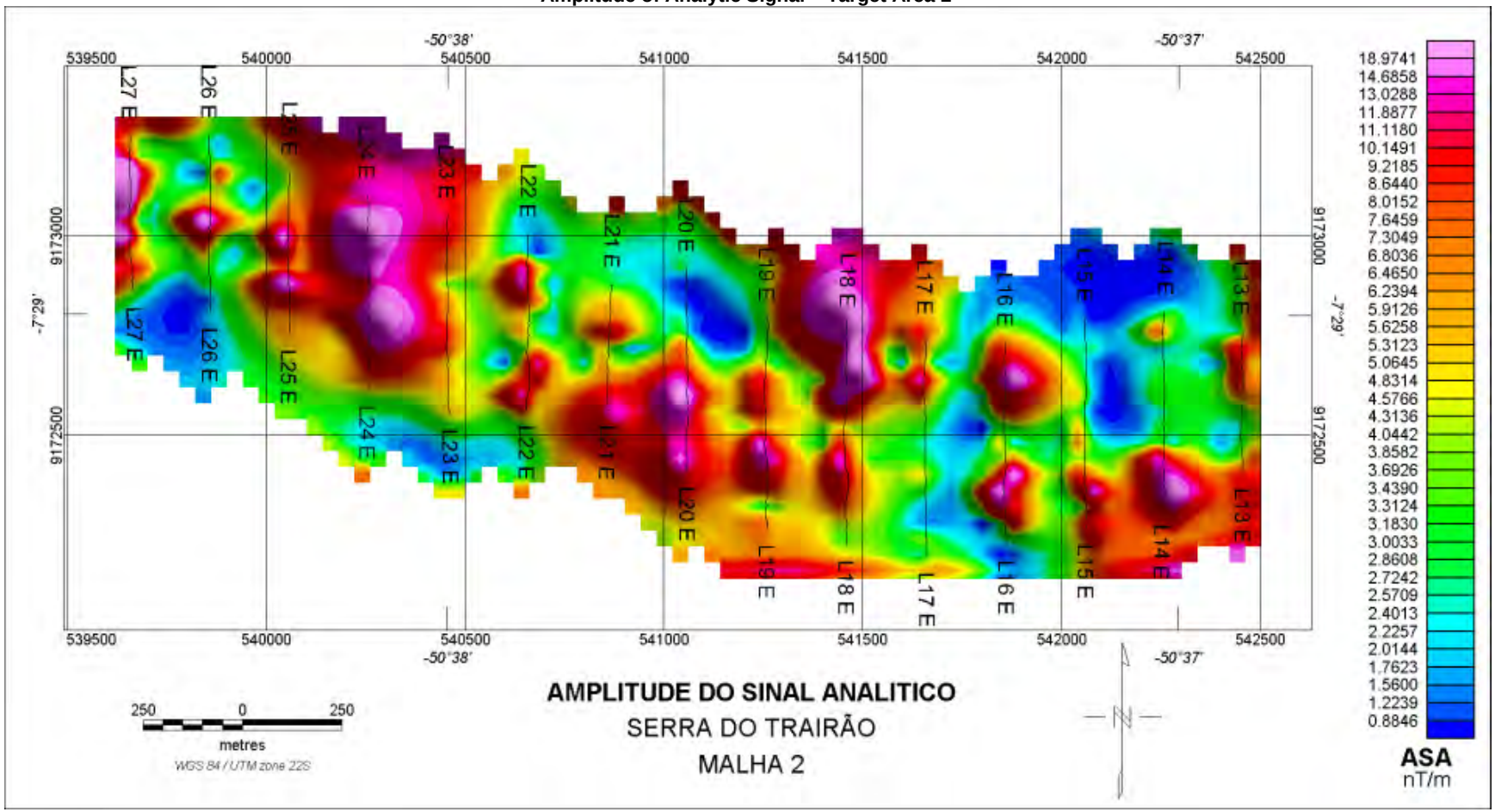


Figure 9.1_5

Trairão Iron Ore Project

Amplitude of Analytic Signal – Target Area 2



The analytical signal is very useful for the interpretation of the shape of source that produced the magnetic anomaly.

To highlight lineaments and shallow magnetic anomalies the first vertical derivative, or vertical gradient was calculated (Figures 9.1_6 and 9.1_7).

Figure 9.1_6

Trairão Iron Ore Project

First Vertical Derivative Magnetic – Target Area 1

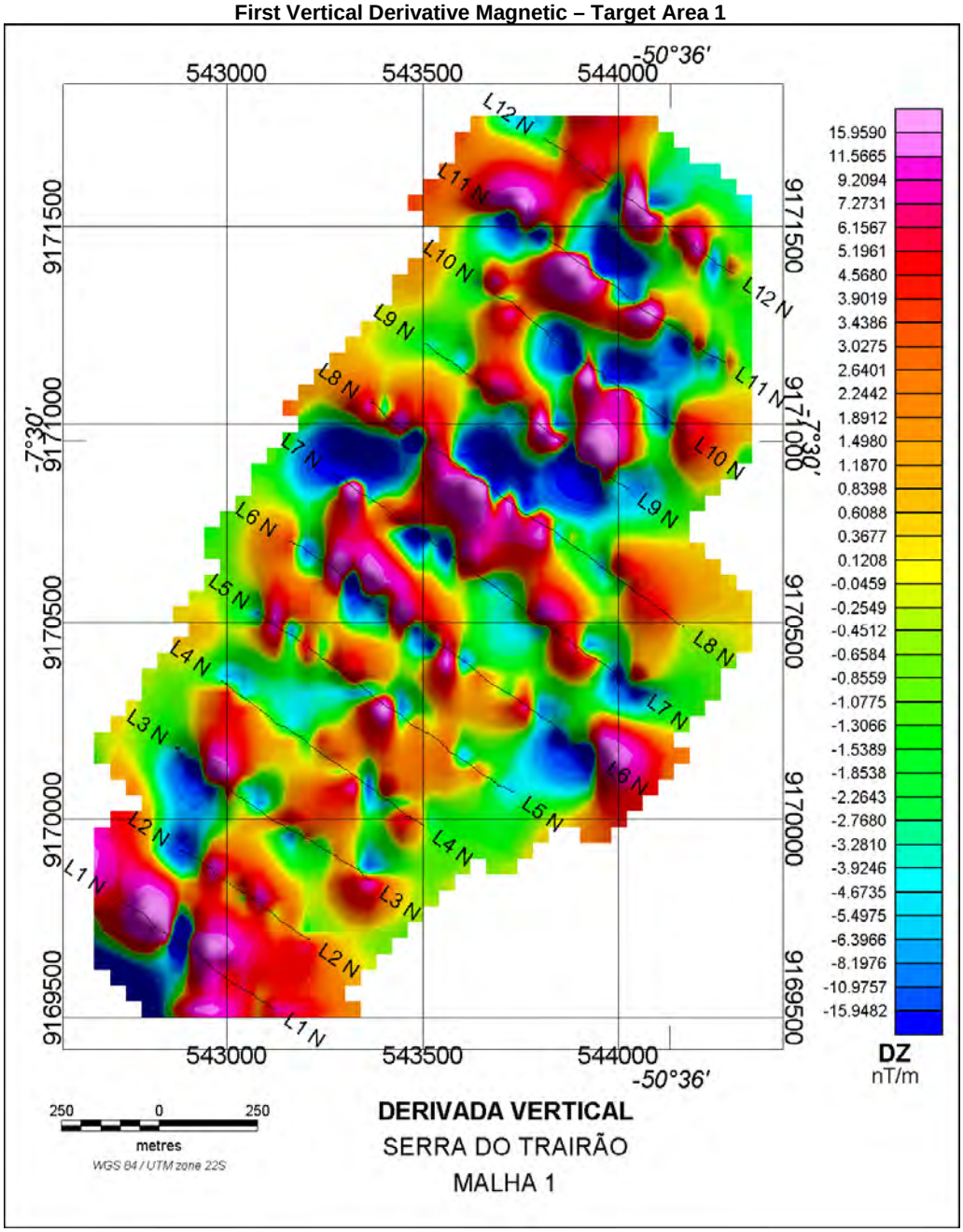
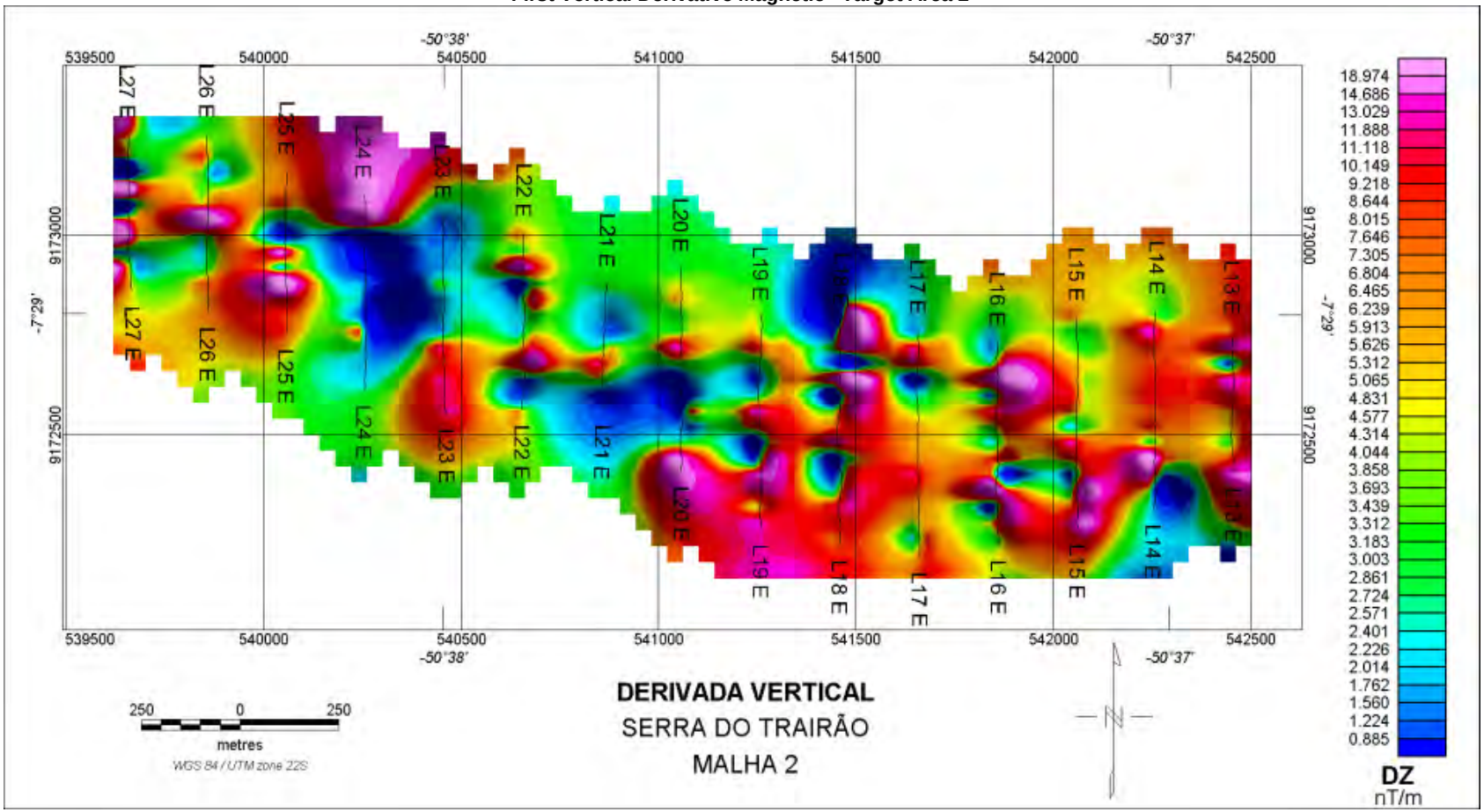


Figure 9.1_7

Trairão Iron Ore Project

First Vertical Derivative Magnetic –Target Area 2



9.2 Airborne Magnetic Survey Reinterpretation

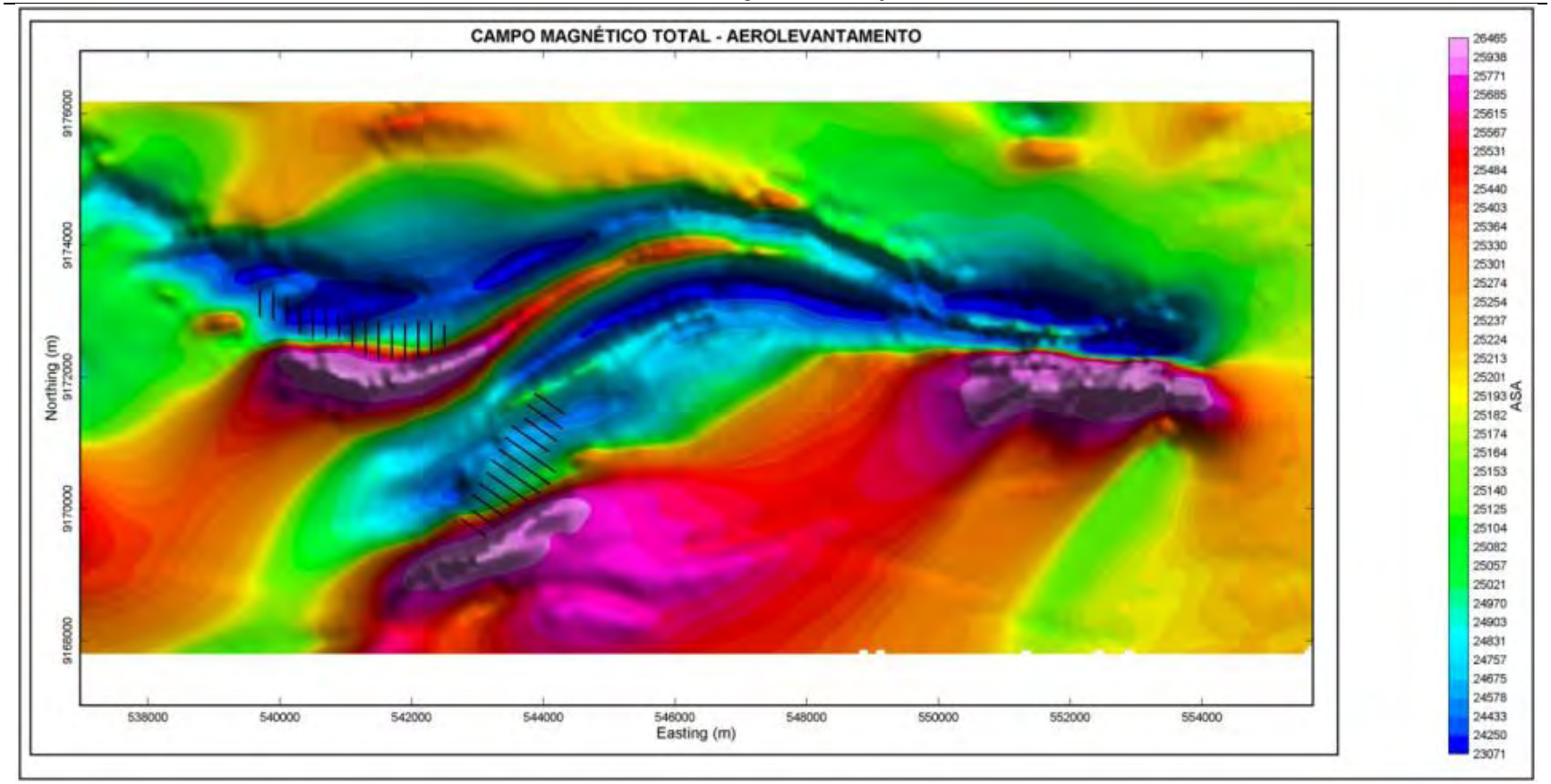
The airborne magnetic survey was carried out by Codelco in September 2001 with the acquisition lines in north-south direction and 250m spacing. The investigation covered the entire Trairão Iron Ore Project area.

The Figure 9.2_1 shows the reinterpretation of the total magnetic field obtained in the airborne survey. There are two very strong elongated magnetic anomalies, which are sympathetic with the topography of the Trairão ridge and the mapped position of the BIFs, and iron rich metasedimentary rocks which are considered the magnetic source of the anomaly. With analysis of the geophysical data it will require deep drilling, to determine accurately which lithology is causing the magnetic anomaly and its depth.

Figure 9.2_1

Trairão Iron Ore Project

Total Magnetic Intensity



Due to the low inclination of the geomagnetic field in the area, the induced magnetic anomalies in the region will be magnetic lows and not dipolar anomalies. Figure 9.2_2 shows a typical magnetic anomaly from the same body but in different magnetic regions (Minas Gerais Iron Quadrangle Region and the Trairão in Bannach, Pará State).

Figure 9.2_2

Trairão Iron Ore Project

Comparison Between the Anomalies in the Geomagnetic Intensity of MG (left) and PA (right)

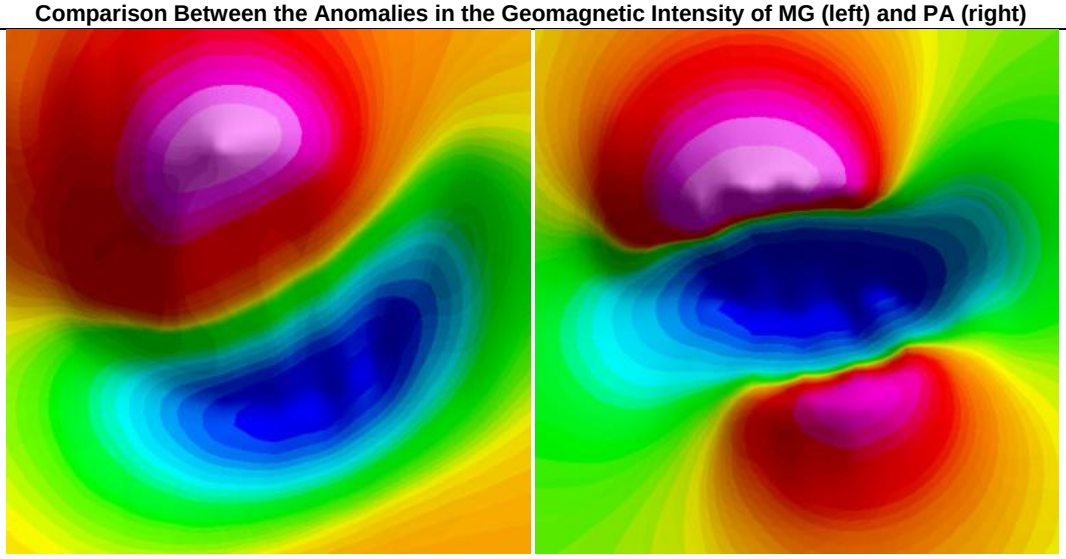
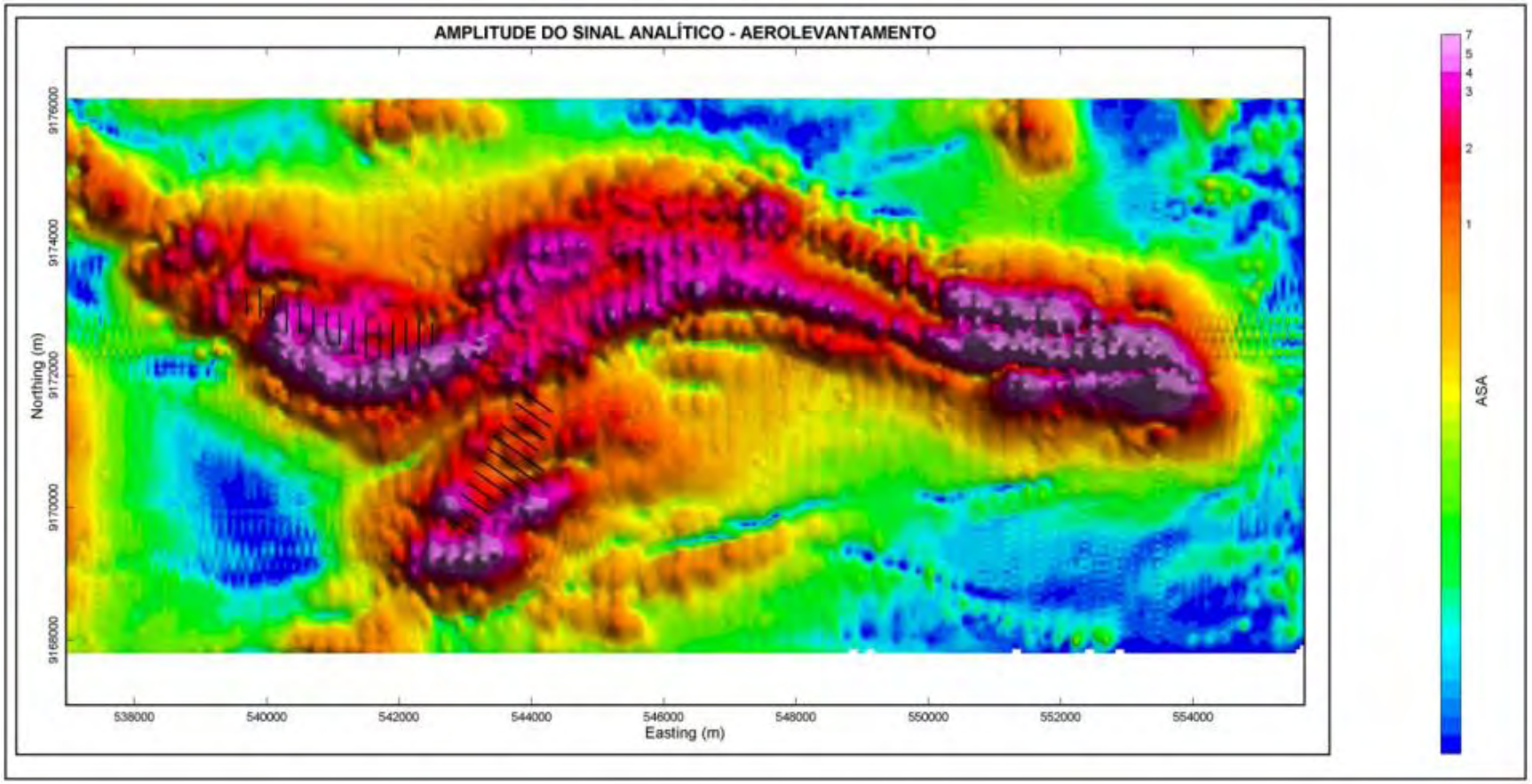


Figure 9.2_3 shows the amplitude of the analytic signal from the target at Trairão.

Figure 9.2_3

Trairão Iron Ore Project

Amplitude of Analytic Signal



It is possible to conclude from the reinterpretation study, that there are additional targets at depth, located outside of major anomalies on the Trairão ridge which coincide with Target Areas 1, 2 and 3. As ground magnetic surveys have to date only been conducted over parts Target Areas 1 and 2, the results of the regional aeromagnetic survey indicate that further ground magnetic surveys are warranted over other target areas marked by positive aeromagnetic anomalies. These ground magnetic surveys are now being undertaken.

From the amplitude of the analytical signal, it is possible to conclude that there are strong anomalies in the extremities of the Serra do Trairão plateau. This conclusion is interpreted to suggest that the main anomalies are caused by the metasiltite or BIF at depth. The source of these anomalies needs to be confirmed by deeper drill holes to be drilled at the base of the plateau.

9.3 Magnetic Susceptibility

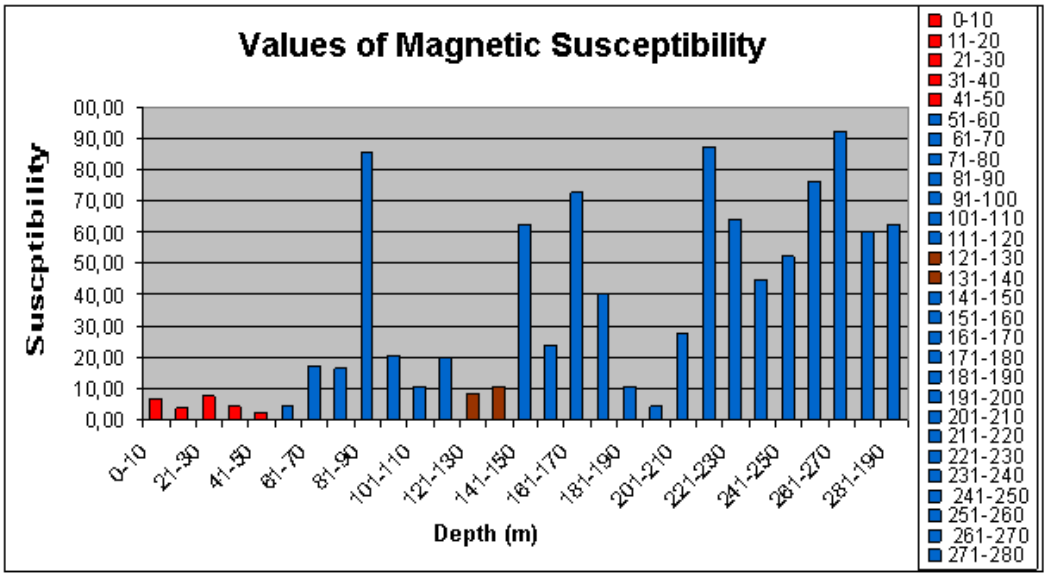
Through the study of magnetic susceptibility it is possible to define the main sources of magnetic anomalies observed in both ground and airborne survey methods.

In order to identify the main sources, Coffey Mining calculated the average of measurements for every ten meters. The Figure 9.3_1 shows the susceptibility plot of the STRD-01.

Figure 9.3_1

Trairão Iron Ore Project

Susceptibility Values for STRD-01 - Red Bars Represent the Range of Interest to Talon, as the Brown Bar Represents the BIFs



The susceptibility analysis for drill hole STRD-01 shows low values for magnetic susceptibility at the drill collar and higher values with depth. The average for the saprolite described by

Codelco was 4.97 x 10^{-5} SI while the rest of the drill hole presents magnetic susceptibility of 40.65 x 10^{-5} SI, i.e. ten times more magnetic than those within Talon's zone of primary interest.

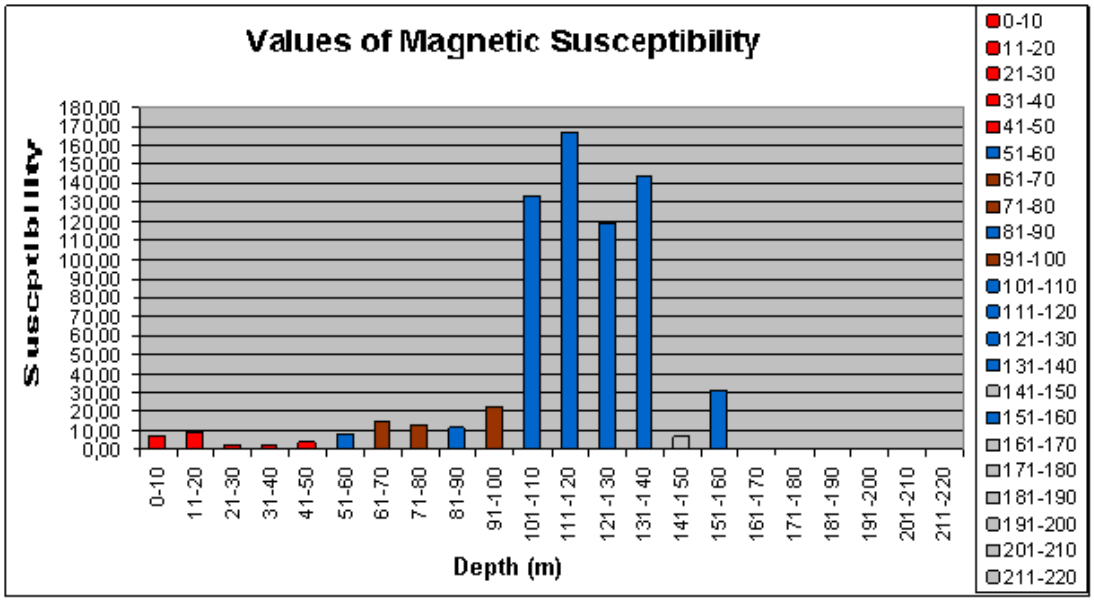
Codelco described the presence of BIFs in the interval from 120m to 140m BIFs (highlighted in brown in Figure 9.3_1) that also has low magnetic susceptibility values. BIFs present values of magnetic susceptibility of 9.47 x 10^{-5} SI.

In the drill hole STRD-02 the difference between the magnetization of the metasiltite (in blue) and the other lithologies is more apparent (Figure 9.3_2). The average magnetic susceptibility of saprolite is 4.83 x 10^{-5} SI (red), whereas BIFs have magnetic susceptibility around 16.68 x 10^{-5} SI (brown). It is important to recognize that the volcanoclastic rocks are non-magnetic.

Figure 9.3_2

Trairão Iron Ore Project

Susceptibility Values for STRD-02 - Red Bars Represent the Range of Interest to Talon, as the Brown Bar Represents the BIFs

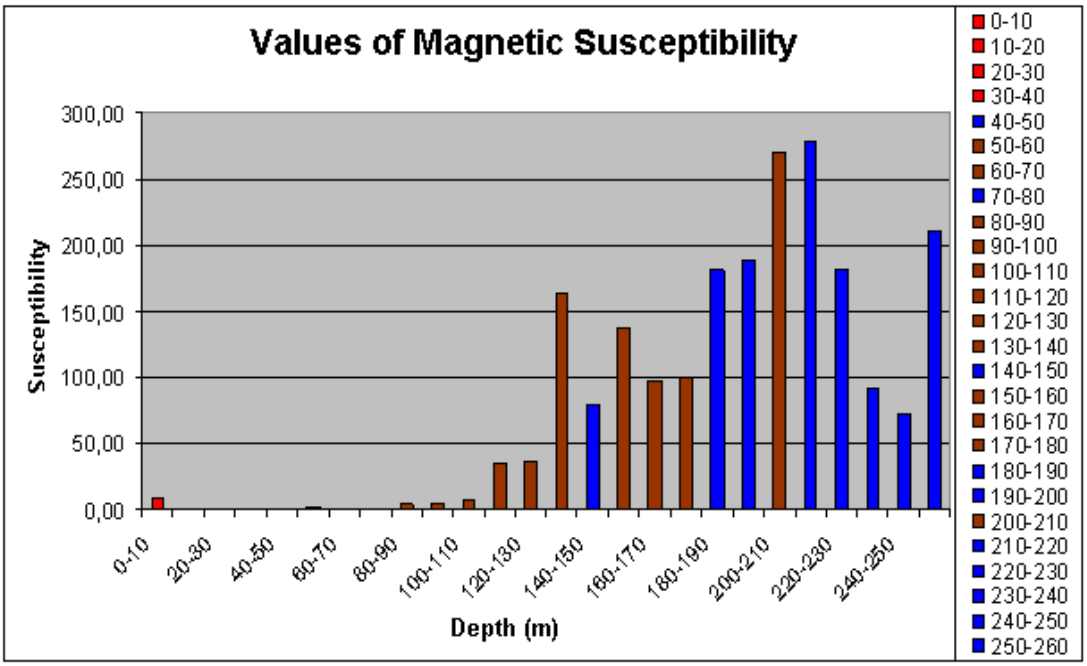


The drill hole STRD-03 intercepted various layers of BIFs, as shown in Figure 9.3_3. In this area the BIFs are much more magnetic than the others, but most of the anomalies are still related to the ferruginous metasiltites described by Codelco. The saprolite has a susceptibility of 2.46 x 10^{-5} SI (red), the BIFs have a magnetic susceptibility of 71.35 x 10^{-5} SI, being much more magnetic at depth. The metasiltite has a susceptibility of 128 x 10^{-5} SI.

Figure 9.3_3

Trairão Iron Ore Project

Susceptibility Values for STRD-03 - Red Bars Represent the Range of Interest to Talon, as the Brown Bar Represents the BIFs



From analysis of these three drill holes, it is clear that within the upper and oxidized parts of the holes drilled that the iron grades decreases inversely with the increase of values of magnetic susceptibility. Because of this behavior susceptibility values can be used to model the base and the top of saprolite, due to the fact that the highest iron grades occur in saprolite, despite the lower values for magnetic susceptibility.

Probability is high that the lower layers present higher magnetite concentration than the upper layers. In the upper layers, it is possible to postulate that hematite is the iron mineral present, because high grade was registered, but without high magnetism anomalies.

9.4 Magnetic 3D Modeling

With the results of the ground magnetic survey and the magnetic susceptibility Coffey Mining carried out magnetic modeling to estimate the total potential mineralization target within Area 1, Area 2 and all Serra do Trairão Iron Ore Project.

The magnetic susceptibility study proved that the saprolite (the primary target of Talon) is not magnetic, however the bedrock is very magnetic. A model of the bedrock can be used to estimate the volume of saprolite by subtraction of the topographic model from the bedrock model.

This methodology was only possible because we have the values of magnetic susceptibility, which decreases significantly the uncertainties of the magnetic model, and the three drill holes made by Codelco in the area.

The GM-SYS software was used for the magnetic modeling. This takes the susceptibility values and creates a 2D magnetic model. After this the sections in 2D are integrated in Gemcon Surpac to generate a 3D geophysical model.

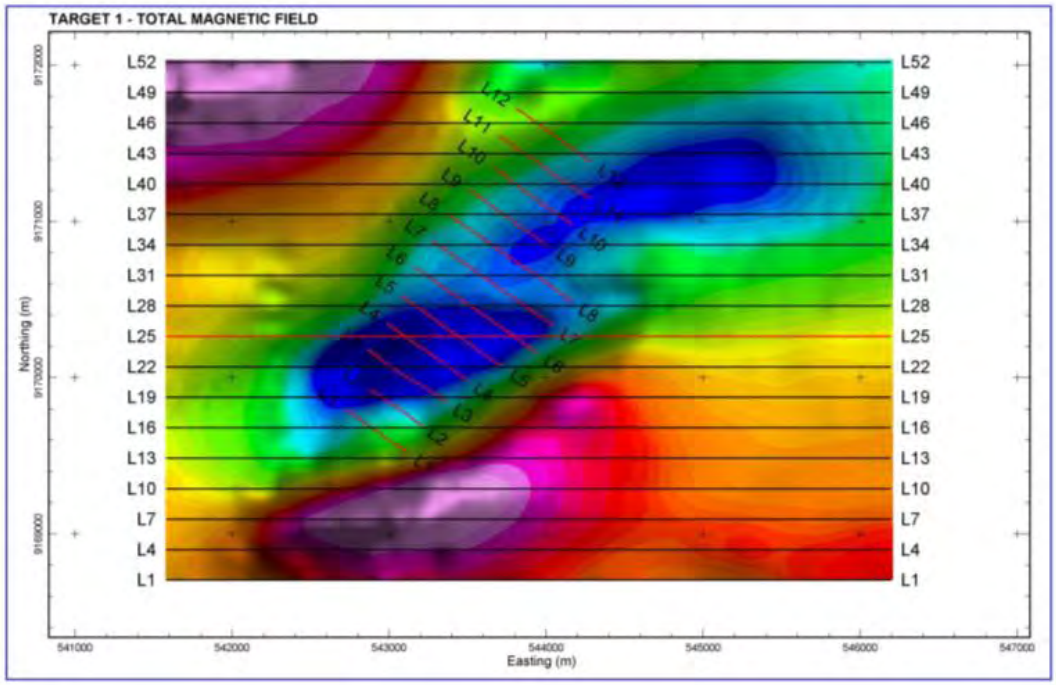
Target Area 1

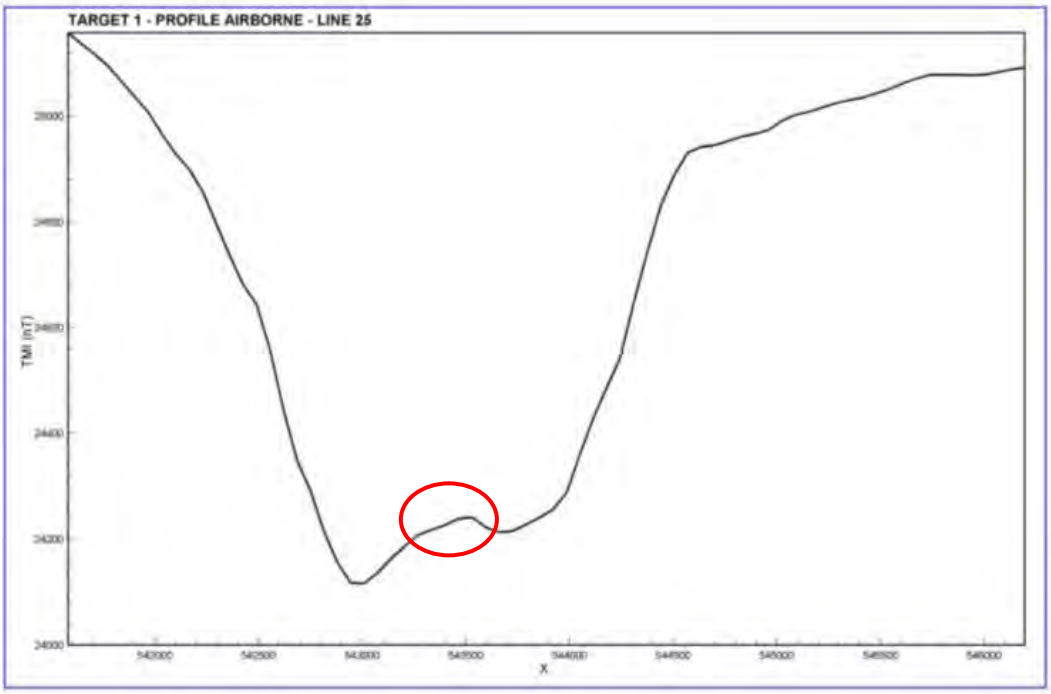
The anomaly of the Target Area 1 is very weak however it is sufficient for magnetic modeling (Figure 9.4_1).

Figure 9.4_1

Trairão Iron Ore Project

Total Magnetic Intensity - Target Area 1 Anomaly





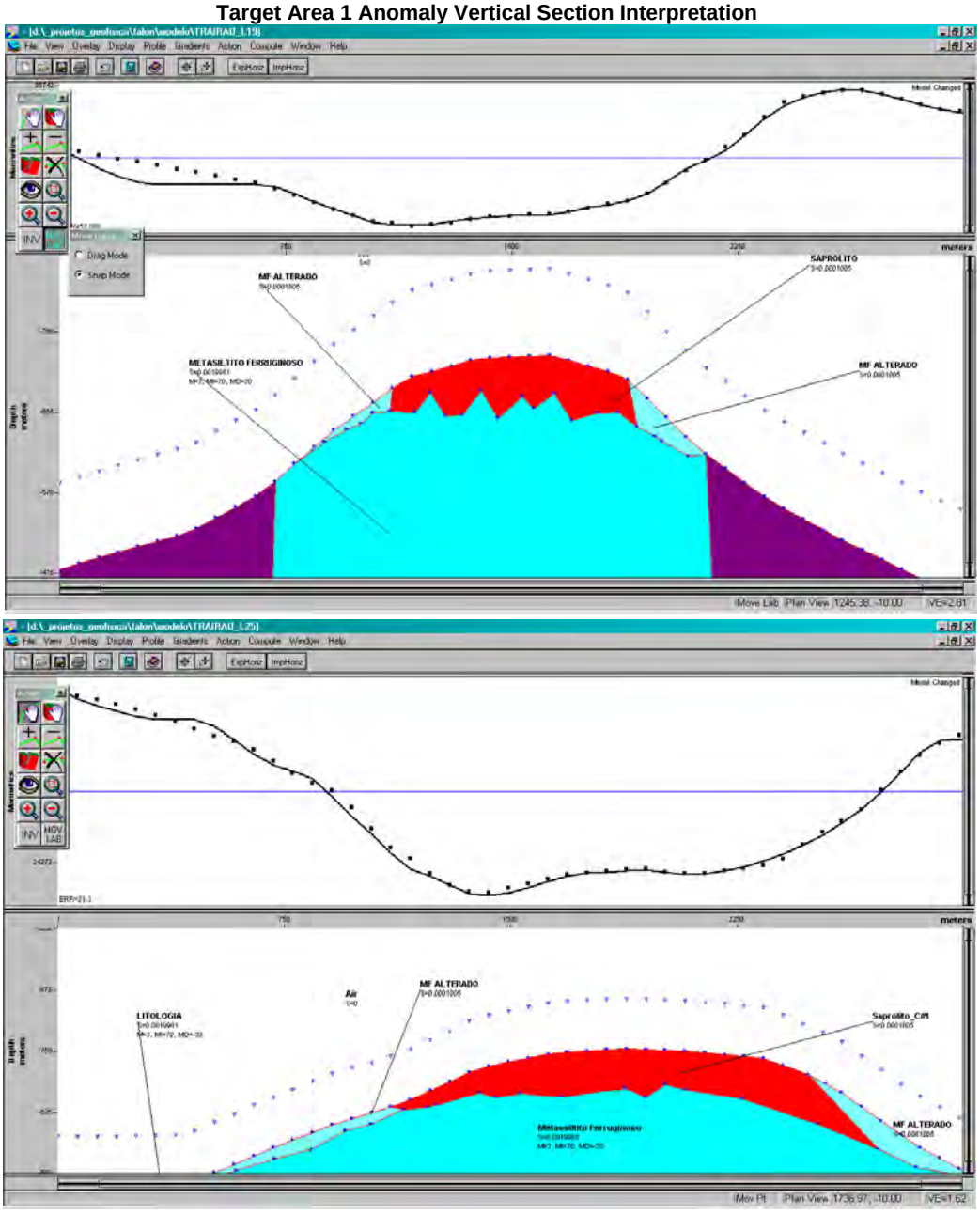
The GM-SYS software uses the Talwani algorithm and calculates the magnetic response for the polygon represented by the anomaly.

The Figure 9.4_2 below shows the results in GM-SYS 2D. The dotted line is the observed anomaly and the continuous line is the calculated anomaly. The best fit is when the continuous line is totally coincident with the dotted line.

Figure 9.4.2

Trairão Iron Ore Project

Target Area 1 Anomaly Vertical Section Interpretation

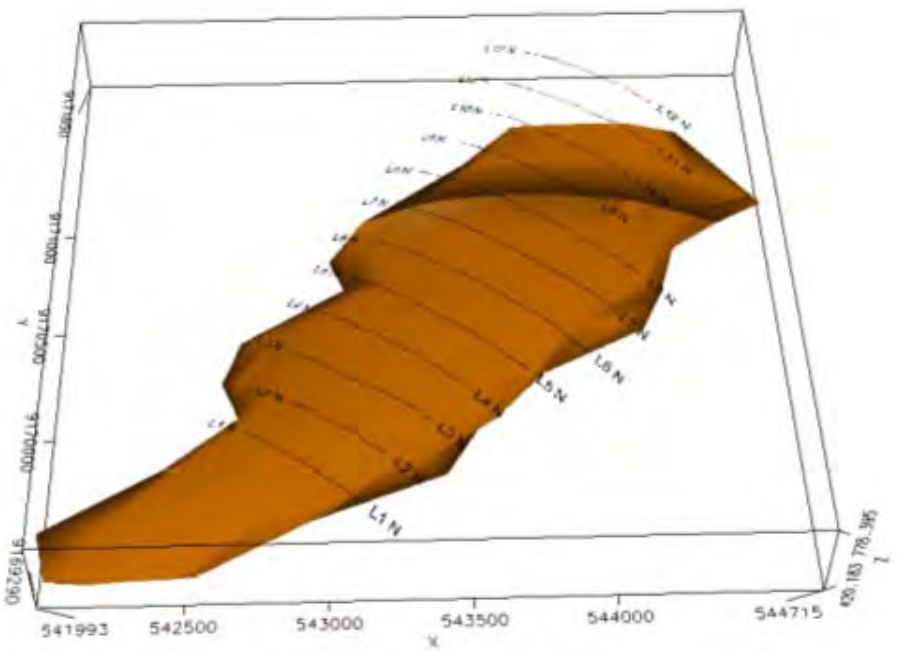


All the lines show a good fit (using the susceptibility values found in the susceptibility study). The sections generated in GM-SYS modeling were integrated in 3D environment using the Gemcom Surpac software to create a 3D solid (Figure 9. 4_3).

Figure 9.4_3

Trairão Iron Ore Project

Target Area 1 Anomaly 3D Solid. The Black Lines are the Acquisition Lines of the Ground Magnetic Survey



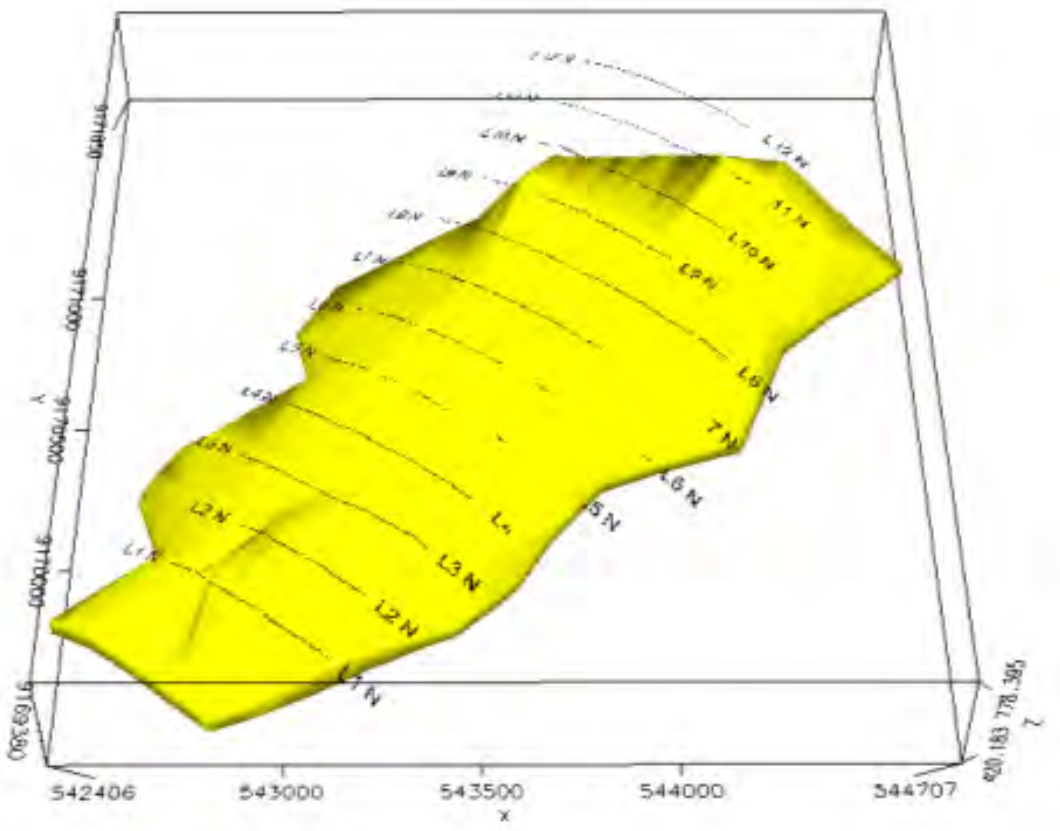
The 3D model probably corresponds with the weathering profile. As the bedrock is not Talon´s objective at this time it was not represented in the model.

The comparison between the 3D solid interpolated from the vertical sections modeled using the 22 RC drill holes in Area 1 (Figure 9.4_4) and the 3D solid from the magnetic interpretation shows good similarity in form and in volumes. The volume difference was less than 10%.

Figure 9.4_4

Trairão Iron Ore Project

Target Area 1 3D Solid from the Geological Interpretation



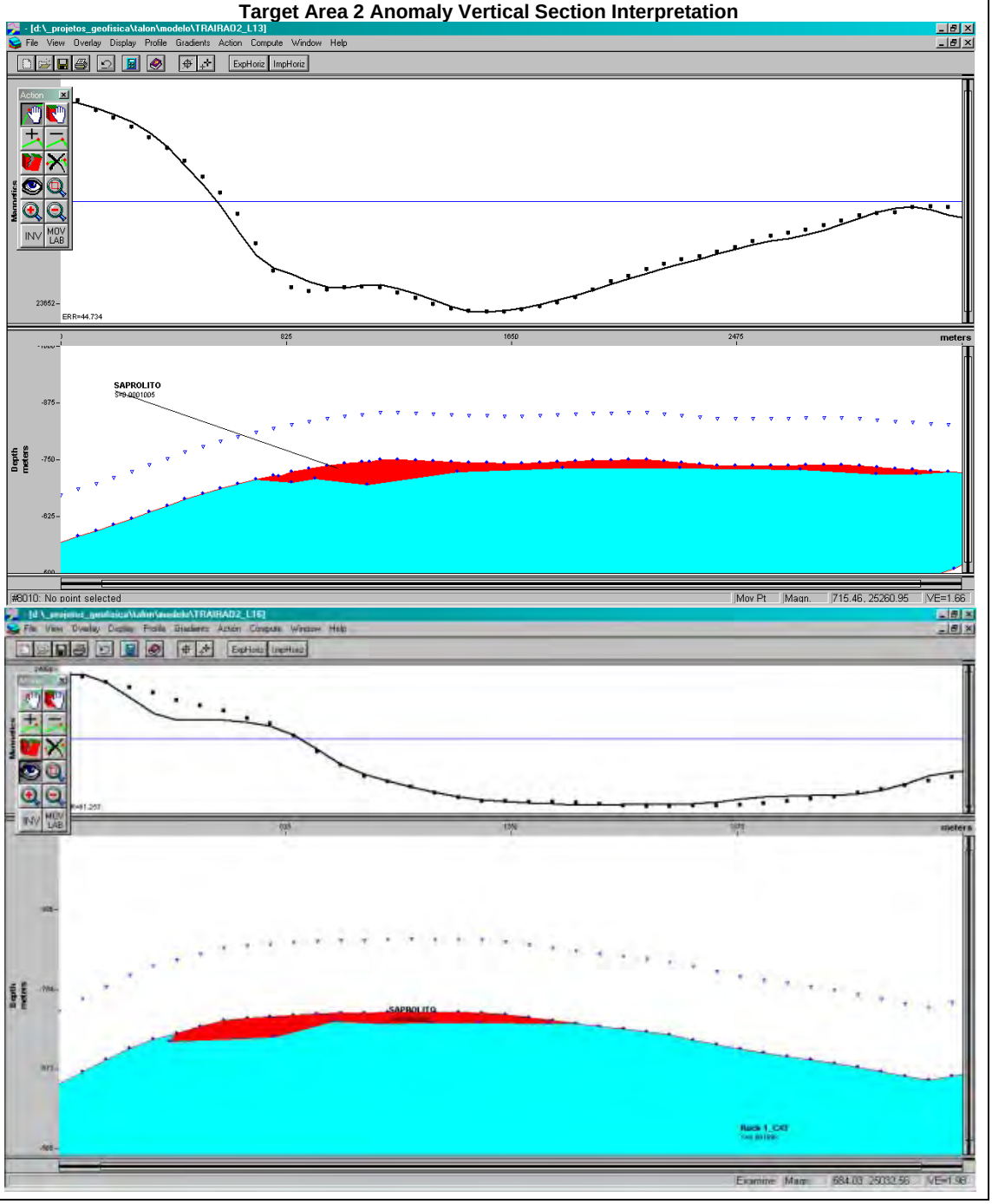
Target Area 2

The same process was completed for the Target Area 2 anomaly. Figures 9.4_5 shows the magnetic profile for the Target Area 2.

Figure 9.4_5

Trairão Iron Ore Project

Target Area 2 Anomaly Vertical Section Interpretation

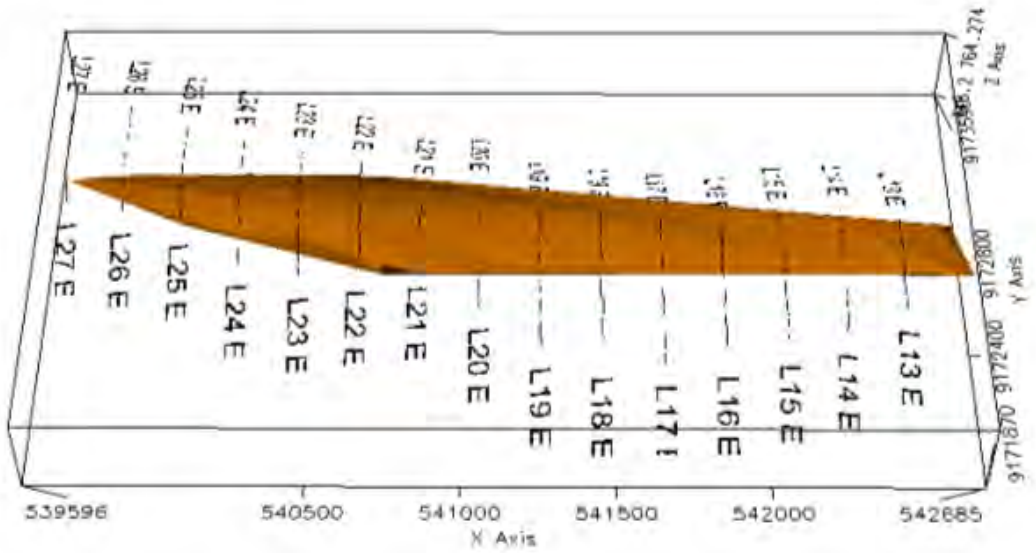


The 3D solid (Figure 9. 4_6) represents the Target Area 2 Anomaly. The volume estimated by the magnetic interpretation in this area is 17Mm^3 but this should be validated with the geology and drill holes.

Figure 9.4_6

Trairão Iron Ore Project

Target Area 2 Anomaly 3D Solid. The Black Lines are the Acquisition Lines of the Ground Magnetic Survey



Trairão Iron Ore Project

In order to determine the delineation of the future Target Areas to be explored by Talon, Coffey Mining carried out 3D anomaly interpretation for the whole of the Serra do Trairão ridge area. The results demonstrate that the entire area, of some 19km of strike, represented by Target Areas 1, 2 and 3 in the Trairão Iron Ore Project has potential for surface enriched iron ore mineralization.

9.5 Sampling Method and Approach

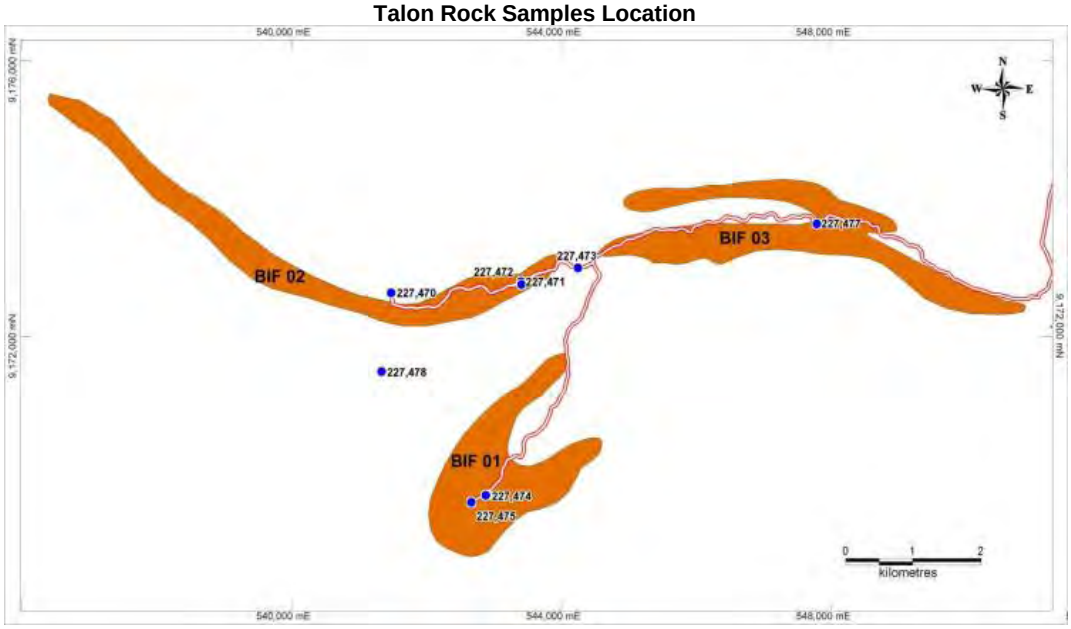
9.5.1 Field Sampling

The sampling undertaken by Talon aimed to confirm the iron content obtained by Codelco, as well as test the lateritic crust located in the central portion of the deposit. During the evaluation program, nine rock samples were collected for analytical purposes (Figure 9.5.1_1). The description, location and assays results of the samples are summarized in the Tables 9.5.1_1 and 9.5.1_2.

Figure 9.5.1_1

Trairão Iron Ore Project

Talon Rock Samples Location



The sample number 227,474 (Figure 9.5.1_4), collected close to the drill hole STRD-03, was sent for analysis of the chemistry and density of the mineralization. The density is reported as 3.18g/cm³.

The iron grade varied in the lump fraction (>6.3mm) from 46.47% in the lateritic crust up to 65.60% in overburden of the target BIF01 (Figure 9.5.1_2).

In the sinter feed fraction (<6.3mm) the iron grade ranged from 42.74% in the vertical channel sample (Figure 9.5.1_4), to 61.38% in the composite sample collected along the road covering 240m (Figure 9.5.1_3).

The assay results suggest that the Target Area 1 has iron grades slightly higher than the other two targets areas that were sampled.

Figure 9.5.1_2

Trairão Iron Ore Project

Rock samples: Iron assay results in lump fraction (>6.3mm)

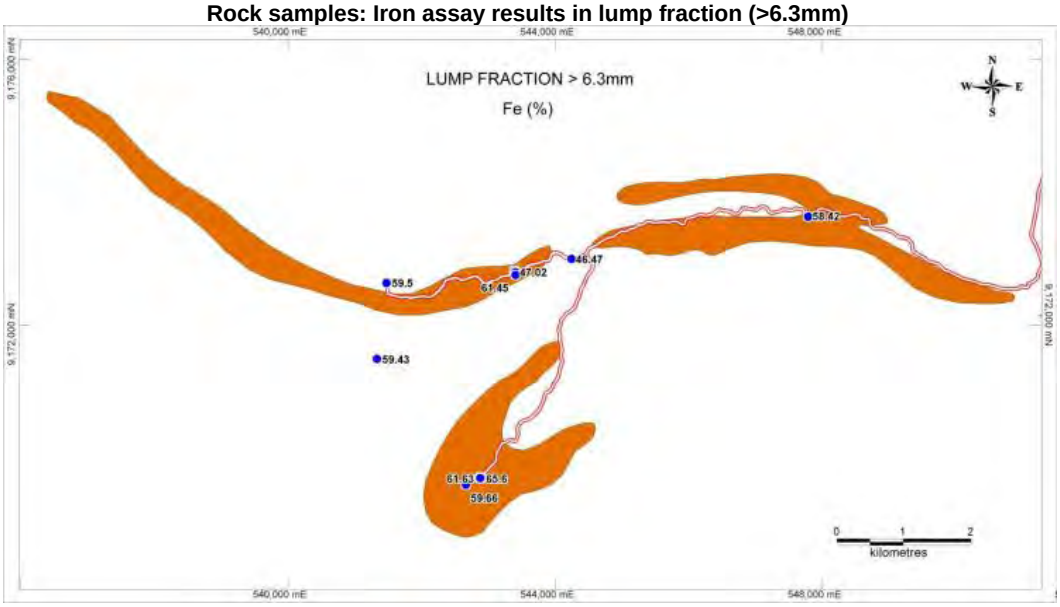
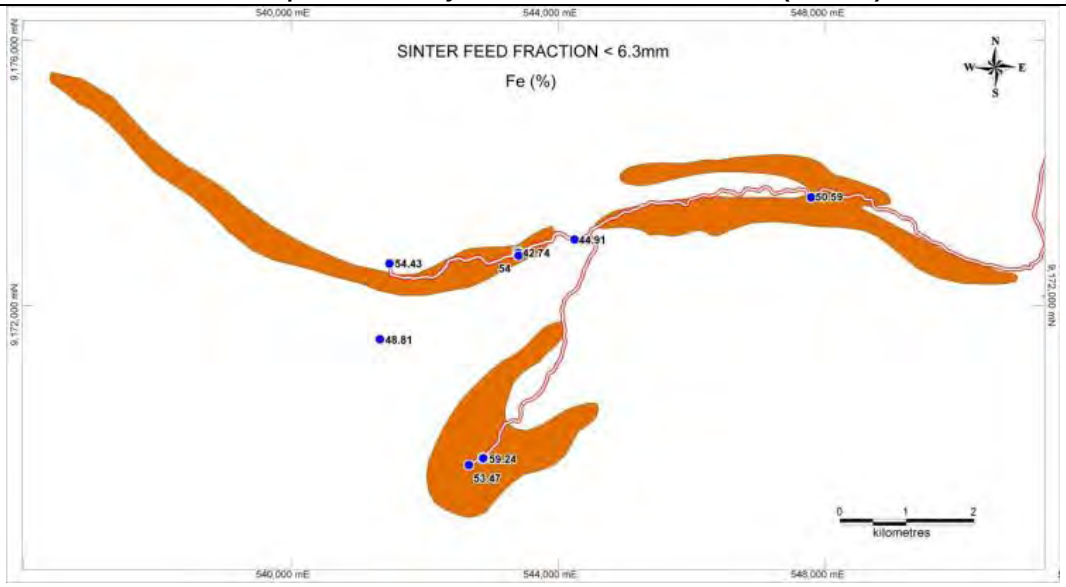


Figure 9.5.1_3

Trairão Iron Ore Project

Rock samples: Iron assay results in sinter feed fraction (<6.3mm)



The iron levels were relatively higher in the lump fraction (>6.3mm) compared to the sinter feed fraction (<6.3mm), due to a higher concentration of clay in the finer fractions. This hypothesis is confirmed with the presence of the high Al_2O_3 grades.

The weight percentage of phosphorous associated with iron ore are, in general, considered high and probably related to the surface weathering, as is common in this kind of deposit.

Table 9.5.1_1
Trairão Iron Ore Project
Talon Rock Samples

Sample ID	Sample type	Easting	Northing	Elevation	Width	Description
227470	Composite sample (Float blocks)	541,479	9,172,647	770		Overburden composed by 60% pebbles of martite (hematite>magnetite) plates and 40% clay minerals+martite granules (< 6mm)
227471	Vertical Channel	543,407	9,172,809	708	1.30m	Overburden composed by pebbles of ferruginous phyllite 70% and 30% martite plates.
227472	Composite sample (Float blocks)	543,409	9,172,769	714		Overburden composed by pebbles of martite (hematite>magnetite) plates, goethite and lateritized BIF. Rich in grained-fine material.
227473	Composite sample (Float blocks)	544,248	9,173,009	720		Lateritic crust composed by phyllite, martite plates and quartz.
227474	Composite sample (Float blocks)	542,894	9,169,715	734		Sample collected in 0.4m depth. Overburden composed by 60% pebbles of martite (hematite>magnetite) plates and 40% clay minerals+phyllite+laterite+quartz.
227475	Composite sample (Float blocks)	542,668	9,169,609	720		Overburden composed by 80% pebbles of martite (hematite>magnetite) plates and 20% clay minerals+martite granules (< 6mm)
227476	Composite sample (Float blocks)	542,883	9,169,711	734		Sample collected on the road, covering a space of 240m (from sample 227475 to Drill hole STRD-03). Overburden composed by pebbles of martite (hematite>magnetite) plates, phyllite, clay, laterite and quartz.
227477	Composite sample (Float blocks)	547,788	9,173,649	700		Overburden composed by 40% coarse pebbles of martite (hematite>magnetite) plates, 40% fine pebbles of martite and 20% clay minerals.
227478	Composite sample (Float blocks)	541,337	9,171,507	452		Overburden composed by boulders, cobbles and pebbles of laterite with fragments of martite plates, phyllite, BIF and quartz.

Table 9.5.1_2
Trairão Iron Ore Project
Talon Rock Samples Results

Sample Number	Lump Fraction (>6.3mm)						Sinter Feed Fraction (<6.3mm)					
	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	Mn (%)	LOI (%)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	Mn (%)	LOI (%)
227470	59.50	5.65	5.22	0.114	0.02	4.13	54.43	5.47	6.69	0.084	0.03	9.38
227471	47.02	10.00	12.60	0.056	0.06	9.34	42.74	8.97	16.32	0.054	0.06	11.93
227472	61.45	4.09	3.88	0.127	0.03	3.60	54.00	6.95	7.92	0.104	0.03	7.66
227473	46.47	9.99	13.33	0.100	bld	9.90	44.91	10.28	12.77	0.191	bld	12.77
227474	65.60	1.87	2.20	0.084	0.02	2.69	59.24	3.43	6.15	0.110	0.02	5.28
227475	59.66	3.00	2.30	0.265	0.03	8.52	53.47	6.67	6.58	0.211	0.03	10.10
227476	61.63	4.32	3.68	0.078	0.02	3.34	61.38	3.97	4.06	0.072	0.02	3.64
227477	58.42	5.64	5.22	0.149	0.02	5.47	50.59	6.47	8.98	0.138	0.04	10.27
227478	59.43	6.43	4.42	0.144	0.08	4.16	48.81	15.62	6.21	0.076	0.07	6.98

bld=below level of detection

Figure 9.5.1_4
Trairão Iron Ore Project
Rock Samples Photos

1 – Overburden rich in martite plates: sample 227470: 59.50%Fe (>6.3mm) and 54.43%Fe (<6.3mm)

2 – Vertical channel sample: overburden above of the drill hole STRD-02. Sample 227471: 47.02% Fe (>6.3mm) and 42.74% Fe (<6.3mm)

3 – Sample 227474: (density and chemical), 65.60%Fe (>6.3mm) and 59.24%Fe (<6.3mm)

4 – Overburden: Sample 227472 with 61.45%Fe (>6.3mm) and 54.00%Fe (<6.3mm)

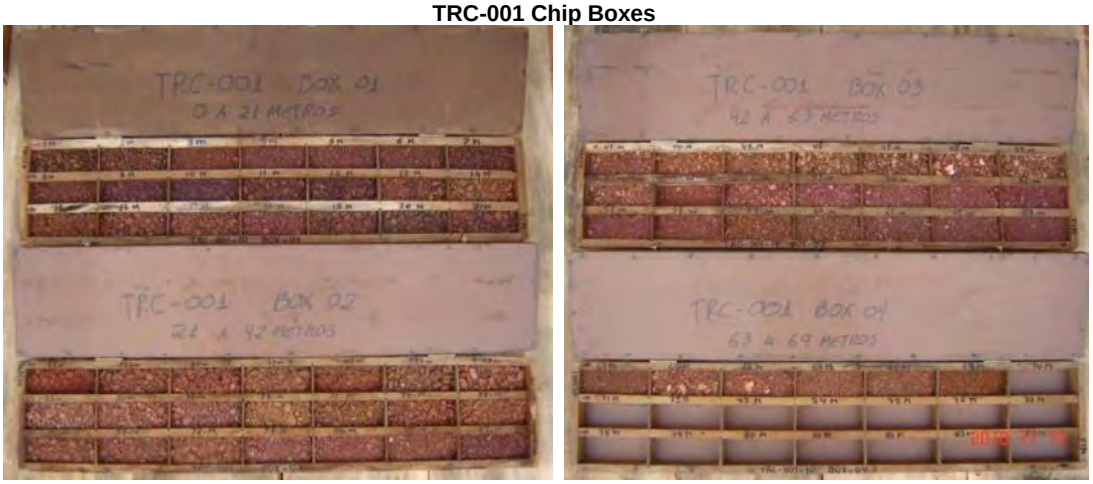
9.5.2 Logging

Each one meter drill RC sample was logged by a Talon senior geologist and was systematically sampled in accordance with the different kinds of regolith. A small sample of the chips was stored in chip boxes for future reference (Figure 9.5.2_1). Basic weathering, lithologies, mineralogy and observations were recorded by the geologist and entered into a digital MS-Excel database. The RC samples were taken at 1m intervals and riffle split down to 4kg samples.

Figure 9.5.2_1

Trairão Iron Ore Project

TRC-001 Chip Boxes



9.5.3 Adequacy of Procedures

Coffey Mining considers the sampling method and approach to be in line with current industry best practice and adequate for the purpose of mineral resource estimation.

10 DRILLING

10.1 RC Drilling

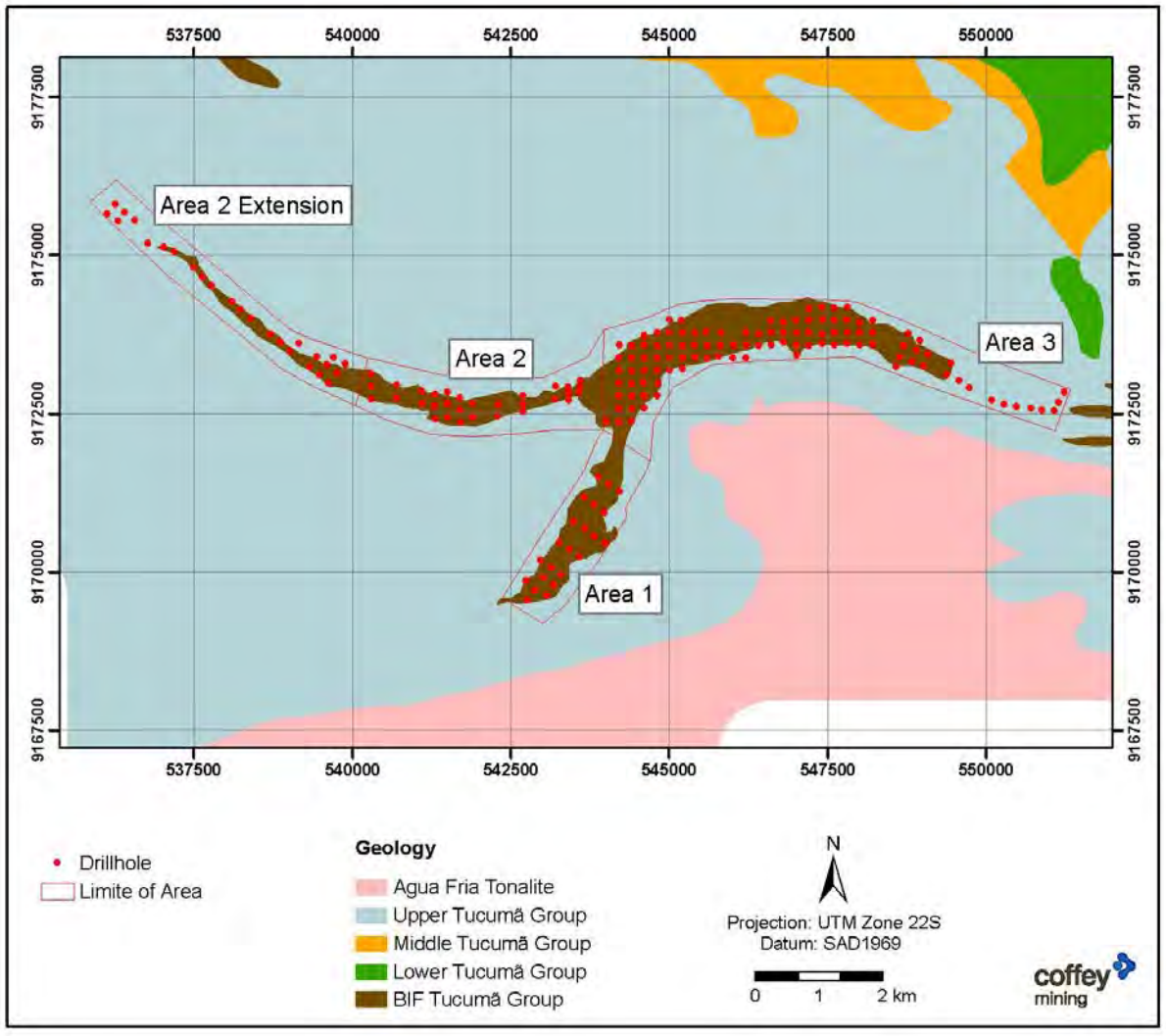
Talon carried out a Reverse Circulation (RC) drilling program to evaluate the potential for iron ore on selective prospective areas which were denominated Target Area 1, Target Area 2, and Target Area 3. The initial RC drilling program in 2010 was planned to test the supergene enriched material. Subsequently during 2011, the RC drilling program extended to cover most immediately accessible parts of Target Areas 1, 2 and 3.

The drilling program tested a cumulative strike length of 18,200m, where 2,400m of strike was drilled in the Target Area 1, and initially 3,000m was drilled in the Target Area 2, followed by an additional 5,000m of strike which was drilled on the remaining extent of Target Area 2 and finally over 7,800m of strike was drilled in Target Area 3. The drill holes were mostly drilled vertically, except in Target Area 2 where 10 drill holes at an angle into stratigraphy dipping at 60 degrees. All the drilling grids were drilled at a spacing of 200m x 400m initially and subsequently were closed up to 200m x 200m spacing (Figure 10.1_1).

Figure 10.1_1

Trairão Iron Ore Project

RC Drilling.



A total of 186 RC drill holes (11,242m) were completed in the areas distributed as shows the Table 10.1_1. The Tables 10.1_2 to 10.1_5 show information about the location and depth of RC Drill holes.

Table 10.1_1
Trairão Iron Ore Project
Summary of RC Drilling

Area	Drill hole	Footage
Target Area 1	22	1,054
Target Area 2	31	1,505
Target Area 2 Extension	26	2,366
Target Area 3	107	6,317
Total	***186***	***11,242***

Table 10.1_2
Trairão Iron Ore Project
Target Area 1 - RC Drill holes Information

Hole-Id	UTM-E	UTM-N	RL (m)	Depth
TRC-001-10	542884.00	9169708.00	732.50	69
TRC-002-10	543400.00	9172821.82	712.30	50
TRC-003-10	542882.54	9169710.95	732.67	25
TRC-004-10	542884.00	9169708.00	732.50	15
TRC-005-10	542769.00	9169545.00	668.51	50
TRC-006-10	543068.00	9169626.00	720.84	45
TRC-007-10	542744.00	9169856.00	703.68	50
TRC-008-10	543016.00	9169908.00	743.80	50
TRC-009-10	543181.00	9169789.00	736.72	50
TRC-010-10	543137.00	9170067.00	753.19	50
TRC-011-10	542971.00	9170182.00	733.86	50
TRC-012-10	543285.00	9169961.00	734.32	50
TRC-013-10	543429.00	9170350.00	776.23	50
TRC-014-10	543265.00	9170461.00	763.48	50
TRC-015-10	543589.00	9170237.00	767.93	50
TRC-016-10	543663.00	9170679.00	785.12	50
TRC-017-10	543497.00	9170791.00	774.81	50
TRC-018-10	543823.00	9170561.00	784.04	50
TRC-019-10	543986.00	9170449.00	760.80	50
TRC-020-10	543820.00	9171056.00	782.79	50
TRC-021-10	543659.00	9171171.00	768.94	50
TRC-022-10	543983.00	9170937.00	781.03	50

Table 10.1_3 Trairão Iron Ore Project Target Area 2 - RC Drill holes Information				
Hole-Id	**UTM-E**	**UTM-N**	**RL (m)**	**Depth**
TRC-023-10	540300.00	9173124.00	729.17	50
TRC-024-10	540300.00	9172924.00	747.11	50
TRC-025-10	540302.00	9172720.00	737.56	39
TRC-026-10	540698.00	9172954.00	731.17	47
TRC-027-10	540699.00	9172750.00	745.06	49
TRC-028-10	541102.00	9172851.00	723.93	50
TRC-029-10	541103.00	9172649.00	742.14	36
TRC-030-10	541305.00	9172409.00	763.33	38
TRC-031-10	541302.00	9172618.00	772.43	50
TRC-032-10	541305.00	9172805.00	730.21	50
TRC-033-10	541501.00	9172838.00	721.37	50
TRC-034-10	541497.00	9172654.00	760.40	50
TRC-035-10	541502.00	9172451.00	770.29	50
TRC-036-10	541703.00	9172750.00	744.12	50
TRC-037-10	541700.00	9172550.00	761.08	50
TRC-038-10	541714.00	9172358.00	767.37	50
TRC-039-10	541898.00	9172650.00	750.43	50
TRC-040-10	541900.00	9172449.00	763.95	50
TRC-041-10	542302.00	9172645.00	740.32	50
TRC-042-10	542298.00	9172454.00	749.17	50
TRC-043-10	542698.00	9172777.00	712.99	50
TRC-044-10	542700.00	9172526.00	720.81	46
TRC-045-10	542696.00	9172646.00	733.10	50
TRC-046-10	543200.00	9172724.00	712.31	50
TRC-047-10	543205.00	9172926.00	685.19	50
TRC-048-10	543415.00	9172713.00	695.92	50
TRC-049-10	543411.00	9172830.00	709.19	50
TRC-050-10	543401.00	9172914.00	695.09	50
TRC-051-10	543582.00	9172833.00	710.61	50
TRC-052-10	543600.00	9172920.00	715.70	50
TRC-053-10	543598.00	9173019.00	702.79	50

Table 10.1_4 Trairão Iron Ore Project Target Area 2 Extension - RC Drill holes Information				
Hole-Id	**UTM-E**	**UTM-N**	**RL (m)**	**Depth**
TRC-0096	536407.06	9175678.30	766.01	85
TRC-0097	536305.66	9175537.77	742.95	36
TRC-0098	537024.16	9175128.92	715.80	103
TRC-0099	537636.97	9174653.01	719.72	94
TRC-0100	539712.60	9173384.37	723.47	55
TRC-0101	539608.63	9173265.97	748.50	88
TRC-0102	539479.61	9173112.18	752.54	73
TRC-0103	538866.24	9173622.91	748.46	88
TRC-0104	538245.70	9174139.32	754.97	91
TRC-0105	536258.83	9175806.72	750.83	134
TRC-0106	536569.10	9175550.99	775.71	85
TRC-0107	536134.21	9175658.22	736.69	63
TRC-0108	536776.19	9175180.13	777.37	93
TRC-0109	537191.04	9175062.66	725.87	132
TRC-0110	537497.93	9174805.25	706.19	84
TRC-0111	537787.67	9174517.66	736.05	80
TRC-0112	538101.42	9174266.47	757.16	87
TRC-0113	538403.24	9174009.02	744.54	85
TRC-0114	538713.98	9173752.00	737.47	101
TRC-0115	539015.91	9173491.07	762.38	115
TRC-0116	539160.90	9173608.31	732.75	87
TRC-0117	539328.06	9173237.74	758.25	112
TRC-0118	539445.09	9173392.56	747.28	98
TRC-0119	539765.37	9173137.01	753.01	106
TRC-0120	539629.95	9172974.13	738.83	118
TRC-0121	539890.62	9173287.07	731.59	73

Table 10.1_5 Trairão Iron Ore Project Target Area 3 - RC Drill holes Information				
Hole-Id	**UTM-E**	**UTM-N**	**RL (m)**	**Depth**
TRC_0054	544207.95	9172976.23	713.23	59
TRC_0055	544208.05	9172776.50	703.02	58
TRC_0056	544207.51	9172571.42	697.47	33
TRC_0057	544208.23	9172371.39	707.35	87
TRC_0058	544209.11	9173176.11	709.79	40
TRC_0059	544207.28	9173374.67	698.52	76

Hole-Id	UTM-E	UTM-N	RL (m)	Depth
TRC_0060	545007.65	9173376.91	709.55	37
TRC_0061	545008.79	9173575.07	716.12	33
TRC_0062	545008.52	9173776.42	715.70	84
TRC_0063	545009.12	9173978.56	695.45	89
TRC_0064	545807.73	9173576.76	708.05	89
TRC_0065	546606.34	9173579.74	702.94	75
TRC_0066	546607.41	9173774.78	704.03	94
TRC_0067	544215.73	9173576.03	682.11	73
TRC_0068	545007.21	9173181.23	683.00	40
TRC_0069	545778.77	9173391.93	698.73	84
TRC_0070	547413.90	9173757.29	714.91	42
TRC_0071	547409.08	9173599.14	706.86	100
TRC_0072	548210.08	9173969.00	675.46	106
TRC_0073	548215.46	9173776.18	694.35	50
TRC_0074	548217.71	9173589.34	678.39	36
TRC_0075	548956.81	9173649.61	666.93	105
TRC_0076	548896.35	9173501.91	684.82	40
TRC_0077	548828.04	9173311.56	693.70	100
TRC_0078	549576.22	9173019.37	667.87	71
TRC_0079	550284.73	9172644.73	599.15	98
TRC_0080	551237.09	9172830.83	426.96	40
TRC_0081	551148.85	9172677.64	414.47	15
TRC_0082	551075.21	9172540.90	442.75	39
TRC_0122	550886.13	9172552.44	504.07	55
TRC_0123	550708.62	9172582.40	541.31	46
TRC_0124	550479.83	9172608.96	571.58	106
TRC_0125	548770.29	9173758.16	678.53	93
TRC_0126	550091.39	9172704.57	616.05	112
TRC_0127	549734.88	9172904.66	653.35	106
TRC_0128	548702.40	9173569.12	686.68	34
TRC_0129	549386.82	9173109.68	683.22	100
TRC_0130	548634.68	9173383.85	693.64	45
TRC_0131	549454.97	9173296.36	666.38	45
TRC_0132	548583.56	9173242.41	679.71	87
TRC_0133	549079.33	9173433.34	680.09	45
TRC_0134	549011.17	9173246.29	689.36	103
TRC_0135	544411.82	9172572.61	712.50	51
TRC_0136	544409.79	9172769.31	700.46	34
TRC_0137	544409.95	9172378.75	714.87	109
TRC_0138	544413.11	9172975.31	709.11	45

Hole-Id	UTM-E	UTM-N	RL (m)	Depth
TRC_0139	544412.47	9173173.49	719.13	33
TRC_0140	544810.79	9173174.59	704.09	33
TRC_0141	544410.70	9173375.83	703.62	40
TRC_0142	544412.32	9173573.09	712.15	104
TRC_0143	544812.62	9173376.88	713.85	45
TRC_0144	544809.77	9173568.43	715.81	43
TRC_0145	544816.78	9173770.23	710.49	88
TRC_0146	544012.50	9172375.69	691.86	42
TRC_0147	545189.69	9173963.97	708.08	49
TRC_0148	545212.20	9173375.44	697.26	25
TRC_0149	544809.49	9172777.22	688.42	61
TRC_0150	545214.45	9173201.43	691.61	79
TRC_0151	544819.85	9172976.20	707.63	63
TRC_0152	545213.62	9173574.61	715.43	45
TRC_0153	545605.29	9173569.24	708.33	40
TRC_0154	545213.24	9173777.05	709.35	45
TRC_0155 (*)	545601.55	9173359.18	707.84	64
TRC_0156	546011.99	9173578.95	696.78	81
TRC_0157	546410.71	9173572.89	707.76	94
TRC_0158	546420.87	9173755.56	699.57	43
TRC_0159	546807.74	9173776.20	714.44	76
TRC_0160 (*)	547206.43	9173774.38	717.47	46
TRC_0161	547206.91	9173571.72	707.96	84
TRC_0162	546807.51	9173622.91	689.39	83
TRC_0163	547607.19	9173575.08	703.54	85
TRC_0164	547608.00	9173778.13	706.59	54
TRC_0165	548005.65	9173582.14	693.84	88
TRC_0166	548006.44	9173775.82	695.59	42
TRC_0168	548006.51	9173932.10	694.93	36
TRC_0208 (*)	547805.19	9173602.60	701.60	69
TRC_0209 (*)	547807.98	9173778.14	704.08	45
TRC_0211 (*)	547807.31	9173977.35	699.84	45
TRC_0212 (*)	547810.57	9174179.30	700.34	86
TRC_0213 (*)	547609.10	9174166.32	701.25	76
TRC_0214 (*)	547607.74	9173972.09	681.28	34
TRC_0215 (*)	547408.51	9174174.22	676.24	34
TRC_0216 (*)	547418.60	9173978.86	652.74	34
TRC_0218 (*)	547205.45	9173972.61	645.63	34
TRC_0219 (*)	547207.84	9174152.11	669.74	34
TRC_0220 (*)	546998.00	9173975.00	651.37	18

Hole-Id	UTM-E	UTM-N	RL (m)	Depth
TRC_0221 (*)	547006.65	9173770.12	717.61	75
TRC_0222 (*)	547015.02	9173415.30	685.25	82
TRC_0223 (*)	547006.96	9173579.14	684.90	77
TRC_0224 (*)	546216.01	9173576.33	713.24	58
TRC_0226 (*)	546207.03	9173378.23	687.48	88
TRC_0228 (*)	546210.66	9173776.21	688.65	28
TRC_0230 (*)	546007.00	9173379.00	689.00	64
TRC_0232 (*)	545400.00	9173577.00	710.56	16
TRC_0234 (*)	545404.00	9173766.00	705.04	16
TRC_0236 (*)	545404.00	9173385.00	701.10	52
TRC_0238 (*)	544602.00	9173578.00	717.56	67
TRC_0240 (*)	544609.00	9173728.00	697.50	70
TRC_0241 (*)	544603.00	9172587.00	705.47	85
TRC_0242 (*)	544605.00	9173373.00	715.21	12
TRC_0244 (*)	544607.00	9173178.00	710.98	30
TRC_0245 (*)	545585.00	9173781.00	663.68	25
TRC_0246 (*)	544599.00	9172985.00	699.78	10
TRC_0247 (*)	545818.00	9173775.00	641.53	22
TRC_0248 (*)	544607.00	9172781.00	708.98	67
TRC_0249 (*)	546598.00	9173962.00	646.50	22
TRC_0251 (*)	546807.00	9173940.00	653.34	22
(*) - RC drill holes recently drilled and with assays pending. These drill holes were used only on the geological modeling				

In part of the Target Area 3, some RC drill holes (34 holes) were recently drilled and chemical results are not available at the time of this report. Based on this fact, these drill holes were used to improve the geological model but were not include on the resource estimate.

Servitec, the drilling company engaged to undertake the drilling, is independent of Talon and used an Explorac R50 drill rig to complete the work (Figure 10.1_2).

Figure 10.1_2
Trairão Iron Ore Project
Drill Rig Explorac R50

10.1.1 RC Drilling Recovery

The RC drilling sample recovery was calculated considering a density of 2.7g/cm^3, determined from regional bibliographic information.

Considering the usual problems with the recovery of RC drilling, Coffey Mining used the values >100% and <50% of recovery to validate the quality of drilling (Table 10.1.1_1). In general, the drilling shows a low average recovery, occurring mainly at the first 10m.

For the study objective, the RC drilling is compliant with the industry standards. The data is consistent with the confidence level of key criteria of the mineral resource classification.

Table 10.1.1_1 Trairão Iron Ore Project Summary of Recovery.				
Area	**Number of samples**	**Recovery > 100%**	**Recovery < 50%**	**Average of Recovery**
Target Area 1	1 049	1%	42%	64.5%
Target Area 2	1 505	0%	36%	45.0%
Target Area 2 Extension	2 366	15%	77%	64.5%
Target Area 3	11 167	5%	67%	63.4%
Total Area	16 087	6%	64%	62.22%

10.1.2 RC Drilling Interceptions

In the initial 2010 drilling program on Target Areas 1 and 2, the drilling was terminated in most of the 53 holes drilled at 50 metres depth. Thereafter, in all the drilling undertaken in the 2011 program the RC drill holes were drilled until they were through the mineralized rocks or were at the maximum depth capacity of the drill rig, which varied between 80 and 110 metres depth. Many of the drill holes terminated within mineralized zones indicating that the mineralization extends below the depth of the drilling in selected areas. This is illustrated in Figure 10.1.2_1 where the Fe grades of the last samples in each of the drill holes. is plotted as a frequency histogram and includes some holes that terminated in areas with high iron grades. The results suggest that the Fe mineralization is open at depth, which needs to be investigated with further and deeper drill holes.

The RC drill holes mostly intersected the following lithologies:

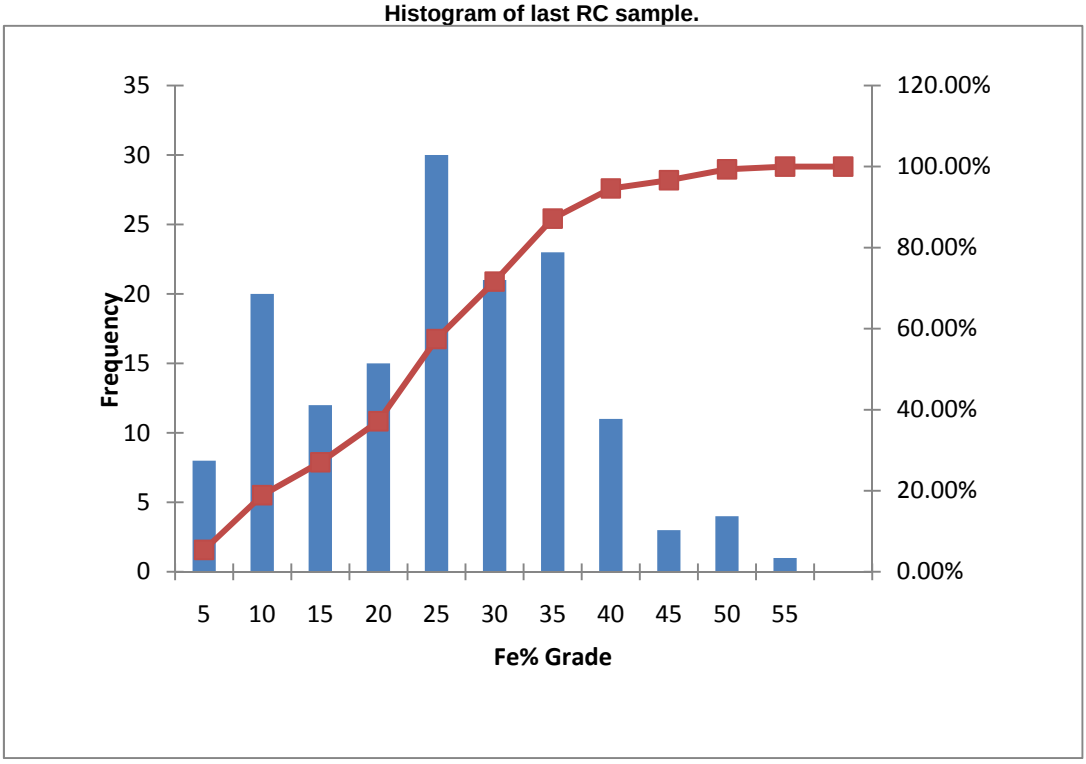
- At surface, a surficial deposit containing iron rich martite flakes, gravels and locally a “canga” capping concretions deposits which is from 1 meter to 10 metres thick;
- A 10 metre to 50 metre thick saprolite zone with hematite and goethite;
- The lower portion of the holes consists of saprock in which the original structure of the underlying rock can be recognized and consists of hematite and goethite rich material.

These three rock types comprise most of the inferred mineral resource as set out in the inferred mineral resource estimate of this report.

Figure 10.1.2_1

Trairão Iron Ore Project

Histogram of last RC sample.



10.2 Diamond Drilling

Talon has completed 40 diamond drill holes which include some 4,769 metres of drilling. This drilling has mainly been undertaken on a grid configuration in the southern part of Target Area 1 and to a lesser extent in Target Areas 2 and 3. The drilling is aimed at:

- Improving the confidence levels in the data obtained from the RC drilling program and so increase the confidence levels of the mineral resource estimates on the project.
- Obtaining material for the metallurgical samples that are part of the ongoing metallurgical test program
- Intersecting the fresh BIF at depth to assess the economic potential of this rock type

The diamond drilling results have not been included in the inferred mineral resource estimation included in this report.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Sample Preparation and Analysis

The RC samples preparation was completed by Servitec staff under Talon supervision. Each one meter sample was weighed, manually homogenized and split (Jones) to produce two samples of 4kg (Figure 11.1_1), one to send to the laboratory and other to duplicate storage. The rest of the material was stored into the original sample bag and retained.

Figure 11.1_1

Trairão Iron Ore Project

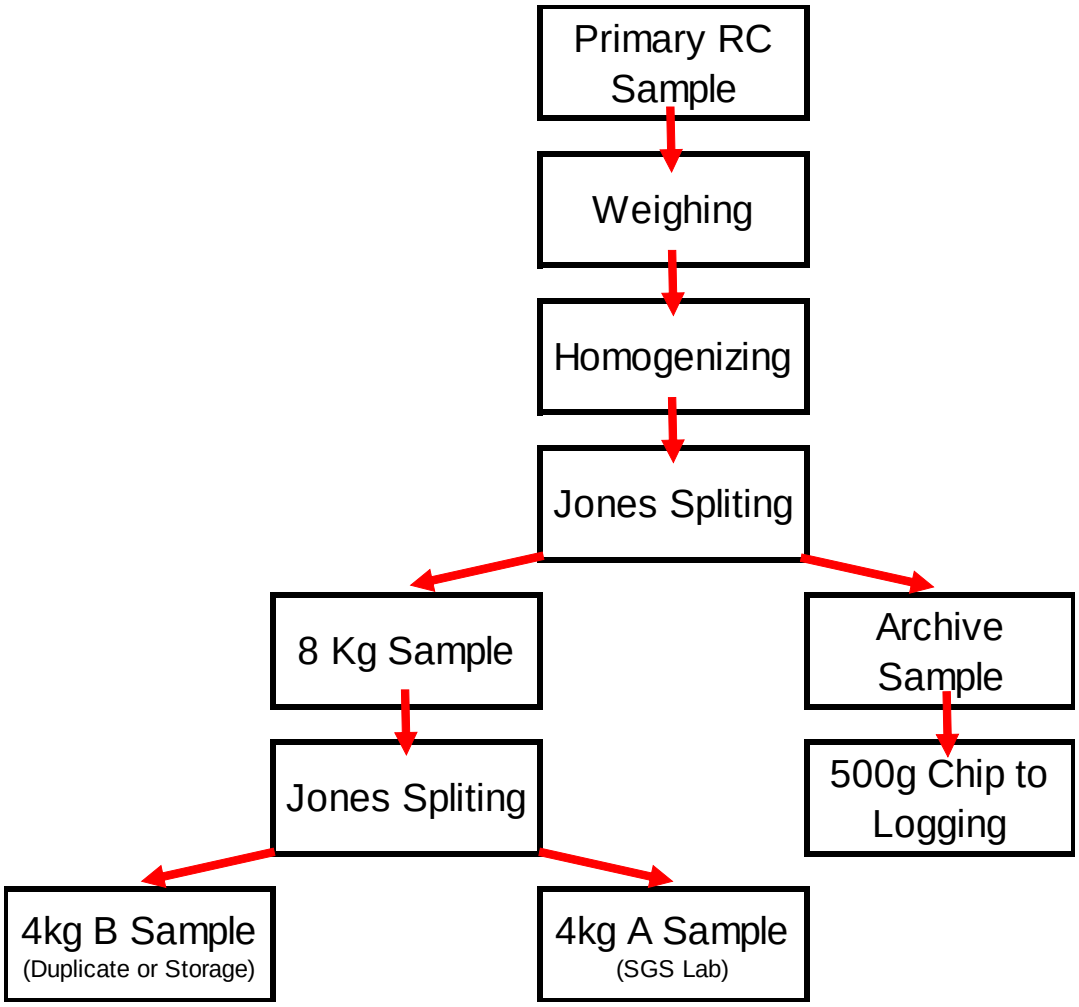
RC Sample Field Preparation

The Figure 11.1_2 shows the sample preparation flowchart.

Figure 11.1_2

Trairão Iron Ore Project

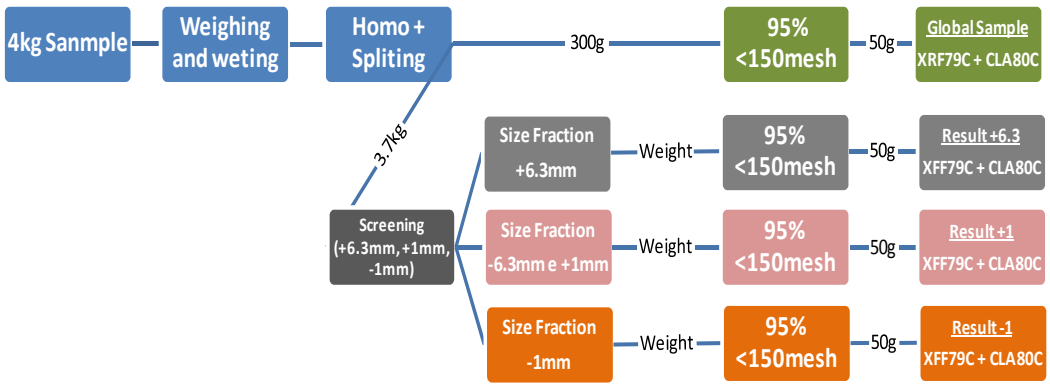
RC Sample Field Preparation



The 4kg 'A' sample, and the duplicate preparation and analysis of all the samples taken by Talon was performed by SGS Geosol Laboratórios Ltda. (www.sgsgeosol.com.br), an ISO 9000-2001 certified laboratory, which is independent of Talon. The laboratory is located in Parauapebas, Pará State, Brazil.

The sample preparation procedure was carried out in two phases. In the first phase, for drill holes 1 to 13, Talon requested SGS to analyze the global results for the total sample mass. For the second phase, from the drill hole 14 onwards and focusing on future geometallurgical and process studies, Talon requested the analysis of 3 different size fractions in addition to the global results. The Figure 11.1_3 shows the current analytical flowchart applied by SGS Geosol.

Figure 11.1_3
Trairão Iron Ore Project
SGS Geosol Analytical Flowchart



The analysis method was XRF (fusion with lithium tetraborate) to analyze 10 elements plus LOI (calcination at 1000°C - SGS internal code: XRF79C_10) and FeO (by wet chemistry-SGS internal code: CLA80C). The Table 11.1_1 below lists the detection limits.

Table 11.1_1
Trairão Iron Ore Project
SGS Analysis Detection Limit

Element	Minimum	Maximum
Al_2O_3	0.1%	100%
CaO	0.1%	70%
Fe_2O_3	0.1%	103%
K_2O	0.1%	18%
MgO	0.1%	100%
MnO	0.1%	75%
Na_2O	0.1%	12%
P_2O_5	0.1%	45%
SiO_2	0.1%	100%
TiO_2	0.1%	100%
FeO	0.14%	80%

11.2 Sample Security

All drilling samples were sent via a Talon vehicle to the SGS laboratory in Parauapebas, PA, for analysis.

The B samples and the Talon archive sample storage is at the company's Bannach local office (Figure 11.2_1).

Figure 11.2_1
Trairão Iron Ore Project
SGS Geosol Analytical Flowchart

B Samples for Storage

B Samples Organized by Drill Hole

Archive Samples

A Samples Ready for the SGS Lab

12 DATA VERIFICATION

A quality control program was implemented by Talon on the complete drilling program (Table 12_1), including:

- Standard samples inserted at a nominal rate of 1:20 samples;
- Duplicates (B Sample - Figure 11.1_2) at a nominal rate of 1:20 samples;
- Blank samples inserted at a nominal rate of 1:20 samples.
- QAQC data from SGS Labs was also used according to their internal control program.

Table 12_1
Trairão Iron Ore Project
Trairão Quality Control Sample Summary

Company	Sample Type	Number of Samples Analyzed
TALON	Standard	526
	Blanks	231
	Duplicate	505
SGS	Standard	1711
	Blanks	316
	Duplicate	731

The quality control data has been assessed statistically by Coffey Mining using a number of comparative analyses for available datasets. The objectives of these analyses were to determine relative precision and accuracy levels between various sets of assay pairs and the quantum of relative error.

12.1 Standard and Blank Samples

A total of 5 iron Talon standards (inserted by the Laboratory following the request from Talon at a rate of 1:20 samples), 4 SGS standards (internal Laboratory standard sample), and two blanks each from Talon or SGS, were utilized in the drilling program. Table 12.1_1 below presents a summary of these 11 standards. All standards analyses were evaluated using Coffey Mining's QC Assure statistical software.

Table 12.1_1 Trairão Iron Ore Project Standards and Blanks QAQC Summary Results									
Reference values				**Analyzed Results**				**Results**	
Standard / Variable	**Origin (%)**	**Min (%)**	**Max (%)**	**N° Samples**	**Min (%)**	**Max (%)**	**Mean (%)**	**% inside precision limits**	**% outside precision limits**
TALON									
Blank / Fe_2O_3	0.00	0.00	0.01	174	0.01	56.20	1.39	0	100
Blank / FeO	0.00	0.00	0.01	201	0.21	2.70	1.31	0	100
SG-099 / Fe	68.44	67.66	69.22	37	67.5	69	68.13	89.19	10.81
SG-070 / Fe	39.38	38.99	39.77	426	3/8.6	40	39.22	71.36	28.64
STD-ITAK-008/Fe	64.51	65	65.8	21	63.80	65.30	64.38	14.29	85.71
STD-ITAK-009/Fe	48.53	48.05	48.97	18	48.10	49.10	48.60	83.33	16.67
STD-ITAK-015/Fe	64.45	65	65	20	63.70	65.30	64.46	80	20
SGS									
Blank / Fe_2O_3	0.00	0.00	0.01	171	0.01	2.13	0.32	0	100
Blank / FeO	0.00	0.00	0.01	17	0.36	2.20	1.08	0	100
SG_051 / FeO	2.23	1.47	2.98	77	1.76	2.76	2.11	100	0
SG_098/FeO	1	0.96	1.04	316	0.80	1.06	1	97.47	2.53
SG-099 / FeO	14.04	13.78	14.30	424	13.35	14.54	13.89	75.24	24.76
SG-070 / Fe	39.20	38.99	39.77	259	38.70	40	39.20	75.29	24.71
SG-099 / Fe	68.44	67.66	69.22	174	67.5	69.20	68.18	89.08	10.92

The analyses of the blank samples used by the Talon show a few events of high grade results indicating probable contaminations or most probable sample changes. The standard analysis allows conclude by a good assurance and low precision reflected on the “% RSD” values over 0.30%. The summary of standard analysis can be found in Appendix A.

In the general context, the parameters from the quality control analysis of the reference samples from exploration are within the acceptance limits for the purpose of mineral resource estimation.

12.2 Comparative Data Analysis

The comparative data was statistically analyzed using the Coffey Mining QC Assure software. The objective of this is to determine the relative precision among some pairs of results and to quantify the relative error.

The analyzed duplicates are summarized in the Table 12.2_1 .The duplicate samples are sorted from pulp.

From 1,400 existing duplicate samples in the database for the analyzed variables Fe_2O_3, SiO_2, Al_2O_3, MgO, P, TiO_2, and LOI, more than 95% of the data pairs are in the acceptable 10% precision limits. The variable FeO, K_2O, Cr_2O_3 and Mn show percentages under 90% of pairs in precision limits mainly as a result of low mean grades obtained near the detection limits of the chemical analysis and an inadequate chemical analysis procedure for FeO.

Coffey Mining concludes that the results of the sample duplicates of Talon are normal for the style of mineralization and acceptable for mineral resource estimation purposes.

Table 12.2_1
Trairão Iron Ore Project
Comparative Data Analyses Summary Results

Reference values		Analyzed Results	Results Evaluation				
Variable	Precision Limits (%)	Analyses Pairs N°	HRD Mean	HRD Median	HARD Mean	HARD Median	% inside precision limits
TALON							
Fe_2O_3	10	727	0.29	0.00	1.27	0.37	98.4
FeO	10	727	0.15	0.00	10.77	2.48	70.8
SiO_2	10	727	0.08	0.00	1.27	0.41	98.9
Al_2O_3	10	727	-0.21	0.00	1.38	0.56	98.4
Mn	10	727	0.34	0.00	4.79	0.00	87.4
P	10	727	0.05	0.00	4.28	1.10	92.9
LOI	10	727	-0.33	0.00	1.48	0.53	98.1
SGS (Duplicates)							
Fe_2O_3	10	673	-0.51	0.00	1.77	0.35	96.1
FeO	10	627	-0.68	0.00	8.42	4.00	73.5
SiO_2	10	690	0.62	0.00	1.66	0.36	95.2
Al_2O_3	10	690	0.29	0.00	2.24	0.68	95.5
Mn	10	604	-0.56	0.00	4.77	0.00	81.6
P	10	650	-0.23	0.00	3.45	2.04	93.4
LOI	10	679	-0.37	-0.17	2.03	0.77	96.8
SGS (Replicates)							
Fe_2O_3	10	22	0.16	-0.04	0.50	0.28	100.0
FeO	10	395	-0.22	-0.24	1.14	0.77	99.8
SiO_2	10	397	0.00	0.00	0.32	0.24	100.0
Al_2O_3	10	397	0.01	0.00	0.71	0.49	100.0
Mn	10	340	-0.22	0.00	2.85	0.00	89.7
P	10	397	-0.43	0.00	4.73	1.41	94.2
LOI	10	395	-0.22	-0.24	1.14	0.77	99.8

12.3 QA/QC Program Analysis

Coffey Mining, after analyzing all procedures and results gathered under the QA/QC program undertaken by Talon conclude that the data is of sufficient quality to support a resource estimate, but there is room for improvements:

- Procedures had shown indications of manipulation issues on the sample preparation, as sampling changes, or dilution.

- Precision issues detected on the standard analysis can be due to matrix-related problems. A specific standard, prepared using local material, could correct this.

- FeO analysis must be improved; Talon should request the laboratory to study this issue to avoid future problems, if this substance became a control grade on the beneficiation process.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

There are no results available from mineral processing or metallurgical test work that Talon has commissioned.

14 MINERAL RESOURCE ESTIMATES

14.1 Mineral Resources Estimates

14.1.1 Introduction

This report complies with disclosure and reporting requirements set forth in NI43-101. The grade estimates have been classified as Inferred Mineral Resources in accordance with and CIM Definition Standards (2011) and NI43-101. A brief discussion on the classification criteria is provided.

Coffey Mining carried out the Trairão Iron Ore Project enriched supergene material mineral resources estimation based on the current available information that has been obtained from the data obtained from the RC drilling program only.

14.1.2 Database

To produce a consistent drilling database of each area, the drilling data from Talon Metals were converted to MS-Access software, originally stored in Excel format. These databases contain information about location and orientation of drill holes, descriptive lithology and analytical results.

Coffey Mining carried out an electronic validation of the database in Gemcom Surpac software. No errors, as gaps or overlapping data, were found. Tables 14.1.2_1 to 14.1.2_4 summarize the RC drill hole database used for the mineral resource estimations.

Table 14.1.2.1_1 Trairão Iron Ore Project Target Area 1 RC Drill Holes Database Summary	
Drill holes	22
Meterage	1,054
Samples with Chemical Results	1,048
Samples without Chemical Results	6

Table 14.1.2.1_2 Trairão Iron Ore Project Target Area 2 RC Drill Holes Database Summary	
Drill holes	31
Meterage	1,505
Samples with Chemical Results	1,505
Samples without Chemical Results	0

Table 14.1.2.1_3 Trairão Iron Ore Project Target Area 2 Extension RC Drill Holes Database Summary	
Drill holes	26
Meterage	2,366
Samples with Chemical Results	2,266
Samples without Chemical Results	100

Table 14.1.2.1_4 Trairão Iron Ore Project Target Area 3 RC Drill Holes Database Summary	
Drill holes	107
Meterage	6,317
Samples with Chemical Results	4,326
Samples without Chemical Results	1,991

The drill holes without chemical results on Target Area 3 (total of 34 holes) were used exclusively to support the geological interpretation.

14.1.3 Geological Model

Coffey Mining completed the weathered material geological model of the areas by interpretation of vertical sections based on the RC drill holes, using polygons to generate solids or lines to generate surfaces. The method to be utilized was defined to conform to the complexity of lithological variations, resulting in block models with uniform quality.

The topography survey used in the models was developed from topographical points collected in the field, coordinates from RC drill hole collars, points collected from the land geophysical campaign and SRTM (Shuttle Radar Topography Mission) by NASA.

The iron mineralization is associated with supergene weathered deposits on the plateau area on the top of the Trairão ridge. The limits of mineral resources were delimited using the drill hole influence and slope of surface, from all RC drill holes that intersected the mineralized lithologies. The lateral continuity is being investigated with further RC and diamond drilling.

The models identify the altered zones, Surficial Deposit (COB), Saprolite (SAP) and Saprock (SAR), and fresh rock. This identification was developed using the geological description realized in the field from available RC and diamond drill holes.

The Surficial Deposit is the most superficial zone, showing the altered rocks. The Saprolite zone is below the Surficial Deposit and shows altered minerals, but also retains some textures of the original rock. Saprock is the layer below the Saprolite and shows the least weathering of the interpreted lithologies (Figure 14.1.2.2_3) and contains remnants of the original rock.

Different lithologies were identified in the fresh rock zone but due to insufficient information and beyond the scope of this work, these were not recognized as separate domains in the model. The potential of mineralization of these rocks was not excluded but it needs investigation.

In Target Area 1, eight vertical geological sections were interpreted aligned northwest to southeast (Figure 14.1.3_1). The Figures 14.1.3_2 and 14.1.3_3 show a typical vertical section and solids wireframe geological model, respectively.

Figure 14.1.3_1

Trairão Iron Ore Project

Target Area 1 Vertical Sections Location

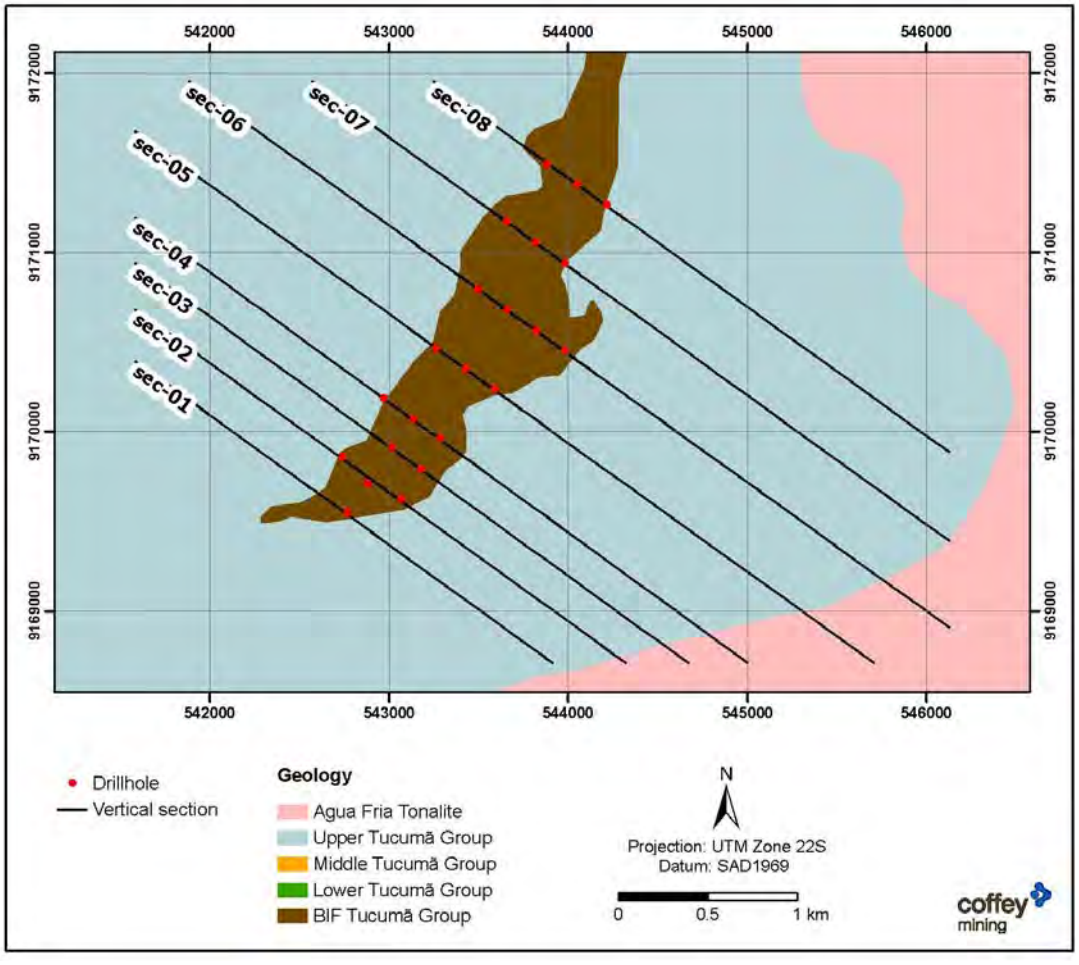


Figure 14.1.3_2

Trairão Iron Ore Project

Target Area 1 Typical Vertical Section with the Detail of the Area Used to Mineral Resources Estimation

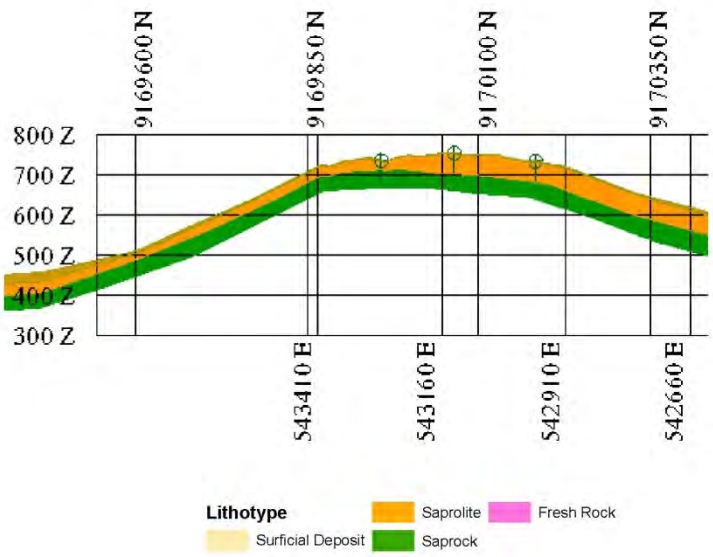
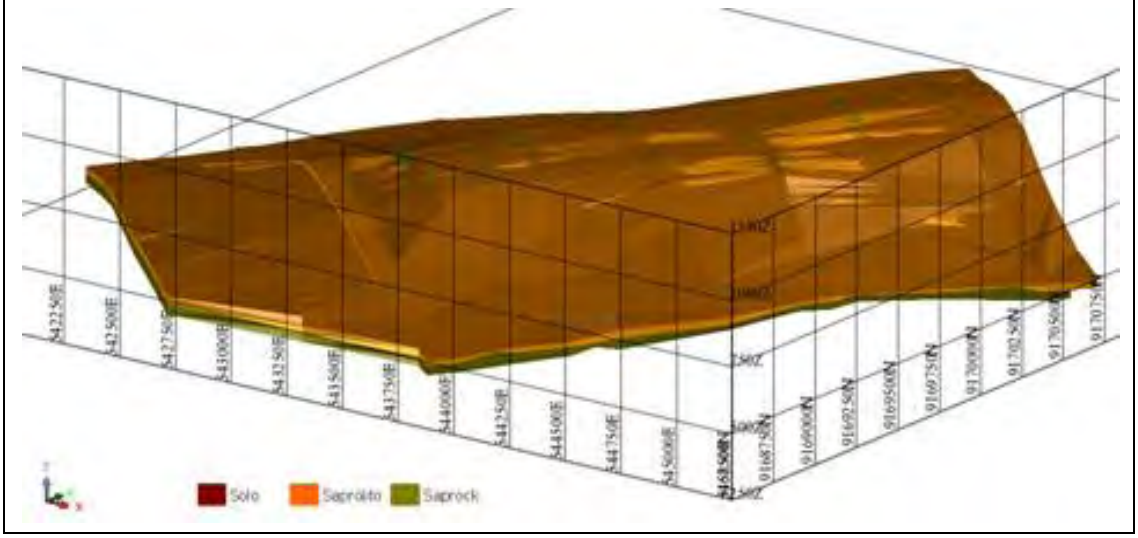


Figure 14.1.3_3

Trairão Iron Ore Project

Target Area 1 - 3D Wireframe Geological Model



Coffey Mining interpreted 12 vertical geological sections aligned south to north (Figure 14.1.3_4) in Target Area 2 for construction of a geological model. The Figures 14.1.3_5 and 14.1.3_6 show a typical vertical section and solids wireframe geological model, respectively.

Figure 14.1.3_4

Trairão Iron Ore Project

Target Area 2 Vertical Sections Location

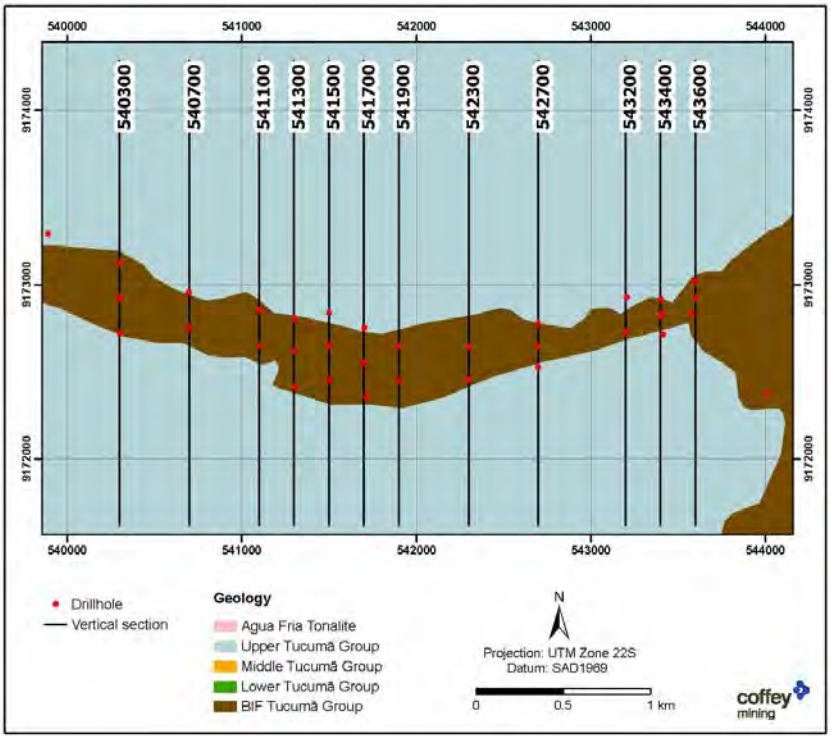


Figure 14.1.3_5

Trairão Iron Ore Project

TargetArea 2 Typical Vertical Section with the Detail of the Area Used to Estimation

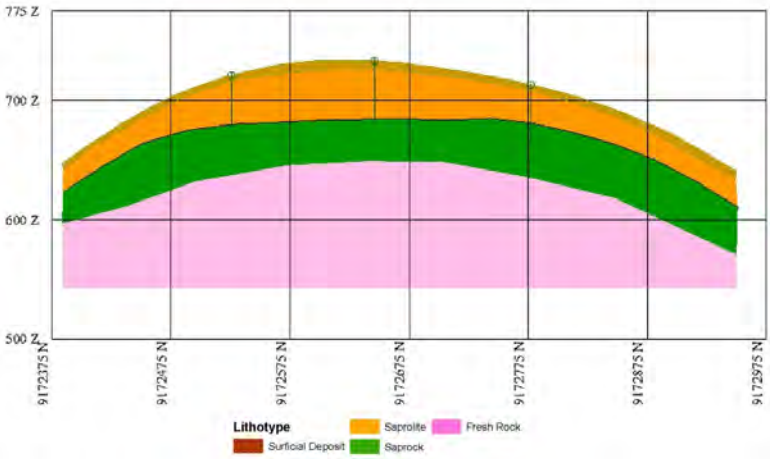
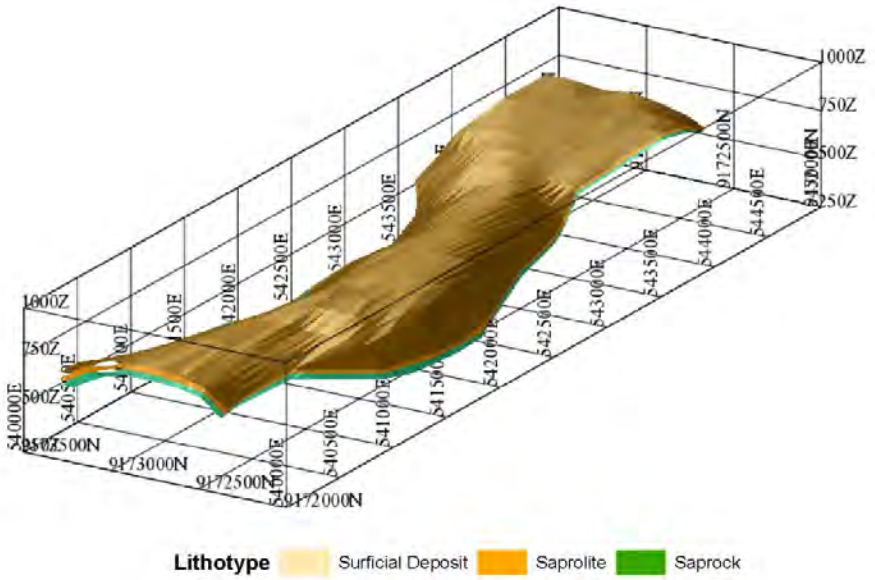


Figure 14.1.3_6

Trairão Iron Ore Project

Target Area 2 - 3D Wireframe Geological Model



Coffey Mining interpreted 18 vertical geological sections aligned northeast to southwest (Figure 14.1.3_7) in the north western extension area of Target Area 2 to construct a geological model, The Figures 14.1.3_8 and 14.1.3_9 show a typical vertical section and solids wireframe geological model, respectively.

Figure 14.1.3_7

Trairão Iron Ore Project

Target Area 2 Extension - Vertical Sections Location

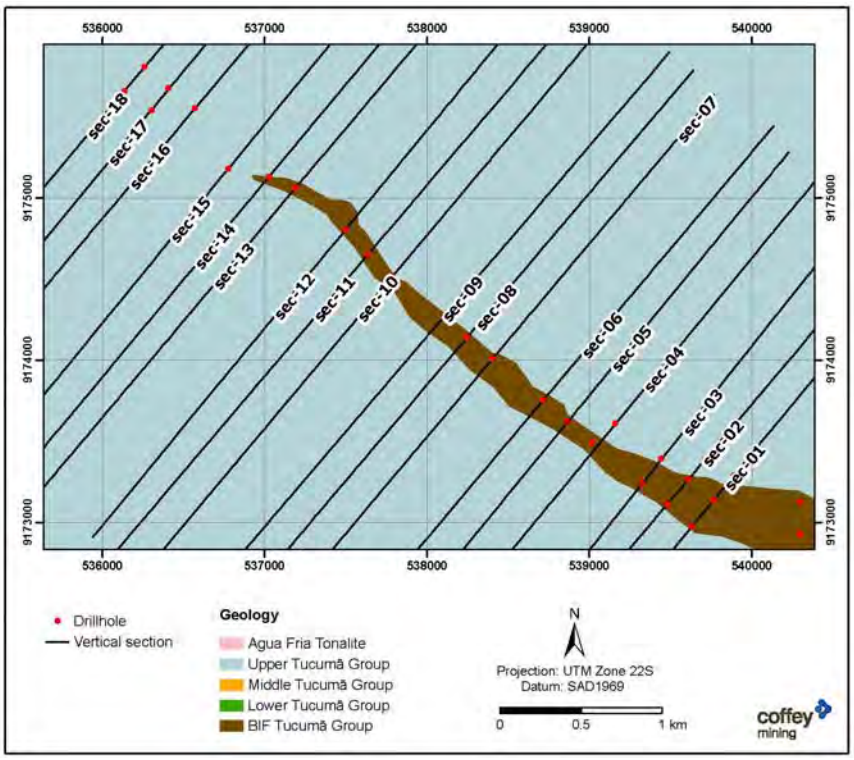


Figure 14.1.3_8

Trairão Iron Ore Project

Target Area 2 Extension - Typical Vertical Section with the Detail of the Area Used to Mineral Resources Estimation

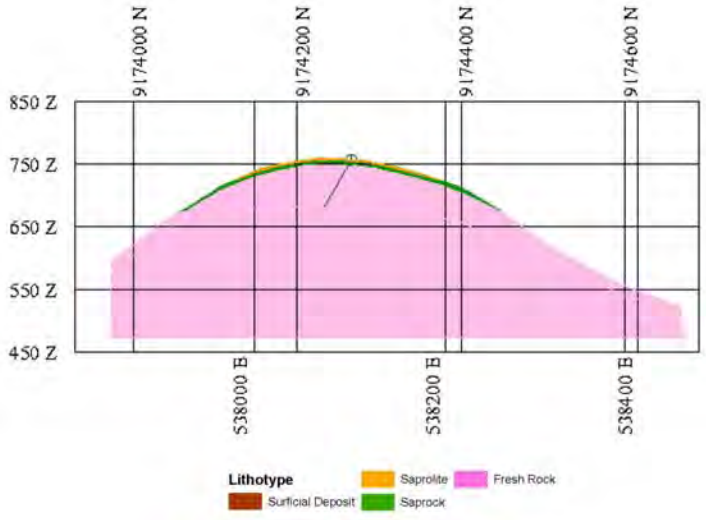
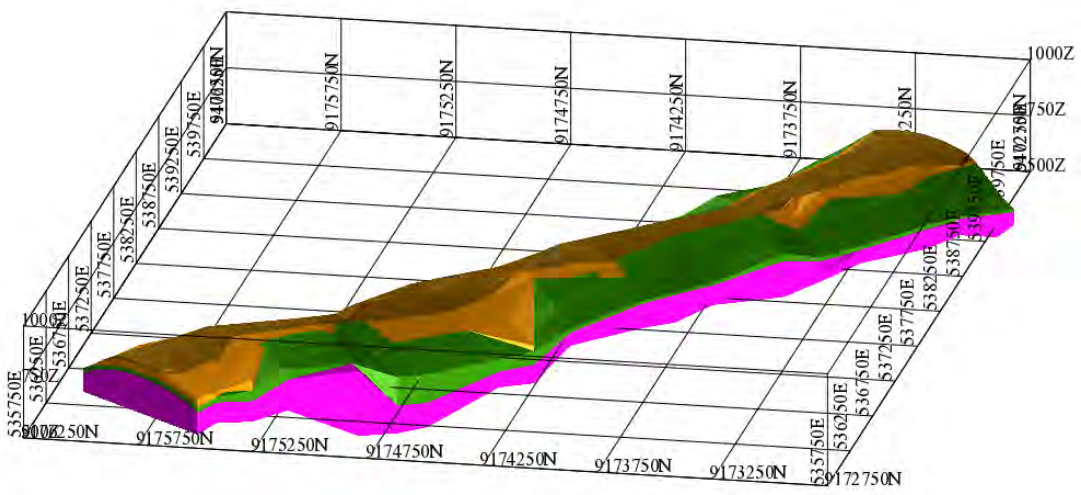


Figure 14.1.3_9

Trairão Iron Ore Project

Target Area 2 Extension - 3D Wireframe Geological Model



Coffey Mining interpreted 22 vertical geological sections aligned south to north and 12 vertical geological sections aligned northeast to southwest (Figure 14.1.3_10) in Target Area 3 to construct a geological model, The Figures 14.1.3_11 and 14.1.3_12 show a typical vertical section and solids wireframe geological model, respectively.

Figure 14.1.3_10

Trairão Iron Ore Project

Target Area 3 Vertical Sections Location

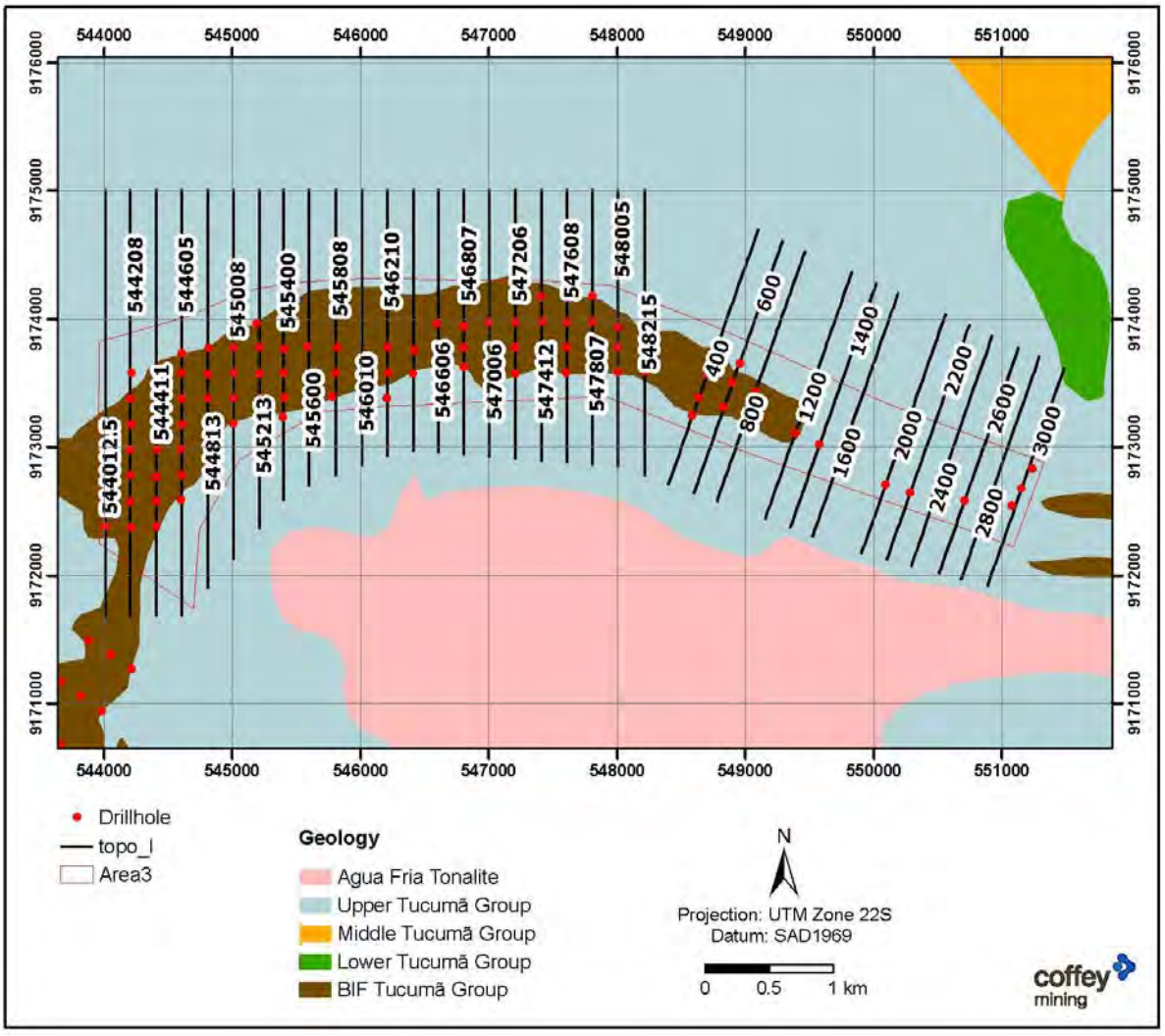


Figure 14.1.3_11

Trairão Iron Ore Project

Target Area 3 Typical Vertical Section with the Detail of the Area Used to Mineral Resources Estimation

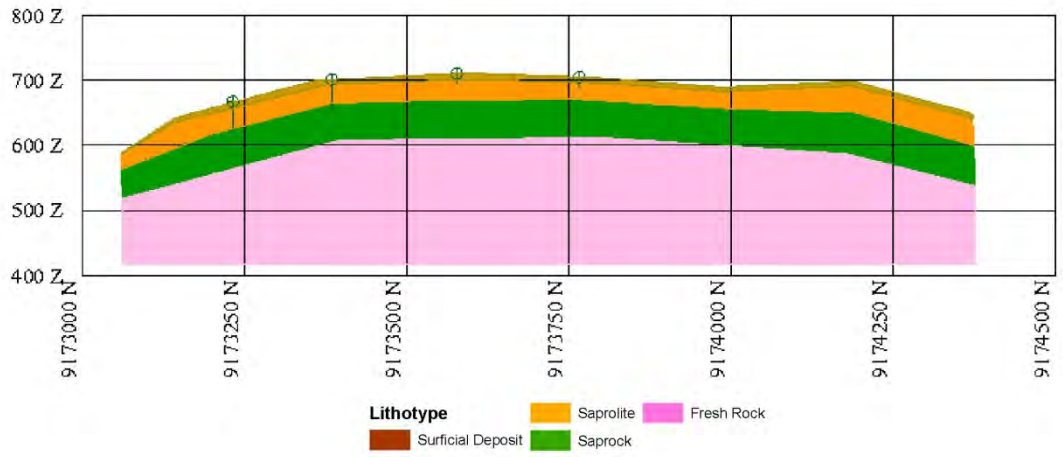
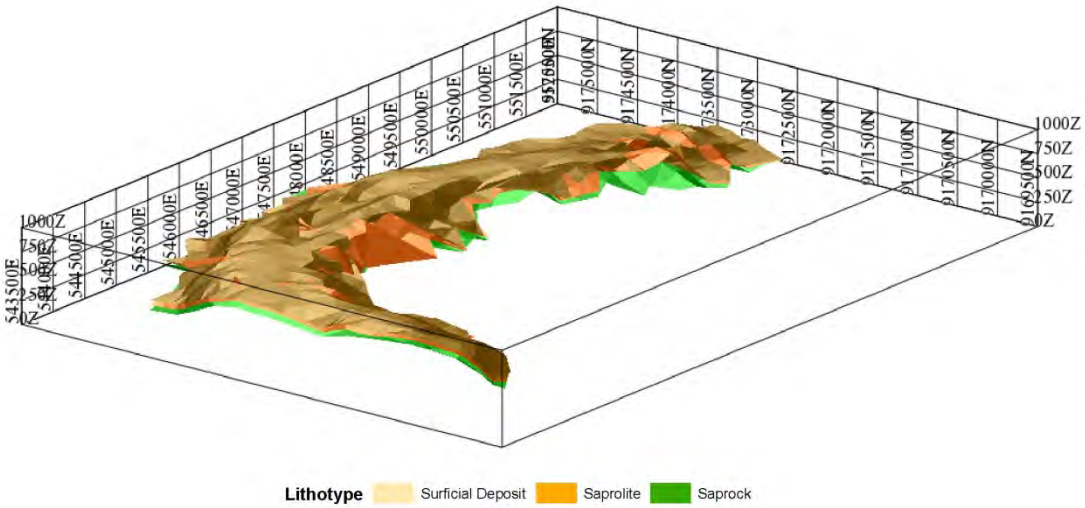


Figure 14.1.3_12

Trairão Iron Ore Project

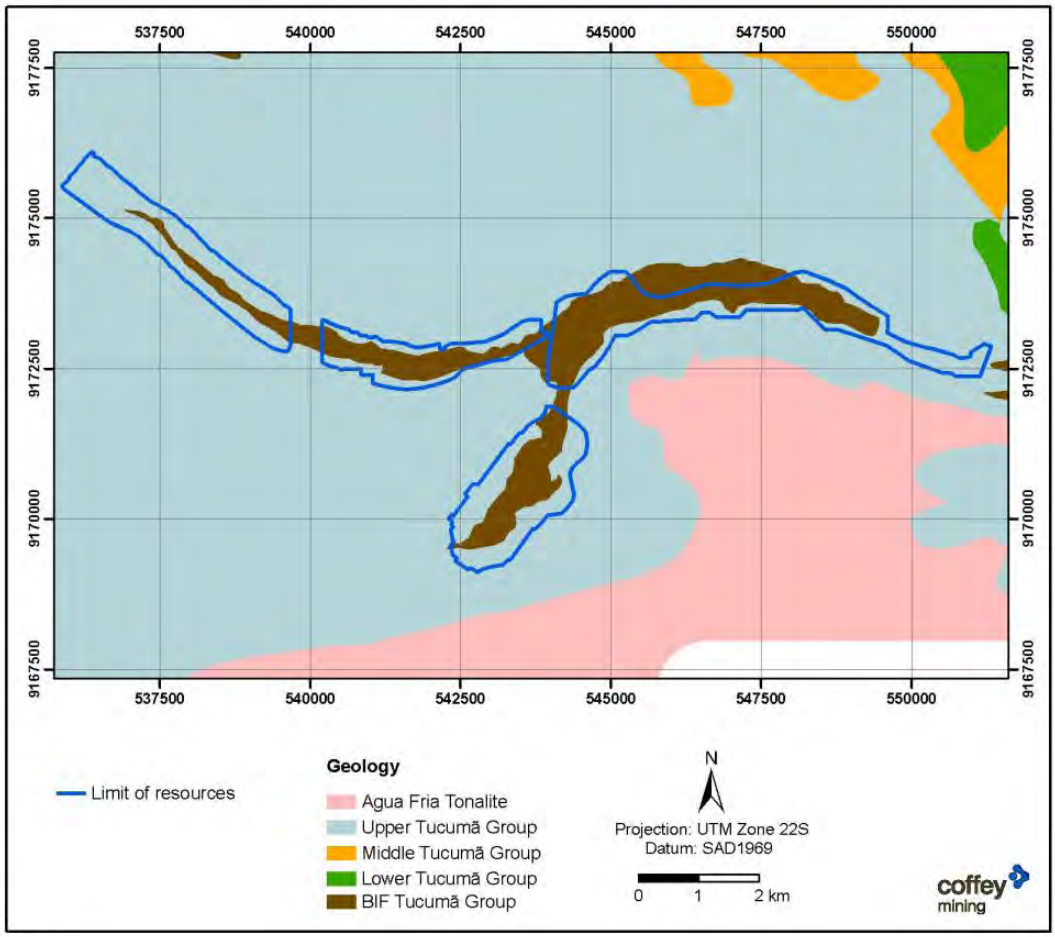
Target Area 3- 3D Wireframe Geological Model



14.1.3.1 Block Model

Individually, block models were developed for the resource estimation, considering the lithologies: Surficial Deposit, Saprolite and Saprock. The areas between the block models, without drill hole information, were not considered as resources. The limits of resources are presented in Figure 14.1.3.1_1.

Figure 14.1.3.1_1
Trairão Iron Ore Project
Block models limits of Target Areas.



The block and sub-block dimensions were defined considering the drilling grid and average thickness of layers. Tables 14.1.3.1_1 and 14.1.3.1_2 show the block model parameters and main attributes.

The density used in this work for the Trairão Iron Ore Project for the three lithologies was based on geologic regional literature, set at 2.7.

Table 14.1.3.1_1 Trairão Iron Ore Project Block Models Summary			
Target Area 1			
Type	**Y**	**X**	**Z**
Minimum Coordinates	9,169,200	541,000	250
Maximum Coordinates	9,173,700	543,500	950
User Block Size	100	100	10
Min. Block Size	25	25	5
Rotation	Bearing: 35	Dip: 0	Rotation: 0
Target Area 2			
Type	**Y**	**X**	**Z**
Minimum Coordinates	9,171,400	539,650	250
Maximum Coordinates	9,174,100	545,550	950
User Block Size	100	100	10
Min. Block Size	25	25	5
Rotation	Bearing: 0	Dip: 0	Rotation: 0
Target Area 2 Extension			
Type	**Y**	**X**	**Z**
Minimum Coordinates	9,171,400	534,758	250
Maximum Coordinates	9,177,400	545,558	950
User Block Size	100	100	10
Min. Block Size	25	25	5
Rotation	Bearing: 0	Dip: 0	Rotation: 0
Target Area 3			
Type	**Y**	**X**	**Z**
Minimum Coordinates	9,171,000	543,000	200
Maximum Coordinates	9,175,000	552,000	800
User Block Size	100	100	10
Min. Block Size	25	25	5
Rotation	Bearing: 0	Dip: 0	Rotation: 0

Table 14.1.3.1_2 Trairão Iron Ore Project Block Models Summary			
Attribute Name	**Type**	**Decimals**	**Description**
lito	Integer	-	0_Air; 1_Surficial Deposit; 2_Saprolite; 3_Saprock
density	Real	3	Density=2.7
limite_area	Integer	-	Limit of area
fe	Real	3	Fe (%) Grade
sio2	Real	3	SiO_2 (%) Grade
al2o3	Real	3	Al_2O_3 (%) Grade
mn	Real	3	Mn (%) Grade
p	Real	3	P (%) Grade
loi	Real	3	LOI (%) Grade
passo_fe	Integer	-	Estimation Step of Fe of KO
passo_sio2	Integer	-	Estimation Step of SiO_2 for OK
passo_al2o3	Integer	-	Estimation Step of Al_2O_3 for OK
passo_mn	Integer	-	Estimation Step of Mn for OK
passo_p	Integer	-	Estimation Step of P for OK
passo_loi	Integer	-	Estimation Step of LOI for OK
passo_iqd	Integer	-	Estimation Step for IDW
estimation_method	Character	-	Method of Estimation.

Visual and Volumetric Block Model Validation

The visual and volumetric comparison between the geological wireframes and the block models shows a good fit for Saprolite and Saprock lithologies. Due to less thickness of Surficial Deposit, it show a less fit between wireframes and blocks, but the fit was considered satisfactory. Figures 14.1.3.1_2 to 14.1.3.1_5 show the visual comparison between wireframes and blocks in vertical sections.

Figure 14.1.3.1_2
Trairão Iron Ore Project
Target Area 1 - Comparison between geological wireframe and block model

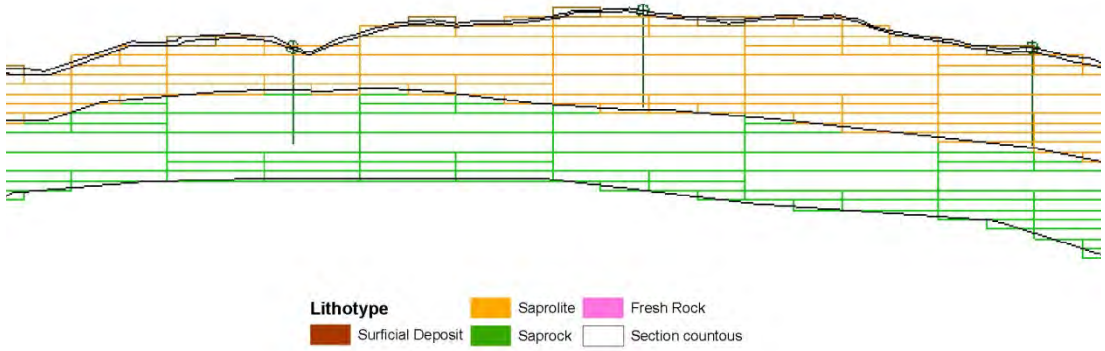


Figure 14.1.3.1_3
Trairão Iron Ore Project
Target Area 2 - Comparison between geological wireframe and block model

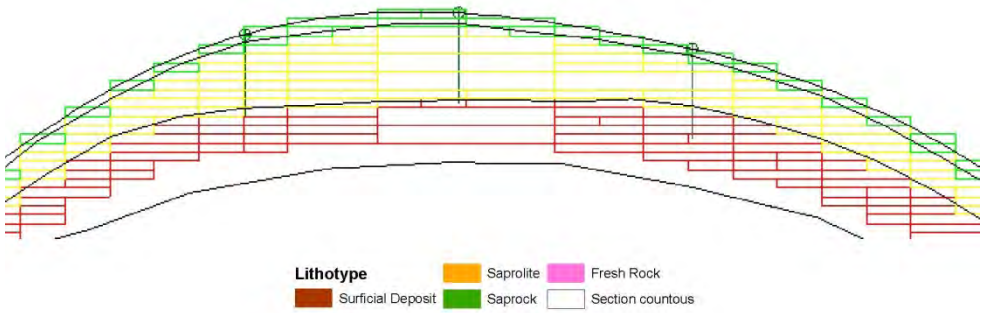


Figure 14.1.3.1_4
Trairão Iron Ore Project
Target Area 2 Extension - Comparison between geological wireframe and block model

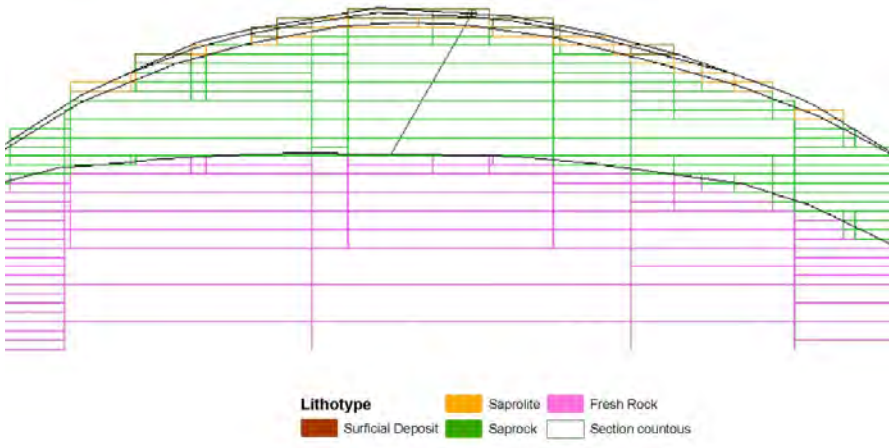
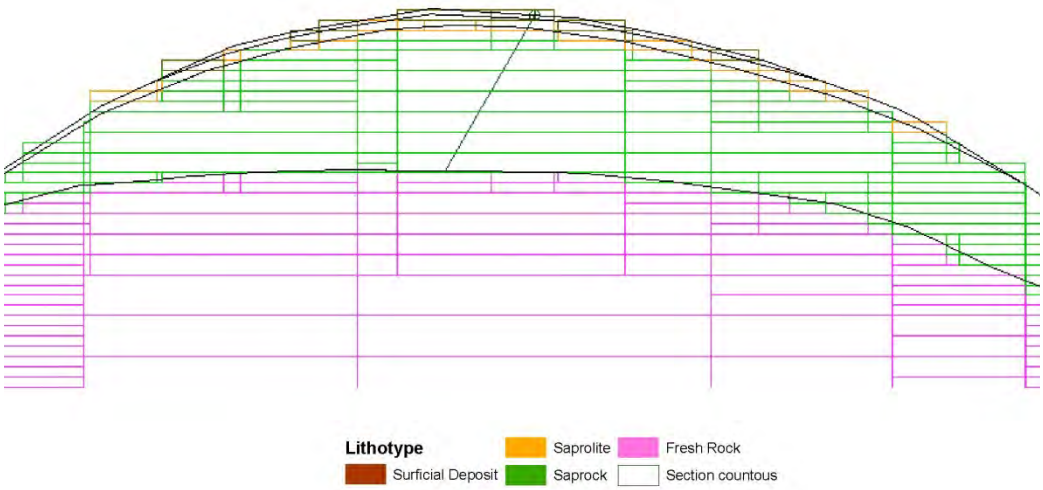


Figure 14.1.3.1_5
Trairão Iron Ore Project
Target Area 3 - Comparison between geological wireframe and block model



14.1.3.2 Statistics Analysis

Descriptive and distribution statistics have been compiled based upon the 1m composite grade data for the mineralized area. The statistical examinations and the grade characteristics of the mineralized intervals of each target area were organized in the Tables 14.1.3.2_1 to 14.1.3.2_4.

The basic statistics also assisted in determining if a high grade cap applied. Appendix B presents a complete statistical analysis.

Table 14.1.3.2_1 Trairão Iron Ore Project Target Area 1 - Basic Statistical Analysis Summary								
Lithology	Variable	Mean	Variance	Standard Deviation	VC	N° Samples	Inf. Limit	Sup. Limit
Surficial Deposit	Fe(%)	50.41	22.66	4.76	9%	57	38.10	60.80
	SiO_2(%)	7.72	6.68	2.58	33%	57	3.08	14.70
	Al(%)	10.67	7.92	2.81	26%	57	4.05	16.90
	Mn(%) CAP	0.050	0.001	0.022	45%	56	0.010	0.120
	P(%) CAP	0.075	0.001	0.025	34%	56	0.029	0.191
	LOI(%)	8.708	4.977	2.231	26%	57	3.610	14.230
Saprolite	Fe(%)	40.50	104.94	10.24	25%	615	1.96	60.40
	SiO_2(%) CAP	20.12	160.63	12.67	63%	614	2.90	72.20
	Al(%)	12.49	25.63	5.06	41%	615	0.47	30.50
	Mn(%) CAP	0.103	0.035	0.187	182%	610	0.004	1.510
	P(%) CAP	0.055	0.001	0.035	64%	612	0.003	0.239
	LOI(%)	8.400	3.539	1.881	22%	615	-	13.470
Saprock	Fe(%)	30.80	86.83	9.32	30%	371	9.77	59.80
	SiO_2(%)	40.31	185.04	13.60	34%	371	3.98	66.40
	Al(%)	8.94	21.06	4.59	51%	371	1.55	24.20
	Mn(%) CAP	0.121	0.017	0.132	109%	359	0.004	0.690
	P(%) CAP	0.041	0.001	0.031	76%	369	0.003	0.175
	LOI(%)	5.806	3.767	1.941	33%	371	2.150	11.430

Table 14.1.3.2_2 Trairão Iron Ore Project Target Area 2 - Basic Statistical Analysis Summary								
Lithology	Variable	Mean	Variance	Standard Deviation	VC	N° Samples	Inf. Limit	Sup. Limit
Surficial Deposit	Fe(%)	47.89	43.39	6.59	14%	134	21.60	58.90
	SiO_2(%)	10.86	52.53	7.25	67%	134	3.00	50.20
	Al(%)	11.24	9.04	3.01	27%	134	5.97	18.50
	Mn(%) CAP	0.048	0.001	0.026	54%	134	0.004	0.200
	P(%) CAP	0.059	0.001	0.028	47%	134	0.015	0.186
	LOI(%)	8.589	2.547	1.596	19%	134	5.420	13.070
Saprolite	Fe(%)	37.41	116.71	10.80	29%	1 174	6.39	56.40
	SiO_2(%) CAP	28.15	247.51	15.73	56%	1 174	1.68	71.90
	Al(%)	10.59	19.36	4.40	42%	1 174	1.65	27.90
	Mn(%) CAP	0.114	0.042	0.204	179%	1 174	0.004	3.190
	P(%) CAP	0.041	0.001	0.035	84%	1 174	0.003	0.368
	LOI(%)	6.946	4.198	2.049	29%	1 174	0.910	12.720
Saprock	Fe(%)	33.80	82.95	9.32	27%	183	4.46	56.80
	SiO_2(%)	39.03	190.56	9.32	35%	183	9.35	72.30
	Al(%)	6.76	8.20	9.32	42%	183	2.32	16.30
	Mn(%) CAP	0.177	0.048	9.318	124%	183	0.004	1.540
	P(%) CAP	0.032	0.001	9.318	92%	183	0.007	0.309
	LOI(%)	5.204	3.429	9.318	36%	183	1.730	10.460

Table 14.1.3.2_3 Trairão Iron Ore Project Target Area 2 Extension - Basic Statistical Analysis Summary								
Lithology	Variable	Mean	Variance	Standard Deviation	VC	N° Samples	Inf. Limit	Sup. Limit
Surficial Deposit	Fe(%) CAP	48.80	83.56	9.14	19%	99	22.50	56.30
	SiO_2(%)	8.93	137.65	11.73	85%	101	4.46	39.40
	Al(%)	10.83	10.77	3.28	30%	103	5.94	19.00
	Mn(%)	0.020	0.057	0.239	400%	103	0.004	0.105
	P(%)	0.038	0.000	0.021	49%	101	0.008	0.080
	LOI(%) CAP	7.340	2.741	1.656	23%	100	4.166	10.935
Saprolite	Fe(%) CAP	39.90	223.07	14.94	43%	305	10.30	52.90
	SiO_2(%) CAP	25.40	387.65	19.69	63%	356	5.82	79.50
	Al(%)	10.50	33.64	5.80	48%	355	4.04	23.90
	Mn(%)	0.010	0.001	0.039	164%	356	0.004	0.080
	P(%)	0.017	0.001	0.023	83%	353	0.003	0.070
	LOI(%)	5.315	4.056	2.014	37%	364	1.250	9.380
Saprock	Fe(%) CAP	25.40	90.27	9.50	34%	1 538	13.80	50.00
	SiO_2(%) CAP	52.40	210.10	14.49	30%	1 529	10.30	63.50
	Al(%)	6.78	13.71	3.70	47%	1 568	1.92	14.10
	Mn(%)	0.010	0.011	0.103	223%	1 570	0.004	0.190
	P(%)	0.017	0.000	0.016	75%	1 555	0.003	0.050
	LOI(%)	3.420	2.303	1.518	39%	1 566	0.990	6.890

Table 14.1.3.2_4 Trairão Iron Ore Project Target Area 3 - Basic Statistical Analysis Summary								
Litholog y	Variable	Mean	Variance	Standard Deviation	VC	N° Samples	Inf. Limit	Sup. Limit
Surficial Deposit	Fe(%) CAP	45.10	62.03	7.88	17%	407	20.70	62.50
	SiO_2(%) CAP	13.02	41.82	6.47	50%	402	2.29	39.30
	Al2O3(%) CAP	12.63	14.80	3.85	30%	402	2.98	22.00
	Mn(%) CAP	0.044	0.001	0.032	73%	403	0.004	0.100
	P(%) CAP	0.054	0.000	0.022	40%	399	0.005	0.110
	LOI(%)	8.24	5.55	2.36	29%	424	1.58	16.79
Saprolite	Fe(%) CAP	26.27	173.20	13.16	50%	1,633	6.01	51.00
	SiO_2(%)	38.35	249.53	15.80	41%	1,813	2.56	74.20
	Al_2O_3(%)	15.20	87.29	9.34	61%	1,812	1.38	34.60
	Mn(%)	0.050	0.001	0.039	78%	1,251	0.004	0.140
	P(%) CAP	0.030	0.001	0.025	84%	1,661	0.003	0.130
	LOI(%) CAP	6.66	7.63	2.76	41%	1,811	0.91	13.96
Saprock	Fe(%) CAP	28.77	67.79	8.23	29%	1,971	8.54	50.50
	SiO_2(%)	43.47	176.04	13.27	31%	2,074	5.51	98.20
	Al_2O_3(%) CAP	9.10	19.15	4.38	48%	2,023	0.05	23.80
	Mn(%) CAP	0.081	0.007	0.084	104%	1,935	0.004	0.440
	P(%) CAP	0.026	0.001	0.024	92%	2,024	0.003	0.120
	LOI(%)	4.96	4.86	2.21	44%	2,070	0.68	12.26

14.1.3.3 Variography

Variography is used to describe the spatial variability or correlation of an attribute recognized as a regionalized variable. The spatial variability is traditionally measured by means of a variogram, which is generated by determining the averaged squared difference of data points at a nominated distance or lag (h). The averaged squared difference (Variogram or $\gamma(h)$) for each lag distance is plotted on bivariate plot where the X-axis is the lag distance and Y-axis represent the average squared differences $\gamma(h)$ for the nominated lag distance.

In this document, the term “variogram” is used as a generic word to designate the function characterizing the variability of variables versus the distance between two samples. The traditional measures have been applied for the estimation studies completed for mineralized intervals of Trairão Iron Ore Project.

Gemcom Surpac Software has been employed to generate and model the Variography. The rotation is reported as input for grade estimation, with Y (rotation around Y axis), X (rotation around X) and Z (rotation around Z axis) also being referred to as the major, semi major and minor axes.

Variography Discussion

The down hole experimental variograms were calculated to establish the structures for composite grades.

On Target Area 1, variogram maps were not constructed because of a lack of data. Then omni-directional horizontal variograms were calculated for the purpose of determination of major axis variability. A horizontal isotropic variogram was considered, because of the small number of samples and because no robust single direction variogram was found. The variography results are summarized in the Table 14.1.3.3_1.

On Target Area 2, Target Area 2 Extension and Target Area 3, variogram maps were constructed. The variography results are summarized in the Table 14.1.3.3_2 to 14.1.3.3_4.

It was not possible to calculate variograms for Surficial Deposit in Target Area 1 and Target Area 2 Extension due to low quantity of samples available.

Table 14.1.3.3_1
Trairão Iron Ore Project
Target Area 1 Variogram Models Summary

Lithology	Variable	C0	C1	A1	C2	A2	C3	A3	RSM	RM
Saprolite	Fe	8.60	2.90	120	65.50	300	-	-	1	10
	SiO_2	13.00	50.00	120	97.00	300	-	-	1	10
	Al_2O_3	2.40	5.00	108	18.30	300	-	-	1	10
	Mn	0.01	0.03	144	0.01	300	-	-	1	10
	P	0.00	0.00	300	-	0	-	-	1	10
	LOI	0.29	3.50	450	-	0	-	-	1	10
Saprock	Fe	6.80	51.00	168.75	29.00	300	-	-	1	10
	SiO_2	6.80	49.00	91.45	130.00	300	-	-	1	10
	Al_2O_3	1.67	19.42	300	-	0	-	-	1	10
	Mn	0.01	0.01	300	-	0	-	-	1	10
	P	0.00	0.00	75	0.00	300	0.00	500.00	1	10
	LOI	0.29	3.50	450	-	0	-	-	1	10

Table 14.1.3.3_2 Trairão Iron Ore Project Target Area 2 Variogram Models Summary										
Lithology	Variable	C0	C1	A1	C2	A2	DIP	BEARING	RSM	RM
Surficial Deposit	Fe	1.2	25.4	500	-	-	0	50	1.2	100
	SiO_2	1.3	18.3	500	-	-	0	50	1.2	100
	Al_2O_3	0.45	8.5	500	-	-	0	50	1.2	100
	Mn	0.00005	0.0004	500	-	-	0	50	1.5	100
	P	0.00005	0.0006	420	-	-	0	50	1.2	100
	LOI	0.27	2.25	420	-	-	0	50	1.2	100
Saprolite	Fe	8	27	160	73	500	0	70	2.2	10
	SiO_2	13.6	47.6	160	172	500	0	70	2.2	10
	Al_2O_3	2	3.75	80	10	320	0	70	2.7	20
	Mn	0.005	0.006	160	0.004	500	0	70	2	15
	P	0.000131	0.000327	160	0.000646	500	0	70	1.2	10
	LOI	0.34	0.74	80	2.95	320	0	70	2.7	15
Saprock	Fe	10	20	250	50	500	0	70	1.3	23
	SiO_2	27	62	250	90	500	0	70	1.3	23
	Al_2O_3	0.75	4.5	250	3	500	0	70	1.3	23
	Mn	0.008	0.0131	250	0.0065	500	0	70	1.3	23
	P	0.00009	0.00007	250	0.0003	500	0	70	1.3	31
	LOI	0.3	1	250	1.25	500	0	70	1.3	31

Table 14.1.3.3_3 Trairão Iron Ore Project Target Area 2 Extension Variogram Models Summary										
Lithology	Variable	C0	C1	A1	C2	A2	DIP	BEARING	RSM	RM
Saprolite	Fe	8.00	19.00	200	42.00	400	0	130	2	22
	SiO2	32.00	100.00	200	160.00	400	0	130	2	22
	Al2O3	1.00	9.00	200	11.00	400	0	130	2	21
	Mn	0.00	0.00	200	0.0036	400	0	130	2	21
	P	0.00002	0.00007	300	0.0001	600	0	130	2	23
	LOI	0.28	0.60	200	2.43	404	0	130	2	23
Saprock	Fe	10.00	44.00	402	5.50	799	0	130	2	20
	SiO2	18.50	132.00	200	20.50	400	0	130	2	21
	Al2O3	1.55	1.00	200	2.65	400	0	130	2	21
	Mn	0.00052	0.00024	200	0.00056	400	0	130	2	21
	P	0.00003	0.00004	200	0.00004	400	0	130	2	21
	LOI	0.30	0.20	200	0.56	400	0	130	2	21

Table 14.1.3.3_4 Trairão Iron Ore Project Target Area 3 Variogram Models Summary										
Lithology	Variable	C0	C1	A1	C2	A2	DIP	BEARING	RSM	RM
Surficial Deposit	Fe	3.00	1.47	250	49.00	500	0	90	1	11
	SiO2	4.50	26.32	250	10.20	500	0	90	1	11
	Al2O3	0.75	0.01	300	14.89	500	0	90	1	11
	Mn	0.00002	0.00021	250	0.0003	500	0	90	1	11
	P	0.00002	0.00019	250	0.0002	500	0	90	1	10
	LOI	0.18	1.44	250	4.32	500	0	90	2	11
Saprolite	Fe	4.50	104.58	170	63.29	500	0	90	1	2
	SiO2	14.00	160.49	170	184.91	500	0	90	1	3
	Al2O3	2.80	15.95	170	90.49	500	0	90	2	3
	Mn	0.0002	0.0007	170	0.0007	500	0	90	1	7
	P	0.0001	0.0002	170	0.0005	500	0	90	1	6
	LOI	0.20	1.44	170	6.66	500	0	90	1	4
Saprock	Fe	5.00	35.12	170	33.14	500	0	90	1	4
	SiO2	7.20	33.28	170	137.03	500	0	90	1	6
	Al2O3	2.40	0.69	180	15.24	500	0	90	1	6
	Mn	0.0025	0.0028	170	0.0018	500	0	90	1	8
	P	0.0001	0.0002	170	0.0003	500	0	90	1	8
	LOI	0.40	1.36	164.702	3.09	500	0	90	1	4

14.1.3.4 Grade Estimation

For resource estimation of the Areas, the variables Fe%, SiO_2%, Al_2O_3%, Mn%, P% and LOI% for Surficial Deposit, Saprolite and Saprock lithologies were evaluated. The method used for estimating was Ordinary Kriging (OK) and Inverse Distance Weighting (IDW).

Ordinary Kriging (OK) is one of the most common geostatistical methods for grade estimation of the block. In this interpolation technique, the contributing composited samples are identified through a search applied from the center of each block. The weights are determined to minimize the variance error, considering the spatial localization of the selected composites and the modeled variogram. The grade of the weighted composited sample is combined to generate the estimation of the block grade and the variance.

Inverse Distance Weighting (IDW) is a conventional method for grade estimation of the block. In this interpolation technique the weights are determined by the inverse of the anisotropic distance (square distance for this project), considering the spatial localization of the selected composites.

Inverse Distance Weighting (IDW) was used for estimate the Surficial Deposit lithology in the Area 1 and Area 2 Extension, due to these not having variograms. The other areas and lithologies were estimated by Ordinary Kriging (OK).

Tables 14.1.3.4_1 to 14.1.3.4_6 present the estimation strategy considered for grade estimations. The total variography is presented in Appendix C.

Table 14.1.3.4_1

Trairão Iron Ore Project

Target Area 1 - Ordinary Kriging Strategy

Lithology	Step	Maximum search distance (m)	Search	Minimum sample numbers	Maximum sample numbers
Saprolite	1	300	Ellipsoid	8	30
	2	600	Ellipsoid	8	30
	3	1200	Ellipsoid	1	30
Saprock	1	300	Ellipsoid	8	30
	2	600	Ellipsoid	8	30
	3	>600	Ellipsoid	1	30

Table 14.1.3.4_2

Trairão Iron Ore Project

Target Area 1 - Inverse Distance Weighting Strategy

Lithology	Step	Maximum search distance (m)	Anisotrophy: Maj/SMaj/Min	Minimum sample numbers	Maximum sample numbers
Surficial Deposit	1	300	1/1/0.1	3	30
	2	600	1/1/0.1	3	30
	3	>600	1/1/0.1	1	30

Table 14.1.3.4_3

Trairão Iron Ore Project

Target Area 2 - Ordinary Kriging Strategy

Lithology	Step	Maximum search distance (m)	Search	Minimum sample numbers	Maximum sample numbers
Surficial Deposit	1	250	Ellipsoid	8	30
	2	500	Ellipsoid	8	30
	3	1500	Ellipsoid	1	30
Saprolite	1	250	Ellipsoid	8	30
	2	500	Ellipsoid	8	30
	3	2000	Ellipsoid	1	30
Saprock	1	250	Ellipsoid	8	30
	2	500	Ellipsoid	8	30
	3	>500	Ellipsoid	1	30

Table 14.1.3.4_4

Trairão Iron Ore Project

Target Area 2 Extension - Ordinary Kriging Strategy

Lithology	Step	Maximum search distance (m)	Search	Minimum sample numbers	Maximum sample numbers
Saprolite	1	270	Ellipsoid	8	30
	2	600	Ellipsoid	8	30
	3	1500	Ellipsoid	1	30
Saprock	1	270	Ellipsoid	8	30
	2	600	Ellipsoid	8	30
	3	>600	Ellipsoid	1	30

Table 14.1.3.4_5

Trairão Iron Ore Project

Target Area 2 Extension - Inverse Distance Weighting Strategy

Lithology	Step	Maximum search distance (m)	Anisotrophy: Maj/SMaj/Min	Minimum sample numbers	Maximum sample numbers
Surficial Deposit	1	>1,500	1/2/22	1	30

Table 14.1.3.4_6

Trairão Iron Ore Project

Target Area 3 - Ordinary Kriging Strategy

Lithology	Step	Maximum search distance (m)	Search	Minimum sample numbers	Maximum sample numbers
Surficial Deposit	1	300	Ellipsoid	8	30
	2	750	Ellipsoid	8	30
	3	2,000	Ellipsoid	8	30
	4	>2,000	Ellipsoid	1	30
Saprolite	1	300	Ellipsoid	8	30
	2	750	Ellipsoid	8	30
	3	2,000	Ellipsoid	8	30
	4	>2,000	Ellipsoid	1	30
Saprock	1	300	Ellipsoid	8	30
	2	750	Ellipsoid	8	30
	3	2,000	Ellipsoid	8	30
	4	>2,000	Ellipsoid	1	30

Resource Validation - NN-Check

Validation of estimated grades was carried out with a comparative Nearest Neighbor estimation (NN). This validation consists of a comparative statistical analysis of global results for Fe wt% to the mineralized intervals (Figures 14.1.3.4_1 to 14.1.3.4_11).

The comparative analysis of OK or IDW with the Nearest Neighbor results for Fe show different grade distributions. The relative smoothing in the OK and IDW results are compatible with these estimation techniques and are acceptable based on the resource classification and the data density and distribution. The NN_Check is presented in Appendix D.

Figure 14.1.3.4_1

Trairão Iron Ore Project

Target Area 1 - Comparative Statistic Saprolite - Saprock – Grade Estimate – Fe (%)

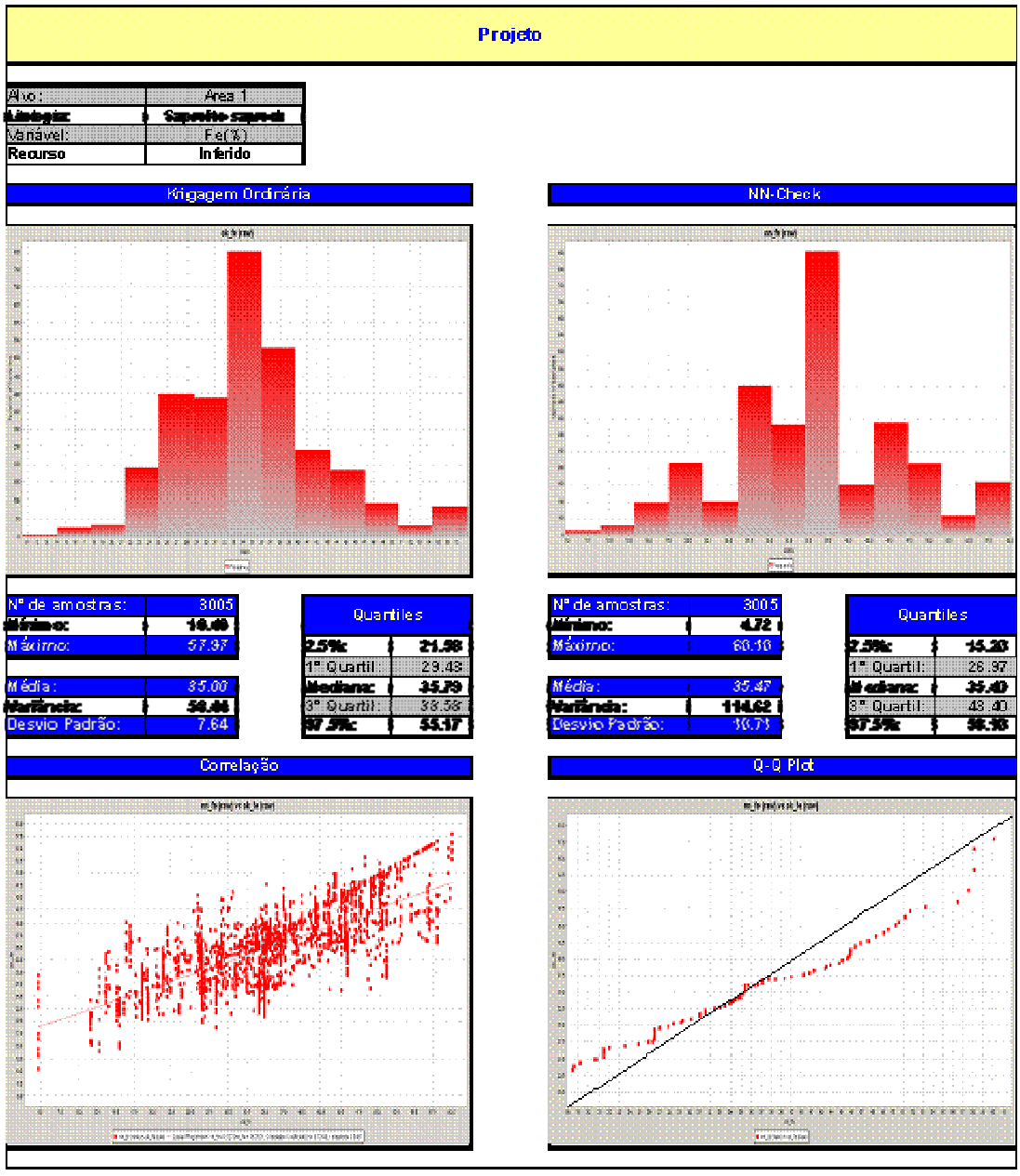


Figure 14.1.3.4_2

Trairão Iron Ore Project

Target Area 1 - Comparative Statistic Surficial Deposit – Grade Estimate – Fe (%)

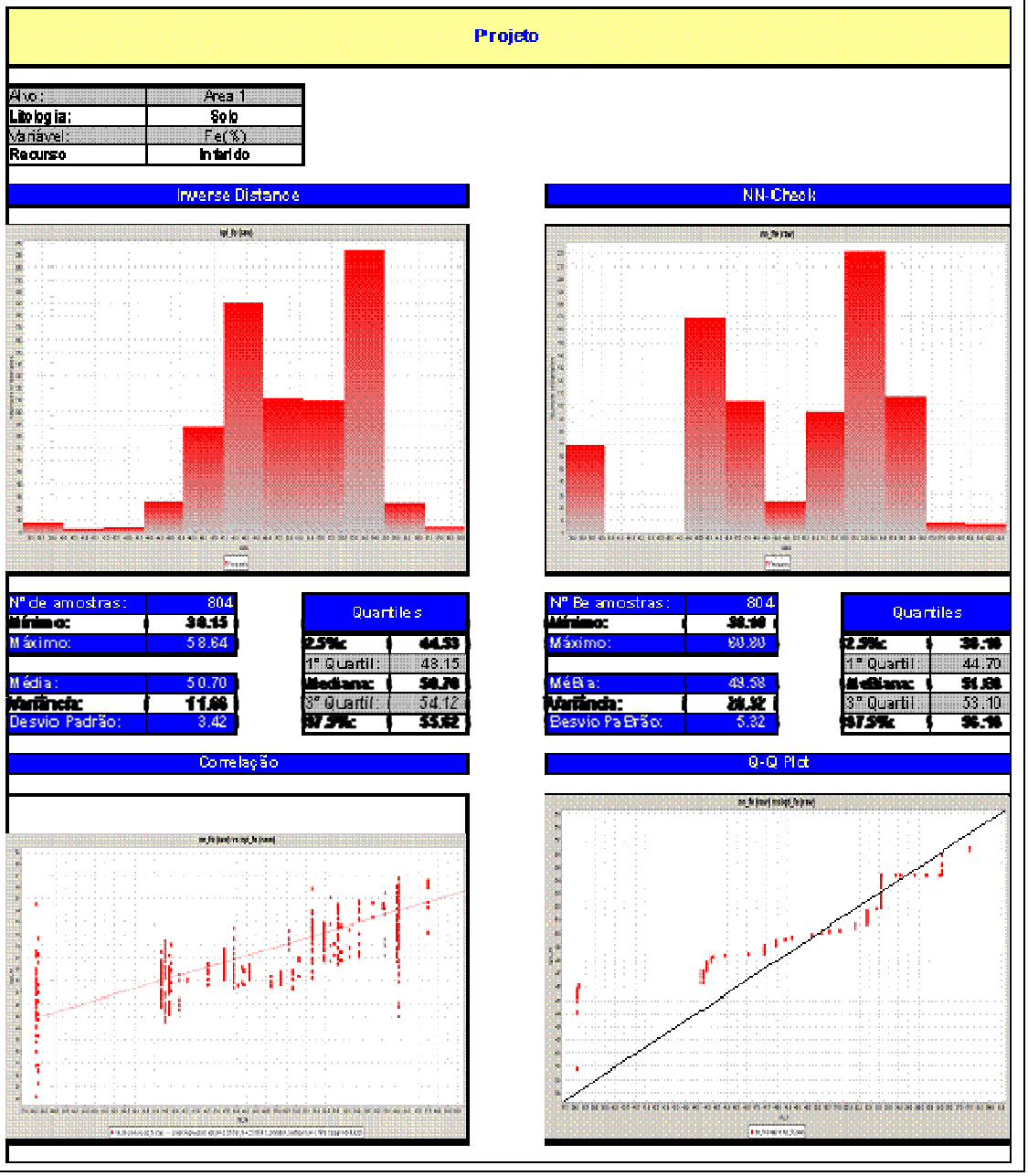


Figure 14.1.3.4_3

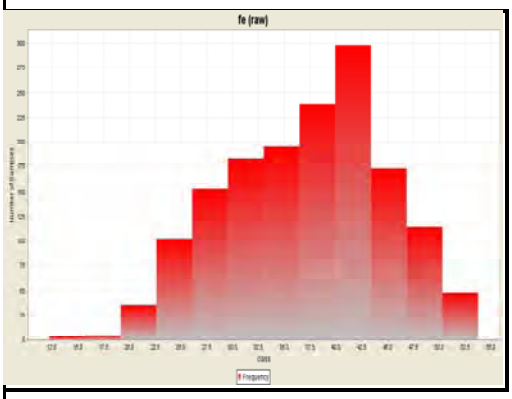
Trairão Iron Ore Project

Target Area 2 - Comparative Statistic Saprolite – Grade Estimate – Fe (%)

Serra do Trairão

Target:	Area 2
Ore:	SAP
Variable:	Fe (%)
Resource:	Inferred

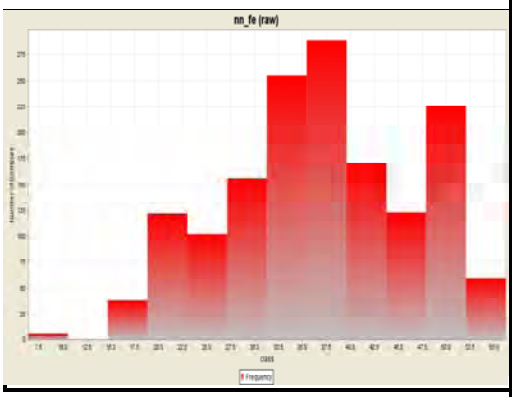
Ordinary Kriging



Number of Sample	1547
Minimum:	4.11
Maximum:	59.62
Mean:	29.39
Variance:	116.78
Standard Deviatio	10.81

Quantiles	
2.5%:	8.19
1° Quartil:	20.93
Median:	29.10
3° Quartil:	38.49
97.5%:	48.35

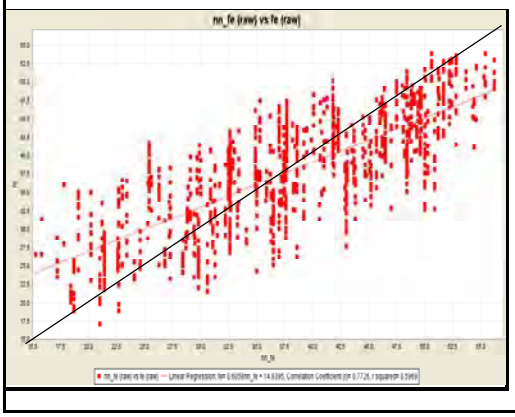
NN-Check



Number of Sample	1547
Minimum:	3.09
Maximum:	65.70
Mean:	29.80
Variance:	213.95
Standard Deviatio	14.63

Quantiles	
2.5%:	6.59
1° Quartil:	16.50
Median:	30.10
3° Quartil:	42.90
97.5%:	54.80

Correlation



Q-Q Plot

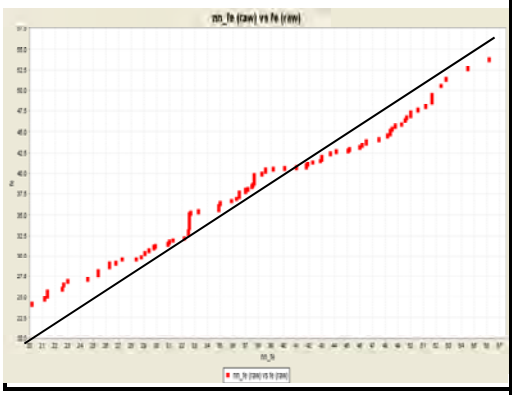


Figure 14.1.3.4_4

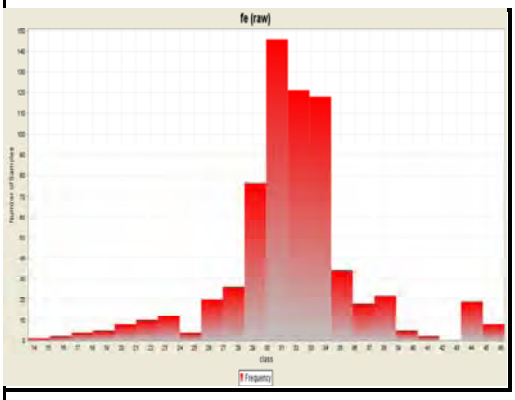
Trairão Iron Ore Project

Target Area 2 - Comparative Statistic Saprock – Grade Estimate – Fe (%)

Serra do Trairão

Target:	Area 2
Ore:	SAR
Variable:	Fe (%)
Resource:	Inferred

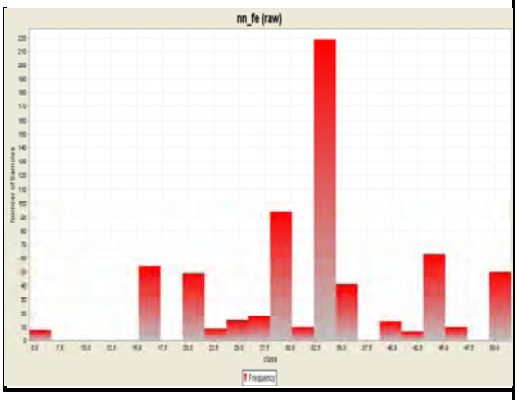
Ordinary Kriging



Number of Sample	661
Minimum:	13.59
Maximum:	46.26
Mean:	31.70
Variance:	21.84
Standard Deviatio	4.67

Quantiles	
2.5%:	20.79
1° Quartil:	29.80
Median:	31.75
3° Quartil:	33.75
97.5%:	38.89

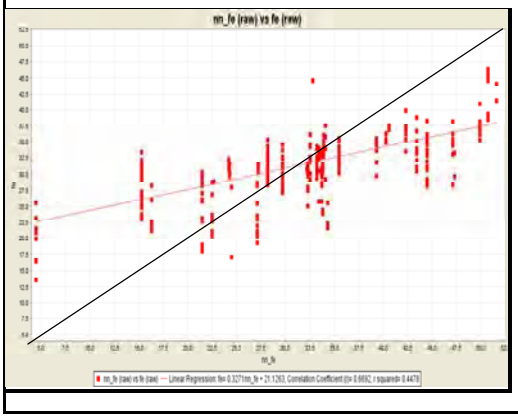
NN-Check



Number of Sample	661
Minimum:	4.46
Maximum:	51.60
Mean:	32.32
Variance:	91.40
Standard Deviatio	9.56

Quantiles	
2.5%:	15.30
1° Quartil:	28.20
Median:	33.40
3° Quartil:	35.50
97.5%:	50.70

Correlation



Q-Q Plot

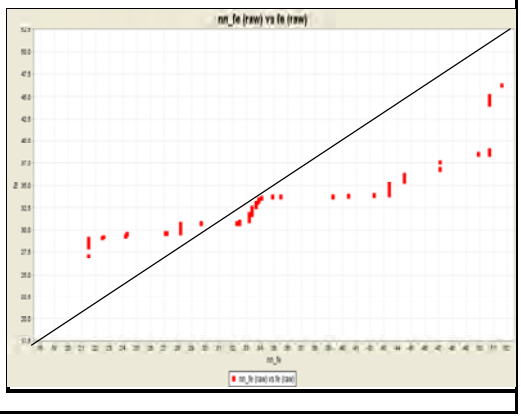


Figure 14.1.3.4_5

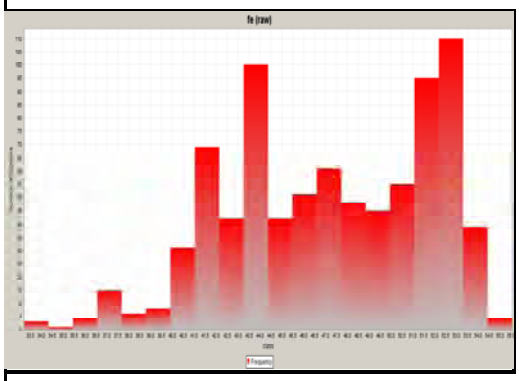
Trairão Iron Ore Project

Target Area 2 - Comparative Statistic Surficial Deposit – Grade Estimate – Fe (%)

Serra do Trairão

Target:	Area 2
Ore:	COB
Variable:	Fe (%)
Resource:	Inferred

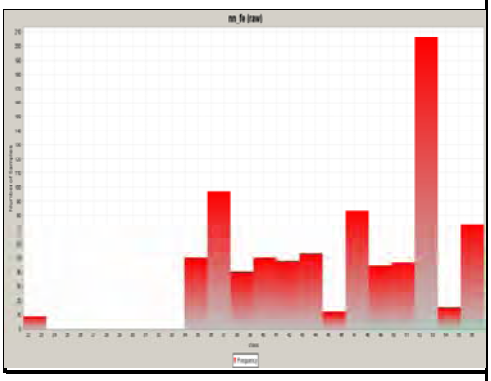
Ordinary Kriging



Number of Samples	829
Minimum:	33.21
Maximum:	55.54
Mean:	47.26
Variance:	21.18
Standard Deviation	4.60

Quantiles	
2.5%:	37.24
1° Quartil:	43.99
Median:	47.42
3° Quartil:	51.63
97.5%:	53.83

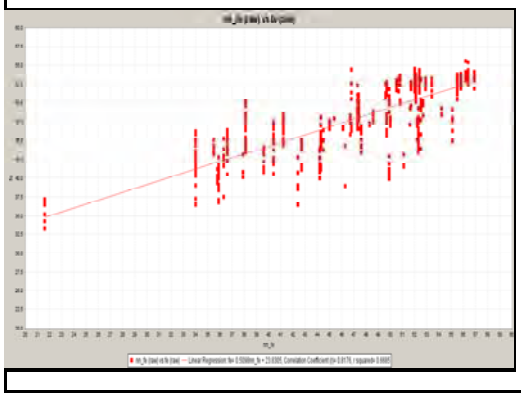
NN-Check



Number of Sample	829
Minimum:	21.60
Maximum:	56.90
Mean:	45.95
Variance:	54.49
Standard Deviatio	7.38

Quantiles	
2.5%:	34.00
1° Quartil:	39.60
Median:	47.40
3° Quartil:	52.30
97.5%:	56.40

Correlation



Q-Q Plot

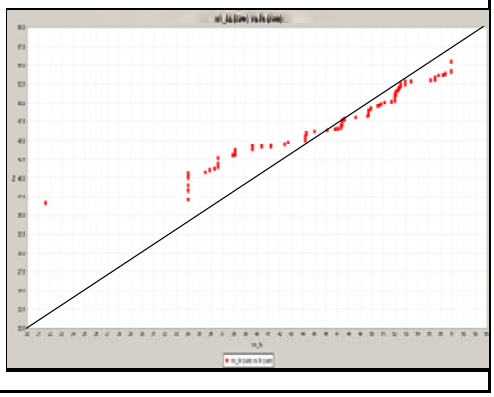


Figure 14.1.3.4_6

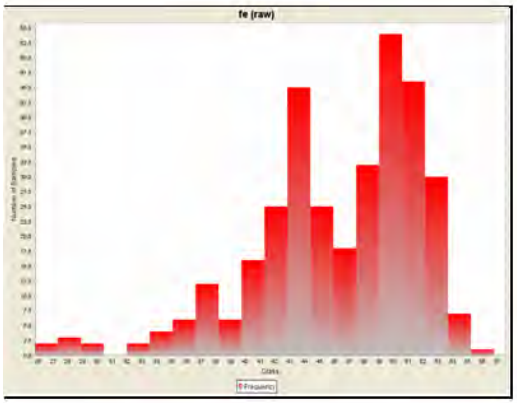
Trairão Iron Ore Project

Target Area 2 Extension - Comparative Statistic Surficial Deposit – Grade Estimate – Fe (%)

Serra do Trairão

Target:	Area 2_Extension
Ore:	COB
Variable:	Fe (%)
Resource:	Inferred

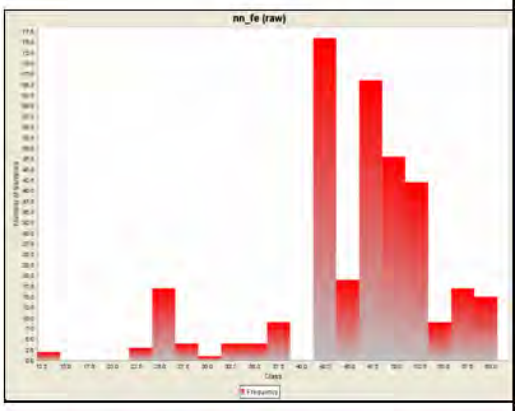
Ordinary Kriging



Number of Samples	336
Minimum:	25.77
Maximum:	55.23
Mean:	46.29
Variance:	30.82
Standard Deviation	5.55

Quantiles	
2.5%:	33.12
1° Quartil:	36.22
Median:	47.62
3° Quartil:	50.58
97.5%:	53.68

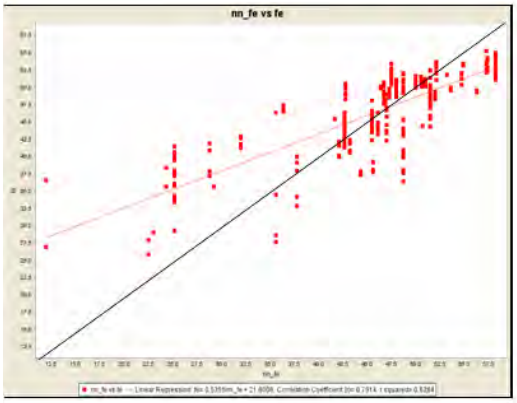
NN-Check



Number of Samples	336
Minimum:	12.00
Maximum:	58.20
Mean:	45.72
Variance:	67.30
Standard Deviation	8.20

Quantiles	
2.5%:	25.20
1° Quartil:	25.20
Median:	47.00
3° Quartil:	50.79
97.5%:	58.20

Correlation



Q-Q Plot

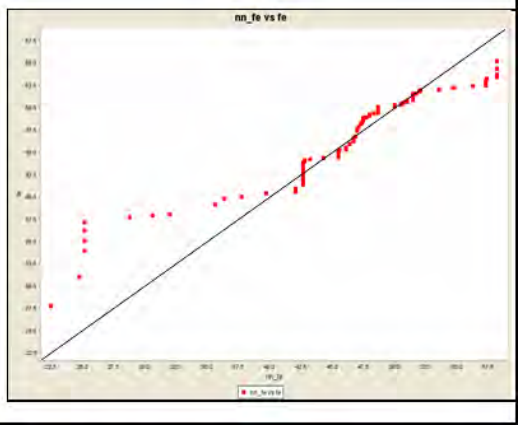


Figure 14.1.3.4_7

Trairão Iron Ore Project

Target Area 2 Extension - Comparative Statistic Saprolite – Grade Estimate – Fe (%)

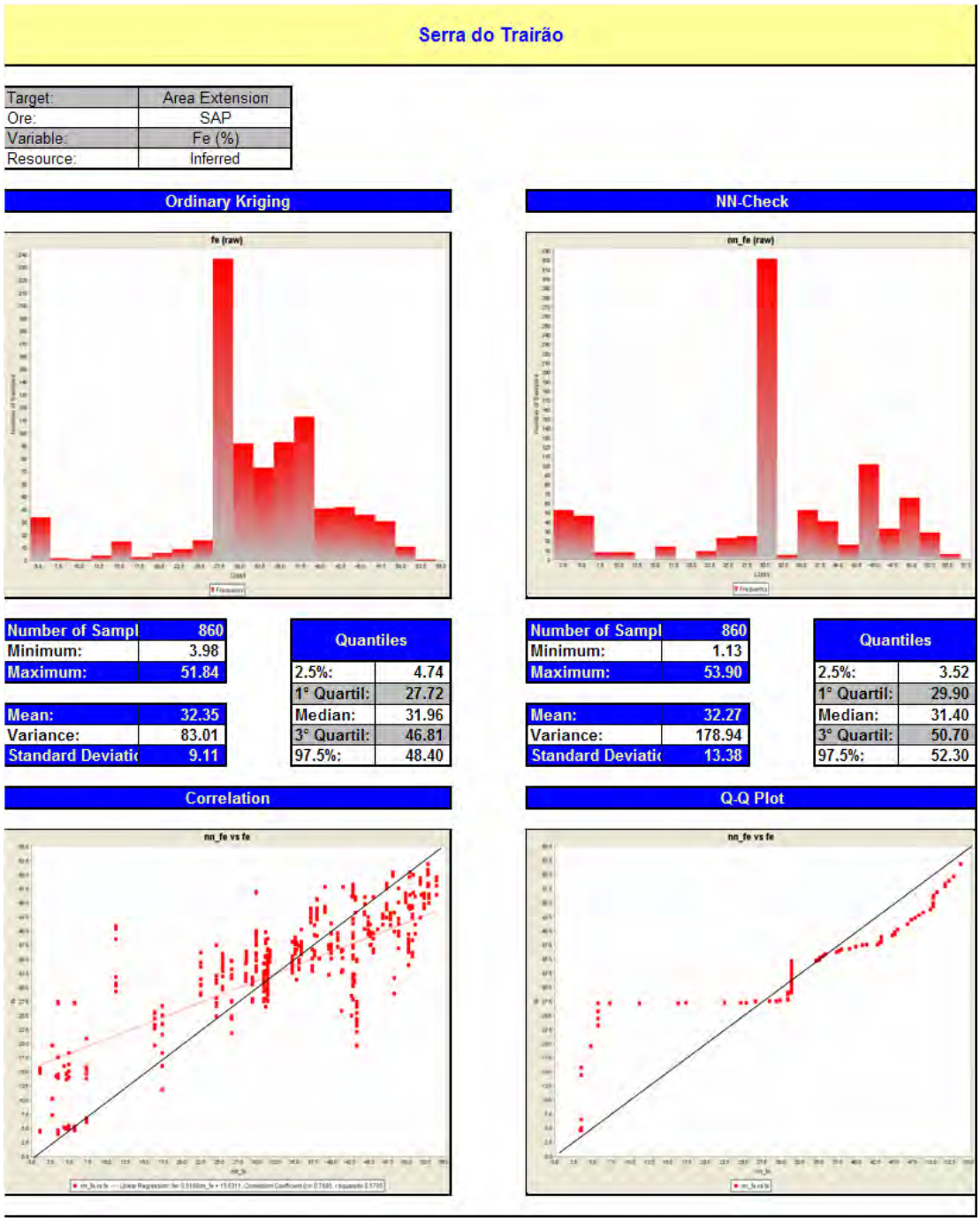


Figure 14.1.3.4_8

Trairão Iron Ore Project

Target Area 2 Extension - Comparative Statistic Saprock – Grade Estimate – Fe (%)

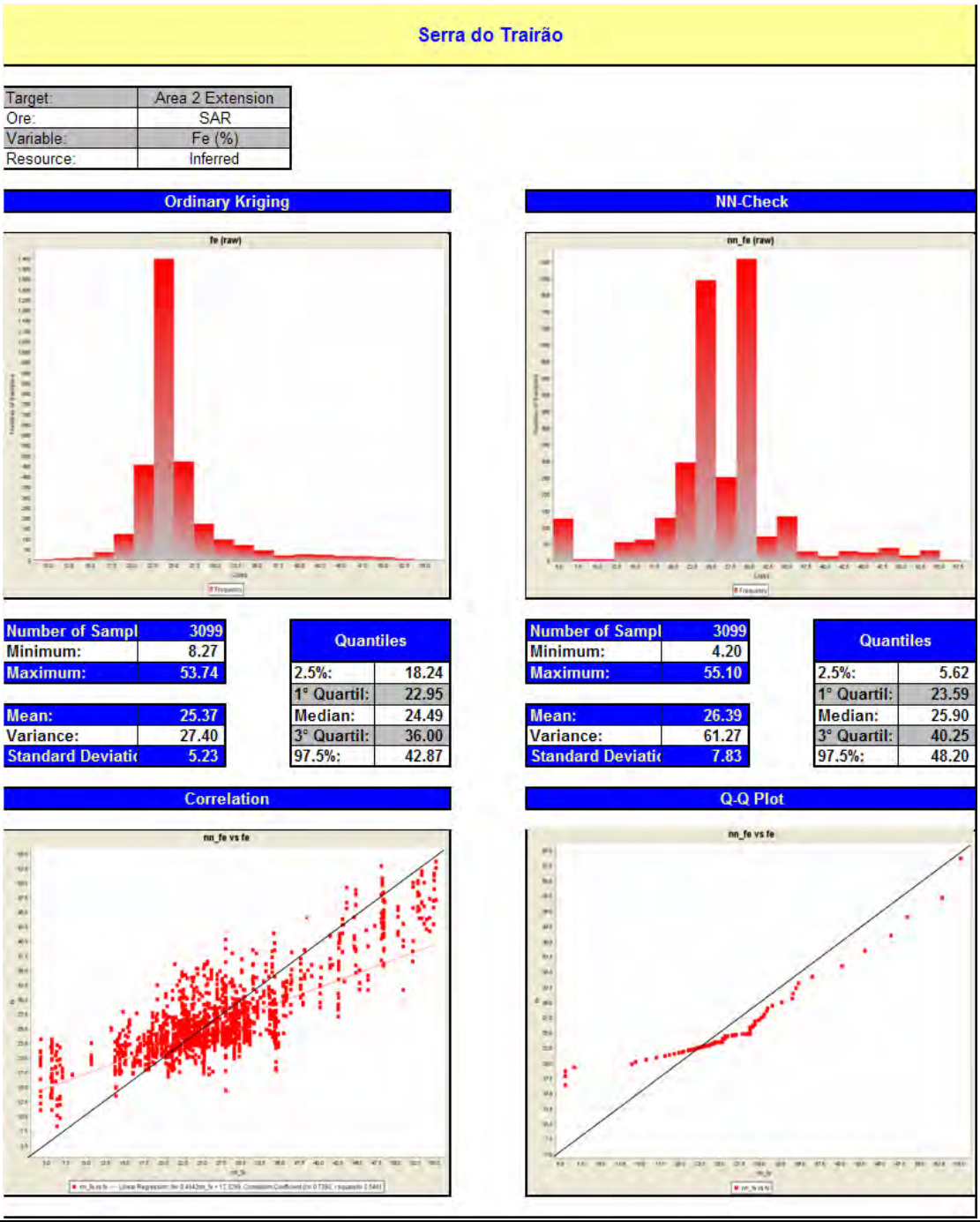


Figure 14.1.3.4_9

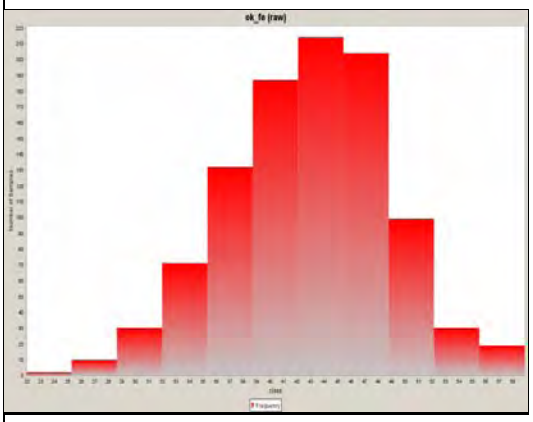
Trairão Iron Ore Project

Target Area 3 - Comparative Statistic Surficial Deposit – Grade Estimate – Fe (%)

Serra do Trairão

Target:	Area 3
Ore:	COB
Variable:	Fe (%)
Resource:	Inferred

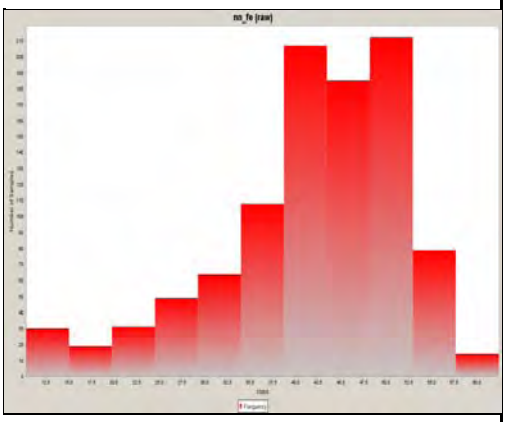
Ordinary Kriging



Number of Samples	998
Minimum:	21.90
Maximum:	58.87
Mean:	42.78
Variance:	36.07
Standard Deviation	6.01

Quantiles	
2.5%:	30.48
1° Quartil:	38.80
Median:	43.12
3° Quartil:	46.95
97.5%:	53.07

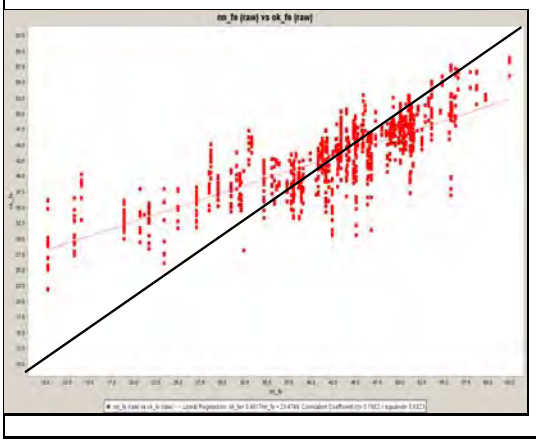
NN-Check



Number of Sampl	998
Minimum:	10.30
Maximum:	62.40
Mean:	41.81
Variance:	106.98
Standard Deviatio	10.34

Quantiles	
2.5%:	14.10
1° Quartil:	37.80
Median:	43.40
3° Quartil:	50.00
97.5%:	56.05

Correlation



Q-Q Plot

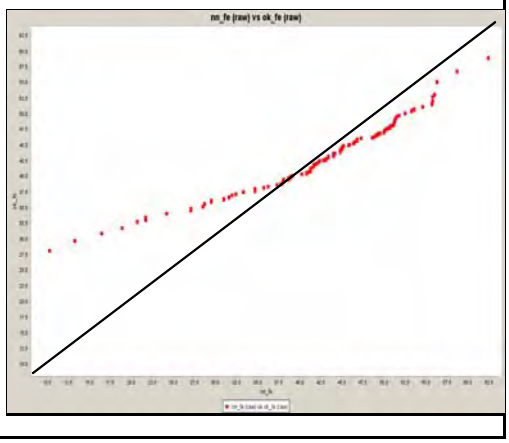


Figure 14.1.3.4_10

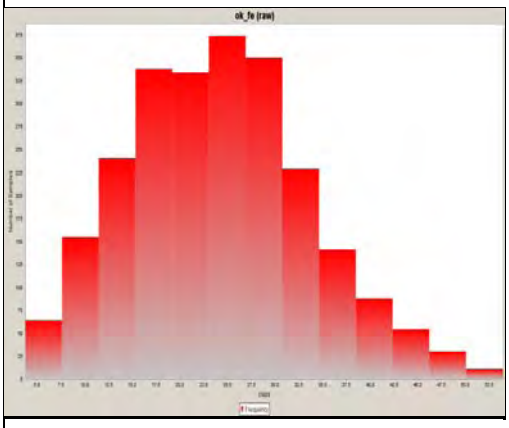
Trairão Iron Ore Project

Target Area 3 - Comparative Statistic Saprolite – Grade Estimate – Fe (%)

Serra do Trairão

Target:	Area 3
Ore:	SAP
Variable:	Fe (%)
Resource:	Inferred

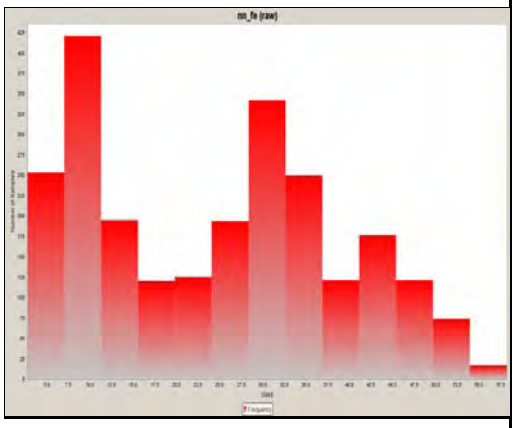
Ordinary Kriging



Number of Sampl	2409
Minimum:	3.75
Maximum:	53.93
Mean:	24.12
Variance:	90.47
Standard Deviatio	9.51

Quantiles	
2.5%:	7.53
1° Quartil:	17.08
Median:	23.88
3° Quartil:	30.25
97.5%:	43.91

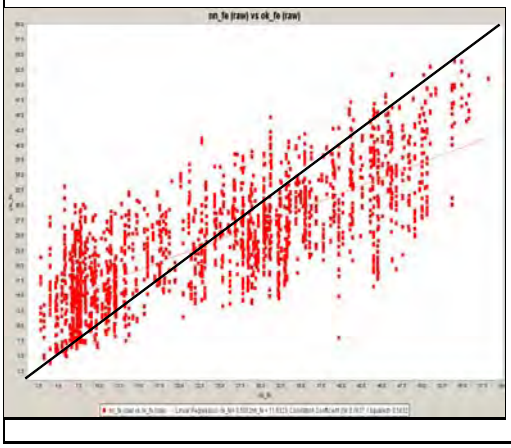
NN-Check



Number of Sampl	2409
Minimum:	2.75
Maximum:	58.20
Mean:	24.58
Variance:	204.33
Standard Deviatio	14.29

Quantiles	
2.5%:	4.72
1° Quartil:	10.30
Median:	26.60
3° Quartil:	35.50
97.5%:	50.00

Correlation



Q-Q Plot

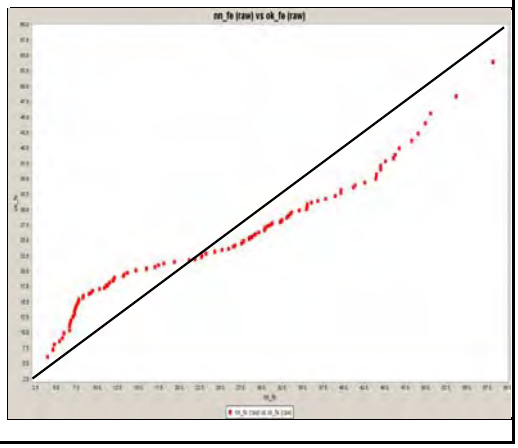


Figure 14.1.3.4_11

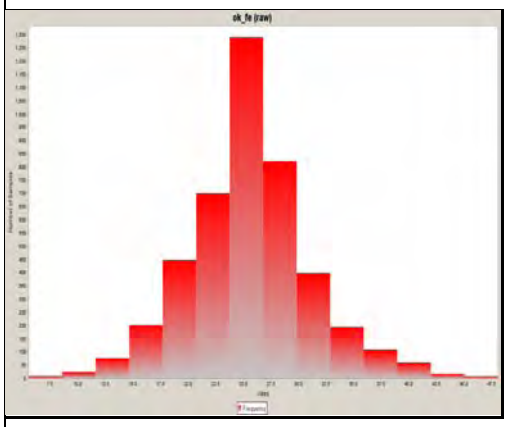
Trairão Iron Ore Project

Target Area 3 - Comparative Statistic Saprock – Grade Estimate – Fe (%)

Serra do Trairão

Target:	Area 3
Ore:	SAR
Variable:	Fe (%)
Resource:	Inferred

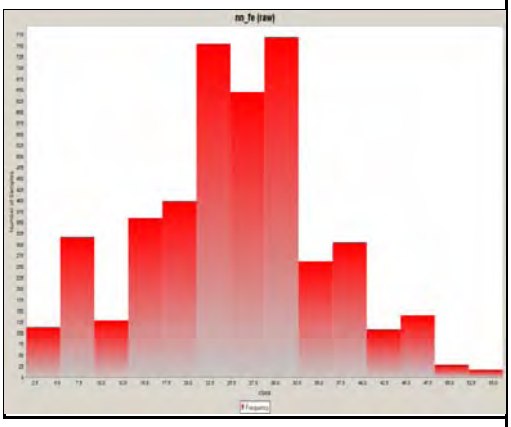
Ordinary Kriging



Number of Sampl	4350
Minimum:	5.56
Maximum:	48.06
Mean:	25.56
Variance:	30.49
Standard Deviatio	5.52

Quantiles	
2.5%:	14.61
1° Quartil:	22.43
Median:	25.44
3° Quartil:	28.45
97.5%:	37.23

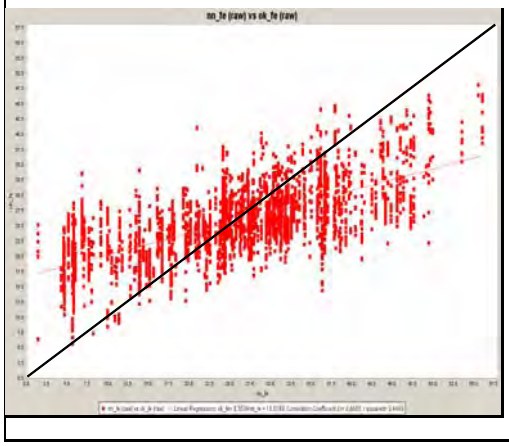
NN-Check



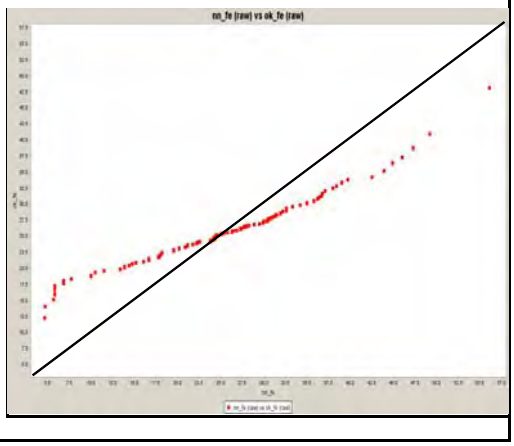
Number of Sampl	4350
Minimum:	1.44
Maximum:	56.10
Mean:	25.31
Variance:	109.13
Standard Deviatio	10.45

Quantiles	
2.5%:	5.21
1° Quartil:	18.20
Median:	25.40
3° Quartil:	28.45
97.5%:	37.23

Correlation



Q-Q Plot



Resource Validation Swath Plot

Local validation by the Swath Plot method shows the existence of some local bias from comparative graphs for estimated grades by OK or IDW and NN-check considering x, y, or z coordinates (Figures 14.1.3.4_12 to 14.1.3.4_23)

Figure 14.1.3.4_12

Trairão Iron Ore Project

Target Area 1 - Swath Plot – East Coordinate – Fe (%)

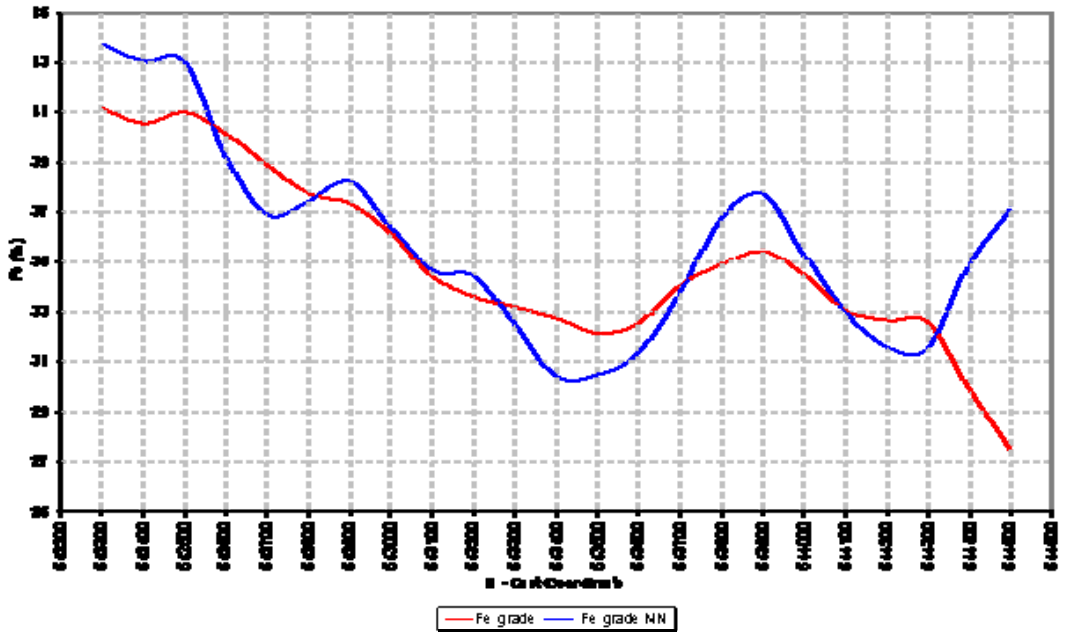


Figure 14.1.3.4_13

Trairão Iron Ore Project

Target Area 1 - Swath Plot – North Coordinate – Fe (%)

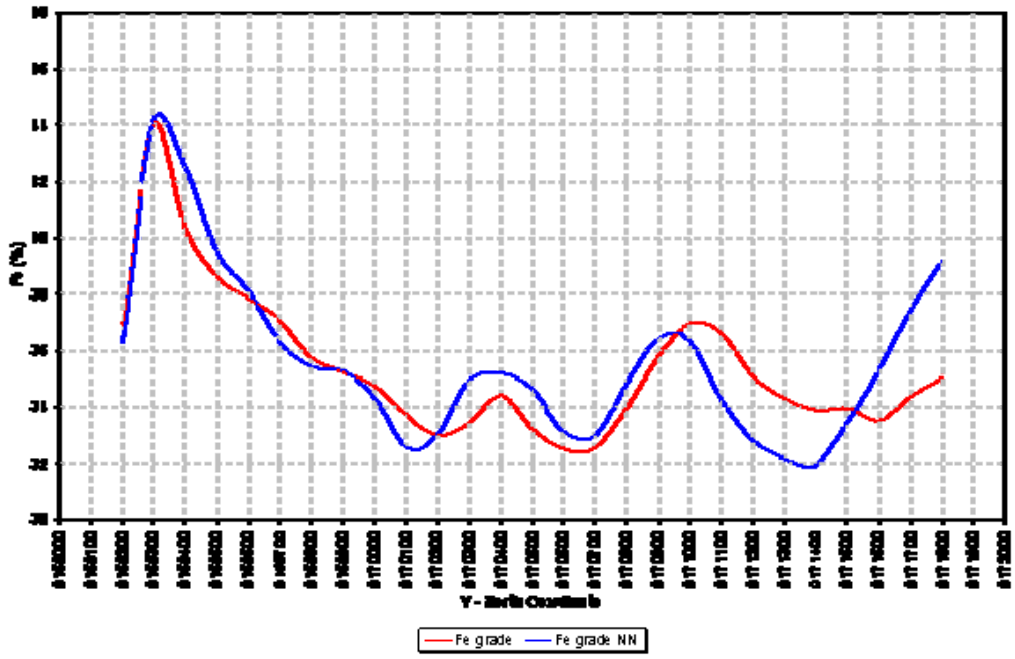


Figure 14.1.3.4_14

Trairão Iron Ore Project

Target Area 1 - Swath Plot – Elevation Coordinate – Fe (%)

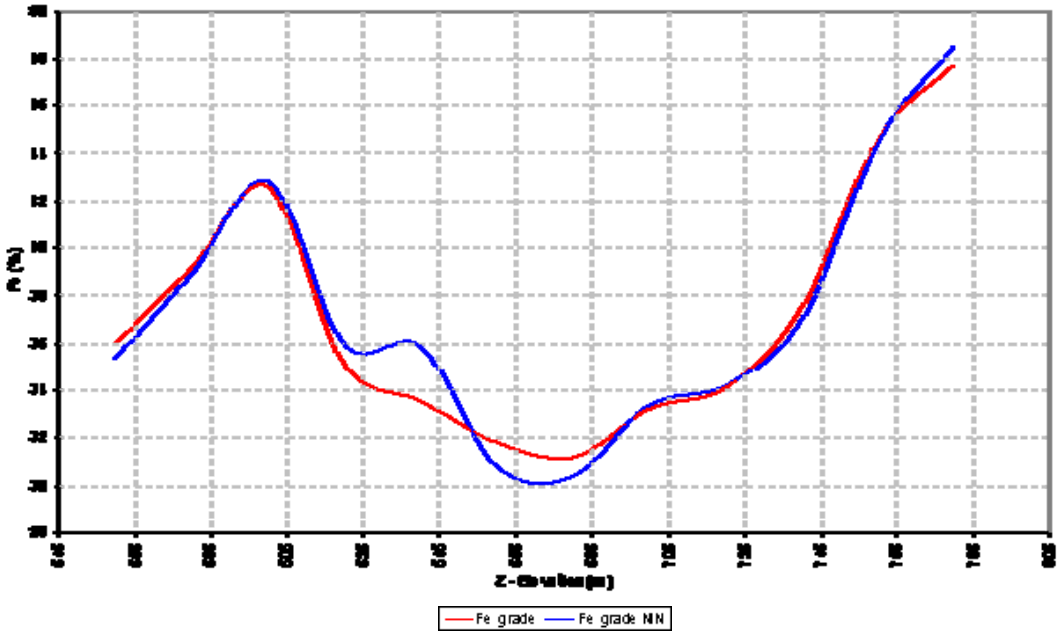


Figure 14.1.3.4_15

Trairão Iron Ore Project

Target Area 2 - Swath Plot – East Coordinate – Fe (%)

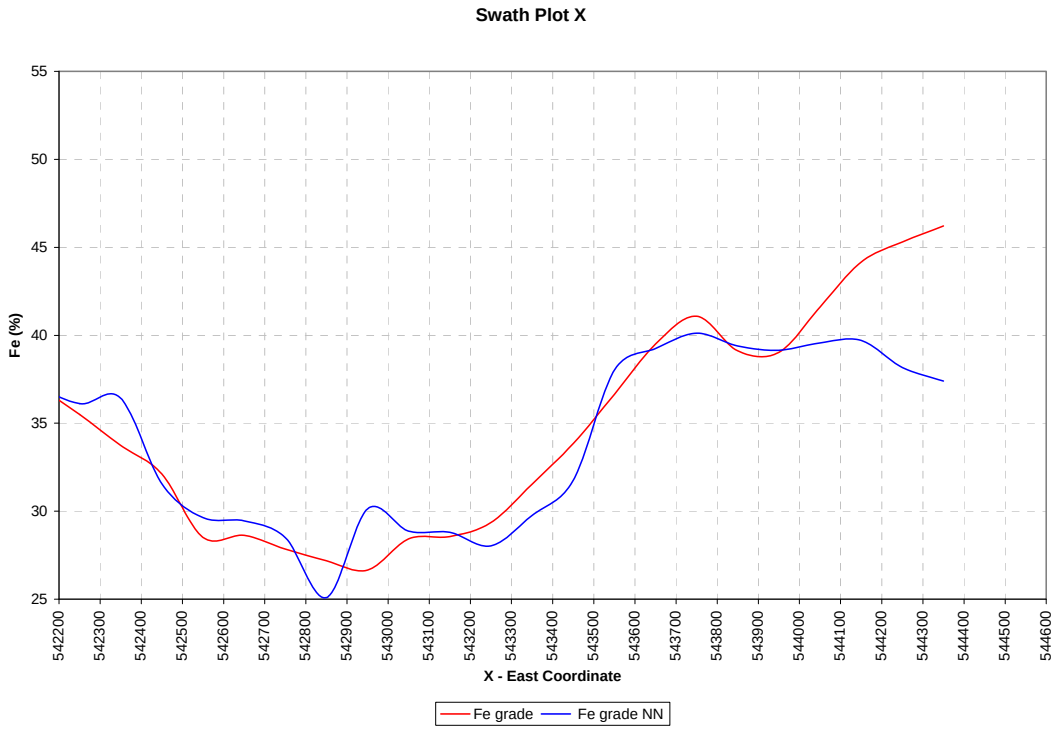


Figure 14.1.3.4_16

Trairão Iron Ore Project

Target Area 2 - Swath Plot – North Coordinate – Fe (%)

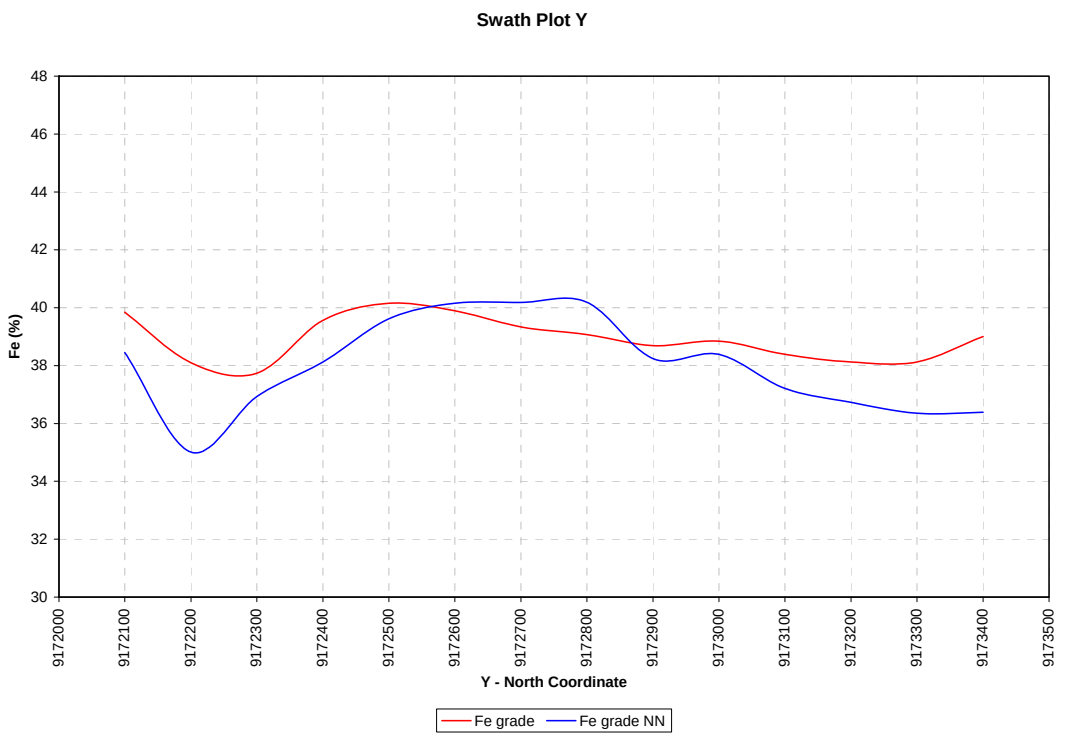


Figure 14.1.3.4_17

Trairão Iron Ore Project

Target Area 2 - Swath Plot – Elevation Coordinate – Fe (%)

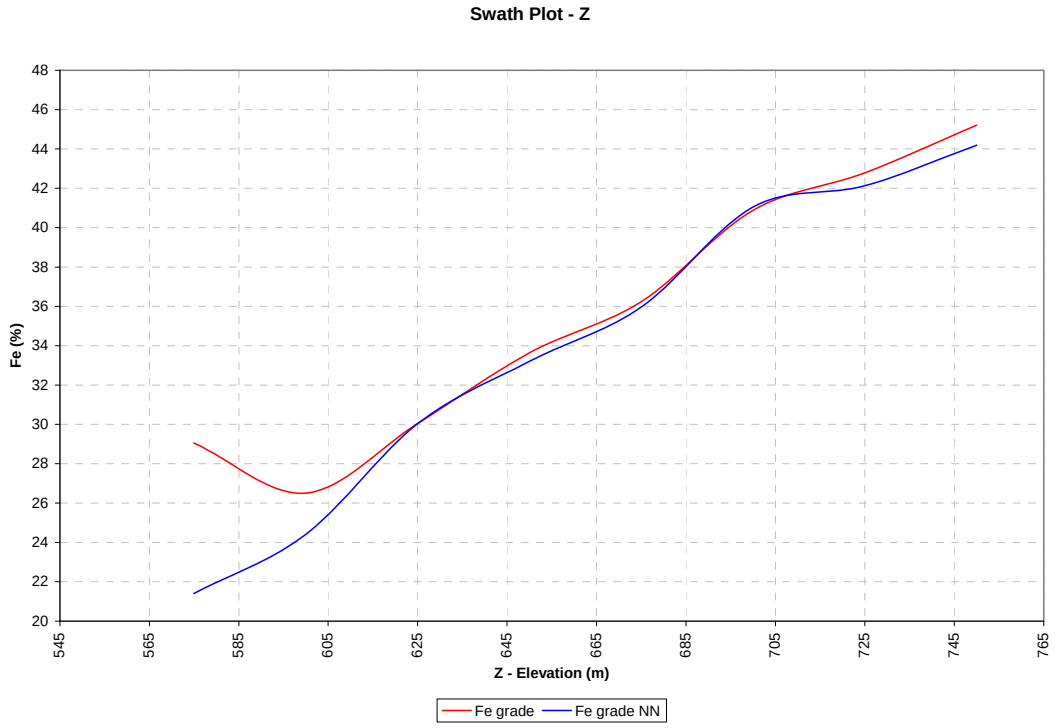


Figure 14.1.3.4_18

Trairão Iron Ore Project

Target Area 2 Extension - Swath Plot – East Coordinate – Fe (%)

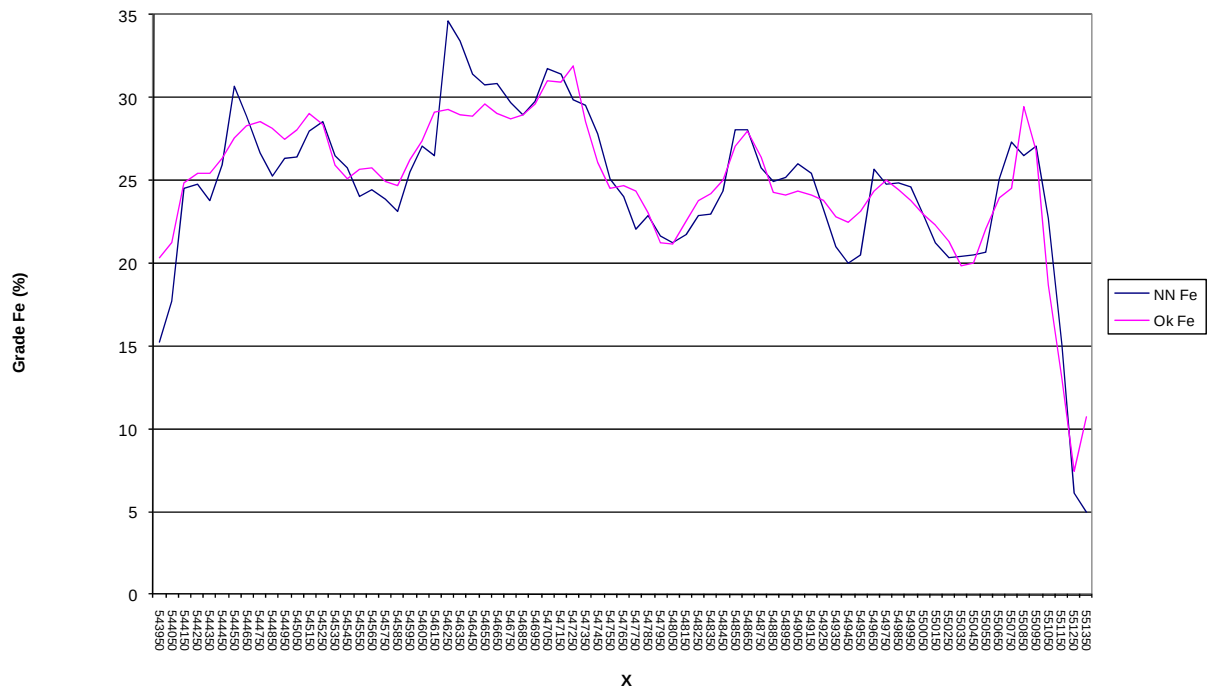


Figure 14.1.3.4_19

Trairão Iron Ore Project

Target Area 2 Extension - Swath Plot – North Coordinate – Fe (%)

Figure 14.1.3.4_19

Trairão Iron Ore Project

Target Area 2 Extension - Swath Plot – Elevation Coordinate – Fe (%)

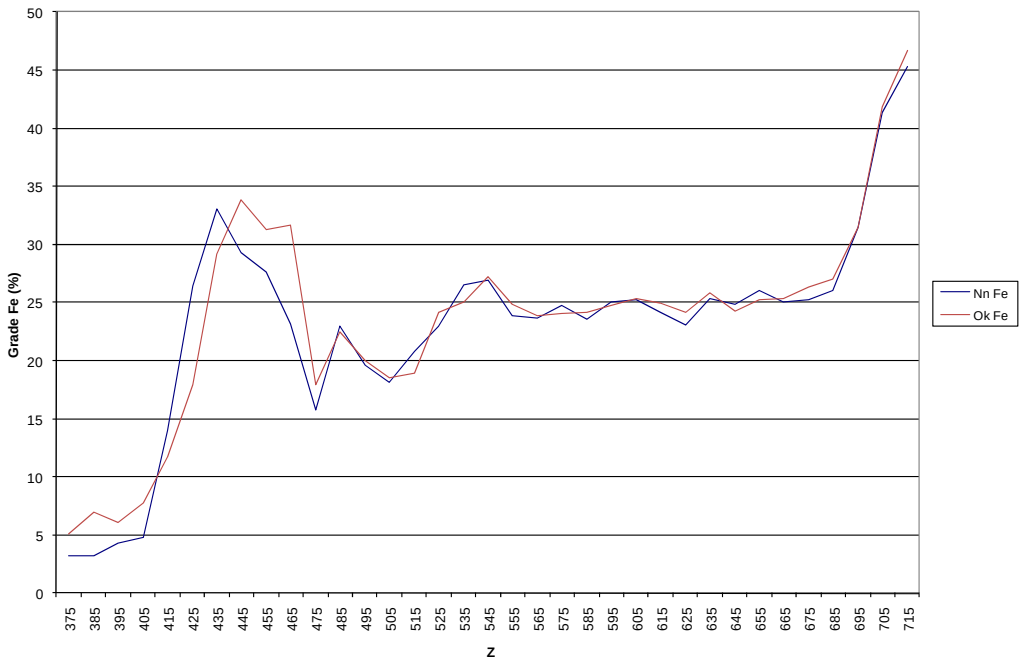


Figure 14.1.3.4_21

Trairão Iron Ore Project

Target Area 3 - Swath Plot – East Coordinate – Fe (%)

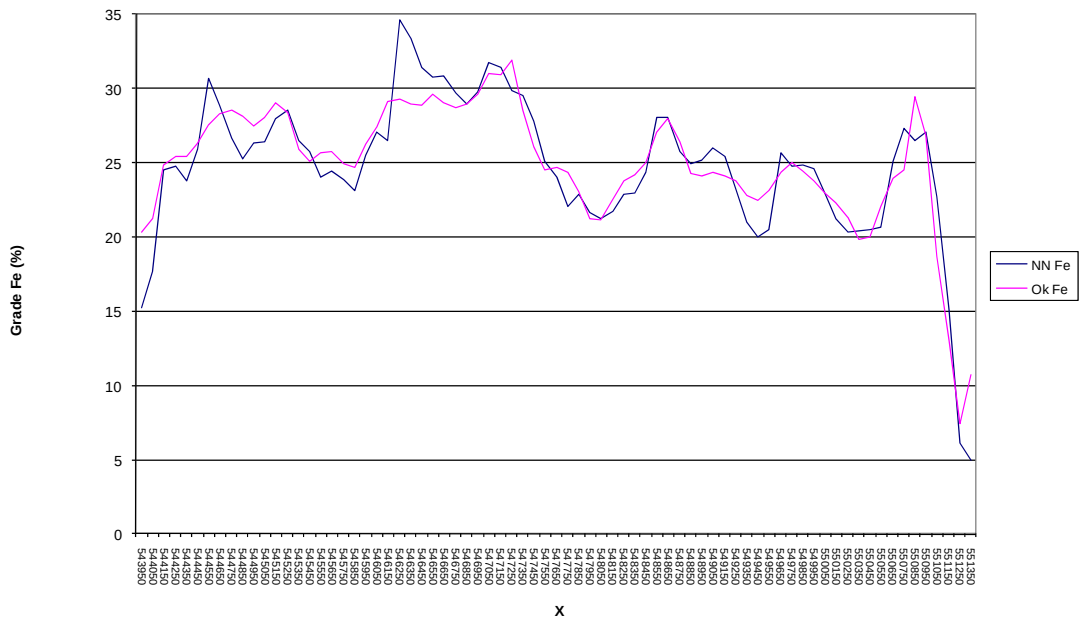


Figure 14.1.3.4_22

Trairão Iron Ore Project

Target Area 3 - Swath Plot – North Coordinate – Fe (%)

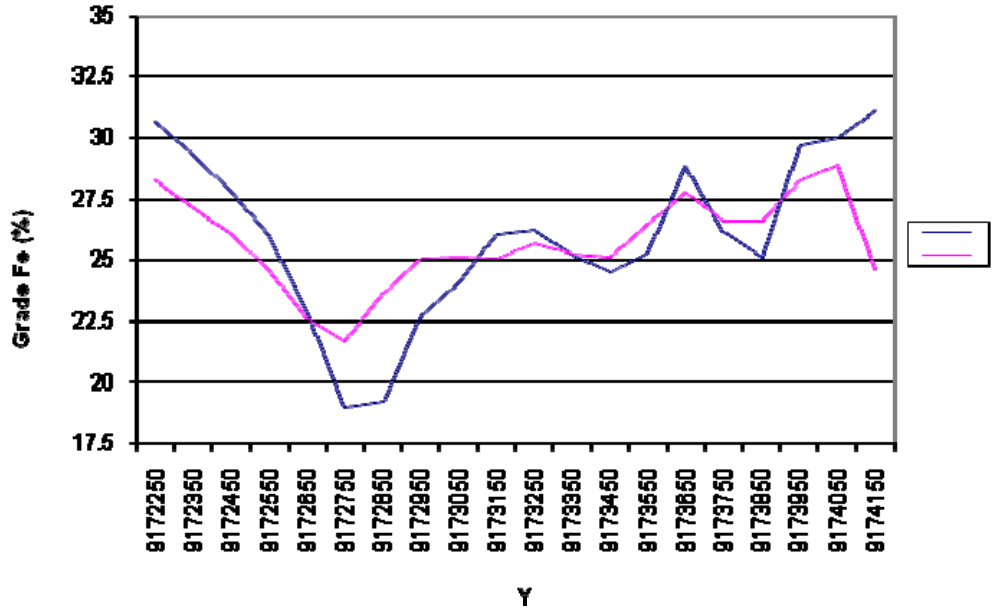
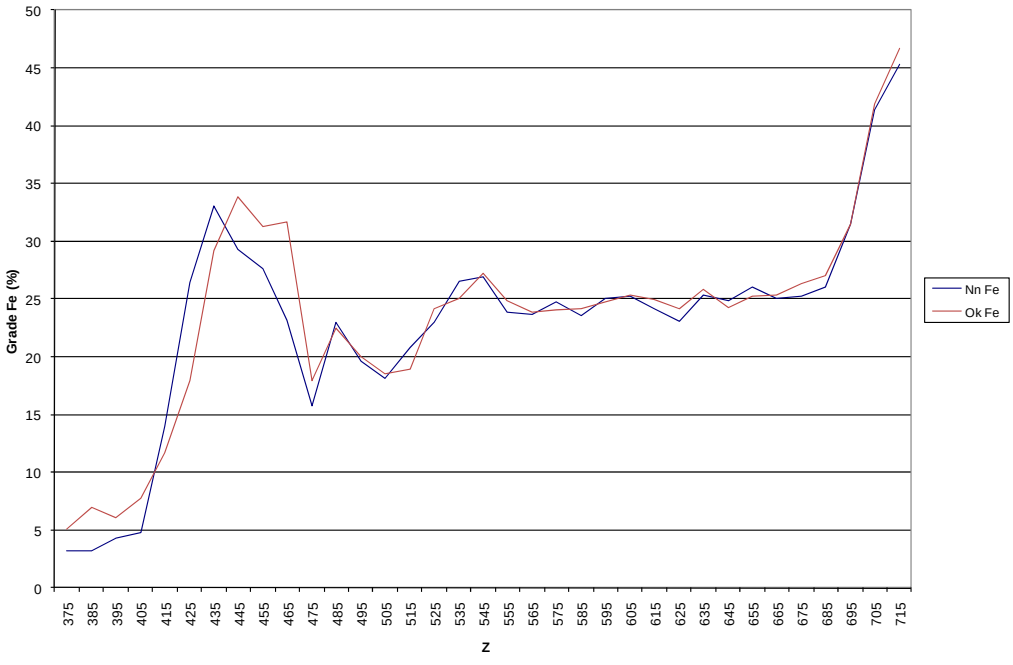


Figure 14.1.3.4_23

Trairão Iron Ore Project

Target Area 3 - Swath Plot – Elevation Coordinate – Fe (%)



14.1.3.5 Resource Reporting

The supergene enriched horizons of Target Area 1, Target Area 2, Target Area 2 Extension and Target Area 3, including Surficial Deposit, Saprolite and Saprock, have been classified as Inferred Mineral Resources based on the assessment of the input data, geological interpretation and quality of grade estimation.

The key criteria assessed as part of the resource classification and the resource quantity are presented in tables (Tables 14.1.3.5_1 to 14.1.3.5_8).

Coffey Mining reports all the 3 lithologies as mineral resources. It is important to recognize that the material from the Surficial Deposit lithology may well have a different recovery process in any future process plant, when compared to the recommended recovery process for the material from other lithologies, such as saprolite and saprock.

The Trairão Iron Ore Project is located in Serra do Trairão region near the town of Bannach, approximately 175km directly south-southwest of Parauapebas city, and 165km from the Carajás railway that connects the mining district with the port 'da Madeira' in São Luis, Maranhão State, the Capital.

This region is booming economically, due to the development of two large nickel laterite projects, namely Onça Puma and Vermelho, owned by Vale, who also own the developing iron ore project at Serra Sul. With increasing activity in the mining sector, significant improvements can be expected in the regional infrastructure in the next few years.

The results of the inferred mineral resource estimate presented here demonstrate a potential of in excess than 1Bt of iron mineralized weathered material within the parts of Target Areas 1, 2 and 3 which have been RC drilled. There are, however, additional target areas within the Talon license area, with additional iron mineralization associated with BIFs, which have been mapped and annotated as Target Areas 4 to 13. In addition within Target Areas 1, 2 and 3, there are gaps in the drilling and in certain areas the RC drilling only penetrated to 50 meters and in other areas drilling of certain holes stopped within mineralization. It is possible that further iron mineralization and inferred mineral resources may be delineated in the "gap" areas and at depth. The aim of the current diamond drilling program is to add confidence to the drilling data within the weathered zone, to intersect and to investigate the iron potential within the fresh rock, where the initial diamond drilling data indicates the presence of lower grade BIF hosted mineralization.

The iron deposits, as dilled to date, are likely to be amenable to be mined as an open cast operation, which is a method well established in the Brazilian iron industry. Furthermore, as the mineralization extends to surface, the strip ratio in any future open cast mining operation is likely to be low.

The main iron products that maybe be considered for this kind of deposit are:

- Lump Ore: >6.3mm;
- Coarse Sinter Feed: >1mm and < 6.3mm;
- Fine Sinter Feed: >0.1mm and <1mm;
- Pellet Feed: <0.1mm.

In these types of deposit, the iron content, in general, may decrease with the decrease in the product size. For direct sales to the local market, represented by small to medium pig iron producers, the opportunity is only for Lump Ore and the Coarse Sinter Feed. Access to this market depends on a lower CAPEX and OPEX than for a fine sinter and/or pellet feed project. Typically, the fines produced as a co-product, would be stockpiled for future concentration and reclamation.

In general, in consideration of the beneficiation process, iron enrichment through concentration is possible, but the mass yield may vary . Metallurgical testwork will be required to allow an assessment of the commercial feasibility of a beneficiation and concentration plant.

The project profitability is direct related to the development of an integrated project, including mine, railroad/pipeline, pellet plant and port facilities. The costs may be higher than the current costs practiced by the others iron ore producers in the region. The project aim will be to be competitive within the world market where the iron ore prices remain attractive, due the lack of high quality pellet feed suppliers and it is considered that the project may support higher costs.

The main iron ore producer in Brazil (Vale) recently declared publically that the price will maintain above USD150 per tonnage for, at least, five years. Vale also reported that the big iron ore companies, e.g. Vale, BHP and Rio Tinto, may have difficulties meeting the demand from its Asian clients. Other important recent information came from Credit Suisse, which estimated that there may be a deficit of more than 90Mt of iron ore in the market.

Target Area 1

Table 14.1.2.5_1 Trairão Iron Ore Project Target Area 1 - Confidence Level of Key Criteria		
Items	**Discussion**	**Confidence**
Drilling Techniques	All drill holes were completed by RC drilling methods and are industry standard approach.	High
Logging	Standard nomenclature and apparent good quality	Moderate – High
Drill Sample Recovery	The RC samples presents a good average recovery but there was a big recovery variation related to the material type (from 10% to 180%).	Low - Moderate
Sub-sampling Techniques and Sample Preparation	Sampling was planned on a nominal 1m interval following the RC drilling progress. The field preparation and the laboratory preparation were industry standard. The blank samples show one low contamination tendency that needs to be analyzed.	Moderate
Quality of Assay Data	In the general context, the parameters from the quality control analysis of the reference samples from exploration are inside the acceptance limits.	Moderate - High
Drill hole Surveying	As the RC drill holes are shallow there was no necessity for deviation measurements.	-
Location of Sampling Points	The field samples and the drill holes collars were collected using hand-held GPS.	Low - Moderate
Data Density and Distribution	Target Area 1 drilling was done approximately on 400m to 800m x 400m to 800m spacing. The drill spacing is not close enough to enable confident interpretation of the mineralized lithologies and domains.	Moderate
Database Integrity	The drill hole database was presented without errors and in a Microsoft Access (mdb) format.	High
Geological Interpretation	There is a reasonable understanding of the stratigraphy and structural controls to construct a robust geological model (there is good surface exposure). The defined enriched supergene horizons are considered to be reasonably robust but drill density needs to be increased to add confidence to further resource estimates.	Moderate - High
Density	There are no density tests available.	Low
Estimation and Modeling Techniques	Ordinary Kriging (OK) method has been used to obtain estimates of Fe, Al_2O_3, SiO_2, Mn, P and LOI. The OK estimation techniques are accepted industry practice.	High

Table 14.1.2.5_2 Trairão Iron Ore Project Target Area 1 - Grade Tonnage Table – 17th Dec 2010 Inferred Mineral Resources - Block Model: 100, 100 10 (25, 25, 5); Rotate Bearing: 35°							
Cut Off Grade (Fe %)	**Tonnes (Mt)**	**Fe (%)**	**SiO_2 (%)**	**Al_2O3 (%)**	**Mn (%)**	**P (%)**	**LOI (%)**
Surficial deposit							
25	22.40	50.21	7.94	10.63	0.05	0.092	8.89
35	22.40	50.21	7.94	10.63	0.05	0.092	8.89
Saprolite							
25	152.72	39.48	21.75	12.65	0.11	0.054	8.25
35	124.97	41.23	19.39	12.46	0.11	0.055	8.32
Saprock							
25	62.68	32.95	38.50	7.98	0.16	0.047	5.64
35	20.89	39.11	29.79	7.06	0.16	0.064	6.28
Grand Total							
25	237.80	38.77	24.86	11.23	0.12	0.056	7.62
35	168.26	42.16	19.16	11.55	0.11	0.061	8.14

Table 14.1.3.5_2 presents the Target Area 1 Mineral Resources for each lithology with the different cut-off grades of Fe applied. A cutoff grade of 25%Fe is preferred under the assumptions discussed above. The total aggregated Inferred Mineral Resource with 25%Fe cut-off grade applied is 237.8Mt at 38.8%Fe, 24.9%SiO_2 11.2%Al_2O_3 0.12%Mn, 0.06%P and 7.6%LOI.

Target Area 2

Table 14.1.3.5_3 Trairão Iron Ore Project Target Area 2 - Confidence Level of Key Criteria		
Items	**Discussion**	**Confidence**
Drilling Techniques	All drill holes were completed by RC drilling methods and are industry standard approach.	High
Logging	Standard nomenclature and apparent good quality	Moderate – High
Drill Sample Recovery	The RC samples present an acceptable average recovery but there was a big recovery variation related to the material type.	Low
Sub-sampling Techniques and Sample Preparation	Sampling was planned on a nominal 1m interval following the RC drilling progress. The field preparation and the laboratory preparation were at industry standard. The blank samples show one low contamination tendency that needs to be analyzed.	Moderate
Quality of Assay Data	In the general context, the parameters from the quality control analysis of the reference samples from exploration are inside the acceptance limits.	Moderate - High
Drill hole Surveying	As the RC drill holes are shallow there was no necessity for deviation measurements.	-
Location of Sampling Points	The field samples and the drill holes collars were collected using hand-held GPS.	Low - Moderate
Data Density and Distribution	Target Area 2 drilling was done approximately on 200m to 400m x 200m to 400m spacing. The drill spacing is close enough to enable confident interpretation of the mineralized lithologies and domains.	Moderate - High
Database Integrity	The drill hole database was presented without errors and in a Microsoft Access (mdb) format.	High
Geological Interpretation	There is a reasonable understanding of the stratigraphy and structural controls to construct a robust geological model (there is good surface exposure). The defined enriched supergene horizons are considered to be reasonably robust but drill density needs to be increased to add confidence to further resource estimates.	Moderate - High
Density	There are no density tests available.	Low
Estimation and Modeling Techniques	Ordinary Kriging (OK) method has been used to obtain estimates of Fe, Al_2O_3, SiO_2, Mn, P and LOI. The OK estimation techniques are accepted industry practice.	High

Table 14.1.3.5_4
Trairão Iron Ore Project
Target Area 2 - Grade Tonnage Table – 21st Mar 2011
Inferred Mineral Resources - Block Model: 100, 100 10 (25, 25, 5)

Cut Off Grade (Fe %)	Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O3 (%)	Mn (%)	P (%)	LOI (%)
Surficial Deposit							
25	36.05	47.72	10.98	11.21	0.05	0.06	8.58
35	35.97	47.75	10.94	11.21	0.05	0.06	8.57
Saprolite							
25	176.13	38.34	27.60	9.99	0.13	0.04	6.76
35	119.44	42.25	22.53	9.36	0.14	0.05	6.95
Saprock							
25	14.66	32.89	40.21	5.83	0.19	0.03	5.67
35	2.88	38.53	32.47	6.02	0.21	0.04	5.53
Grand Total							
25	226.85	39.48	25.77	9.91	0.12	0.05	6.98
35	158.29	43.43	20.08	9.72	0.12	0.05	7.29

Table 14.1.3.5_4 presents the Target Area 2 Mineral Resources for each lithology with the different cut-off grades of Fe applied. A cutoff grade of 25%Fe is preferred under the assumptions discussed above. The total aggregated Inferred Mineral Resource with 25%Fe cut-off grade applied is 226.9Mt at 39.5%Fe, 25.8%SiO_2 9.9%Al_2O_3 0.12%Mn, 0.05%P and 7.0%LOI.

Target Area 2 Extension

Table 14.1.3.5_5 Trairão Iron Ore Project Target Area 2 Extension- Confidence Level of Key Criteria		
Items	**Discussion**	**Confidence**
Drilling Techniques	All drill holes were completed by RC drilling methods and are industry standard approach.	High
Logging	Standard nomenclature and apparent good quality	Moderate – High
Drill Sample Recovery	The RC samples present an acceptable average recovery but there was a big recovery variation related to the material type.	Low
Sub-sampling Techniques and Sample Preparation	Sampling was planned on a nominal 1m interval following the RC drilling progress. The field preparation and the laboratory preparation were at industry standard. The blank samples show one low contamination tendency that needs to be analyzed.	Moderate
Quality of Assay Data	In the general context, the parameters from the quality control analysis of the reference samples from exploration are inside the acceptance limits.	Moderate - High
Drill hole Surveying	As the RC drill holes are shallow there was no necessity for deviation measurements.	-
Location of Sampling Points	The field samples and the drill holes collars were collected using hand-held GPS.	Low - Moderate
Data Density and Distribution	Target Area 2 extension drilling was done approximately on 200m to 400m x 200m to 400m spacing. The drill spacing is close enough to enable confident interpretation of the mineralized lithologies and domains.	Moderate - High
Database Integrity	The drill hole database was presented without errors and in a Microsoft Access (mdb) format.	High
Geological Interpretation	There is a reasonable understanding of the stratigraphy and structural controls to construct a robust geological model (there is good surface exposure). The defined enriched supergene horizons are considered to be reasonably robust but drill density needs to be increased to add confidence to further resource estimates.	Moderate - High
Density	There are no density tests available.	Low
Estimation and Modeling Techniques	Ordinary Kriging (OK) method has been used to obtain estimates of Fe, Al_2O_3, SiO_2, Mn, P and LOI. The OK estimation techniques are accepted industry practice.	High

Table 14.1.3.5_6 Trairão Iron Ore Project Target Area 2 Extension - Grade Tonnage Table – 28th Jun 2011 Inferred Mineral Resources - Block Model: 100, 100 10 (25, 25, 5)							
Cut Off Grade (Fe %)	**Tonnes (Mt)**	**Fe (%)**	**SiO_2 (%)**	**Al_2O_3 (%)**	**Mn (%)**	**P (%)**	**LOI (%)**
Surficial Deposit							
25	11.94	46.81	14.27	10.77	0.05	0.04	7.16
35	11.37	47.58	13.22	10.67	0.05	0.05	7.23
Saprolite							
25	52.52	35.33	32.58	10.67	0.03	0.03	5.04
35	24.70	41.10	23.71	10.94	0.03	0.03	5.68
Saprock							
25	159.09	29.99	45.35	7.21	0.06	0.02	3.74
35	24.55	42.05	27.16	8.87	0.06	0.04	5.08
Grand Total							
25	223.54	32.15	40.69	8.21	0.05	0.03	4.23
35	60.62	42.70	23.14	10.05	0.05	0.04	5.73

Table 14.1.3.5_6 presents the Target Area 2 Extension Mineral Resources for each lithology with the different cut-off grades of Fe applied. A cutoff grade of 25%Fe is preferred under the assumptions discussed above. The total aggregated Inferred Mineral Resource with 25%Fe cut-off grade applied is 223.5Mt at 32.2%Fe, 40.7%SiO_2 8.2%Al_2O_3 0.05%Mn, 0.03%P and 4.2%LOI.

Targets Area 2 and Area 2 Extension

The Table 14.1.3.5_7 shows the total of resources of Targets Area2 and Area 2 extension.

Table 14.1.3.5_7
Trairão Iron Ore Project
Total of Targets Area 2 and Area 2 Extension - Grade Tonnage Table – 28th Jun 2011
Inferred Mineral Resources - Block Model: 100, 100 10 (25, 25, 5)

Cut Off Grade (Fe %)	Tonnes (Mt)	Fe (%)	SiO2 (%)	Al2O3 (%)	Mn (%)	P (%)	LOI (%)
Surficial Deposit							
25	47.99	47.49	11.80	11.10	0.05	0.05	8.22
35	47.33	47.71	11.49	11.08	0.05	0.05	8.25
Saprolite							
25	228.65	37.65	28.74	10.15	0.11	0.04	6.36
35	144.14	42.05	22.73	9.63	0.12	0.05	6.73
Saprock							
25	173.75	30.24	44.91	7.09	0.07	0.02	3.90
35	27.43	41.68	27.71	8.57	0.08	0.04	5.13
Grand Total							
25	450.39	35.84	33.18	9.07	0.08	0.04	5.61
35	218.90	43.23	20.92	9.81	0.10	0.05	6.86

Table 14.1.3.5_7 presents the Targets Area 2 and Area 2 Extension Mineral Resources for each lithology with the different cut-off grades of Fe applied. A cutoff grade of 25%Fe is preferred under the assumptions discussed above. The total aggregated Inferred Mineral Resource with 25%Fe cut-off grade applied is 450.4Mt at 35.9%Fe, 33.2%SiO_2 9.1%Al_2O_3 0.08%Mn, 0.04%P and 5.6%LOI.

Target Area 3

Table 14.1.3.5_8 Trairão Iron Ore Project Target Area 3 - Confidence Level of Key Criteria		
Items	**Discussion**	**Confidence**
Drilling Techniques	All drill holes were completed by RC drilling methods and are industry standard approach.	High
Logging	Standard nomenclature and apparent good quality	Moderate – High
Drill Sample Recovery	The RC samples present an acceptable average recovery but there was a big recovery variation related to the material type.	Low
Sub-sampling Techniques and Sample Preparation	Sampling was planned on a nominal 1m interval following the RC drilling progress. The field preparation and the laboratory preparation were at industry standard. The blank samples show one low contamination tendency that needs to be analyzed.	Moderate
Quality of Assay Data	In the general context, the parameters from the quality control analysis of the reference samples from exploration are inside the acceptance limits.	Moderate - High
Drill hole Surveying	As the RC drill holes are shallow there was no necessity for deviation measurements.	-
Location of Sampling Points	The field samples and the drill holes collars were collected using hand-held GPS.	Low - Moderate
Data Density and Distribution	Target Area 3 drilling was done approximately on 200m to 200m spacing. The drill spacing is close enough to enable confident interpretation of the mineralized lithologies and domains.	Moderate - High
Database Integrity	The drill hole database was presented without errors and in a Microsoft Access (mdb) format.	High
Geological Interpretation	There is a reasonable understanding of the stratigraphy and structural controls to construct a robust geological model (there is good surface exposure). The defined enriched supergene horizons are considered to be reasonably robust but drill density needs to be increased to add confidence to further resource estimates.	Moderate - High
Density	There are no density tests available.	Low
Estimation and Modeling Techniques	Ordinary Kriging (OK) method has been used to obtain estimates of Fe, Al_2O_3, SiO_2, Mn, P and LOI. The OK estimation techniques are accepted industry practice.	High

Table 14.1.3.5_9 Trairão Iron Ore Project Target Area 3 - Grade Tonnage Table – 3th Aug 2011 Inferred Mineral Resources - Block Model: 100, 100 10 (25, 25, 5)							
Cut Off Grade (Fe %)	**Tonnes (Mt)**	**Fe (%)**	**SiO_2 (%)**	**Al_2O_3 (%)**	**Mn (%)**	**P (%)**	**LOI (%)**
Surficial Deposit							
25	71.60	43.33	14.29	14.03	0.04	0.055	8.63
35	67.40	44.05	13.78	13.82	0.04	0.055	8.55
Saprolite							
25	126.10	32.66	32.37	12.63	0.15	0.043	6.58
35	36.93	40.64	21.66	12.00	0.13	0.048	7.04
Saprock							
25	216.83	30.12	41.93	9.06	0.13	0.030	4.81
35	28.51	39.13	27.68	9.78	0.12	0.034	5.49
Grand Total							
25	414.53	33.18	34.25	11.01	0.12	0.038	6.01
35	132.84	42.04	18.95	12.45	0.09	0.049	7.48

Table 14.1.3.5_8 presents the Target Area 3 Mineral Resources for each lithology with the different cut-off grades of Fe applied. A cutoff grade of 25%Fe is preferred under the assumptions discussed above. The total aggregated Inferred Mineral Resource with 25%Fe cut-off grade applied is 414.5Mt at 33.2%Fe, 34%SiO_2 11.0%Al_2O_3 0.12%Mn, 0.04%P and 6.0%LOI.

TOTAL AGGREGATED RESOURCES

Table 14.1.3.5_10 Trairão Iron Ore Project Total Aggregated Inferred Mineral Resources (all Target Areas) – 3th Aug 2011							
Cut Off Grade (Fe %)	**Tonnes (Mt)**	**Fe (%)**	**SiO_2 (%)**	**Al_2O_3 (%)**	**Mn (%)**	**P (%)**	**LOI (%)**
25	1,102.72	35.52	31.79	10.27	0.11	0.04	6.20
35	520.00	42.58	19.85	11.05	0.10	0.05	7.43

Table 14.1.3.5_10 presents the total aggregated Inferred Mineral Resources for all Areas and lithologies at cutoff grades of 25%Fe and 35%Fe. A cutoff grade of 25%Fe is preferred under the assumptions discussed above. The total aggregated Inferred Mineral Resource with 25%Fe cut-off grade applied is 1,102.7Mt at 35.5%Fe, 31.8%SiO_2 10.3%Al_2O_3 0.11%Mn, 0.04%P and 6.2%LOI.

The independent qualified person responsible for the mineral resource estimate in this report and summarized in Table 14.1.3.5_9 is Bernardo Viana, a geologist with 10 years of geological and mining related experience ranging from execution, management and coordination of geology projects, to resource estimation in a variety of commodities including Au, Cu, Fe, Al, U, Ni, Zn, Mn and diamond in Brazil, Angola and Chile. He is a member of the Australian Institute of Geoscientists ("MAIG") and is independent of Talon as that term is defined in Section 1.5 of the Instrument.

Mineral resources which are not mineral reserves do not have demonstrated economic viability. The estimate of mineral resources may be materially affected by environmental, permitting, legal, marketing, or other relevant issues.

15 ADJACENT PROPERTIES

There are no Adjacent Properties as this term is defined in NI43-101.

16 OTHER RELEVANT DATA AND INFORMATION

Coffey Mining is not aware of other relevant data pertaining to the Trairão Iron Ore Project.

17 INTERPRETATION AND CONCLUSIONS

The Serra do Trairão Iron Project contains a large prospective tonnage of supergene iron mineralization which to date has been demonstrated mainly in Target Areas 1, 2, '2 Extension' and 3 (previously referred to as BIF's 1, 2 and 3 by Codelco), where RC drilling programs have been undertaken by Talon.

RC Drilling extended to a mean depth of 50m within the initial areas drilled on Target Areas 1 and 2, which were drilled in 2010 with the objective to evaluate only the supergene enriched material. Within that drilling program, it was not possible to analyze the deep mineralized BIF potential. Subsequent drilling in the extension areas of Target Area 2 and Target Area 3 RC drilling extended to the lower limits of mineralization or as in the case of many of the drilled holes the maximum drilling depth of the drill rig of approximately 80 to 100 metres. Consequently a number of the RC holes drilled in these areas terminated within the mineralized zones. Mineralization is thus open at depth in a number of areas drilled. The RC drilling recovery shows a representative variation which requires validation with diamond drill holes and local pits. For the objective of this study, the RC drilling is adherent with the industry standards. The data is consistent with the confidence level of key criteria for mineral resources classification.

All the RC drill holes intersected the mineralization and the majority of the holes ended in the Saprolite or Saprock lithologies. There are no drill holes indicating the lateral limits of mineralization and there are few indications about the depth of weathering.

Coffey Mining has estimated Inferred Mineral Resources for the Target Area 1, Target Area 2, Target Area 2 Extension and Target Area 3 of Trairão Iron Project in accordance with the guidelines as set out in the CIM Definition Standards and NI 43-101. The *in situ* resources are wholly contained within the current license boundary and do not take into account any elements which may sterilize areas of the deposit for mining operations.

Lithotype statistics completed in this study presented high variances and many outliers. It is possible that there is mixing of lithotypes due to bias by the geologist in the modeling and this has led to less consistent estimates.

The total Inferred Mineral Resource for Target Area 1 has been estimated at 237.8Mt with an average grade of 38.8%Fe (with 25%Fe cut off grade applied).

The total Inferred Mineral Resource for Target Area 2 has been estimated at 226.9Mt with an average grade of 39.5%Fe (with 25%Fe cut off grade applied).

The total Inferred Mineral Resource for Target Area 2 Extension has been estimated at 223.5Mt with an average grade of 32.2%Fe (with 25%Fe cut off grade applied).

The total Inferred Mineral Resource for Target Area 3 has been estimated at 414.5Mt with an average grade of 33.2%Fe (with 25%Fe cut off grade applied).

The totals resources, considering Target Area 1, Target Area 2, Target Area 2 Extension and Target Area 3 are presented in Table 17_1.

Table 17_1
Grade Tonnage Table – 03th Aug 2011
Total of Targets Area 1, Area 2, Area 2 Extension and Area 3
Block Models: 100, 100 10 (25, 25, 5)

Cut Off Grade (Fe %)	Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	Mn (%)	P (%)	LOI (%)
Surficial Deposit							
25	141.99	45.82	12.45	12.50	0.04	0.060	8.53
35	137.13	46.32	12.03	12.35	0.04	0.06	8.50
Saprolite							
25	507.47	36.96	27.54	11.52	0.12	0.04	6.99
35	306.04	41.54	21.24	11.07	0.12	0.05	7.42
Saprock							
25	453.26	30.56	42.60	8.16	0.11	0.03	4.58
35	76.83	40.04	28.26	8.61	0.11	0.04	5.58
Grand Total							
25	1,102.72	35.52	31.79	10.27	0.11	0.04	6.20
35	520.00	42.58	19.85	11.05	0.10	0.05	7.43

The total aggregated Inferred Mineral Resource with 25%Fe cut-off grade applied is 1,102.7Mt at 35.5%Fe, 31.8%SiO_2 10.3%Al_2O_3 0.11%Mn, 0.04%P and 6.2%LOI.

Density measurements along the different lithotypes are currently being obtained by Talon using the diamond core. As density measurements are not available at this time, Coffey Mining applied a density value of 2.7t/m^3, which is supported by public data and bibliographic research, related to other iron deposits located within the same geological environment. This number needs to be reviewed with further in situ and diamond core hole density tests.

The contaminant grades, mainly the P grade, are considered high in comparison with the current industrial standards. A metallurgical testwork program will be required to evaluate possible use by local pig iron producers and the international market.

Coffey Mining considers that this project has met the company's objectives, and with the continuity of the current exploration program, applying diamond drilling, will provide more information related to the supergene and deep mineralized material in the area. besides providing more data and information about the entire project geology and potential.

18 RECOMMENDATIONS

Given all these positive geological and prospective indications Coffey Mining considers the Trairão Property to be prospective for hosting economic iron ore deposits. Talon's proposed exploration strategy is considered to be consistent with the potential of the Trairão Iron Ore Project, providing that target priorities are clearly adhered to and exploration is appropriately staged to permit continual assessment of progressive exploration results.

Talon personnel have also provided comprehensive work programs and budgets covering proposed exploration for 18 months.

Talon has prepared 18 months of a continued exploration and evaluation program, tailored to the potential of the project, which is consistent with the budget allocations. Coffey Mining considers that the relevant area has sufficient technical merit to justify the proposed program and associated expenditures.

It is for this reason that Coffey Mining recommends the continuity of the current follow up exploration program and an additional exploration budget to:

- Complete the regional geological mapping of all the property and detailed mapping of individual target areas including mapping of available bedrock exposures below the soil and lateritic cover to improve the knowledge of the iron mineralization. Also map the iron mineralization in the colluvial and eluvial, saprock and saprolite deposits.
- Continue with the ground magnetic surveys over the targeted areas to better understand all the existing target areas and to map the individual iron formations, the surrounding country rocks, geological structure and the saprolite and saprock lithologies overlying the iron formations.
- Continue with the RC drilling program over the entire area, including more exploration and infill drilling, to intersect the iron mineralization in the colluvial and eluvial deposits, the saprolite, saprock and iron formations and determine the distribution and controls of the mineralization in the respective rock types and subsequently extend this drilling program to all target areas, including those in the north of the property.
- Continue with the extensive diamond drilling program over all the target areas to validate RC drilling results and so improve the categories of the actual mineral resources classification. Diamond drilling will also be used to intersect the iron formations at depth, to determine the potential of the mineralization in these rock types.
- Complete exploratory RC drill holes or detail mapping outside of external limits of the deposit to confirm these limits.
- Complete a topographic survey of the influenced areas (mineralized, furthers possible mined and service areas for further infrastructure including plants, waste dumps, tailings, etc.) to provide detailed information to support further mineral resources and

reserves studies. It is necessary to model the Surficial Deposits and to possibly map the depth of weathering relative to the elevation and slope. The topography should consider the adjacencies of the mineralized areas focusing

- Continue with the in situ and drill hole core dry bulk density determinations which are being obtained from direct density measurements on diamond core samples. These determinations are providing relative density information on all the mineralized horizons as well as also the surrounding non-mineralized lithologies and on the oxidized and weathered rocks.
- Complete the multivariate study to define litho-chemical types to be used in the future modeling and in the selection of metallurgical samples.
- Continue the metallurgical tests to evaluate the feasibility of processing the supergene material, as well as the mineralized fresh rock.
- Continue and improve the current QA/QC program.
- Undertake a trial mining and bulk sampling program.
- The Trairão Iron Project has Cu-Au and Ni targets that have been identified but warrant further assessment. These have not been assessed during this study, as the main focus was the potential for iron ore. However they should be assessed in the future.
- Specialist environmental, infrastructure and logistic studies as well as conceptual mining, engineering, marketing and financial studies

The proposed exploration program presented aims to evaluate the iron potential of the Serra do Trairao Project and provide enough data that will support further NI 43-101-compliant mineral resource estimates. The iron mineralization at the Trairão Project is associated with a hematite-goethite supergene enrichment zone and fresh rock over a sequence of interbedded BIF and magnetite-rich metasiltstones that belong to the upper portion of Tucumã Group. It is believed that the supergene process leached a significant amount of silica from the country rocks and transformed the magnetite into hematite-goethite creating a resistant cap rock, which supports the actual prominent topography along the Trairão Ridge. The Trairão Ridge is underlain by a folded succession of Archean age iron formations and related rocks and extends for a total length of 19km. In addition to the Trairão Range, other targets exist within the project area adding an additional cumulative length of 31km of prospective targets. According to this, the exploration program was delineated to investigate a total of 13 discreet target areas that have been identified to date.

The timing to complete the exploration program presented is estimated at 18 months and it is estimated that the expenditure required for the proposed work program for the period of April 2011 to September 2012, will amount to CDN$20.2 million, as summarized on Table 18_1. This budget excludes all corporate and overhead costs.

Coffey Mining has reviewed the proposed exploration program and budget (Table 18_1) and concurs this is appropriate for the current status of the project.

Table 18_1

Trairão Iron Ore Project

Talon Exploration Schedule and Budget

	TRAIRÃO BUDGET SUMMARY	Total (CDN$)	% of Budget
1	DIAMOND and RC DRILLING	10 835 000	54%
2	ASSAYS	3 165 000	16%
3	FIELD COSTS	570 000	3%
4	TRACK ACCESS & SURVEYING	485 000	2%
5	GEOPHYSICS – GROUND	102 500	1%
6	LICENSES & PERMITS	52 400	0%
7	LEGAL	162 000	1%
8	TRAVEL & TRANSPORTATION	475 000	2%
9	ENVIRONMENTAL	257 000	1%
10	MINERAL RESOURCE ESTIMATES	150 000	1%
11	METALLURGY & MINERALOGY	500 000	2%
12	SPECIALIST STUDIES	605 000	3%
13	PREFEASIBILITY STUDY	1 200 000	6%
14	DATA VERIFICATION	55 000	0%
15	MANPOWER	1 600 000	8%
16	**GROSS PROJECT COSTS**	**20 213 900**	**100%**

19 REFERENCES

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Appendix A

Certificate of Bernardo H. C. Viana

Certificate of Qualified Person – Bernardo H C Viana

I, Bernardo Horta de Cerqueira Viana, Geologist, as an author of this report entitled "Third Independent Technical Report on Mineral Resources" prepared for Talon Metals Corp and effective 3 August 2011 and dated 12 August 2011, do hereby certify that:

1. I am Operations Manager Geology & Resources with Coffey Consultoria e Serviços Ltda, of Av Afonso Pena, 3924, Conjunto 207, Mangabeiras- CEP 30.130-009;
2. I am a graduate of Federal University of Minas Gerais, Belo Horizonte, Brazil and hold a Bachelor of Science Degree in Geology (2001) and Master Business Administration in Project Management (2009) and I have practiced my profession continuously since 2001.
3. I am a professional geologist with more than 09 years of relevant experience in iron ore exploration and mining, involving numerous iron ore properties in Brazil.
4. I am a member of the Australian Institute of Geoscientists ("MAIG") #3709.
5. I have read the definition of "qualified person" set out in National Instrument 43 101 (NI43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of NI43-101.
6. I have visited the Trairão Iron Ore Project between the 25th and 27th August 2010 and the 07th and 10th November 2010.
7. I prepared and am responsible for all sections of this report.
8. My prior involvement with the Trairão Project involved the preparing of two independent technical reports dated December 23, 2010 and March 29, 2011.
9. I am independent of Talon Metals Corp, pursuant to section 1.5 of the Instrument.
10. I have read National Instrument 43-101F1, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
11. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
12. I do not have nor do I expect to receive a direct or indirect interest in the Trairão Iron Ore Project of Talon Metals Corp, and I do not beneficially own, directly or indirectly, any securities of Talon Metals Corp or any associate or affiliate of such company.

Belo Horizonte, Brazil, 12 August, 2011.

[SIGNED]
Bernardo Horta de Cerqueira Viana
BSc(Geol), MAIG #3709, MBA

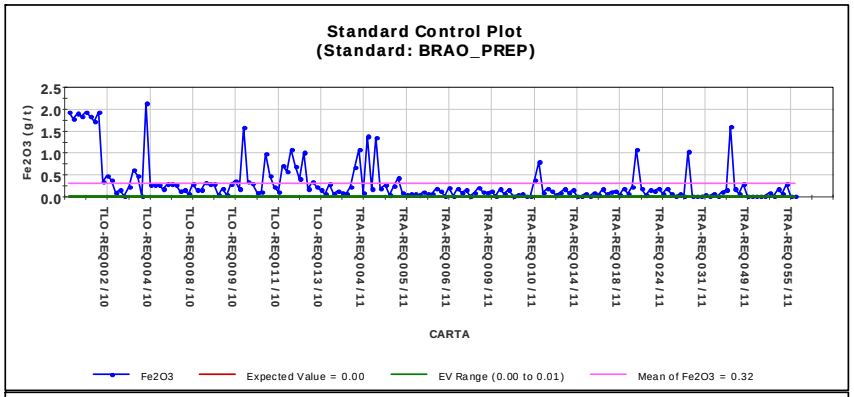
Appendix B

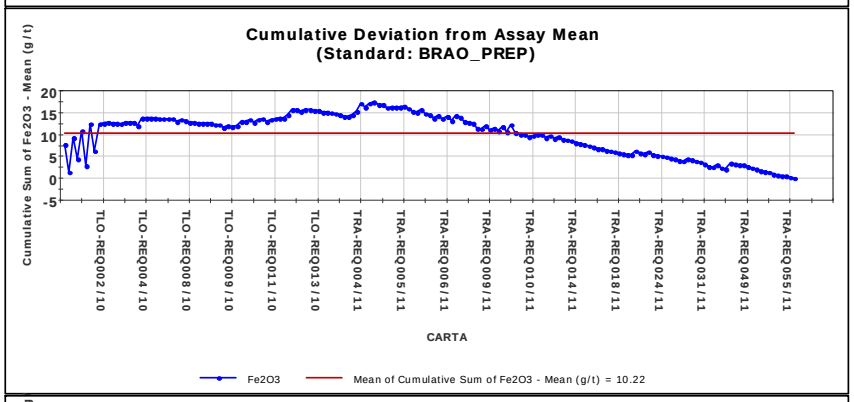
QA/QC

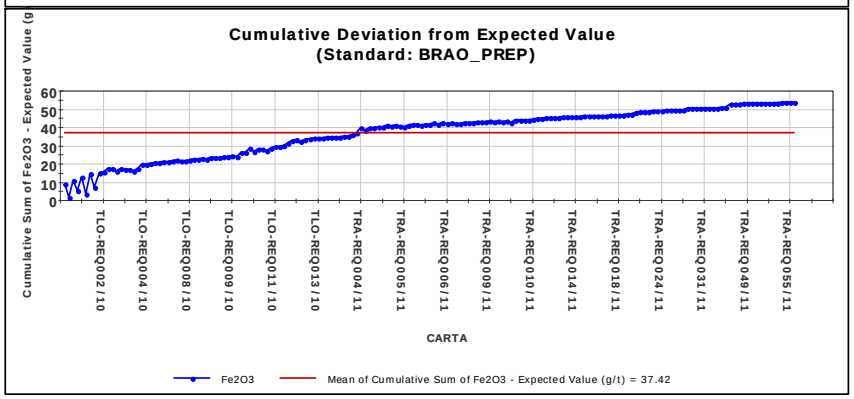
Laboratory Blank Samples

Summary
(Standard: BRAO_PREP)

Standard:	BRAO_PREP		No of Analyses:	171
Element:	Fe2O3		Minimum:	0.01
Units:	%		Maximum:	2.13
Detection Limit:	-		Mean:	0.32
Expected Value (EV):	0.00		Std Deviation:	0.47
E.V. Range:	0.00 to 0.01		% in Tolerance	0.00 %
			% Bias	0.00 %
			% RSD	149.88 %



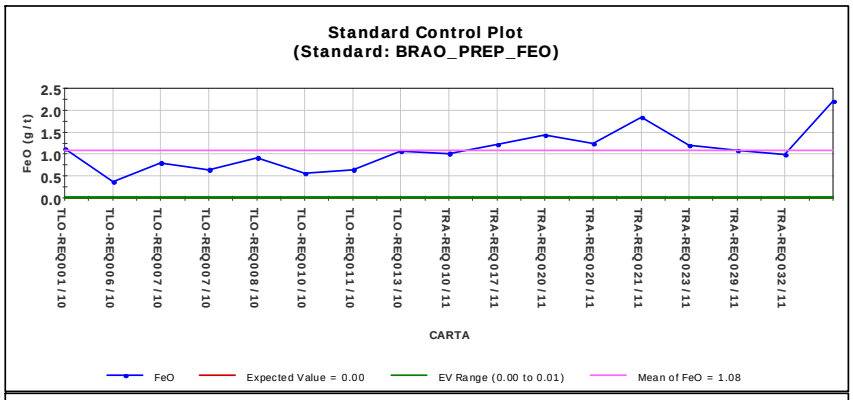


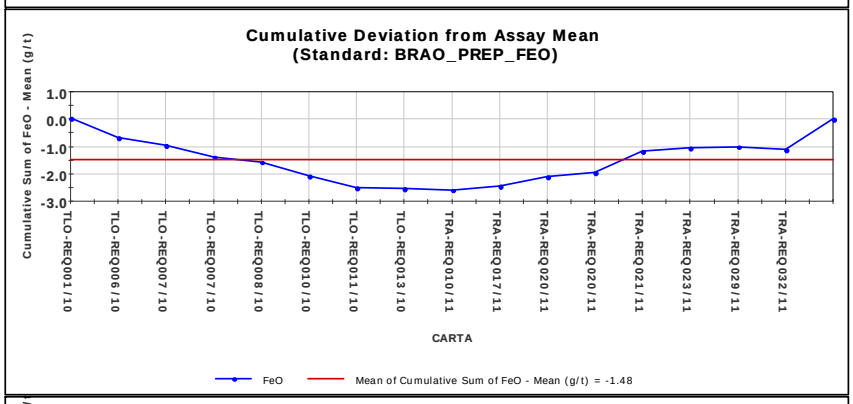


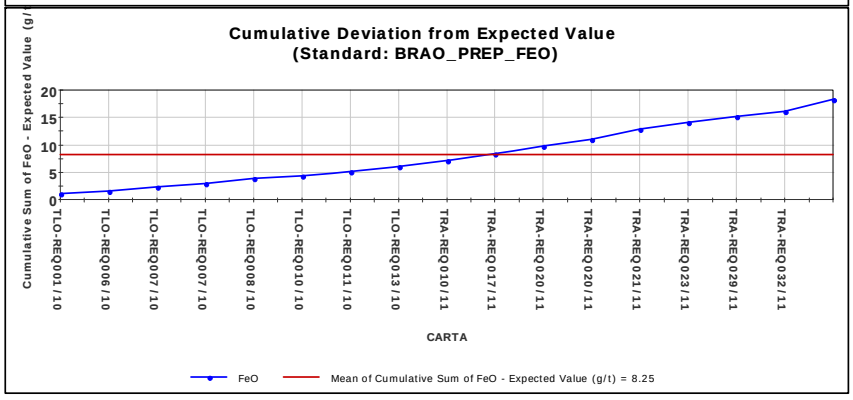
Printed: 05-ago-2011 13:04:31 Data Imported: 05-ago-2011 13:01:42 Page 1

Summary
(Standard: BRAO_PREP_FEO)

Standard:	BRAO_PREP_FEO		No of Analyses:	17
Element:	FeO		Minimum:	0.36
Units:	%		Maximum:	2.20
Detection Limit:	-		Mean:	1.08
Expected Value (EV):	0.00		Std Deviation:	0.44
E.V. Range:	0.00 to 0.01		% in Tolerance	0.00 %
			% Bias	0.00 %
			% RSD	40.99 %







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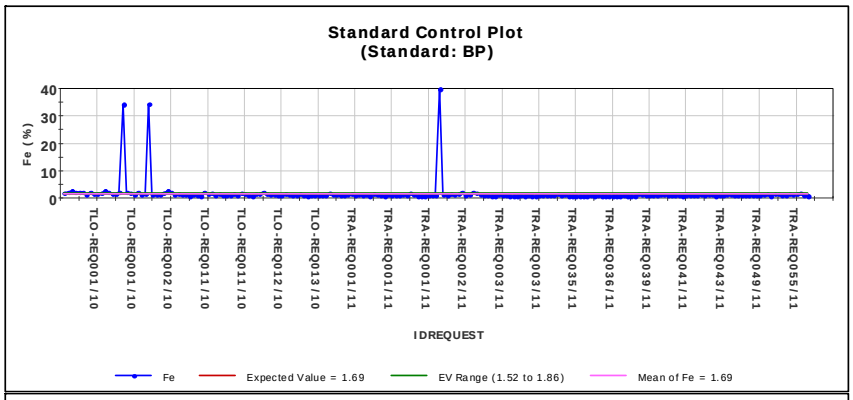
Appendix B

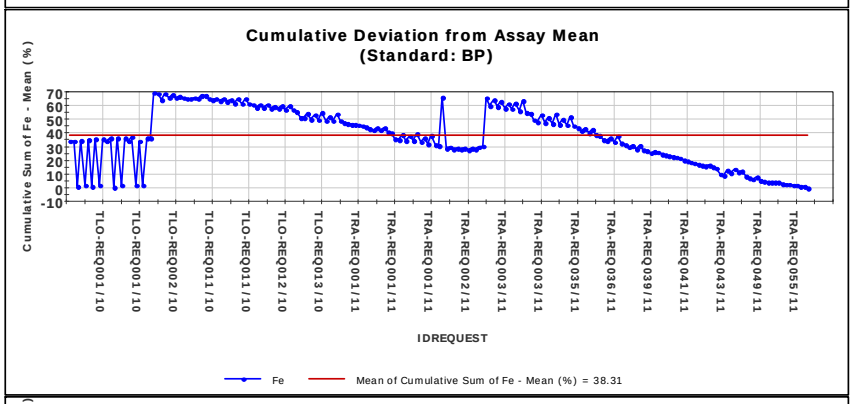
QA/QC

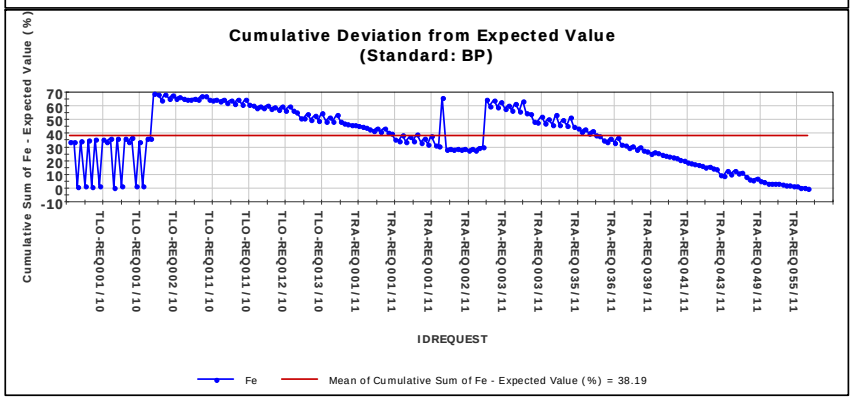
Project Blank Samples

Summary
(Standard: BP)

Standard:	BP		No of Analyses:	203
Element:	Fe		Minimum:	0.52
Units:			Maximum:	39.70
Detection Limit:	-		Mean:	1.69
Expected Value (EV):	1.69		Std Deviation:	4.25
E.V. Range:	1.52 to 1.86		% in Tolerance	11.33 %
			% Bias	-0.07 %
			% RSD	251.41 %



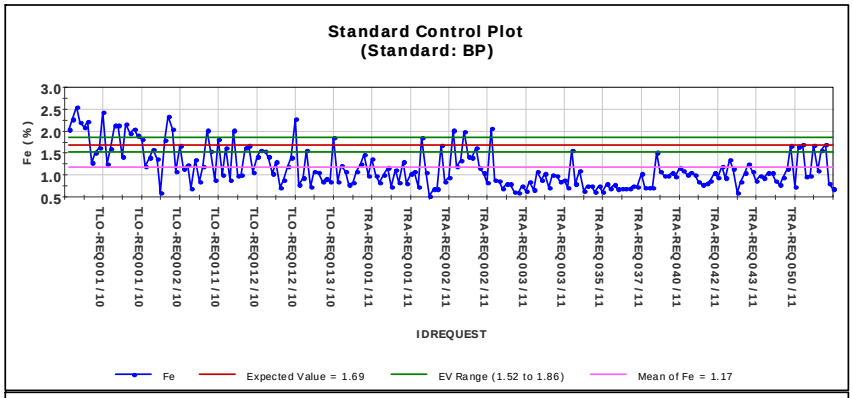


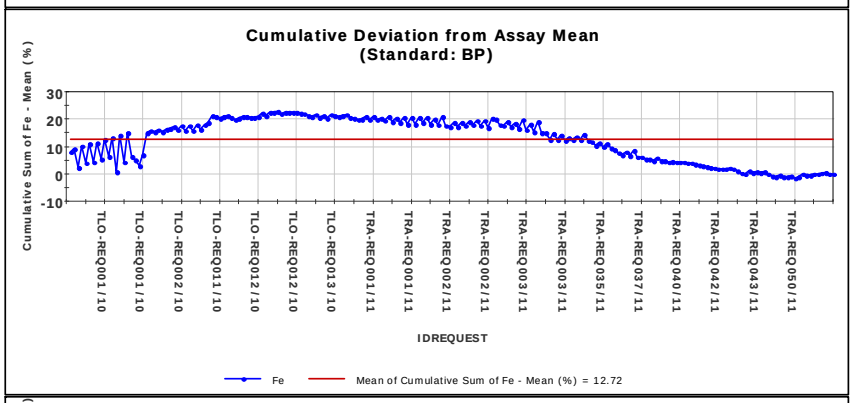


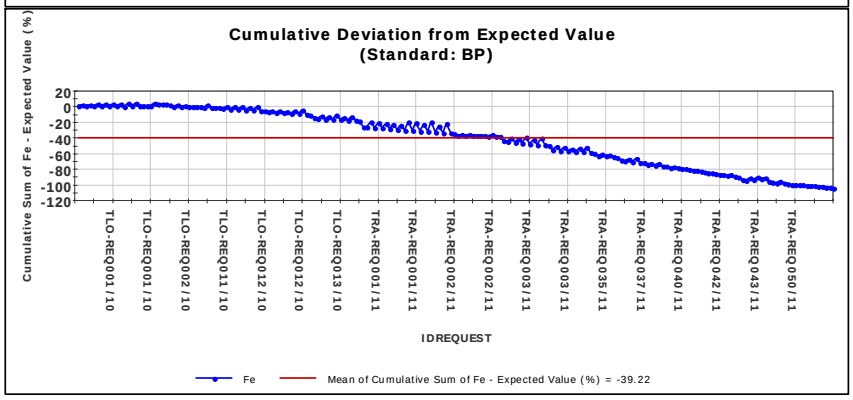
Printed: 11-jul-2011 08:52:24 Data Imported: 11-jul-2011 08:48:33 Page 1

Summary
(Standard: BP)

Standard:	BP		No of Analyses:	200
Element:	Fe		Minimum:	0.52
Units:			Maximum:	2.55
Detection Limit:	-		Mean:	1.17
Expected Value (EV):	1.69		Std Deviation:	0.45
E.V. Range:	1.52 to 1.86		% in Tolerance	11.50 %
			% Bias	-30.58 %
			% RSD	38.74 %







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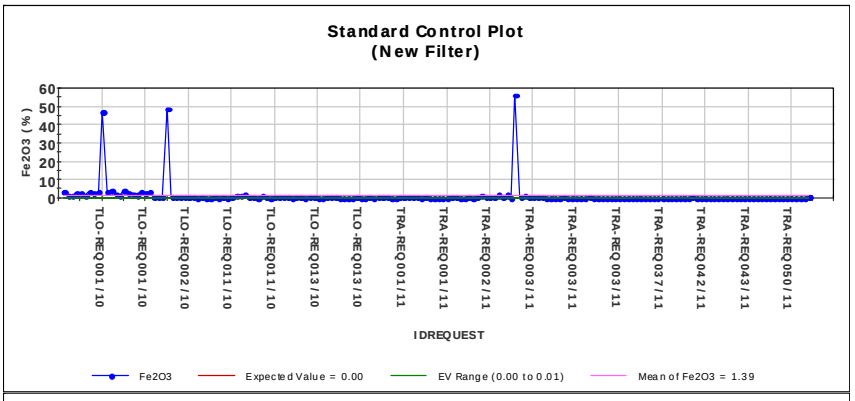
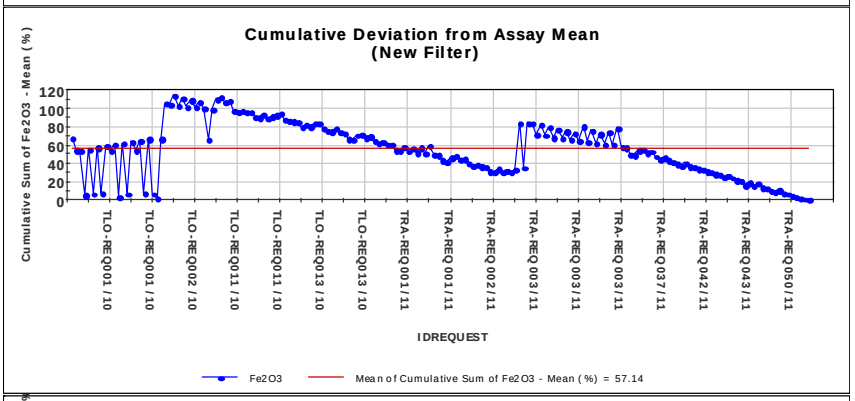
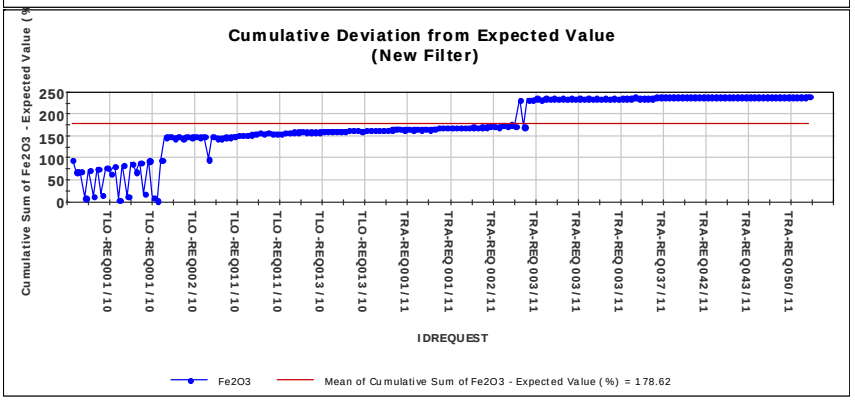
Summary
(New Filter)

Standard:	BP		No of Analyses:	174
Element:	Fe2O3		Minimum:	0.01
Units:	%		Maximum:	56.20
Detection Limit:	-		Mean:	1.39
Expected Value (EV):	0.00		Std Deviation:	6.62
E.V. Range:	0.00 to 0.01		% in Tolerance	0.00 %
			% Bias	0.00 %
			% RSD	476.52 %







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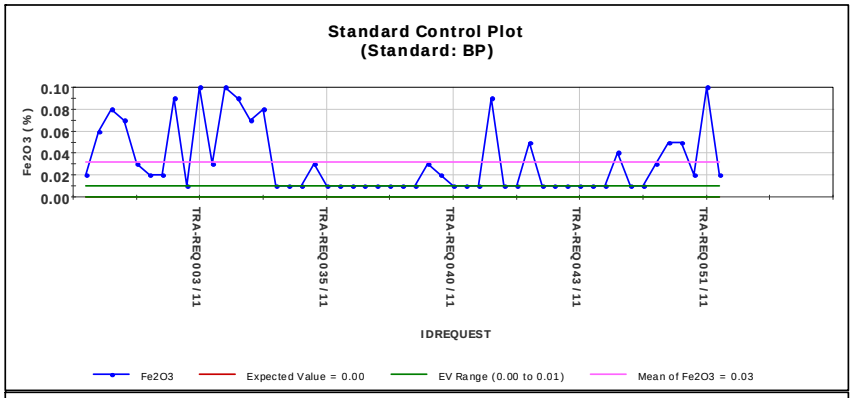
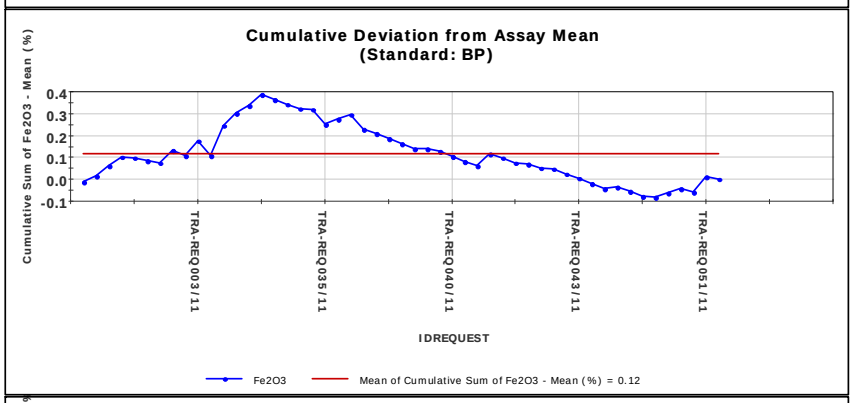
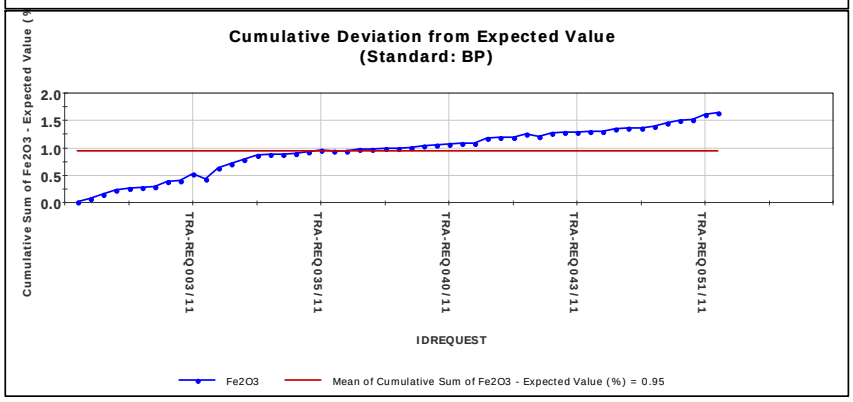
Summary
(Standard: BP)

Standard:	BP		No of Analyses:	51
Element:	Fe2O3		Minimum:	0.01
Units:	%		Maximum:	0.10
Detection Limit:	-		Mean:	0.03
Expected Value (EV):	0.00		Std Deviation:	0.03
E.V. Range:	0.00 to 0.01		% in Tolerance	0.00 %
			% Bias	0.00 %
			% RSD	93.66 %







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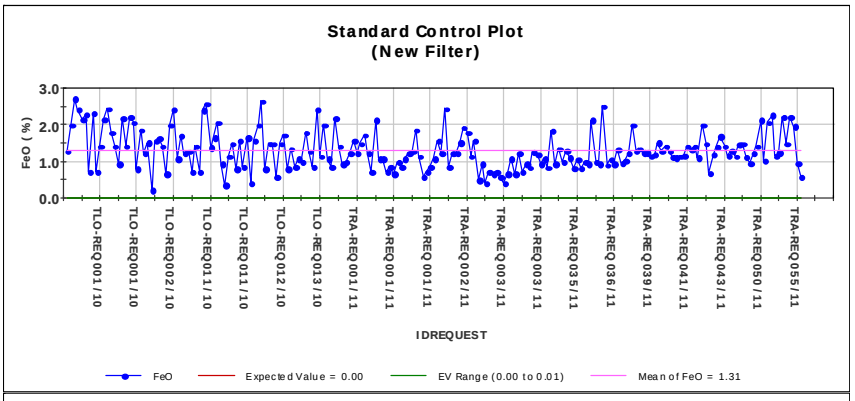
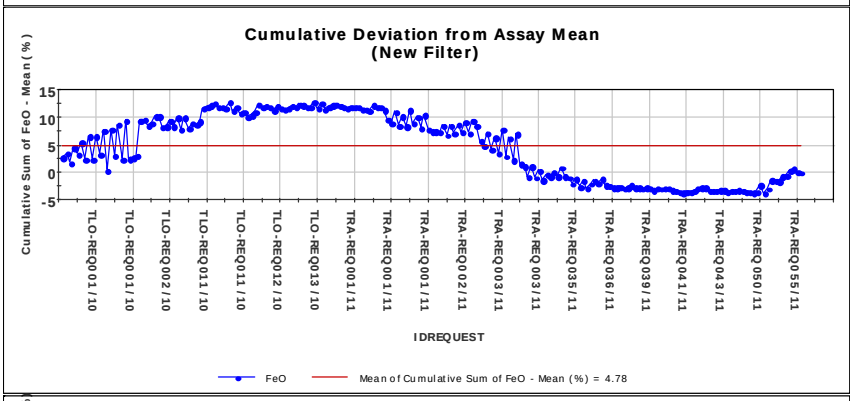
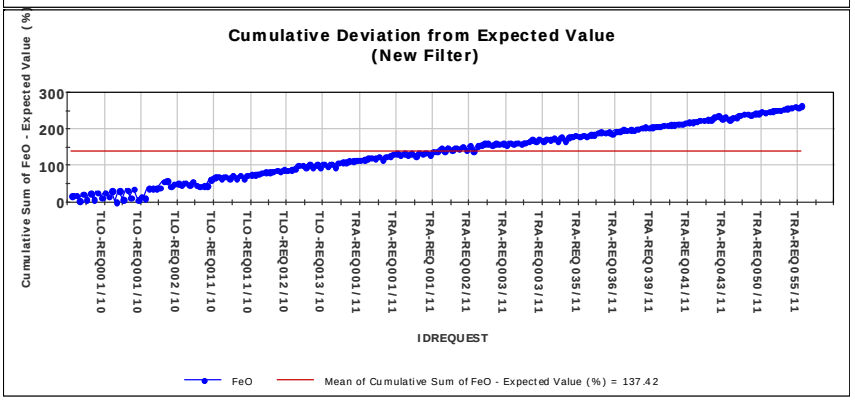
Summary
(New Filter)

Standard:	BP		No of Analyses:	201
Element:	FeO		Minimum:	0.21
Units:	%		Maximum:	2.70
Detection Limit:	-		Mean:	1.31
Expected Value (EV):	0.00		Std Deviation:	0.52
E.V. Range:	0.00 to 0.01		% in Tolerance	0.00 %
			% Bias	0.00 %
			% RSD	39.66 %







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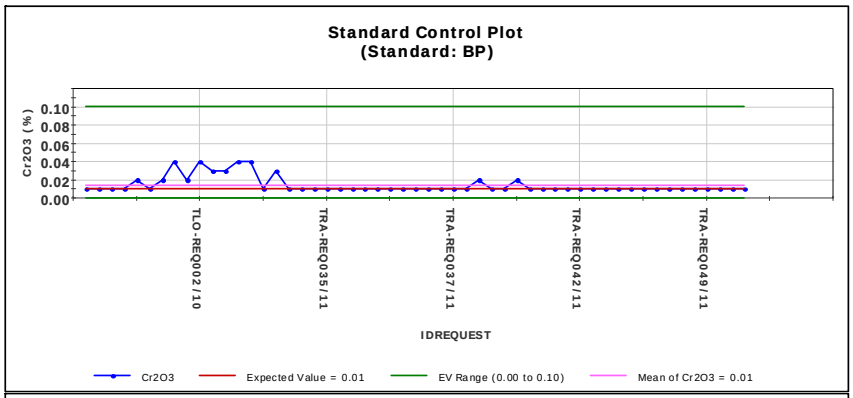
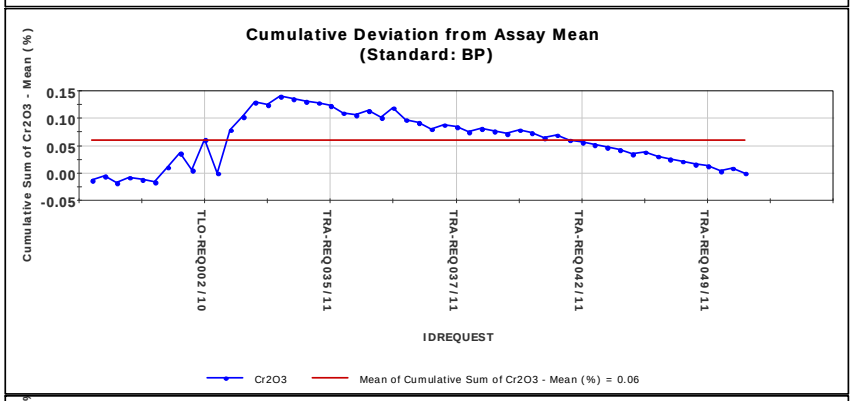
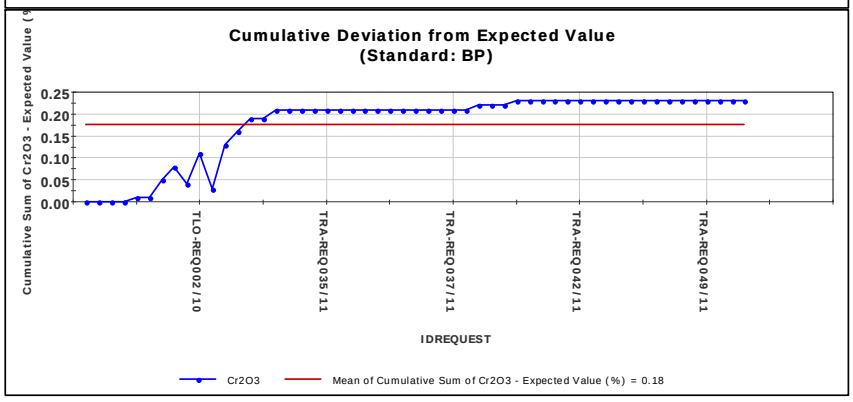
Summary
(Standard: BP)

Standard:	BP		No of Analyses:	53
Element:	Cr2O3		Minimum:	0.01
Units:			Maximum:	0.04
Detection Limit:	-		Mean:	0.01
Expected Value (EV):	0.01		Std Deviation:	0.01
E.V. Range:	0.00 to 0.10		% in Tolerance	100.00 %
			% Bias	43.40 %
			% RSD	62.83 %







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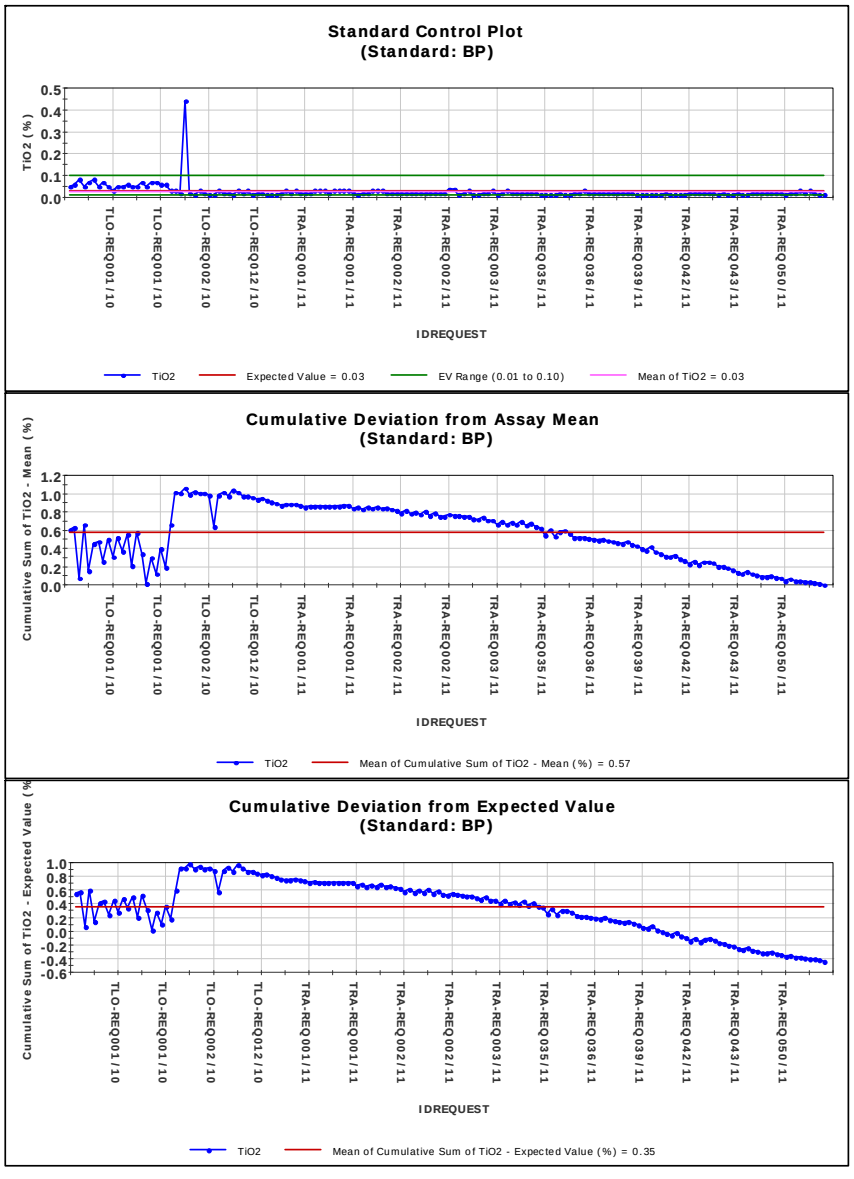
Summary
(Standard: BP)

Standard:	BP		No of Analyses:	158
Element:	TiO2		Minimum:	0.01
Units:			Maximum:	0.44
Detection Limit:	-		Mean:	0.03
Expected Value (EV):	0.03		Std Deviation:	0.04
E.V. Range:	0.01 to 0.10		% in Tolerance	99.37 %
			% Bias	-9.28 %
			% RSD	133.76 %



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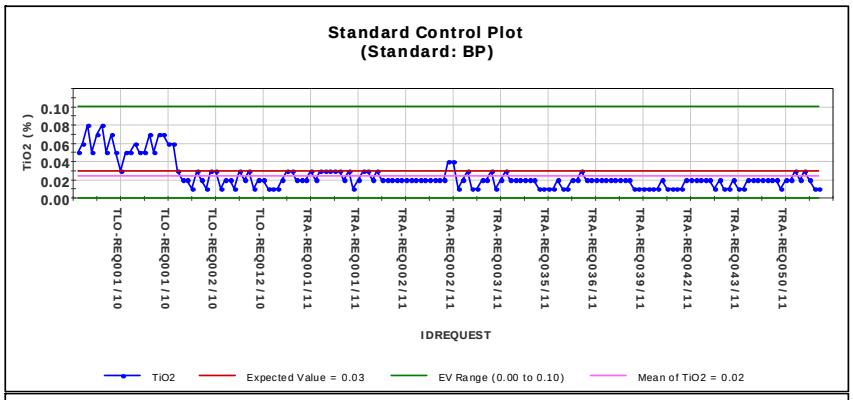
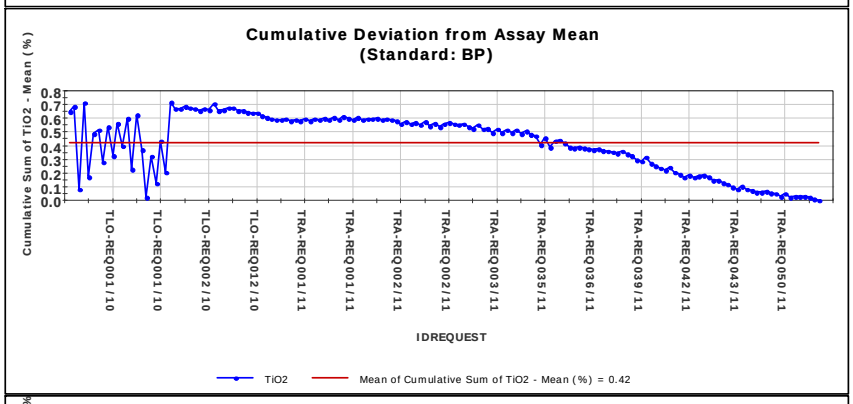
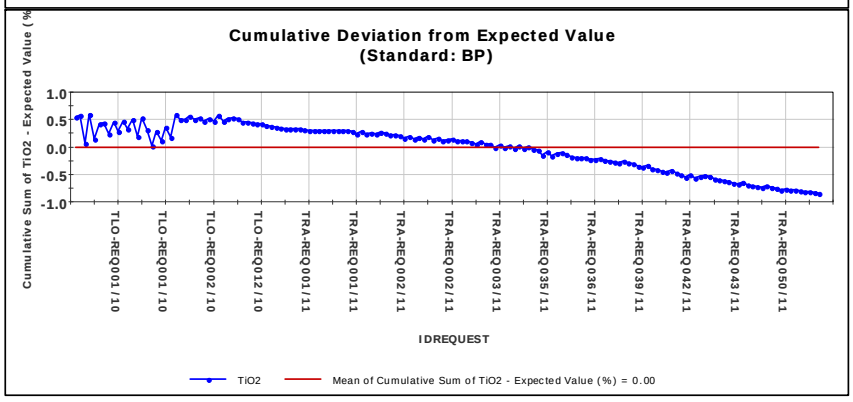
Summary
(Standard: BP)

Standard:	BP		No of Analyses:	157
Element:	TiO2		Minimum:	0.01
Units:			Maximum:	0.08
Detection Limit:	-		Mean:	0.02
Expected Value (EV):	0.03		Std Deviation:	0.02
E.V. Range:	0.00 to 0.10		% in Tolerance	100.00 %
			% Bias	-18.05 %
			% RSD	63.19 %



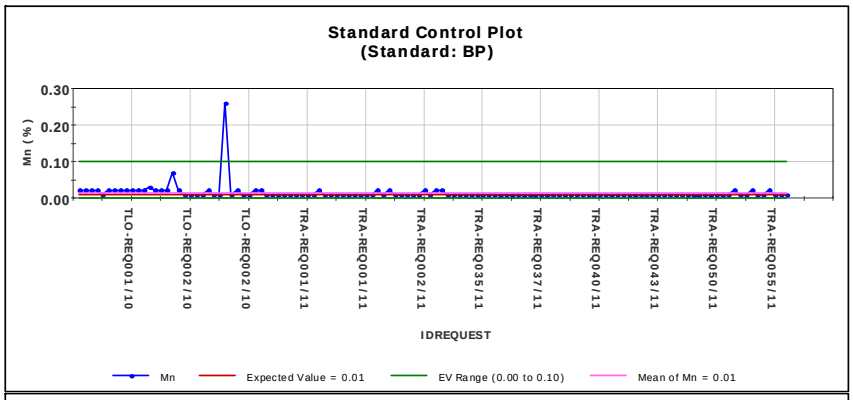


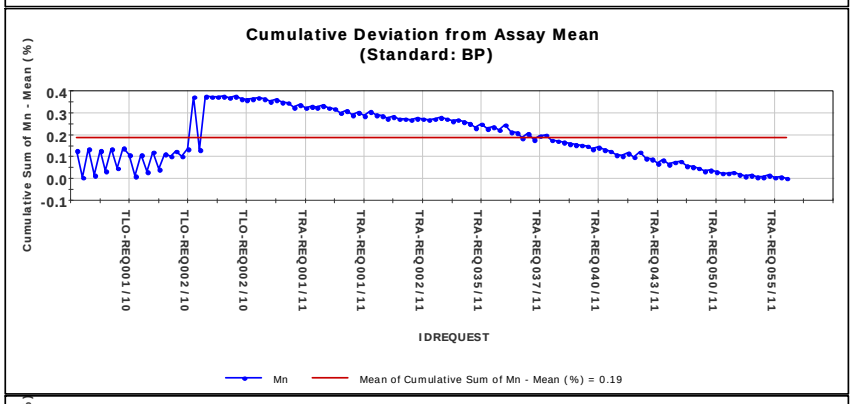


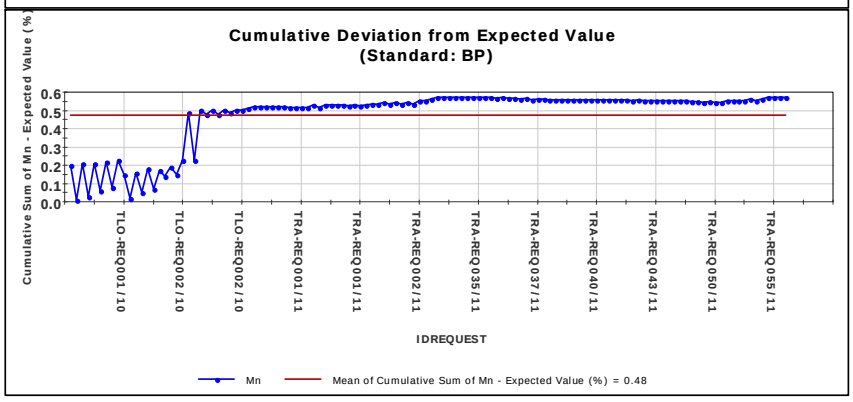
Printed: 11-jul-2011 14:04:29 Data Imported: 11-jul-2011 14:00:54 Page 1

Summary
(Standard: BP)

Standard:	BP		No of Analyses:	122
Element:	Mn		Minimum:	0.01
Units:			Maximum:	0.26
Detection Limit:	-		Mean:	0.01
Expected Value (EV):	0.01		Std Deviation:	0.02
E.V. Range:	0.00 to 0.10		% in Tolerance	99.18 %
			% Bias	46.89 %
			% RSD	159.16 %



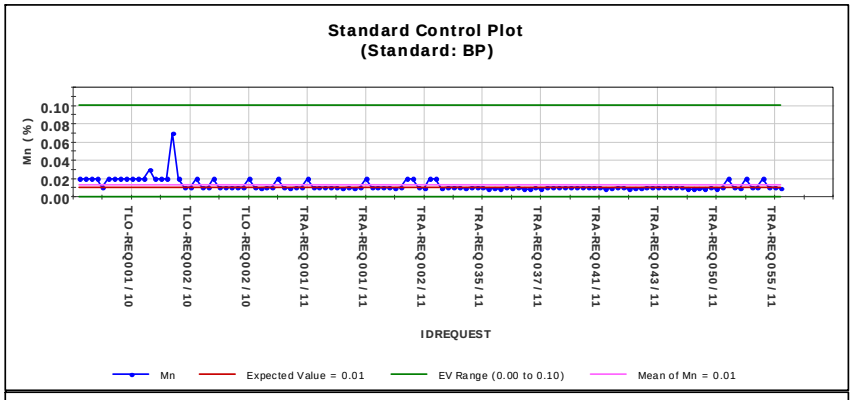


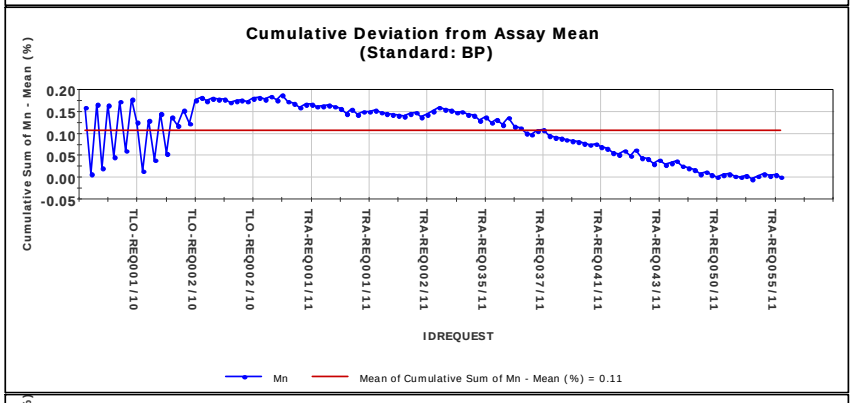


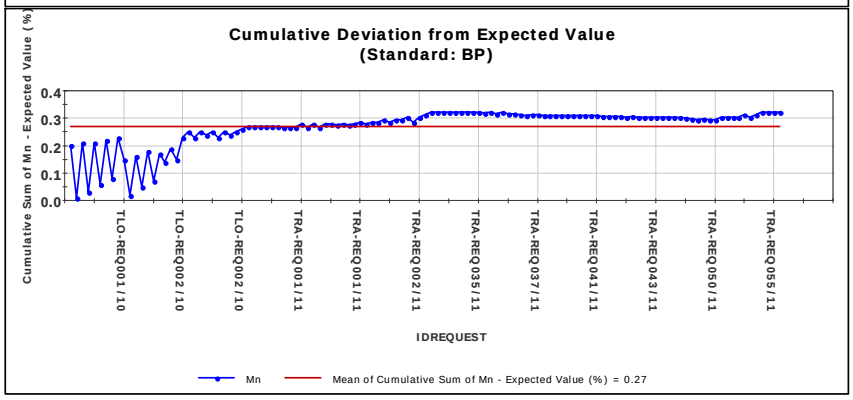
Printed: 11-jul-2011 10:37:08 Data Imported: 11-jul-2011 10:35:20 Page 1

Summary
(Standard: BP)

Standard:	BP		No of Analyses:	121
Element:	Mn		Minimum:	0.01
Units:			Maximum:	0.07
Detection Limit:	-		Mean:	0.01
Expected Value (EV):	0.01		Std Deviation:	0.01
E.V. Range:	0.00 to 0.10		% in Tolerance	100.00 %
			% Bias	26.61 %
			% RSD	55.63 %







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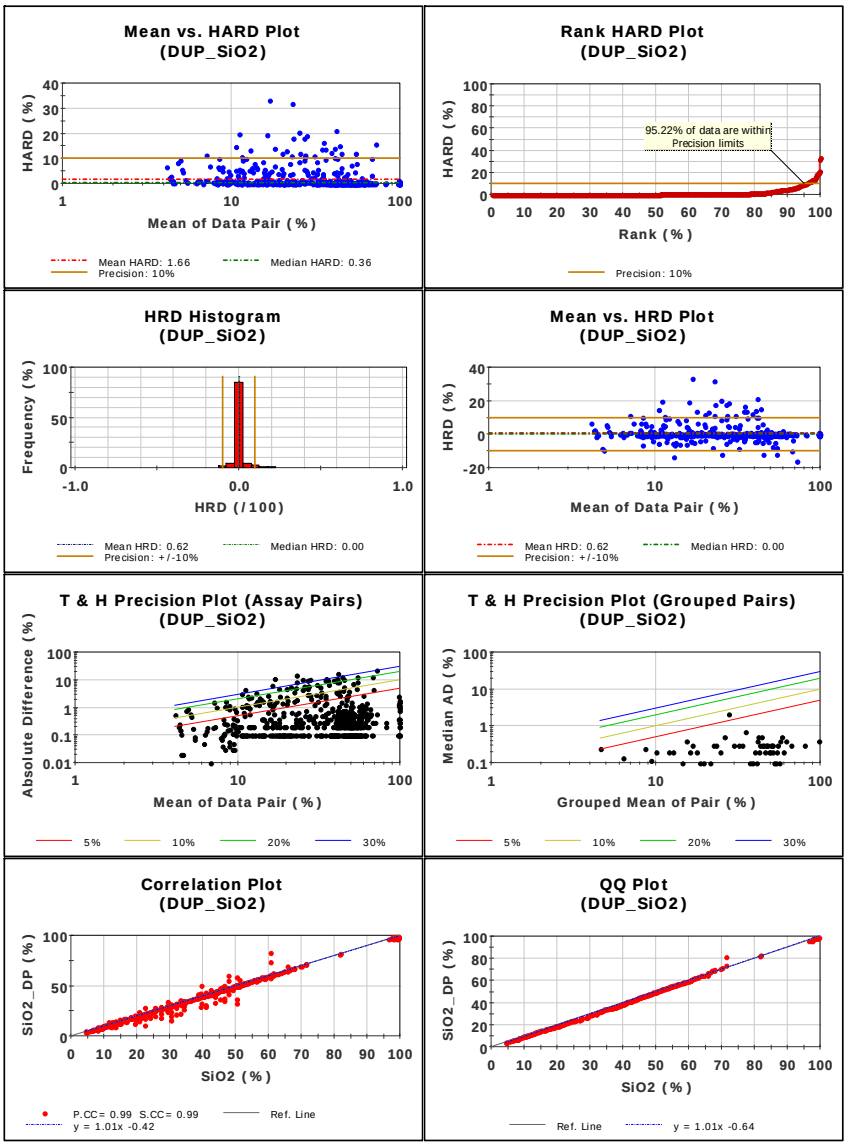
Appendix B

QA/QC

Laboratory Duplicates

Summary
(DUP_SiO2)

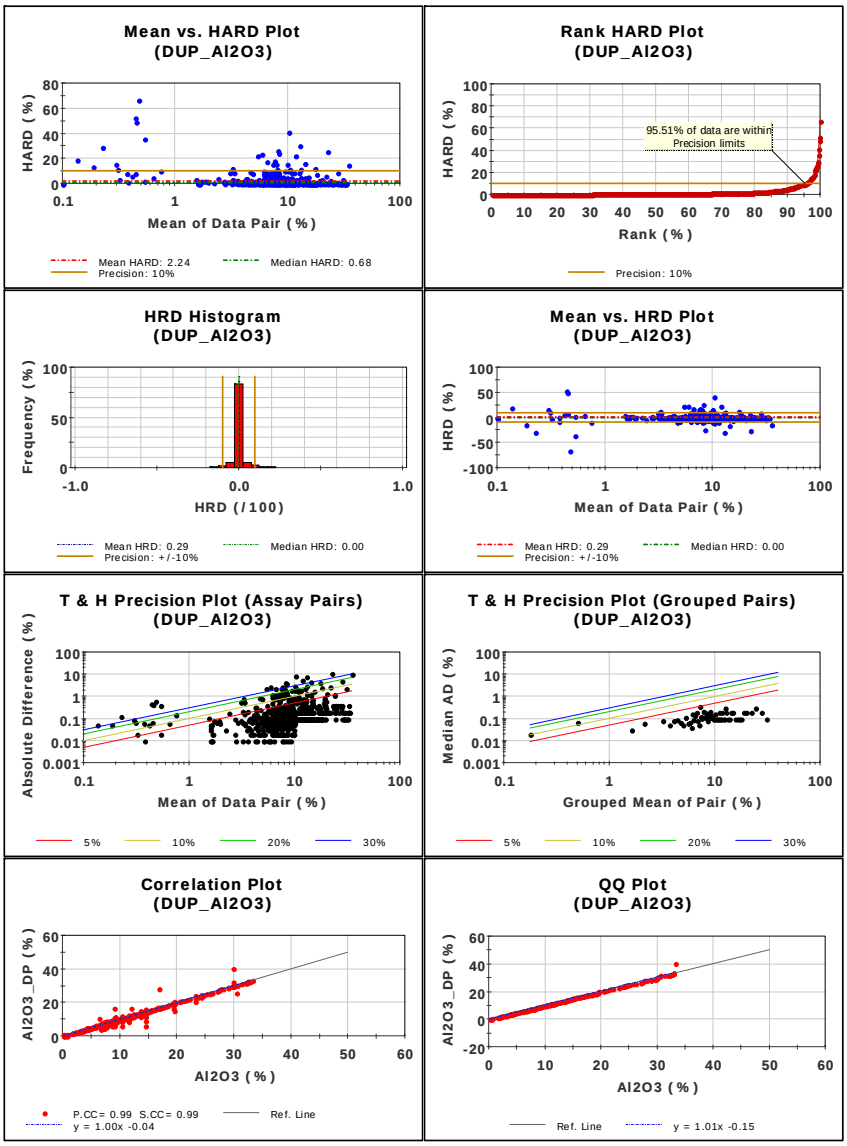
	SiO2	SiO2_DP	Units			Result
No. Pairs:	690	690			Pearson CC:	0.99
Minimum:	4.39	3.83	%		Spearman CC:	0.99
Maximum:	99.40	99.40	%		Mean HARD:	1.66
Mean:	36.56	36.33	%		Median HARD:	0.36
Median	39.80	39.05	%			
Std. Deviation:	20.63	20.87	%		Mean HRD:	0.62
Coefficient of Variation:	0.56	0.57			Median HRD	0.00



Printed: 12-jul-2011 15:03:10 Data Imported: 11-jul-2011 14:56:02 Page 1

Summary
(DUP_Al2O3)

	Al2O3	Al2O3_DP	Units			Result
No. Pairs:	690	690			Pearson CC:	0.99
Minimum:	0.10	0.10	%		Spearman CC:	0.99
Maximum:	33.30	40.20	%		Mean HARD:	2.24
Mean:	10.39	10.37	%		Median HARD:	0.68
Median	9.03	8.91	%			
Std. Deviation:	6.46	6.54	%		Mean HRD:	0.29
Coefficient of Variation:	0.62	0.63			Median HRD	0.00



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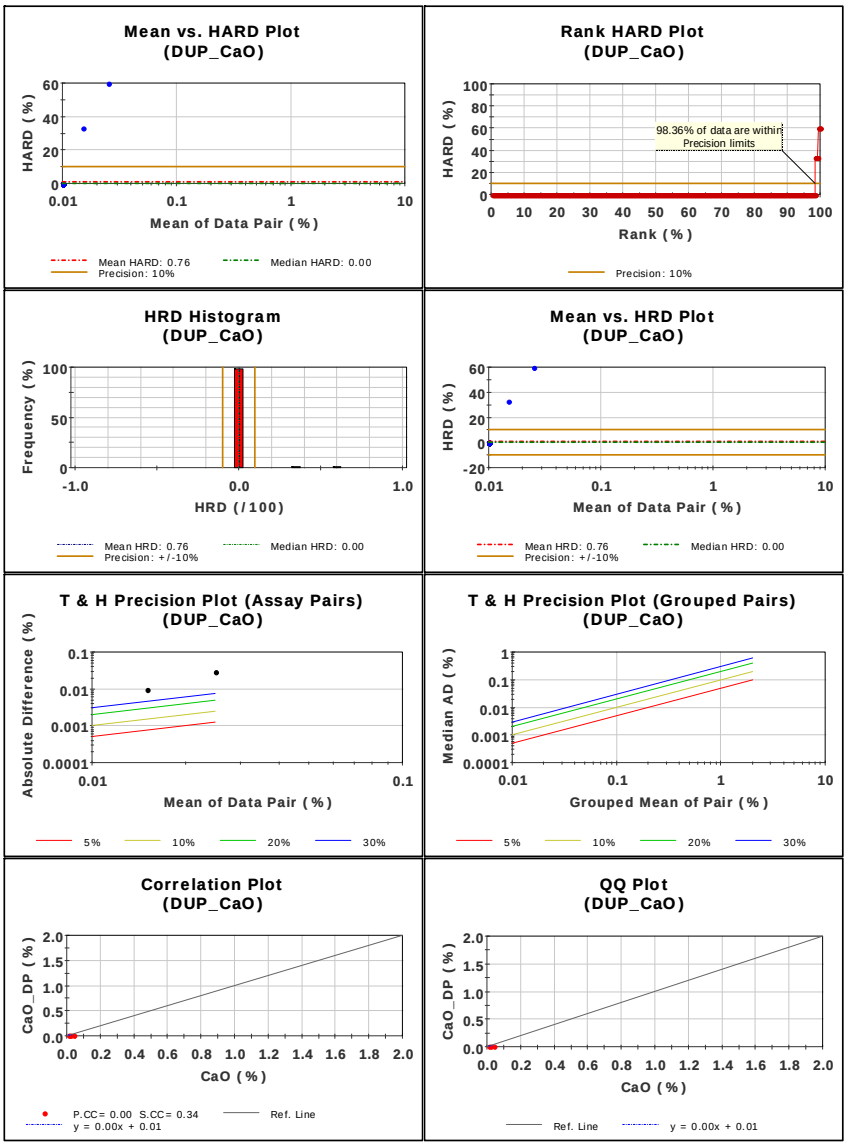
Summary
(DUP_CaO)

	CaO	CaO_DP	Units			Result
No. Pairs:	489	489			Pearson CC:	0.00
Minimum:	0.01	0.01	%		Spearman CC:	0.34
Maximum:	0.04	0.01	%		Mean HARD:	0.76
Mean:	0.01	0.01	%		Median HARD:	0.00
Median	0.01	0.01	%			
Std. Deviation:	0.00	0.00	%		Mean HRD:	0.76
Coefficient of Variation:	0.28	0.00			Median HRD	0.00



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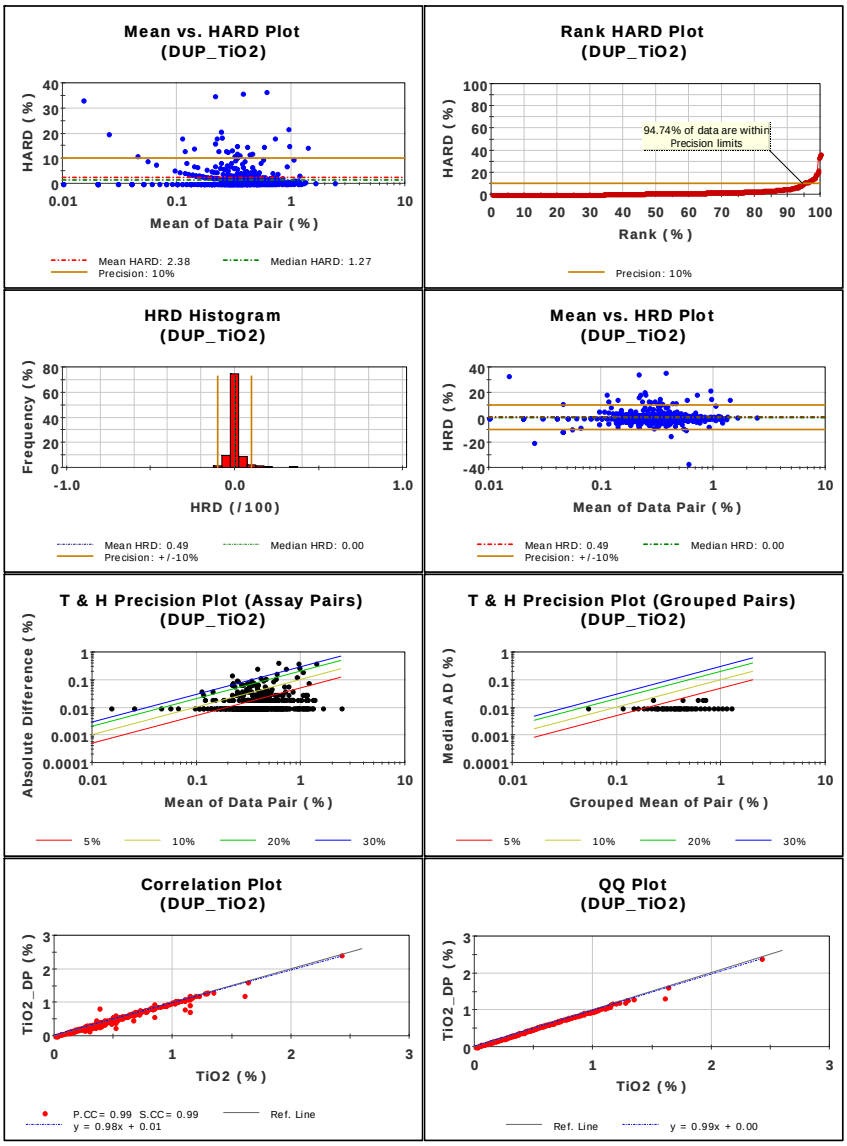
Summary
(DUP_TiO2)

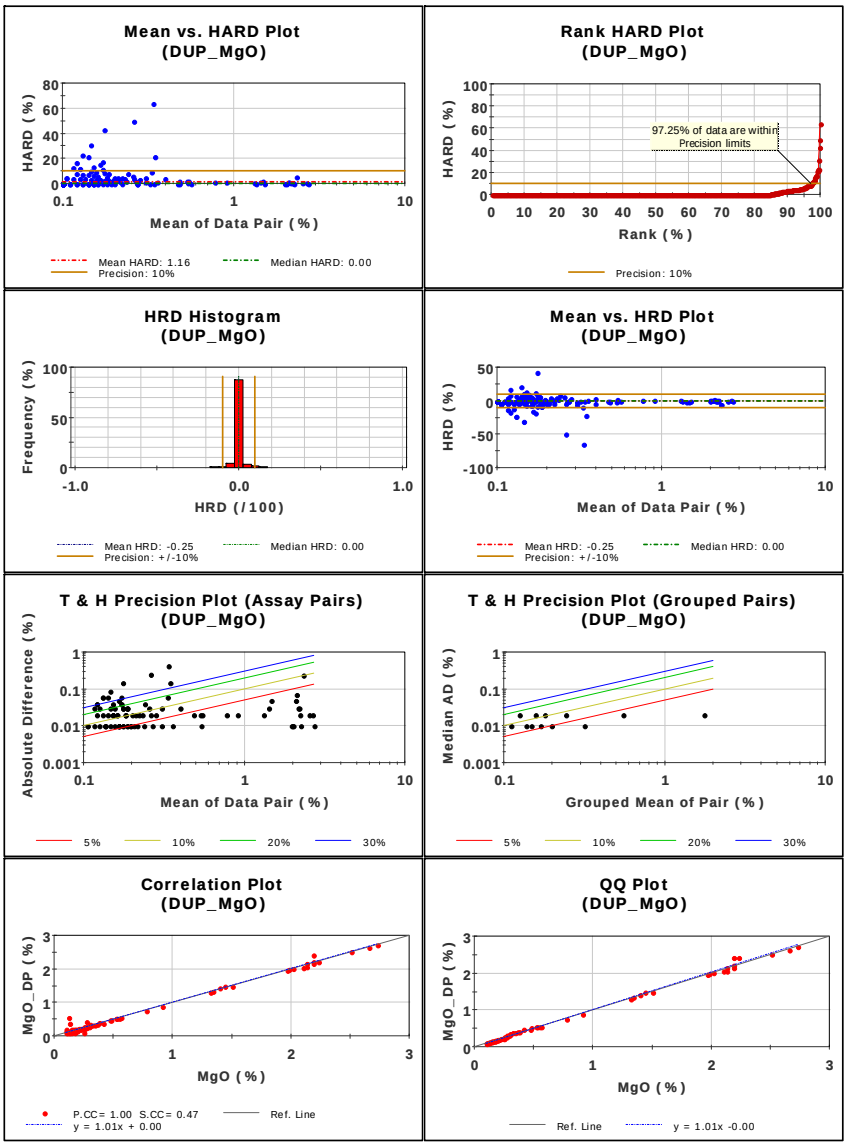
	TiO2	TiO2_DP	Units			Result
No. Pairs:	684	684			Pearson CC:	0.99
Minimum:	0.01	0.01	%		Spearman CC:	0.99
Maximum:	2.42	2.41	%		Mean HARD:	2.38
Mean:	0.40	0.40	%		Median HARD:	1.27
Median	0.35	0.34	%			
Std. Deviation:	0.27	0.26	%		Mean HRD:	0.49
Coefficient of Variation:	0.67	0.66			Median HRD	0.00



Printed: 12-jul-2011 15:08:07 Data Imported: 11-jul-2011 14:56:02 Page 1

Summary
(DUP_MgO)

	MgO	MgO_DP	Units			Result
No. Pairs:	690	690			Pearson CC:	1.00
Minimum:	0.10	0.10	%		Spearman CC:	0.47
Maximum:	2.73	2.72	%		Mean HARD:	1.16
Mean:	0.17	0.17	%		Median HARD:	0.00
Median	0.10	0.10	%			
Std. Deviation:	0.32	0.33	%		Mean HRD:	-0.25
Coefficient of Variation:	1.89	1.90			Median HRD	0.00



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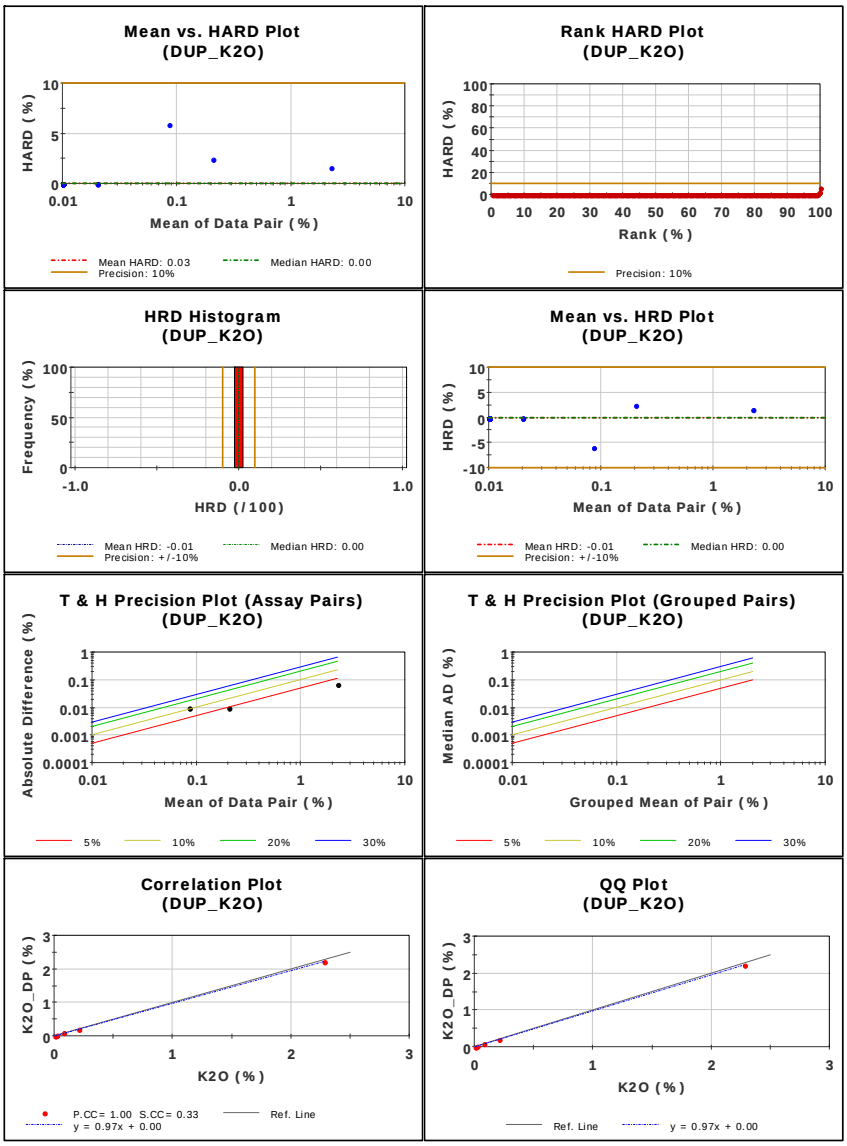
Summary
(DUP_K2O)

	K2O	K2O_DP	Units			Result
No. Pairs:	334	334			Pearson CC:	1.00
Minimum:	0.01	0.01	%		Spearman CC:	0.33
Maximum:	2.28	2.21	%		Mean HARD:	0.03
Mean:	0.02	0.02	%		Median HARD:	0.00
Median	0.01	0.01	%			
Std. Deviation:	0.12	0.12	%		Mean HRD:	-0.01
Coefficient of Variation:	7.04	6.90			Median HRD	0.00



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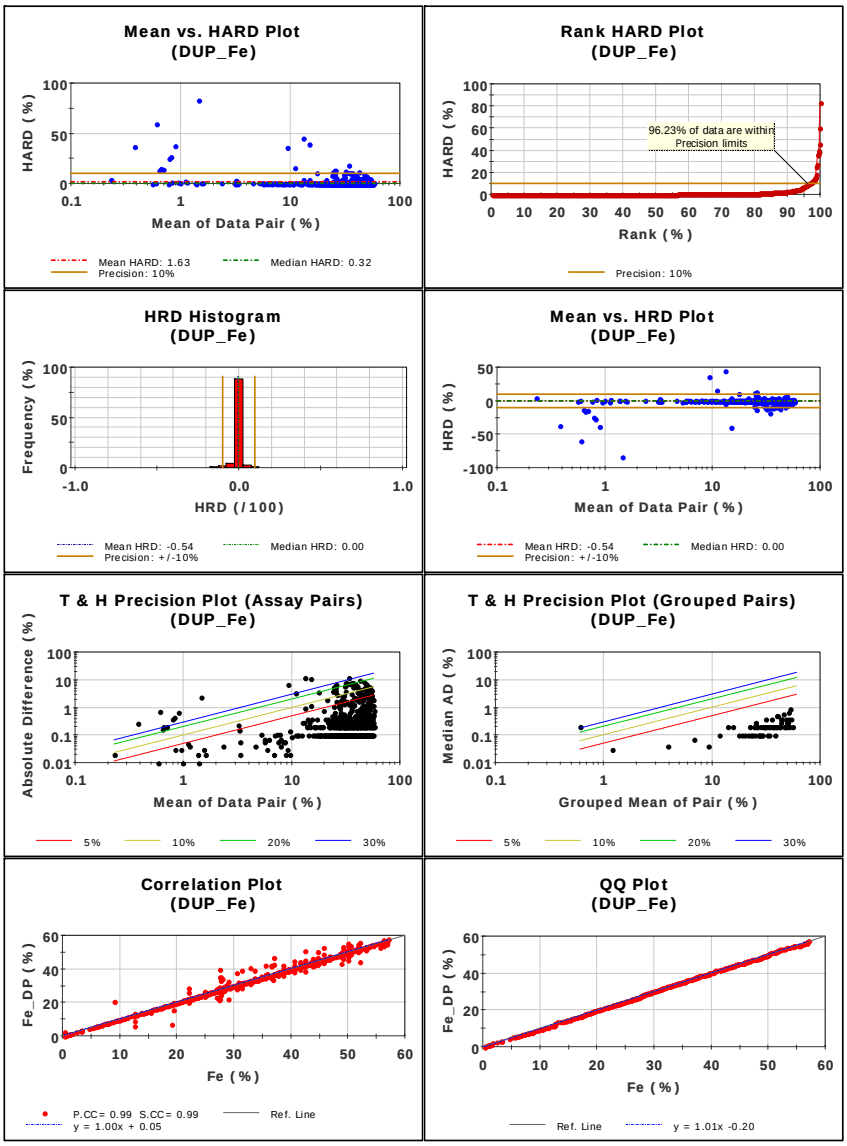
Summary
(DUP_Fe)

	Fe	Fe_DP	Units			Result
No. Pairs:	690	690			Pearson CC:	0.99
Minimum:	0.24	0.22	%		Spearman CC:	0.99
Maximum:	57.00	57.80	%		Mean HARD:	1.63
Mean:	32.22	32.38	%		Median HARD:	0.32
Median	31.75	32.20	%			
Std. Deviation:	13.62	13.78	%		Mean HRD:	-0.54
Coefficient of Variation:	0.42	0.43			Median HRD	0.00



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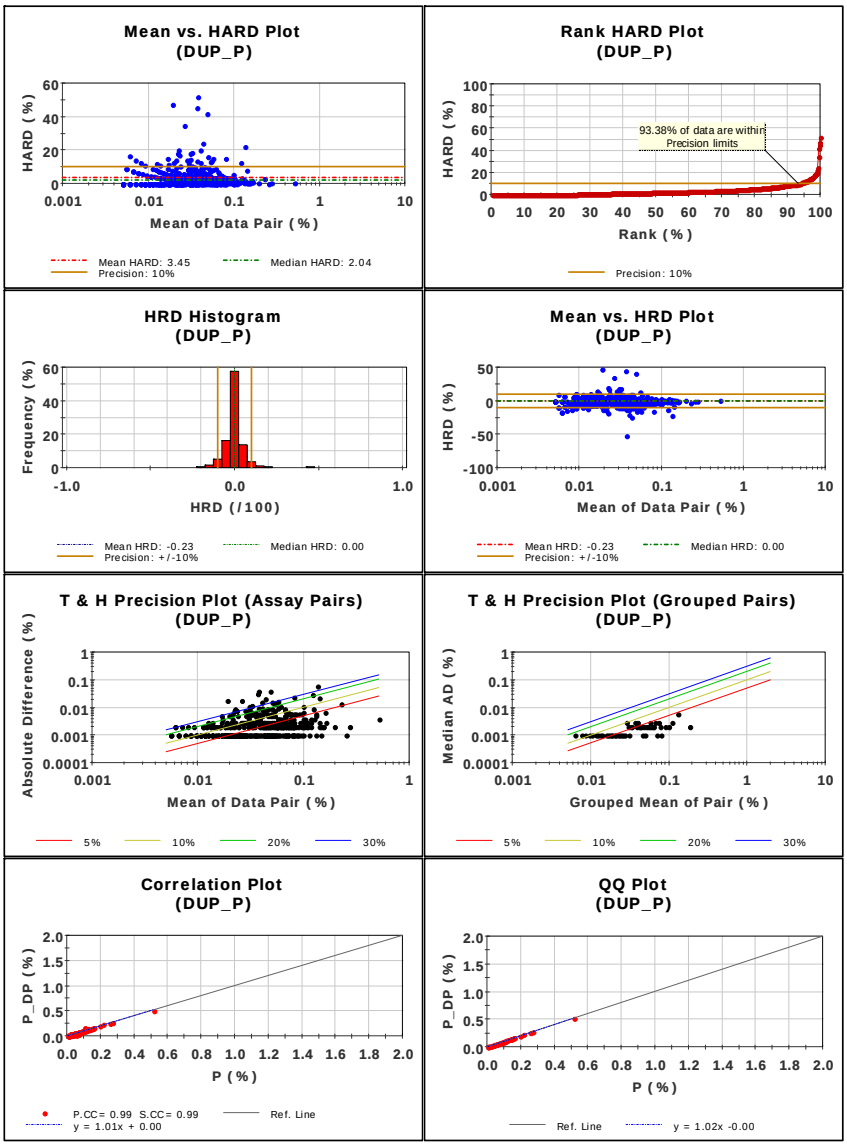
Summary
(DUP_P)

	P	P_DP	Units			Result
No. Pairs:	650	650			Pearson CC:	0.99
Minimum:	0.01	0.01	%		Spearman CC:	0.99
Maximum:	0.52	0.51	%		Mean HARD:	3.45
Mean:	0.04	0.04	%		Median HARD:	2.04
Median	0.03	0.03	%			
Std. Deviation:	0.04	0.04	%		Mean HRD:	-0.23
Coefficient of Variation:	0.93	0.94			Median HRD	0.00



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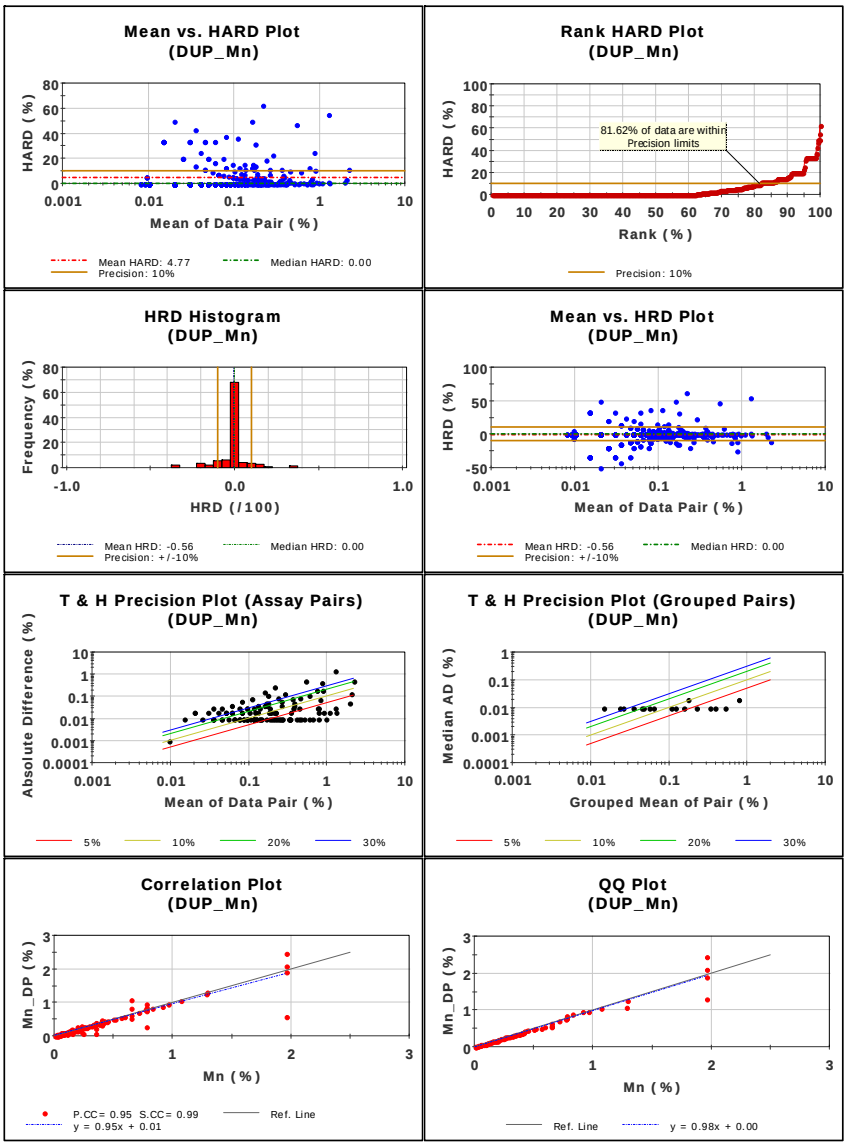
Summary
(DUP_Mn)

	Mn	Mn_DP	Units			Result
No. Pairs:	604	604			Pearson CC:	0.95
Minimum:	0.01	0.01	%		Spearman CC:	0.99
Maximum:	1.96	2.46	%		Mean HARD:	4.77
Mean:	0.13	0.12	%		Median HARD:	0.00
Median	0.05	0.05	%			
Std. Deviation:	0.22	0.22	%		Mean HRD:	-0.56
Coefficient of Variation:	1.79	1.80			Median HRD	0.00



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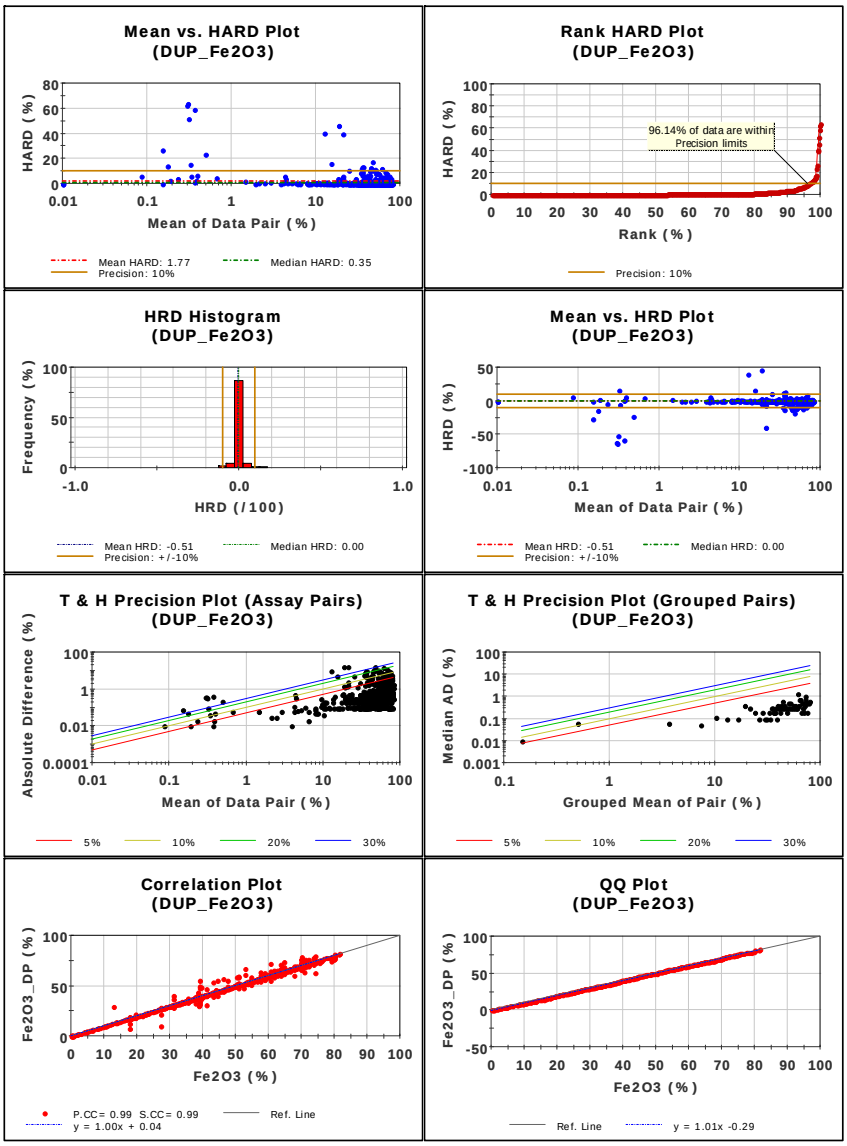
Summary
(DUP_Fe2O3)

	Fe2O3	Fe2O3_DP	Units			Result
No. Pairs:	673	673			Pearson CC:	0.99
Minimum:	0.01	0.01	%		Spearman CC:	0.99
Maximum:	81.50	82.70	%		Mean HARD:	1.77
Mean:	44.69	44.94	%		Median HARD:	0.35
Median	44.30	44.70	%			
Std. Deviation:	20.14	20.38	%		Mean HRD:	-0.51
Coefficient of Variation:	0.45	0.45			Median HRD	0.00



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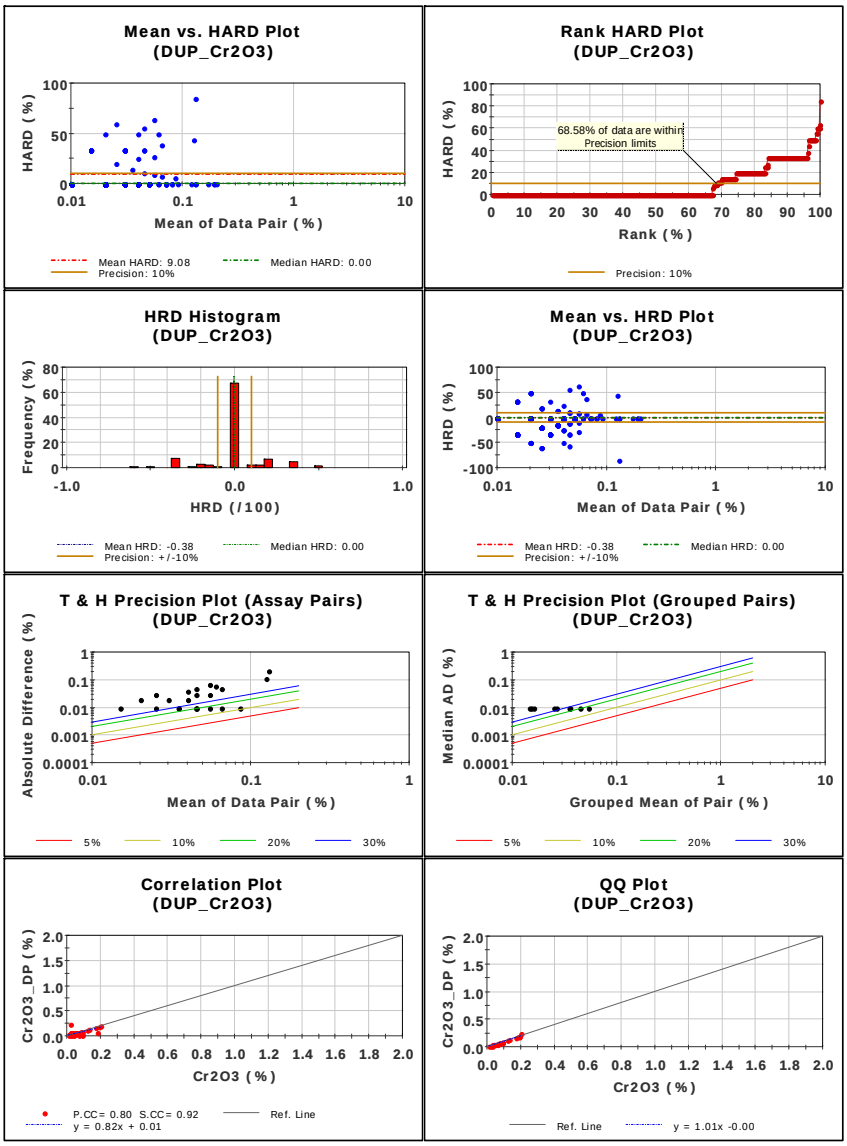
Summary
(DUP_Cr2O3)

	Cr2O3	Cr2O3_DP	Units			Result
No. Pairs:	541	541			Pearson CC:	0.80
Minimum:	0.01	0.01	%		Spearman CC:	0.92
Maximum:	0.20	0.24	%		Mean HARD:	9.08
Mean:	0.03	0.03	%		Median HARD:	0.00
Median	0.02	0.02	%			
Std. Deviation:	0.02	0.02	%		Mean HRD:	-0.38
Coefficient of Variation:	0.81	0.83			Median HRD	0.00



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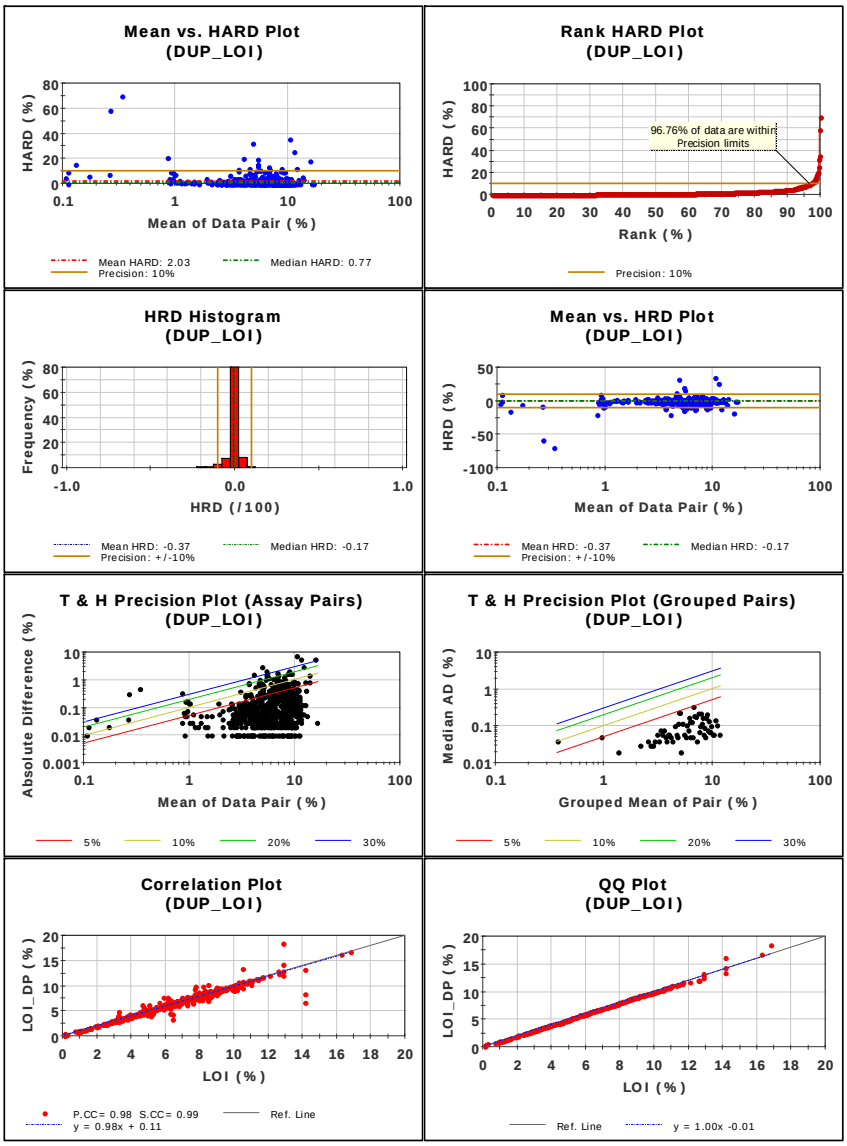
Summary
(DUP_LOI)

	LOI	LOI_DP	Units			Result
No. Pairs:	679	679			Pearson CC:	0.98
Minimum:	0.10	0.10	%		Spearman CC:	0.99
Maximum:	16.79	18.47	%		Mean HARD:	2.03
Mean:	6.09	6.10	%		Median HARD:	0.77
Median	5.98	6.00	%			
Std. Deviation:	2.80	2.82	%		Mean HRD:	-0.37
Coefficient of Variation:	0.46	0.46			Median HRD	-0.17



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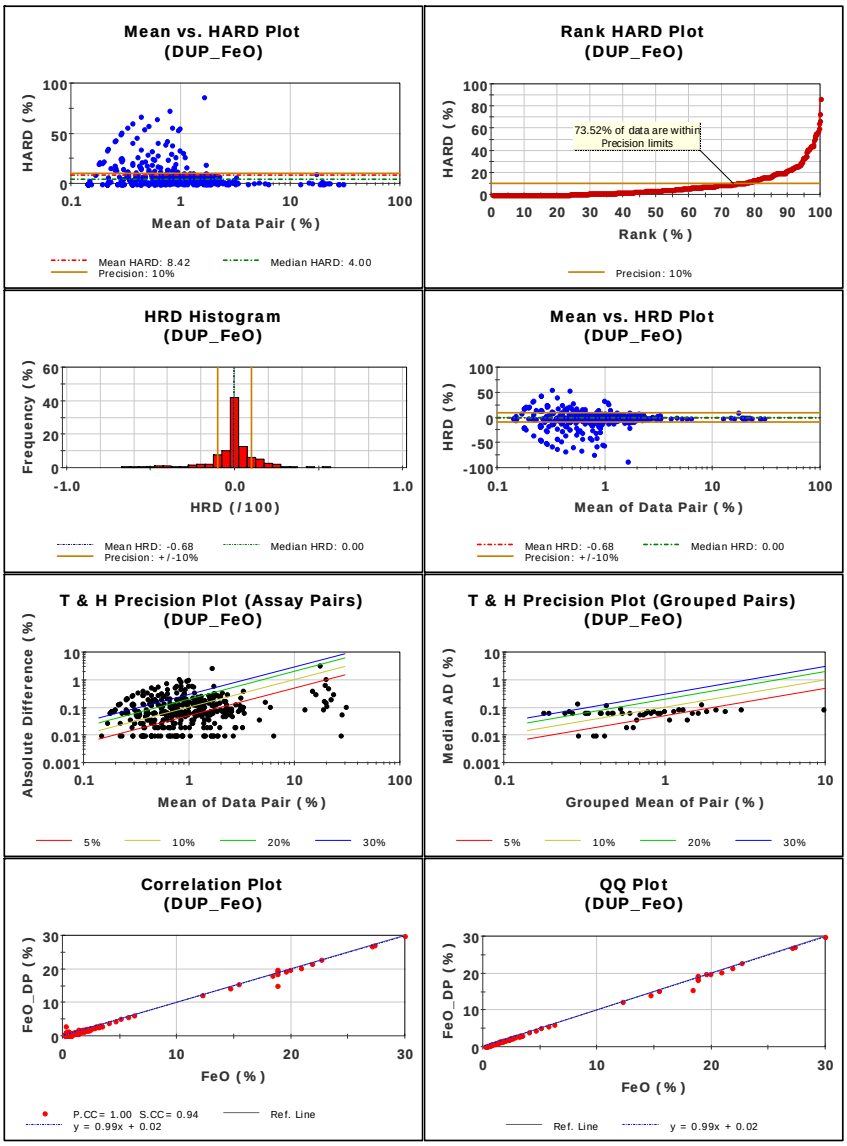
Summary
(DUP_FeO)

	FeO	FeO_DP	Units			Result
No. Pairs:	627	627			Pearson CC:	1.00
Minimum:	0.14	0.14	%		Spearman CC:	0.94
Maximum:	29.89	30.00	%		Mean HARD:	8.42
Mean:	1.25	1.26	%		Median HARD:	4.00
Median	0.50	0.50	%			
Std. Deviation:	3.25	3.23	%		Mean HRD:	-0.68
Coefficient of Variation:	2.60	2.57			Median HRD	0.00



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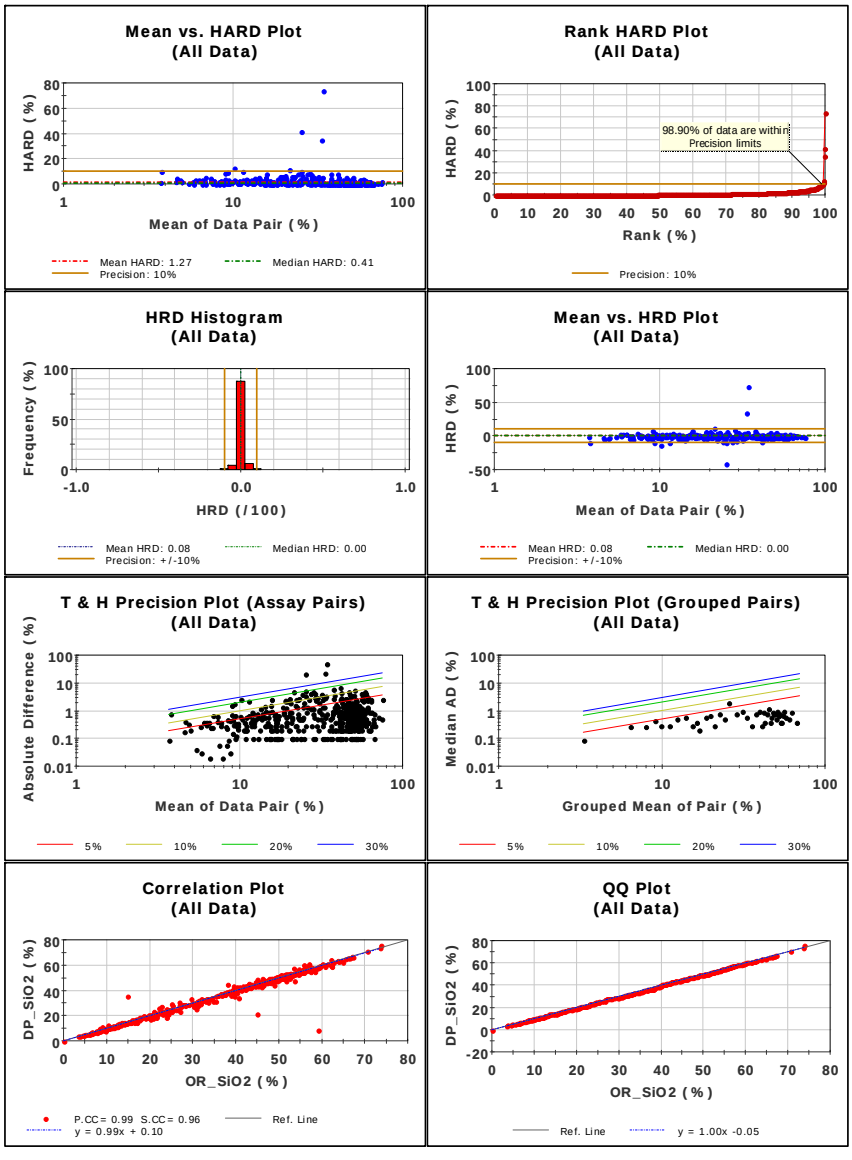
Appendix B

QA/QC

Project Duplicates

Summary
(All Data)

	OR_SiO2	DP_SiO2	Units			Result
No. Pairs:	727	727			Pearson CC:	0.99
Minimum:	0.00	0.00	%		Spearman CC:	0.96
Maximum:	73.70	76.30	%		Mean HARD:	1.27
Mean:	24.76	24.70	%		Median HARD:	0.41
Median	20.50	20.10	%			
Std. Deviation:	22.06	22.05	%		Mean HRD:	0.08
Coefficient of Variation:	0.89	0.89			Median HRD	0.00



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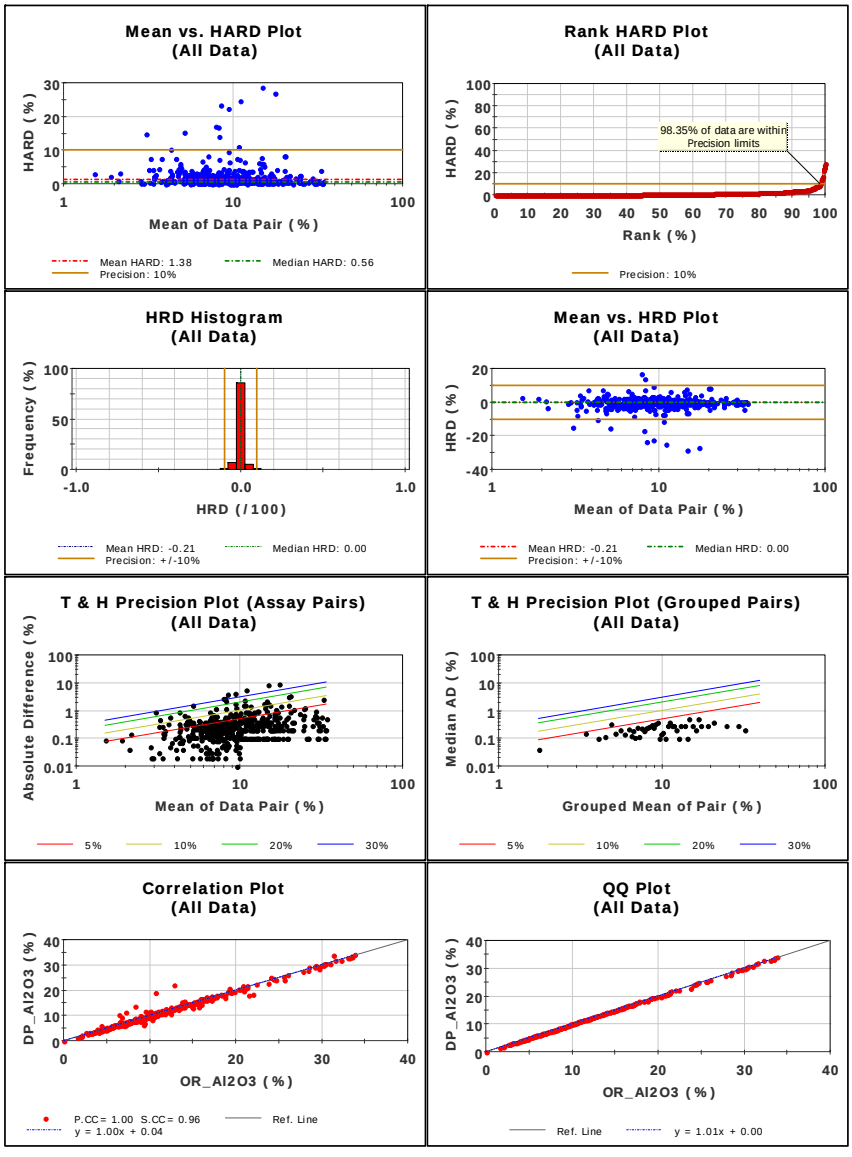
Summary
(All Data)

	OR_Al2O3	DP_Al2O3	Units			Result
No. Pairs:	727	727			Pearson CC:	1.00
Minimum:	0.00	0.00	%		Spearman CC:	0.96
Maximum:	33.80	34.30	%		Mean HARD:	1.38
Mean:	7.69	7.74	%		Median HARD:	0.56
Median	7.10	7.12	%			
Std. Deviation:	7.35	7.39	%		Mean HRD:	-0.21
Coefficient of Variation:	0.96	0.96			Median HRD	0.00



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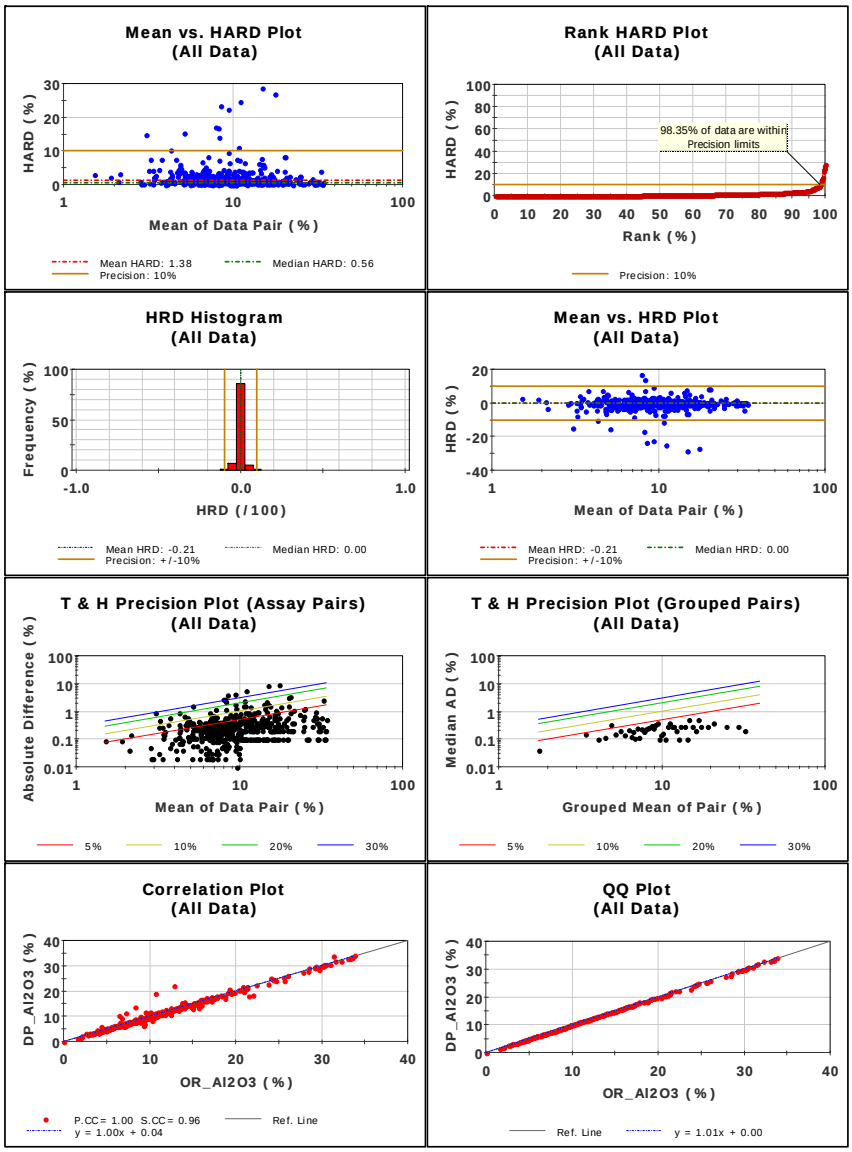
Summary
(All Data)

	OR_Al2O3	DP_Al2O3	Units			Result
No. Pairs:	727	727			Pearson CC:	1.00
Minimum:	0.00	0.00	%		Spearman CC:	0.96
Maximum:	33.80	34.30	%		Mean HARD:	1.38
Mean:	7.69	7.74	%		Median HARD:	0.56
Median	7.10	7.12	%			
Std. Deviation:	7.35	7.39	%		Mean HRD:	-0.21
Coefficient of Variation:	0.96	0.96			Median HRD	0.00



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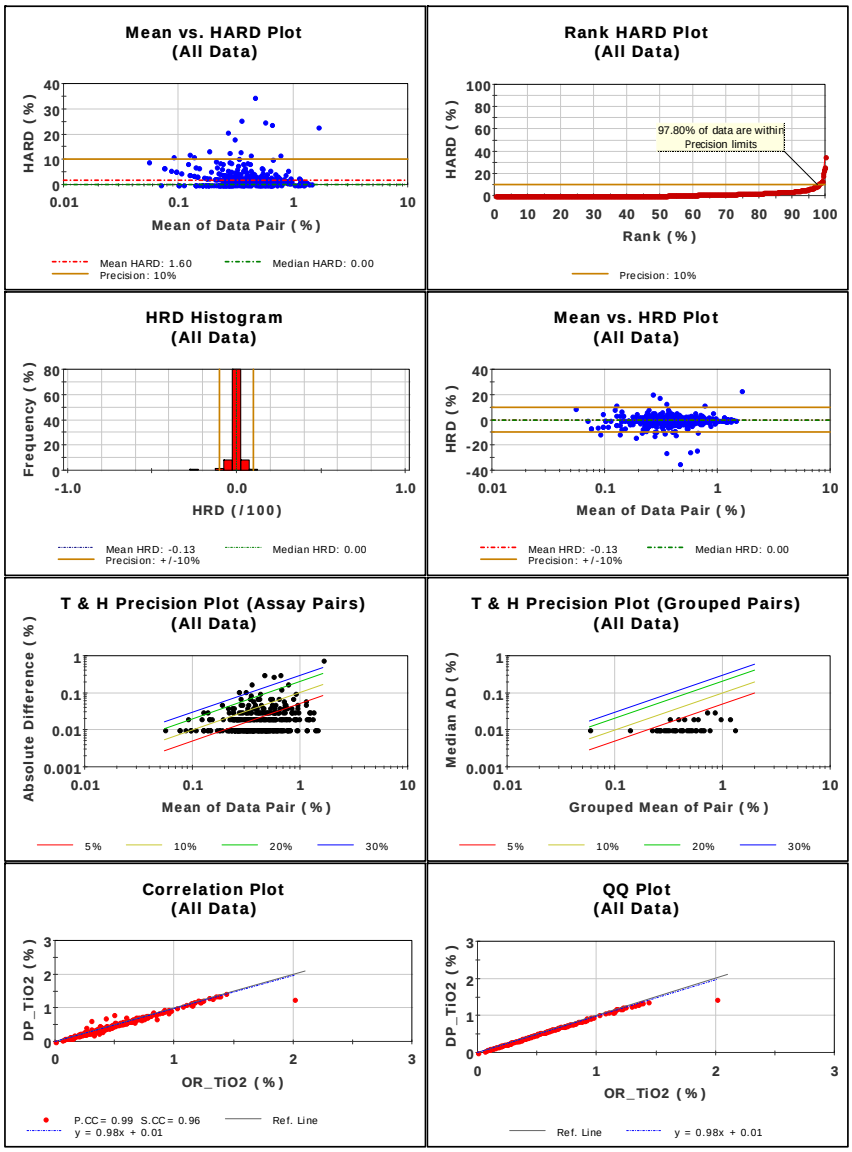
Summary
(All Data)

	OR_TiO2	DP_TiO2	Units			Result
No. Pairs:	727	727			Pearson CC:	0.99
Minimum:	0.00	0.00	%		Spearman CC:	0.96
Maximum:	2.01	1.44	%		Mean HARD:	1.60
Mean:	0.30	0.30	%		Median HARD:	0.00
Median	0.26	0.26	%			
Std. Deviation:	0.30	0.29	%		Mean HRD:	-0.13
Coefficient of Variation:	0.99	0.98			Median HRD	0.00



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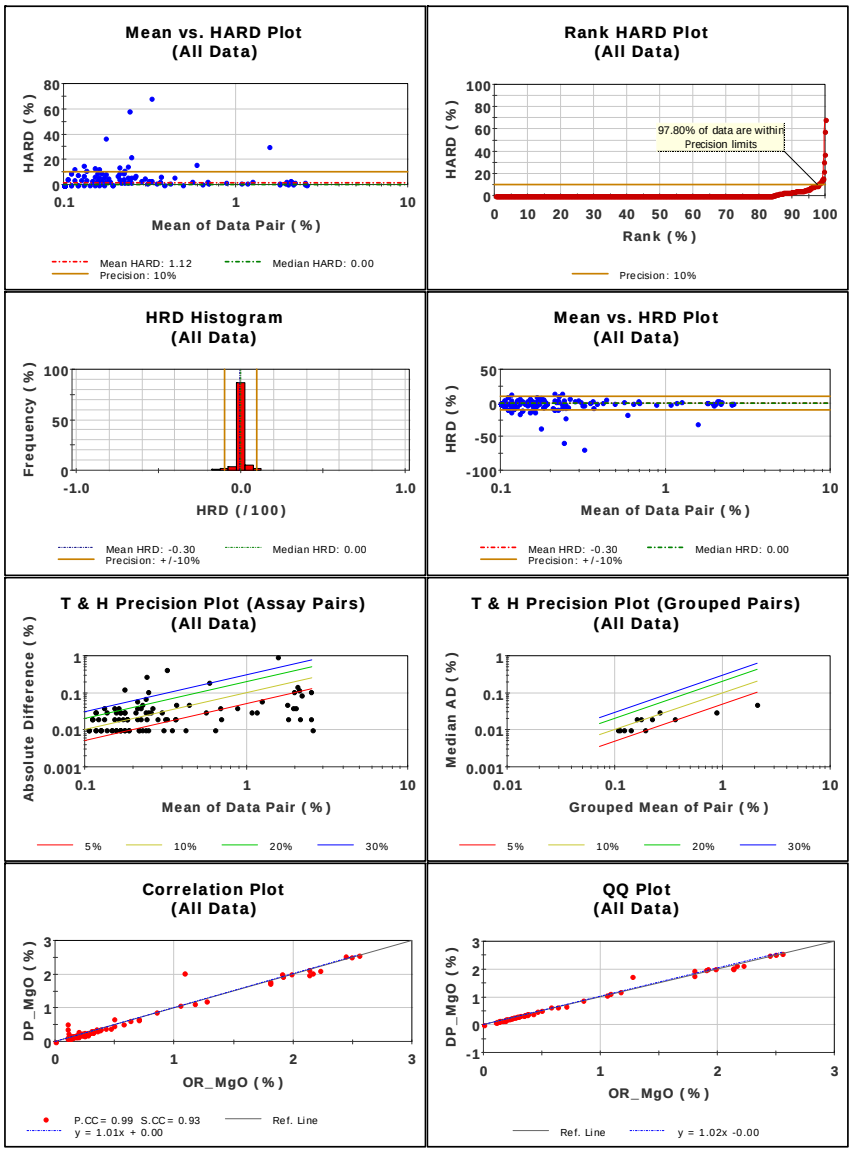
Summary
(All Data)

	OR_MgO	DP_MgO	Units			Result
No. Pairs:	727	727			Pearson CC:	0.99
Minimum:	0.00	0.00	%		Spearman CC:	0.93
Maximum:	2.55	2.56	%		Mean HARD:	1.12
Mean:	0.13	0.13	%		Median HARD:	0.00
Median	0.10	0.10	%			
Std. Deviation:	0.29	0.29	%		Mean HRD:	-0.30
Coefficient of Variation:	2.28	2.29			Median HRD	0.00



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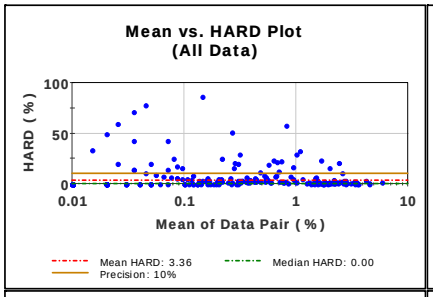
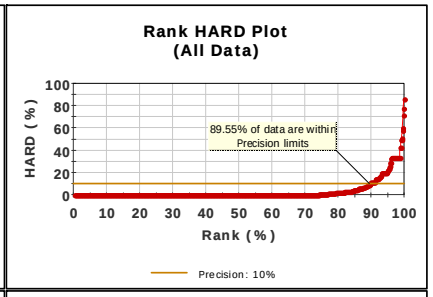
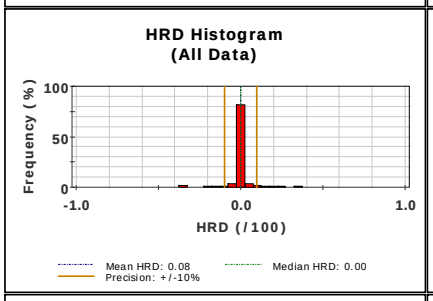
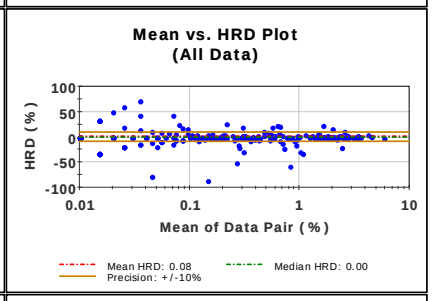
Summary
(All Data)

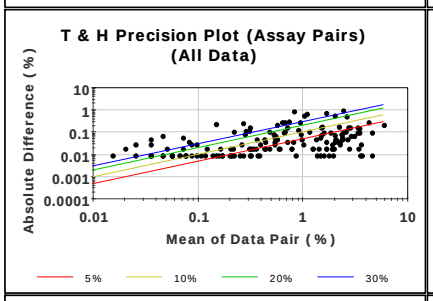
	OR_K2O	DP_K2O	Units			Result
No. Pairs:	727	727			Pearson CC:	0.99
Minimum:	0.00	0.00	%		Spearman CC:	0.96
Maximum:	5.71	5.94	%		Mean HARD:	3.36
Mean:	0.26	0.26	%		Median HARD:	0.00
Median	0.01	0.01	%			
Std. Deviation:	0.71	0.70	%		Mean HRD:	0.08
Coefficient of Variation:	2.68	2.66			Median HRD	0.00

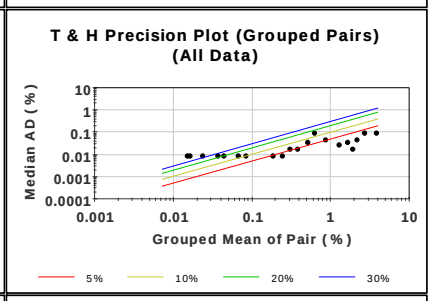


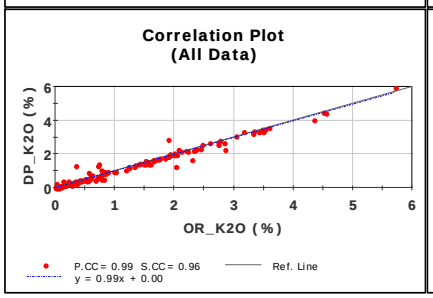


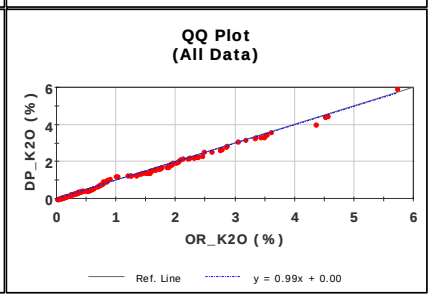






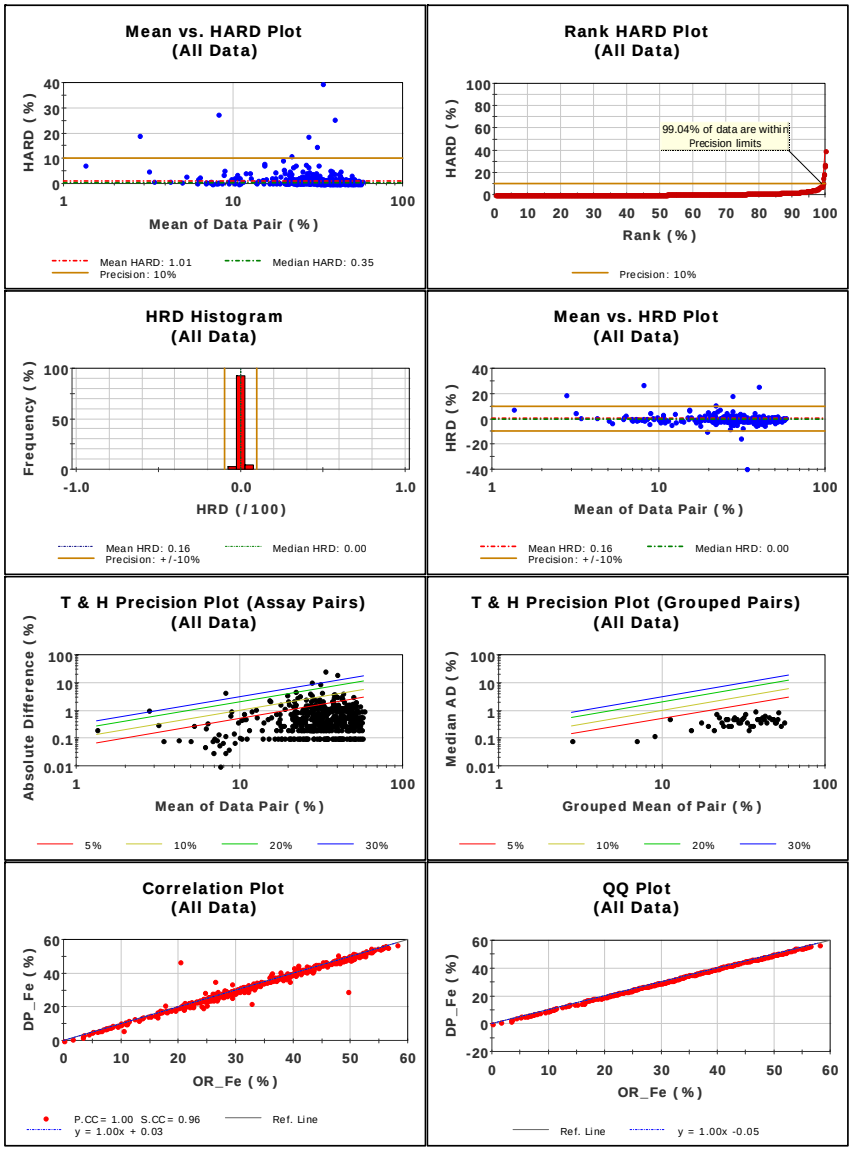






Summary
(All Data)

	OR_Fe	DP_Fe	Units			Result
No. Pairs:	727	727			Pearson CC:	1.00
Minimum:	0.00	0.00	%		Spearman CC:	0.96
Maximum:	58.10	57.10	%		Mean HARD:	1.01
Mean:	22.24	22.21	%		Median HARD:	0.35
Median	24.70	24.40	%			
Std. Deviation:	18.11	18.13	%		Mean HRD:	0.16
Coefficient of Variation:	0.81	0.82			Median HRD	0.00



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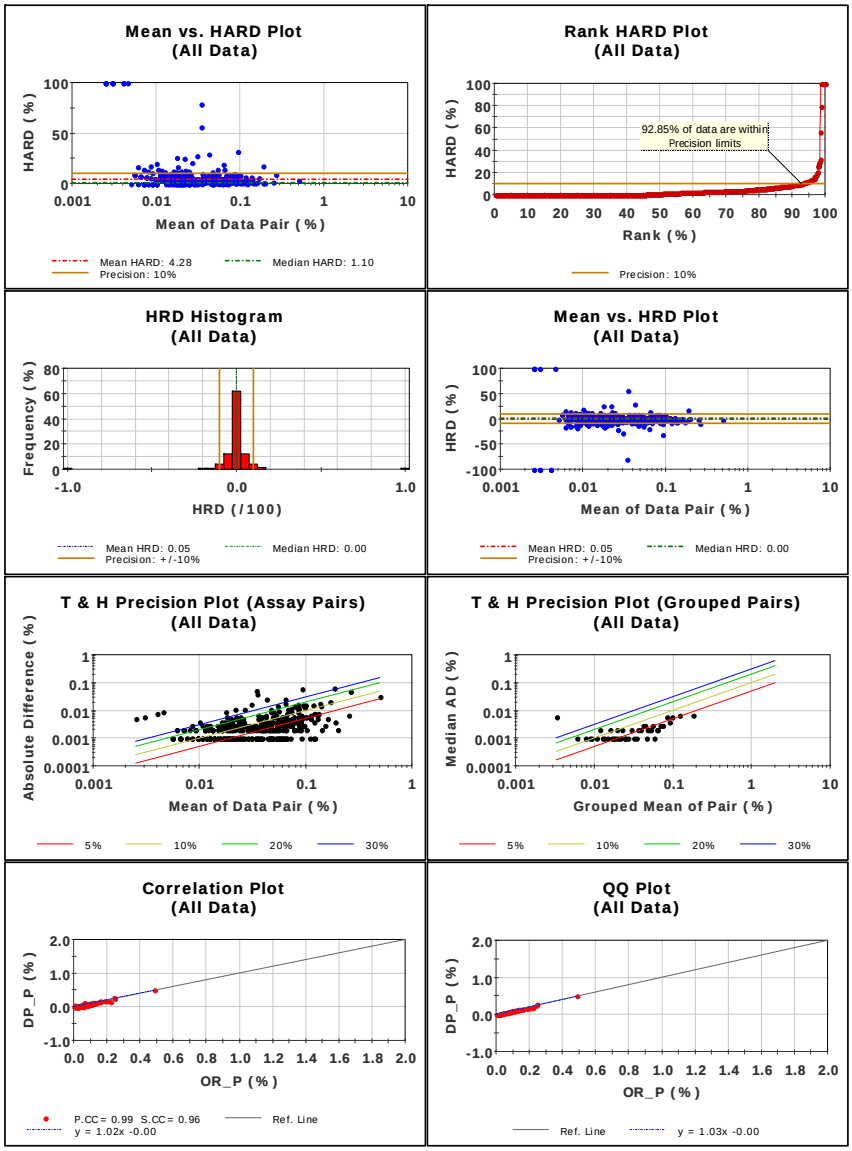
Summary
(All Data)

	OR_P	DP_P	Units			Result
No. Pairs:	727	727			Pearson CC:	0.99
Minimum:	0.00	0.00	%		Spearman CC:	0.96
Maximum:	0.48	0.52	%		Mean HARD:	4.28
Mean:	0.03	0.03	%		Median HARD:	1.10
Median	0.02	0.02	%			
Std. Deviation:	0.04	0.04	%		Mean HRD:	0.05
Coefficient of Variation:	1.41	1.44			Median HRD	0.00



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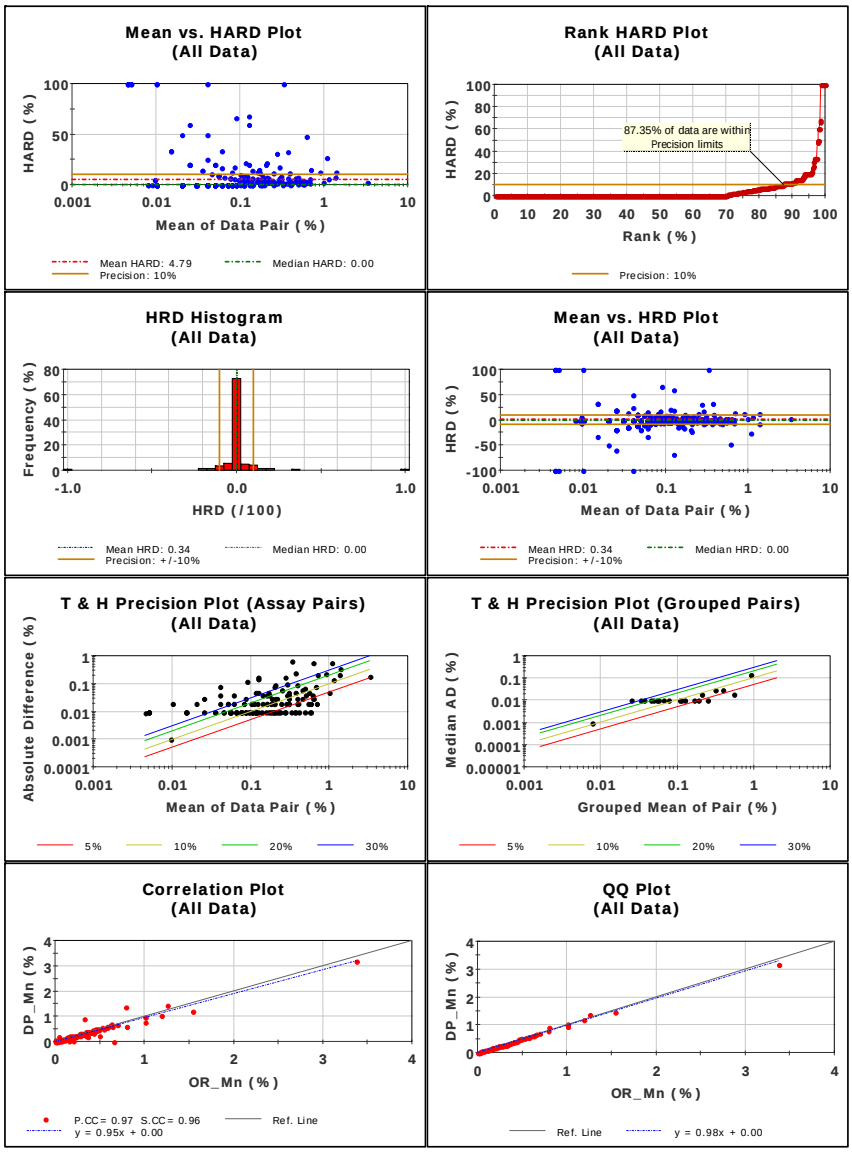
Summary
(All Data)

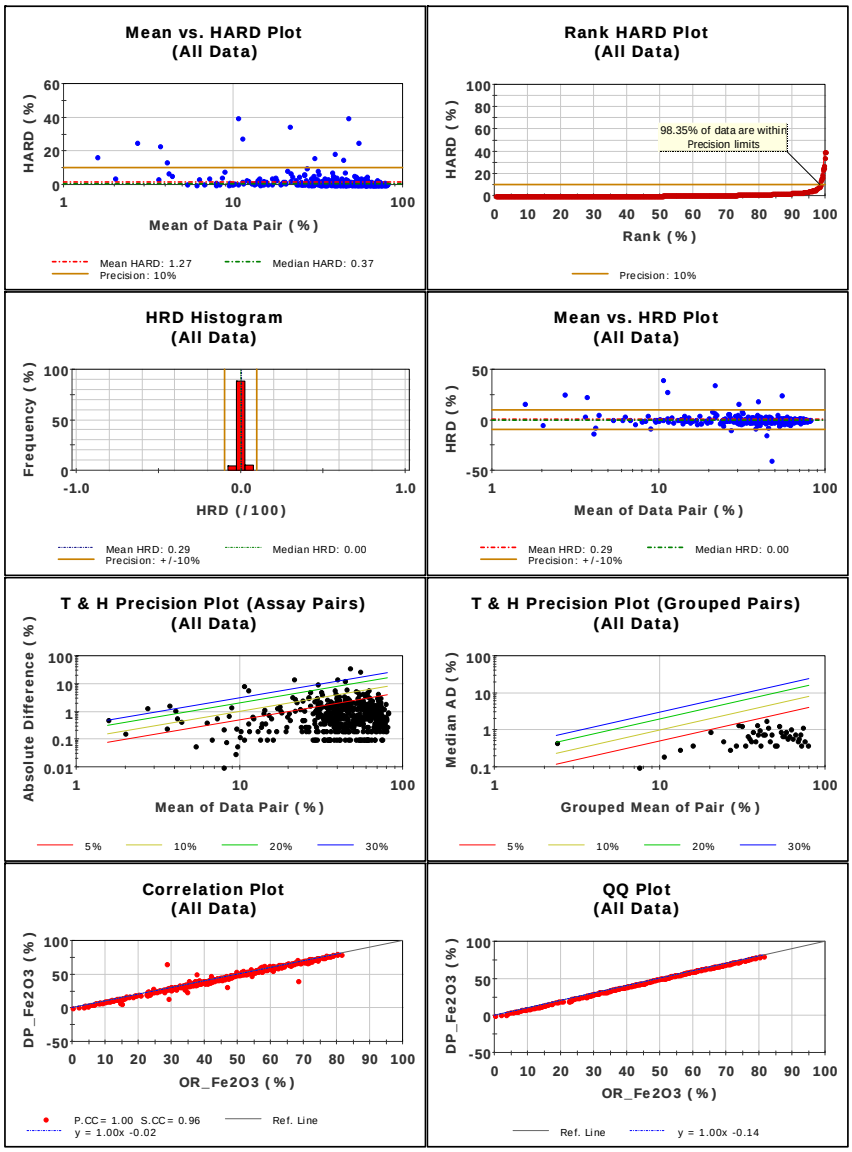
	OR_Mn	DP_Mn	Units			Result
No. Pairs:	727	727			Pearson CC:	0.97
Minimum:	0.00	0.00	%		Spearman CC:	0.96
Maximum:	3.37	3.18	%		Mean HARD:	4.79
Mean:	0.08	0.07	%		Median HARD:	0.00
Median	0.02	0.02	%			
Std. Deviation:	0.19	0.19	%		Mean HRD:	0.34
Coefficient of Variation:	2.56	2.54			Median HRD	0.00



Printed: 11-jul-2011 11:54:01 Data Imported: 11-jul-2011 11:38:43 Page 1

Summary
(All Data)

	OR_Fe2O3	DP_Fe2O3	Units			Result
No. Pairs:	727	727			Pearson CC:	1.00
Minimum:	0.00	0.00	%		Spearman CC:	0.96
Maximum:	81.30	80.90	%		Mean HARD:	1.27
Mean:	30.86	30.78	%		Median HARD:	0.37
Median	34.60	33.90	%			
Std. Deviation:	25.70	25.76	%		Mean HRD:	0.29
Coefficient of Variation:	0.83	0.84			Median HRD	0.00



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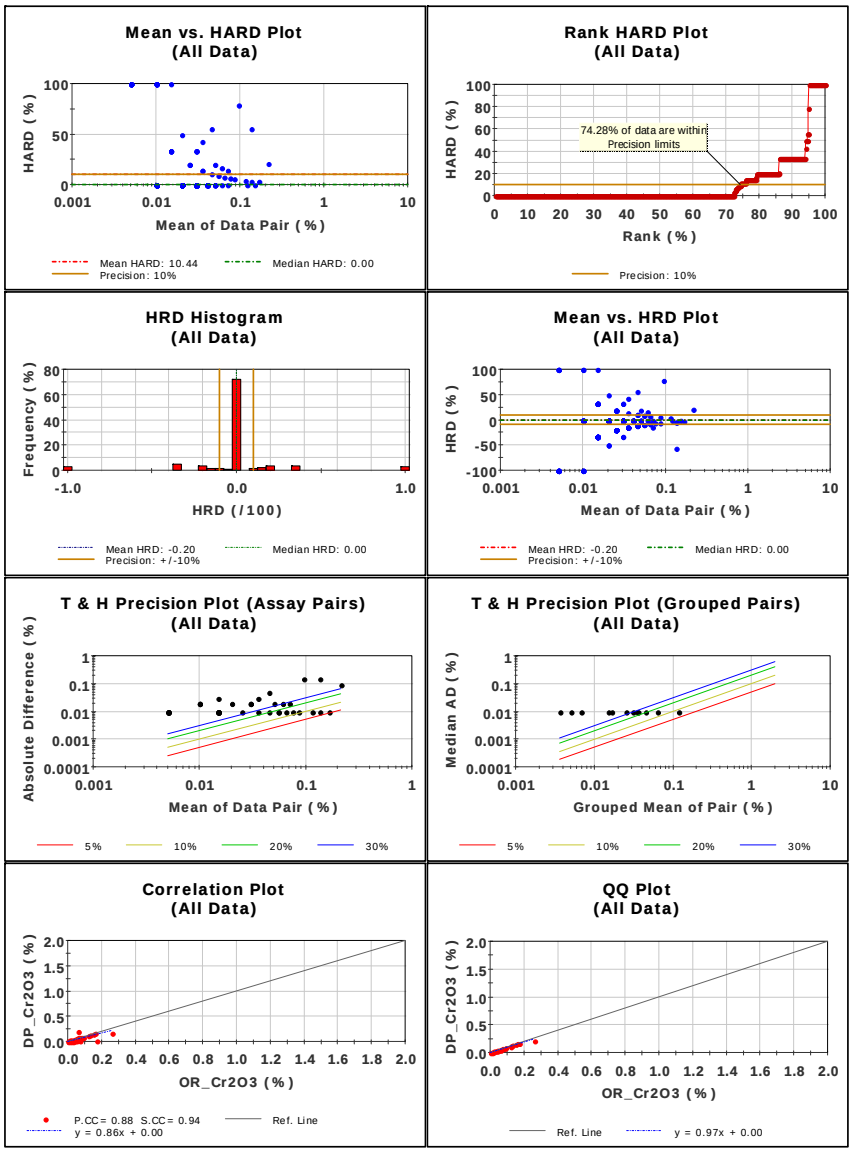
Summary
(All Data)

	OR_Cr2O3	DP_Cr2O3	Units			Result
No. Pairs:	727	727			Pearson CC:	0.88
Minimum:	0.00	0.00	%		Spearman CC:	0.94
Maximum:	0.26	0.21	%		Mean HARD:	10.44
Mean:	0.02	0.02	%		Median HARD:	0.00
Median	0.01	0.01	%			
Std. Deviation:	0.02	0.02	%		Mean HRD:	-0.20
Coefficient of Variation:	1.31	1.28			Median HRD	0.00



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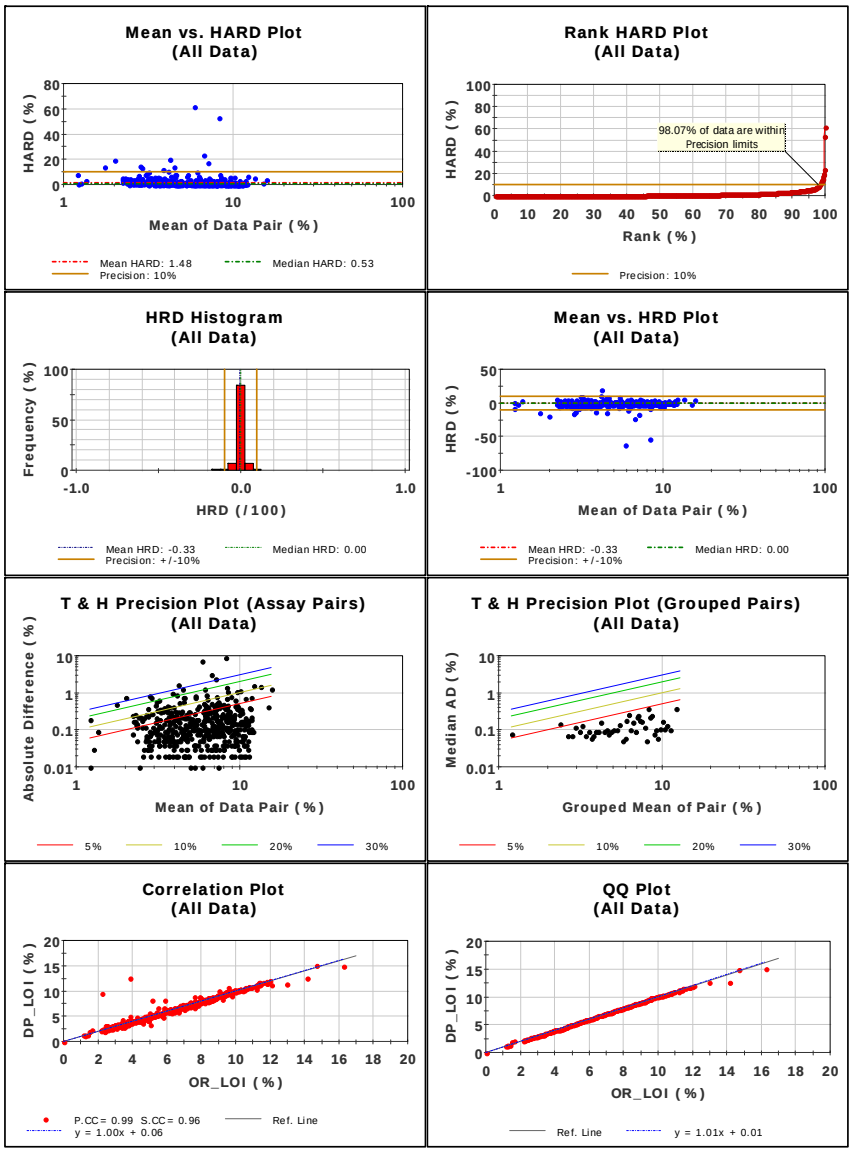
Summary
(All Data)

	OR_LOI	DP_LOI	Units			Result
No. Pairs:	727	727			Pearson CC:	0.99
Minimum:	0.00	0.00	%		Spearman CC:	0.96
Maximum:	16.27	15.10	%		Mean HARD:	1.48
Mean:	4.31	4.35	%		Median HARD:	0.53
Median	4.08	4.13	%			
Std. Deviation:	3.63	3.65	%		Mean HRD:	-0.33
Coefficient of Variation:	0.84	0.84			Median HRD	0.00



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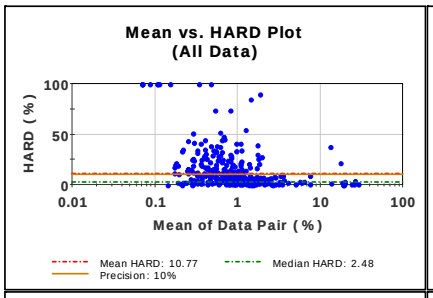
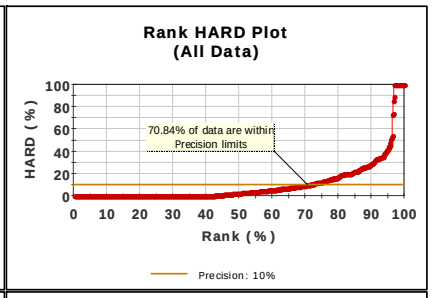
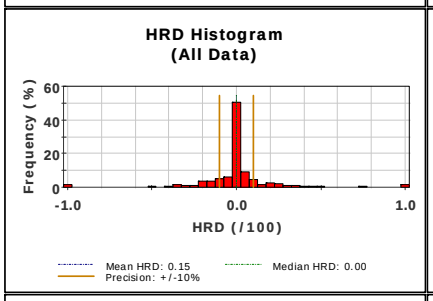
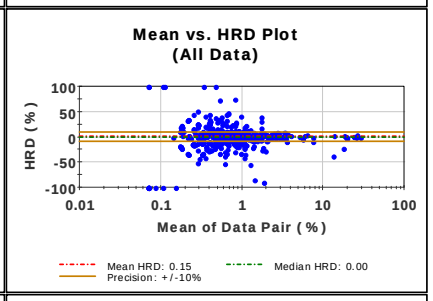
Summary
(All Data)

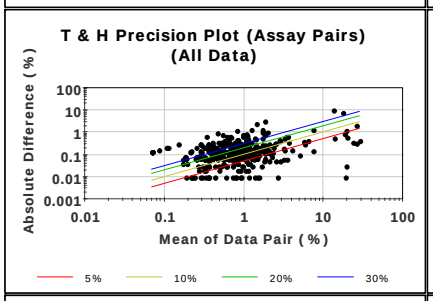
	OR_FeO	DP_FeO	Units			Result
No. Pairs:	727	727			Pearson CC:	0.98
Minimum:	0.00	0.00	%		Spearman CC:	0.93
Maximum:	28.40	28.83	%		Mean HARD:	10.77
Mean:	0.85	0.87	%		Median HARD:	2.48
Median	0.28	0.28	%			
Std. Deviation:	2.67	2.79	%		Mean HRD:	0.15
Coefficient of Variation:	3.15	3.19			Median HRD	0.00

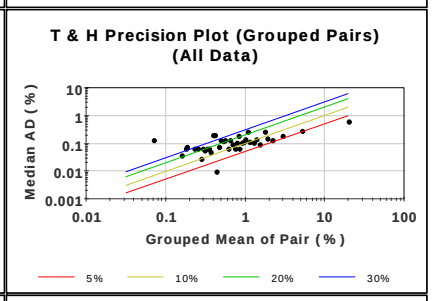


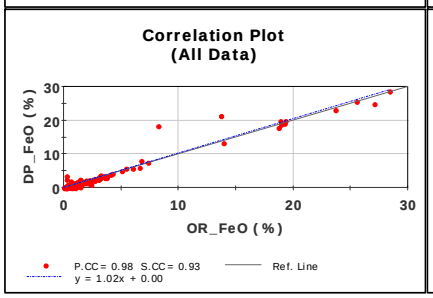


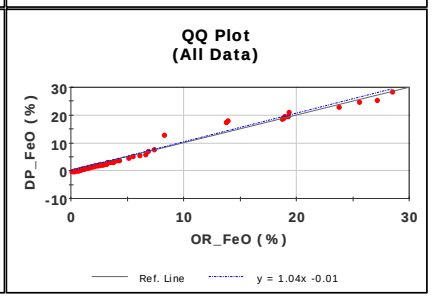












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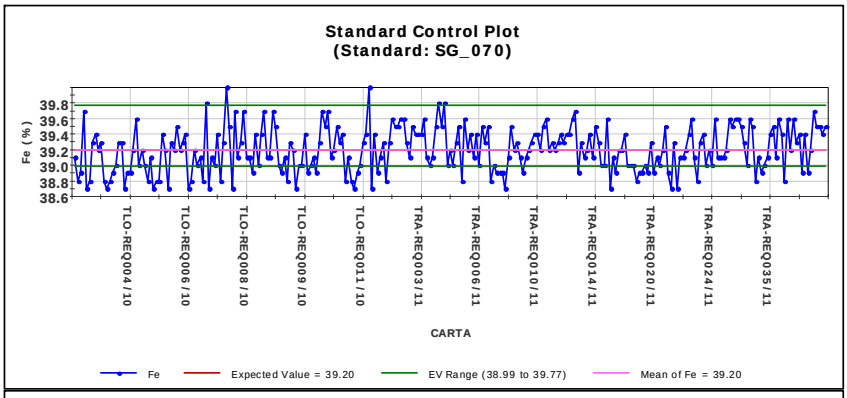
Appendix B

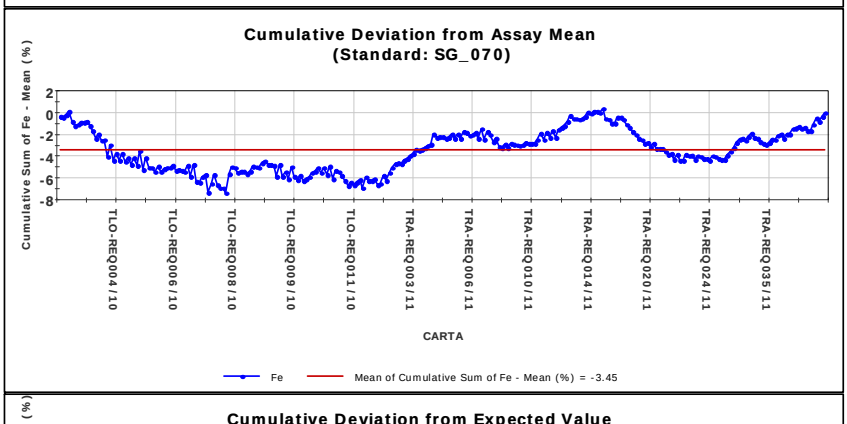
QA/QC

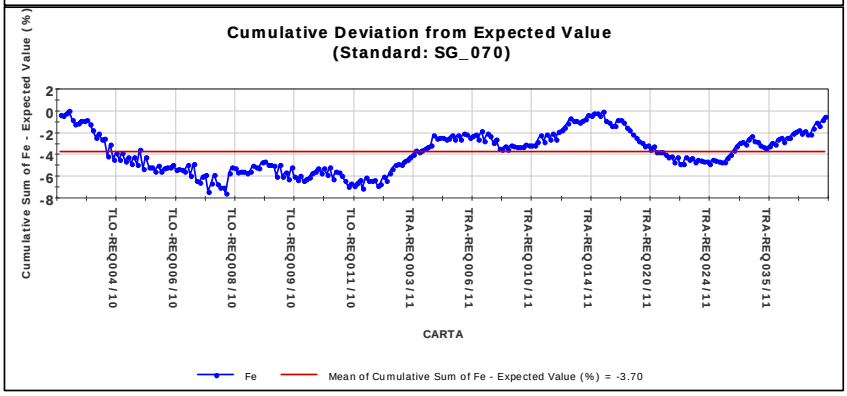
Laboratory Standard Fe

Summary
(Standard: SG_070)

Standard:	SG_070		No of Analyses:	259
Element:	Fe		Minimum:	38.70
Units:			Maximum:	40.00
Detection Limit:	-		Mean:	39.20
Expected Value (EV):	39.20		Std Deviation:	0.29
E.V. Range:	38.99 to 39.77		% in Tolerance	75.29 %
			% Bias	0.00 %
			% RSD	0.74 %







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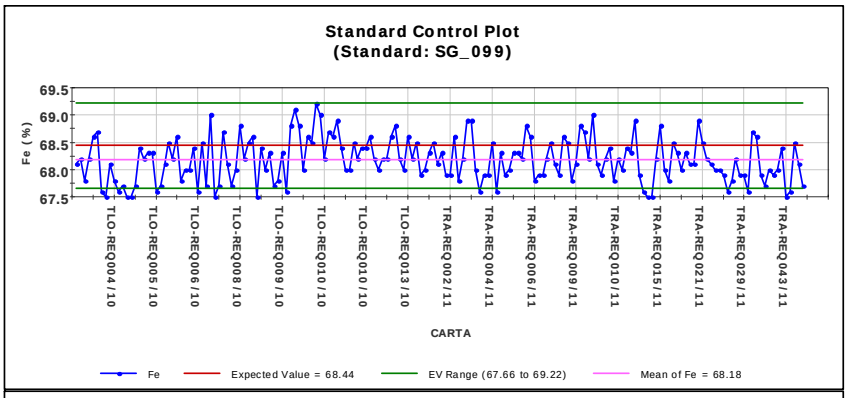
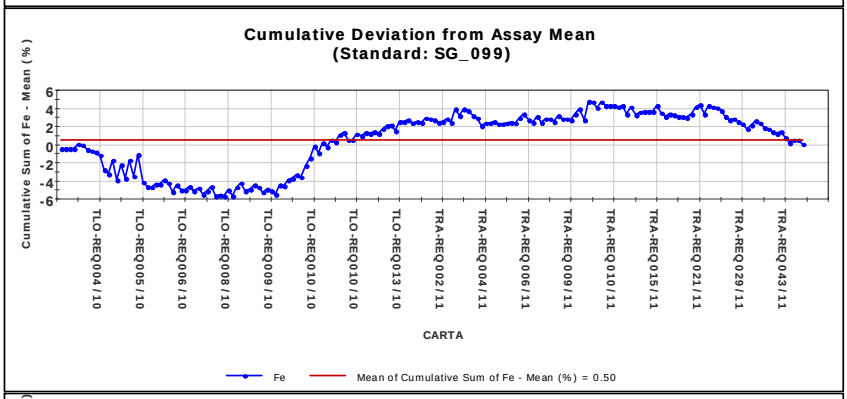
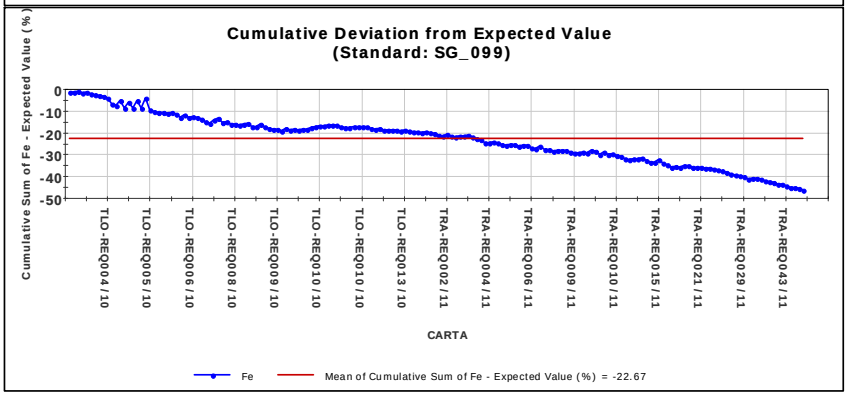
Summary
(Standard: SG_099)

Standard:	SG_099		No of Analyses:	174
Element:	Fe		Minimum:	67.50
Units:			Maximum:	69.20
Detection Limit:	-		Mean:	68.18
Expected Value (EV):	68.44		Std Deviation:	0.40
E.V. Range:	67.66 to 69.22		% in Tolerance	89.08 %
			% Bias	-0.39 %
			% RSD	0.58 %







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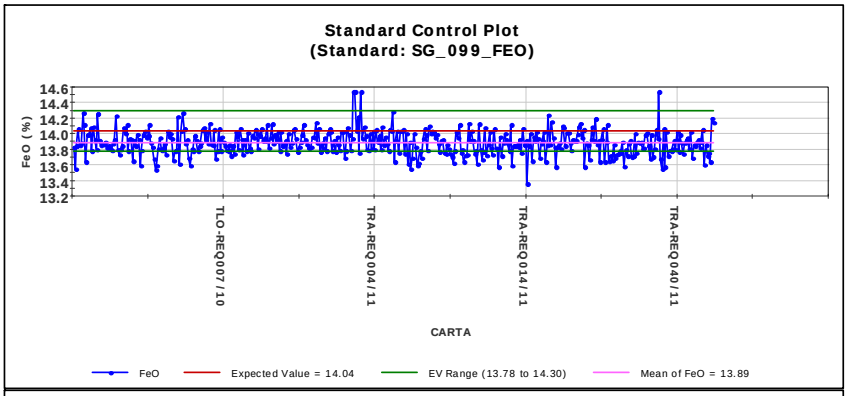
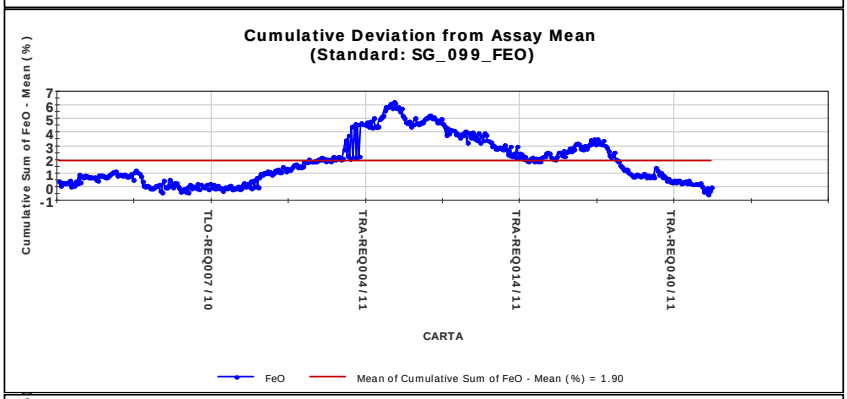
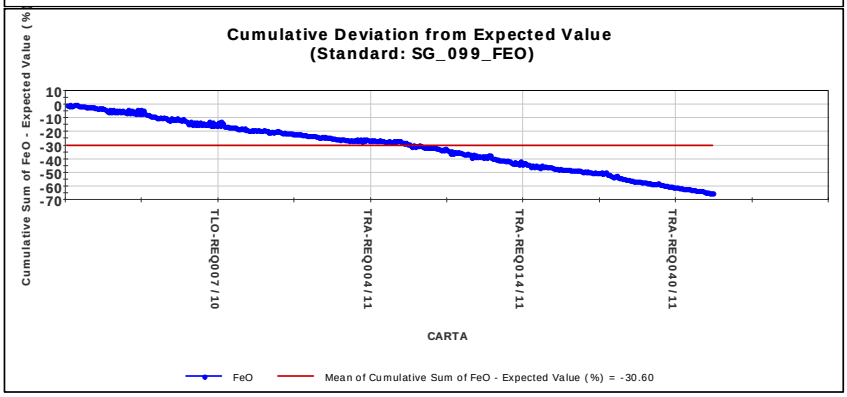
Summary
(Standard: SG_099_FEO)

Standard:	SG_099_FEO		No of Analyses:	424
Element:	FeO		Minimum:	13.35
Units:			Maximum:	14.54
Detection Limit:	-		Mean:	13.89
Expected Value (EV):	14.04		Std Deviation:	0.16
E.V. Range:	13.78 to 14.30		% in Tolerance	75.24 %
			% Bias	-1.09 %
			% RSD	1.16 %







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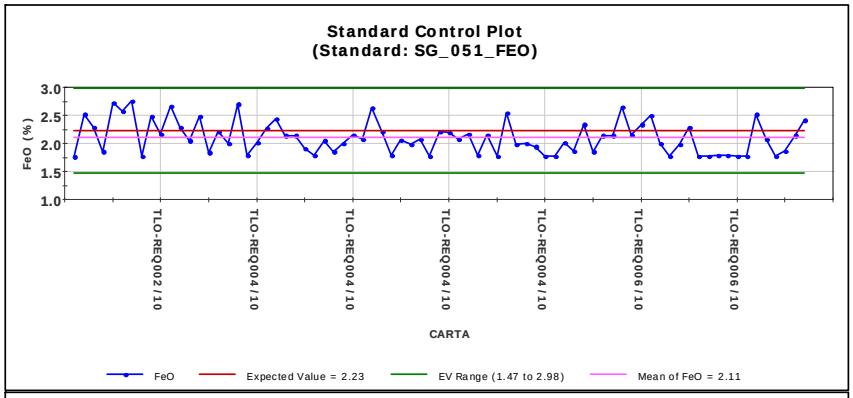
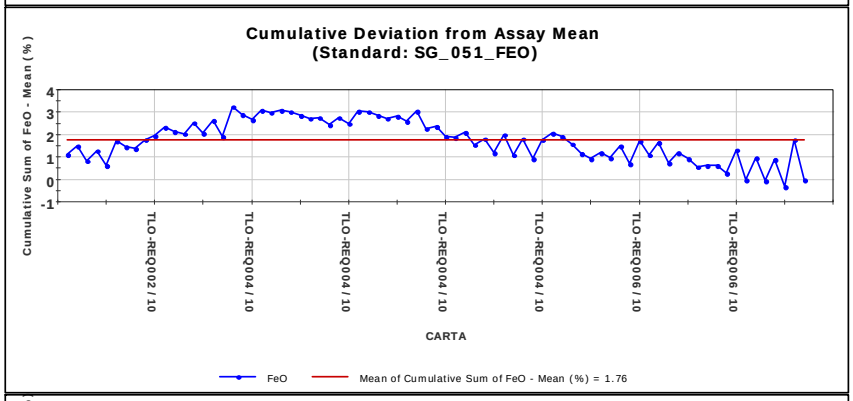
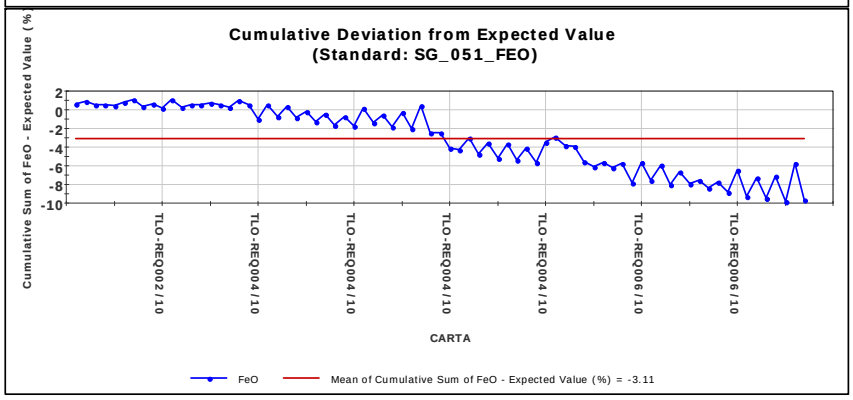
Summary
(Standard: SG_051_FEO)

Standard:	SG_051_FEO		No of Analyses:	77
Element:	FeO		Minimum:	1.76
Units:	%		Maximum:	2.76
Detection Limit:			Mean:	2.11
Expected Value (EV):	2.23		Std Deviation:	0.28
E.V. Range:	1.47 to 2.98		% in Tolerance	100.00 %
			% Bias	-5.60 %
			% RSD	13.46 %







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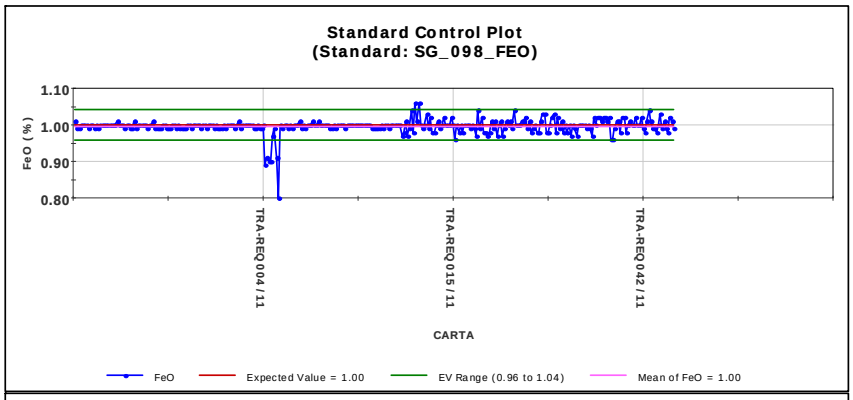
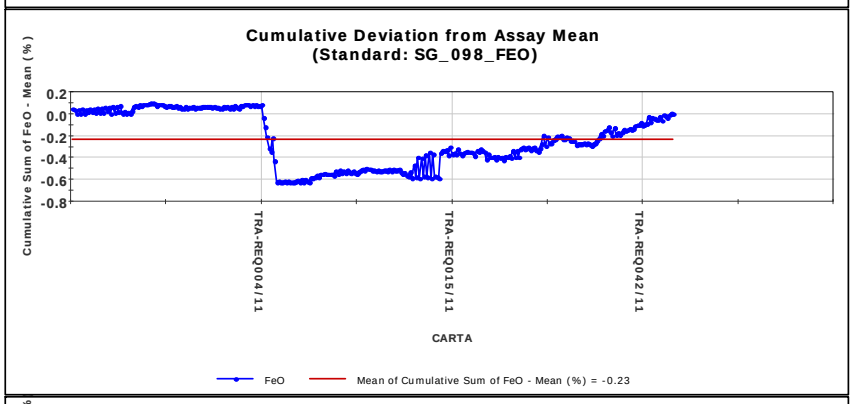
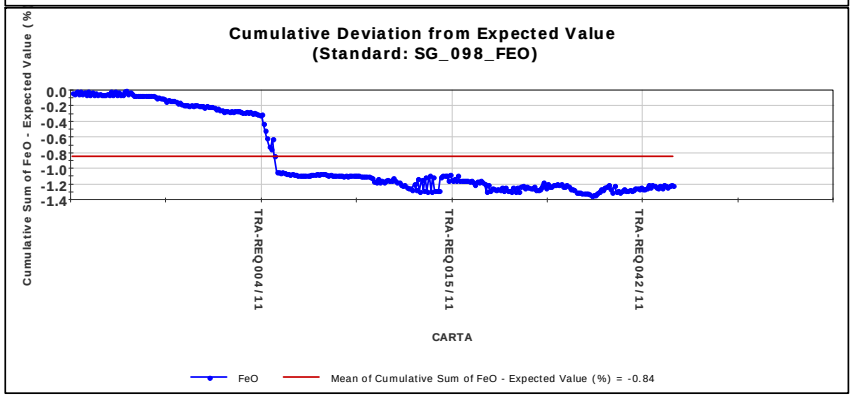
Summary
(Standard: SG_098_FEO)

Standard:	SG_098_FEO		No of Analyses:	316
Element:	FeO		Minimum:	0.80
Units:	%		Maximum:	1.06
Detection Limit:			Mean:	1.00
Expected Value (EV):	1.00		Std Deviation:	0.02
E.V. Range:	0.96 to 1.04		% in Tolerance	97.47 %
			% Bias	-0.39 %
			% RSD	2.13 %







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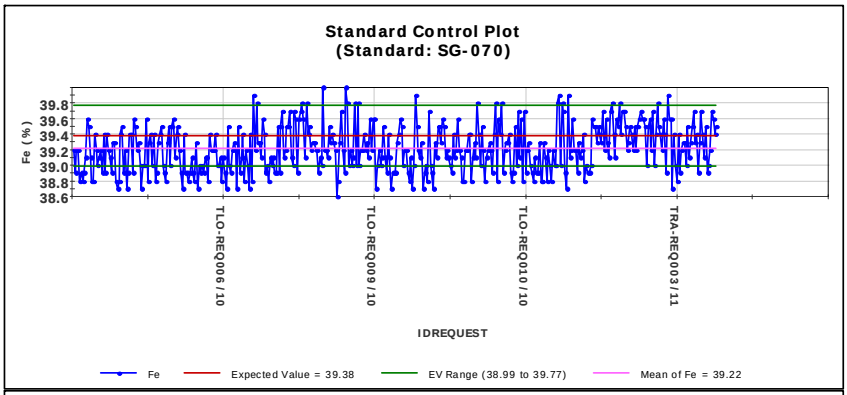
Appendix B

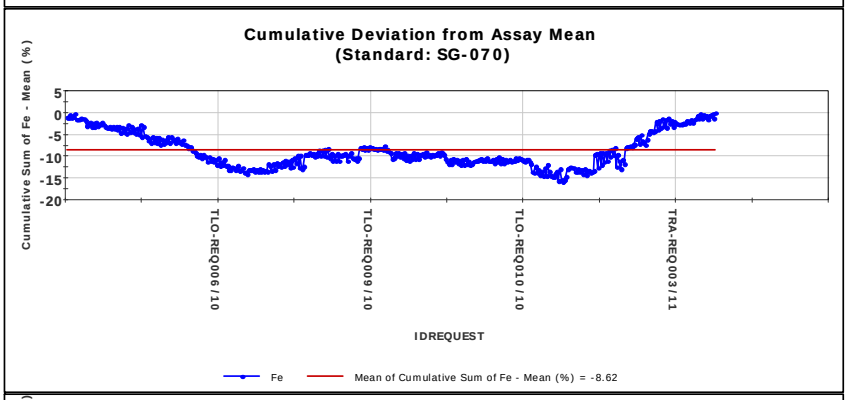
QA/QC

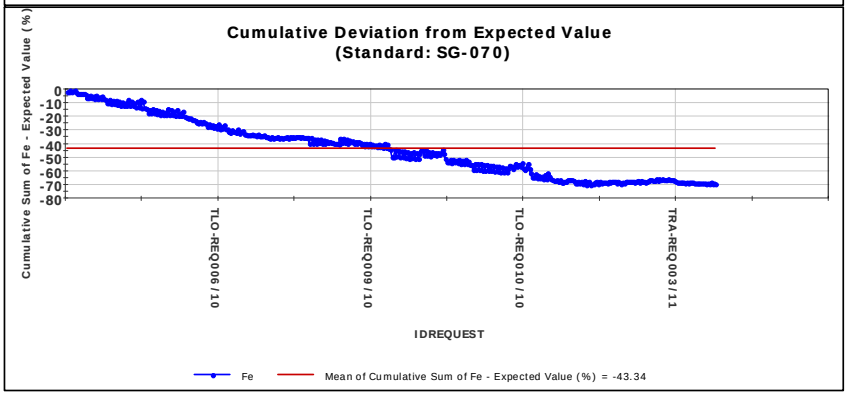
Project Standard Fe

Summary
(Standard: SG-070)

Standard:	SG-070		No of Analyses:	426
Element:	Fe		Minimum:	38.60
Units:			Maximum:	40.00
Detection Limit:			Mean:	39.22
Expected Value (EV):	39.38		Std Deviation:	0.30
E.V. Range:	38.99 to 39.77		% in Tolerance	71.36 %
			% Bias	-0.41 %
			% RSD	0.77 %







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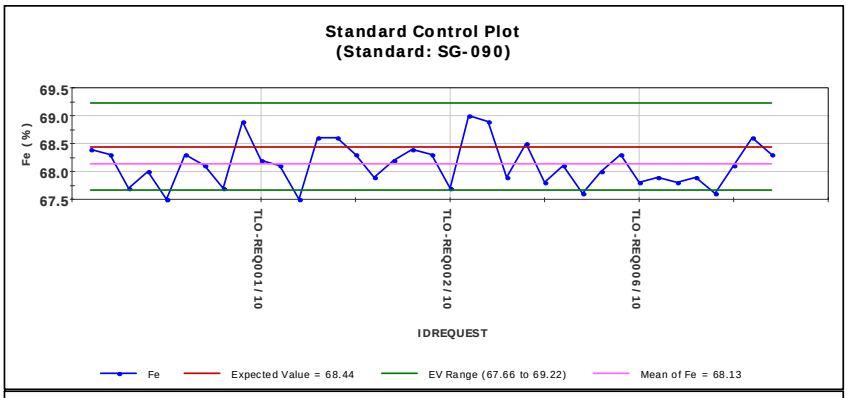
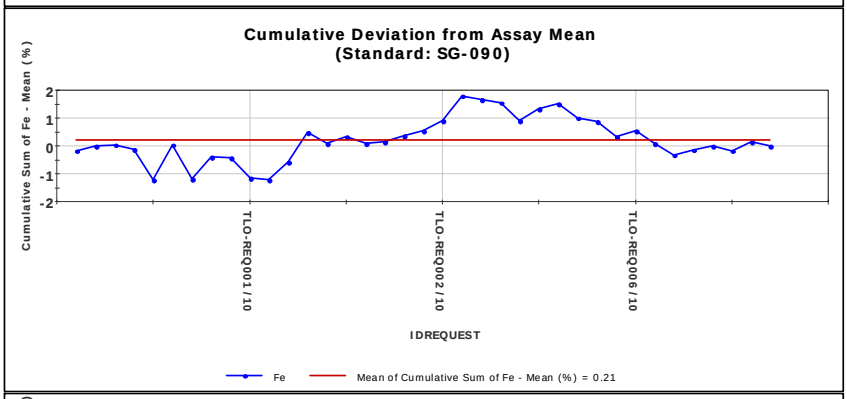
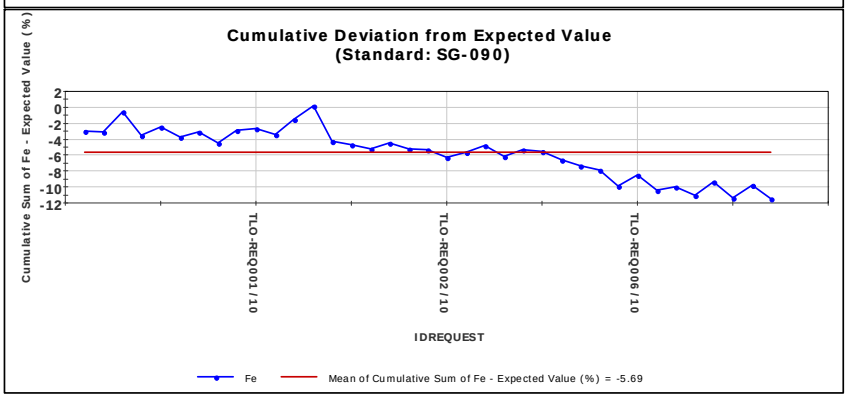
Summary
(Standard: SG-090)

Standard:	SG-090		No of Analyses:	37
Element:	Fe		Minimum:	67.50
Units:			Maximum:	69.00
Detection Limit:			Mean:	68.13
Expected Value (EV):	68.44		Std Deviation:	0.39
E.V. Range:	67.66 to 69.22		% in Tolerance	89.19 %
			% Bias	-0.45 %
			% RSD	0.57 %







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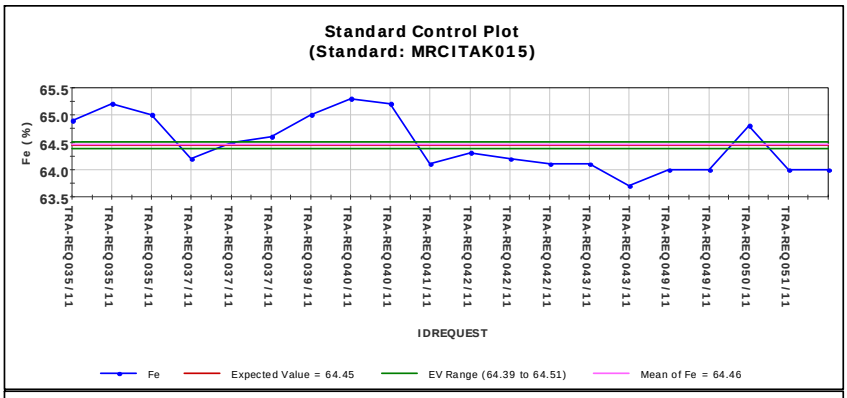
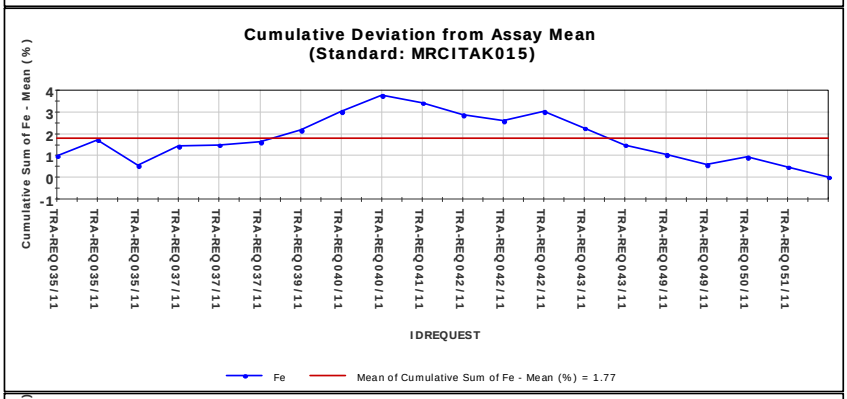
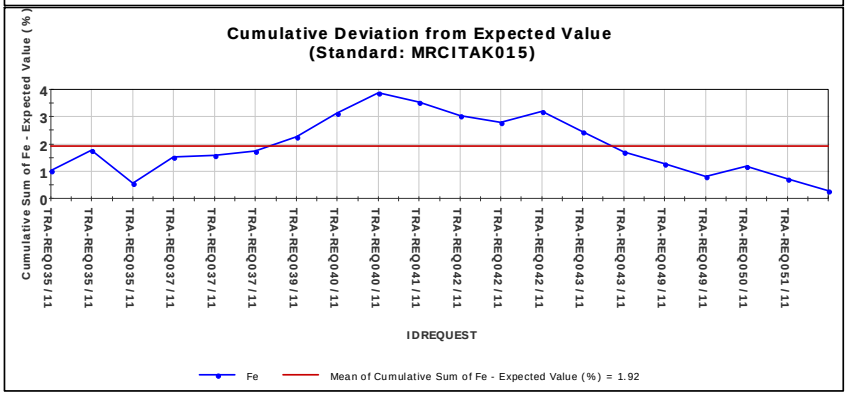
Summary
(Standard: MRCITAK015)

Standard:	MRCITAK015		No of Analyses:	20
Element:	Fe		Minimum:	63.70
Units:			Maximum:	65.30
Detection Limit:			Mean:	64.46
Expected Value (EV):	64.45		Std Deviation:	0.48
E.V. Range:	64.39 to 64.51		% in Tolerance	5.00 %
			% Bias	0.02 %
			% RSD	0.75 %







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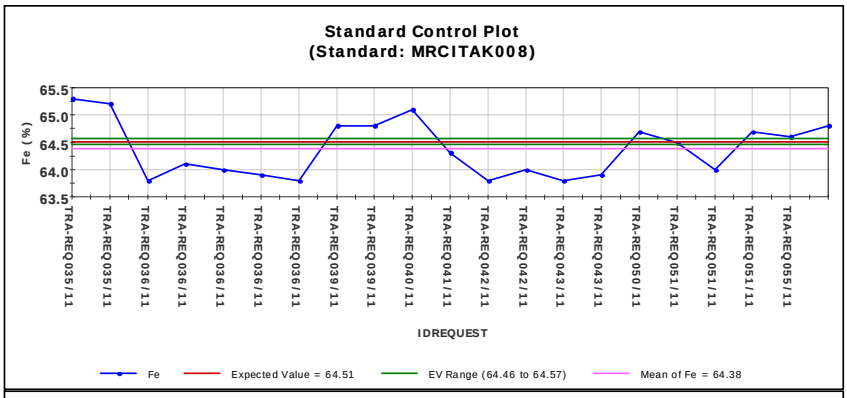
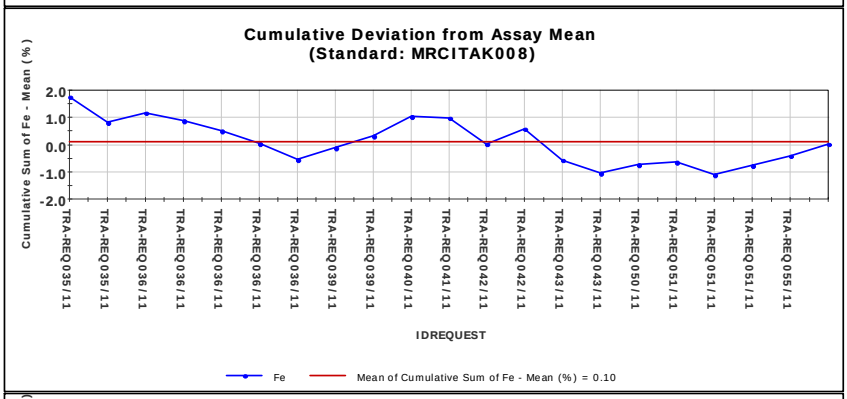
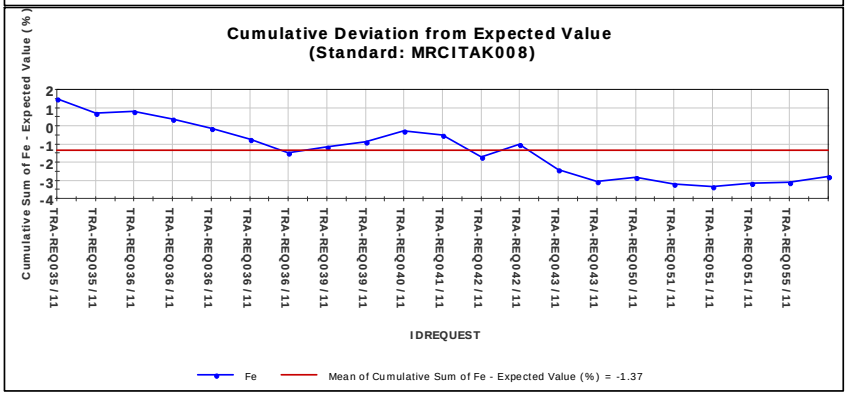
Summary
(Standard: MRCITAK008)

Standard:	MRCITAK008		No of Analyses:	21
Element:	Fe		Minimum:	63.80
Units:			Maximum:	65.30
Detection Limit:			Mean:	64.38
Expected Value (EV):	64.51		Std Deviation:	0.50
E.V. Range:	64.46 to 64.57		% in Tolerance	4.76 %
			% Bias	-0.21 %
			% RSD	0.77 %







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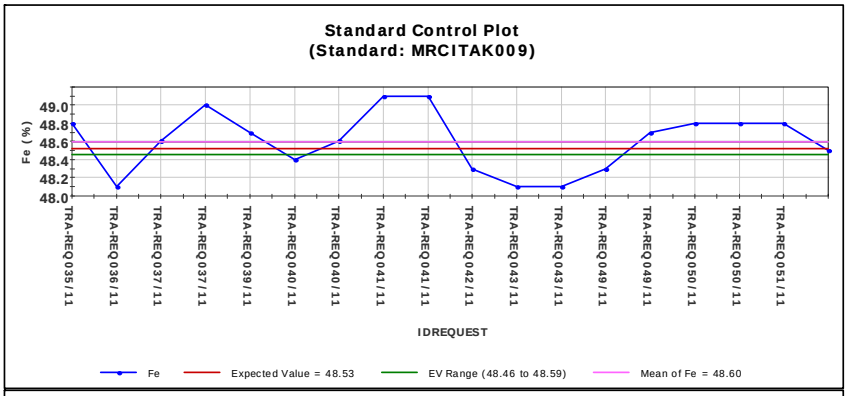
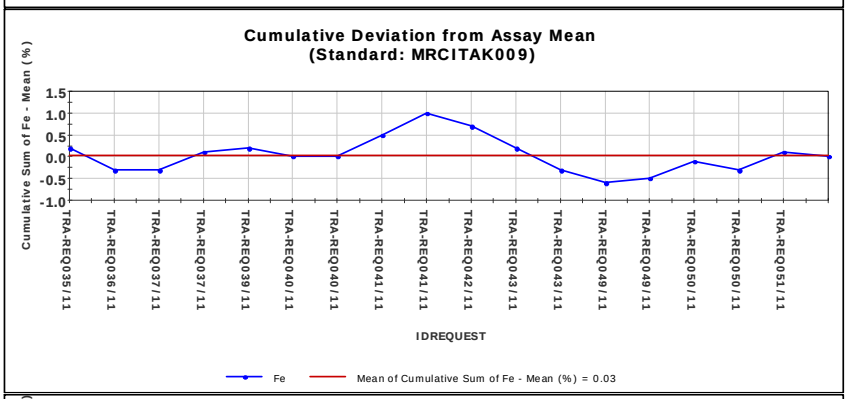
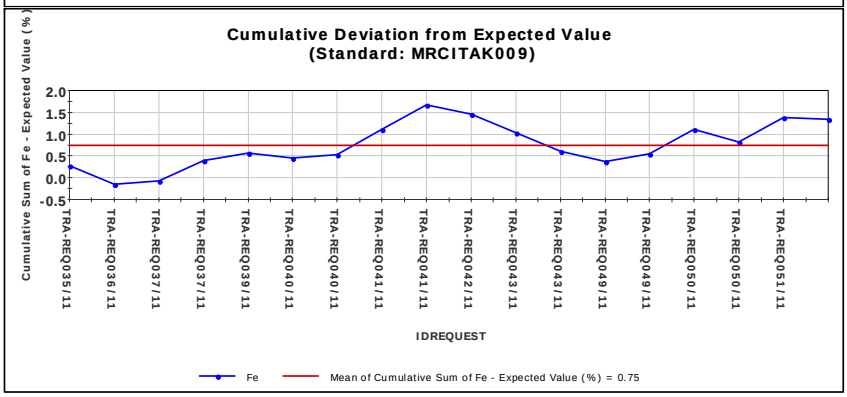
Summary
(Standard: MRCITAK009)

Standard:	MRCITAK009		No of Analyses:	18
Element:	Fe		Minimum:	48.10
Units:			Maximum:	49.10
Detection Limit:			Mean:	48.60
Expected Value (EV):	48.53		Std Deviation:	0.32
E.V. Range:	48.46 to 48.59		% in Tolerance	5.56 %
			% Bias	0.15 %
			% RSD	0.65 %







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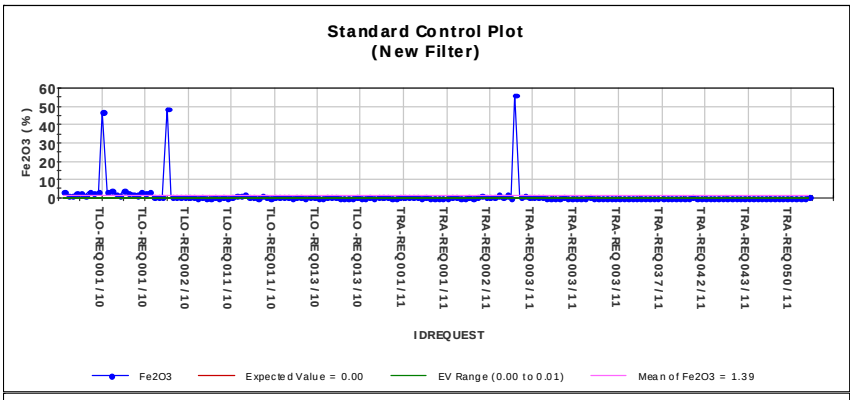
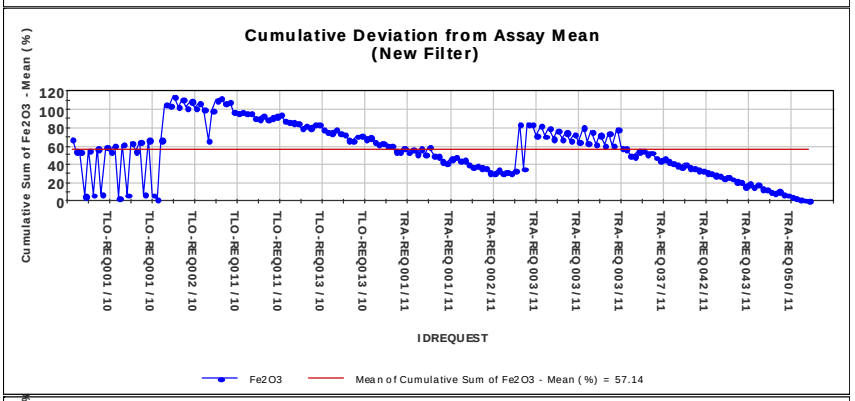
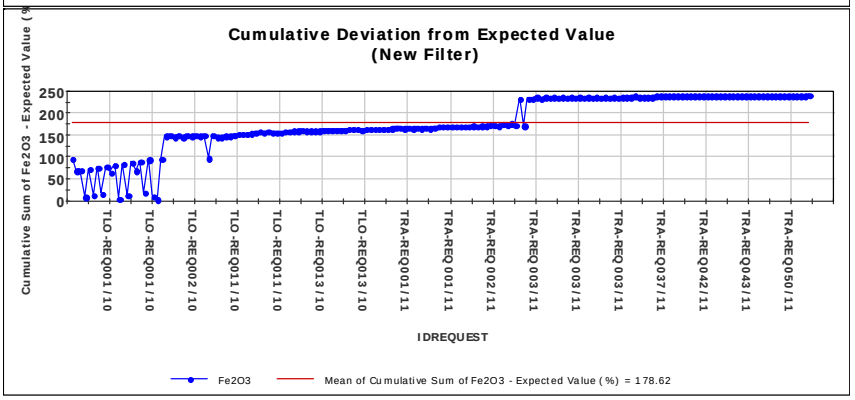
Summary
(New Filter)

Standard:	BP		No of Analyses:	174
Element:	Fe2O3		Minimum:	0.01
Units:	%		Maximum:	56.20
Detection Limit:	-		Mean:	1.39
Expected Value (EV):	0.00		Std Deviation:	6.62
E.V. Range:	0.00 to 0.01		% in Tolerance	0.00 %
			% Bias	0.00 %
			% RSD	476.52 %







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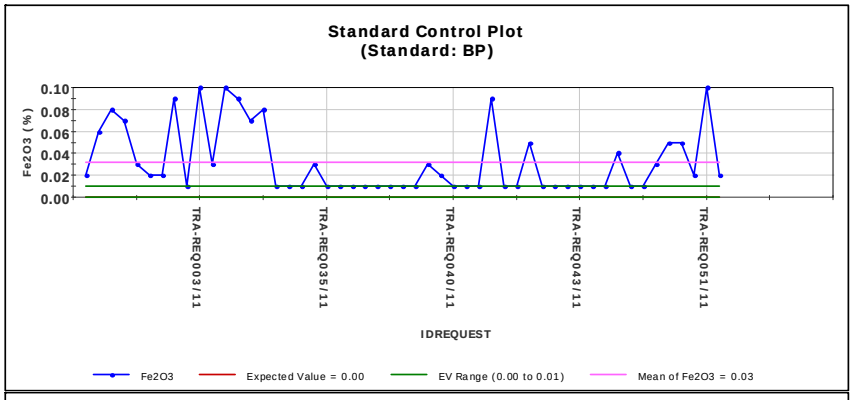
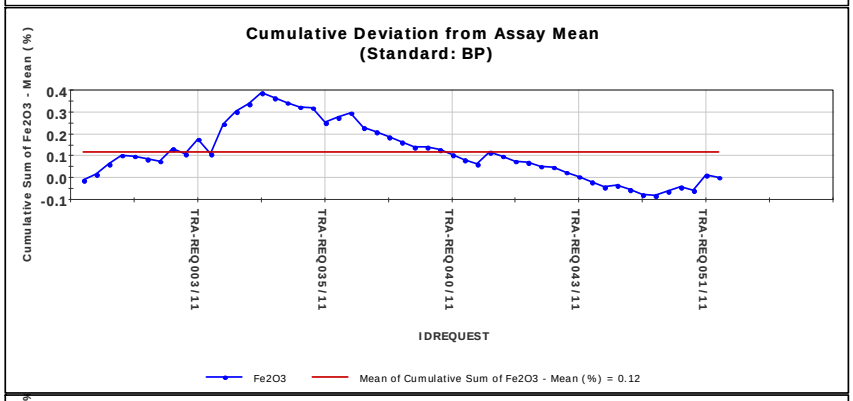
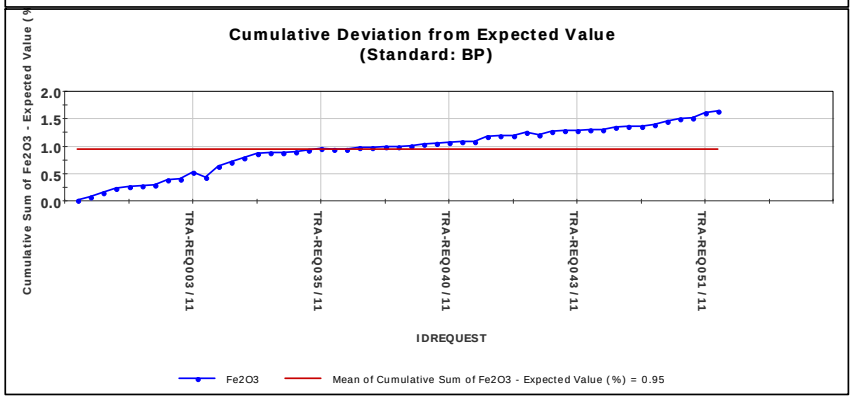
Summary
(Standard: BP)

Standard:	BP		No of Analyses:	51
Element:	Fe2O3		Minimum:	0.01
Units:	%		Maximum:	0.10
Detection Limit:	-		Mean:	0.03
Expected Value (EV):	0.00		Std Deviation:	0.03
E.V. Range:	0.00 to 0.01		% in Tolerance	0.00 %
			% Bias	0.00 %
			% RSD	93.66 %







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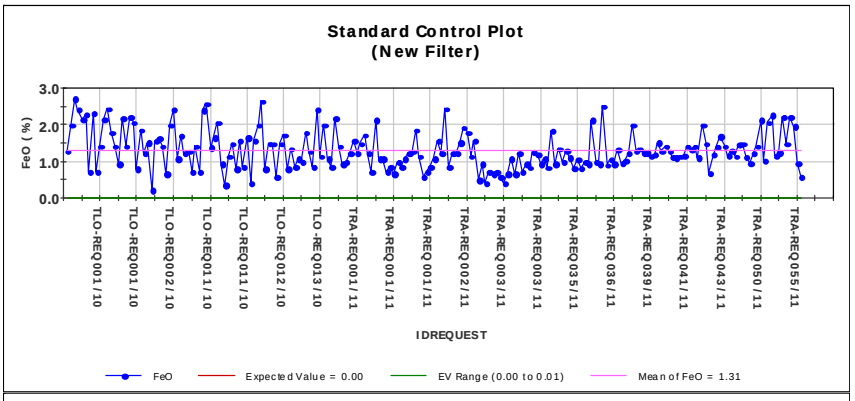
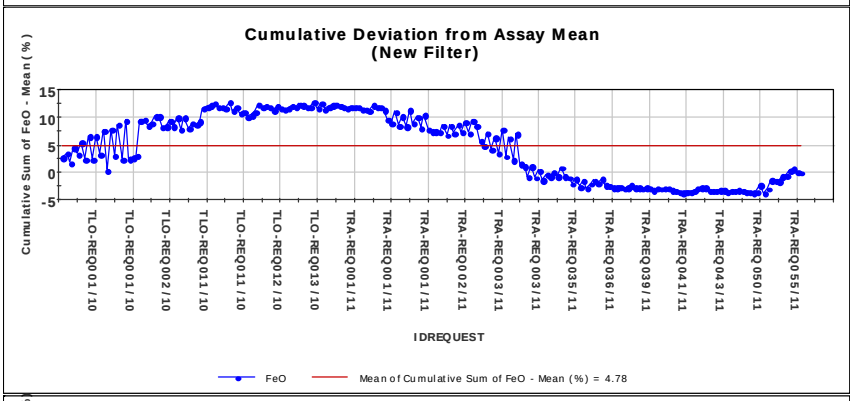
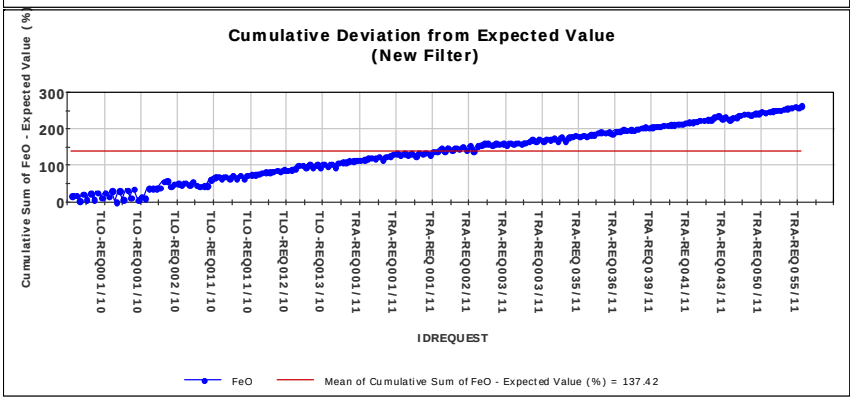
Summary
(New Filter)

Standard:	BP		No of Analyses:	201
Element:	FeO		Minimum:	0.21
Units:	%		Maximum:	2.70
Detection Limit:	-		Mean:	1.31
Expected Value (EV):	0.00		Std Deviation:	0.52
E.V. Range:	0.00 to 0.01		% in Tolerance	0.00 %
			% Bias	0.00 %
			% RSD	39.66 %







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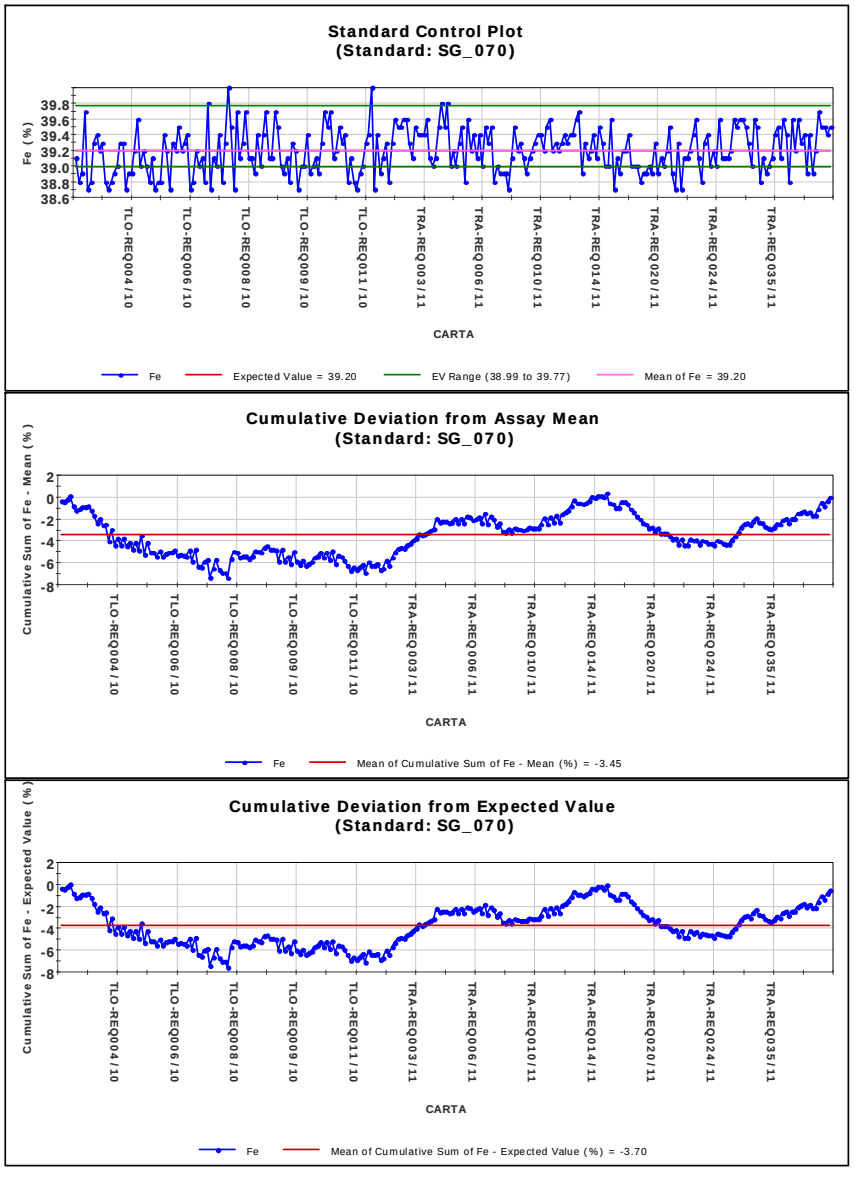
Appendix B

QA/QC

Laboratory Standard

Summary
(Standard: SG_070)

Standard:	SG_070		No of Analyses:	259
Element:	Fe		Minimum:	38.70
Units:			Maximum:	40.00
Detection Limit:	-		Mean:	39.20
Expected Value (EV):	39.20		Std Deviation:	0.29
E.V. Range:	38.99 to 39.77		% in Tolerance	75.29 %
			% Bias	0.00 %
			% RSD	0.74 %



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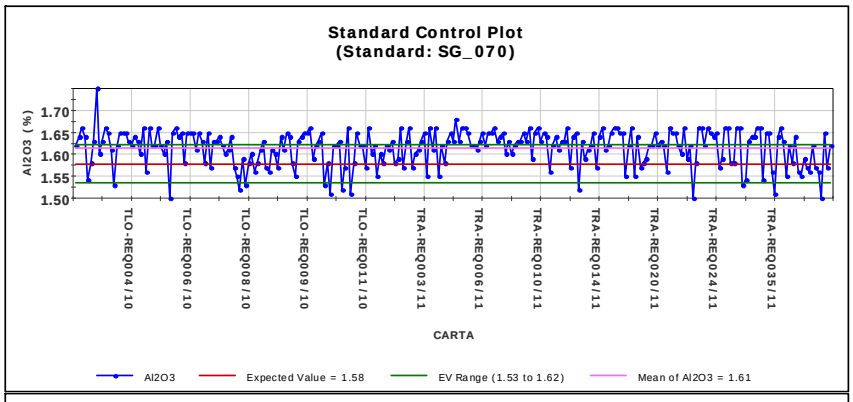
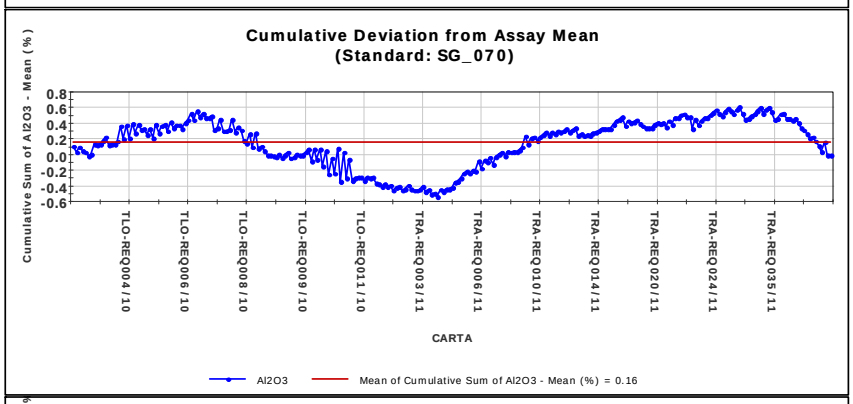
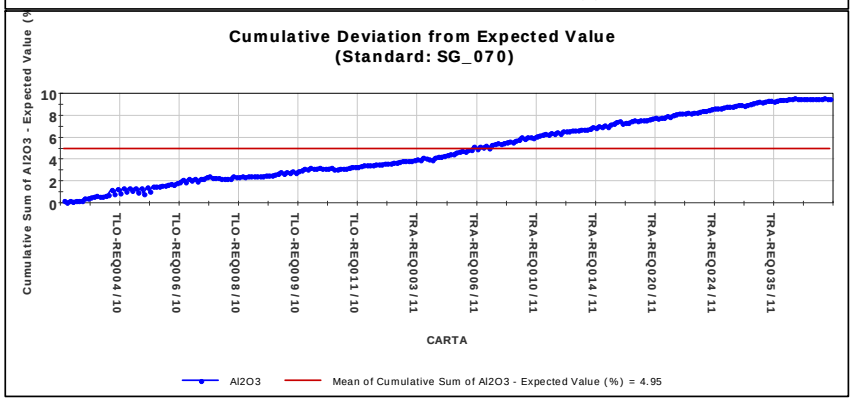
Summary
(Standard: SG_070)

Standard:	SG_070		No of Analyses:	259
Element:	Al2O3		Minimum:	1.50
Units:			Maximum:	1.75
Detection Limit:	-		Mean:	1.61
Expected Value (EV):	1.58		Std Deviation:	0.04
E.V. Range:	1.53 to 1.62		% in Tolerance	45.95 %
			% Bias	2.34 %
			% RSD	2.53 %







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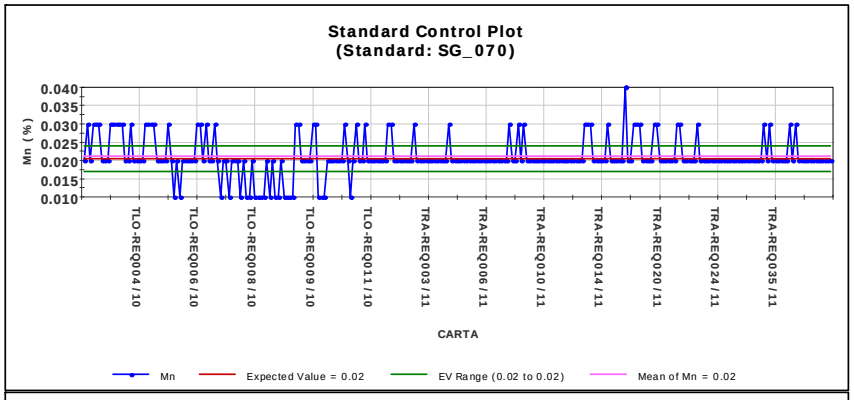
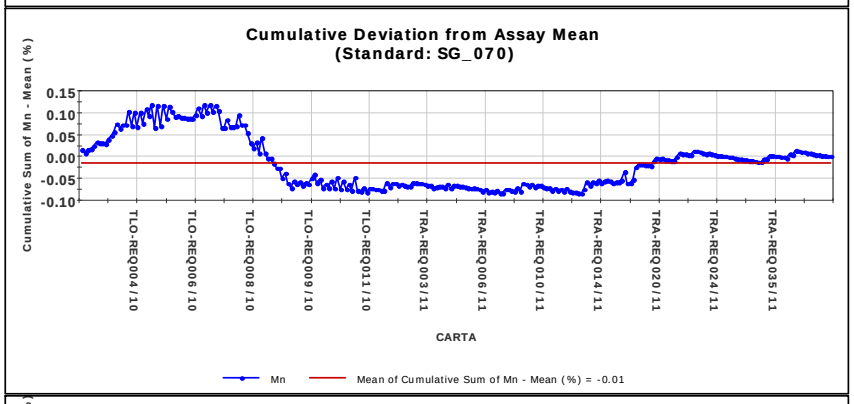
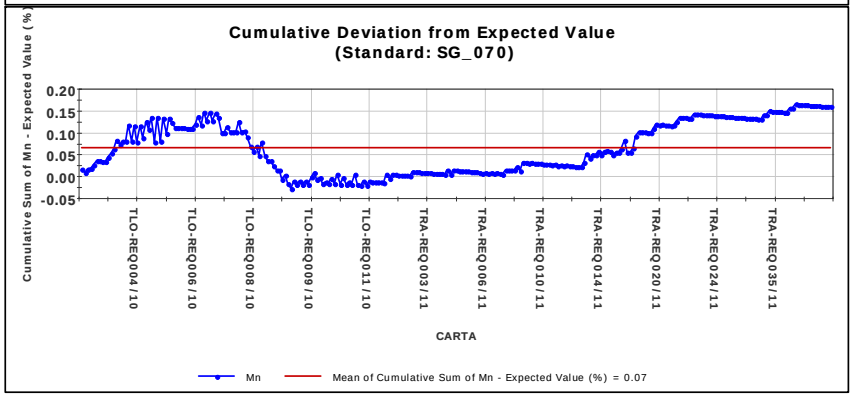
Summary
(Standard: SG_070)

Standard:	SG_070		No of Analyses:	259
Element:	Mn		Minimum:	0.01
Units:			Maximum:	0.04
Detection Limit:	-		Mean:	0.02
Expected Value (EV):	0.02		Std Deviation:	0.01
E.V. Range:	0.02 to 0.02		% in Tolerance	72.20 %
			% Bias	3.02 %
			% RSD	24.92 %

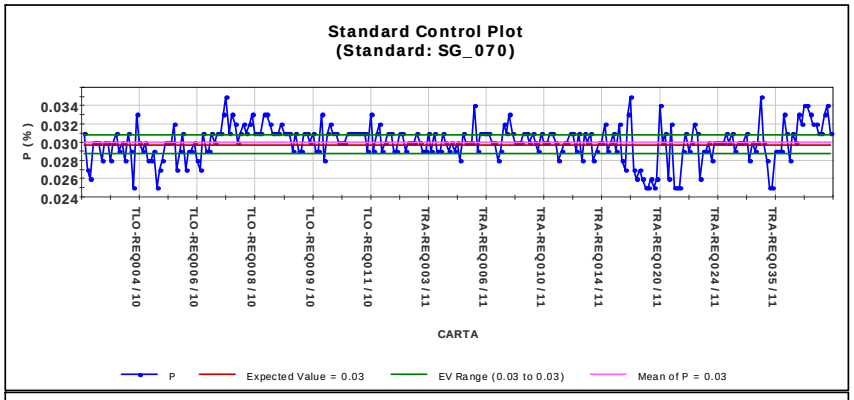


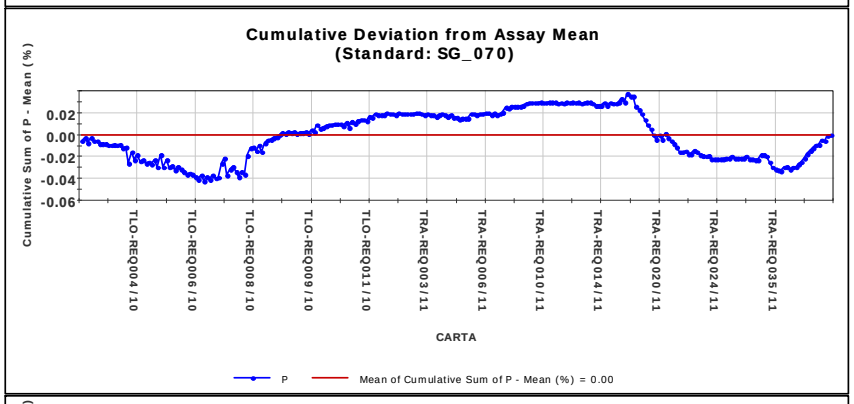


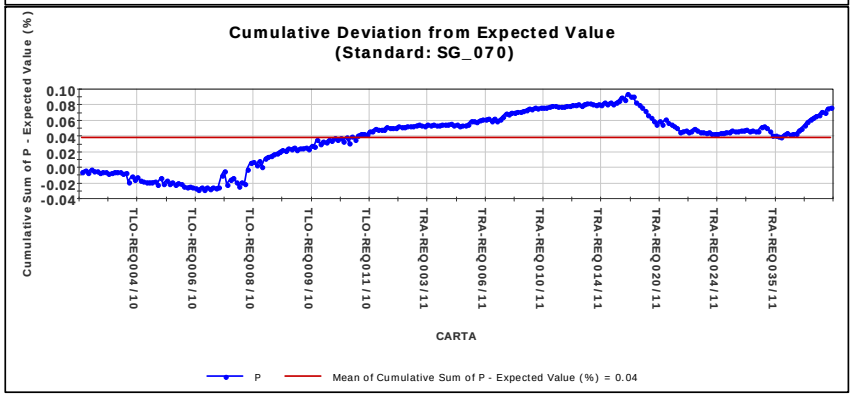


Summary
(Standard: SG_070)

Standard:	SG_070		No of Analyses:	259
Element:	P		Minimum:	0.03
Units:			Maximum:	0.04
Detection Limit:	-		Mean:	0.03
Expected Value (EV):	0.03		Std Deviation:	0.00
E.V. Range:	0.03 to 0.03		% in Tolerance	40.54 %
			% Bias	1.01 %
			% RSD	6.44 %







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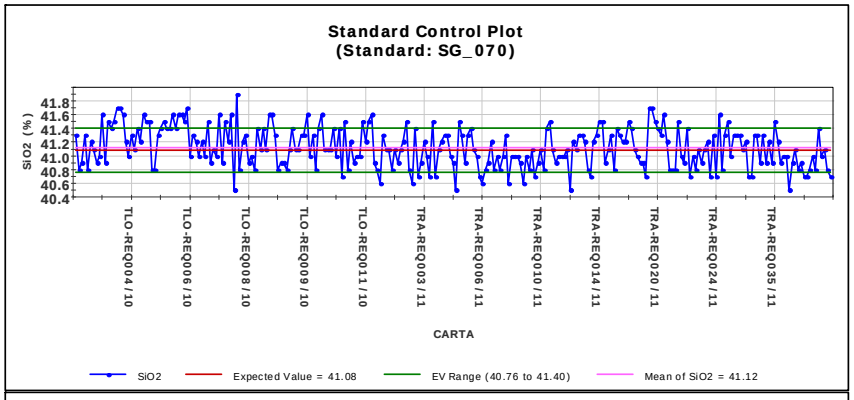
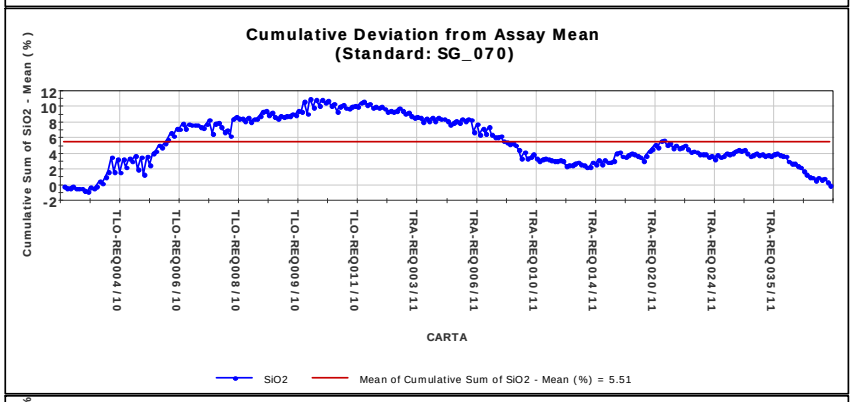
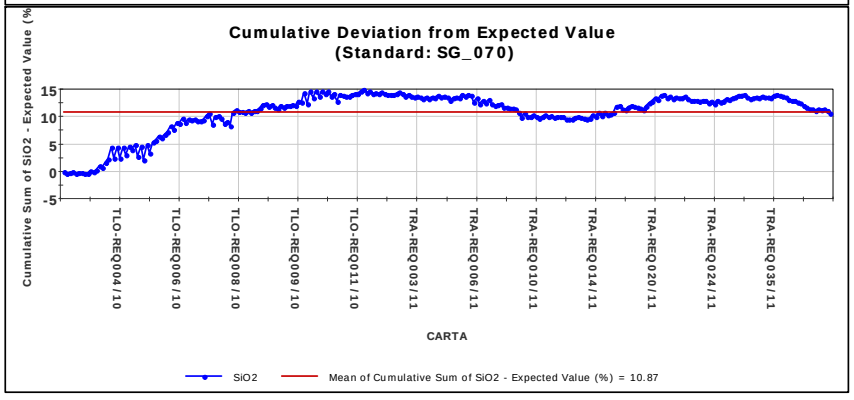
Summary
(Standard: SG_070)

Standard:	SG_070		No of Analyses:	259
Element:	SiO2		Minimum:	40.50
Units:			Maximum:	41.90
Detection Limit:	-		Mean:	41.12
Expected Value (EV):	41.08		Std Deviation:	0.29
E.V. Range:	40.76 to 41.40		% in Tolerance	73.75 %
			% Bias	0.10 %
			% RSD	0.71 %







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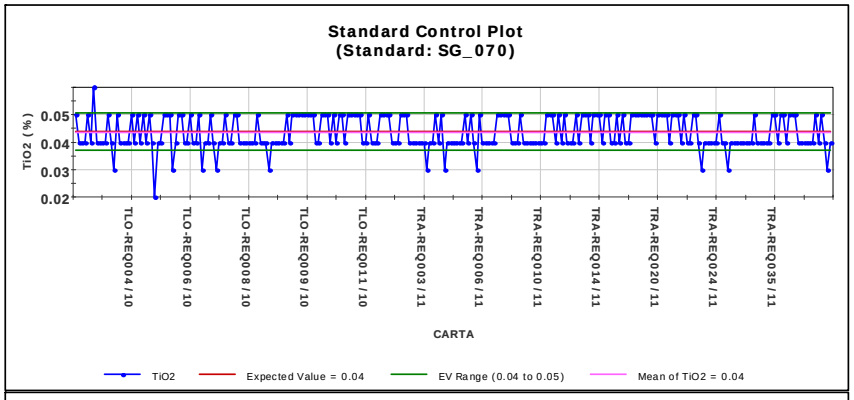
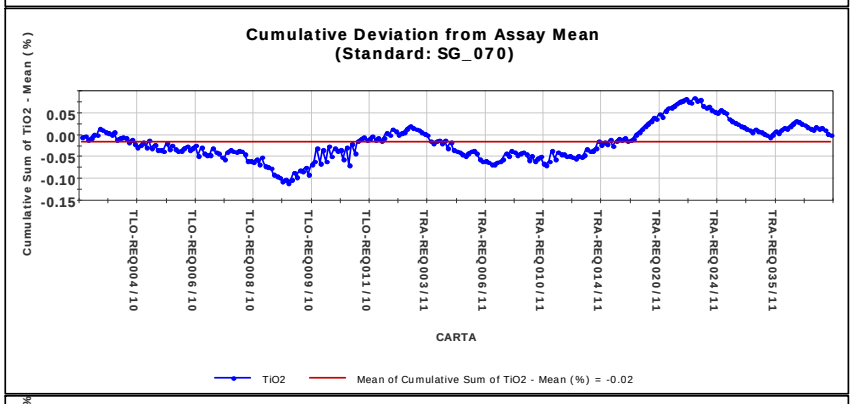
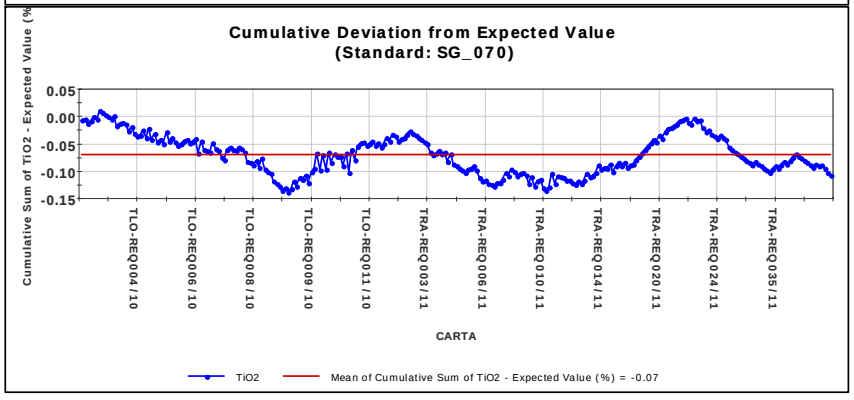
Summary
(Standard: SG_070)

Standard:	SG_070		No of Analyses:	259
Element:	TiO2		Minimum:	0.02
Units:			Maximum:	0.06
Detection Limit:	-		Mean:	0.04
Expected Value (EV):	0.04		Std Deviation:	0.01
E.V. Range:	0.04 to 0.05		% in Tolerance	94.98 %
			% Bias	-0.93 %
			% RSD	13.49 %







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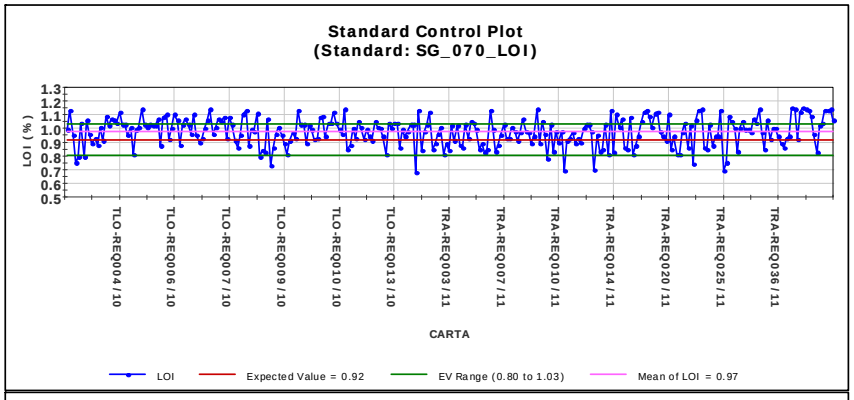
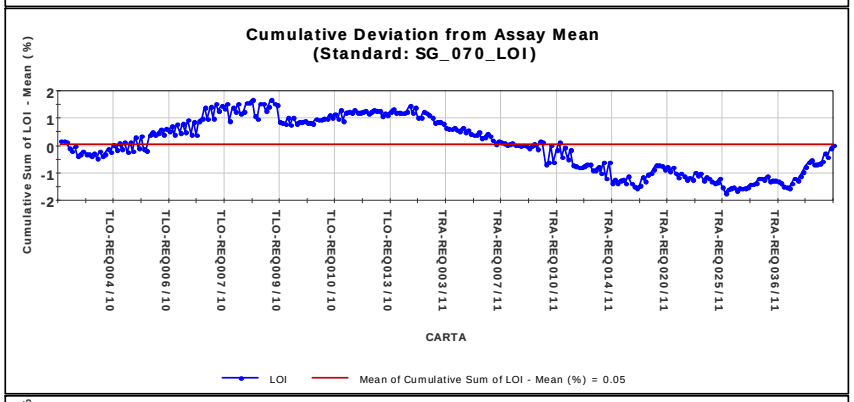
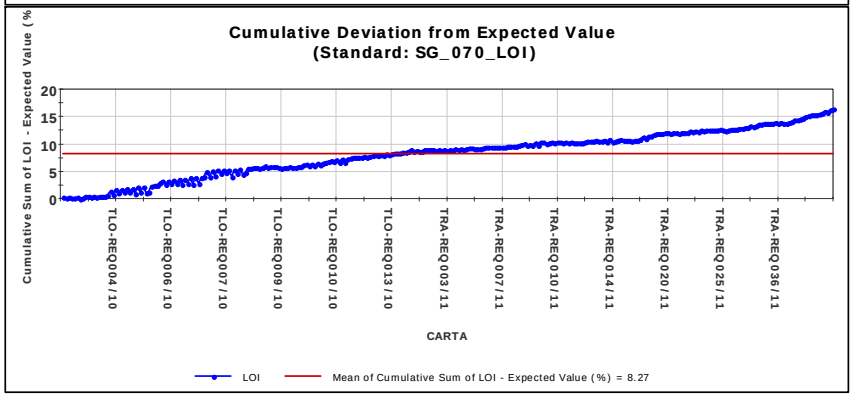
Summary
(Standard: SG_070_LOI)

Standard:	SG_070_LOI		No of Analyses:	280
Element:	LOI		Minimum:	0.68
Units:			Maximum:	1.15
Detection Limit:	-		Mean:	0.97
Expected Value (EV):	0.92		Std Deviation:	0.10
E.V. Range:	0.80 to 1.03		% in Tolerance	66.43 %
			% Bias	6.39 %
			% RSD	10.52 %



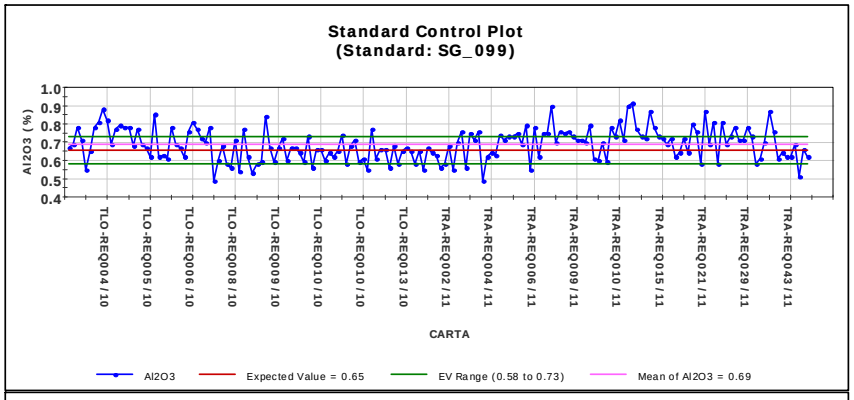


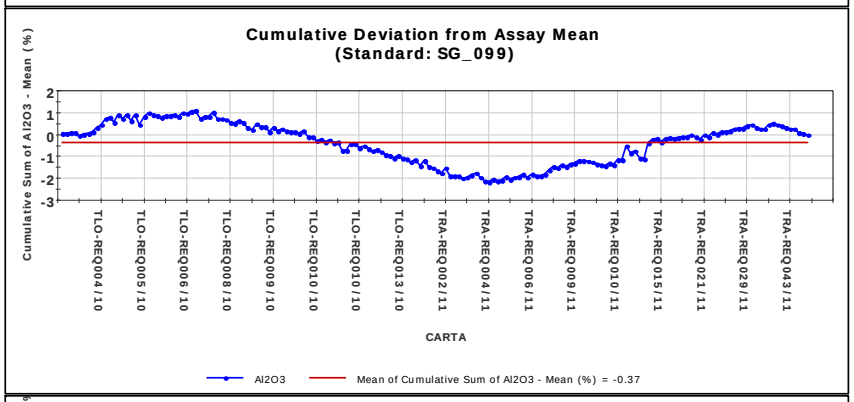


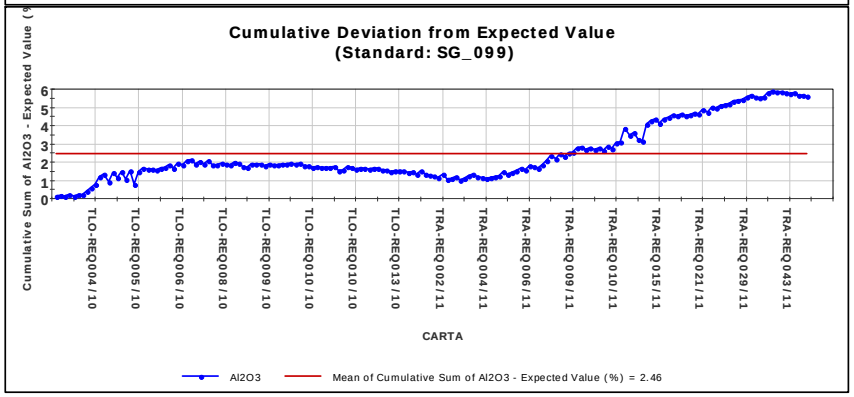
Printed: 11-jul-2011 11:19:47 Data Imported: 11-jul-2011 10:41:43 Page 1

Summary
(Standard: SG_099)

Standard:	SG_099		No of Analyses:	174
Element:	Al2O3		Minimum:	0.49
Units:			Maximum:	0.91
Detection Limit:	-		Mean:	0.69
Expected Value (EV):	0.65		Std Deviation:	0.09
E.V. Range:	0.58 to 0.73		% in Tolerance	62.64 %
			% Bias	4.94 %
			% RSD	12.72 %



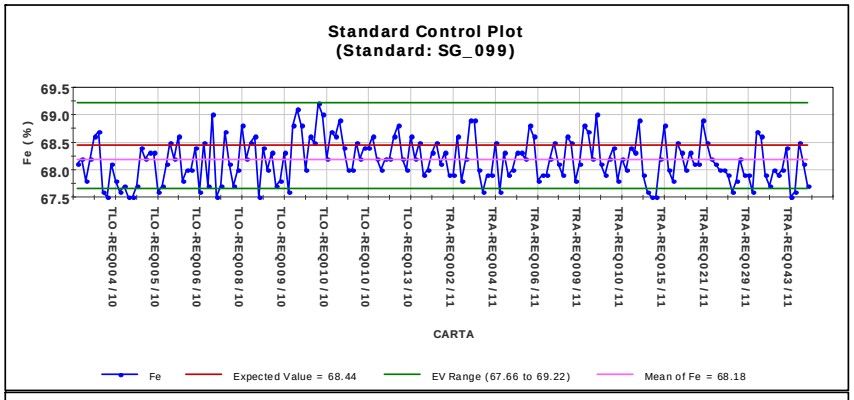


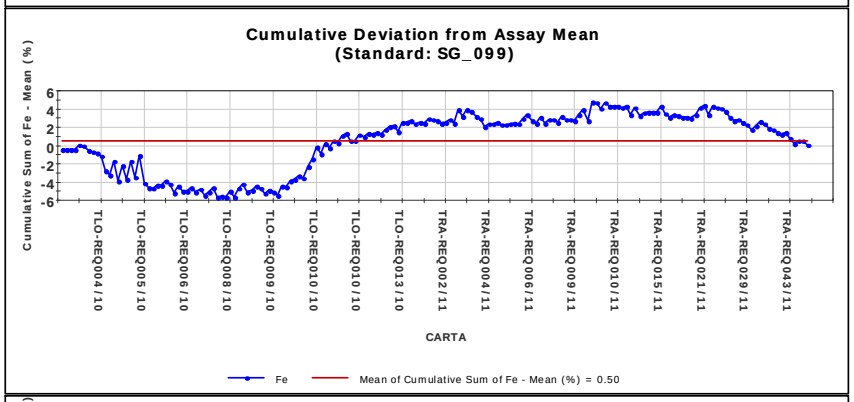


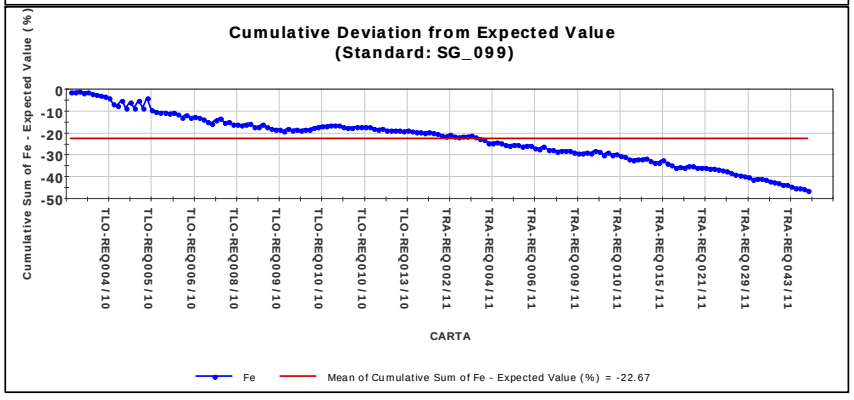
Printed: 11-jul-2011 11:21:52 Data Imported: 11-jul-2011 10:41:43 Page 1

Summary
(Standard: SG_099)

Standard:	SG_099		No of Analyses:	174
Element:	Fe		Minimum:	67.50
Units:			Maximum:	69.20
Detection Limit:	-		Mean:	68.18
Expected Value (EV):	68.44		Std Deviation:	0.40
E.V. Range:	67.66 to 69.22		% in Tolerance	89.08 %
			% Bias	-0.39 %
			% RSD	0.58 %



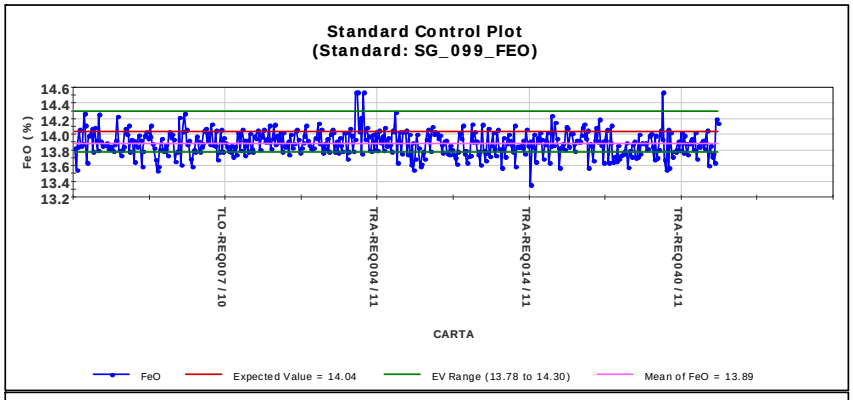


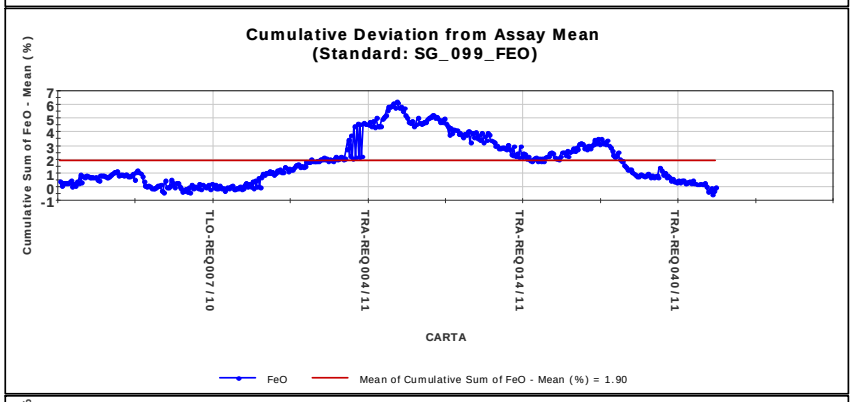


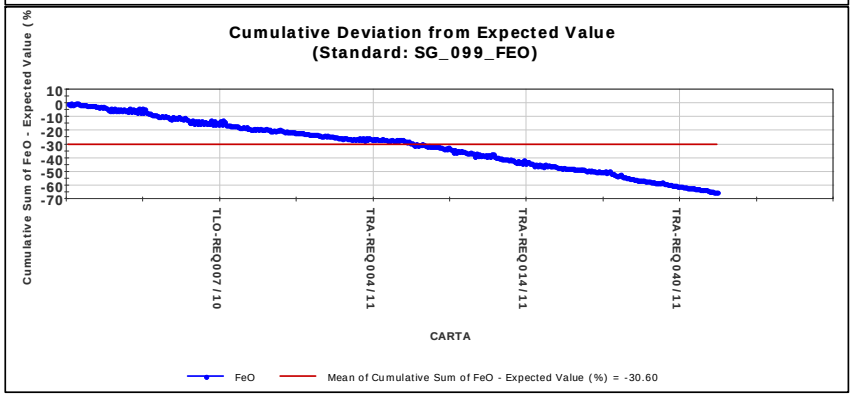
Printed: 11-jul-2011 11:23:57 Data Imported: 11-jul-2011 10:41:43 Page 1

Summary
(Standard: SG_099_FEO)

Standard:	SG_099_FEO		No of Analyses:	424
Element:	FeO		Minimum:	13.35
Units:			Maximum:	14.54
Detection Limit:	-		Mean:	13.89
Expected Value (EV):	14.04		Std Deviation:	0.16
E.V. Range:	13.78 to 14.30		% in Tolerance	75.24 %
			% Bias	-1.09 %
			% RSD	1.16 %



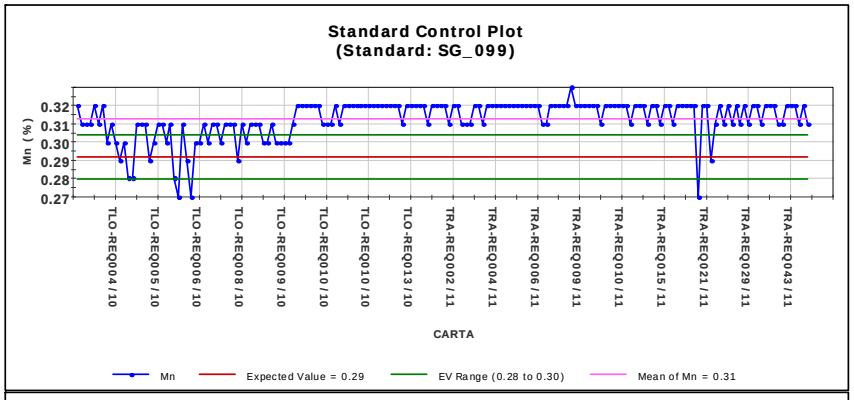


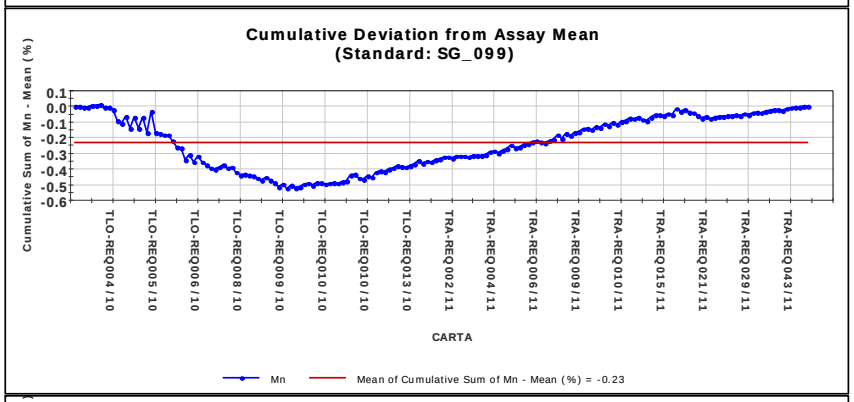


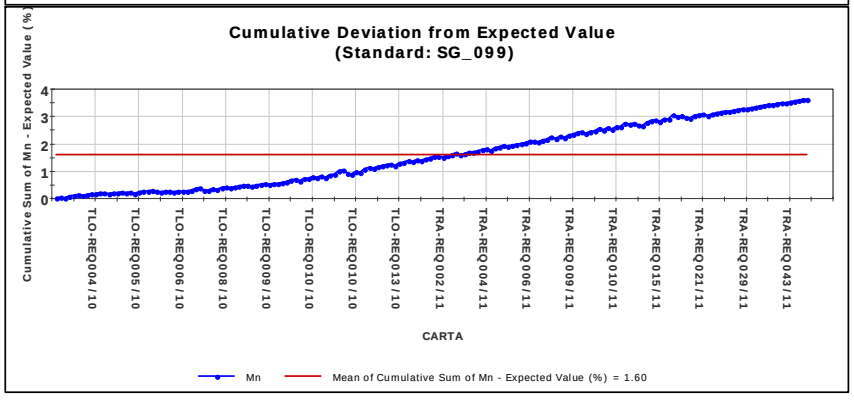
Printed: 11-jul-2011 11:26:53 Data Imported: 11-jul-2011 10:41:43 Page 1

Summary
(Standard: SG_099)

Standard:	SG_099		No of Analyses:	174
Element:	Mn		Minimum:	0.27
Units:			Maximum:	0.33
Detection Limit:	-		Mean:	0.31
Expected Value (EV):	0.29		Std Deviation:	0.01
E.V. Range:	0.28 to 0.30		% in Tolerance	13.79 %
			% Bias	7.17 %
			% RSD	3.39 %



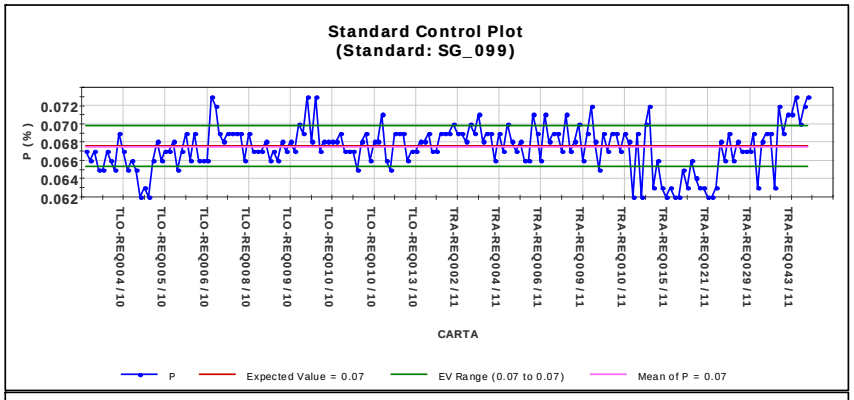


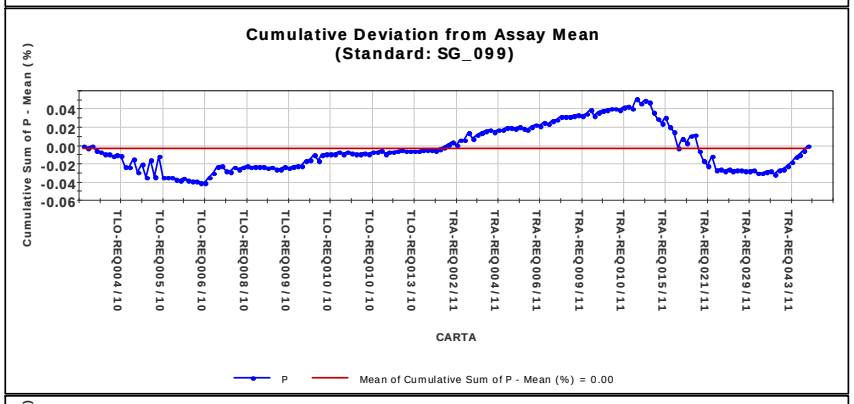


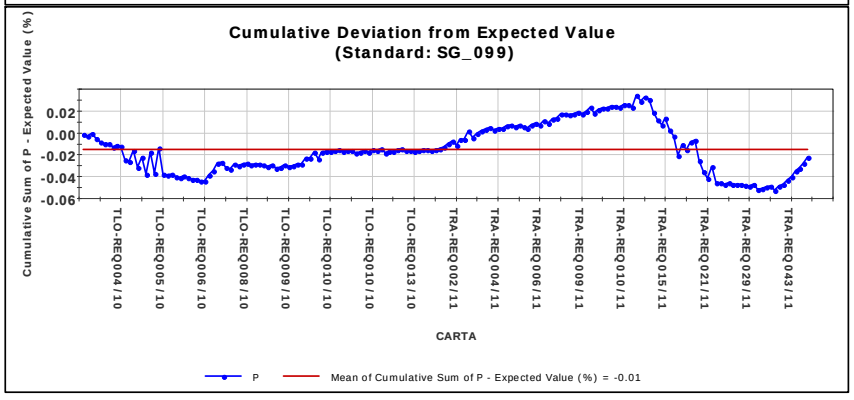
Printed: 11-jul-2011 11:28:31 Data Imported: 11-jul-2011 10:41:43 Page 1

Summary
(Standard: SG_099)

Standard:	SG_099		No of Analyses:	174
Element:	P		Minimum:	0.06
Units:			Maximum:	0.07
Detection Limit:	-		Mean:	0.07
Expected Value (EV):	0.07		Std Deviation:	0.00
E.V. Range:	0.07 to 0.07		% in Tolerance	68.97 %
			% Bias	-0.19 %
			% RSD	3.71 %

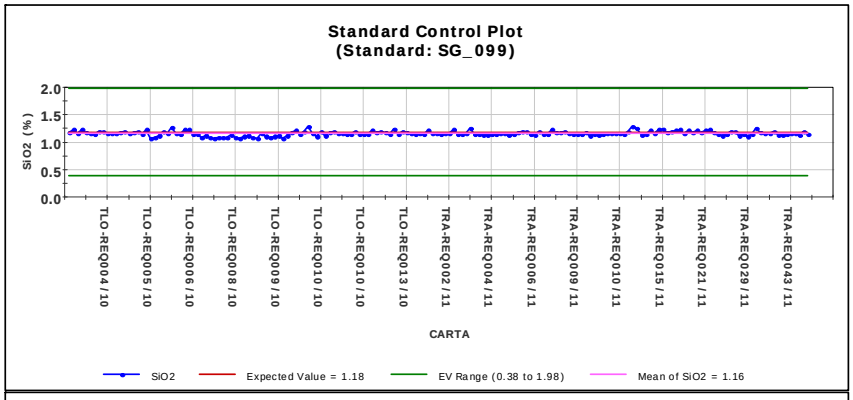


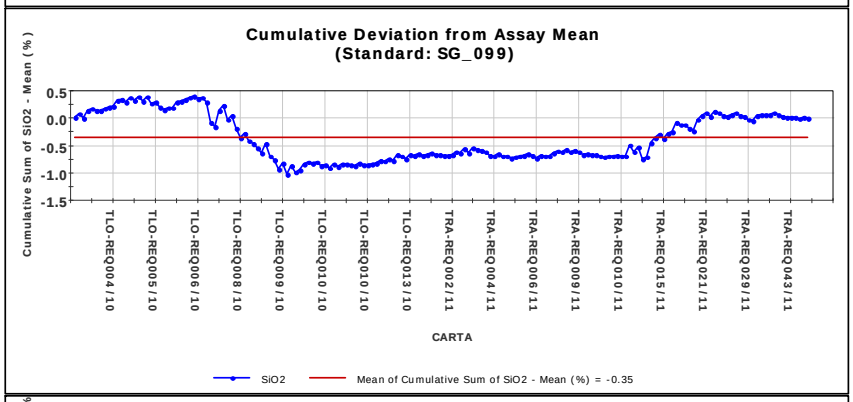


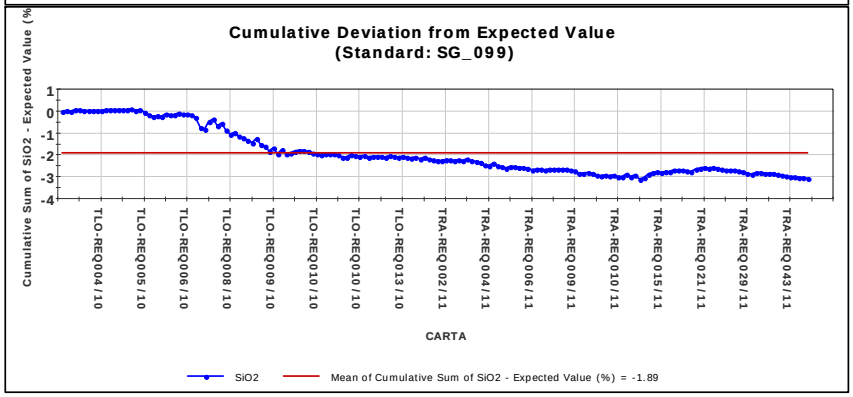


Summary
(Standard: SG_099)

Standard:	SG_099		No of Analyses:	174
Element:	SiO2		Minimum:	1.07
Units:			Maximum:	1.29
Detection Limit:	-		Mean:	1.16
Expected Value (EV):	1.18		Std Deviation:	0.04
E.V. Range:	0.38 to 1.98		% in Tolerance	100.00 %
			% Bias	-1.50 %
			% RSD	3.71 %







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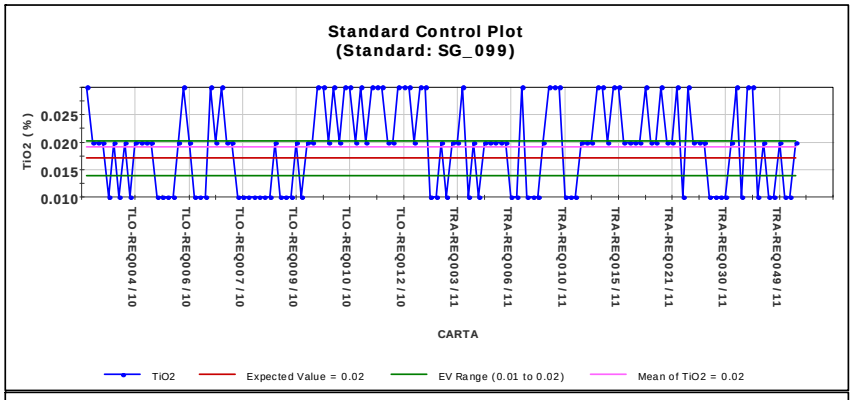
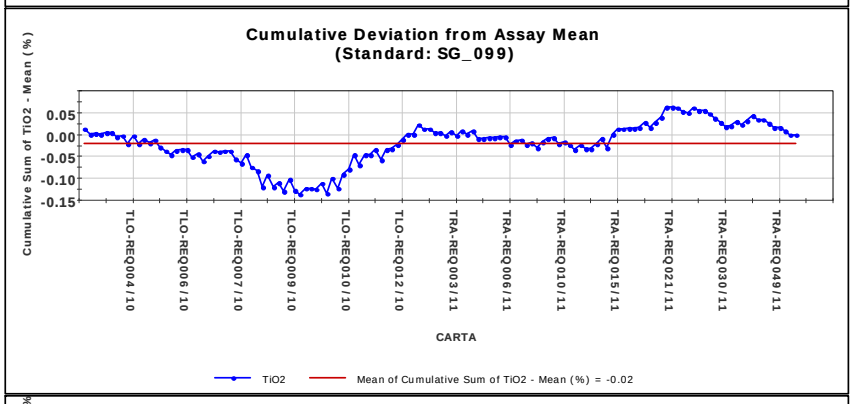
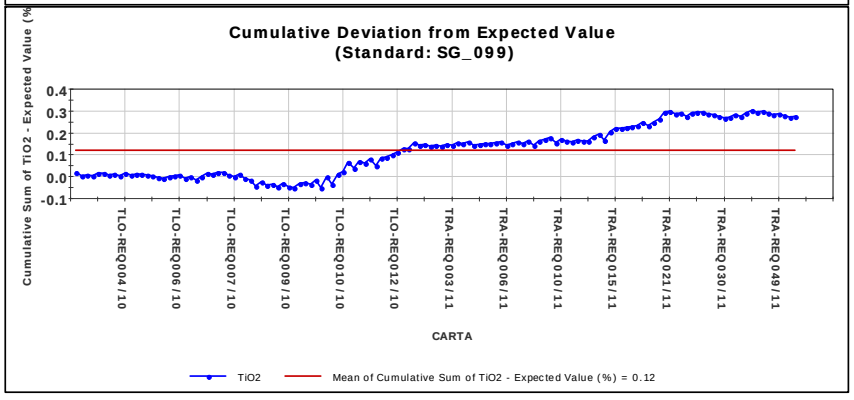
Summary
(Standard: SG_099)

Standard:	SG_099		No of Analyses:	133
Element:	TiO2		Minimum:	0.01
Units:			Maximum:	0.03
Detection Limit:	-		Mean:	0.02
Expected Value (EV):	0.02		Std Deviation:	0.01
E.V. Range:	0.01 to 0.02		% in Tolerance	40.60 %
			% Bias	12.12 %
			% RSD	39.97 %







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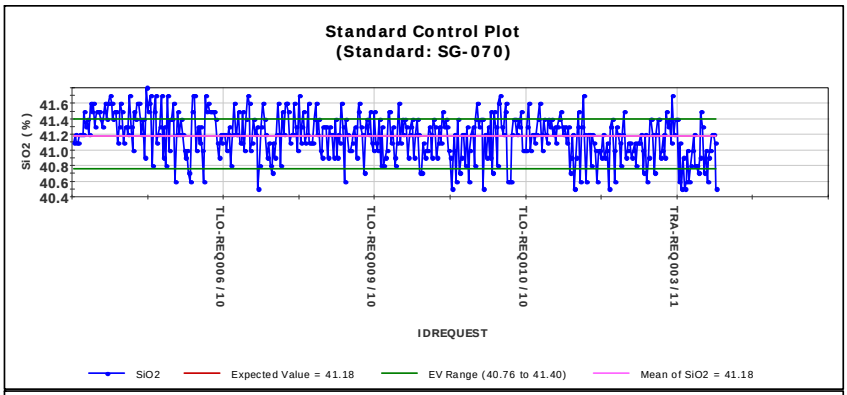
Appendix B

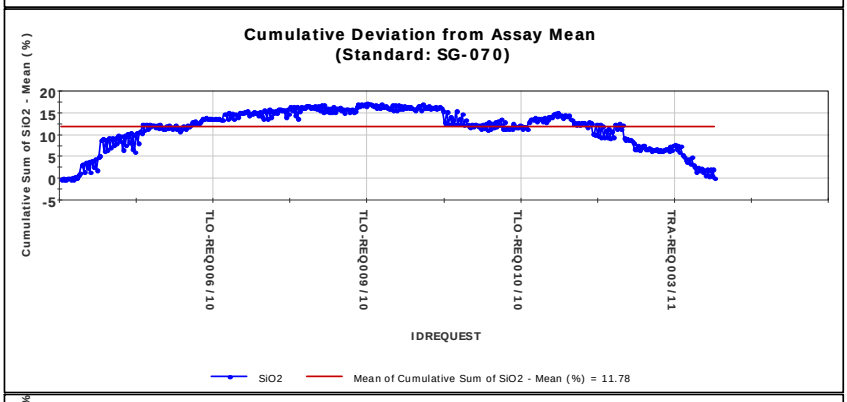
QA/QC

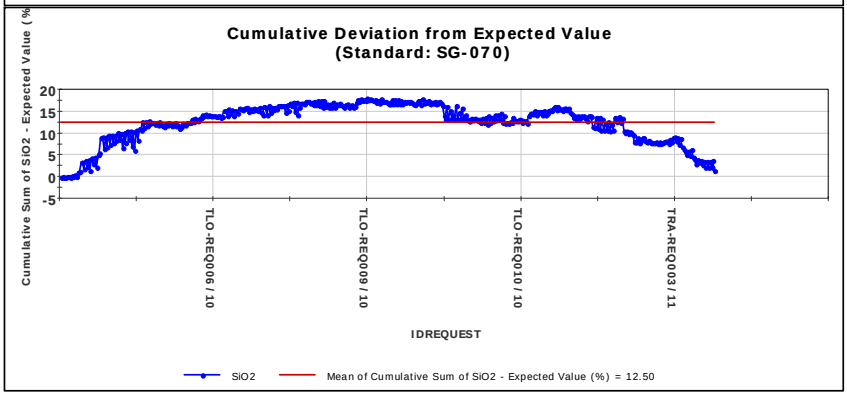
Project Standard

Summary
(Standard: SG-070)

Standard:	SG-070		No of Analyses:	426
Element:	SiO2		Minimum:	40.50
Units:			Maximum:	41.80
Detection Limit:			Mean:	41.18
Expected Value (EV):	41.18		Std Deviation:	0.29
E.V. Range:	40.76 to 41.40		% in Tolerance	71.83 %
			% Bias	0.01 %
			% RSD	0.70 %

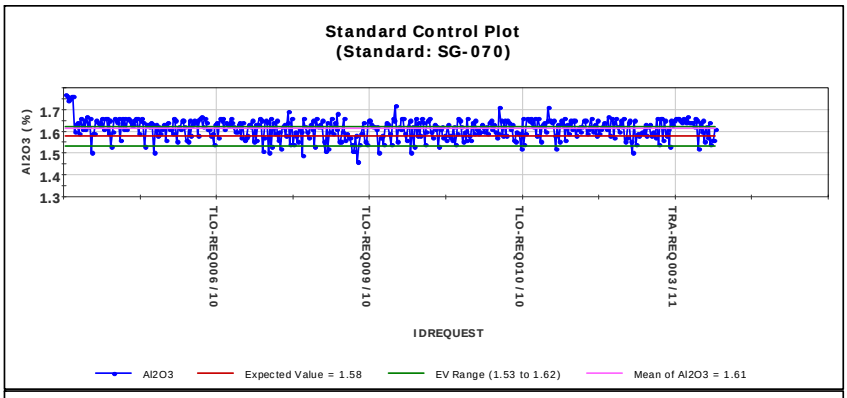


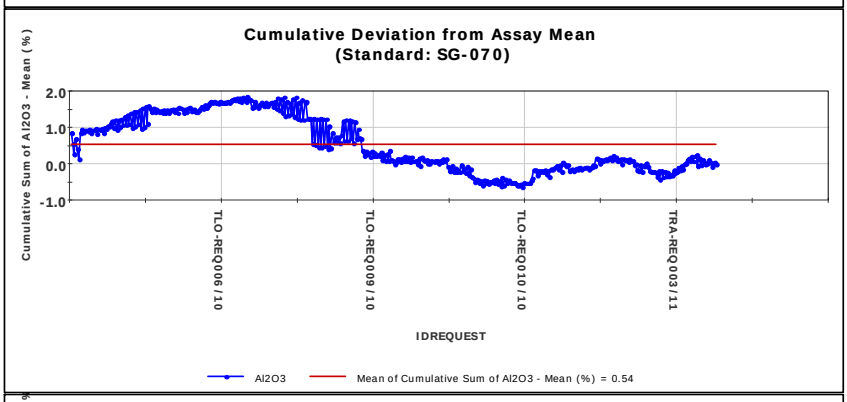


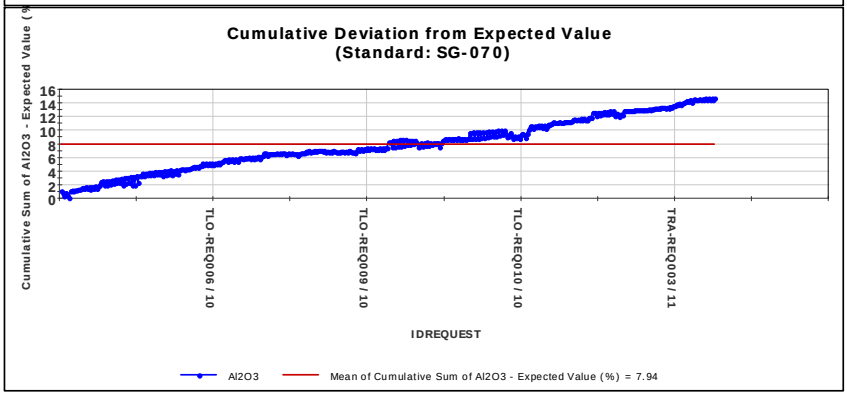


Summary
(Standard: SG-070)

Standard:	SG-070		No of Analyses:	426
Element:	Al2O3		Minimum:	1.46
Units:			Maximum:	1.77
Detection Limit:			Mean:	1.61
Expected Value (EV):	1.58		Std Deviation:	0.05
E.V. Range:	1.53 to 1.62		% in Tolerance	48.83 %
			% Bias	2.20 %
			% RSD	2.88 %







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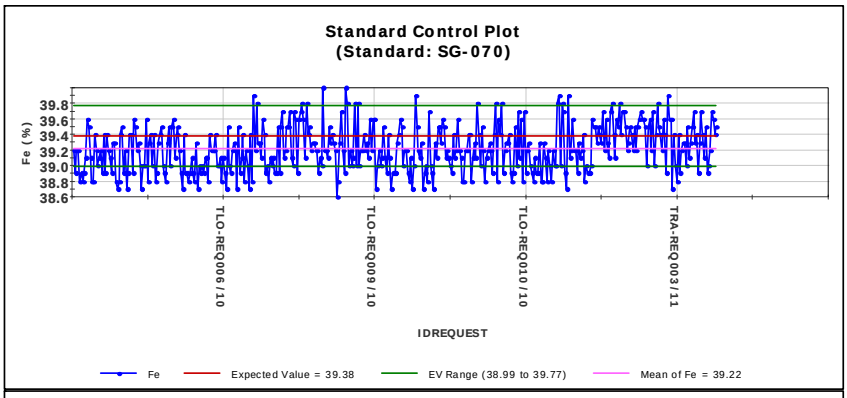
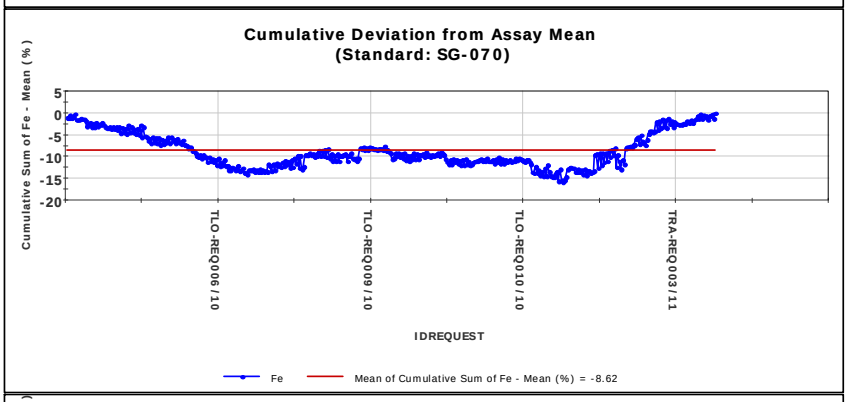
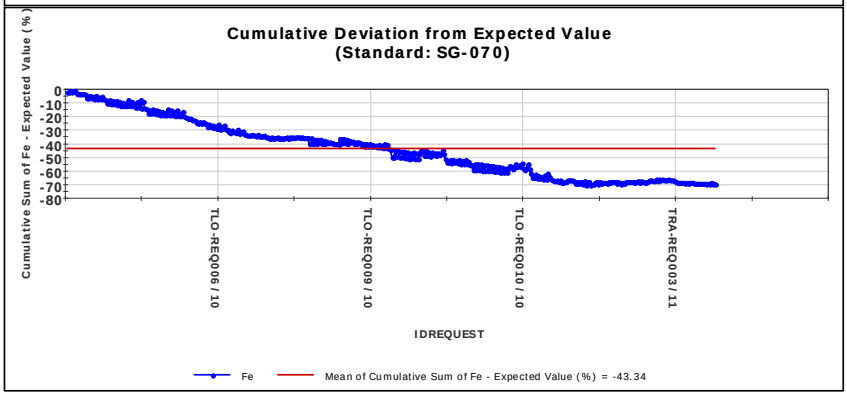
Summary
(Standard: SG-070)

Standard:	SG-070		No of Analyses:	426
Element:	Fe		Minimum:	38.60
Units:			Maximum:	40.00
Detection Limit:			Mean:	39.22
Expected Value (EV):	39.38		Std Deviation:	0.30
E.V. Range:	38.99 to 39.77		% in Tolerance	71.36 %
			% Bias	-0.41 %
			% RSD	0.77 %







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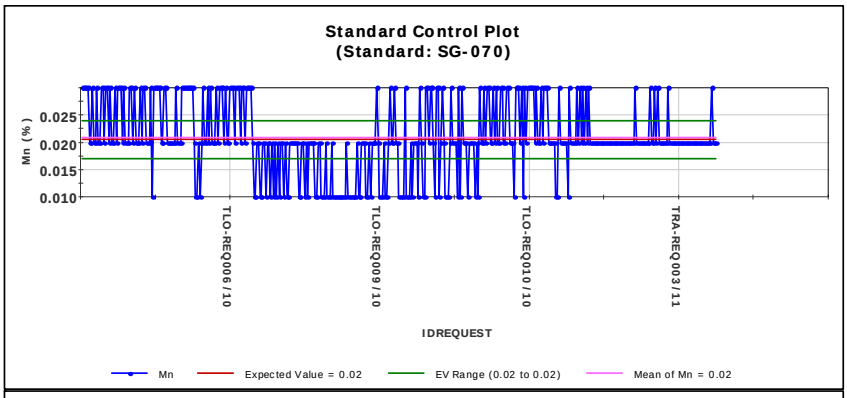
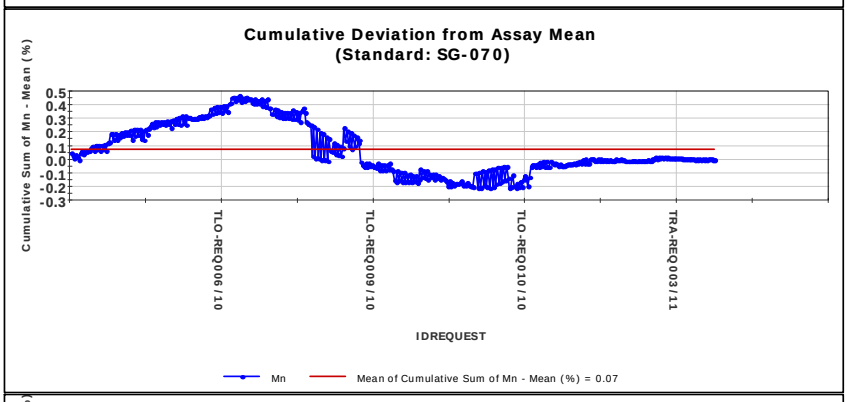
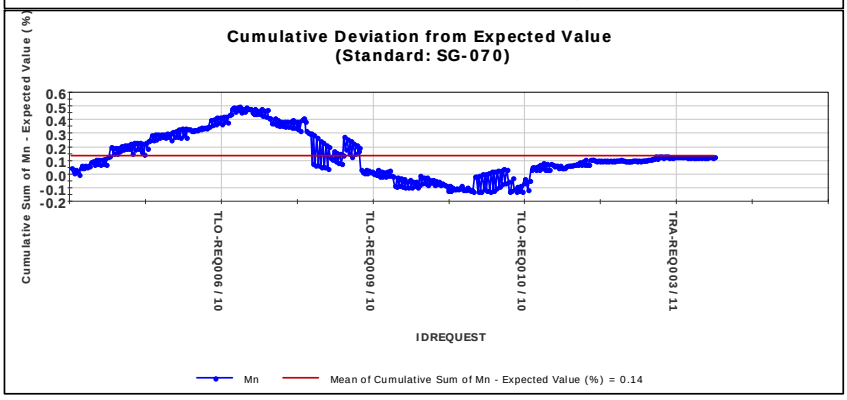
Summary
(Standard: SG-070)

Standard:	SG-070		No of Analyses:	425
Element:	Mn		Minimum:	0.01
Units:			Maximum:	0.03
Detection Limit:			Mean:	0.02
Expected Value (EV):	0.02		Std Deviation:	0.01
E.V. Range:	0.02 to 0.02		% in Tolerance	54.82 %
			% Bias	1.46 %
			% RSD	32.08 %







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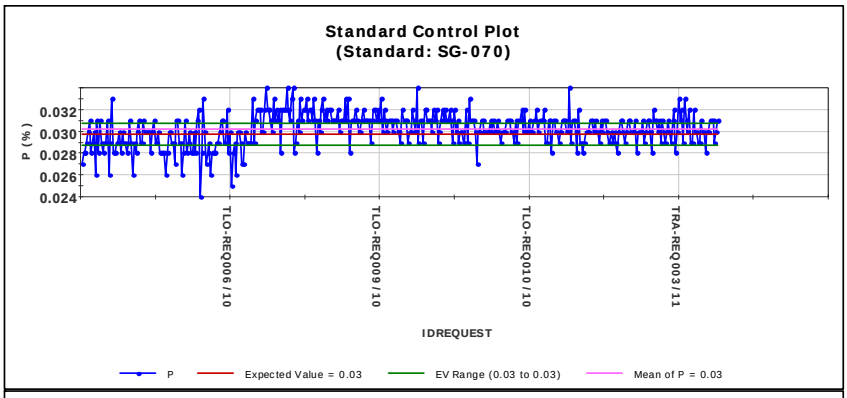
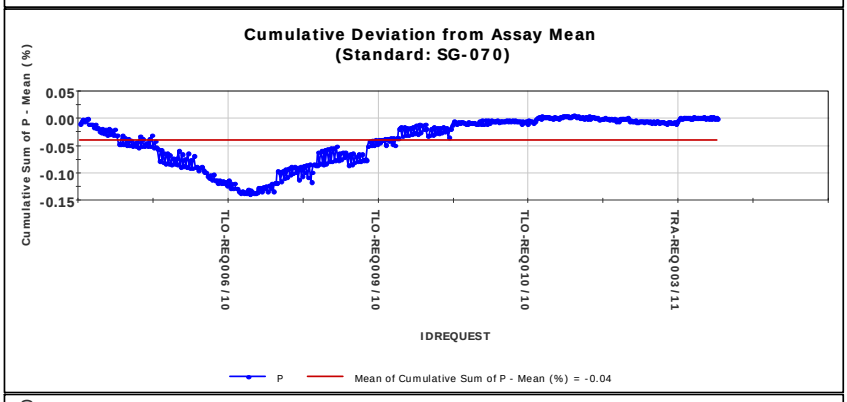
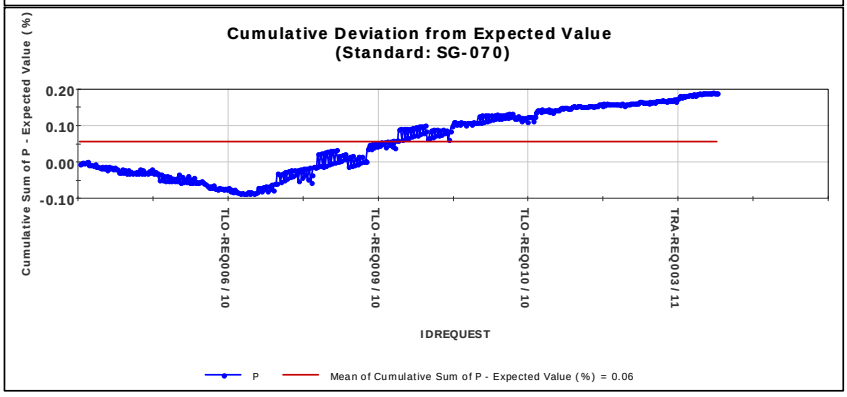
Summary
(Standard: SG-070)

Standard:	SG-070		No of Analyses:	426
Element:	P		Minimum:	0.02
Units:			Maximum:	0.03
Detection Limit:			Mean:	0.03
Expected Value (EV):	0.03		Std Deviation:	0.00
E.V. Range:	0.03 to 0.03		% in Tolerance	41.31 %
			% Bias	1.51 %
			% RSD	5.03 %







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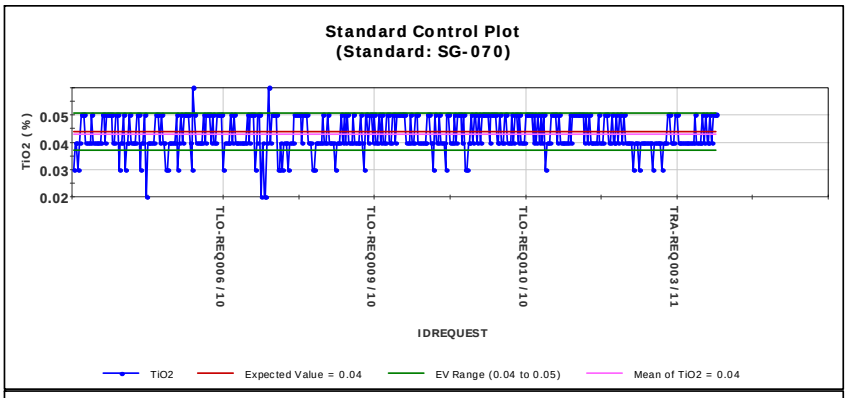
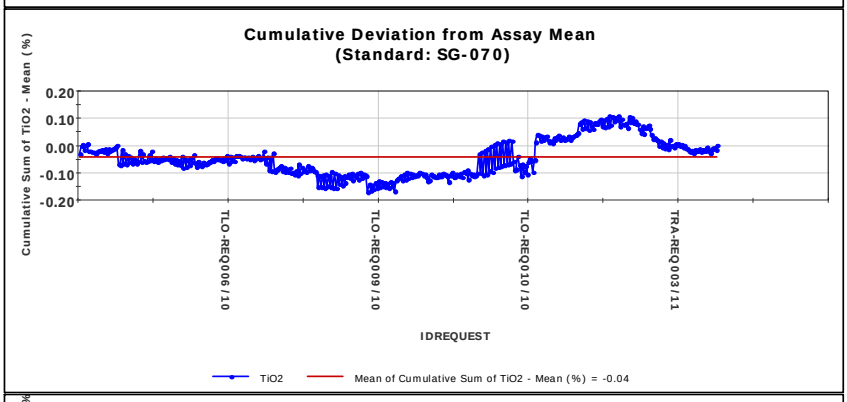
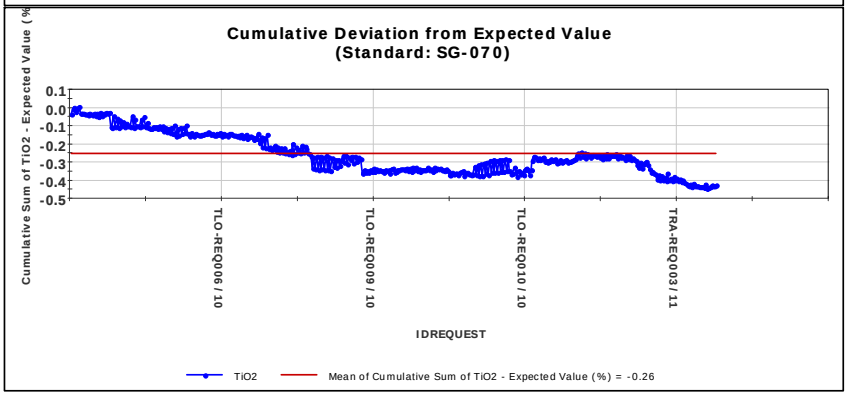
Summary
(Standard: SG-070)

Standard:	SG-070		No of Analyses:	426
Element:	TiO2		Minimum:	0.02
Units:			Maximum:	0.06
Detection Limit:			Mean:	0.04
Expected Value (EV):	0.04		Std Deviation:	0.01
E.V. Range:	0.04 to 0.05		% in Tolerance	92.02 %
			% Bias	-2.26 %
			% RSD	14.84 %

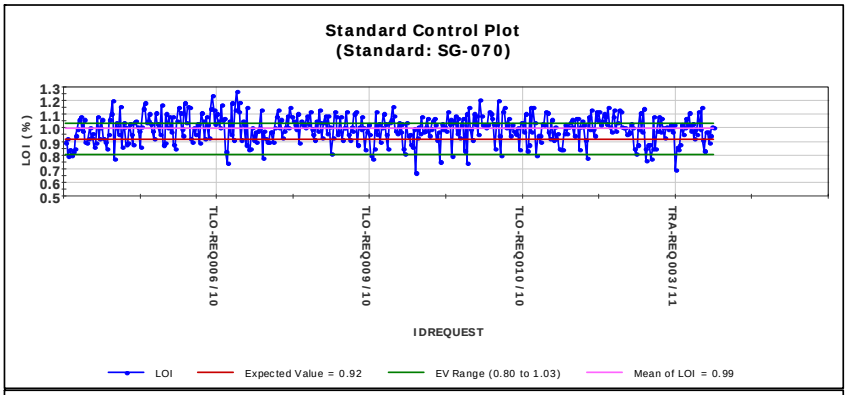


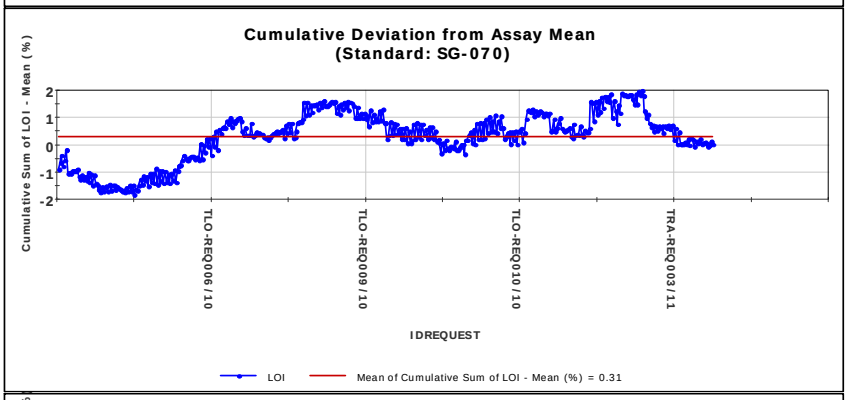


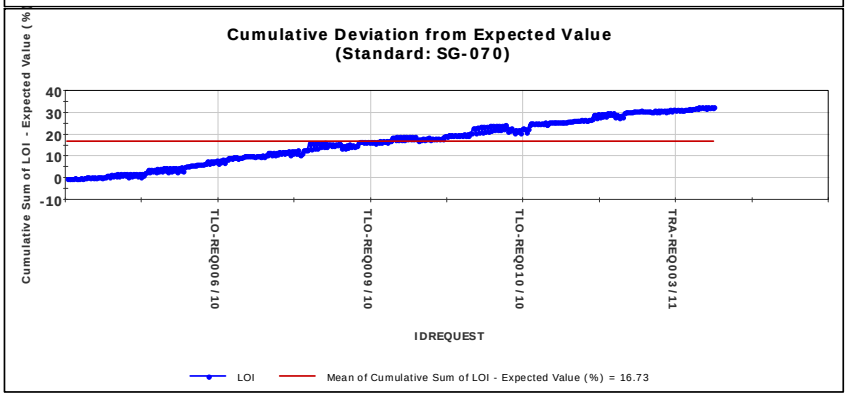


Summary
(Standard: SG-070)

Standard:	SG-070		No of Analyses:	425
Element:	LOI		Minimum:	0.67
Units:			Maximum:	1.27
Detection Limit:			Mean:	0.99
Expected Value (EV):	0.92		Std Deviation:	0.10
E.V. Range:	0.80 to 1.03		% in Tolerance	62.59 %
			% Bias	8.42 %
			% RSD	9.99 %







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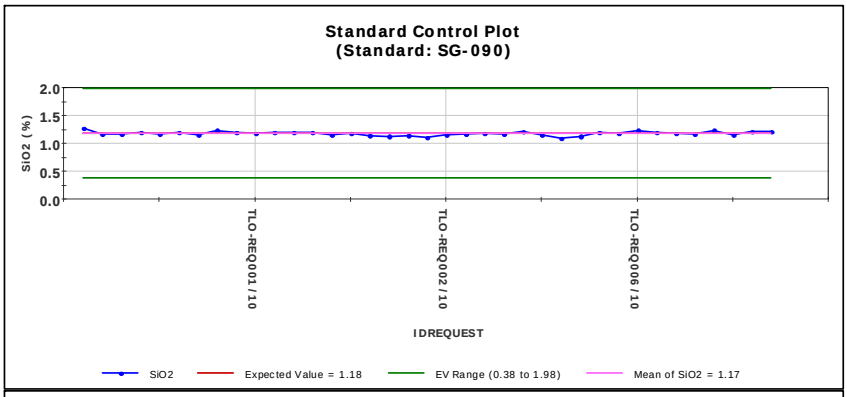
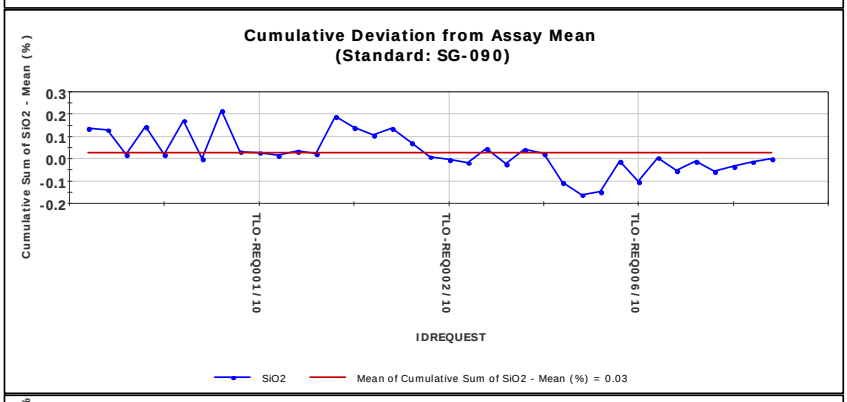
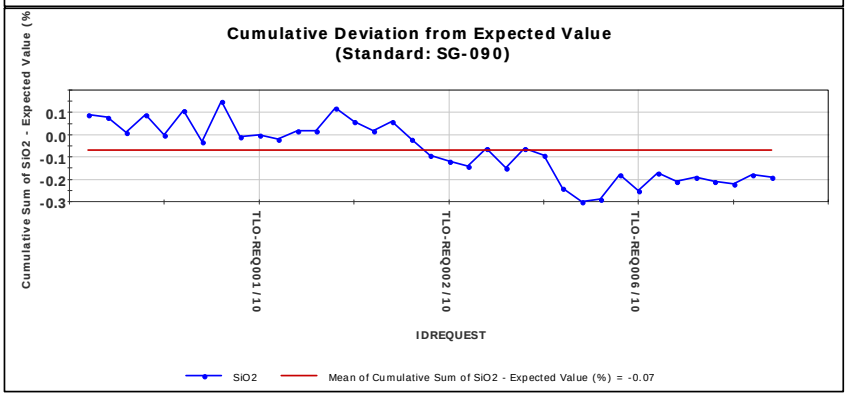
Summary
(Standard: SG-090)

Standard:	SG-090		No of Analyses:	37
Element:	SiO2		Minimum:	1.09
Units:			Maximum:	1.28
Detection Limit:			Mean:	1.17
Expected Value (EV):	1.18		Std Deviation:	0.04
E.V. Range:	0.38 to 1.98		% in Tolerance	100.00 %
			% Bias	-0.44 %
			% RSD	3.04 %







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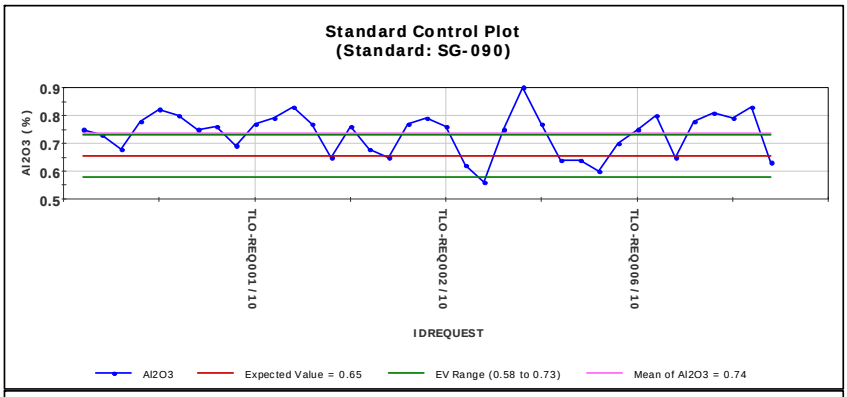
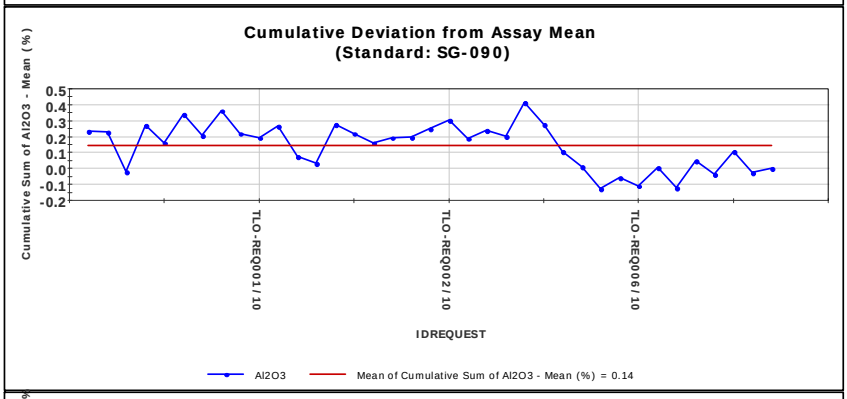
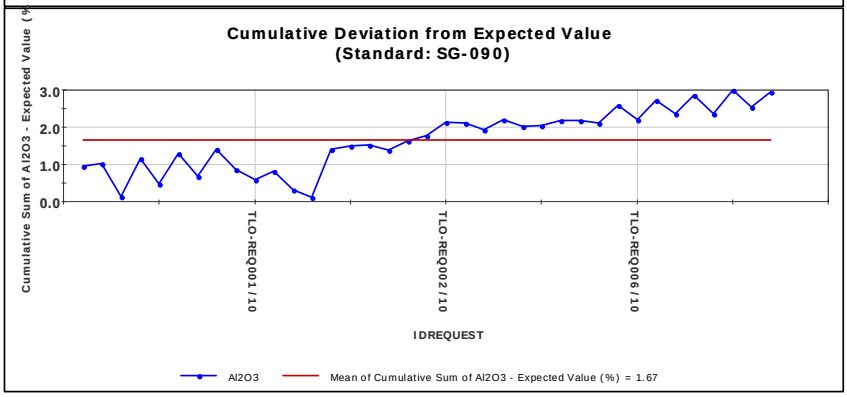
Summary
(Standard: SG-090)

Standard:	SG-090		No of Analyses:	37
Element:	Al2O3		Minimum:	0.56
Units:			Maximum:	0.90
Detection Limit:			Mean:	0.74
Expected Value (EV):	0.65		Std Deviation:	0.08
E.V. Range:	0.58 to 0.73		% in Tolerance	35.14 %
			% Bias	12.23 %
			% RSD	10.24 %







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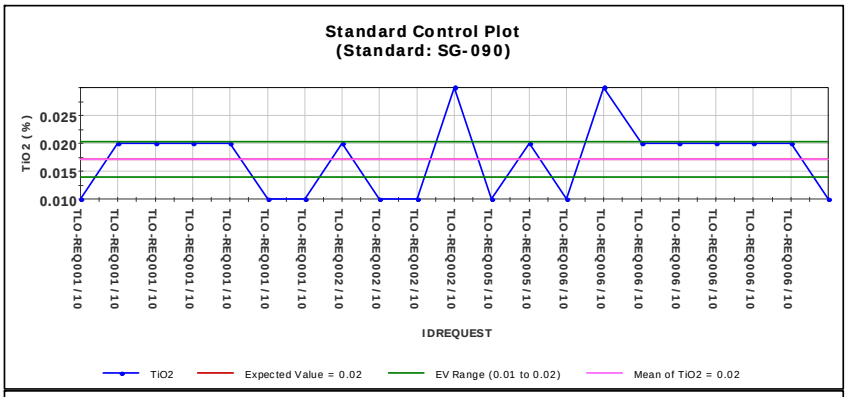
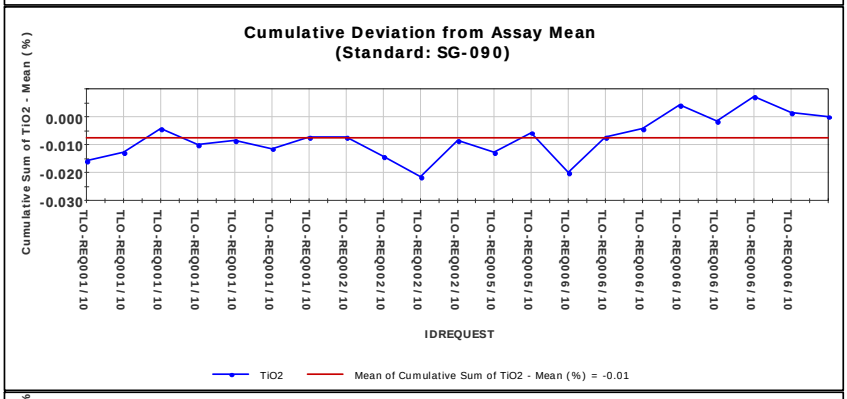
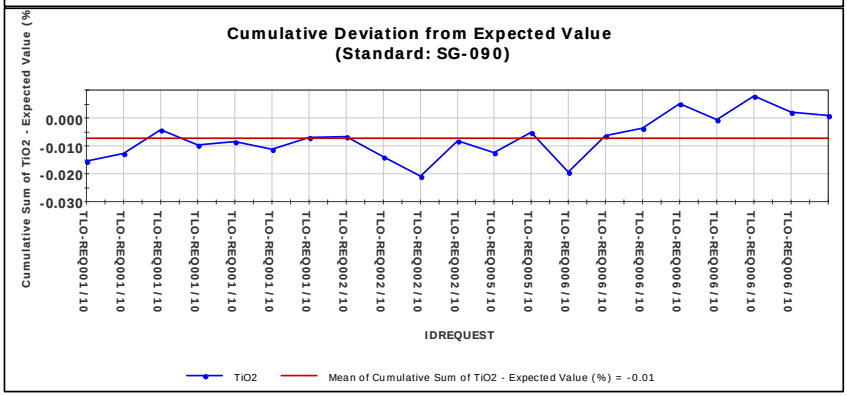
Summary
(Standard: SG-090)

Standard:	SG-090		No of Analyses:	21
Element:	TiO2		Minimum:	0.01
Units:			Maximum:	0.03
Detection Limit:			Mean:	0.02
Expected Value (EV):	0.02		Std Deviation:	0.01
E.V. Range:	0.01 to 0.02		% in Tolerance	52.38 %
			% Bias	0.25 %
			% RSD	36.64 %







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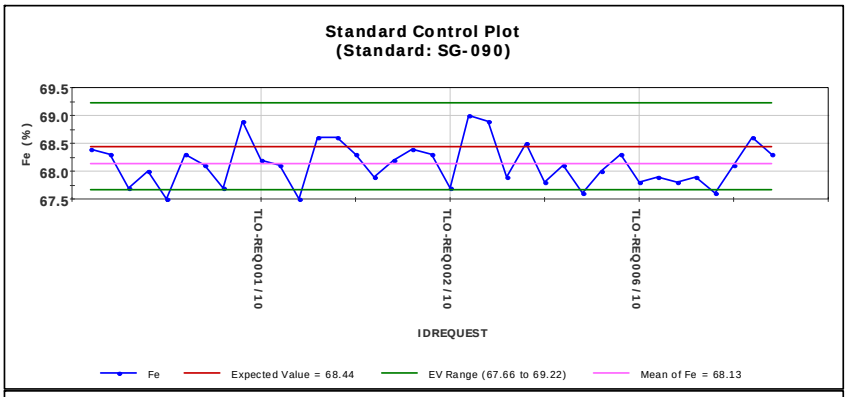
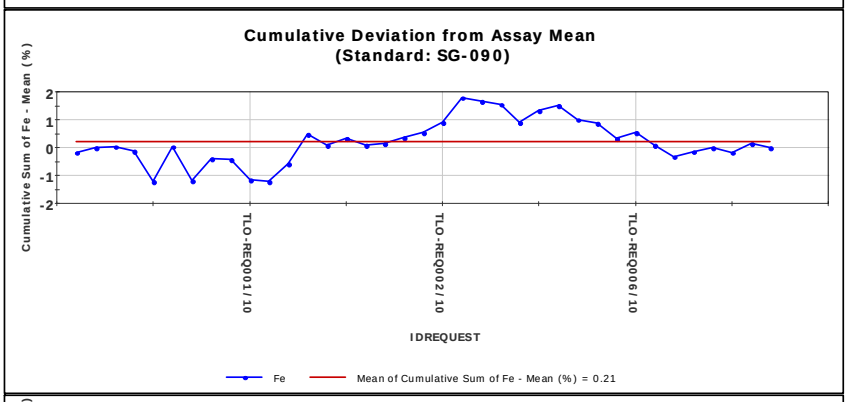
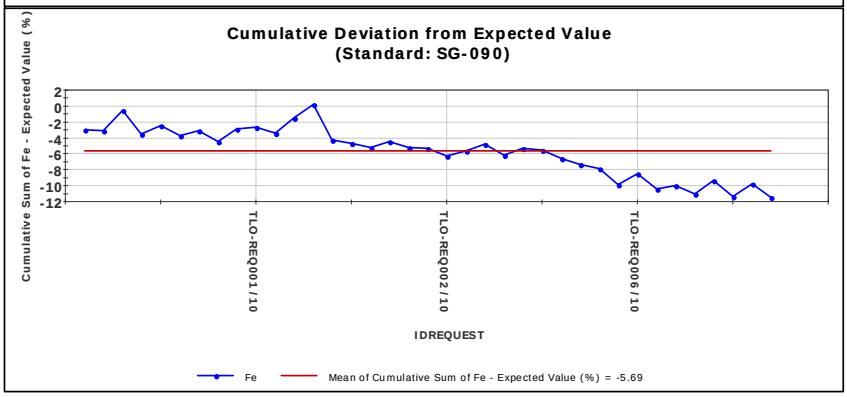
Summary
(Standard: SG-090)

Standard:	SG-090		No of Analyses:	37
Element:	Fe		Minimum:	67.50
Units:			Maximum:	69.00
Detection Limit:			Mean:	68.13
Expected Value (EV):	68.44		Std Deviation:	0.39
E.V. Range:	67.66 to 69.22		% in Tolerance	89.19 %
			% Bias	-0.45 %
			% RSD	0.57 %







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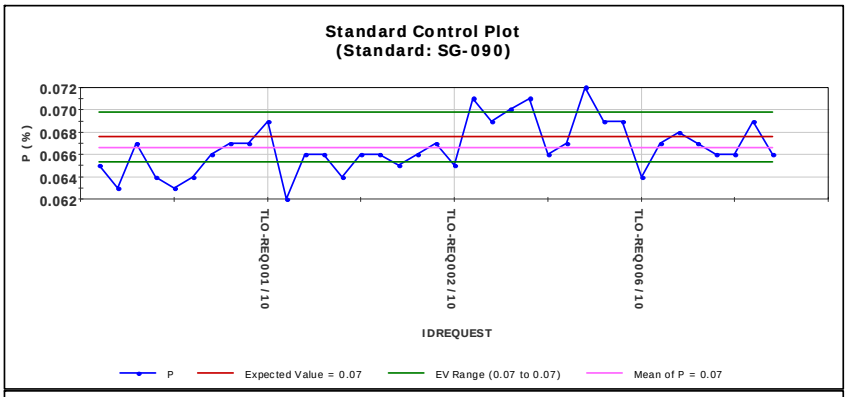
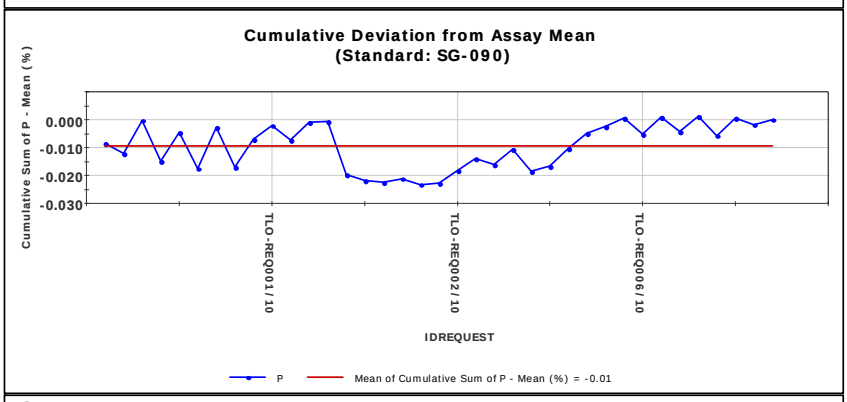
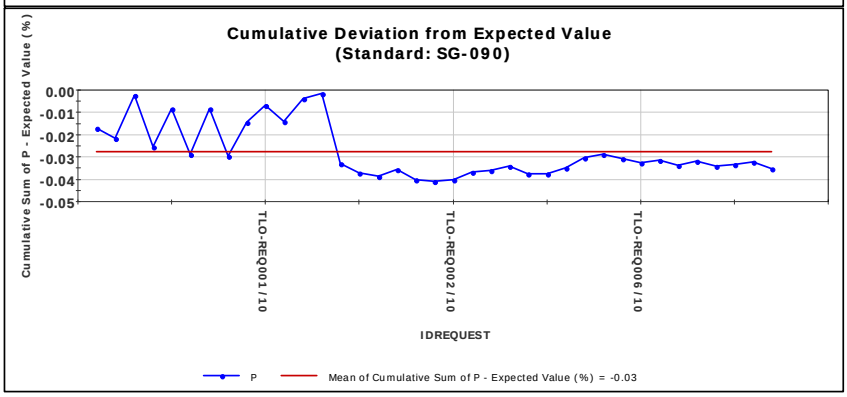
Summary
(Standard: SG-090)

Standard:	SG-090		No of Analyses:	37
Element:	P		Minimum:	0.06
Units:			Maximum:	0.07
Detection Limit:			Mean:	0.07
Expected Value (EV):	0.07		Std Deviation:	0.00
E.V. Range:	0.07 to 0.07		% in Tolerance	62.16 %
			% Bias	-1.40 %
			% RSD	3.46 %







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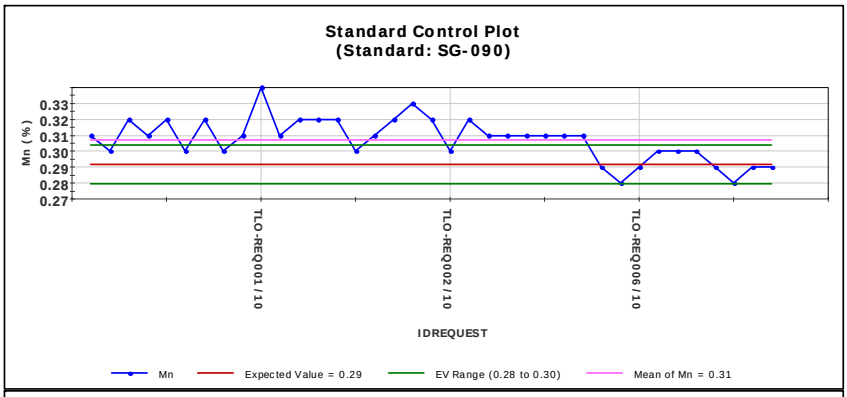
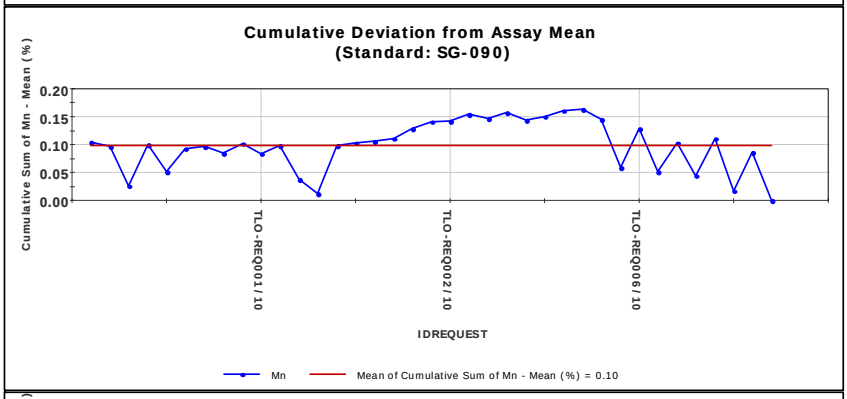
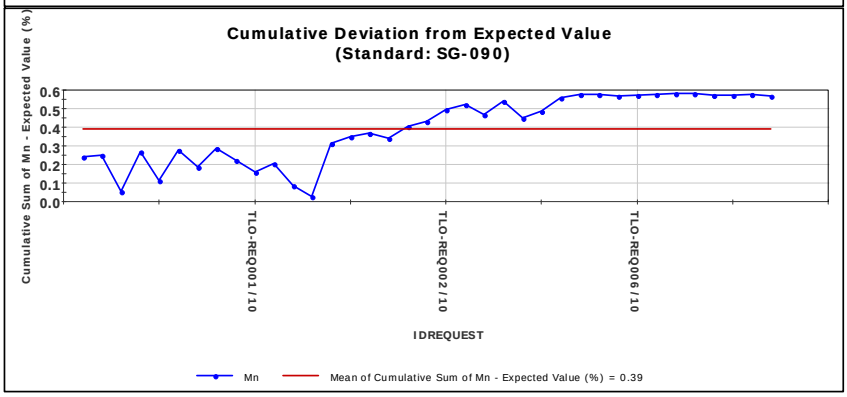
Summary
(Standard: SG-090)

Standard:	SG-090		No of Analyses:	37
Element:	Mn		Minimum:	0.28
Units:			Maximum:	0.34
Detection Limit:			Mean:	0.31
Expected Value (EV):	0.29		Std Deviation:	0.01
E.V. Range:	0.28 to 0.30		% in Tolerance	40.54 %
			% Bias	5.27 %
			% RSD	4.32 %







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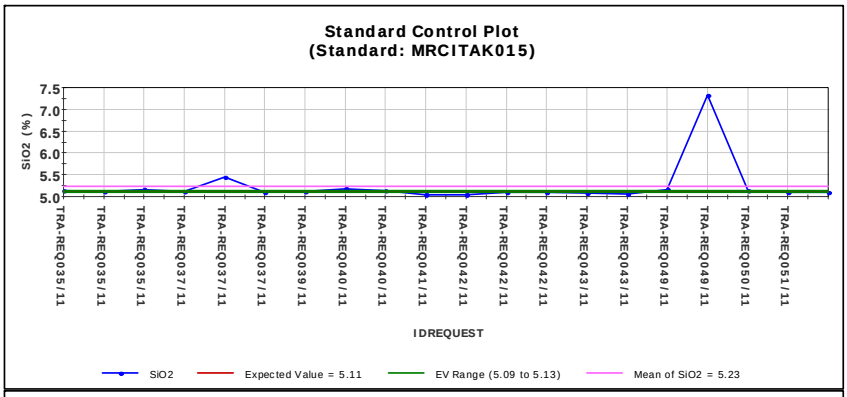
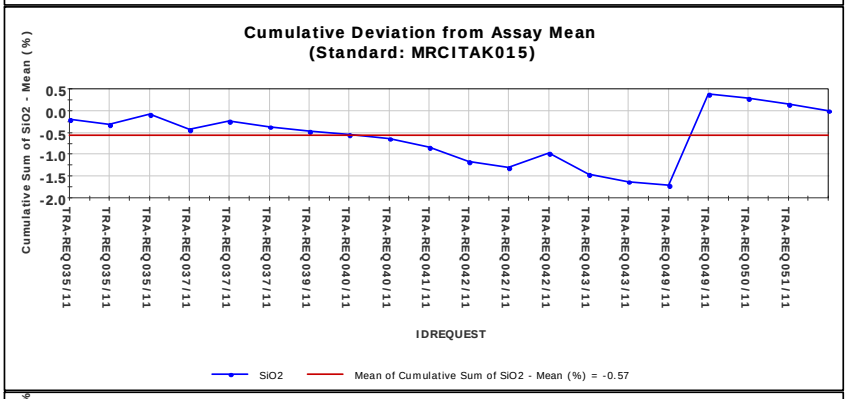
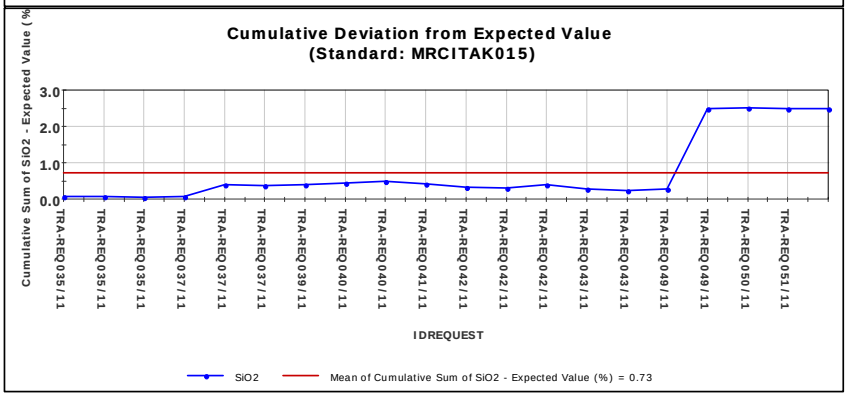
Summary
(Standard: MRCITAK015)

Standard:	MRCITAK015		No of Analyses:	20
Element:	SiO2		Minimum:	5.04
Units:			Maximum:	7.32
Detection Limit:			Mean:	5.23
Expected Value (EV):	5.11		Std Deviation:	0.49
E.V. Range:	5.09 to 5.13		% in Tolerance	45.00 %
			% Bias	2.43 %
			% RSD	9.27 %

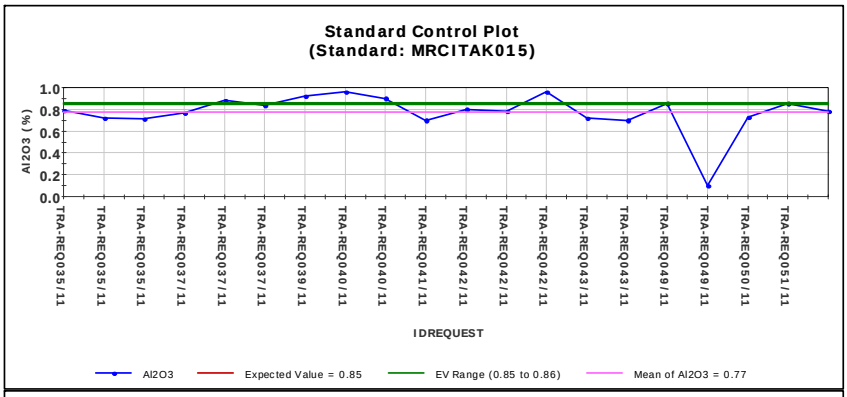


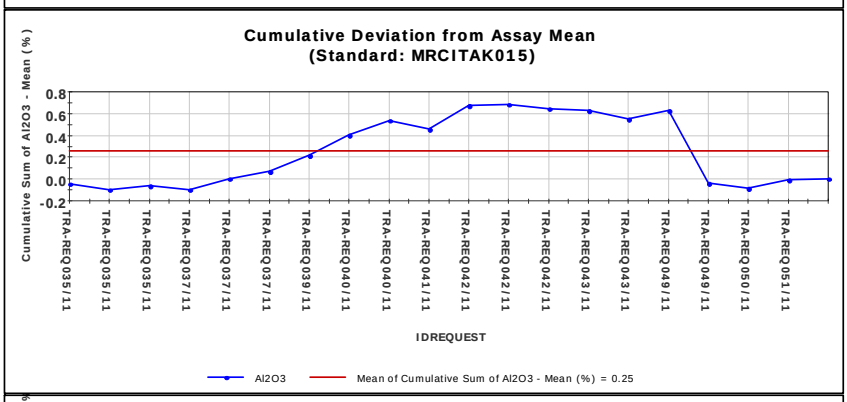


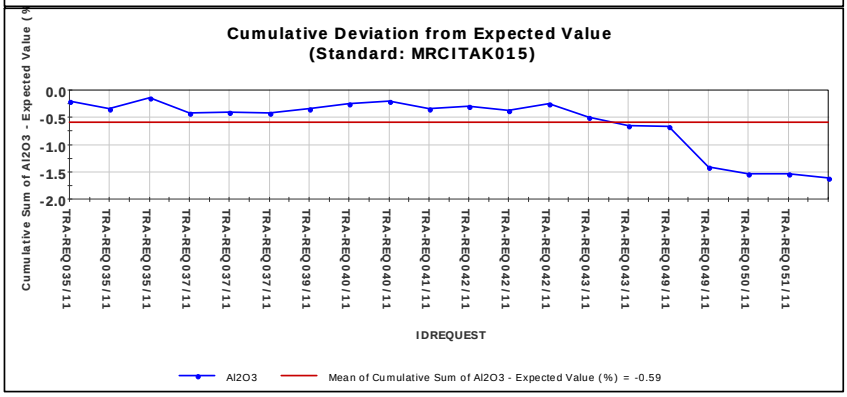


Summary
(Standard: MRCITAK015)

Standard:	MRCITAK015		No of Analyses:	20
Element:	Al2O3		Minimum:	0.10
Units:			Maximum:	0.96
Detection Limit:			Mean:	0.77
Expected Value (EV):	0.85		Std Deviation:	0.17
E.V. Range:	0.85 to 0.86		% in Tolerance	10.00 %
			% Bias	-9.46 %
			% RSD	22.62 %







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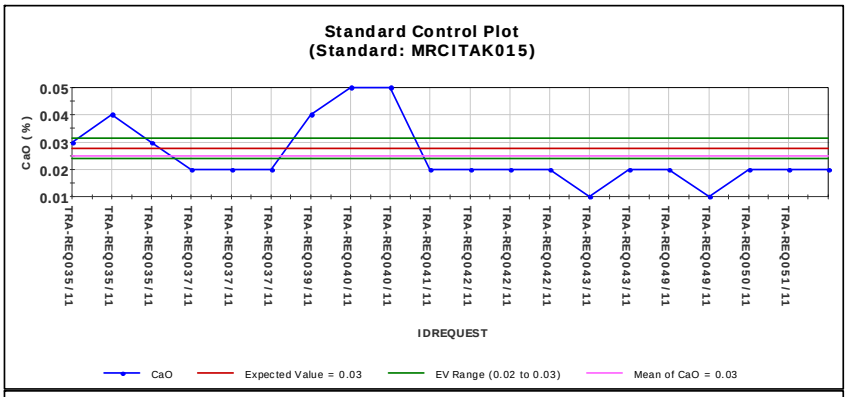
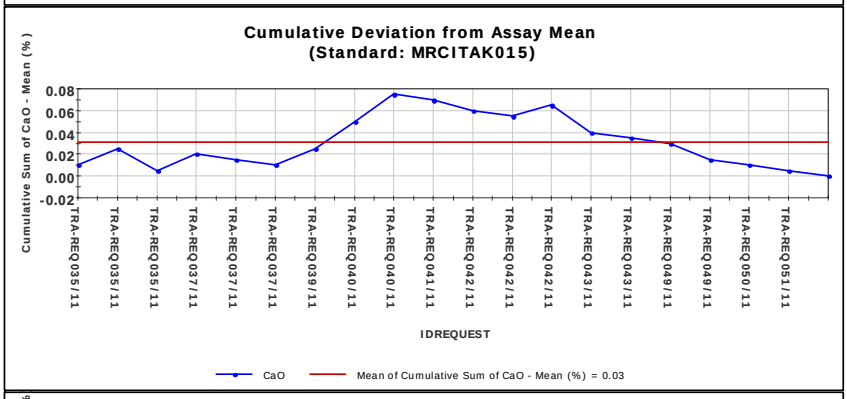
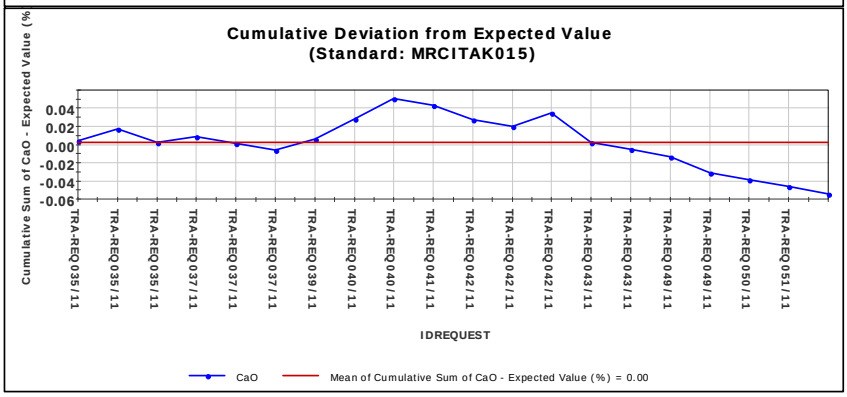
Summary
(Standard: MRCITAK015)

Standard:	MRCITAK015		No of Analyses:	20
Element:	CaO		Minimum:	0.01
Units:			Maximum:	0.05
Detection Limit:			Mean:	0.03
Expected Value (EV):	0.03		Std Deviation:	0.01
E.V. Range:	0.02 to 0.03		% in Tolerance	10.00 %
			% Bias	-9.75 %
			% RSD	44.72 %







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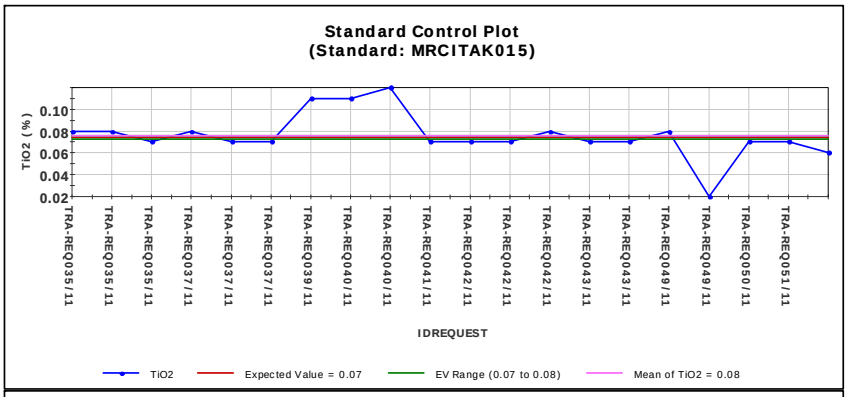
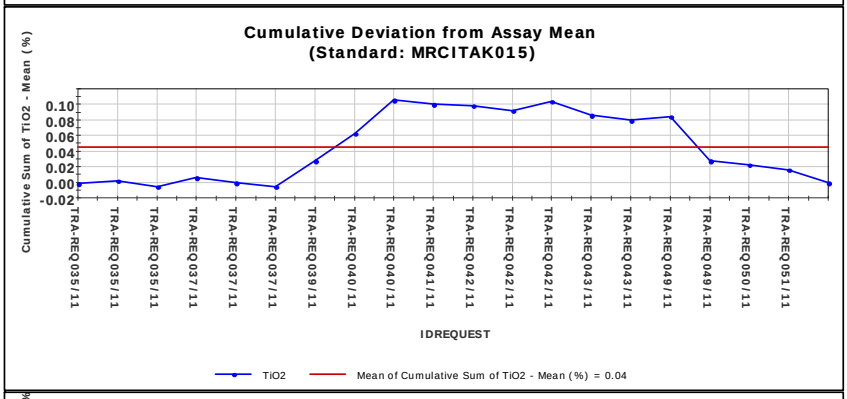
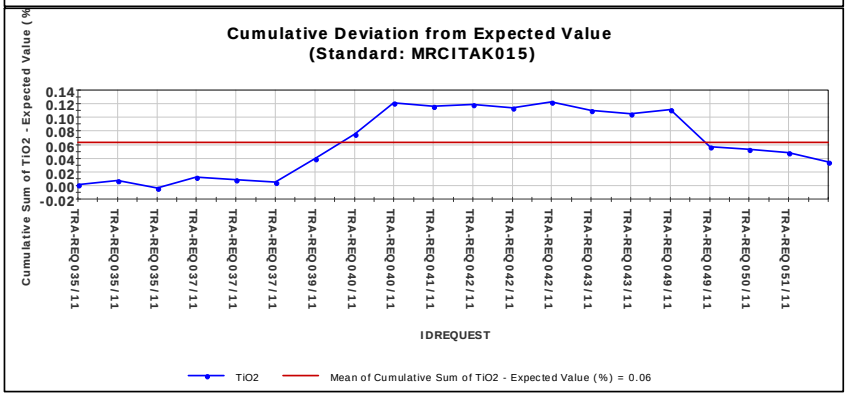
Summary
(Standard: MRCITAK015)

Standard:	MRCITAK015		No of Analyses:	20
Element:	TiO2		Minimum:	0.02
Units:			Maximum:	0.12
Detection Limit:			Mean:	0.08
Expected Value (EV):	0.07		Std Deviation:	0.02
E.V. Range:	0.07 to 0.08		% in Tolerance	0.00 %
			% Bias	2.29 %
			% RSD	26.45 %







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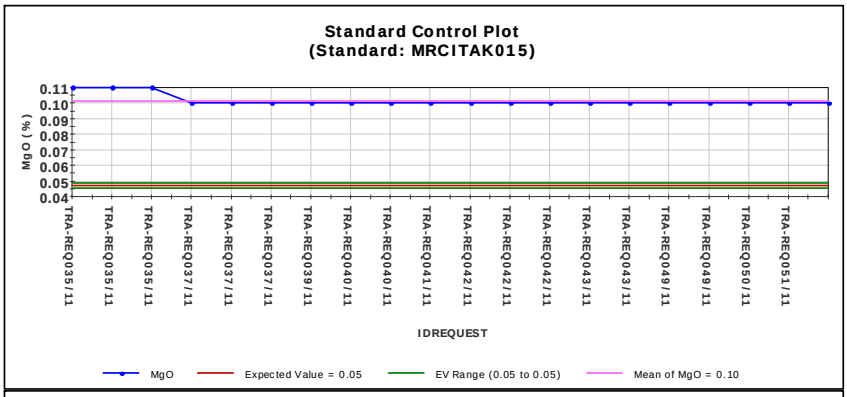
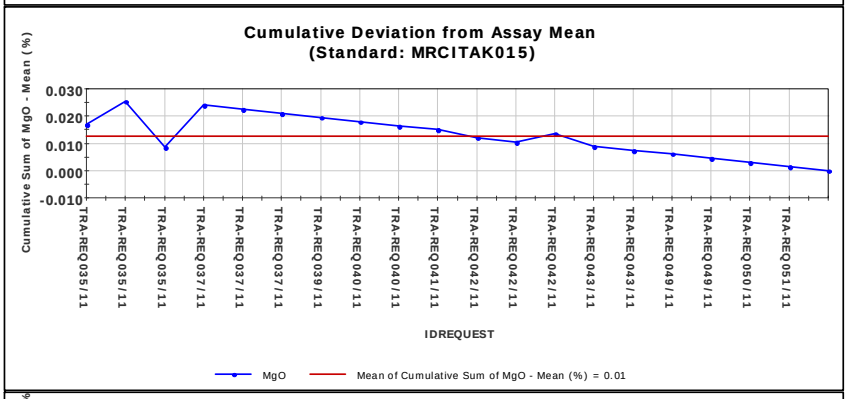
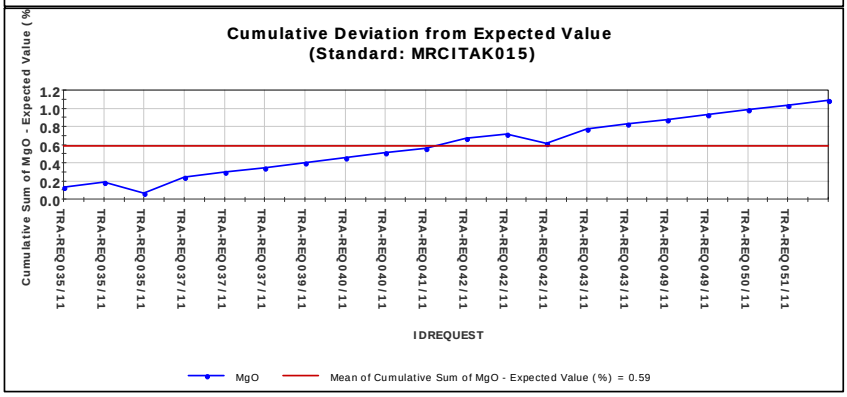
Summary
(Standard: MRCITAK015)

Standard:	MRCITAK015		No of Analyses:	20
Element:	MgO		Minimum:	0.10
Units:			Maximum:	0.11
Detection Limit:			Mean:	0.10
Expected Value (EV):	0.05		Std Deviation:	0.00
E.V. Range:	0.05 to 0.05		% in Tolerance	0.00 %
			% Bias	115.96 %
			% RSD	3.52 %







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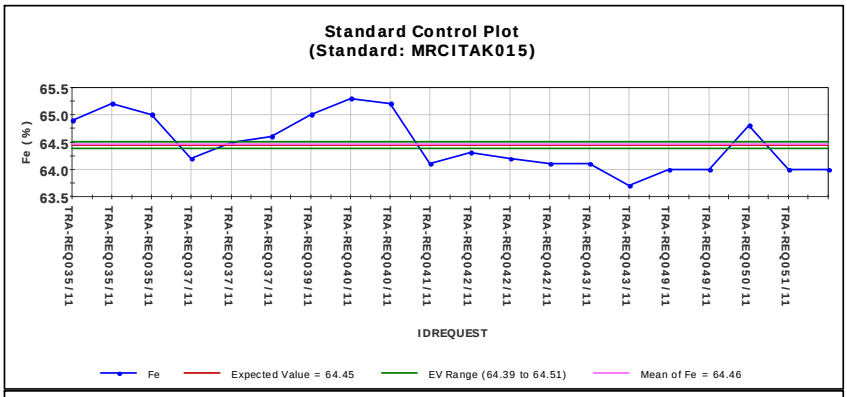
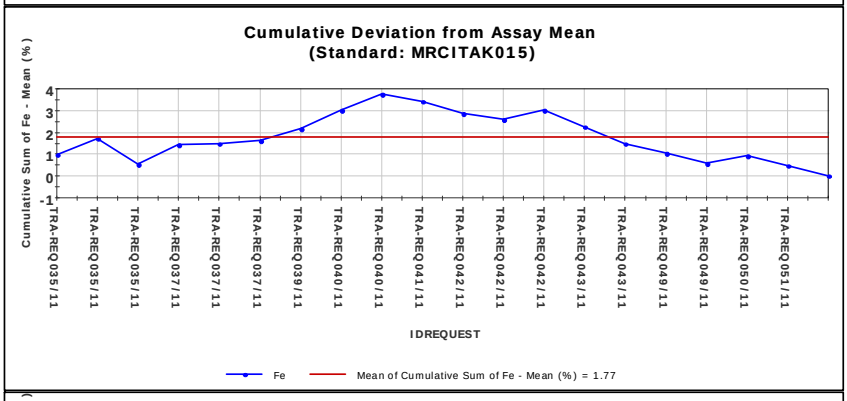
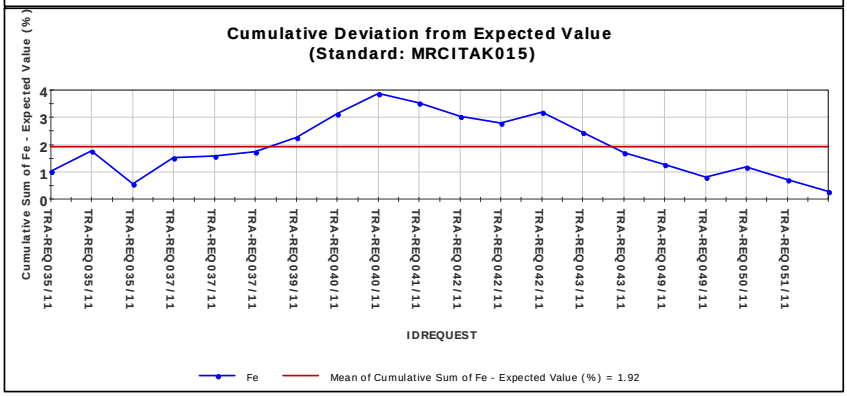
Summary
(Standard: MRCITAK015)

Standard:	MRCITAK015		No of Analyses:	20
Element:	Fe		Minimum:	63.70
Units:			Maximum:	65.30
Detection Limit:			Mean:	64.46
Expected Value (EV):	64.45		Std Deviation:	0.48
E.V. Range:	64.39 to 64.51		% in Tolerance	5.00 %
			% Bias	0.02 %
			% RSD	0.75 %







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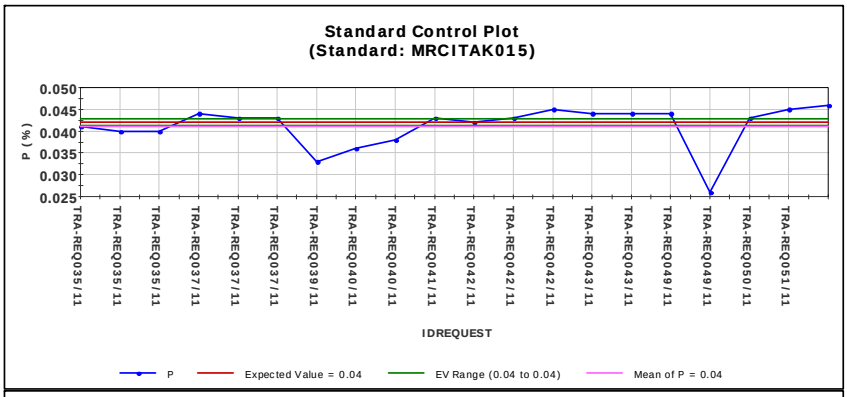
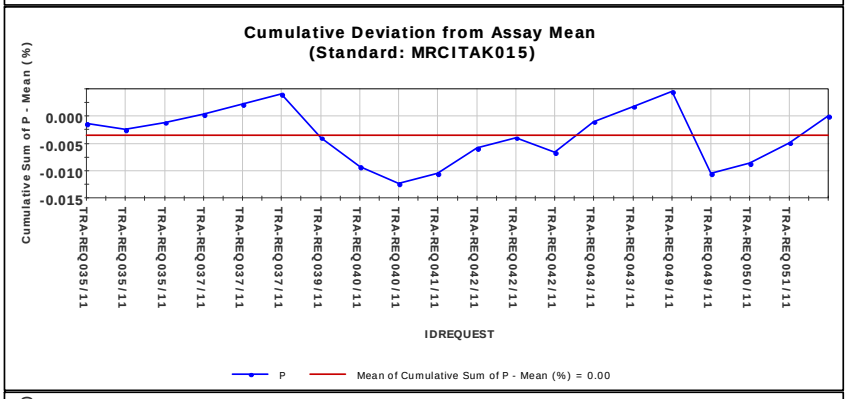
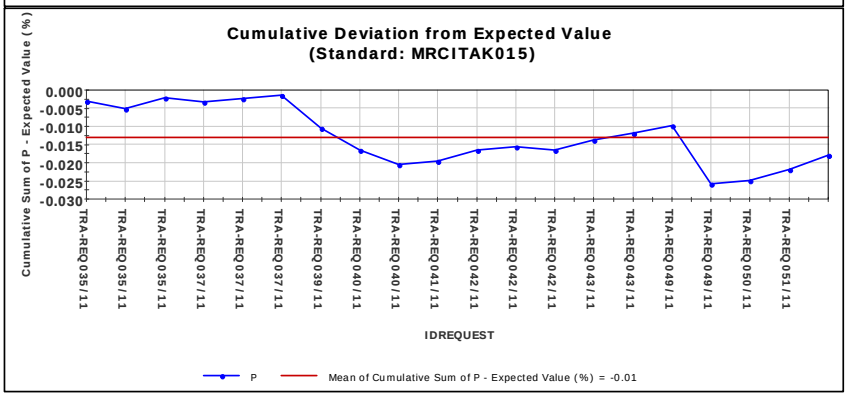
Summary
(Standard: MRCITAK015)

Standard:	MRCITAK015		No of Analyses:	20
Element:	P		Minimum:	0.03
Units:			Maximum:	0.05
Detection Limit:			Mean:	0.04
Expected Value (EV):	0.04		Std Deviation:	0.00
E.V. Range:	0.04 to 0.04		% in Tolerance	5.00 %
			% Bias	-2.14 %
			% RSD	11.38 %







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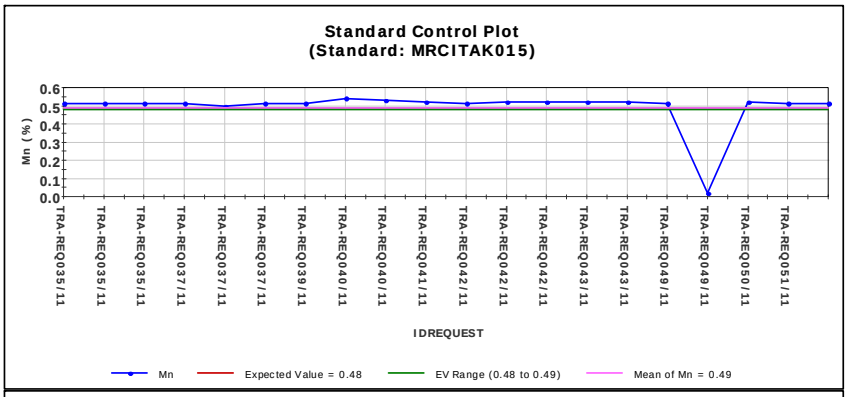
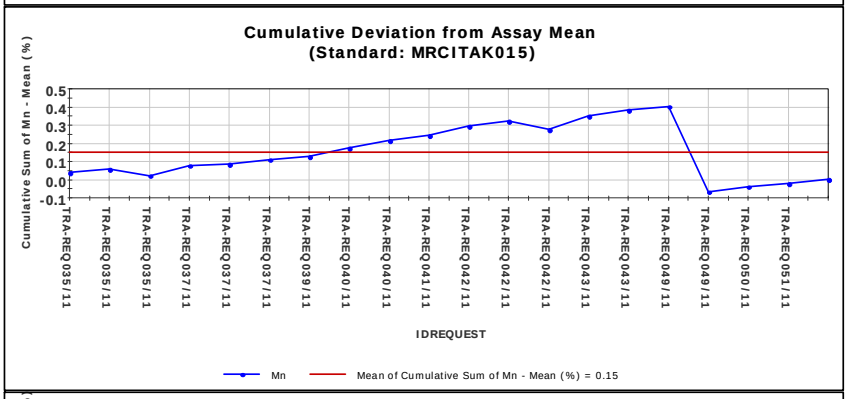
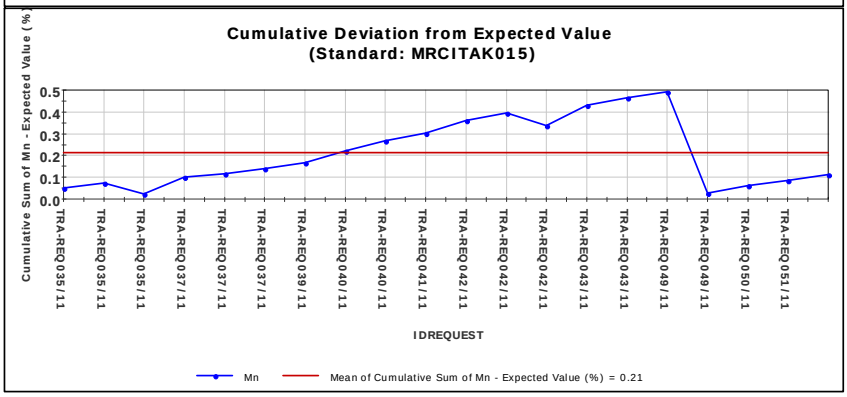
Summary
(Standard: MRCITAK015)

Standard:	MRCITAK015		No of Analyses:	20
Element:	Mn		Minimum:	0.02
Units:			Maximum:	0.54
Detection Limit:			Mean:	0.49
Expected Value (EV):	0.48		Std Deviation:	0.11
E.V. Range:	0.48 to 0.49		% in Tolerance	0.00 %
			% Bias	1.15 %
			% RSD	22.08 %







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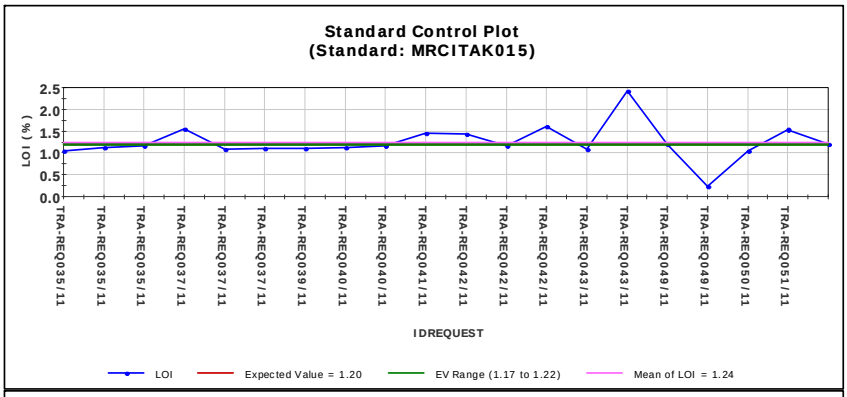
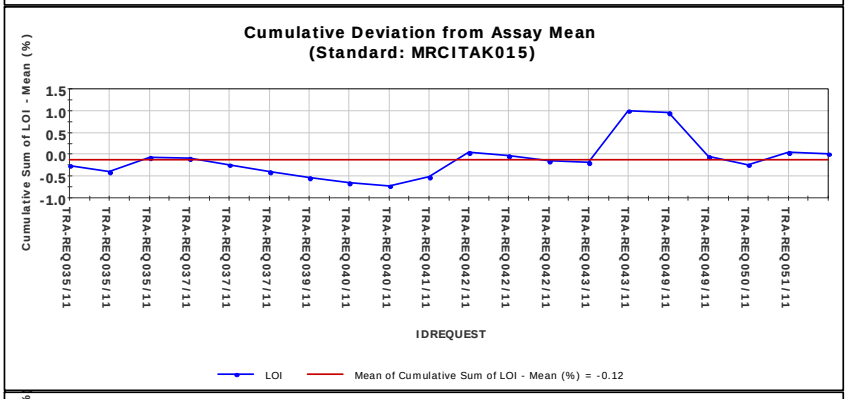
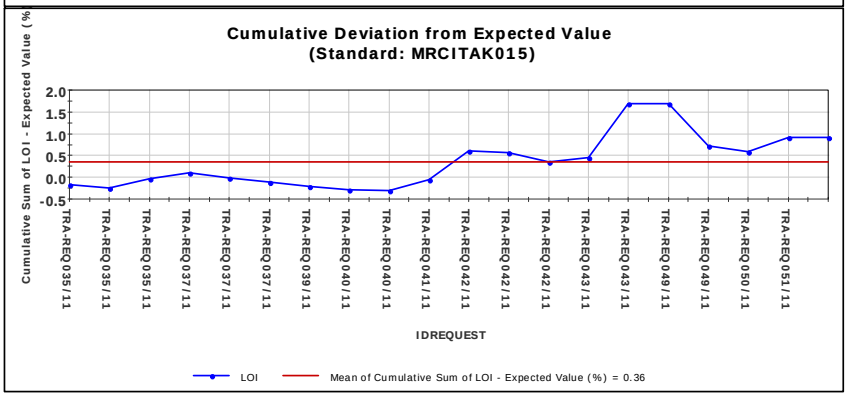
Summary
(Standard: MRCITAK015)

Standard:	MRCITAK015		No of Analyses:	20
Element:	LOI		Minimum:	0.23
Units:			Maximum:	2.43
Detection Limit:			Mean:	1.24
Expected Value (EV):	1.20		Std Deviation:	0.39
E.V. Range:	1.17 to 1.22		% in Tolerance	10.00 %
			% Bias	3.84 %
			% RSD	31.40 %







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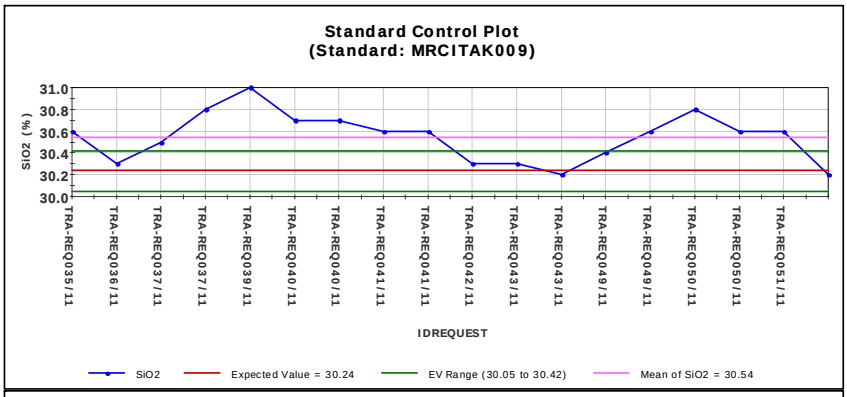
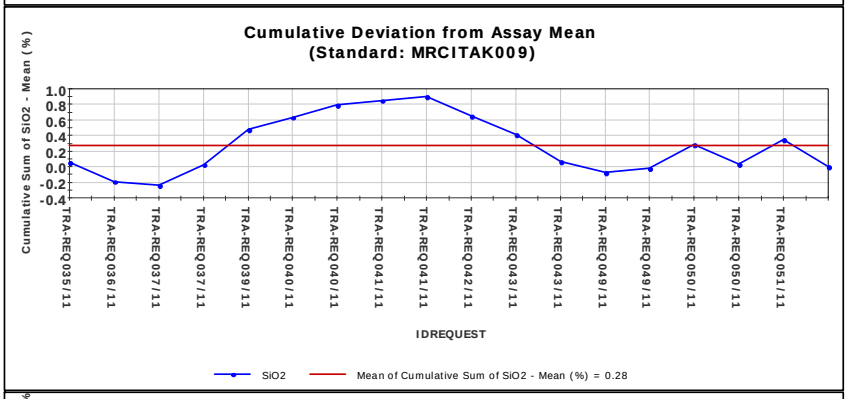
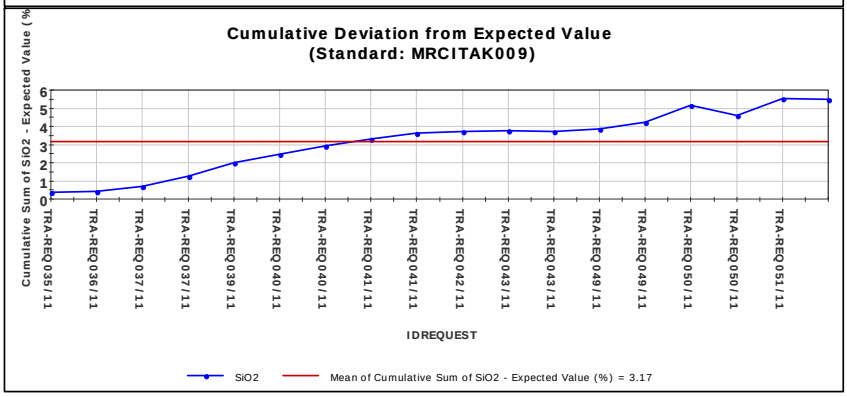
Summary
(Standard: MRCITAK009)

Standard:	MRCITAK009		No of Analyses:	18
Element:	SiO2		Minimum:	30.20
Units:			Maximum:	31.00
Detection Limit:			Mean:	30.54
Expected Value (EV):	30.24		Std Deviation:	0.22
E.V. Range:	30.05 to 30.42		% in Tolerance	33.33 %
			% Bias	1.01 %
			% RSD	0.71 %







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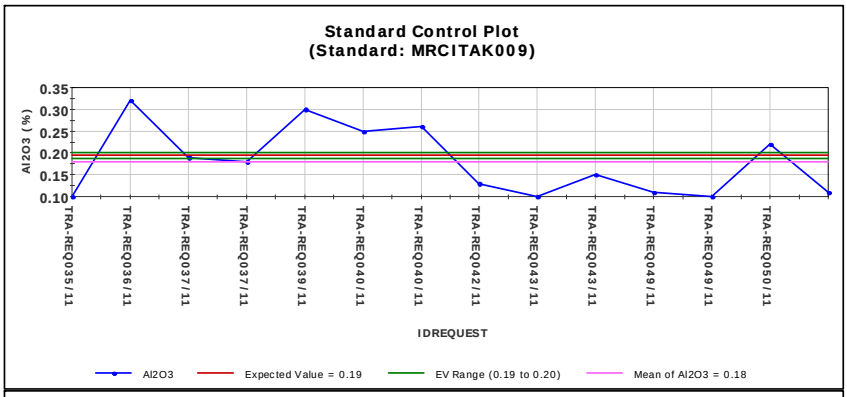
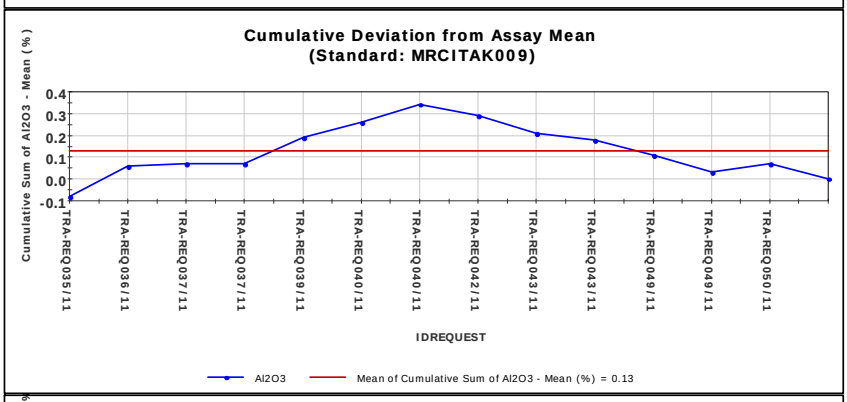
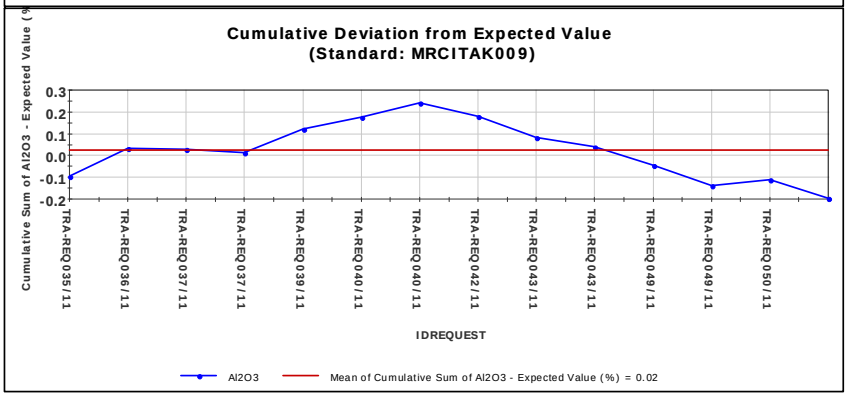
Summary
(Standard: MRCITAK009)

Standard:	MRCITAK009		No of Analyses:	14
Element:	Al2O3		Minimum:	0.10
Units:			Maximum:	0.32
Detection Limit:			Mean:	0.18
Expected Value (EV):	0.19		Std Deviation:	0.08
E.V. Range:	0.19 to 0.20		% in Tolerance	7.14 %
			% Bias	-7.22 %
			% RSD	41.84 %







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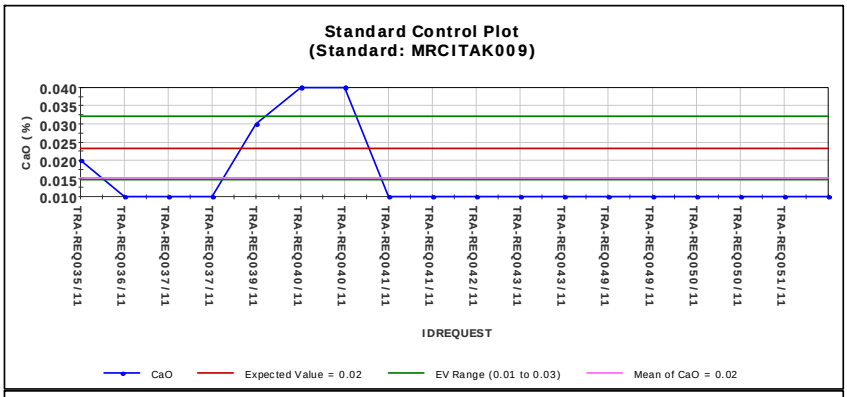
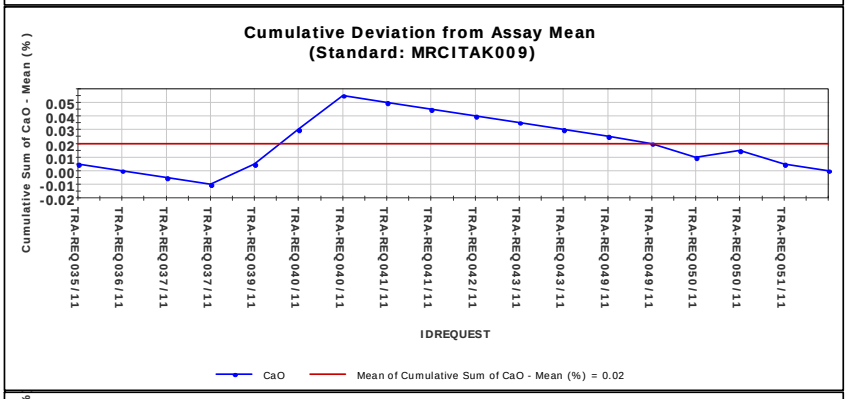
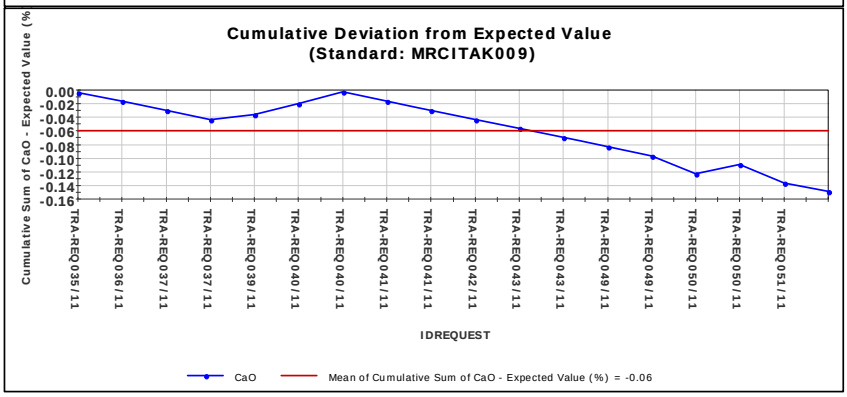
Summary
(Standard: MRCITAK009)

Standard:	MRCITAK009		No of Analyses:	18
Element:	CaO		Minimum:	0.01
Units:			Maximum:	0.04
Detection Limit:			Mean:	0.02
Expected Value (EV):	0.02		Std Deviation:	0.01
E.V. Range:	0.01 to 0.03		% in Tolerance	11.11 %
			% Bias	-35.62 %
			% RSD	67.59 %







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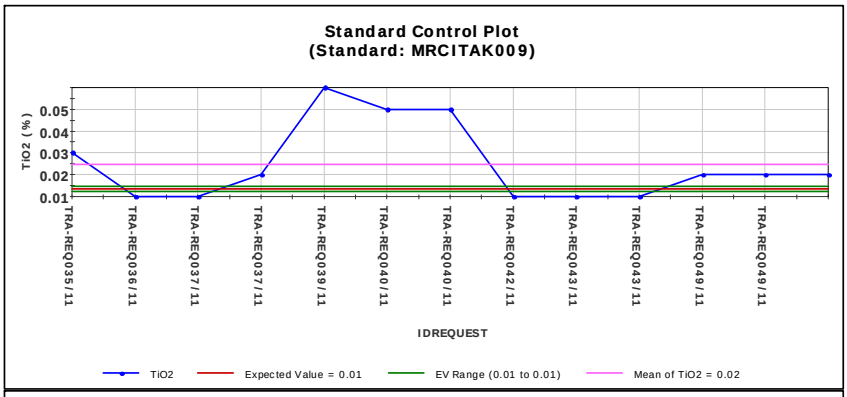
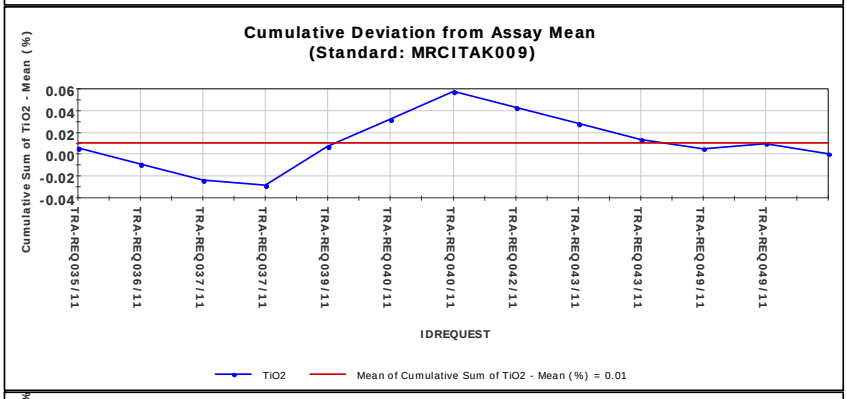
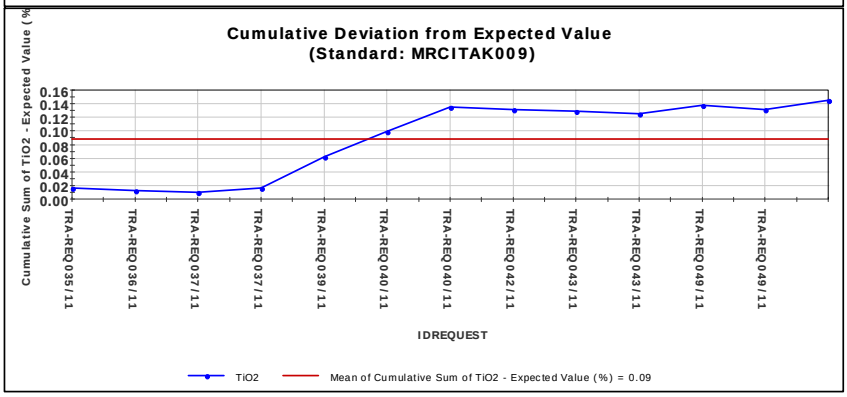
Summary
(Standard: MRCITAK009)

Standard:	MRCITAK009		No of Analyses:	13
Element:	TiO2		Minimum:	0.01
Units:			Maximum:	0.06
Detection Limit:			Mean:	0.02
Expected Value (EV):	0.01		Std Deviation:	0.02
E.V. Range:	0.01 to 0.01		% in Tolerance	0.00 %
			% Bias	82.34 %
			% RSD	68.75 %

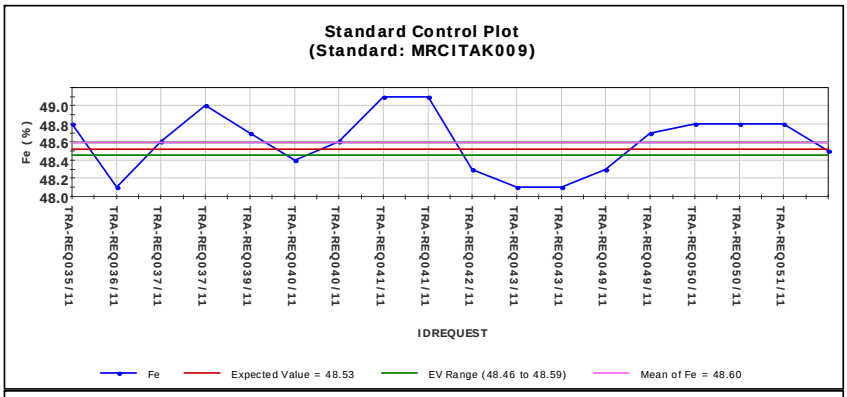


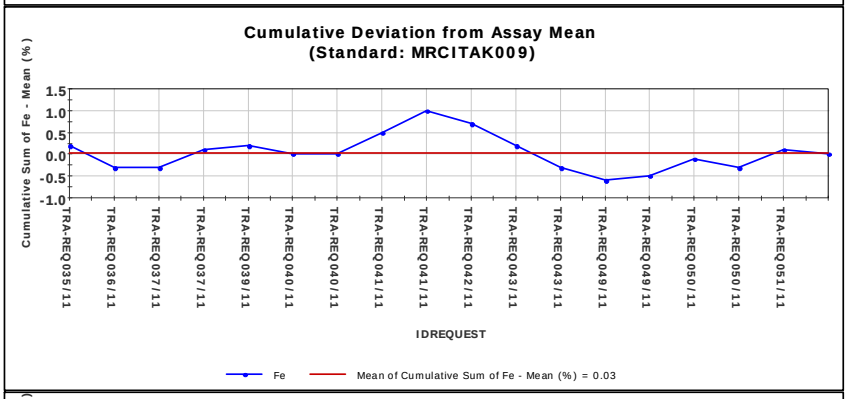


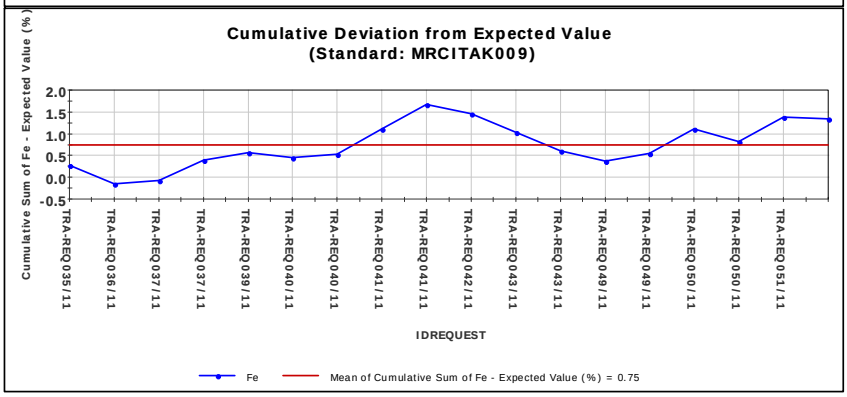


Summary
(Standard: MRCITAK009)

Standard:	MRCITAK009		No of Analyses:	18
Element:	Fe		Minimum:	48.10
Units:			Maximum:	49.10
Detection Limit:			Mean:	48.60
Expected Value (EV):	48.53		Std Deviation:	0.32
E.V. Range:	48.46 to 48.59		% in Tolerance	5.56 %
			% Bias	0.15 %
			% RSD	0.65 %







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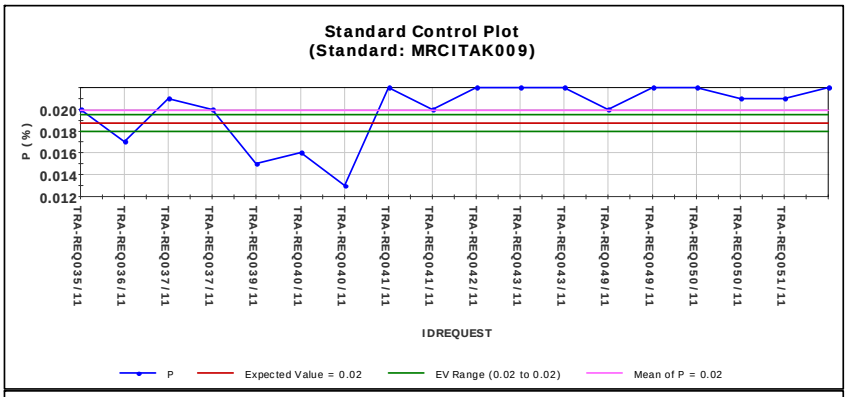
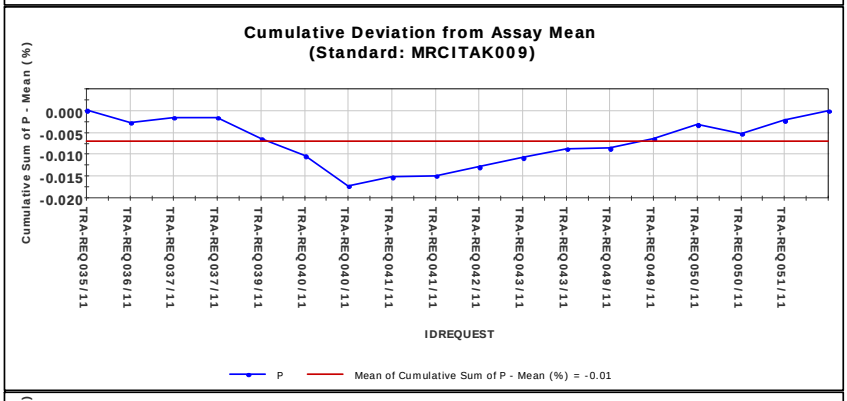
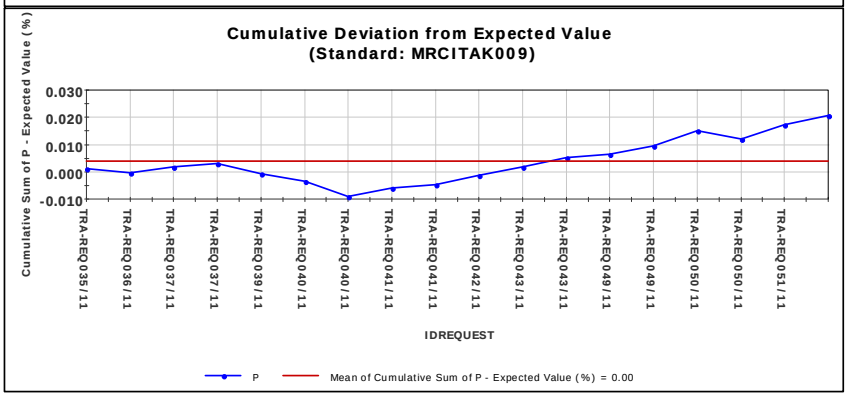
Summary
(Standard: MRCITAK009)

Standard:	MRCITAK009		No of Analyses:	18
Element:	P		Minimum:	0.01
Units:			Maximum:	0.02
Detection Limit:			Mean:	0.02
Expected Value (EV):	0.02		Std Deviation:	0.00
E.V. Range:	0.02 to 0.02		% in Tolerance	0.00 %
			% Bias	6.13 %
			% RSD	13.50 %







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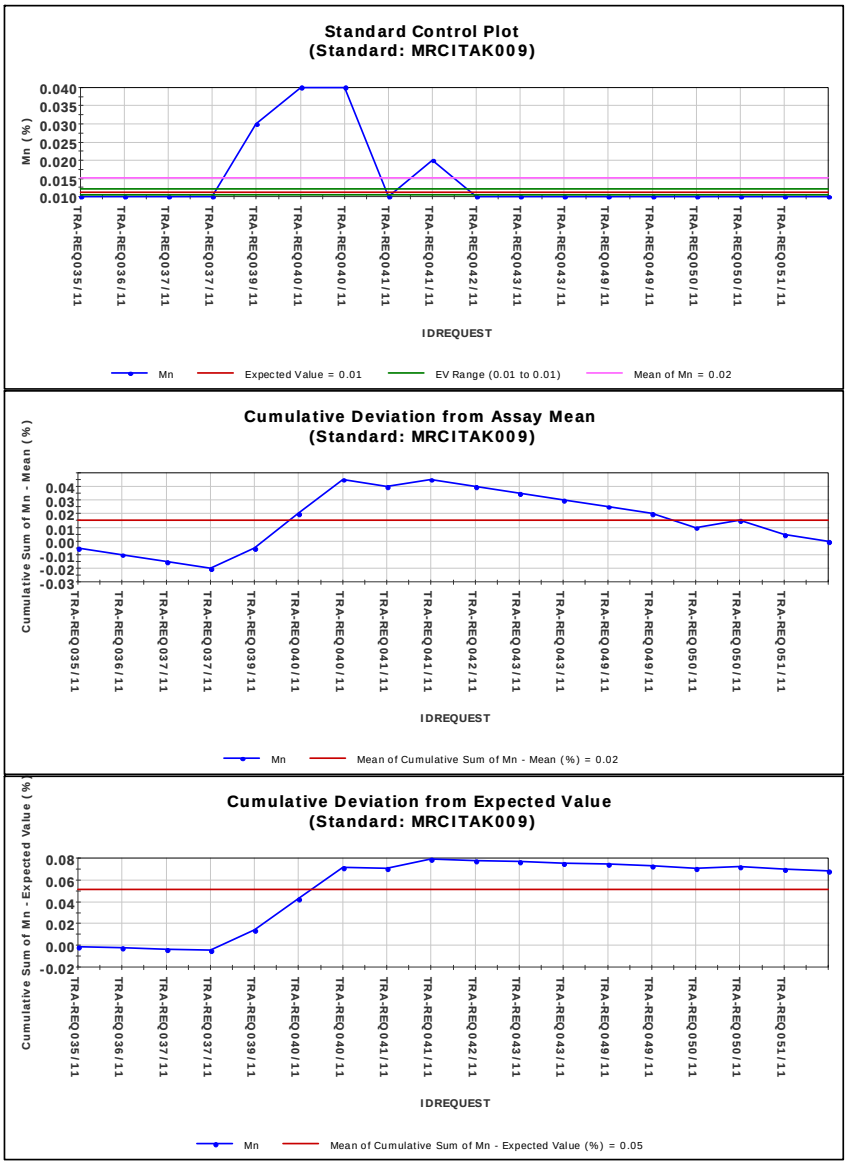
Summary
(Standard: MRCITAK009)

Standard:	MRCITAK009		No of Analyses:	18
Element:	Mn		Minimum:	0.01
Units:			Maximum:	0.04
Detection Limit:			Mean:	0.02
Expected Value (EV):	0.01		Std Deviation:	0.01
E.V. Range:	0.01 to 0.01		% in Tolerance	0.00 %
			% Bias	33.93 %
			% RSD	67.59 %



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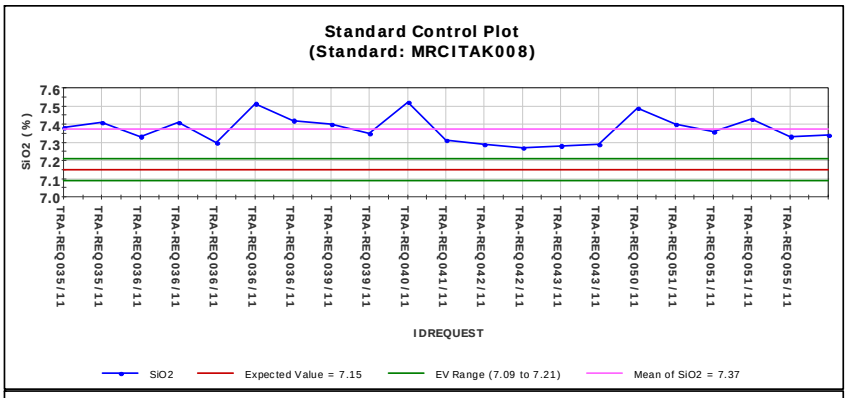
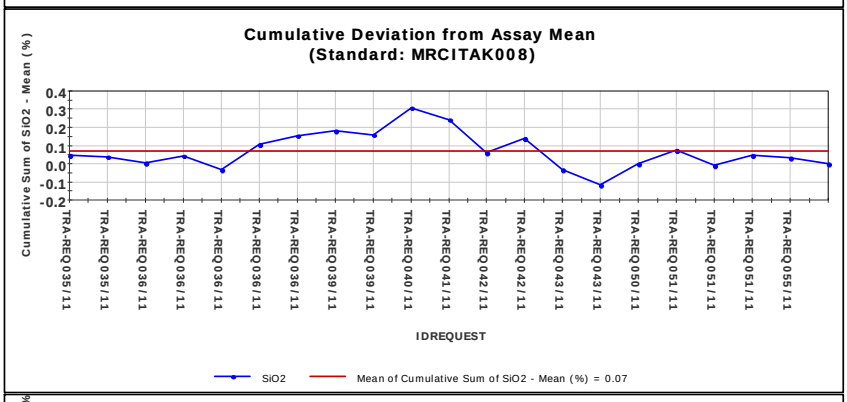
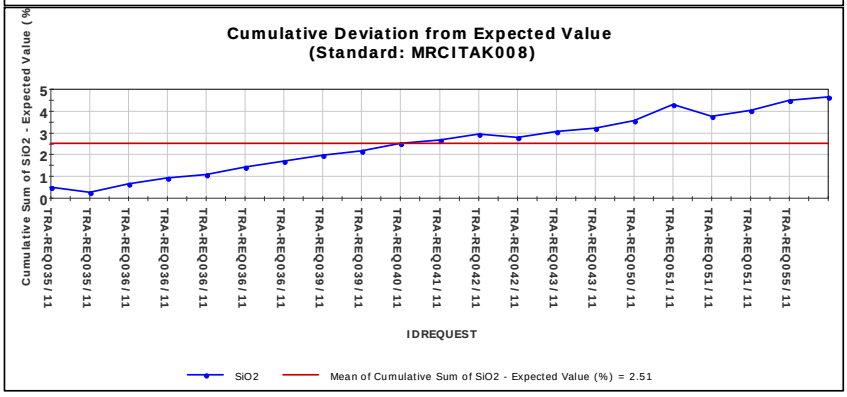
Summary
(Standard: MRCITAK008)

Standard:	MRCITAK008		No of Analyses:	21
Element:	SiO2		Minimum:	7.27
Units:			Maximum:	7.52
Detection Limit:			Mean:	7.37
Expected Value (EV):	7.15		Std Deviation:	0.07
E.V. Range:	7.09 to 7.21		% in Tolerance	0.00 %
			% Bias	3.11 %
			% RSD	0.99 %







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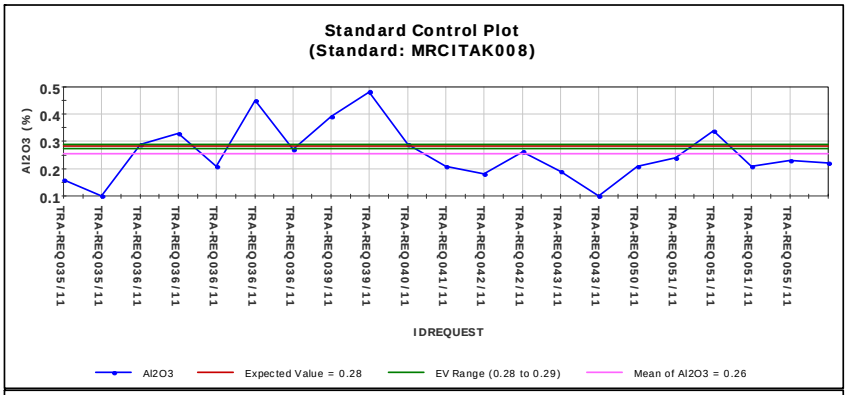
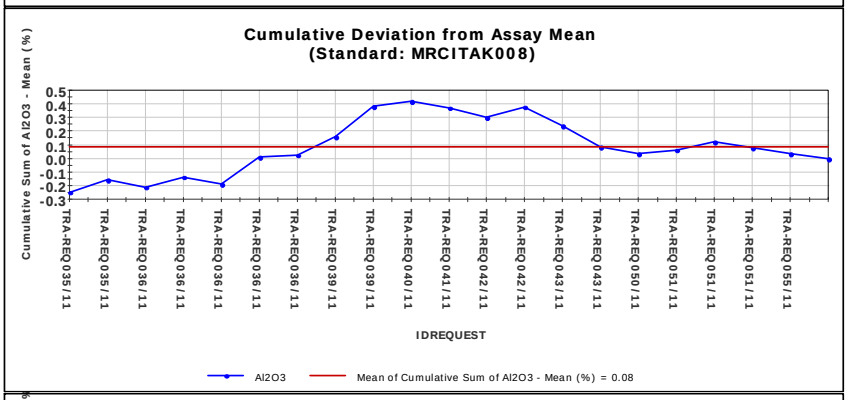
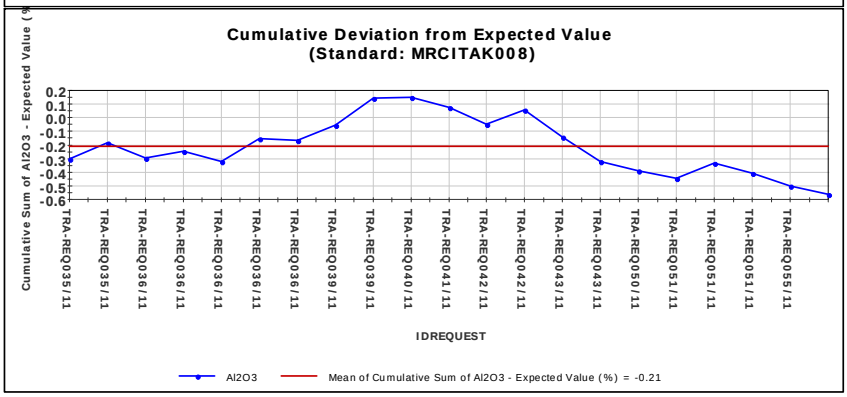
Summary
(Standard: MRCITAK008)

Standard:	MRCITAK008		No of Analyses:	21
Element:	Al2O3		Minimum:	0.10
Units:			Maximum:	0.48
Detection Limit:			Mean:	0.26
Expected Value (EV):	0.28		Std Deviation:	0.10
E.V. Range:	0.28 to 0.29		% in Tolerance	0.00 %
			% Bias	-9.49 %
			% RSD	38.19 %

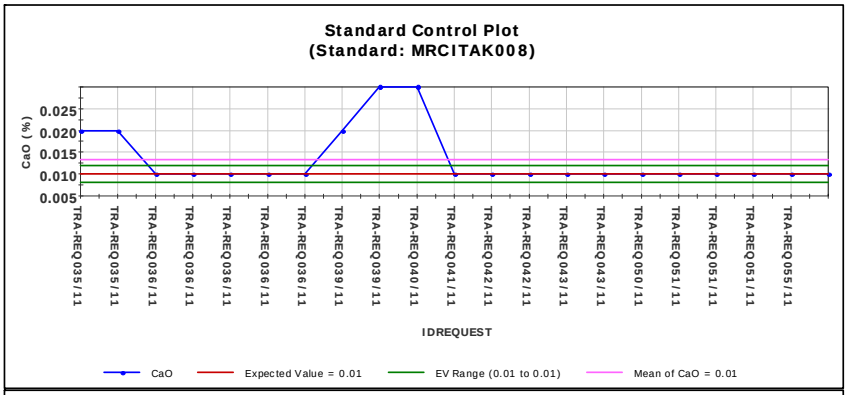


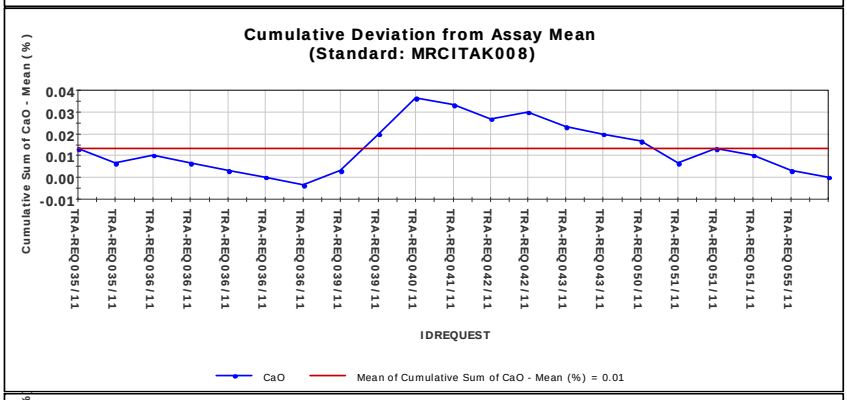


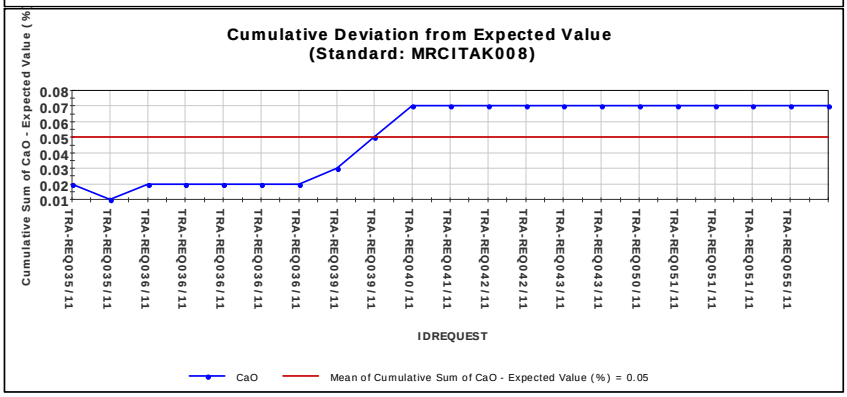


Summary
(Standard: MRCITAK008)

Standard:	MRCITAK008		No of Analyses:	21
Element:	CaO		Minimum:	0.01
Units:			Maximum:	0.03
Detection Limit:			Mean:	0.01
Expected Value (EV):	0.01		Std Deviation:	0.01
E.V. Range:	0.01 to 0.01		% in Tolerance	76.19 %
			% Bias	33.33 %
			% RSD	48.18 %







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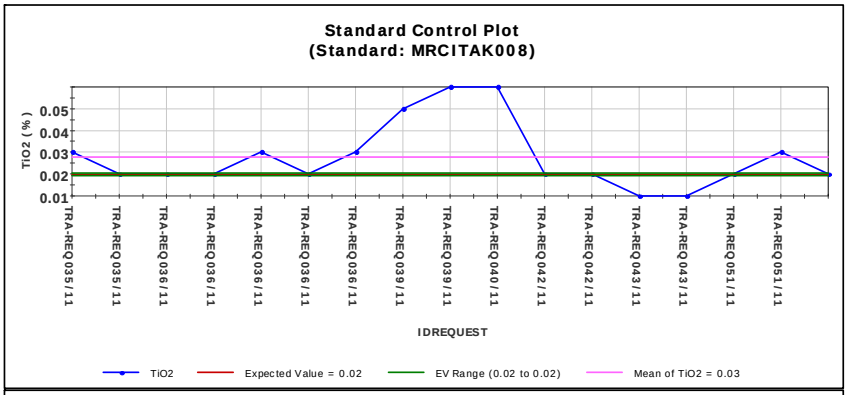
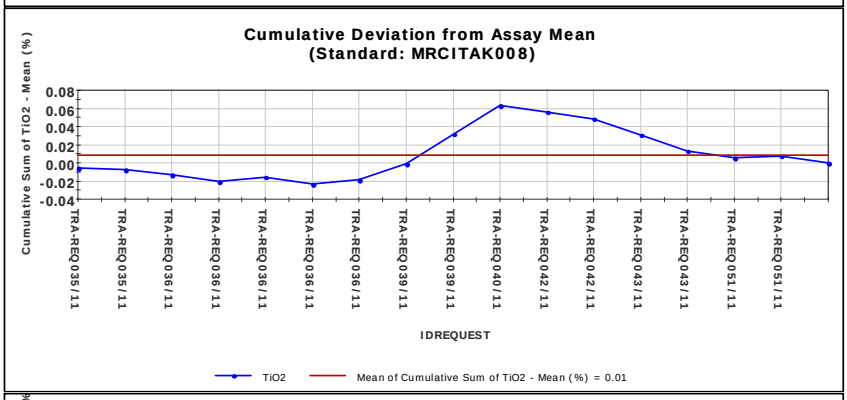
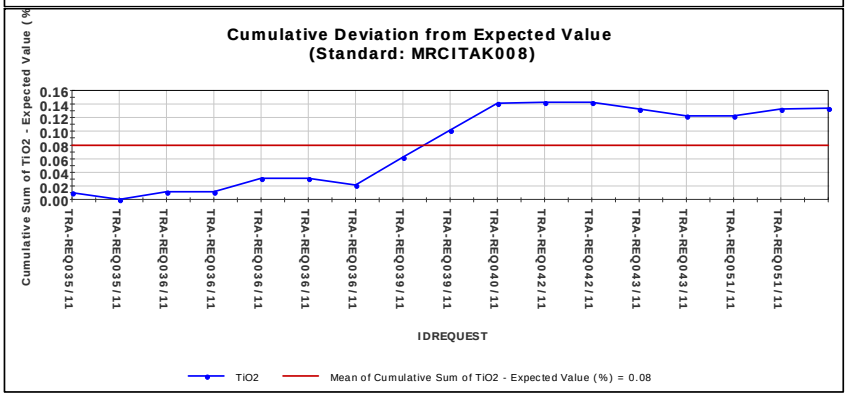
Summary
(Standard: MRCITAK008)

Standard:	MRCITAK008		No of Analyses:	17
Element:	TiO2		Minimum:	0.01
Units:			Maximum:	0.06
Detection Limit:			Mean:	0.03
Expected Value (EV):	0.02		Std Deviation:	0.01
E.V. Range:	0.02 to 0.02		% in Tolerance	47.06 %
			% Bias	39.63 %
			% RSD	53.40 %







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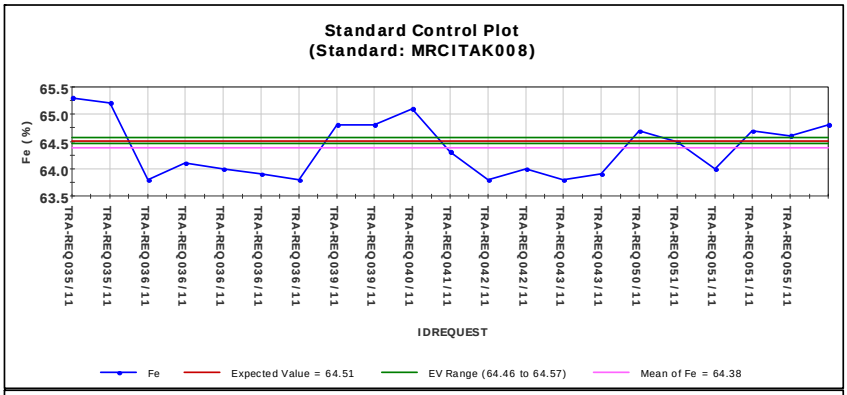
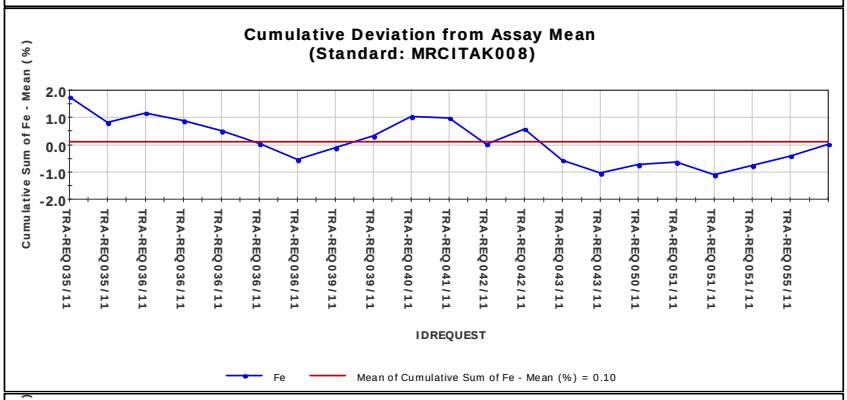
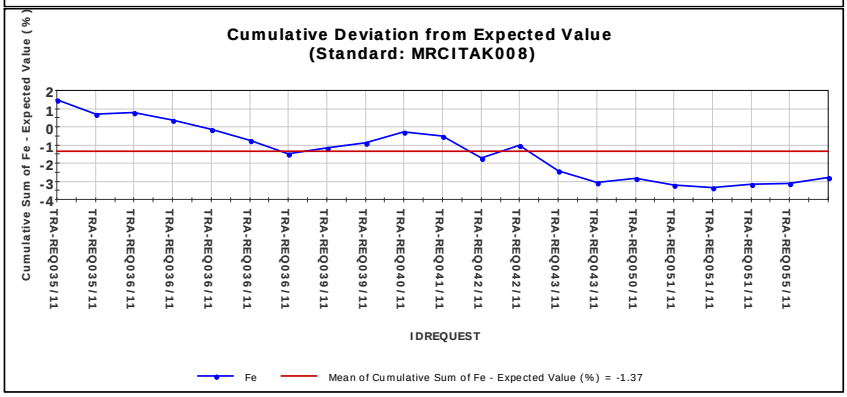
Summary
(Standard: MRCITAK008)

Standard:	MRCITAK008		No of Analyses:	21
Element:	Fe		Minimum:	63.80
Units:			Maximum:	65.30
Detection Limit:			Mean:	64.38
Expected Value (EV):	64.51		Std Deviation:	0.50
E.V. Range:	64.46 to 64.57		% in Tolerance	4.76 %
			% Bias	-0.21 %
			% RSD	0.77 %







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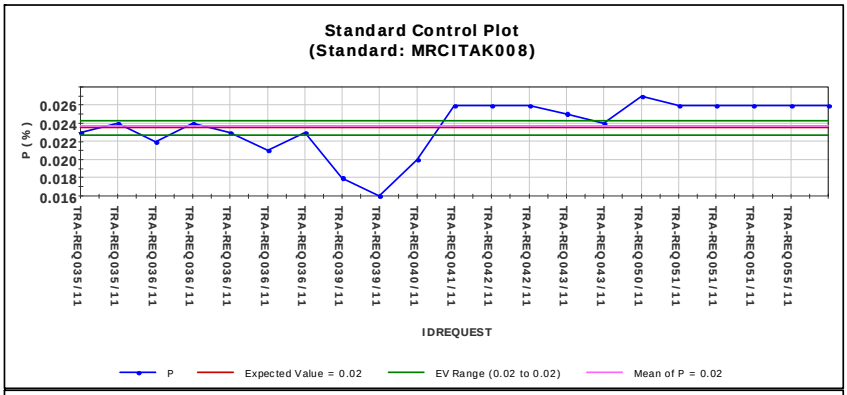
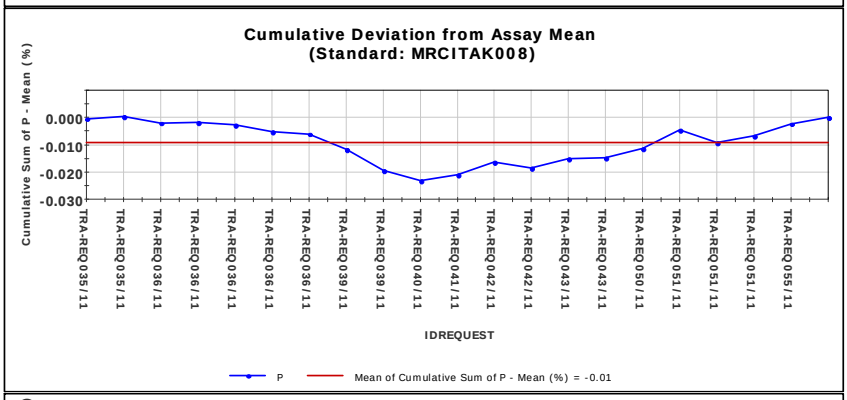
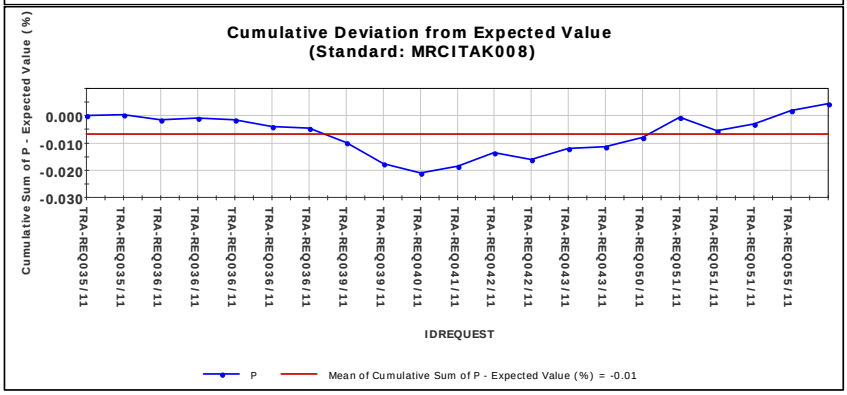
Summary
(Standard: MRCITAK008)

Standard:	MRCITAK008		No of Analyses:	21
Element:	Fe		Minimum:	0.02
Units:			Maximum:	0.03
Detection Limit:			Mean:	0.02
Expected Value (EV):	0.02		Std Deviation:	0.00
E.V. Range:	0.02 to 0.02		% in Tolerance	28.57 %
			% Bias	0.91 %
			% RSD	12.08 %







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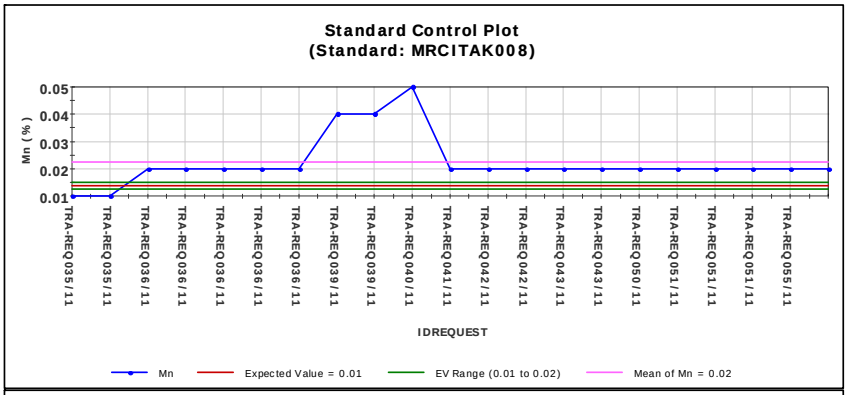
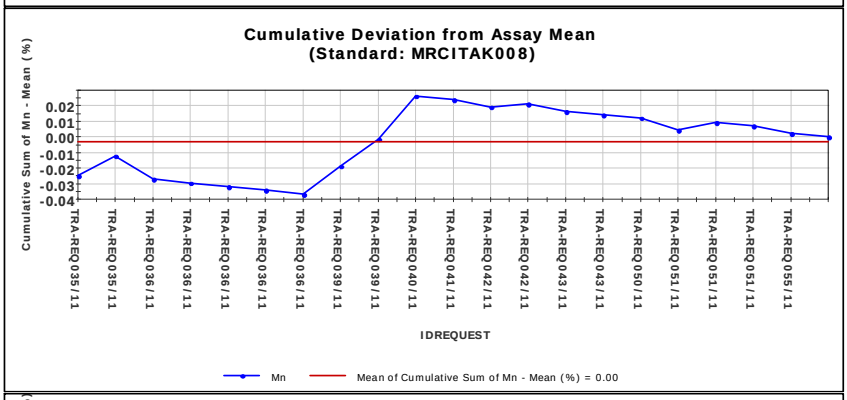
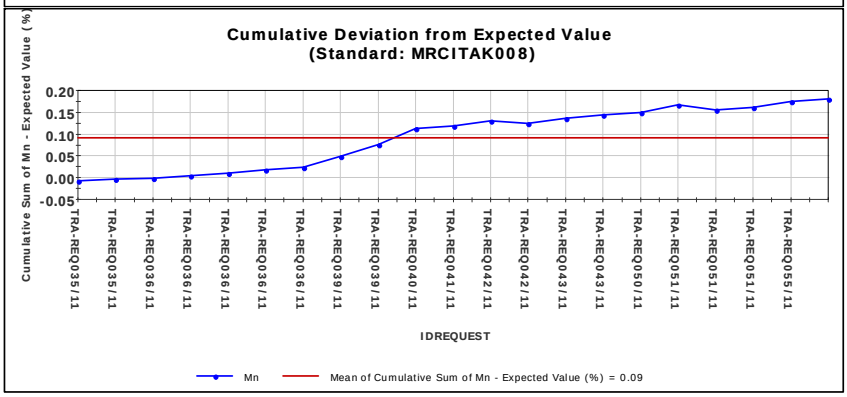
Summary
(Standard: MRCITAK008)

Standard:	MRCITAK008		No of Analyses:	21
Element:	Mn		Minimum:	0.01
Units:			Maximum:	0.05
Detection Limit:			Mean:	0.02
Expected Value (EV):	0.01		Std Deviation:	0.01
E.V. Range:	0.01 to 0.02		% in Tolerance	0.00 %
			% Bias	62.18 %
			% RSD	41.15 %







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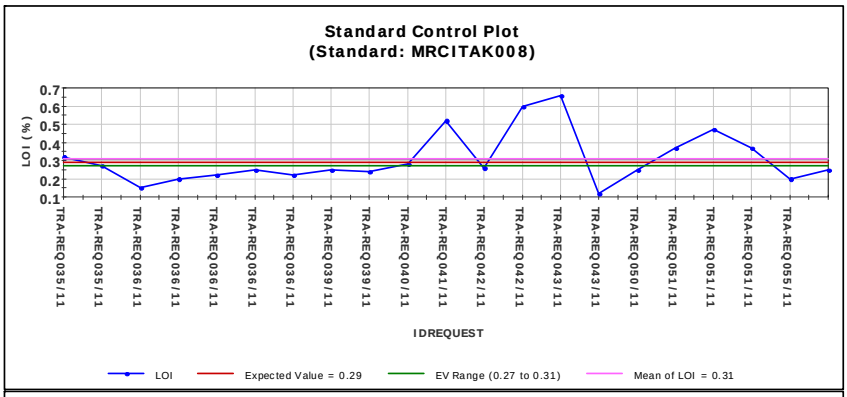
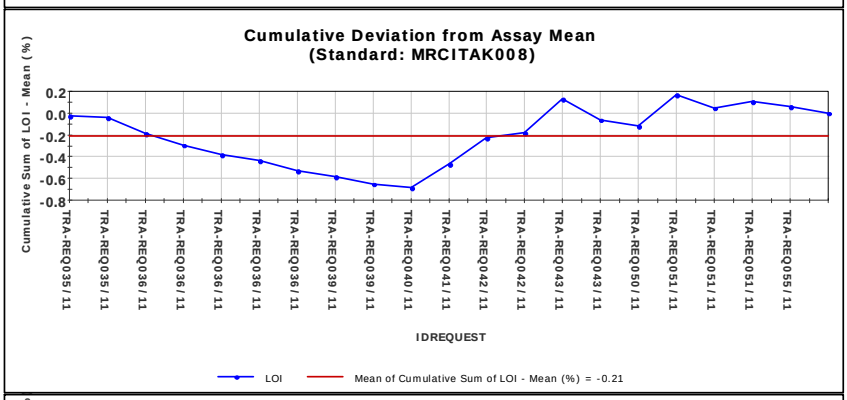
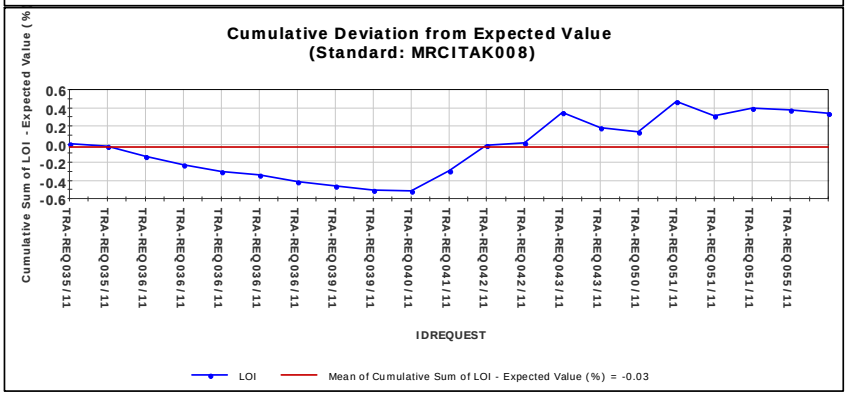
Summary
(Standard: MRCITAK008)

Standard:	MRCITAK008		No of Analyses:	21
Element:	LOI		Minimum:	0.12
Units:			Maximum:	0.66
Detection Limit:			Mean:	0.31
Expected Value (EV):	0.29		Std Deviation:	0.14
E.V. Range:	0.27 to 0.31		% in Tolerance	4.76 %
			% Bias	5.51 %
			% RSD	45.35 %







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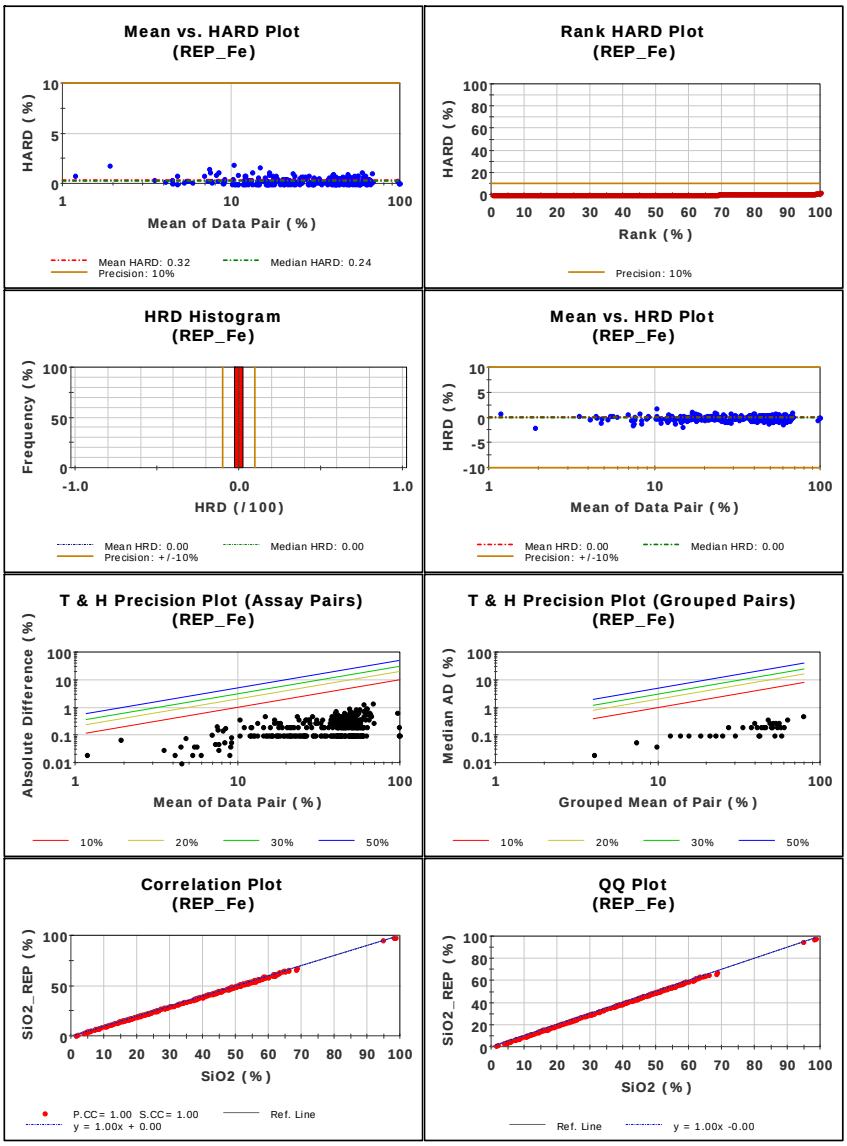
Appendix B

QA/QC

Laboratory Replicate

Summary
(REP_Fe)

	SiO2	SiO2_REP	Units			Result
No. Pairs:	397	397			Pearson CC:	1.00
Minimum:	1.18	1.16	%		Spearman CC:	1.00
Maximum:	98.50	98.40	%		Mean HARD:	0.32
Mean:	37.78	37.78	%		Median HARD:	0.24
Median	41.20	41.30	%			
Std. Deviation:	18.26	18.26	%		Mean HRD:	0.00
Coefficient of Variation:	0.48	0.48			Median HRD	0.00



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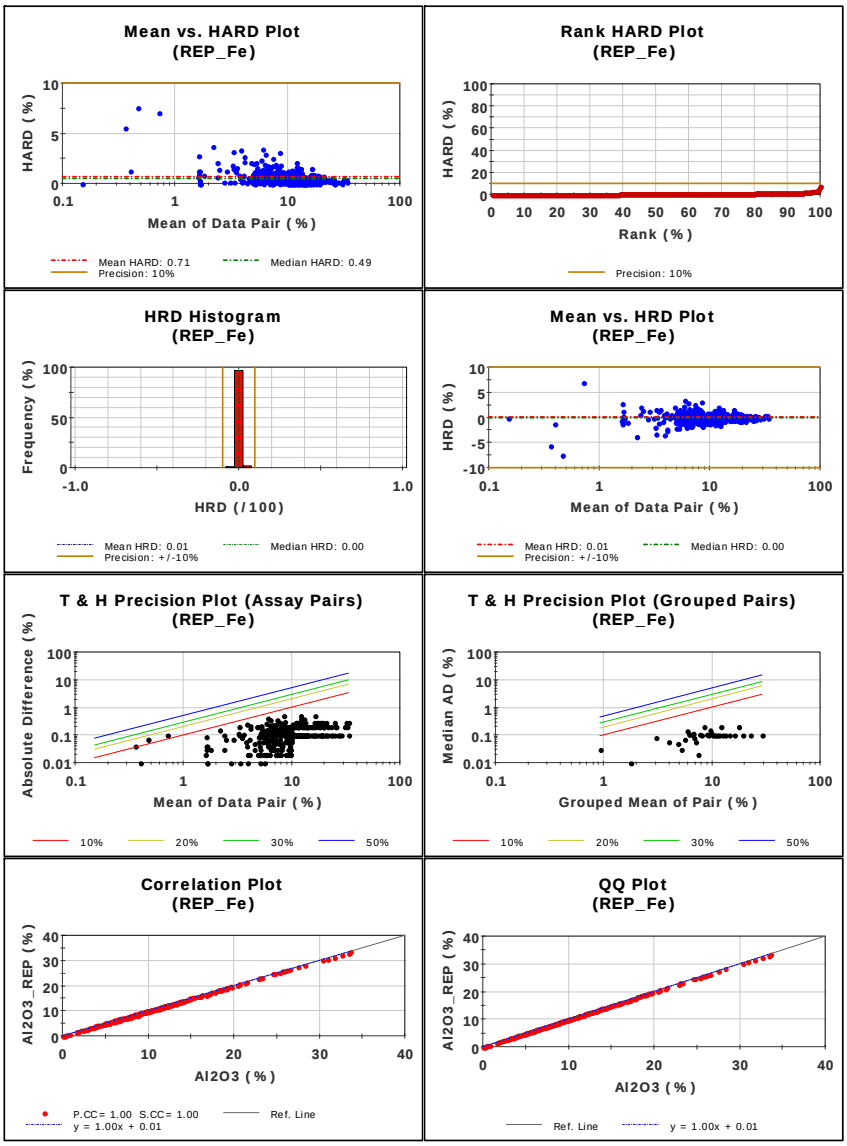
Summary
(REP_Fe)

	Al2O3	Al2O3_REP	Units			Result
No. Pairs:	397	397			Pearson CC:	1.00
Minimum:	0.00	0.00	%		Spearman CC:	1.00
Maximum:	33.60	33.70	%		Mean HARD:	0.71
Mean:	9.98	9.97	%		Median HARD:	0.49
Median	8.98	9.12	%			
Std. Deviation:	5.82	5.81	%		Mean HRD:	0.01
Coefficient of Variation:	0.58	0.58			Median HRD	0.00



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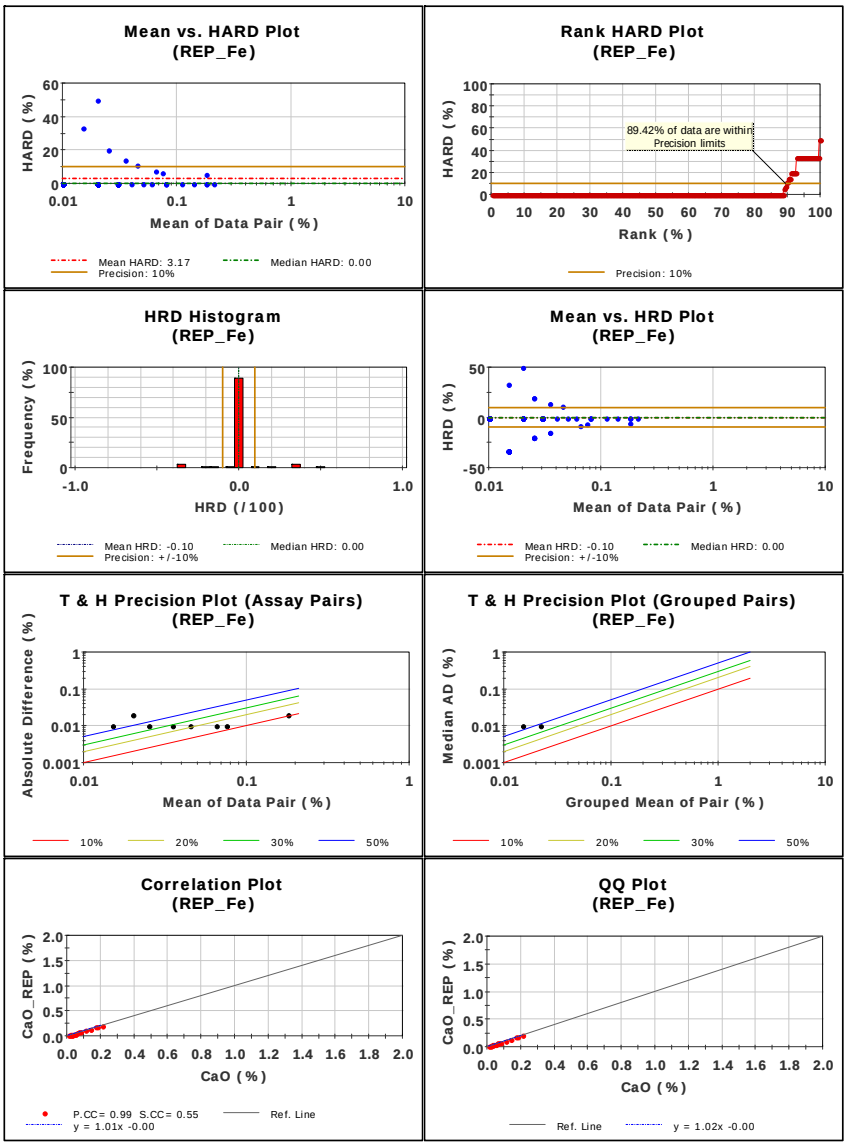
Summary
(REP_Fe)

	CaO	CaO_REP	Units			Result
No. Pairs:	397	397			Pearson CC:	0.99
Minimum:	0.01	0.01	%		Spearman CC:	0.55
Maximum:	0.21	0.21	%		Mean HARD:	3.17
Mean:	0.02	0.02	%		Median HARD:	0.00
Median	0.01	0.01	%			
Std. Deviation:	0.02	0.02	%		Mean HRD:	-0.10
Coefficient of Variation:	1.33	1.35			Median HRD	0.00



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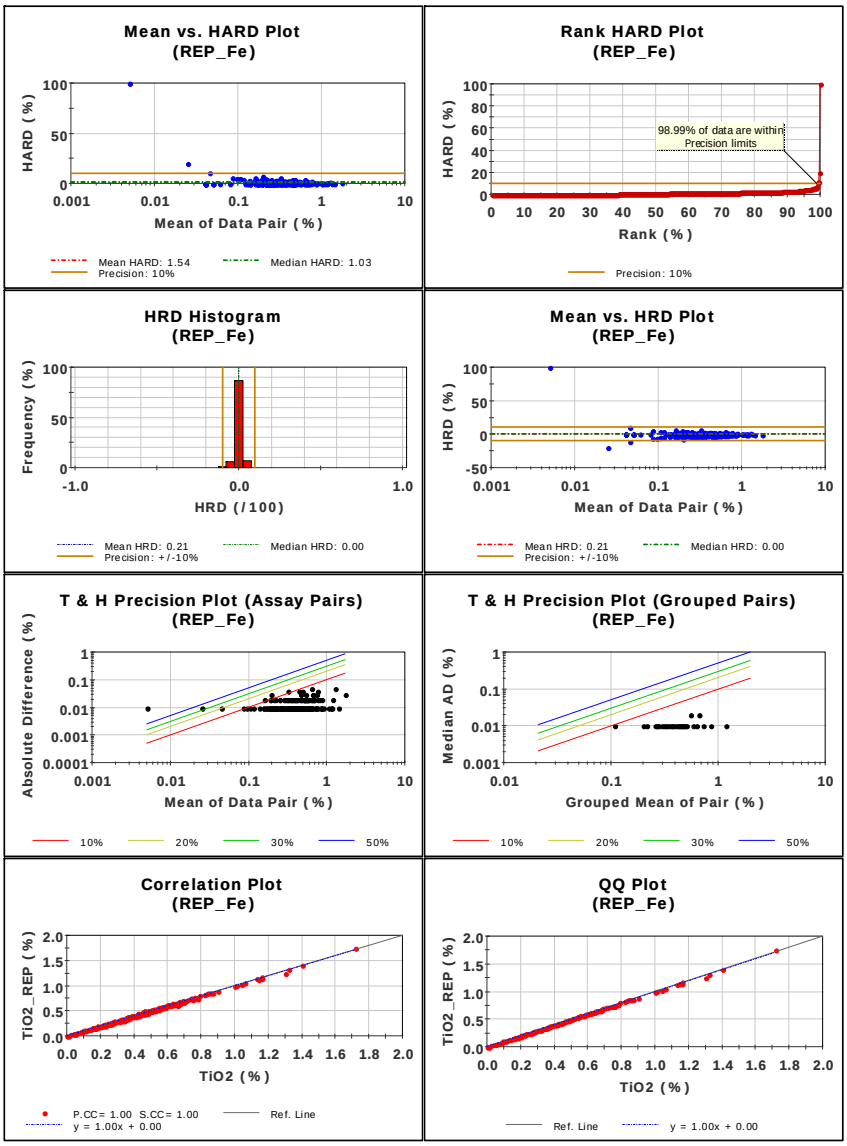
Summary
(REP_Fe)

	TiO2	TiO2_REP	Units			Result
No. Pairs:	397	397			Pearson CC:	1.00
Minimum:	0.00	0.00	%		Spearman CC:	1.00
Maximum:	1.72	1.75	%		Mean HARD:	1.54
Mean:	0.38	0.38	%		Median HARD:	1.03
Median	0.34	0.33	%			
Std. Deviation:	0.24	0.24	%		Mean HRD:	0.21
Coefficient of Variation:	0.62	0.62			Median HRD	0.00



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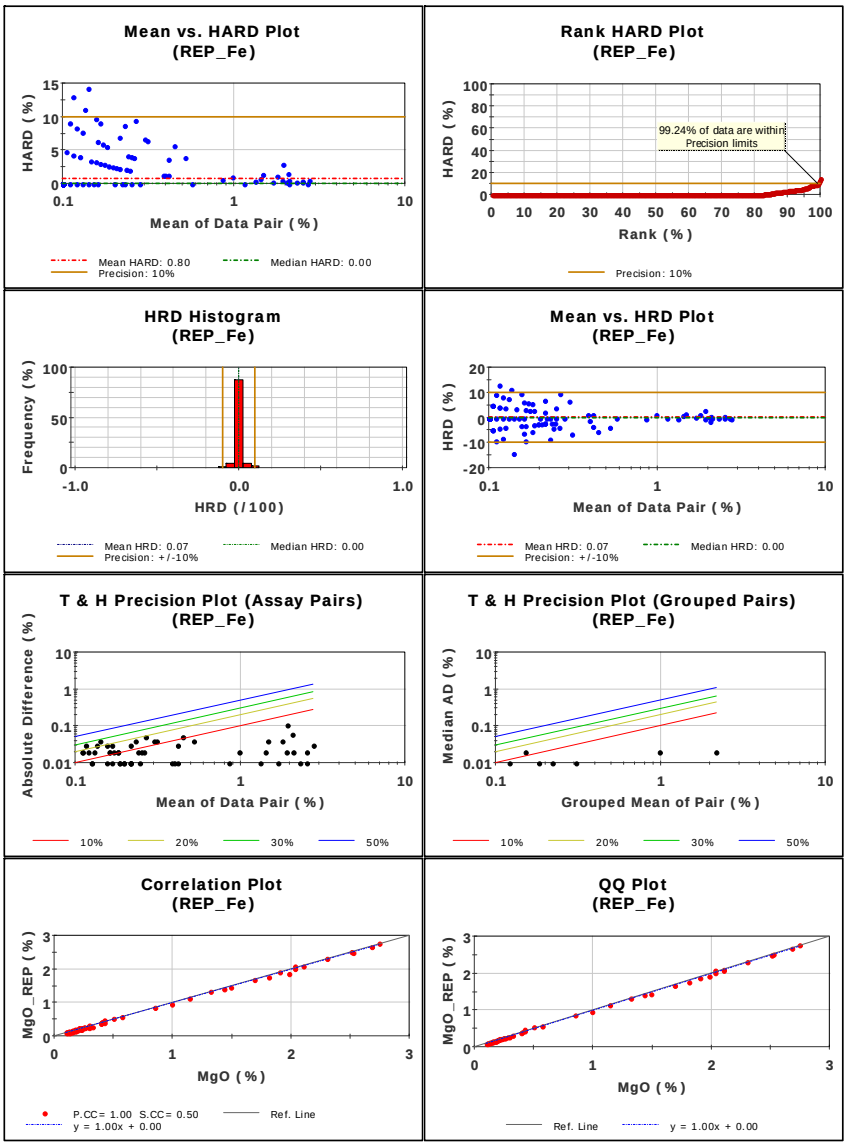
Summary
(REP_Fe)

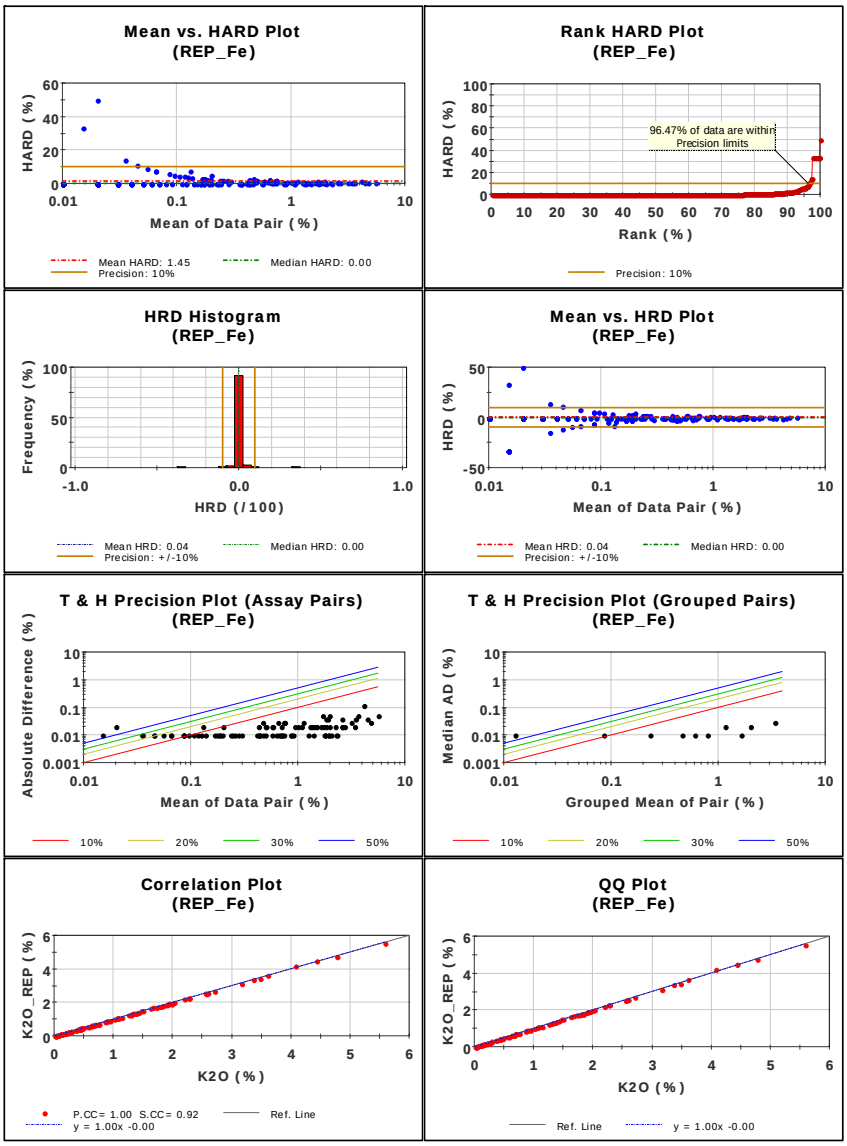
	MgO	MgO_REP	Units			Result
No. Pairs:	397	397			Pearson CC:	1.00
Minimum:	0.10	0.10	%		Spearman CC:	0.50
Maximum:	2.74	2.77	%		Mean HARD:	0.80
Mean:	0.20	0.20	%		Median HARD:	0.00
Median	0.10	0.10	%			
Std. Deviation:	0.40	0.40	%		Mean HRD:	0.07
Coefficient of Variation:	1.96	1.96			Median HRD	0.00



Printed: 12-jul-2011 14:02:17 Data Imported: 12-jul-2011 13:55:17 Page 1

Summary
(REP_Fe)

	K2O	K2O_REP	Units			Result
No. Pairs:	397	397			Pearson CC:	1.00
Minimum:	0.01	0.01	%		Spearman CC:	0.92
Maximum:	5.58	5.53	%		Mean HARD:	1.45
Mean:	0.33	0.33	%		Median HARD:	0.00
Median	0.02	0.02	%			
Std. Deviation:	0.75	0.75	%		Mean HRD:	0.04
Coefficient of Variation:	2.29	2.29			Median HRD	0.00



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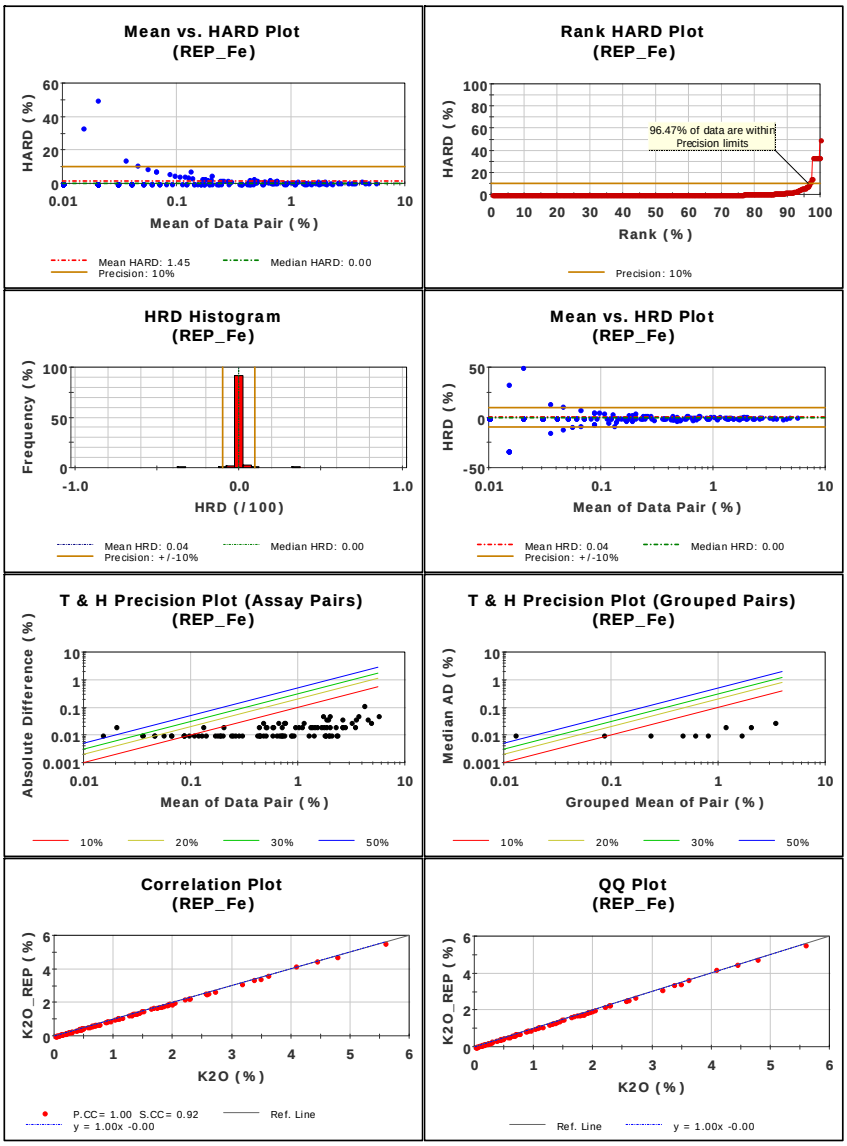
Summary
(REP_Fe)

	K2O	K2O_REP	Units			Result
No. Pairs:	397	397			Pearson CC:	1.00
Minimum:	0.01	0.01	%		Spearman CC:	0.92
Maximum:	5.58	5.53	%		Mean HARD:	1.45
Mean:	0.33	0.33	%		Median HARD:	0.00
Median	0.02	0.02	%			
Std. Deviation:	0.75	0.75	%		Mean HRD:	0.04
Coefficient of Variation:	2.29	2.29			Median HRD	0.00



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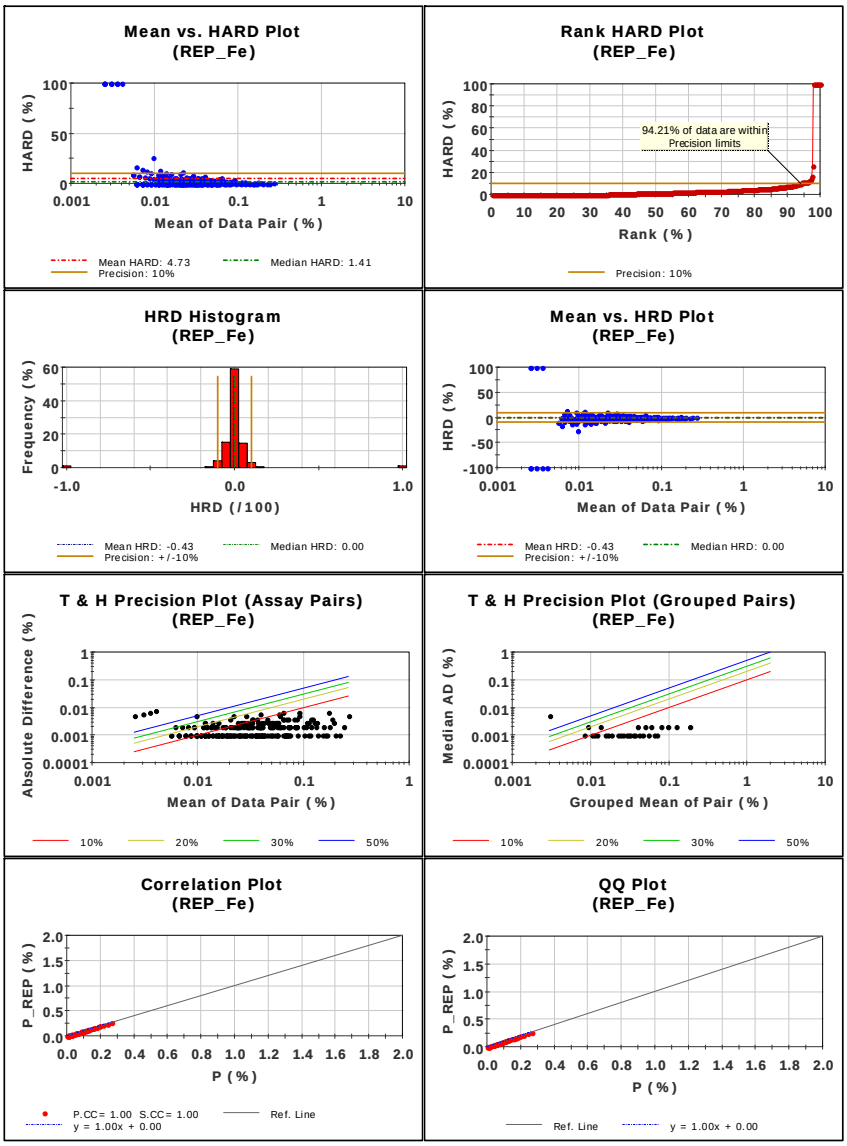
Summary
(REP_Fe)

	P	P_REP	Units			Result
No. Pairs:	397	397			Pearson CC:	1.00
Minimum:	0.00	0.00	%		Spearman CC:	1.00
Maximum:	0.27	0.26	%		Mean HARD:	4.73
Mean:	0.04	0.04	%		Median HARD:	1.41
Median	0.03	0.03	%			
Std. Deviation:	0.04	0.04	%		Mean HRD:	-0.43
Coefficient of Variation:	1.04	1.03			Median HRD	0.00



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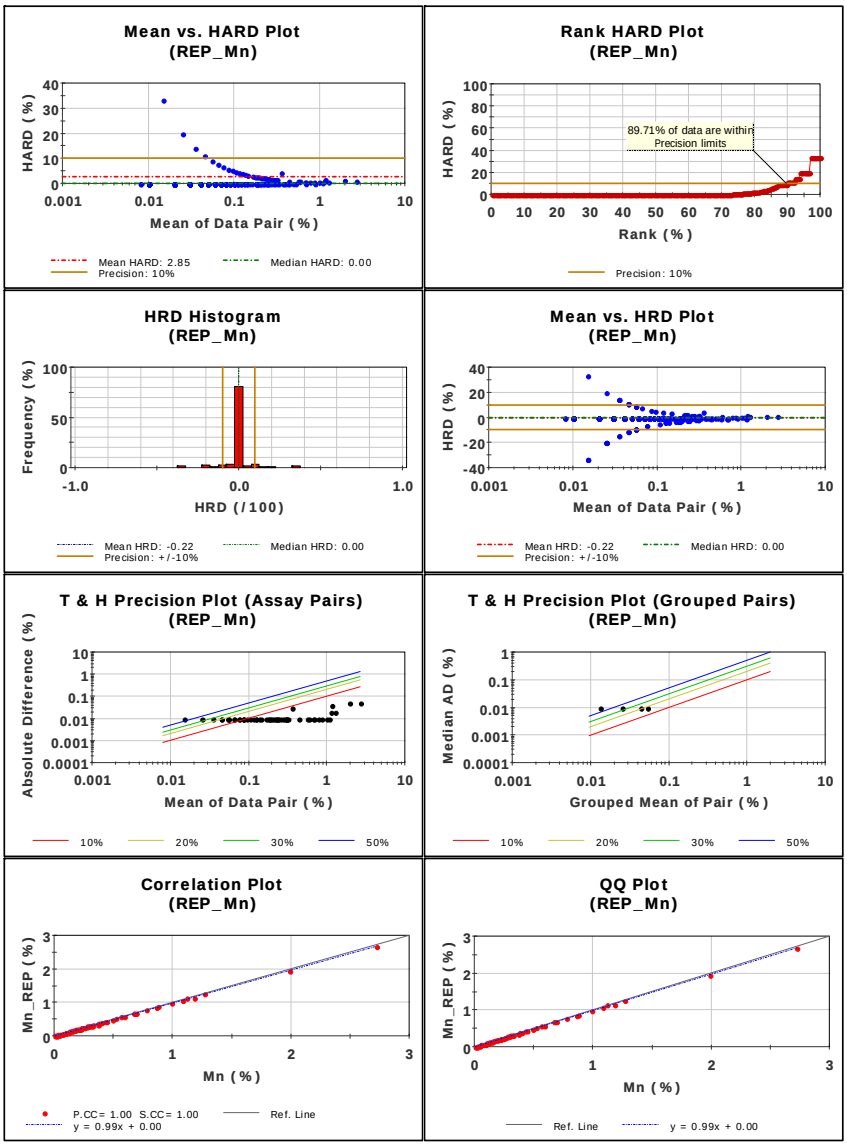
Summary
(REP_Mn)

	Mn	Mn_REP	Units			Result
No. Pairs:	340	340			Pearson CC:	1.00
Minimum:	0.01	0.01	%		Spearman CC:	1.00
Maximum:	2.72	2.67	%		Mean HARD:	2.85
Mean:	0.13	0.13	%		Median HARD:	0.00
Median	0.05	0.05	%			
Std. Deviation:	0.25	0.25	%		Mean HRD:	-0.22
Coefficient of Variation:	1.97	1.95			Median HRD	0.00



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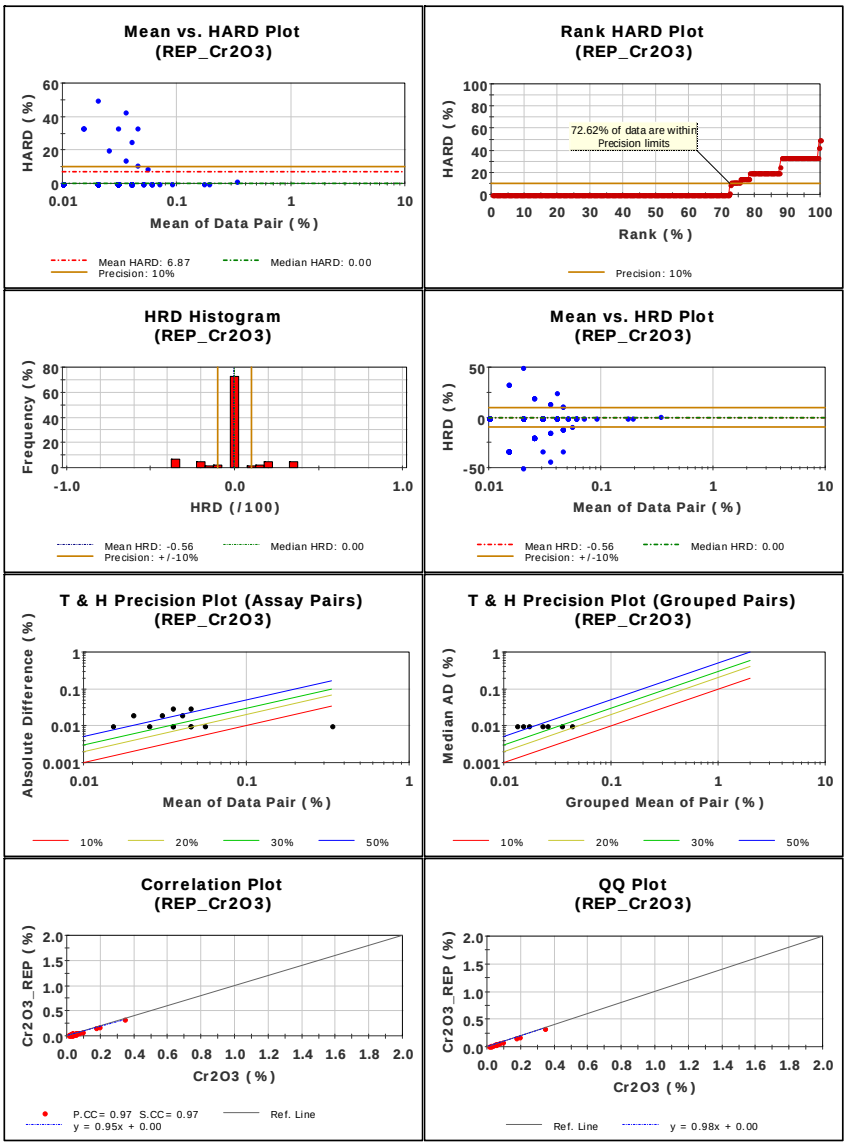
Summary
(REP_Cr2O3)

	Cr2O3	Cr2O3_REP	Units			Result
No. Pairs:	336	336			Pearson CC:	0.97
Minimum:	0.01	0.01	%		Spearman CC:	0.97
Maximum:	0.34	0.33	%		Mean HARD:	6.87
Mean:	0.03	0.03	%		Median HARD:	0.00
Median	0.02	0.02	%			
Std. Deviation:	0.02	0.02	%		Mean HRD:	-0.56
Coefficient of Variation:	0.90	0.88			Median HRD	0.00



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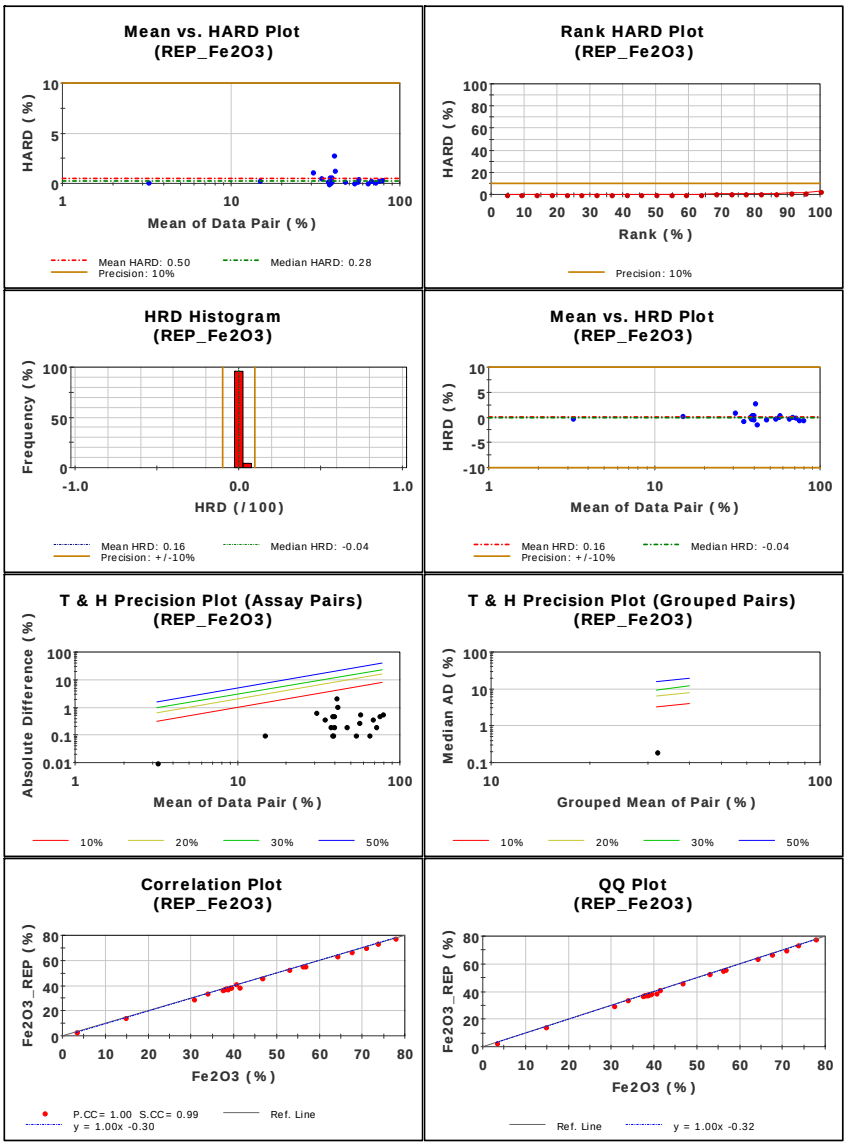
Summary
(REP_Fe2O3)

	Fe2O3	Fe2O3_REP	Units			Result
No. Pairs:	22	22			Pearson CC:	1.00
Minimum:	3.19	3.20	%		Spearman CC:	0.99
Maximum:	77.70	78.30	%		Mean HARD:	0.50
Mean:	45.32	45.21	%		Median HARD:	0.28
Median	39.80	39.05	%			
Std. Deviation:	17.94	18.02	%		Mean HRD:	0.16
Coefficient of Variation:	0.40	0.40			Median HRD	-0.04



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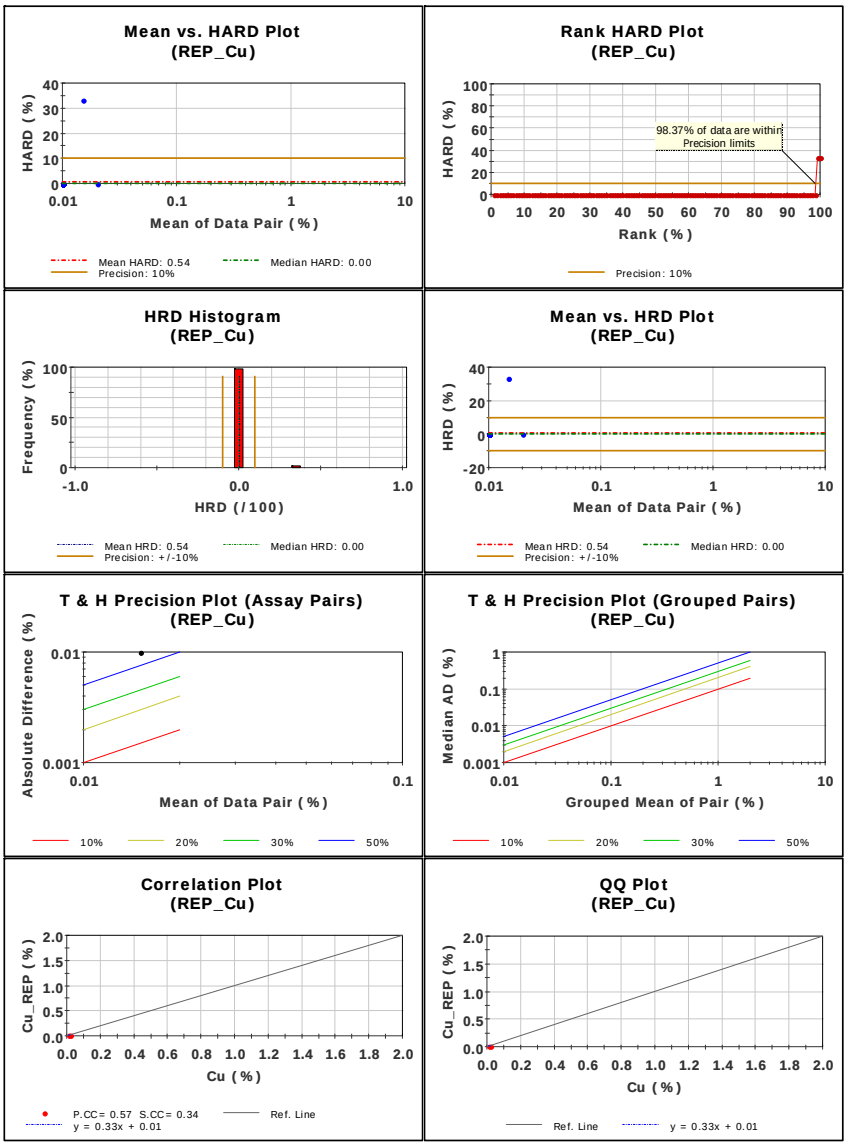
Summary
(REP_Cu)

	Cu	Cu_REP	Units			Result
No. Pairs:	123	123			Pearson CC:	0.57
Minimum:	0.01	0.01	%		Spearman CC:	0.34
Maximum:	0.02	0.02	%		Mean HARD:	0.54
Mean:	0.01	0.01	%		Median HARD:	0.00
Median	0.01	0.01	%			
Std. Deviation:	0.00	0.00	%		Mean HRD:	0.54
Coefficient of Variation:	0.15	0.09			Median HRD	0.00



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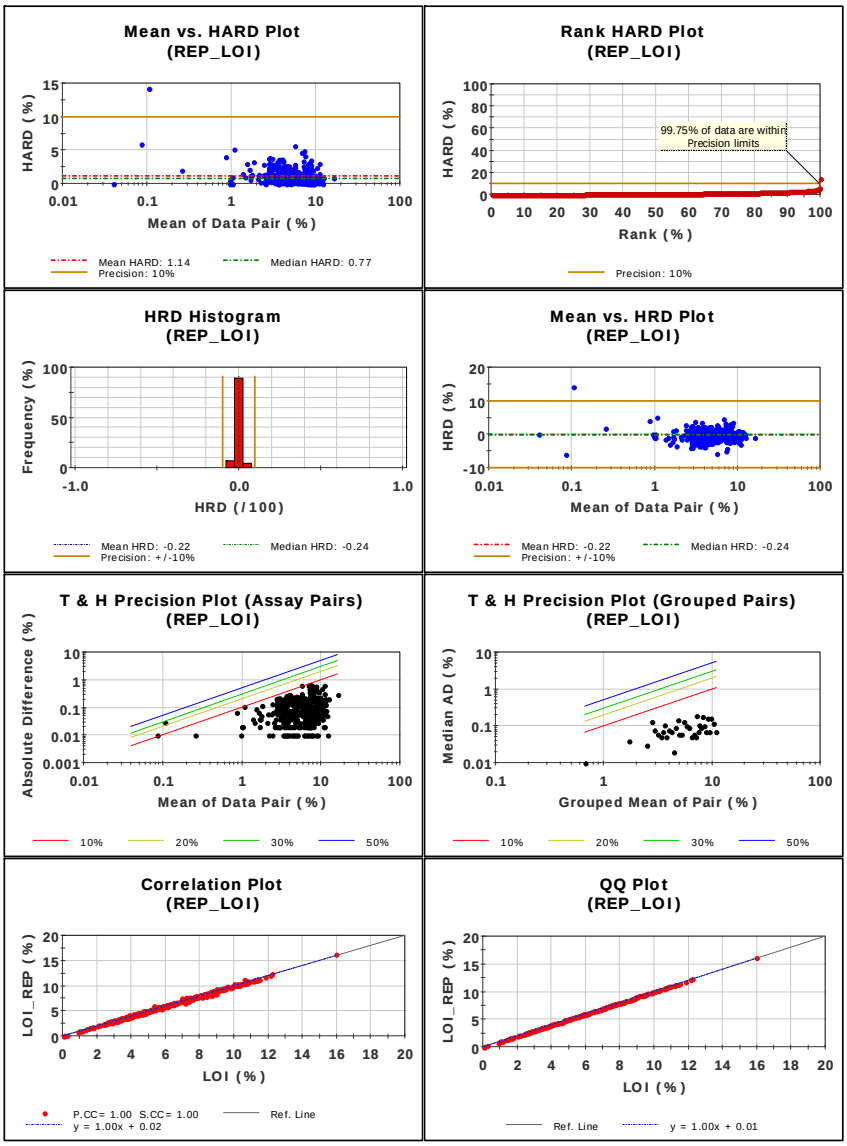
Summary
(REP_LOI)

	LOI	LOI_REP	Units			Result
No. Pairs:	395	395			Pearson CC:	1.00
Minimum:	0.04	0.04	%		Spearman CC:	1.00
Maximum:	15.96	16.25	%		Mean HARD:	1.14
Mean:	5.90	5.93	%		Median HARD:	0.77
Median	5.62	5.71	%			
Std. Deviation:	2.71	2.72	%		Mean HRD:	-0.22
Coefficient of Variation:	0.46	0.46			Median HRD	-0.24



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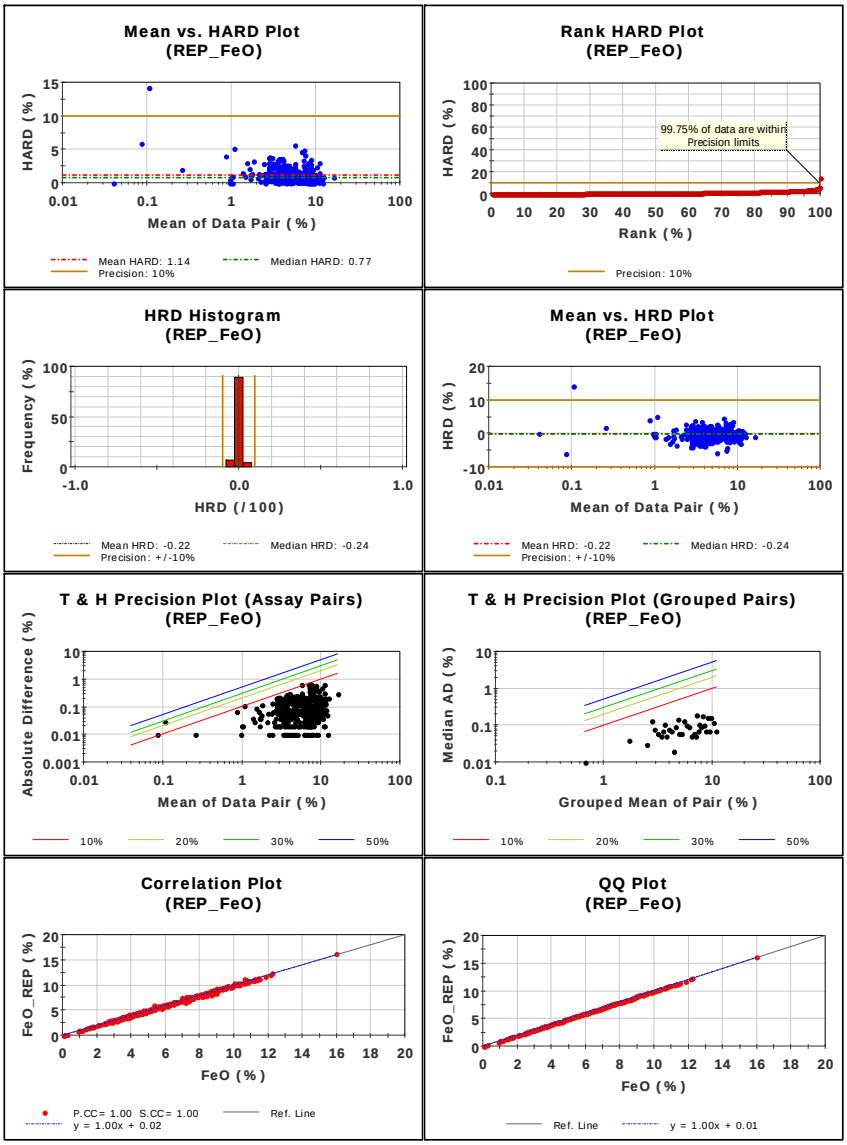
Summary
(REP_FeO)

	FeO	FeO_REP	Units			Result
No. Pairs:	395	395			Pearson CC:	1.00
Minimum:	0.04	0.04	%		Spearman CC:	1.00
Maximum:	15.96	16.25	%		Mean HARD:	1.14
Mean:	5.90	5.93	%		Median HARD:	0.77
Median	5.62	5.71	%			
Std. Deviation:	2.71	2.72	%		Mean HRD:	-0.22
Coefficient of Variation:	0.46	0.46			Median HRD	-0.24



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Appendix C

Basic Statistics Histograms and Plots

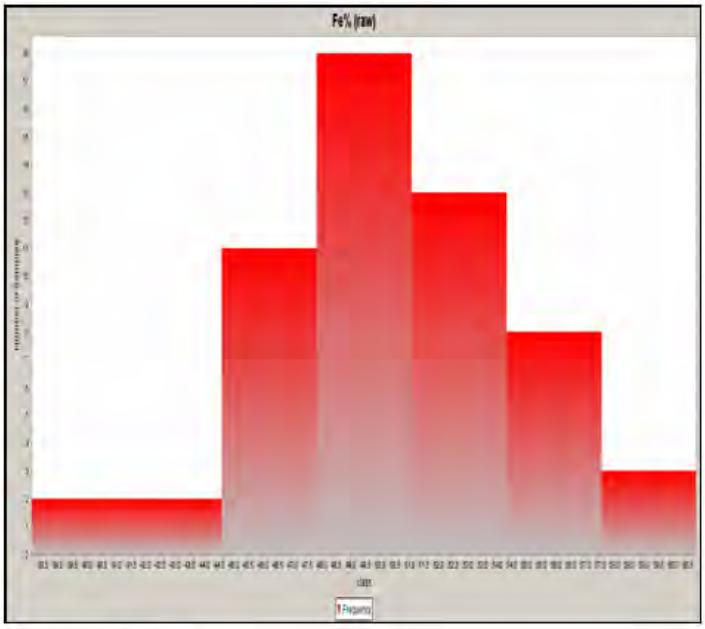
Litologia	Variável	Média	Variância	Desvio Padrão	CV	N° Amostras	Lim. Inferior	Lim. Superior
Sol	Fe(%)	50,41	22,66	4,76	9%	57	38,10	60,80
	SiO2(%)	7,72	6,68	2,58	33%	57	3,08	14,70
	Al(%)	10,67	7,92	2,81	26%	57	4,05	16,90
	Mn(%) CAP	0,050	0,001	0,022	45%	56,000	0,010	0,120
	P(%) CAP	0,075	0,001	0,025	34%	56,000	0,029	0,191
	LOI(%)	8,708	4,977	2,231	26%	57,000	3,610	14,230
Sap	Fe(%)	40,50	104,94	10,24	25%	615	1,96	60,40
	SiO2(%) CAP	20,12	160,63	12,67	63%	614	2,90	72,20
	Al(%)	12,49	25,63	5,06	41%	615	0,47	30,50
	Mn(%) CAP	0,103	0,035	0,187	182%	610,000	0,004	1,510
	P(%) CAP	0,055	0,001	0,035	64%	612,000	0,003	0,239
	LOI(%)	8,400	3,539	1,881	22%	615,000	-	13,470
Sar	Fe(%)	30,80	86,83	9,32	30%	371	9,77	59,80
	SiO2(%)	40,31	185,04	13,60	34%	371	3,98	66,40
	Al(%)	8,94	21,06	4,59	51%	371	1,55	24,20
	Mn(%) CAP	0,121	0,017	0,132	109%	359,000	0,004	0,690
	P(%) CAP	0,041	0,001	0,031	76%	369,000	0,003	0,175
	LOI(%)	5,806	3,767	1,941	33%	371,000	2,150	11,430

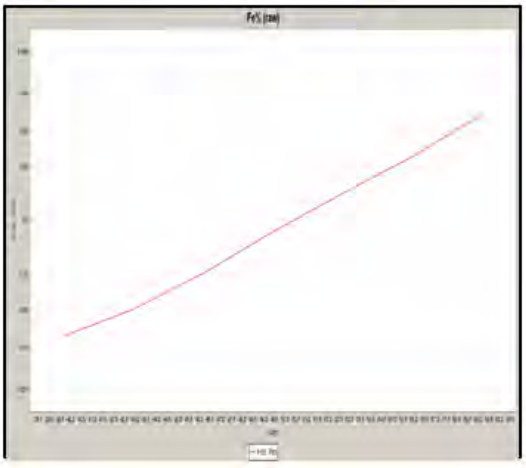
Target:	area1
Lithology:	Sol
Variable:	Fe(%)

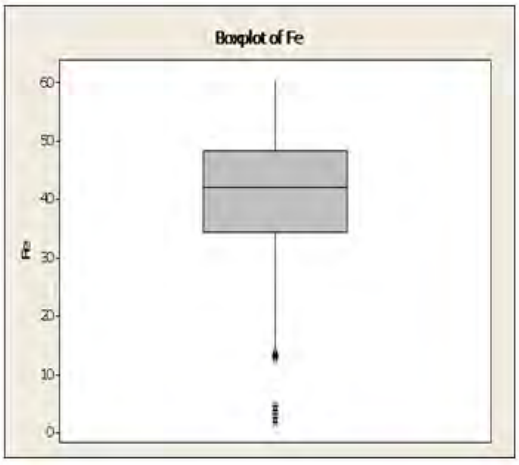
Sample Number:	57
Mínimum:	38,10
Maximum:	60,80
N° Classes (Sturges):	7
Interval (Sturges):	3,31

Quantiles	
2.5%:	38,15
5.0%:	44,40
25.0%:	47,35
Median:	50,20
75.0%:	53,70
95.0%:	58,55
97.5%:	60,75

Mean:	50,41
Variance:	22,66
Standard Deviation:	4,76
Coef. de variation:	9%
Range interquartil:	6,35





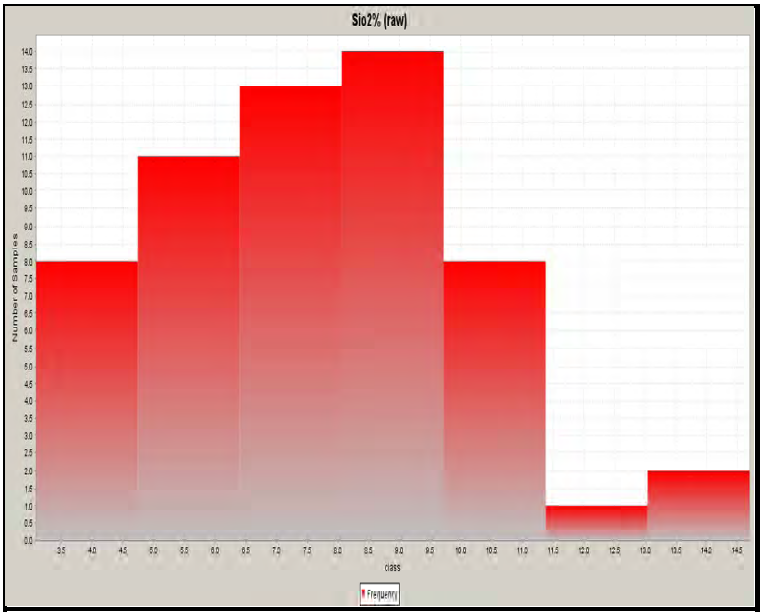


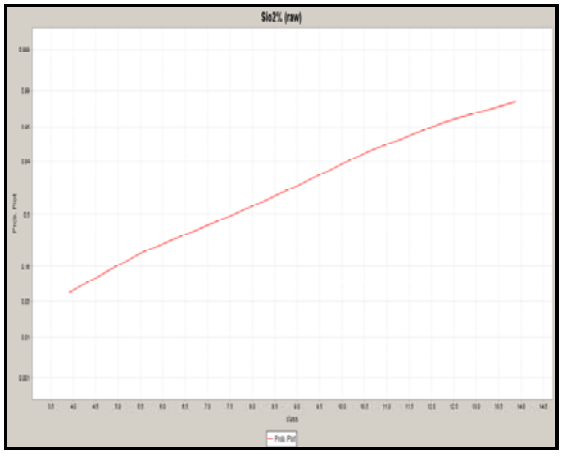
Target:	area1
Lithology:	Sol
Variable:	SiO2(%)

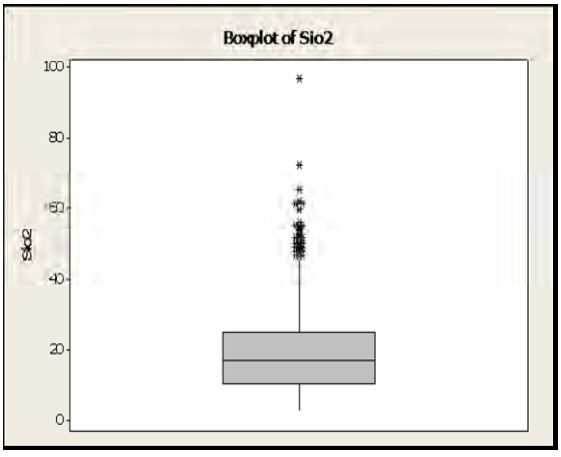
Sample Number:	57
Mínimum:	3.08
Maximum:	14.70
N° Classes (Sturges):	7
Interval (Sturges):	1.70

Quantiles	
2.5%:	3.10
5.0%:	3.36
25.0%:	5.88
Mediana:	7.92
75.0%:	9.42
95.0%:	11.45
97.5%:	14.55

Mean:	7.72
Variance:	6.68
Standard Deviation:	2.58
Coef. de variation:	33%
Range interquartil:	3.54





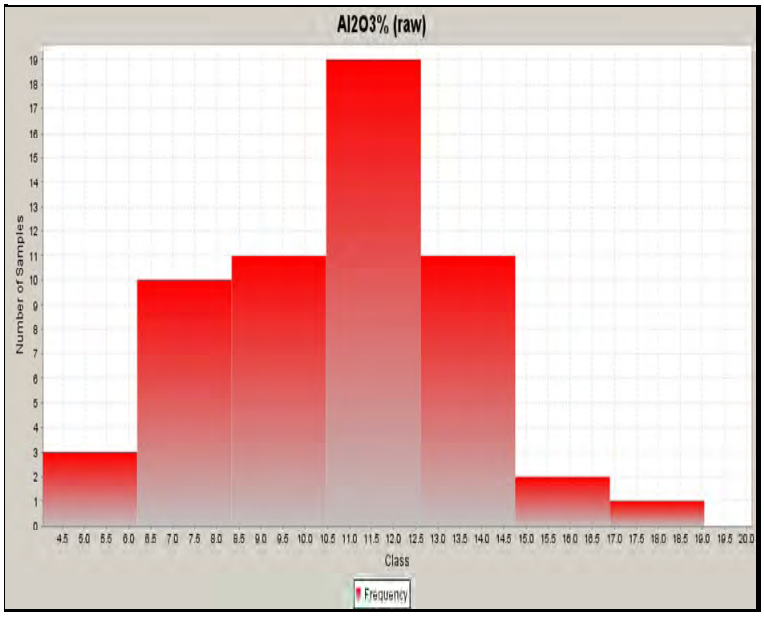


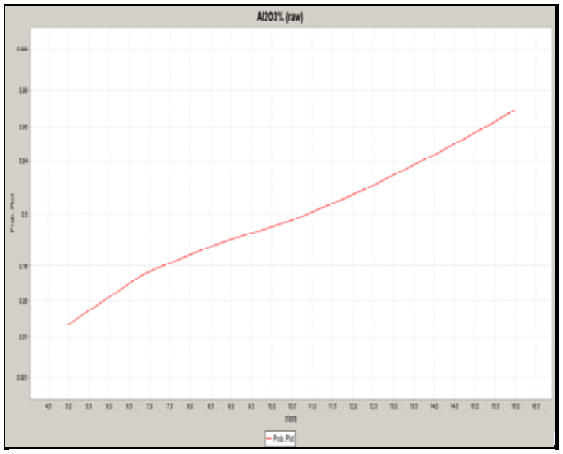
Target:	area1
Lithology:	Sol
Variable:	Al2O3(%)

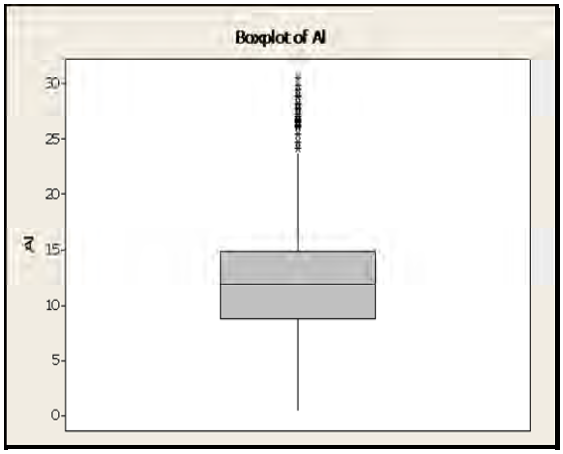
Sample Number:	57
Mínimum:	4.05
Maximum:	0.00
N° Classes (Sturges):	7
Interval (Sturges):	(0.59)

Quantiles	
2.5%:	4.51
5.0%:	6.11
25.0%:	8.70
Mediana:	11.20
75.0%:	12.60
95.0%:	15.05
97.5%:	16.60

Mean:	10.67
Variance:	7.92
Standard Deviation:	2.81
Coef. de variation:	26%
Range interquartil:	3.91





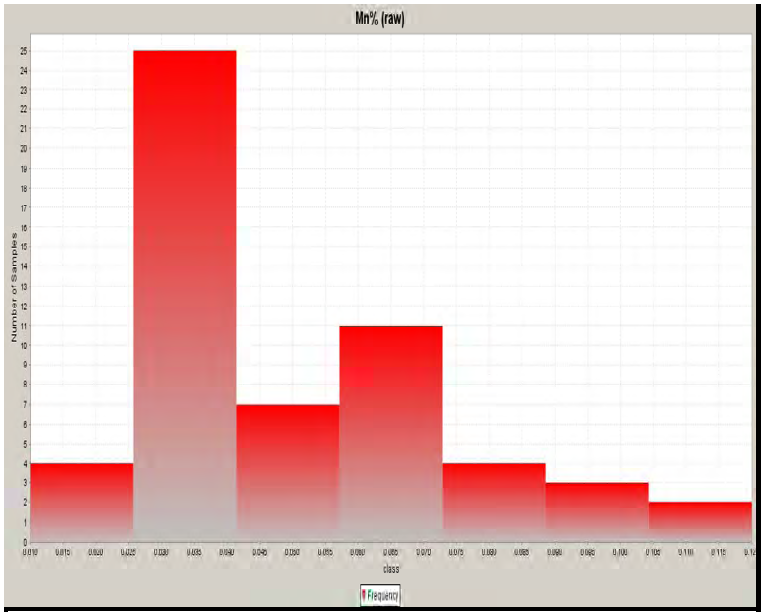


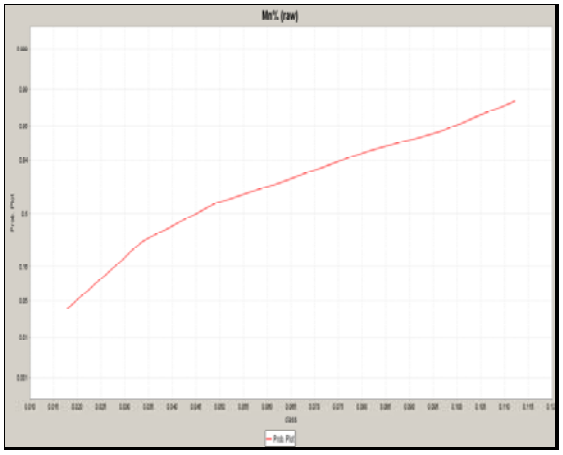
Target:	area1
Lithology:	Sol
Variable:	Mn(%)

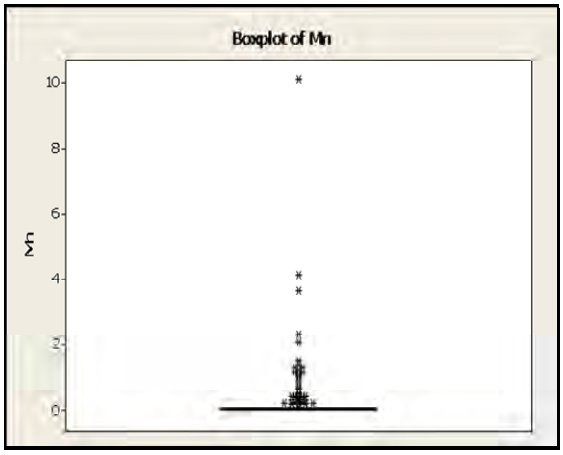
Sample Number:	56
Mínimum:	0.01
Maximum:	0.12
N° Classes (Sturges):	7
Interval (Sturges):	0.02

Quantiles	
2.5%:	0.01
5.0%:	0.02
25.0%:	0.04
Mediana:	0.04
75.0%:	0.06
95.0%:	0.09
97.5%:	0.12

Mean:	0.05
Variance:	0.00
Standard Deviation:	0.02
Coef. de variation:	45%
Range interquartil:	0.02





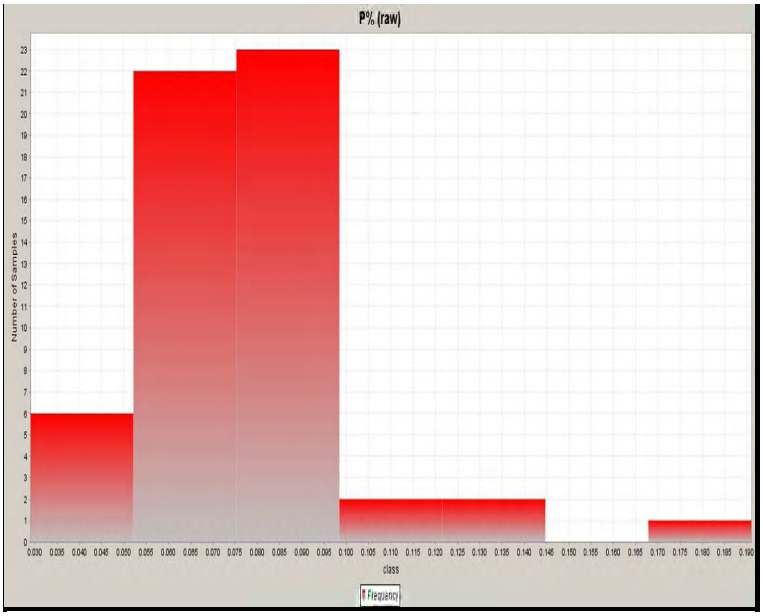


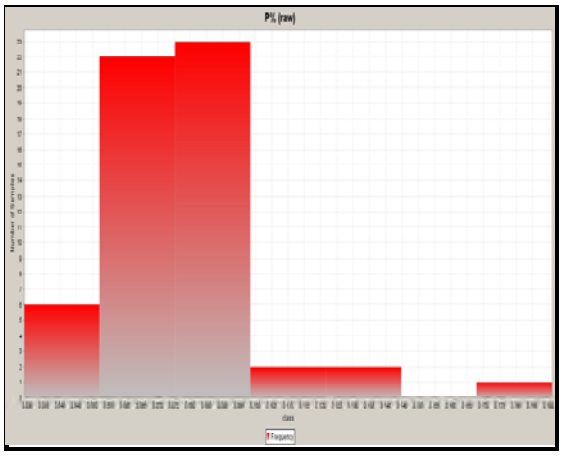
Target:	area1
Lithology:	Sol
Variable:	P(%)

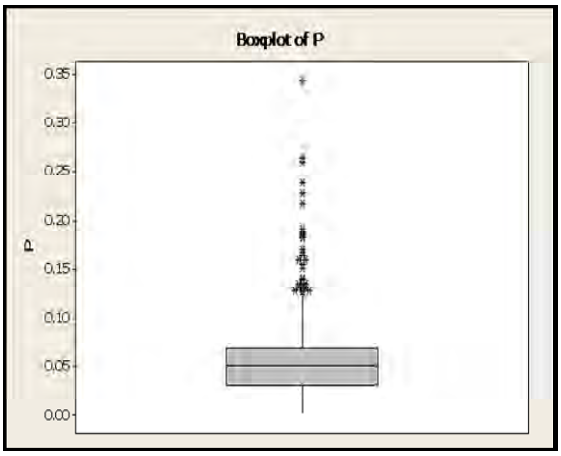
Sample Number:	56
Mínimum:	0.03
Maximum:	0.19
N° Classes (Sturges):	7
Interval (Sturges):	0.02

Quantiles	
2.5%:	0.03
5.0%:	0.04
25.0%:	0.06
Mediana:	0.08
75.0%:	0.08
95.0%:	0.12
97.5%:	0.16

Mean:	0.07
Variance:	0.00
Standard Deviation:	0.03
Coef. de variation:	34%
Range interquartil:	0.02





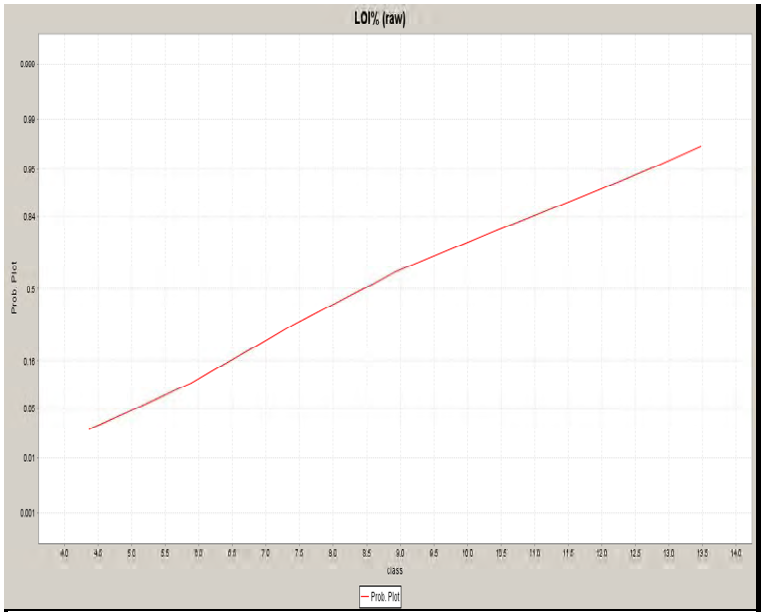


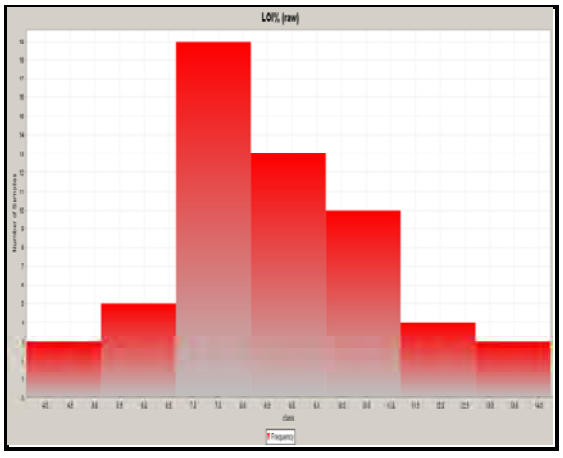
Target:	area1
Lithology:	Sol
Variable:	LOI(%)

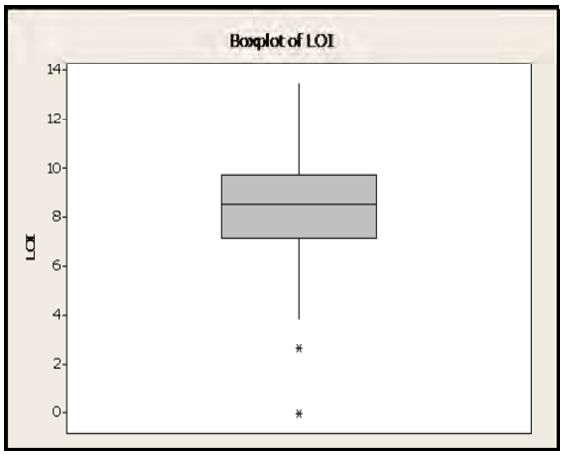
Sample Number:	57
Mínimum:	3.61
Maximum:	14.23
N° Classes (Sturges):	7
Interval (Sturges):	1.55

Quantiles	
2.5%:	3.73
5.0%:	5.02
25.0%:	7.50
Mediana:	8.39
75.0%:	10.24
95.0%:	12.60
97.5%:	14.20

Mean:	8.71
Variance:	4.98
Standard Deviation:	2.23
Coef. de variation:	26%
Range interquartil:	2.74





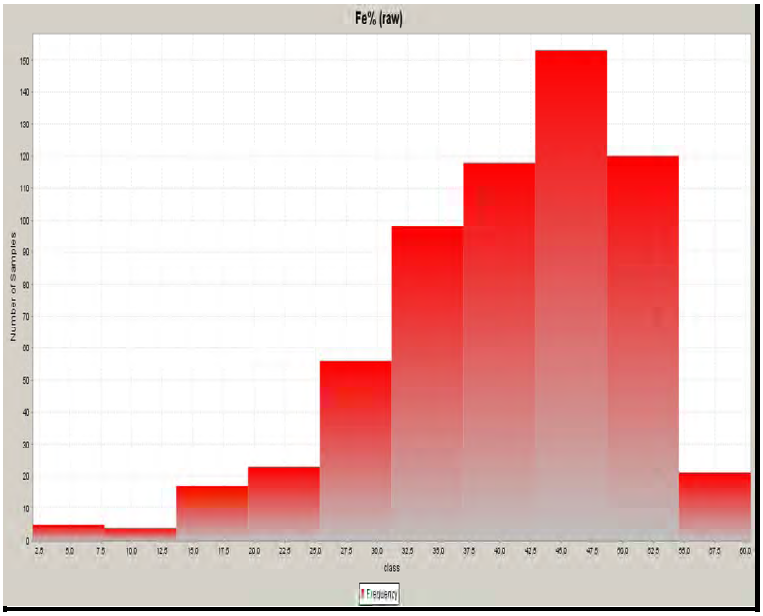


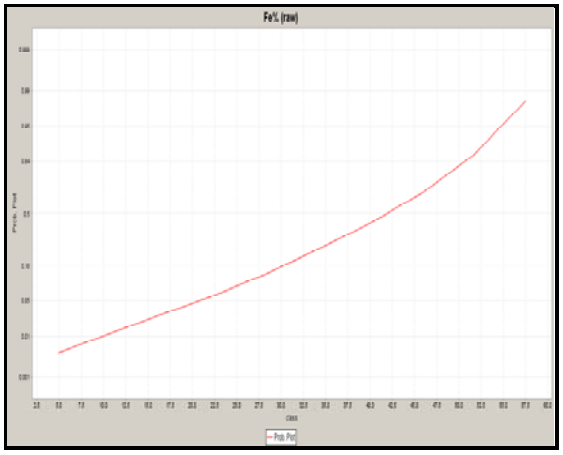
Target:	area1
Lithology:	Sap
Variable:	Fe(%)

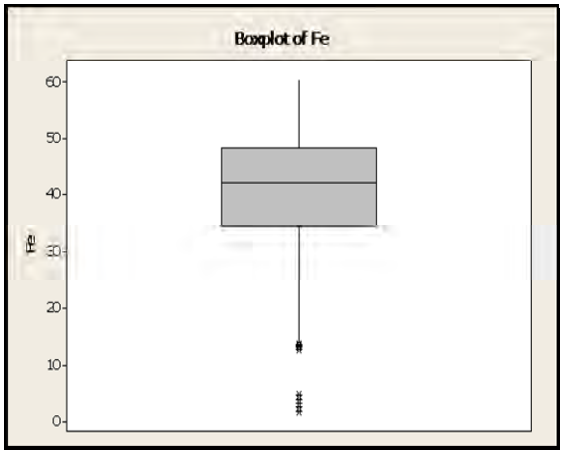
Sample Number:	615
Mínimum:	1.96
Maximum:	60.40
N° Classes (Sturges):	10
Interval (Sturges):	5.68

Quantiles	
2.5%:	15.95
5.0%:	21.25
25.0%:	34.55
Mediana:	42.10
75.0%:	48.30
95.0%:	53.65
97.5%:	56.25

Mean:	40.50
Variance:	104.94
Standard Deviation:	10.24
Coef. de variation:	25%
Range interquartil:	13.75





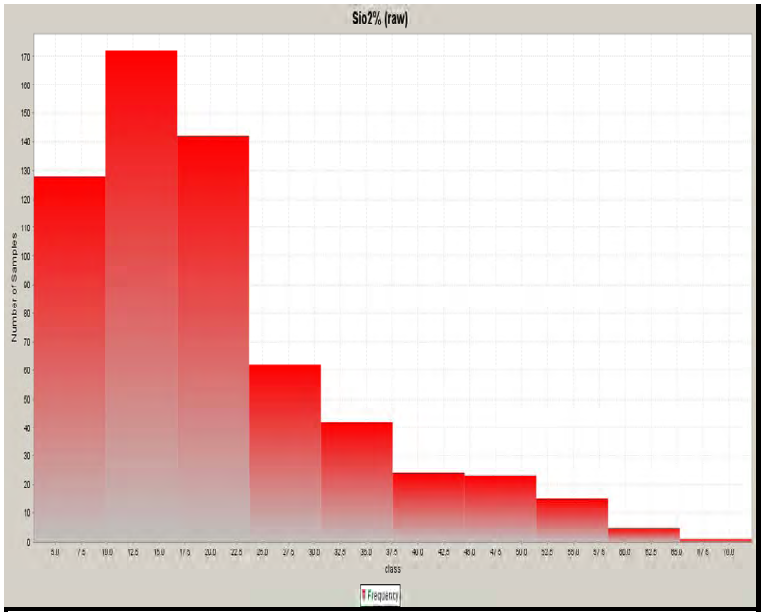


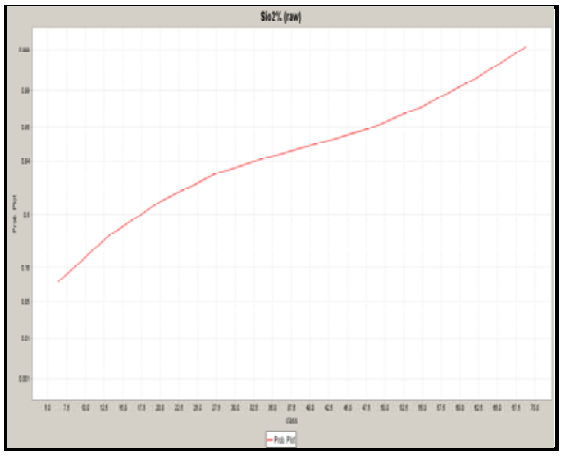
Target:	area1
Lithology:	Sap
Variable:	SiO2(%)

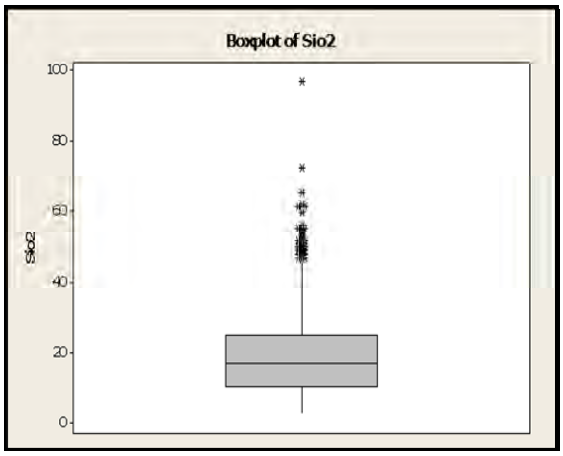
Sample Number:	614
Mínimum:	2.90
Maximum:	72.20
N° Classes (Sturges):	10
Interval (Sturges):	6.73

Quantiles	
2.5%:	4.81
5.0%:	6.24
25.0%:	10.70
Mediana:	17.00
75.0%:	25.00
95.0%:	48.45
97.5%:	52.65

Mean:	20.12
Variance:	160.63
Standard Deviation:	12.67
Coef. de variation:	63%
Range interquartil:	14.30





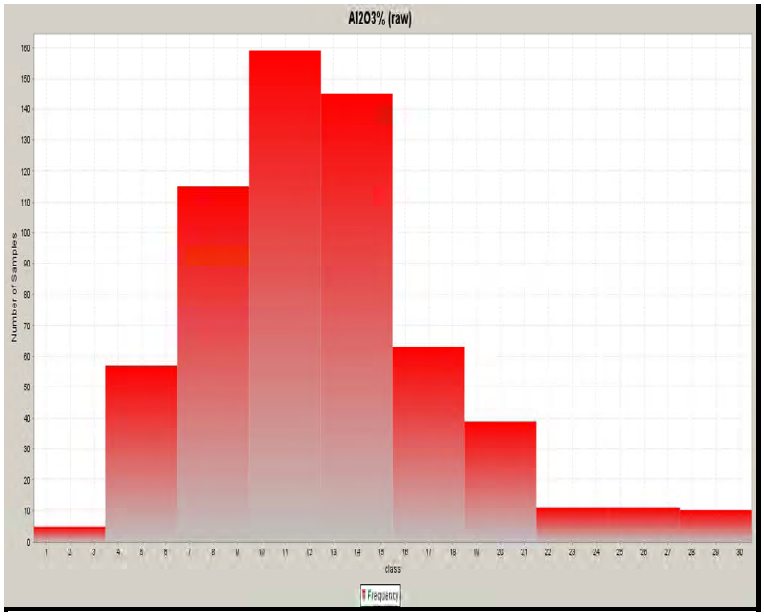


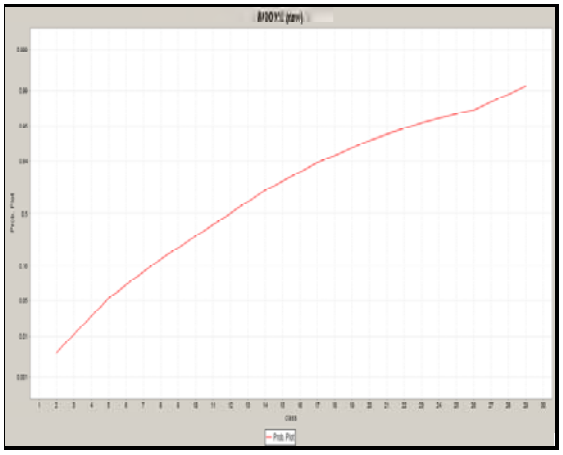
Target:	area1
Lithology:	Sap
Variable:	Al2O3(%)

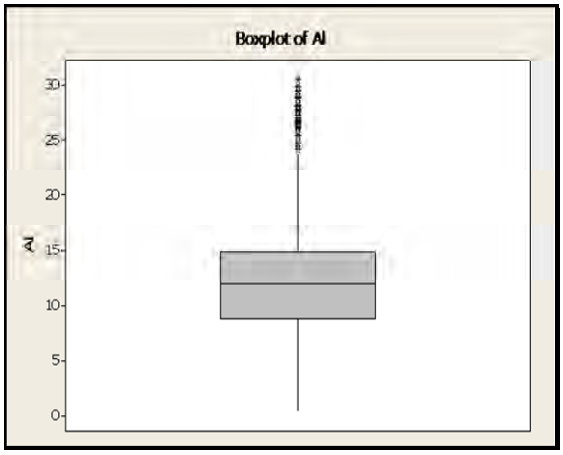
Sample Number:	615
Mínimum:	0.47
Maximum:	30.50
N° Classes (Sturges):	10
Interval (Sturges):	2.92

Quantiles	
2.5%:	4.71
5.0%:	5.44
25.0%:	8.89
Mediana:	12.00
75.0%:	14.85
95.0%:	21.70
97.5%:	26.55

Mean:	12.49
Variance:	25.63
Standard Deviation:	5.06
Coef. de variation:	41%
Range interquartil:	5.97





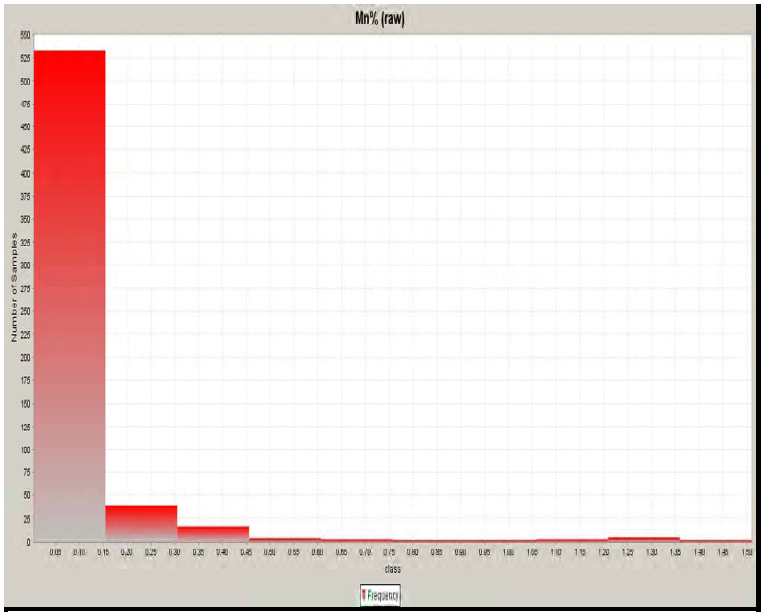


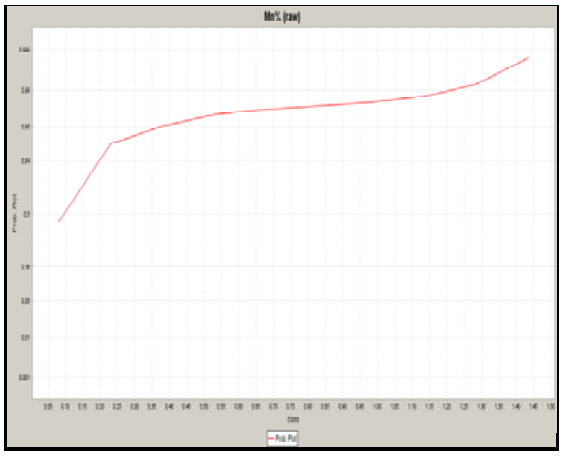
Target:	area1
Lithology:	Sap
Variable:	Mn(%)

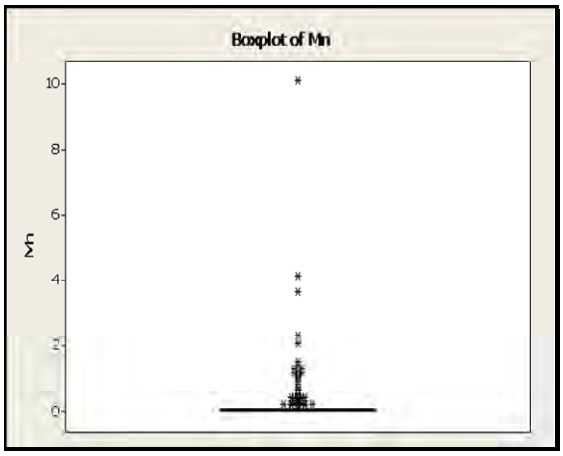
Sample Number:	610
Mínimum:	0.00
Maximum:	1.51
N° Classes (Sturges):	10
Interval (Sturges):	0.15

Quantiles	
2.5%:	0.00
5.0%:	0.00
25.0%:	0.03
Mediana:	0.05
75.0%:	0.09
95.0%:	0.36
97.5%:	0.72

Mean:	0.10
Variance:	0.04
Standard Deviation:	0.19
Coef. de variation:	182%
Range interquartil:	0.06





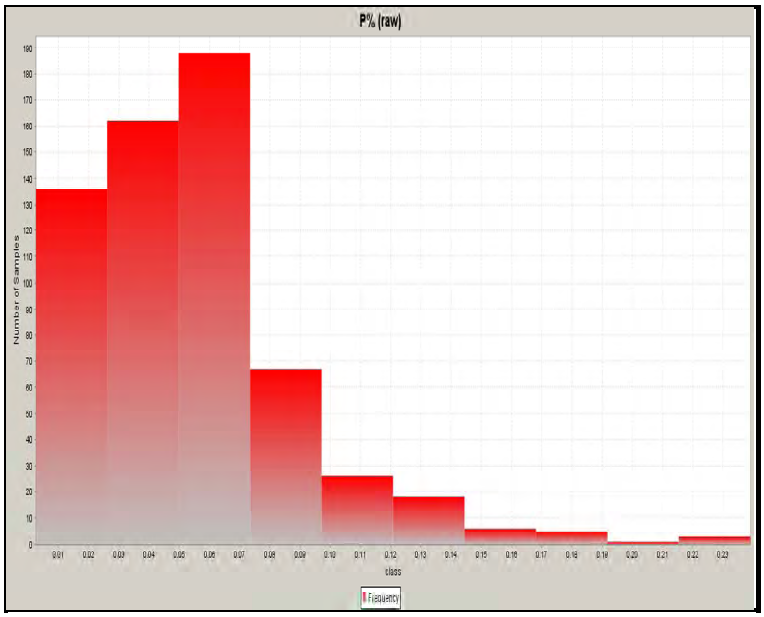


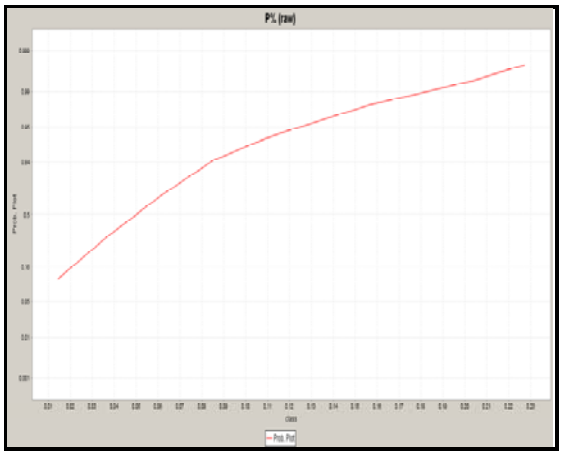
Target:	area1
Lithology:	Sap
Variable:	P(%)

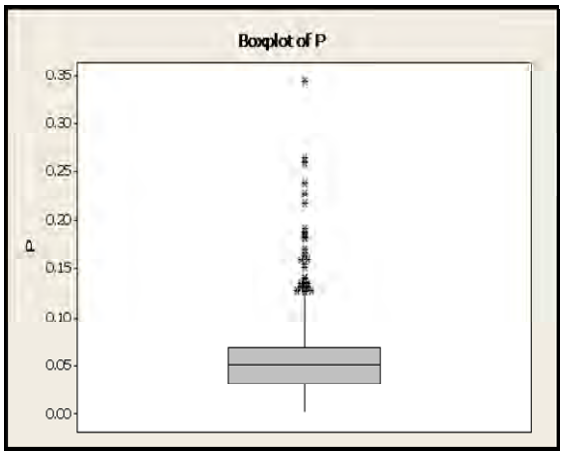
Sample Number:	612
Mínimum:	0.00
Maximum:	0.24
N° Classes (Sturges):	10
Interval (Sturges):	0.02

Quantiles	
2.5%:	0.01
5.0%:	0.01
25.0%:	0.03
Mediana:	0.05
75.0%:	0.07
95.0%:	0.13
97.5%:	0.15

Mean:	0.06
Variance:	0.00
Standard Deviation:	0.04
Coef. de variation:	64%
Range interquartil:	0.04





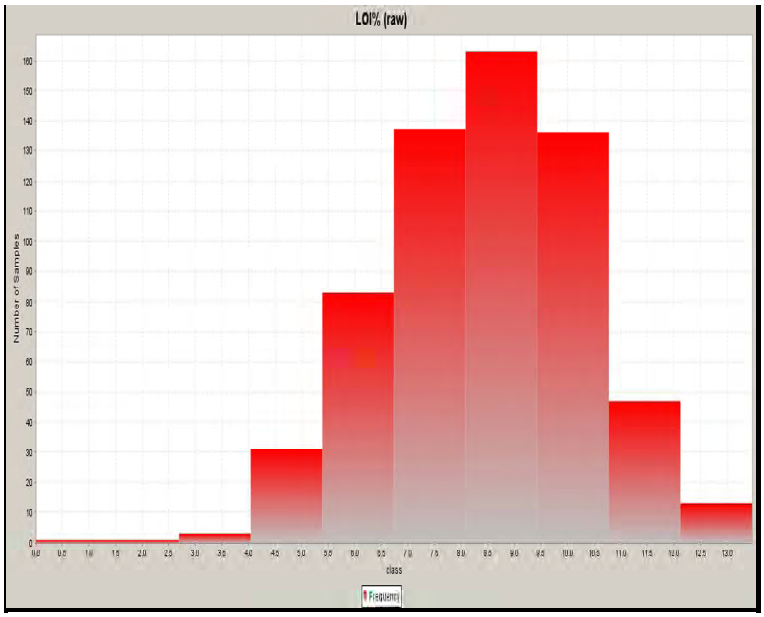


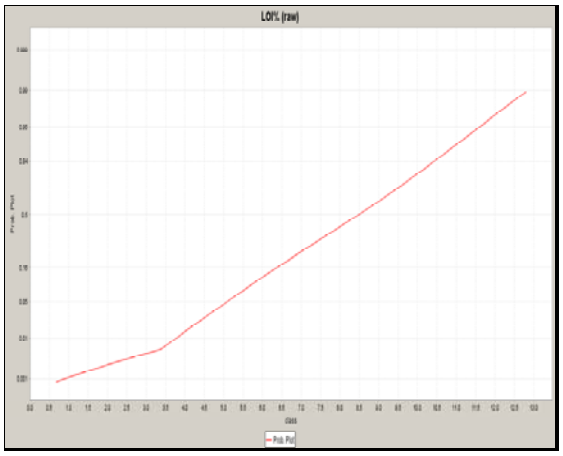
Target:	area1
Lithology:	Sap
Variable:	LOI(%)

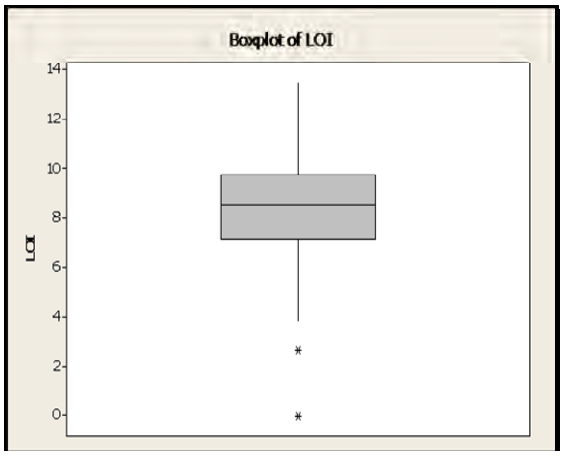
Sample Number:	615
Mínimum:	0.00
Maximum:	13.47
N° Classes (Sturges):	10
Interval (Sturges):	1.31

Quantiles	
2.5%:	4.70
5.0%:	5.22
25.0%:	7.14
Mediana:	8.55
75.0%:	9.74
95.0%:	11.37
97.5%:	11.82

Mean:	8.40
Variance:	3.54
Standard Deviation:	1.88
Coef. de variation:	22%
Range interquartil:	2.61





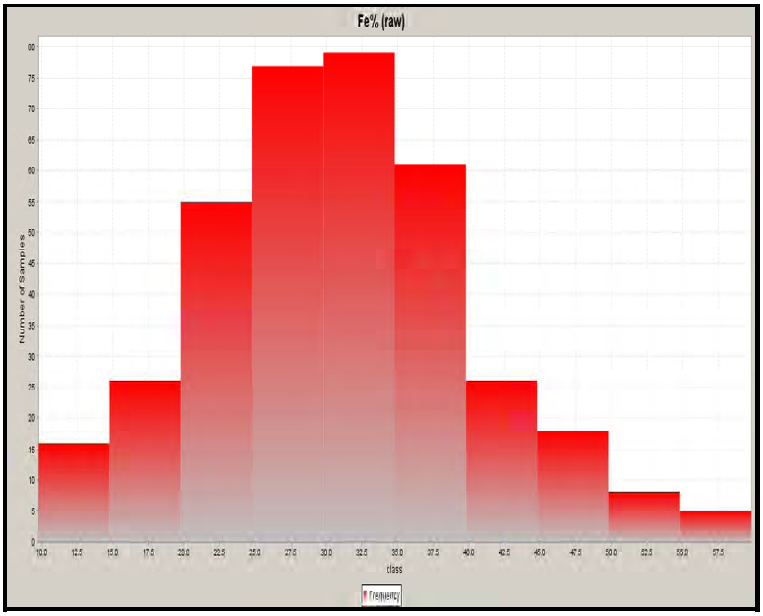


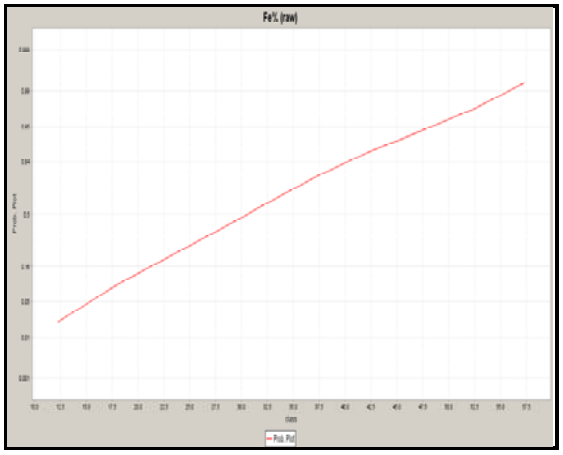
Target:	area1
Lithology:	Sar
Variable:	Fe(%)

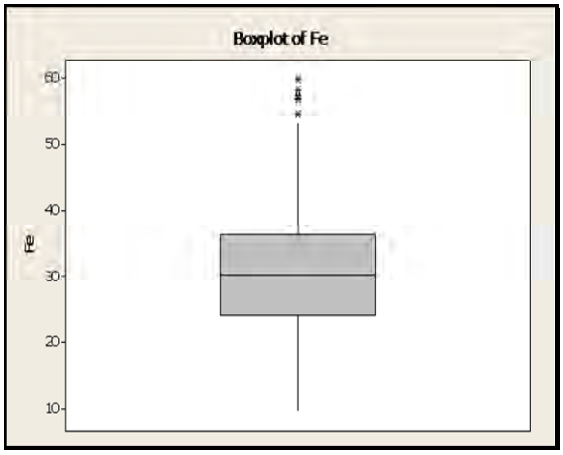
Sample Number:	371
Mínimum:	9.77
Maximum:	59.80
N° Classes (Sturges):	10
Interval (Sturges):	5.23

Quantiles	
2.5%:	13.00
5.0%:	15.45
25.0%:	24.30
Mediana:	30.30
75.0%:	36.25
95.0%:	47.80
97.5%:	51.75

Mean:	30.80
Variance:	86.83
Standard Deviation:	9.32
Coef. de variation:	30%
Range interquartil:	11.95





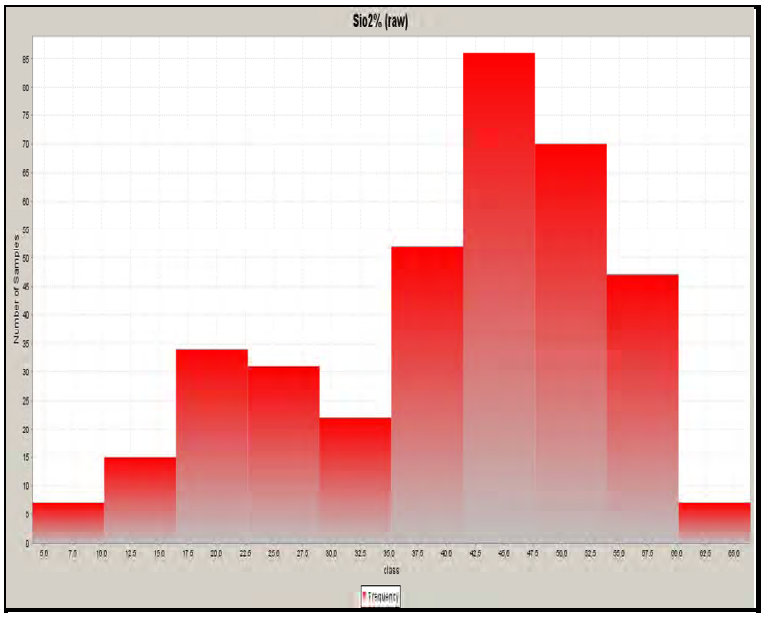


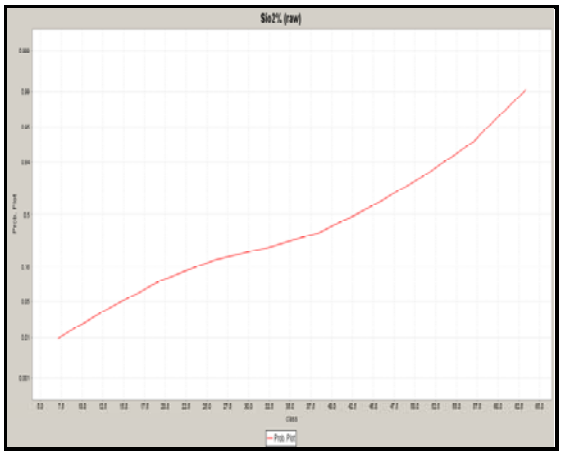
Target:	area1
Lithology:	Sar
Variable:	SiO2(%)

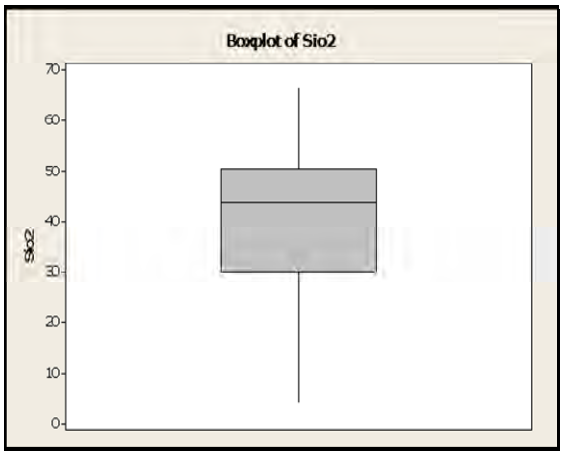
Sample Number:	371
Mínimum:	3.98
Maximum:	66.40
N° Classes (Sturges):	10
Interval (Sturges):	6.53

Quantiles	
2.5%:	11.65
5.0%:	14.40
25.0%:	30.00
Mediana:	43.60
75.0%:	50.35
95.0%:	58.55
97.5%:	59.55

Mean:	40.31
Variance:	185.04
Standard Deviation:	13.60
Coef. de variation:	34%
Range interquartil:	20.35





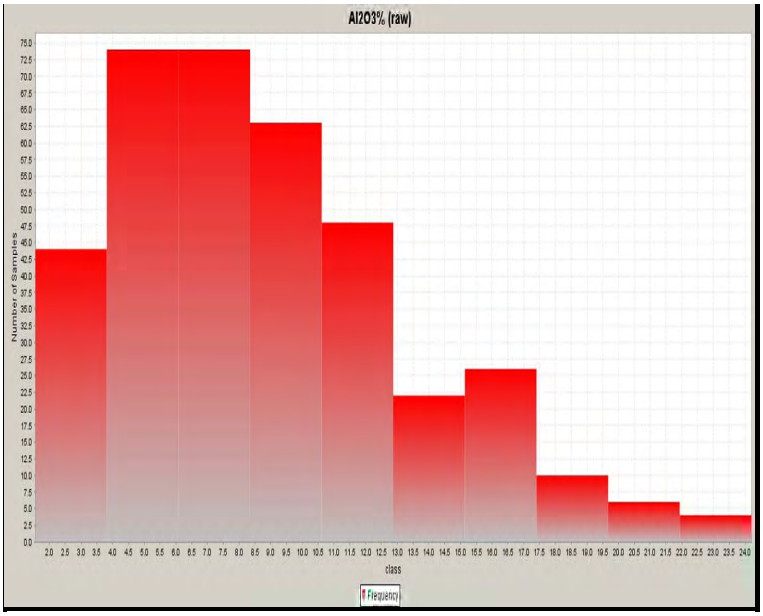


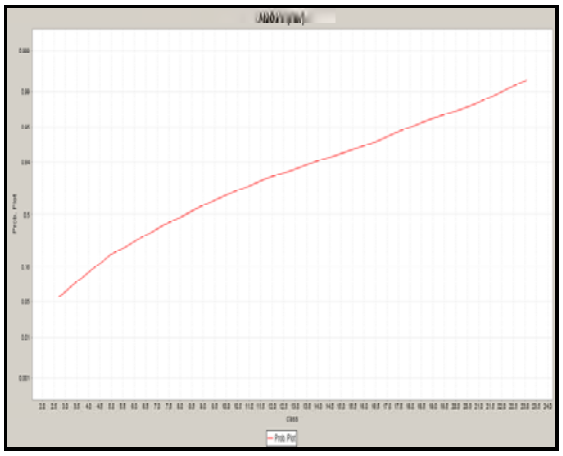
Target:	area1
Lithology:	Sar
Variable:	Al2O3(%)

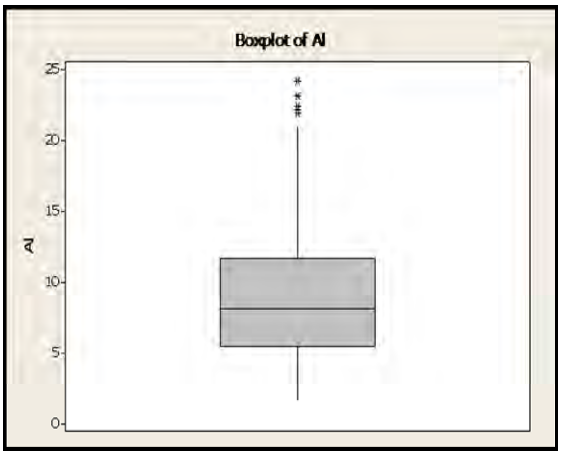
Sample Number:	371
Mínimum:	1.55
Maximum:	24.20
N° Classes (Sturges):	10
Interval (Sturges):	2.37

Quantiles	
2.5%:	2.42
5.0%:	2.81
25.0%:	5.45
Mediana:	8.10
75.0%:	11.65
95.0%:	17.60
97.5%:	19.90

Mean:	8.94
Variance:	21.06
Standard Deviation:	4.59
Coef. de variation:	51%
Range interquartil:	6.21





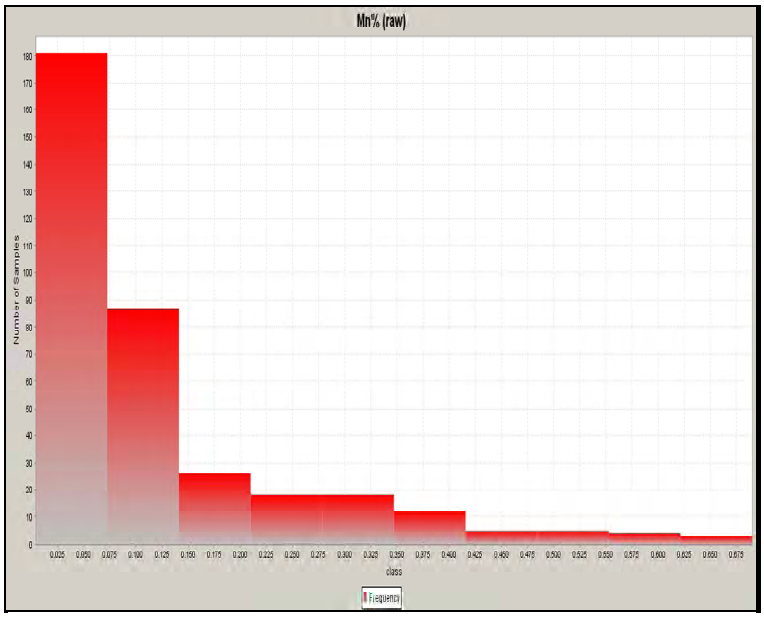


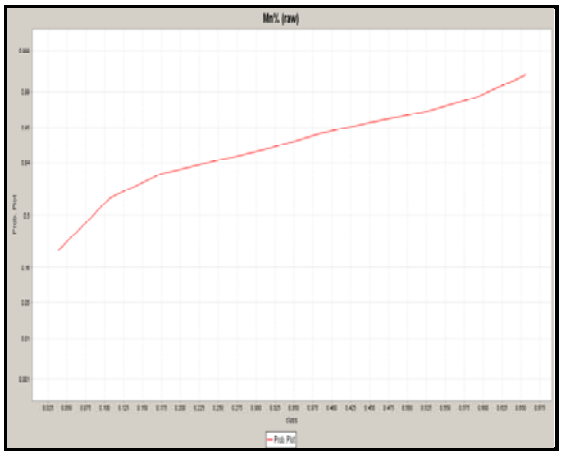
Target:	area1
Lithology:	Sar
Variable:	Mn(%)

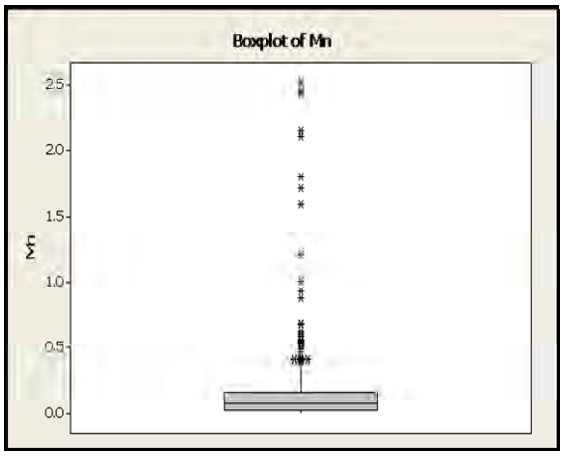
Sample Number:	359
Mínimum:	0.00
Maximum:	0.69
N° Classes (Sturges):	10
Interval (Sturges):	0.07

Quantiles	
2.5%:	0.01
5.0%:	0.01
25.0%:	0.03
Mediana:	0.07
75.0%:	0.15
95.0%:	0.41
97.5%:	0.54

Mean:	0.12
Variance:	0.02
Standard Deviation:	0.13
Coef. de variation:	109%
Range interquartil:	0.12





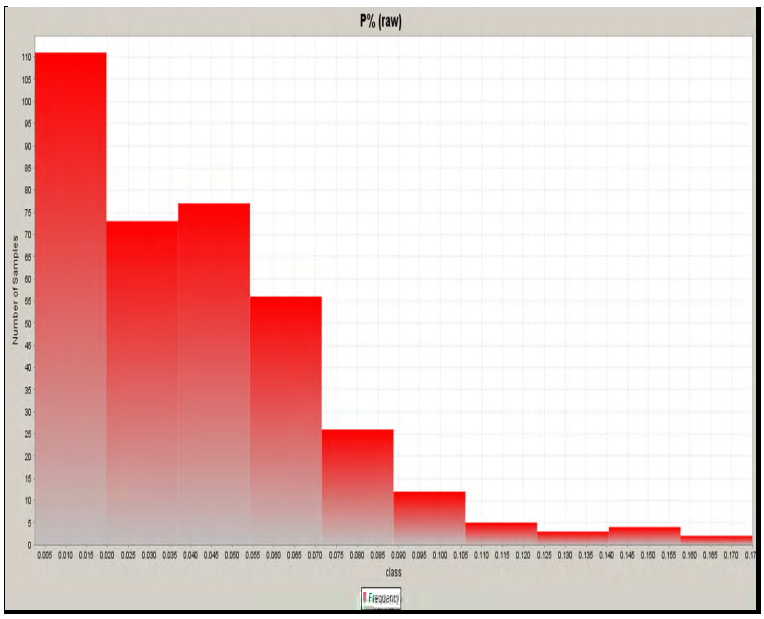


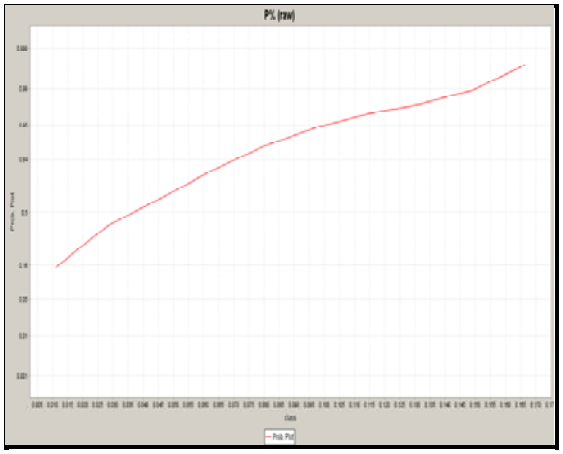
Target:	area1
Lithology:	Sar
Variable:	P(%)

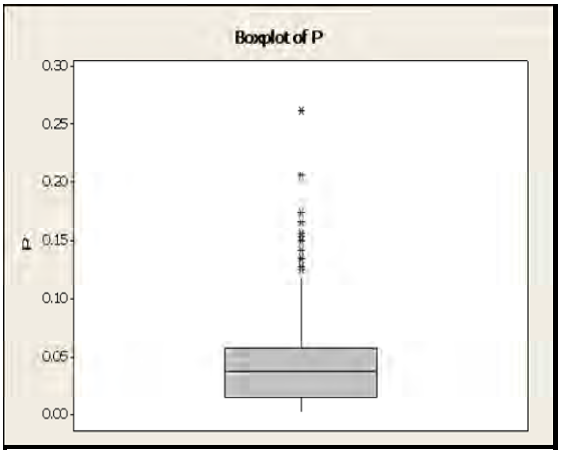
Sample Number:	369
Mínimum:	0.00
Maximum:	0.18
N° Classes (Sturges):	10
Interval (Sturges):	0.02

Quantiles	
2.5%:	0.00
5.0%:	0.01
25.0%:	0.02
Mediana:	0.04
75.0%:	0.06
95.0%:	0.10
97.5%:	0.12

Mean:	0.04
Variance:	0.00
Standard Deviation:	0.03
Coef. de variation:	76%
Range interquartil:	0.04





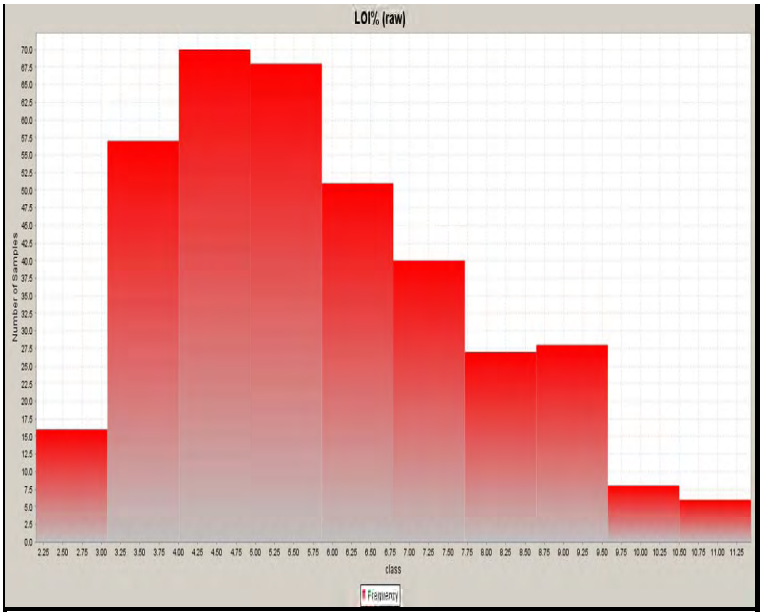


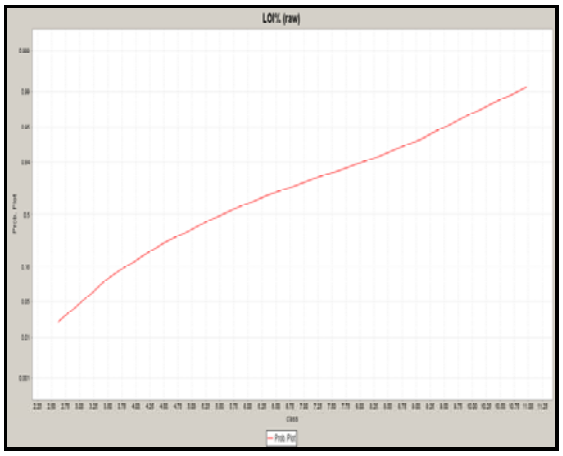
Target:	area1
Lithology:	Sar
Variable:	LOI(%)

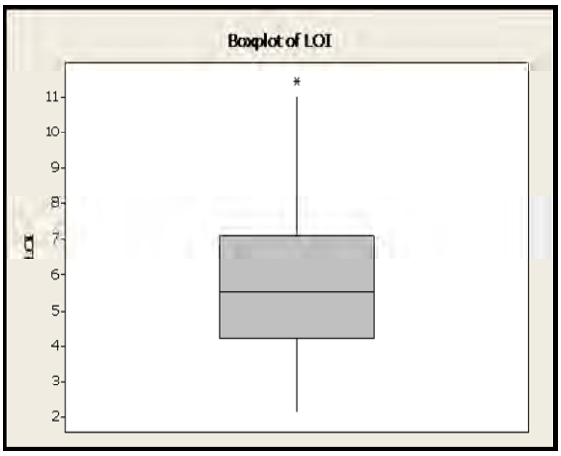
Sample Number:	371
Mínimum:	2.15
Maximum:	11.43
N° Classes (Sturges):	10
Interval (Sturges):	0.97

Quantiles	
2.5%:	2.75
5.0%:	3.19
25.0%:	4.24
Mediana:	5.54
75.0%:	7.09
95.0%:	9.31
97.5%:	9.92

Mean:	5.81
Variance:	3.77
Standard Deviation:	1.94
Coef. de variation:	33%
Range interquartil:	2.85







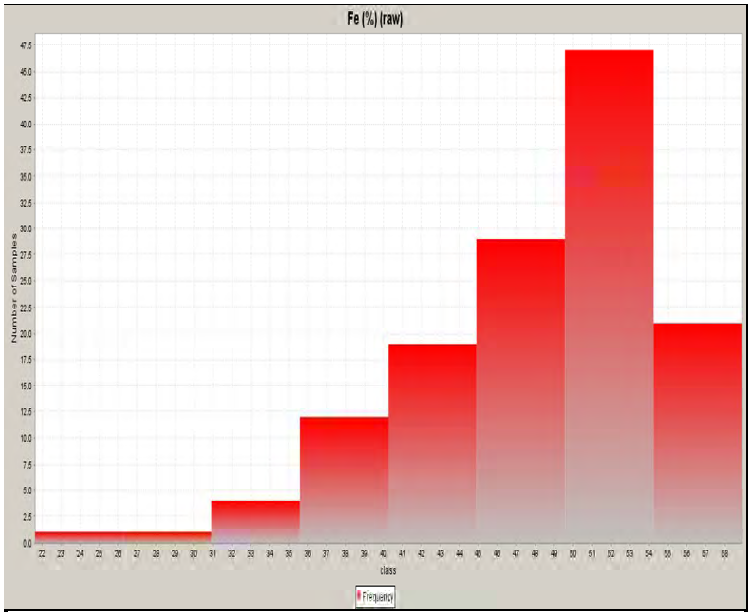
Litologia	Variável	Média	Variância	Desvio Padrão	CV	Nº Amostras	Lim. Inferior	Lim. Superior
Sol	Fe(%)	47,89	43,39	6,59	14%	134	21,60	58,90
	SiO2(%)	10,86	52,53	7,25	67%	134	3,00	50,20
	Al(%)	11,24	9,04	3,01	27%	134	5,97	18,50
	Mn(%) CAP	0,048	0,001	0,026	54%	134,000	0,004	0,200
	P(%) CAP	0,059	0,001	0,028	47%	134,000	0,015	0,186
	LOI(%)	8,589	2,547	1,596	19%	134,000	5,420	13,070
Sap	Fe(%)	37,41	116,71	10,80	29%	1 174	6,39	56,40
	SiO2(%) CAP	28,15	247,51	15,73	56%	1 174	1,68	71,90
	Al(%)	10,59	19,36	4,40	42%	1 174	1,65	27,90
	Mn(%) CAP	0,114	0,042	0,204	179%	1 174,000	0,004	3,190
	P(%) CAP	0,041	0,001	0,035	84%	1 174,000	0,003	0,368
	LOI(%)	6,946	4,198	2,049	29%	1 174,000	0,910	12,720
Sar	Fe(%)	33,80	82,95	9,32	27%	183	4,46	56,80
	SiO2(%)	39,03	190,56	9,32	35%	183	9,35	72,30
	Al(%)	6,76	8,20	9,32	42%	183	2,32	16,30
	Mn(%) CAP	0,177	0,048	9,318	124%	183,000	0,004	1,540
	P(%) CAP	0,032	0,001	9,318	92%	183,000	0,007	0,309
	LOI(%)	5,204	3,429	9,318	36%	183,000	1,730	10,460

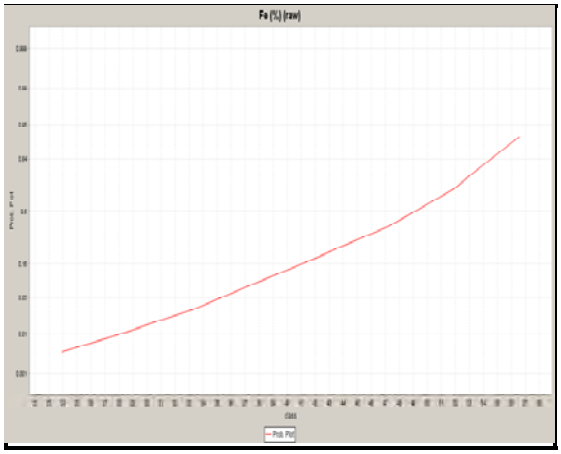
Target:	area2
Lithology:	Sol
Variable:	Fe (%)

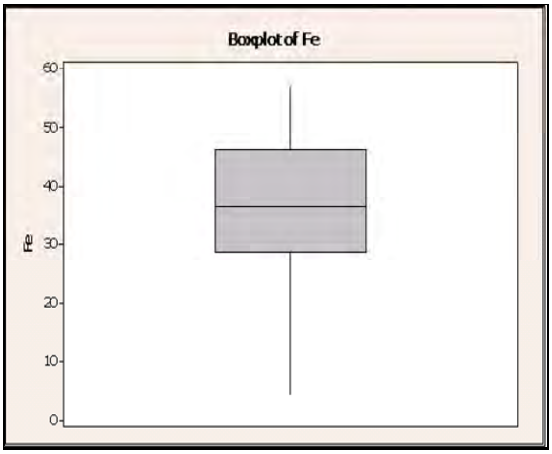
Sample Number:	134
Mínimum:	21.60
Maximum:	58.90
N° Classes (Sturges):	8
Interval (Sturges):	4.61

Quantiles	
2.5%:	33.60
5.0%:	35.85
25.0%:	44.30
Median:	49.60
75.0%:	52.30
95.0%:	56.15
97.5%:	56.90

Mean:	47.89
Variance:	43.39
Standard Deviation:	6.59
Coef. de variation:	14%
Range interquartil:	8.00





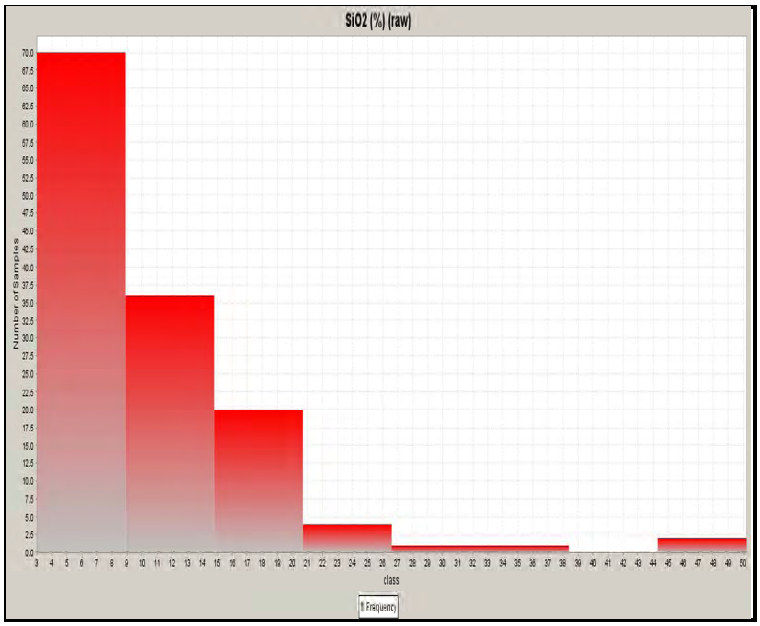


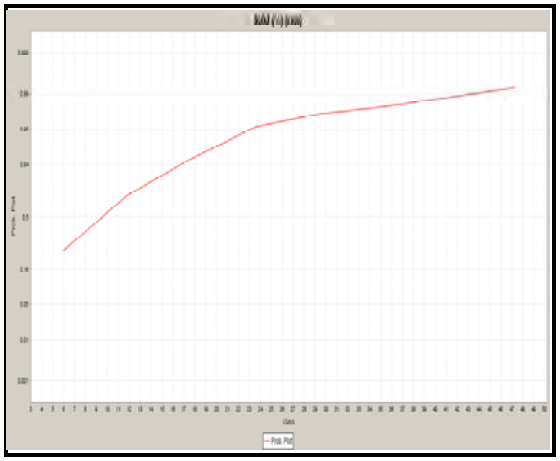
Target:	area2
Lithology:	Sol
Variable:	SiO2 (%)

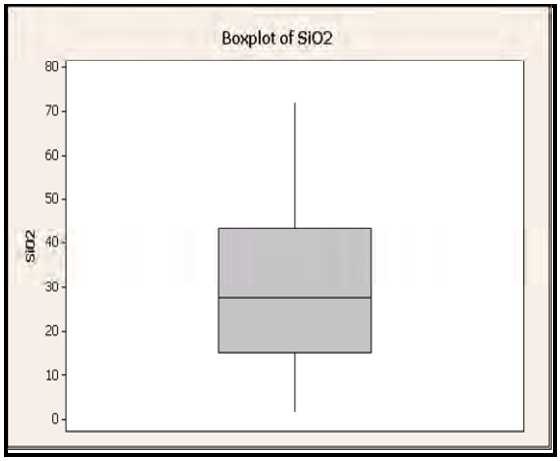
Sample Number:	134
Mínimum:	3.00
Maximum:	50.20
N° Classes (Sturges):	8
Interval (Sturges):	5.84

Quantiles	
2.5%:	3.74
5.0%:	4.29
25.0%:	6.61
Median:	8.65
75.0%:	13.00
95.0%:	22.20
97.5%:	34.60

Mean:	10.86
Variance:	52.53
Standard Deviation:	7.25
Coef. de variation:	67%
Range interquartil:	6.39





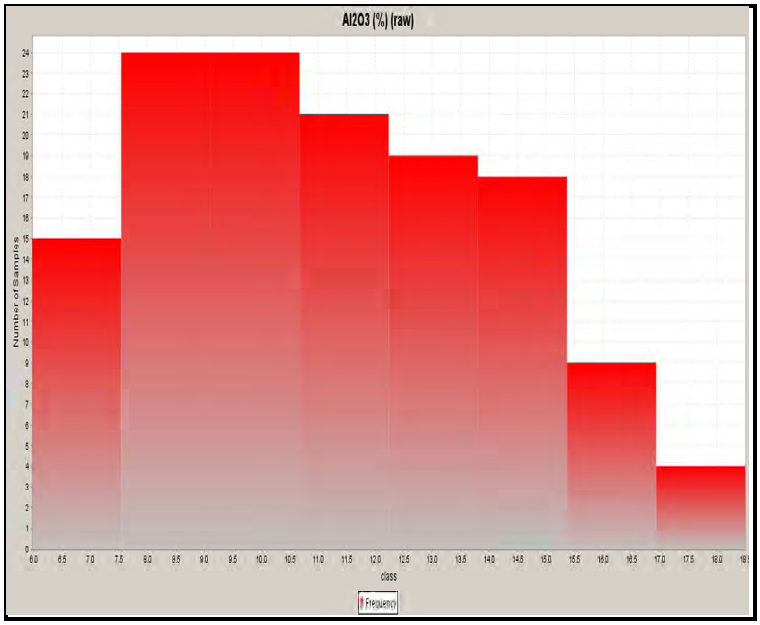


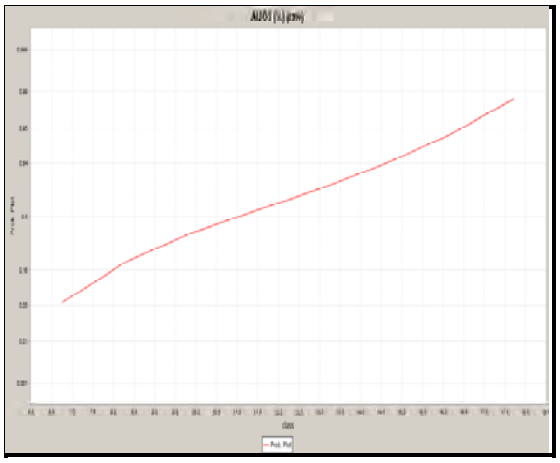
Target:	area2
Lithology:	Sol
Variable:	Al2O3 (%)

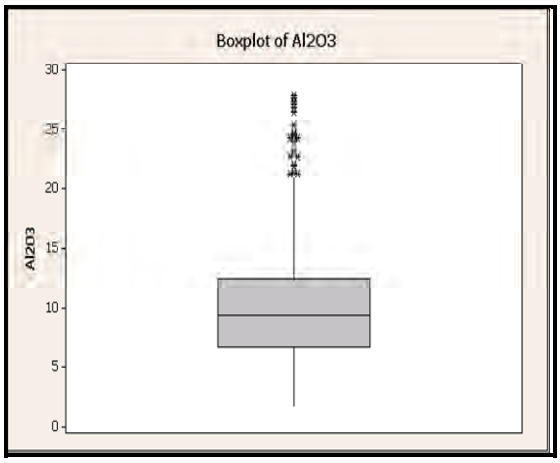
Sample Number:	134
Mínimum:	5.97
Maximum:	18.50
N° Classes (Sturges):	8
Interval (Sturges):	1.55

Quantiles	
2.5%:	6.51
5.0%:	6.92
25.0%:	8.98
Median:	10.95
75.0%:	13.40
95.0%:	16.45
97.5%:	17.15

Mean:	11.24
Variance:	9.04
Standard Deviation:	3.01
Coef. de variation:	27%
Range interquartil:	4.42





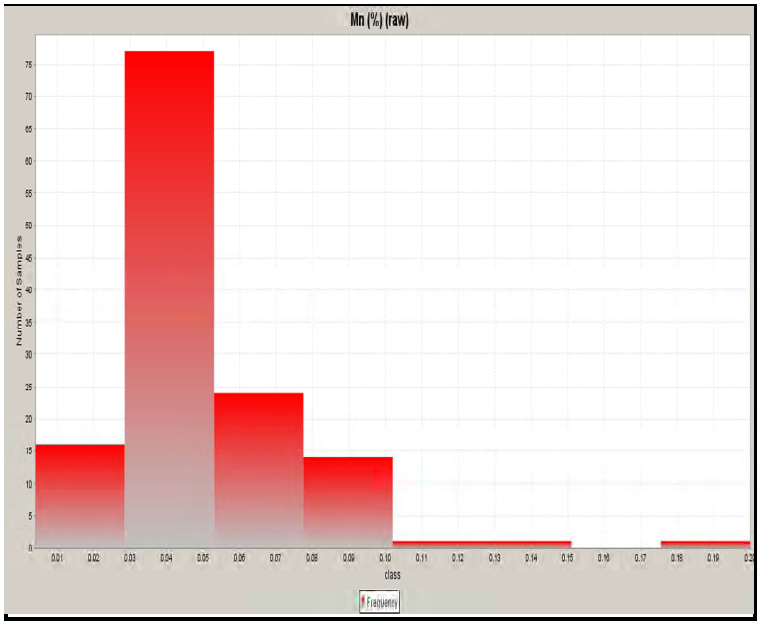


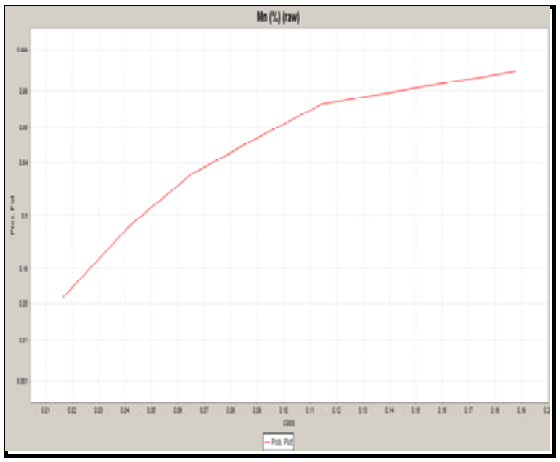
Target:	area2
Lithology:	Sol
Variable:	Mn (%)

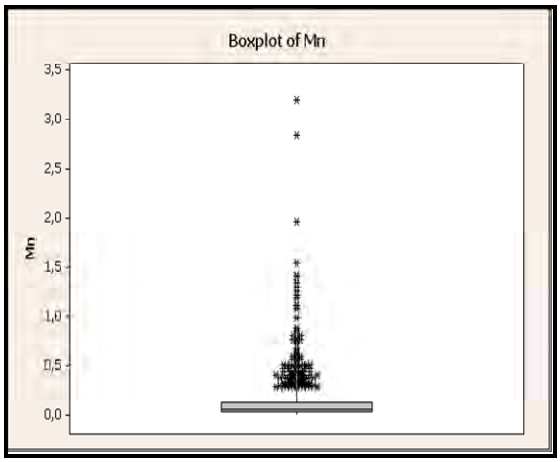
Sample Number:	134
Mínimum:	0.00
Maximum:	0.20
N° Classes (Sturges):	8
Interval (Sturges):	0.02

Quantiles	
2.5%:	0.01
5.0%:	0.01
25.0%:	0.03
Median:	0.04
75.0%:	0.06
95.0%:	0.09
97.5%:	0.11

Mean:	0.05
Variance:	0.00
Standard Deviation:	0.03
Coef. de variation:	54%
Range interquartil:	0.03





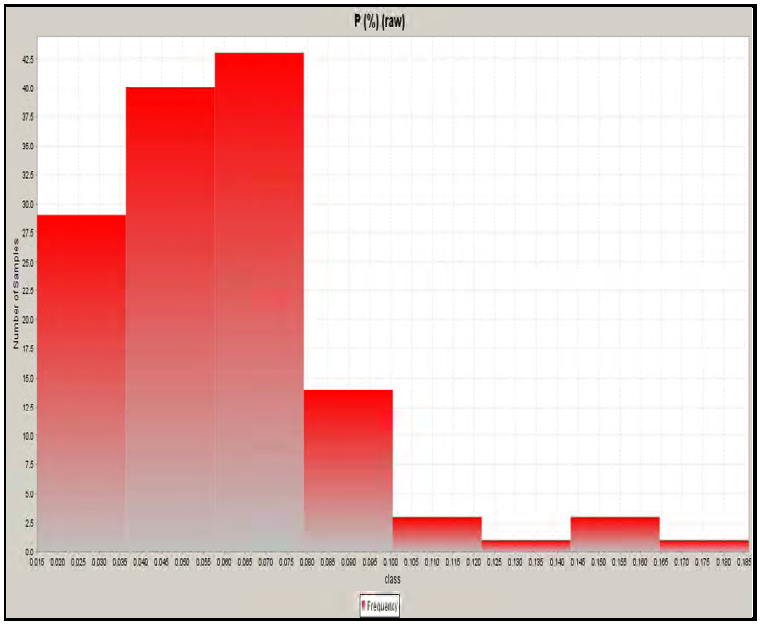


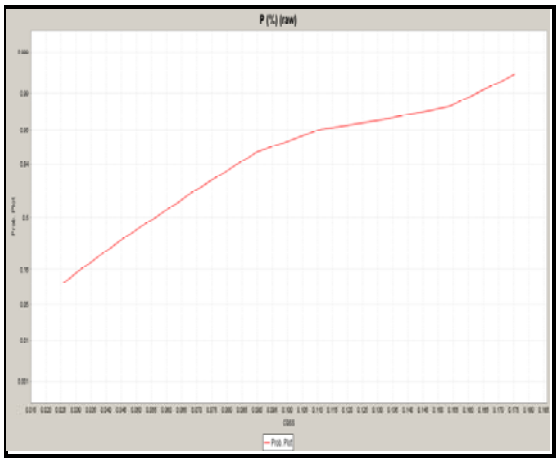
Target:	area2
Lithology:	Sol
Variable:	P (%)

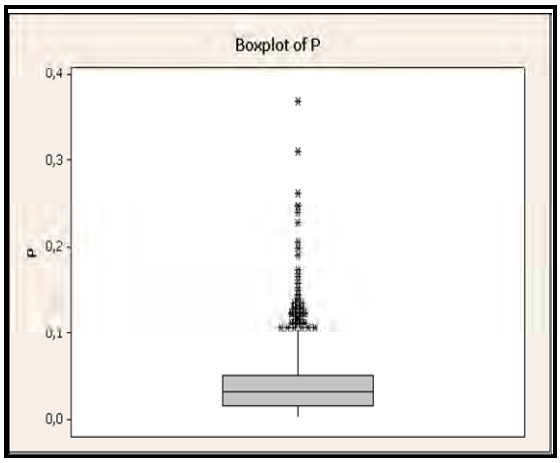
Sample Number:	134
Mínimum:	0.02
Maximum:	0.19
N° Classes (Sturges):	8
Interval (Sturges):	0.02

Quantiles	
2.5%:	0.02
5.0%:	0.02
25.0%:	0.04
Median:	0.06
75.0%:	0.07
95.0%:	0.11
97.5%:	0.15

Mean:	0.06
Variance:	0.00
Standard Deviation:	0.03
Coef. de variation:	47%
Range interquartil:	0.03





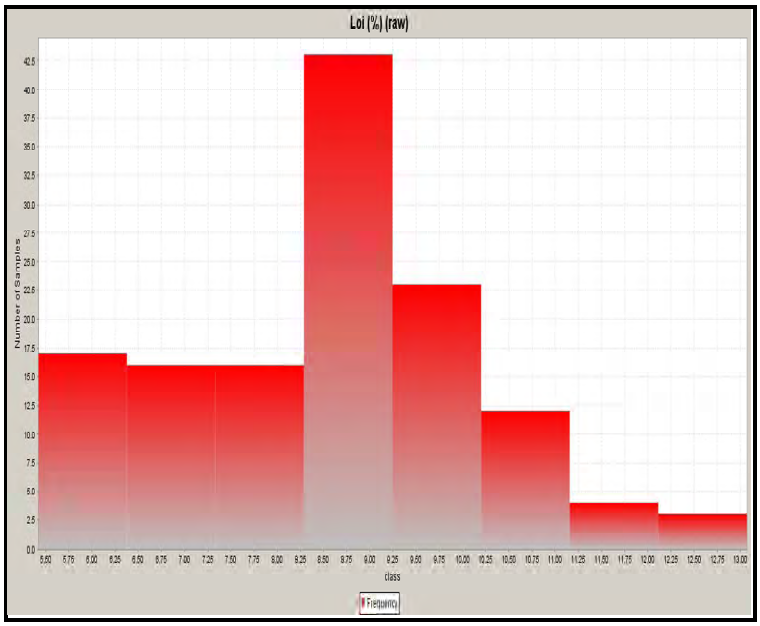


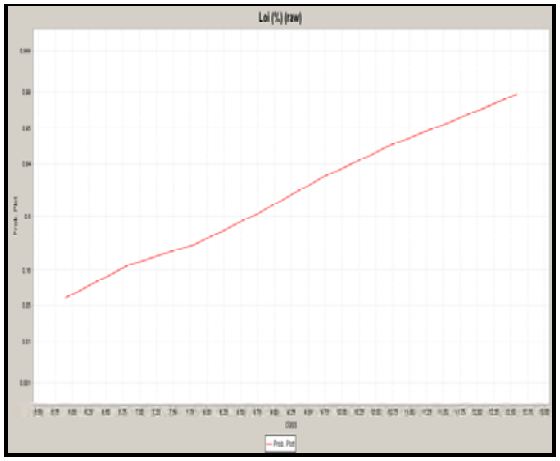
Target:	area2
Lithology:	Sol
Variable:	Loi (%)

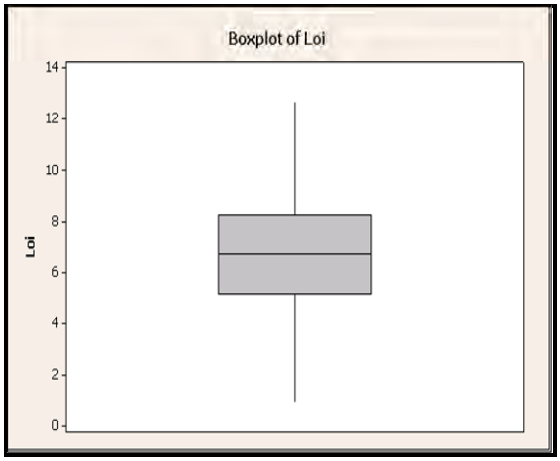
Sample Number:	134
Mínimum:	5.42
Maximum:	13.07
N° Classes (Sturges):	8
Interval (Sturges):	0.95

Quantiles	
2.5%:	5.65
5.0%:	5.97
25.0%:	7.36
Median:	8.65
75.0%:	9.60
95.0%:	11.11
97.5%:	12.08

Mean:	8.59
Variance:	2.55
Standard Deviation:	1.60
Coef. de variation:	19%
Range interquartil:	2.24





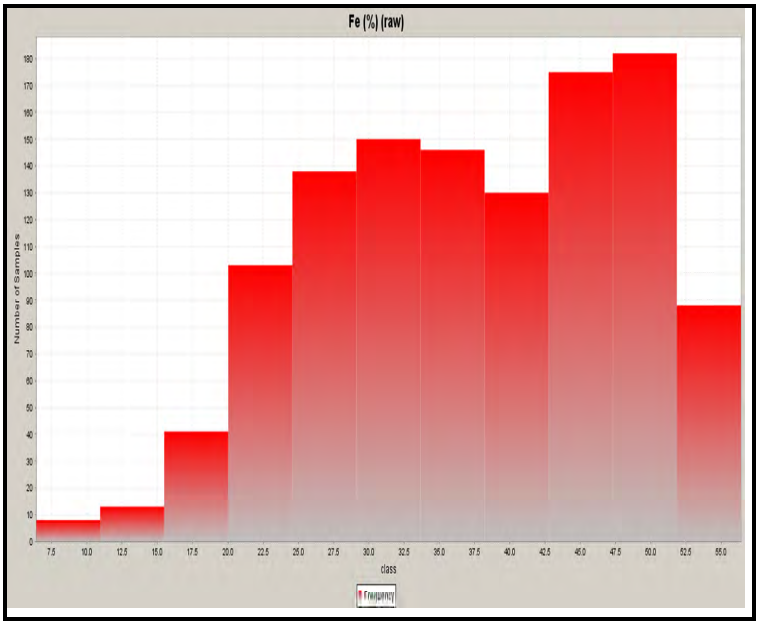


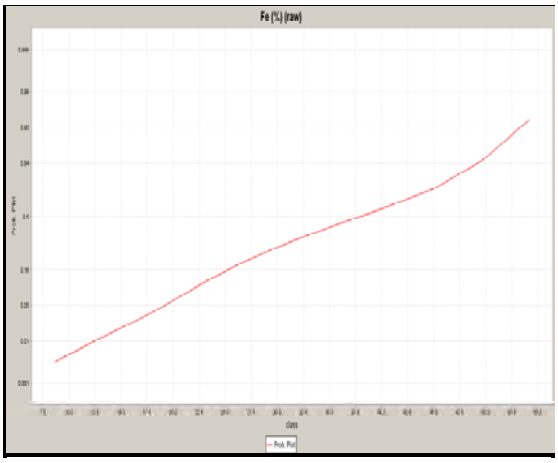
Target:	area2
Lithology:	Sap
Variable:	Fe (%)

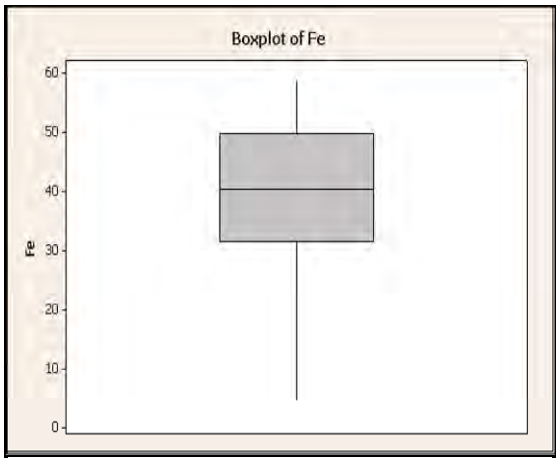
Sample Number:	1 174
Mínimum:	6.39
Maximum:	56.40
N° Classes (Sturges):	11
Interval (Sturges):	4.45

Quantiles	
2.5%:	16.50
5.0%:	19.15
25.0%:	28.80
Median:	37.65
75.0%:	46.80
95.0%:	52.70
97.5%:	54.20

Mean:	37.41
Variance:	116.71
Standard Deviation:	10.80
Coef. de variation:	29%
Range interquartil:	18.00





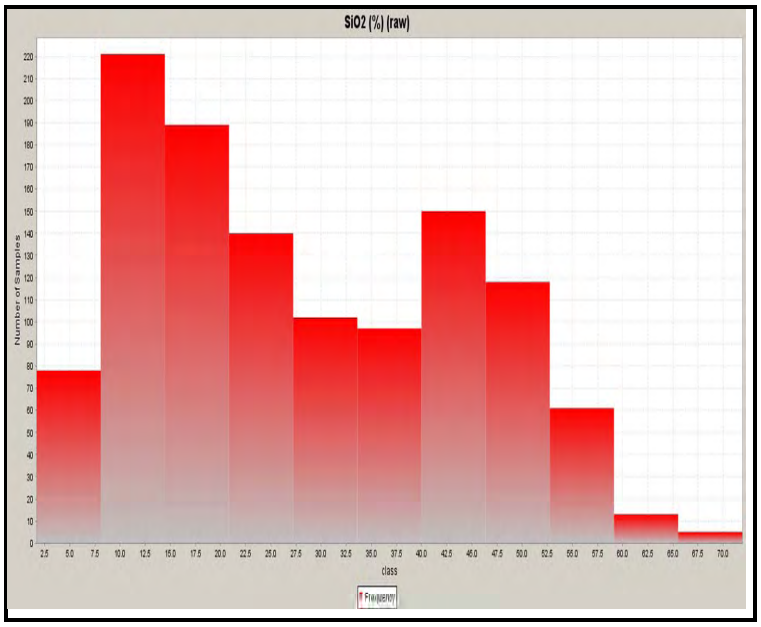


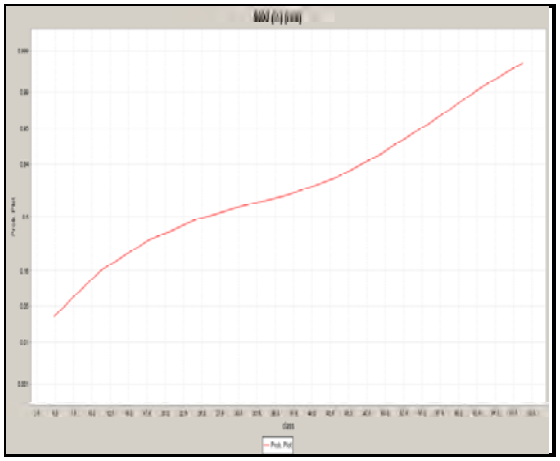
Target:	area2
Lithology:	Sap
Variable:	SiO2 (%)

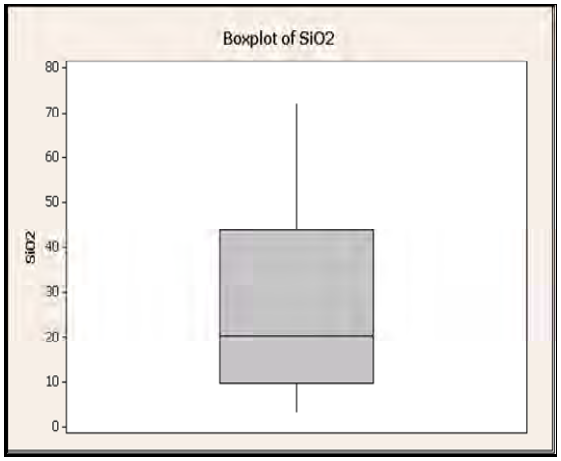
Sample Number:	1 174
Mínimum:	1.68
Maximum:	71.90
N° Classes (Sturges):	11
Interval (Sturges):	6.25

Quantiles	
2.5%:	5.27
5.0%:	7.29
25.0%:	14.30
Median:	24.50
75.0%:	42.50
95.0%:	54.60
97.5%:	57.00

Mean:	28.15
Variance:	247.51
Standard Deviation:	15.73
Coef. de variation:	56%
Range interquartil:	28.20





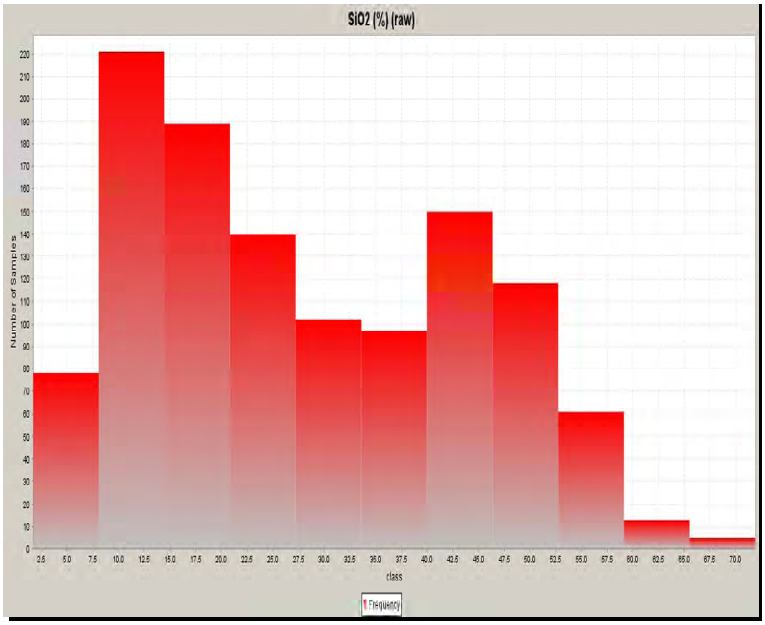


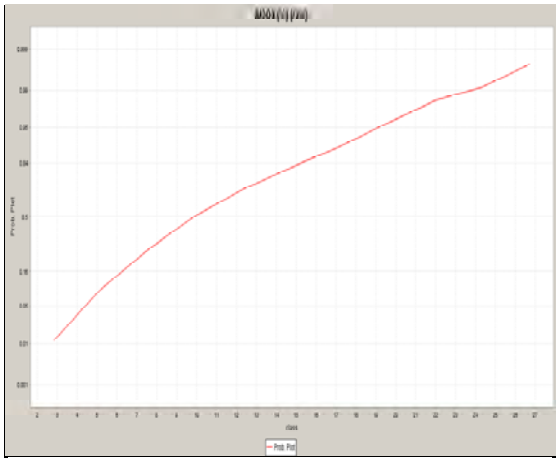
Target:	area2
Lithology:	Sap
Variable:	Al2O3 (%)

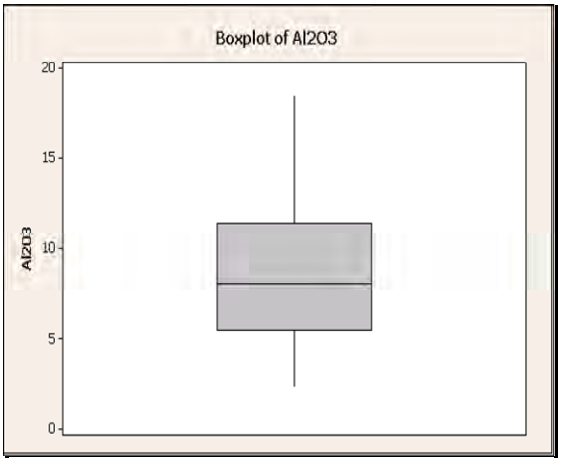
Sample Number:	1 174
Mínimum:	1.65
Maximum:	27.90
N° Classes (Sturges):	11
Interval (Sturges):	2.34

Quantiles	
2.5%:	4.05
5.0%:	4.65
25.0%:	7.43
Median:	9.89
75.0%:	13.00
95.0%:	18.95
97.5%:	20.55

Mean:	10.59
Variance:	19.36
Standard Deviation:	4.40
Coef. de variation:	42%
Range interquartil:	5.57





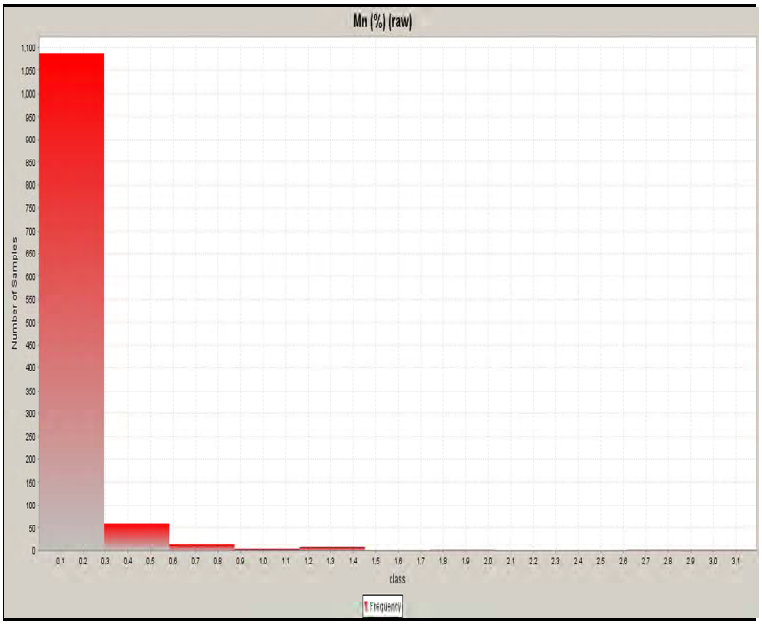


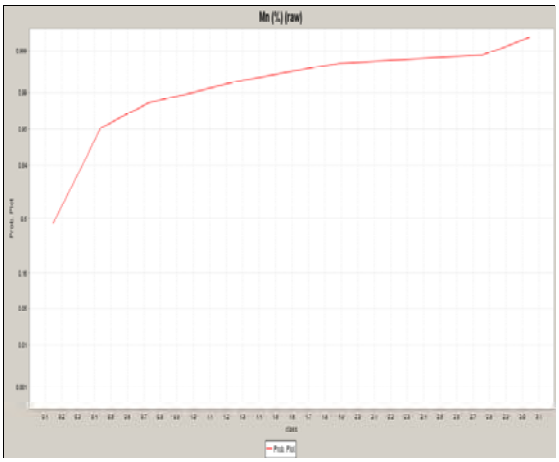
Target:	area2
Lithology:	Sap
Variable:	Mn (%)

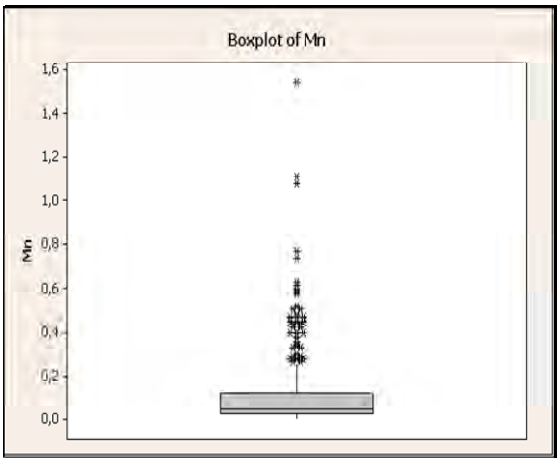
Sample Number:	1 174
Mínimum:	0.00
Maximum:	3.19
N° Classes (Sturges):	11
Interval (Sturges):	0.28

Quantiles	
2.5%:	0.00
5.0%:	0.00
25.0%:	0.03
Median:	0.06
75.0%:	0.12
95.0%:	0.38
97.5%:	0.56

Mean:	0.11
Variance:	0.04
Standard Deviation:	0.20
Coef. de variation:	179%
Range interquartil:	0.09





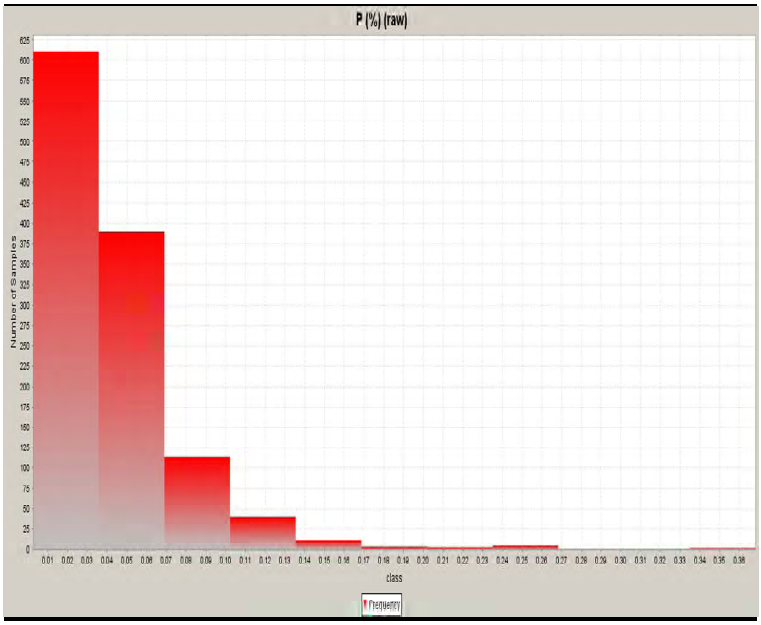


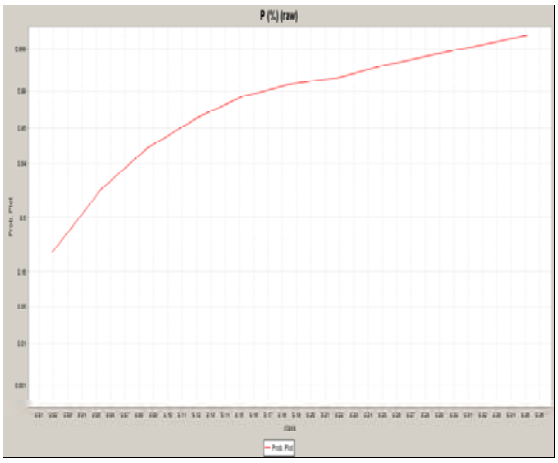
Target:	area2
Lithology:	Sap
Variable:	P (%)

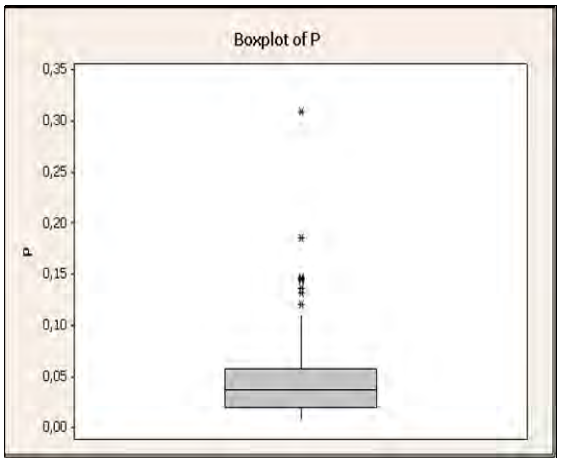
Sample Number:	1 174
Mínimum:	0.00
Maximum:	0.37
N° Classes (Sturges):	11
Interval (Sturges):	0.03

Quantiles	
2.5%:	0.01
5.0%:	0.01
25.0%:	0.02
Median:	0.04
75.0%:	0.05
95.0%:	0.11
97.5%:	0.13

Mean:	0.04
Variance:	0.00
Standard Deviation:	0.03
Coef. de variation:	84%
Range interquartil:	0.04





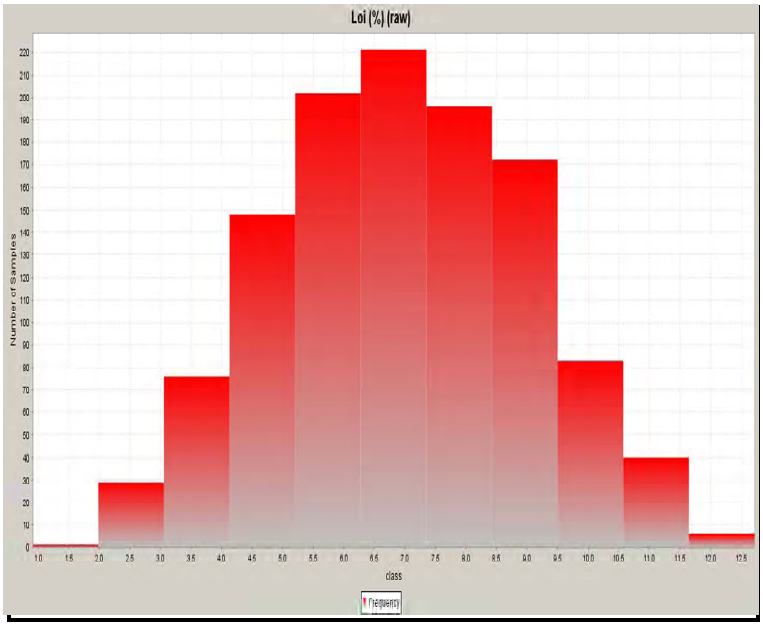


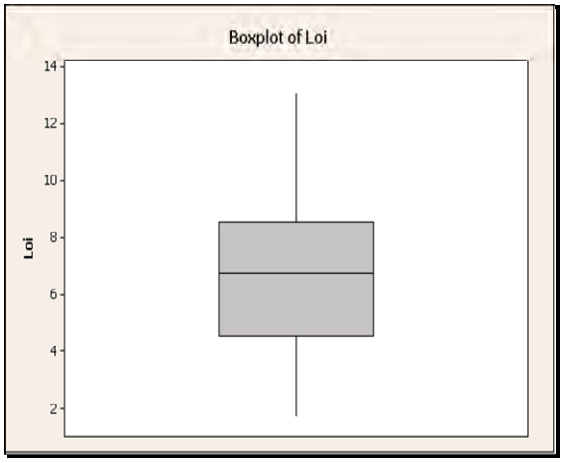
Target:	area2
Lithology:	Sap
Variable:	Loi (%)

Sample Number:	1 174
Mínimum:	0.91
Maximum:	12.72
N° Classes (Sturges):	11
Interval (Sturges):	1.05

Quantiles	
2.5%:	3.04
5.0%:	3.58
25.0%:	5.41
Median:	6.98
75.0%:	8.46
95.0%:	10.41
97.5%:	10.93

Mean:	6.95
Variance:	4.20
Standard Deviation:	2.05
Coef. de variation:	29%
Range interquartil:	3.05



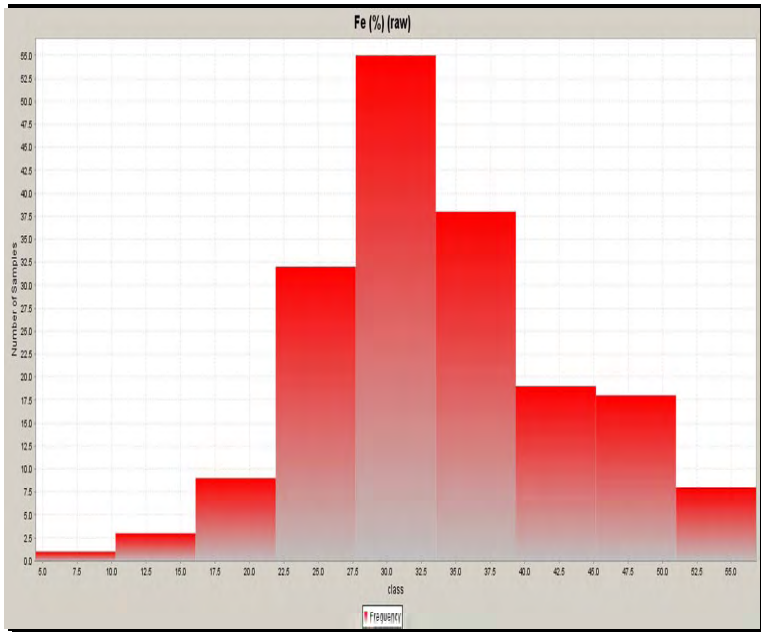


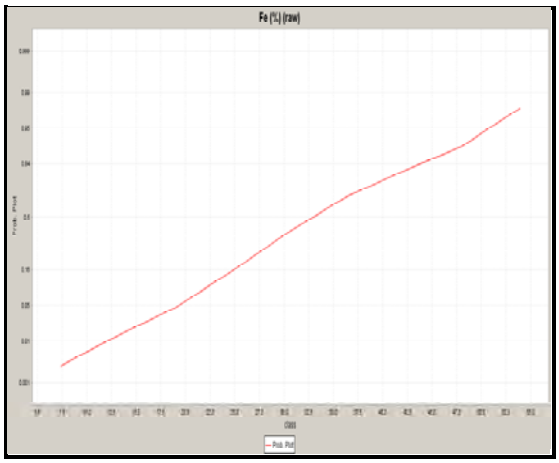
Target:	area2
Lithology:	Sar
Variable:	Fe (%)

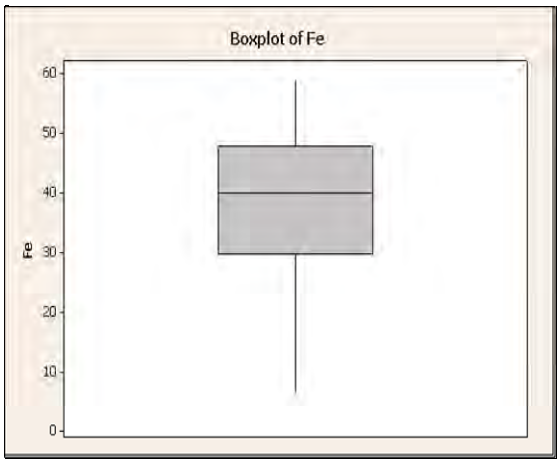
Sample Number:	183
Mínimum:	4.46
Maximum:	56.80
N° Classes (Sturges):	9
Interval (Sturges):	6.13

Quantiles	
2.5%:	16.65
5.0%:	19.65
25.0%:	27.90
Mediana:	33.20
75.0%:	39.10
95.0%:	50.70
97.5%:	51.30

Mean:	33.80
Variance:	82.95
Standard Deviation:	9.32
Coef. de variation:	27%
Range interquartil:	11.20





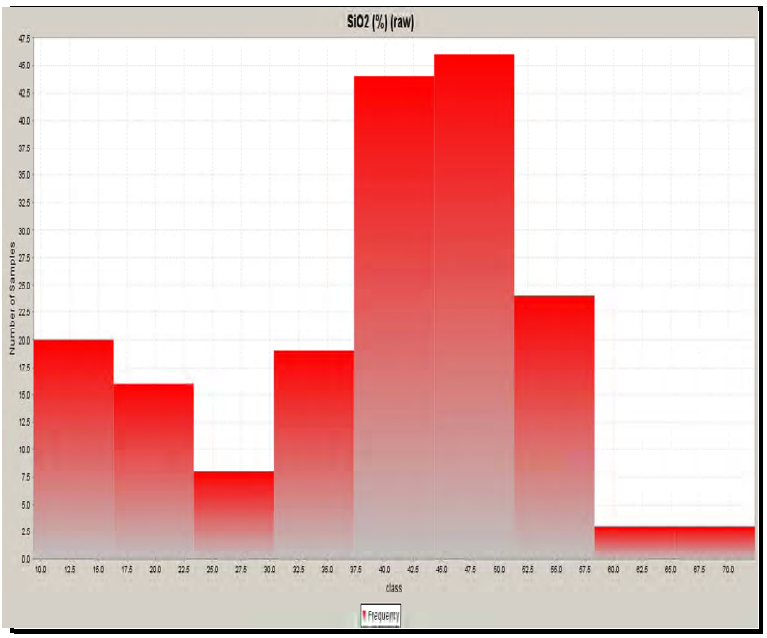


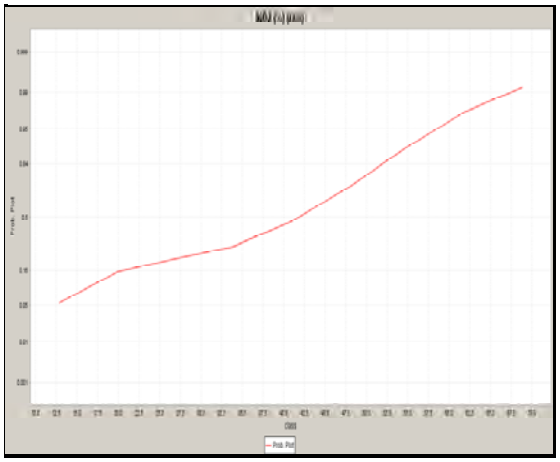
Target:	area2
Lithology:	Sar
Variable:	SiO2 (%)

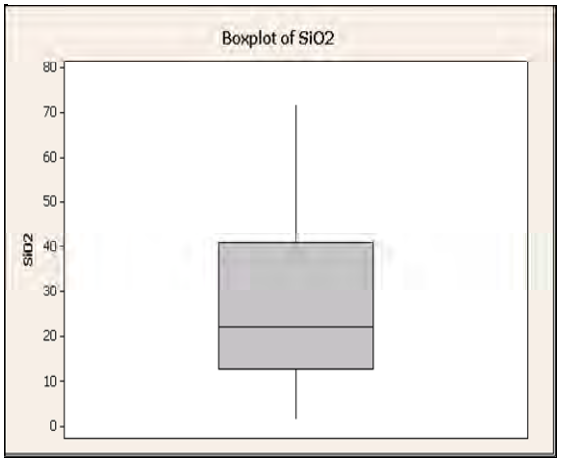
Sample Number:	183
Mínimum:	9.35
Maximum:	72.30
N° Classes (Sturges):	9
Interval (Sturges):	7.37

Quantiles	
2.5%:	12.05
5.0%:	13.20
25.0%:	32.40
Mediana:	42.10
75.0%:	48.65
95.0%:	56.70
97.5%:	60.75

Mean:	39.03
Variance:	190.56
Standard Deviation:	9.32
Coef. de variation:	35%
Range interquartil:	16.25





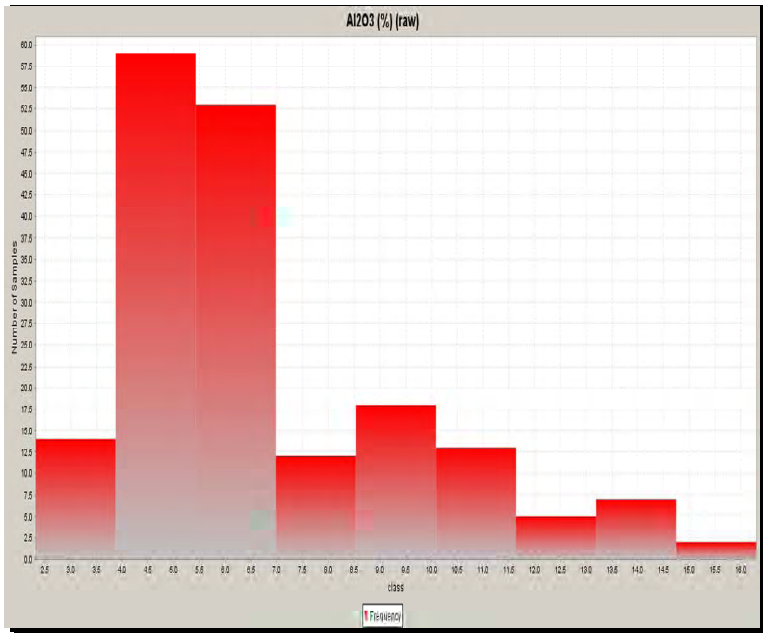


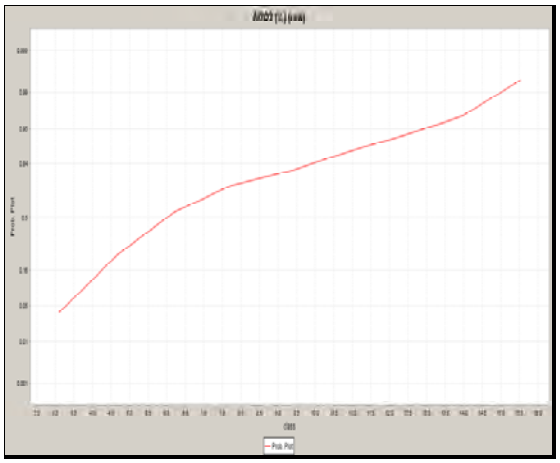
Target:	area2
Lithology:	Sar
Variable:	Al2O3 (%)

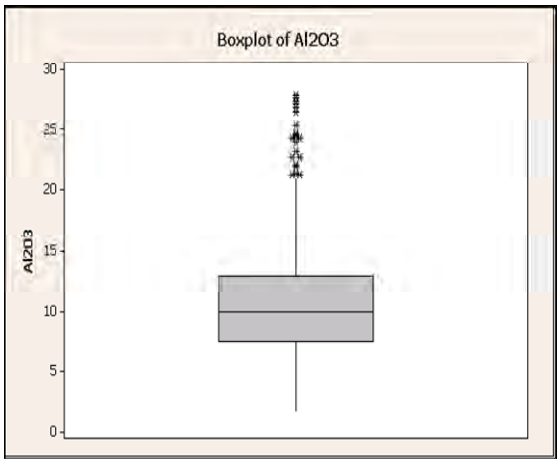
Sample Number:	183
Mínimum:	2.32
Maximum:	16.30
N° Classes (Sturges):	9
Interval (Sturges):	1.64

Quantiles	
2.5%:	3.46
5.0%:	3.61
25.0%:	4.75
Mediana:	5.91
75.0%:	8.14
95.0%:	13.20
97.5%:	14.05

Mean:	6.76
Variance:	8.20
Standard Deviation:	9.32
Coef. de variation:	42%
Range interquartil:	3.40





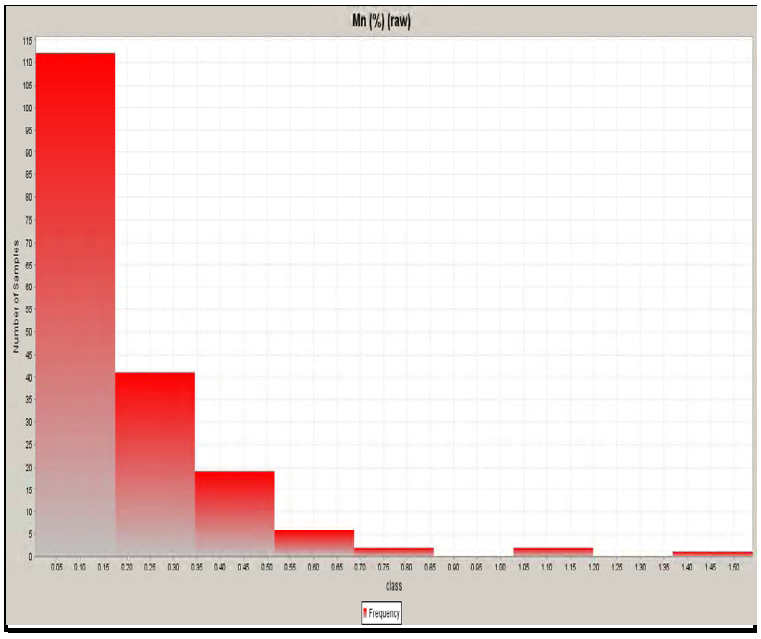


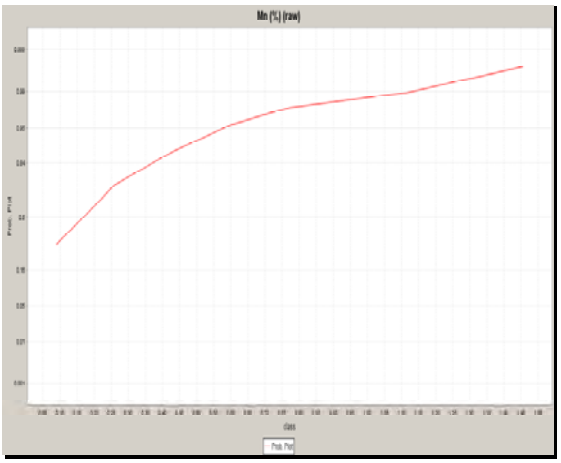
Target:	area2
Lithology:	Sar
Variable:	Mn (%)

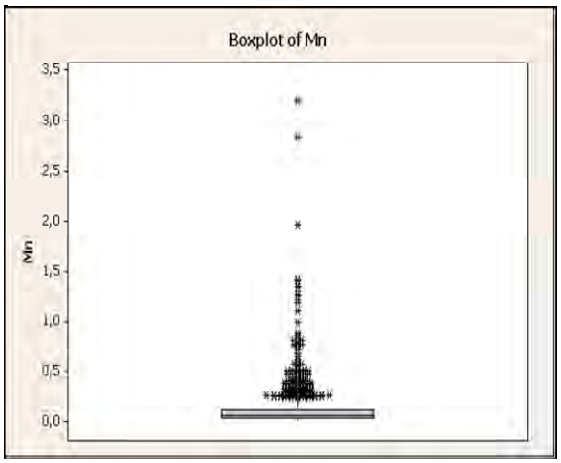
Sample Number:	183
Mínimum:	0.00
Maximum:	1.54
N° Classes (Sturges):	9
Interval (Sturges):	0.18

Quantiles	
2.5%:	0.00
5.0%:	0.00
25.0%:	0.03
Mediana:	0.09
75.0%:	0.25
95.0%:	0.59
97.5%:	0.69

Mean:	0.18
Variance:	0.05
Standard Deviation:	9.32
Coef. de variation:	124%
Range interquartil:	0.22





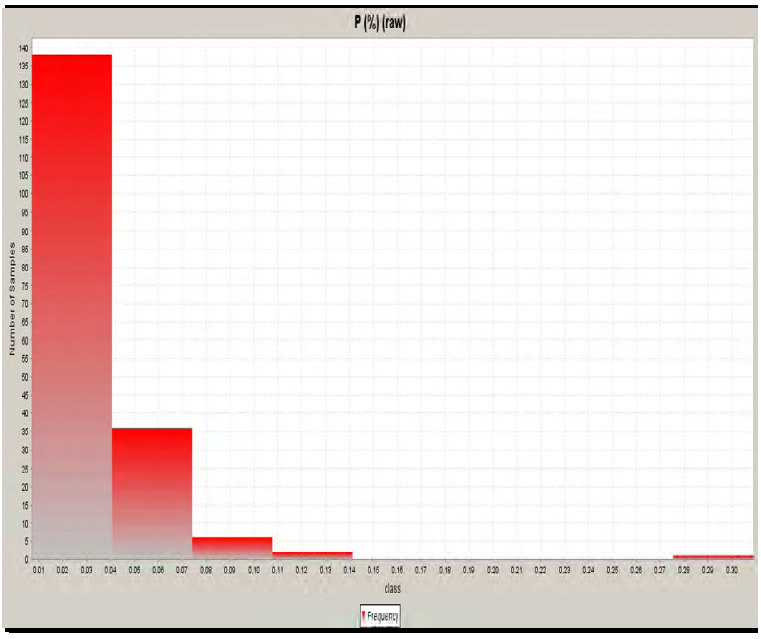


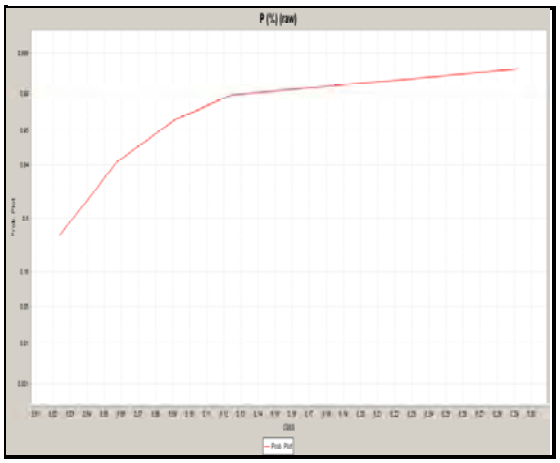
Target:	area2
Lithology:	Sar
Variable:	P (%)

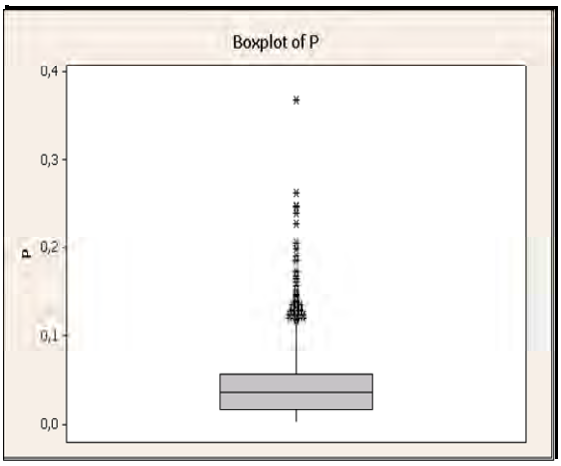
Sample Number:	183
Mínimum:	0.01
Maximum:	0.31
N° Classes (Sturges):	9
Interval (Sturges):	0.04

Quantiles	
2.5%:	0.01
5.0%:	0.01
25.0%:	0.01
Mediana:	0.03
75.0%:	0.04
95.0%:	0.07
97.5%:	0.08

Mean:	0.03
Variance:	0.00
Standard Deviation:	9.32
Coef. de variation:	92%
Range interquartil:	0.03





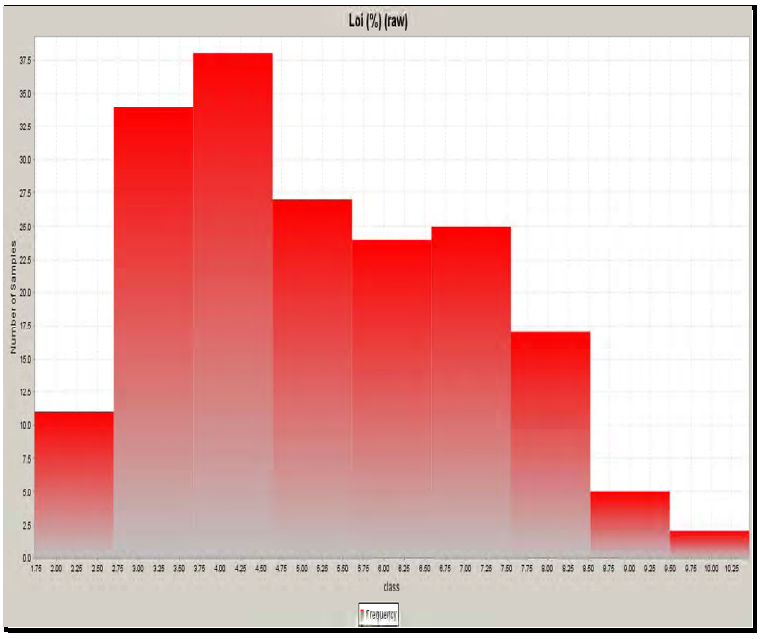


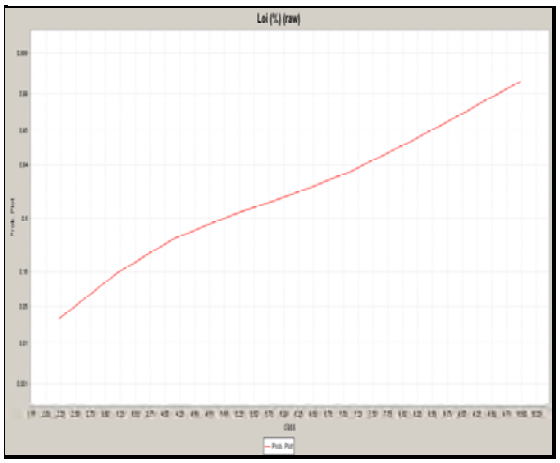
Target:	area2
Lithology:	Sar
Variable:	Loi (%)

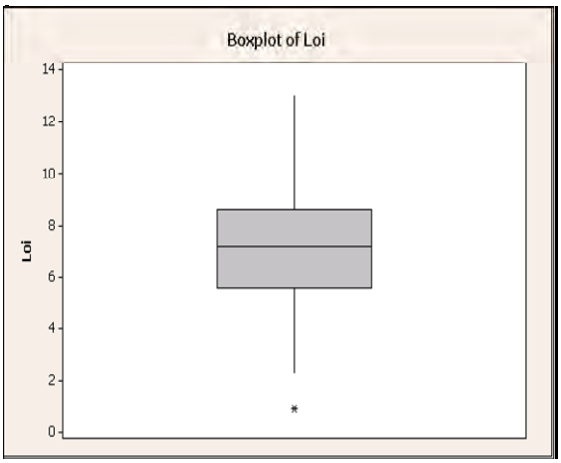
Sample Number:	183
Mínimum:	1.73
Maximum:	10.46
N° Classes (Sturges):	9
Interval (Sturges):	1.02

Quantiles	
2.5%:	2.32
5.0%:	2.58
25.0%:	3.73
Mediana:	5.02
75.0%:	6.72
95.0%:	8.17
97.5%:	8.84

Mean:	5.20
Variance:	3.43
Standard Deviation:	9.32
Coef. de variation:	36%
Range interquartil:	3.00







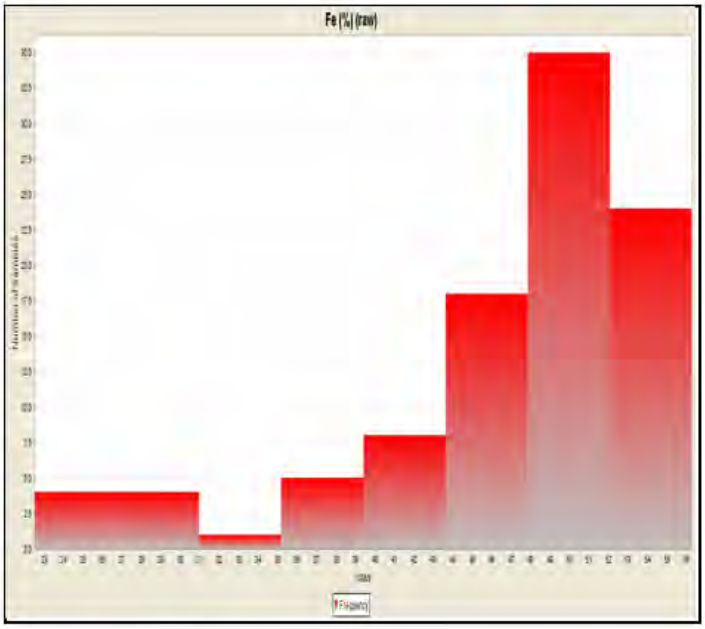
Litologia	Variável	Média	Variância	Desvio Padrão	CV	Nº Amostras	Lim. Inferior	Lim. Superior
COB	Fe(%) CAP	48,80	83,56	9,14	19%	99	22,50	56,30
	SiO2(%)	8,93	137,65	11,73	85%	101	4,46	39,40
	Al(%)	10,83	10,77	3,28	30%	103	5,94	19,00
	Mn(%)	0,020	0,057	0,239	400%	103	0,004	0,105
	P(%)	0,038	0,000	0,021	49%	101	0,008	0,080
	LOI(%) CAP	7,340	2,741	1,656	23%	100	4,166	10,935
SAP	Fe(%) CAP	39,90	223,07	14,94	43%	305	10,30	52,90
	SiO2(%) CAP	25,40	387,65	19,69	63%	356	5,82	79,50
	Al(%)	10,50	33,64	5,80	48%	355	4,04	23,90
	Mn(%)	0,010	0,001	0,039	164%	356	0,004	0,080
	P(%)	0,017	0,001	0,023	83%	353	0,003	0,070
	LOI(%)	5,315	4,056	2,014	37%	364	1,250	9,380
SAR	Fe(%) CAP	25,40	90,27	9,50	34%	1 538	13,80	50,00
	SiO2(%) CAP	52,40	210,10	14,49	30%	1 529	10,30	63,50
	Al(%)	6,78	13,71	3,70	47%	1 568	1,92	14,10
	Mn(%)	0,010	0,011	0,103	223%	1 570	0,004	0,190
	P(%)	0,017	0,000	0,016	75%	1 555	0,003	0,050
	LOI(%)	3,420	2,303	1,518	39%	1 566	0,990	6,890
RCK	Fe(%) CAP	23,30	35,36	5,95	27%	120	4,62	28,20
	SiO2(%) CAP	52,70	55,26	7,43	14%	119	43,70	64,80
	Al(%) CAP	5,93	8,85	2,98	45%	122	2,27	12,40
	Mn(%)	0,125	0,023	0,153	104%	124	0,004	0,410
	P(%) CAP	0,010	0,000	0,010	74%	121	0,003	0,028
	LOI(%) CAP	4,255	12,487	3,534	62%	122	1,300	11,370

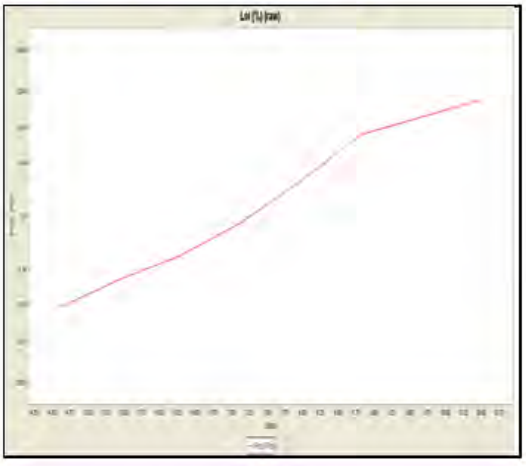
Target:	area2 Ext
Lithology:	Cob
Variable:	Fe

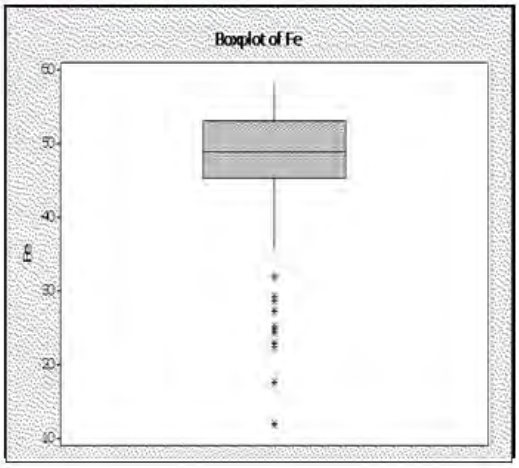
Sample Number:	99
Mínimum:	22,50
Maximum:	56,30
N° Classes (Sturges):	8
Interval (Sturges):	4,42

Quantiles	
2.5%:	23,67
5.0%:	28,03
25.0%:	45,50
Median:	48,80
75.0%:	51,96
95.0%:	55,60
97.5%:	55,81

Mean:	46,96
Variance:	83,56
Standard Deviation:	9,14
Coef. de variation:	19%
Range interquartil:	6,46





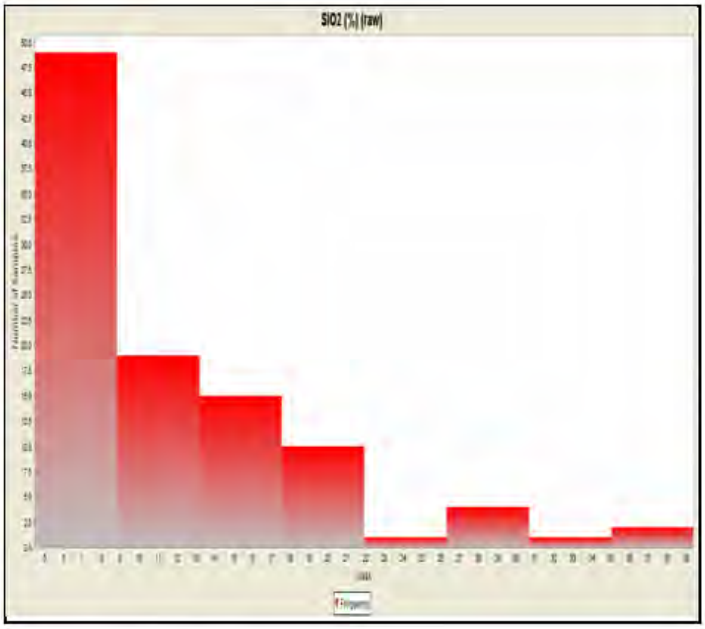


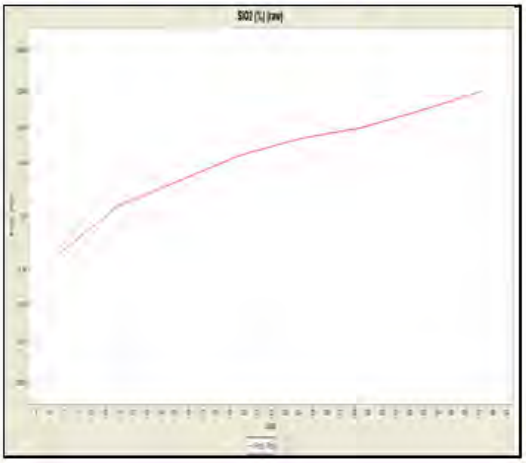
Target:	area2 Ext
Lithology:	Cob
Variable:	SiO2

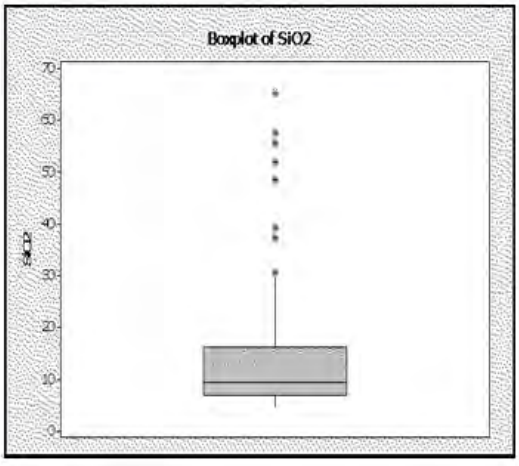
Sample Number:	101
Minimum:	4,46
Maximum:	39,40
N° Classes (Sturges):	8
Interval (Sturges):	4,55

Quantiles	
2.5%:	4,80
5.0%:	4,89
25.0%:	6,81
Median:	8,93
75.0%:	15,19
95.0%:	28,50
97.5%:	30,38

Mean:	13,81
Variance:	137,65
Standard Deviation:	11,73
Coef. de variation:	85%
Range interquartil:	8,38





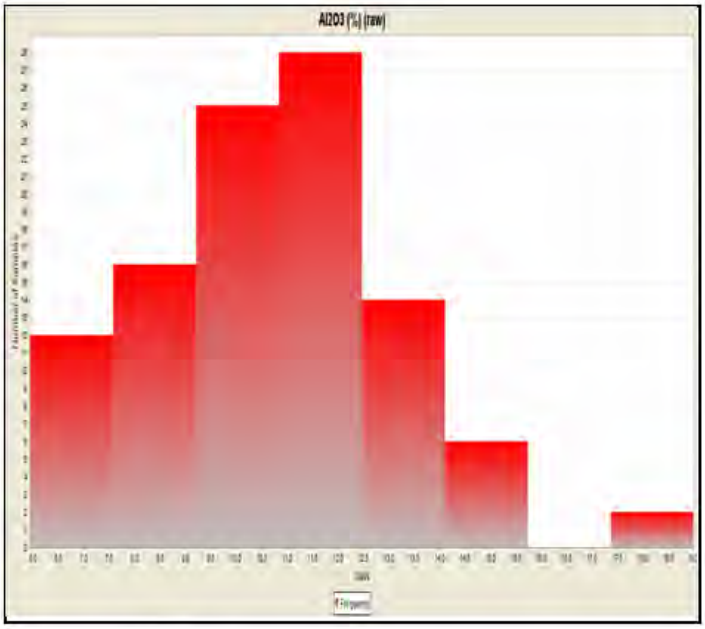


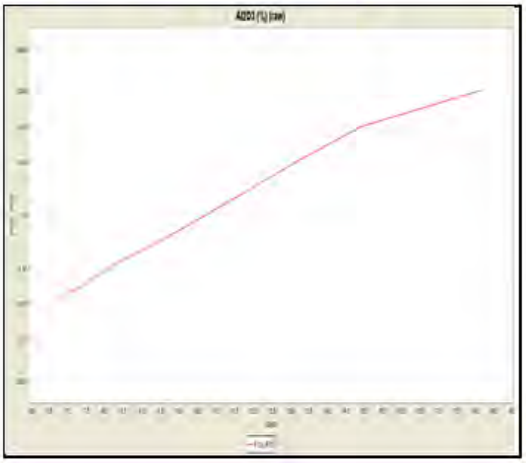
Target:	area2 Ext
Lithology:	Cob
Variable:	Al2O3

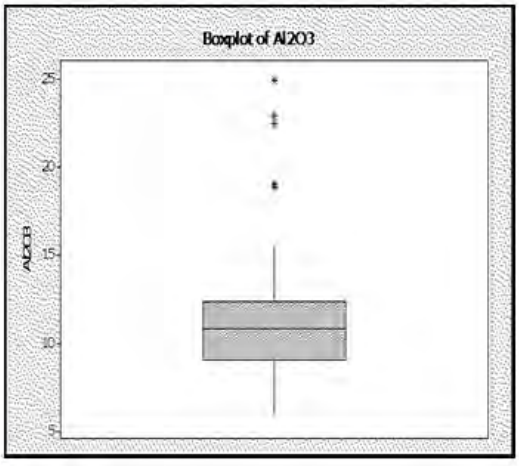
Sample Number:	103
Mínimum:	5,94
Maximum:	19,00
N° Classes (Sturges):	8
Interval (Sturges):	1,69

Quantiles	
2.5%:	6,08
5.0%:	6,26
25.0%:	9,04
Median:	10,83
75.0%:	12,20
95.0%:	14,75
97.5%:	15,52

Mean:	11,04
Variance:	10,77
Standard Deviation:	3,28
Coef. de variation:	30%
Range interquartil:	3,16





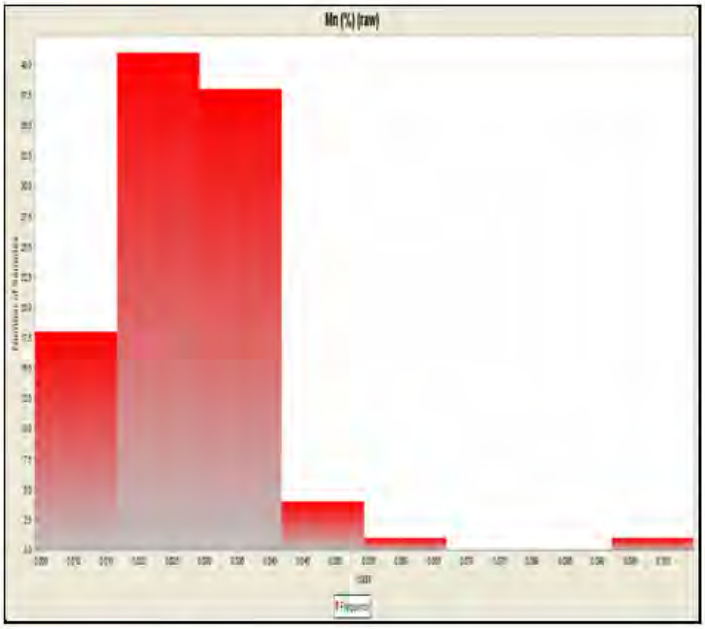


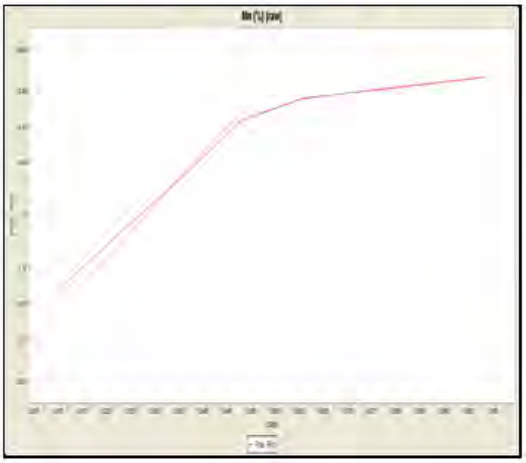
Target:	area2 Ext
Lithology:	Cob
Variable:	Mn

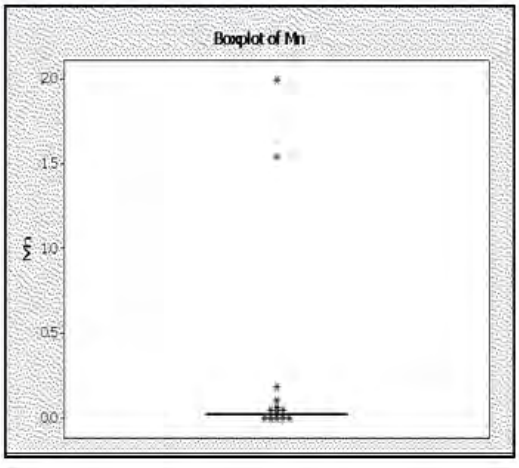
Sample Number:	103
Minimum:	0,00
Maximum:	0,10
N° Classes (Sturges):	8
Interval (Sturges):	0,01

Quantiles	
2.5%:	0,00
5.0%:	0,01
25.0%:	0,02
Median:	0,02
75.0%:	0,03
95.0%:	0,05
97.5%:	0,05

Mean:	0,06
Variance:	0,06
Standard Deviation:	0,24
Coef. de variation:	400%
Range interquartil:	0,01





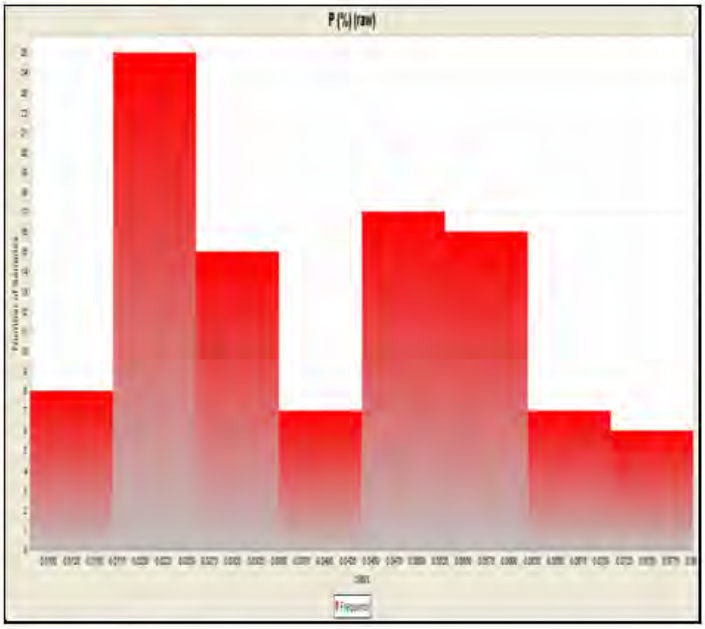


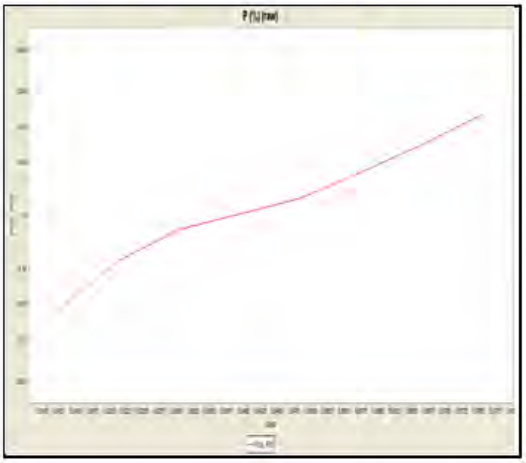
Target:	area2 Ext
Lithology:	Cob
Variable:	P

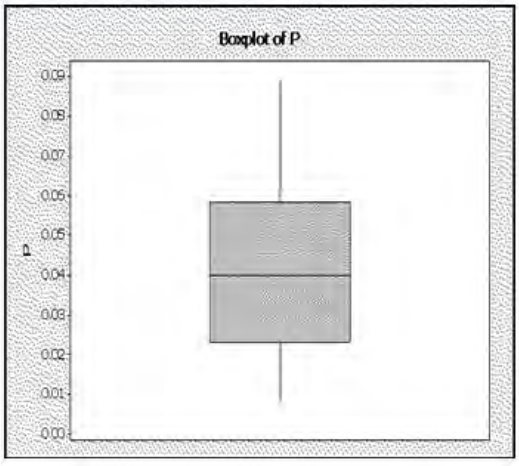
Sample Number:	101
Mínimum:	0,01
Maximum:	0,08
N° Classes (Sturges):	8
Interval (Sturges):	0,01

Quantiles	
2.5%:	0,01
5.0%:	0,01
25.0%:	0,02
Median:	0,04
75.0%:	0,06
95.0%:	0,07
97.5%:	0,07

Mean:	0,04
Variance:	0,00
Standard Deviation:	0,02
Coef. de variation:	49%
Range interquartil:	0,03





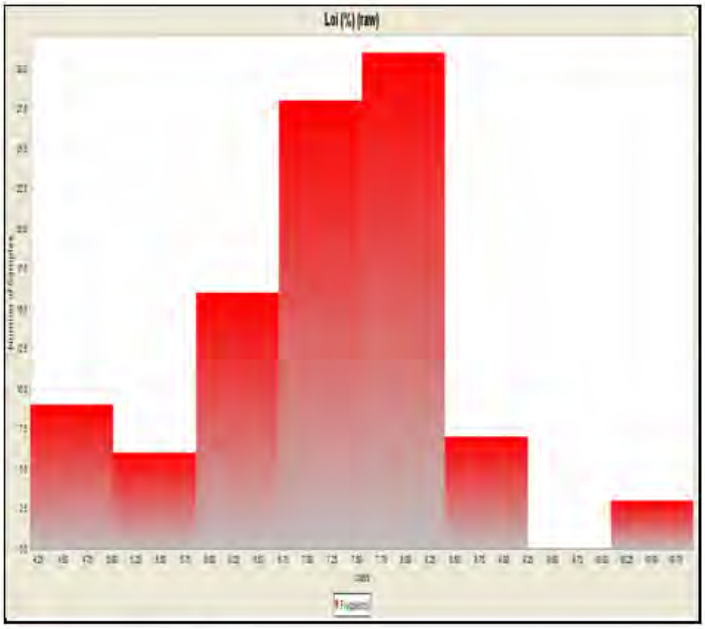


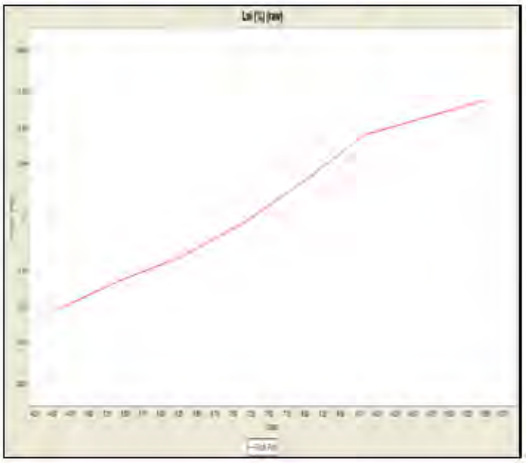
Target:	area2 Ext
Lithology:	Cob
Variable:	LOI

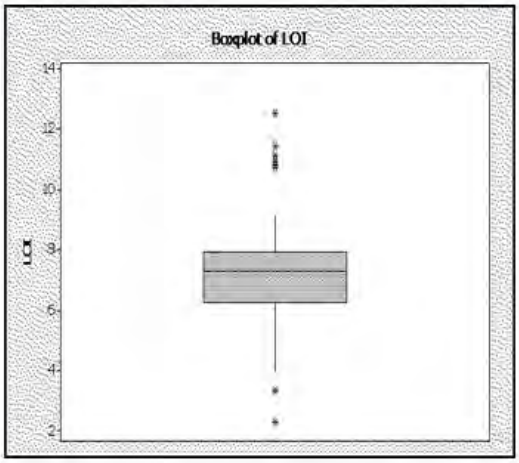
Sample Number:	100
Minimum:	4,17
Maximum:	10,94
N° Classes (Sturges):	8
Interval (Sturges):	0,88

Quantiles	
2.5%:	4,24
5.0%:	4,43
25.0%:	6,27
Median:	7,34
75.0%:	7,92
95.0%:	9,02
97.5%:	10,74

Mean:	7,17
Variance:	2,74
Standard Deviation:	1,66
Coef. de variation:	23%
Range interquartil:	1,65





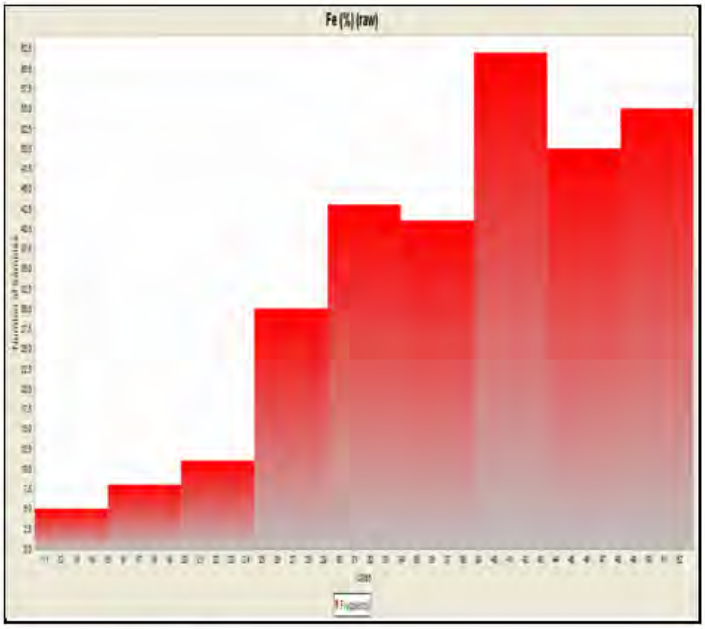


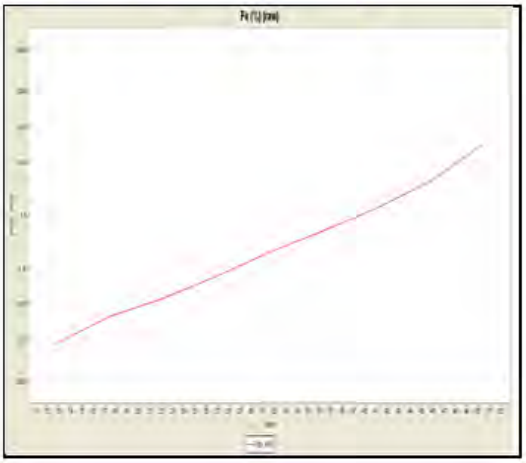
Target:	area2 Ext
Lithology:	Sap
Variable:	Fe

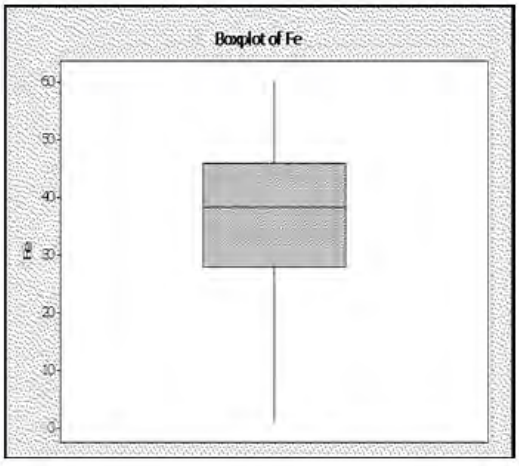
Sample Number:	305
Mínimum:	10,30
Maximum:	52,90
N° Classes (Sturges):	9
Interval (Sturges):	4,59

Quantiles	
2.5%:	17,15
5.0%:	20,43
25.0%:	31,30
Median:	39,90
75.0%:	45,80
95.0%:	51,85
97.5%:	52,50

Mean:	34,77
Variance:	223,07
Standard Deviation:	14,94
Coef. de variation:	43%
Range interquartil:	14,50





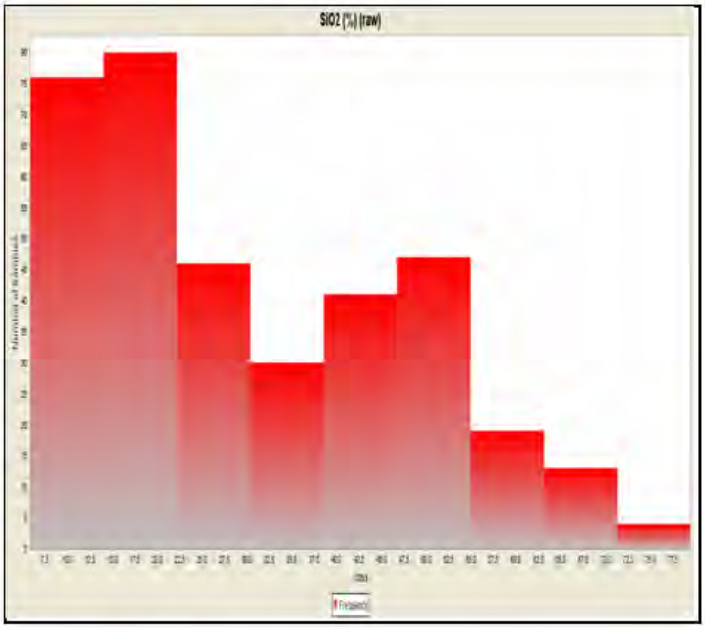


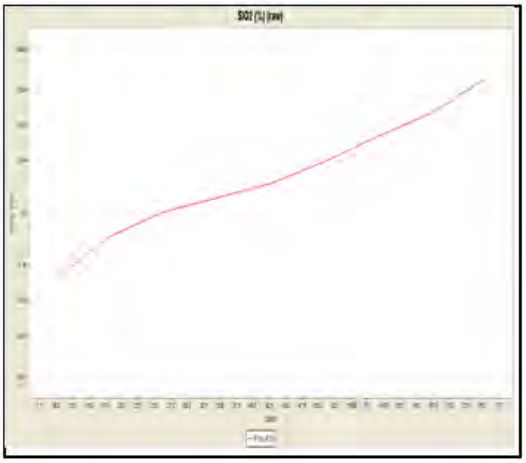
Target:	area2 Ext
Lithology:	Sap
Variable:	SiO2

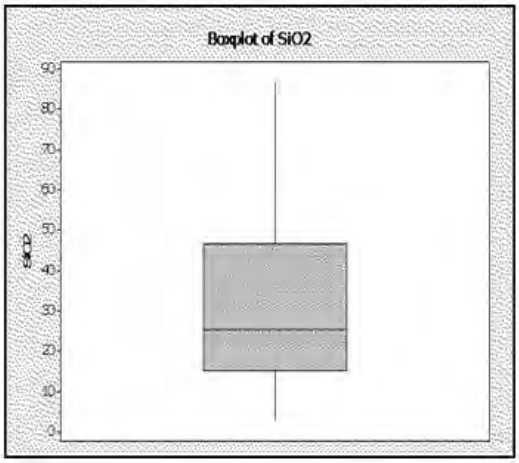
Sample Number:	356
Minimum:	5,82
Maximum:	79,50
N° Classes (Sturges):	10
Interval (Sturges):	7,75

Quantiles	
2.5%:	7,42
5.0%:	8,18
25.0%:	15,55
Median:	25,40
75.0%:	45,85
95.0%:	62,55
97.5%:	66,25

Mean:	31,22
Variance:	387,65
Standard Deviation:	19,69
Coef. de variation:	63%
Range interquartil:	30,30





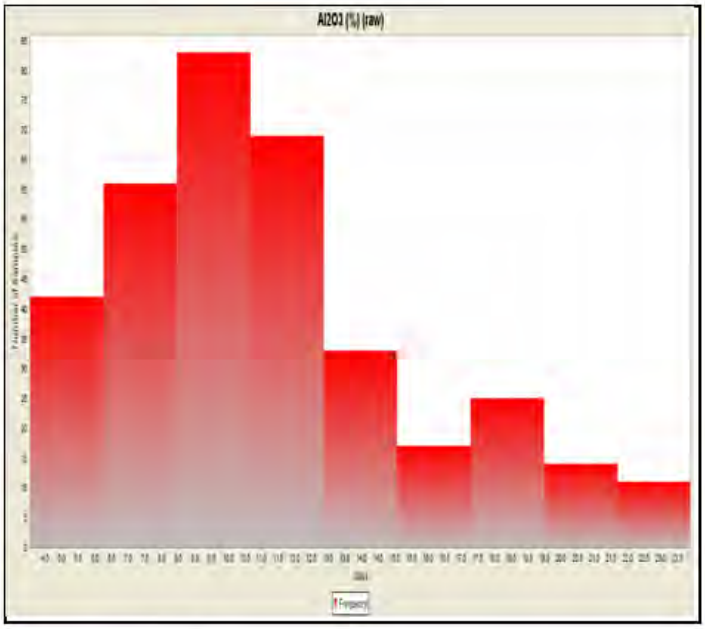


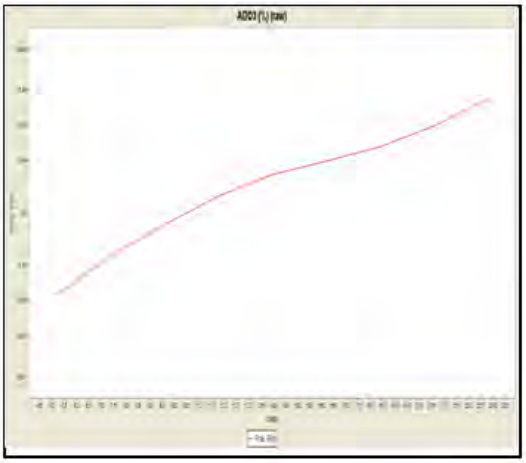
Target:	area2 Ext
Lithology:	Sap
Variable:	Al2O3

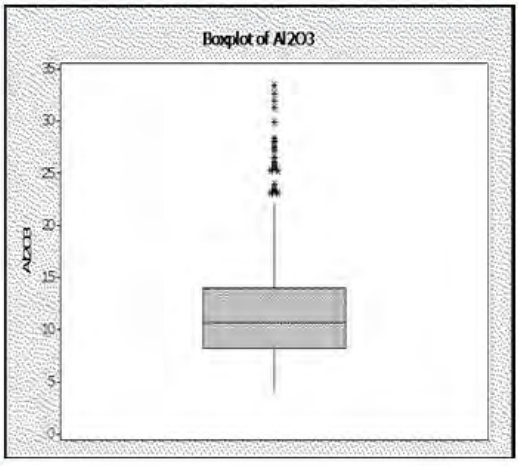
Sample Number:	355
Mínimum:	4,04
Maximum:	23,90
N° Classes (Sturges):	9
Interval (Sturges):	2,09

Quantiles	
2.5%:	4,85
5.0%:	5,40
25.0%:	8,06
Median:	10,50
75.0%:	13,45
95.0%:	20,60
97.5%:	22,00

Mean:	12,15
Variance:	33,64
Standard Deviation:	5,80
Coef. de variation:	48%
Range interquartil:	5,39





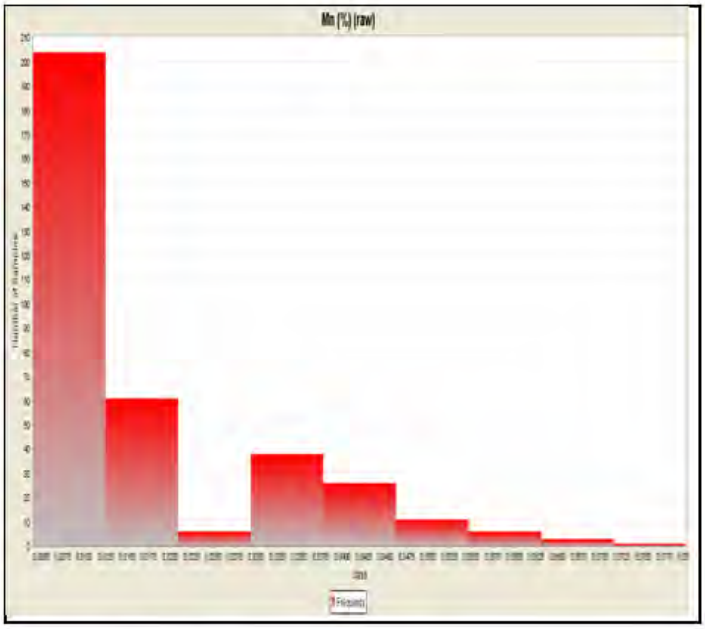


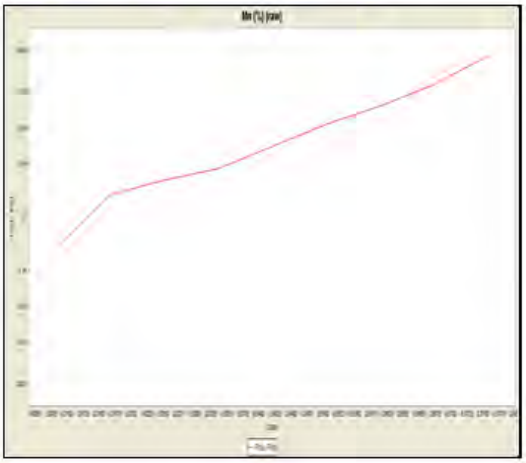
Target:	area2 Ext
Lithology:	Sap
Variable:	Mn

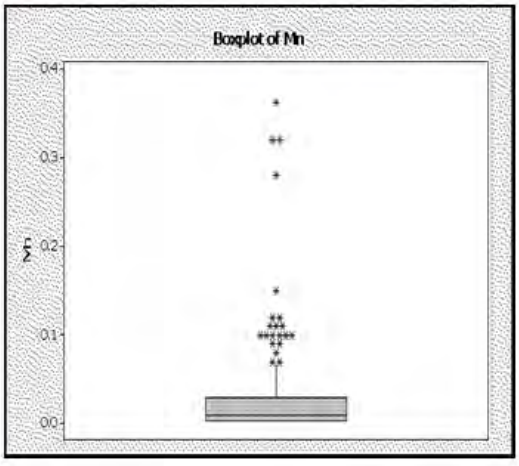
Sample Number:	356
Minimum:	0,00
Maximum:	0,08
N° Classes (Sturges):	10
Interval (Sturges):	0,01

Quantiles	
2.5%:	0,00
5.0%:	0,00
25.0%:	0,00
Median:	0,01
75.0%:	0,02
95.0%:	0,05
97.5%:	0,06

Mean:	0,02
Variance:	0,00
Standard Deviation:	0,04
Coef. de variation:	164%
Range interquartil:	0,02





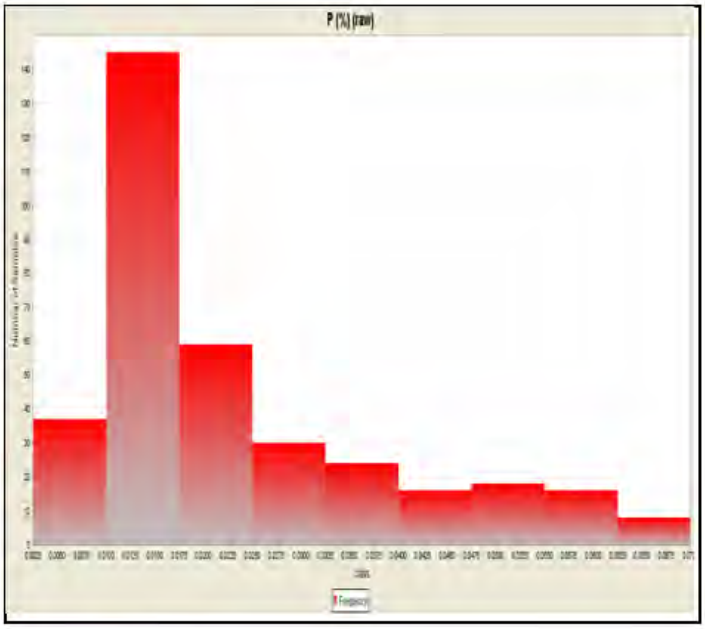


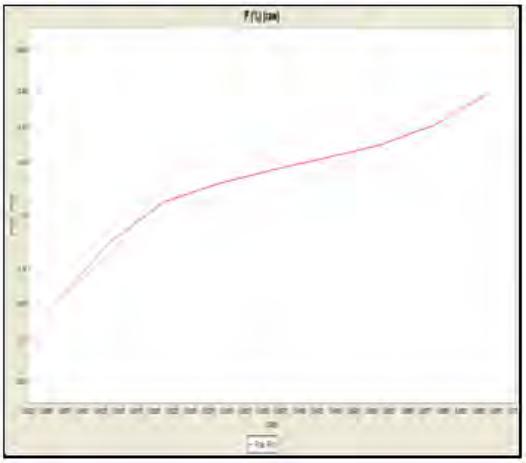
Target:	area2 Ext
Lithology:	Sap
Variable:	P

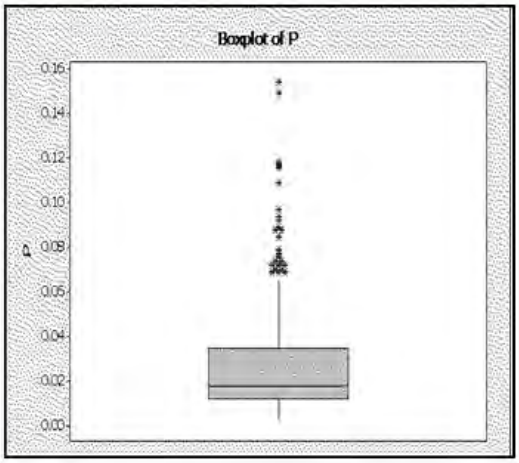
Sample Number:	353
Mínimum:	0,00
Maximum:	0,07
N° Classes (Sturges):	9
Interval (Sturges):	0,01

Quantiles	
2.5%:	0,01
5.0%:	0,01
25.0%:	0,01
Median:	0,02
75.0%:	0,03
95.0%:	0,06
97.5%:	0,06

Mean:	0,03
Variance:	0,00
Standard Deviation:	0,02
Coef. de variation:	83%
Range interquartil:	0,02





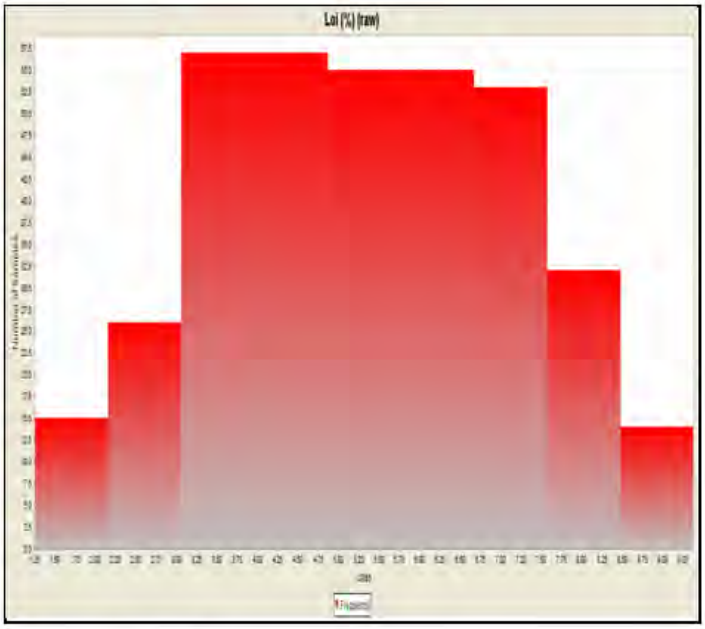


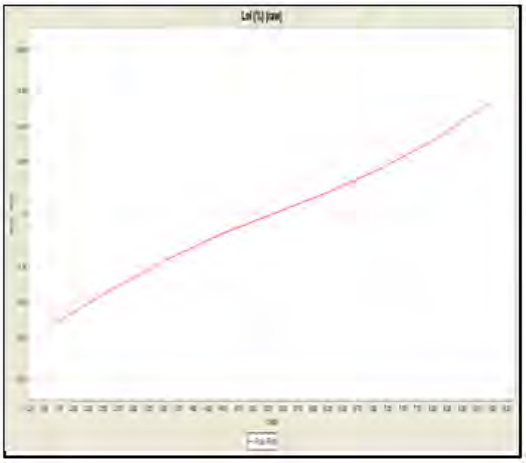
Target:	area2 Ext
Lithology:	Sap
Variable:	LOI

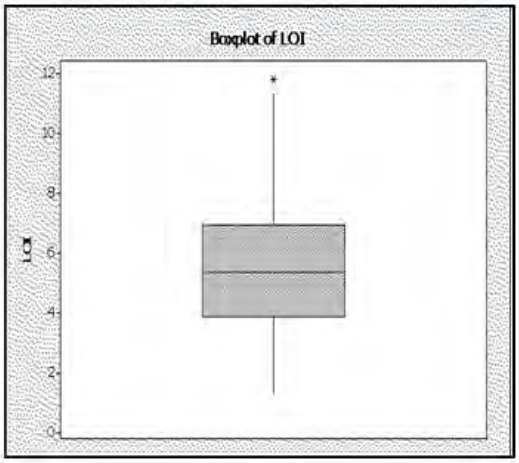
Sample Number:	364
Minimum:	1,25
Maximum:	9,38
N° Classes (Sturges):	10
Interval (Sturges):	0,85

Quantiles	
2.5%:	1,83
5.0%:	2,35
25.0%:	3,84
Median:	5,32
75.0%:	6,85
95.0%:	8,32
97.5%:	8,67

Mean:	5,47
Variance:	4,06
Standard Deviation:	2,01
Coef. de variation:	37%
Range interquartil:	3,02





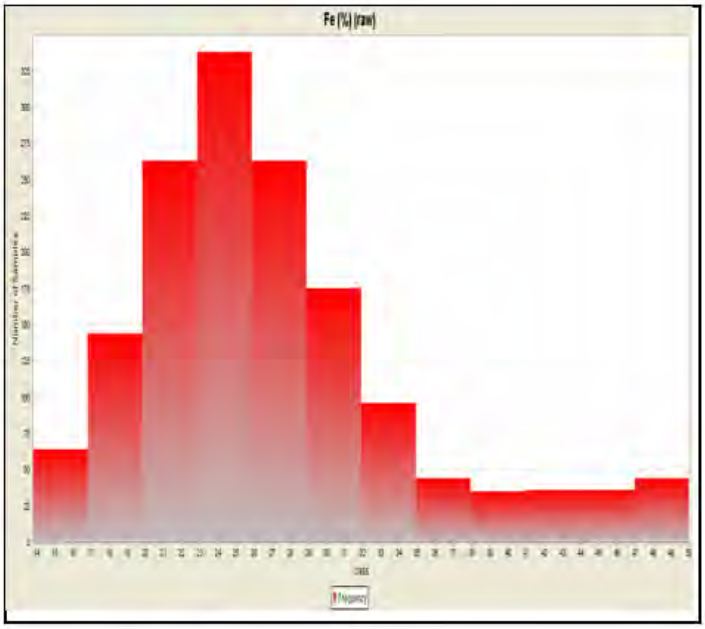


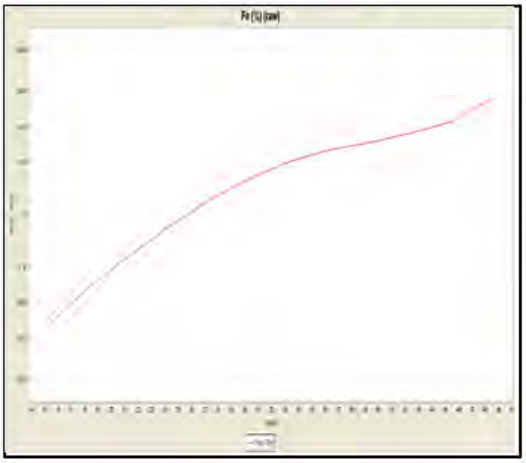
Target:	area2 Ext
Lithology:	Sar
Variable:	Fe

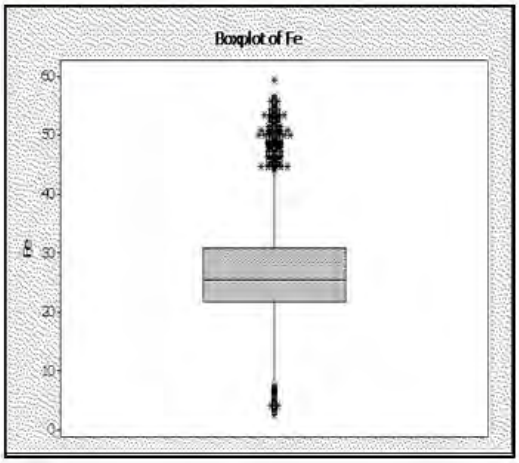
Sample Number:	1 538
Mínimum:	13,80
Maximum:	50,00
N° Classes (Sturges):	12
Interval (Sturges):	3,12

Quantiles	
2.5%:	16,00
5.0%:	17,12
25.0%:	22,00
Median:	25,40
75.0%:	30,00
95.0%:	44,20
97.5%:	47,40

Mean:	27,59
Variance:	90,27
Standard Deviation:	9,50
Coef. de variation:	34%
Range interquartil:	8,00





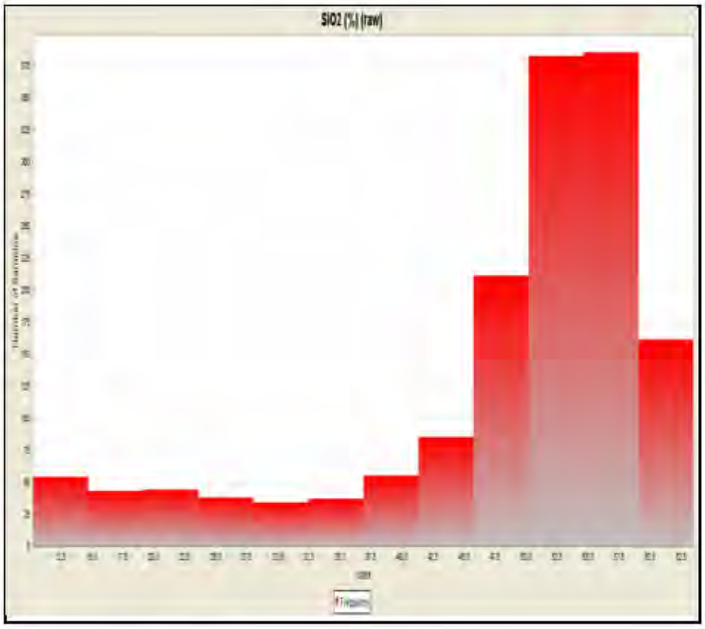


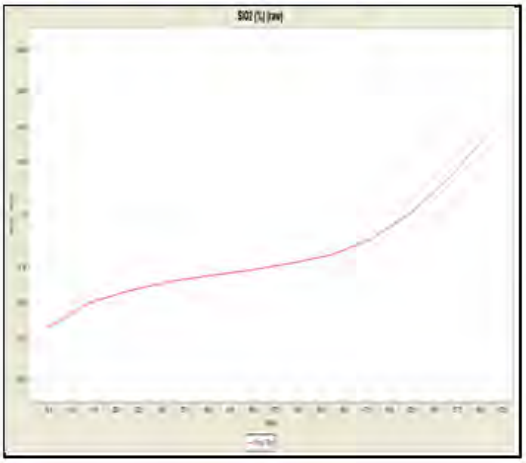
Target:	area2 Ext
Lithology:	Sar
Variable:	SiO2

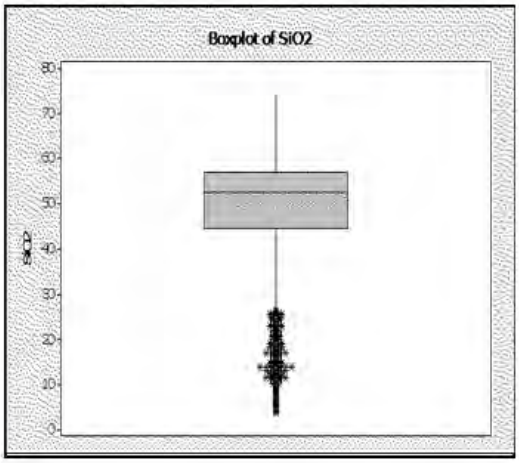
Sample Number:	1 529
Minimum:	10,30
Maximum:	63,50
N° Classes (Sturges):	12
Interval (Sturges):	4,58

Quantiles	
2.5%:	13,75
5.0%:	17,05
25.0%:	45,35
Median:	52,40
75.0%:	56,40
95.0%:	61,10
97.5%:	62,10

Mean:	47,95
Variance:	210,10
Standard Deviation:	14,49
Coef. de variation:	30%
Range interquartil:	11,05





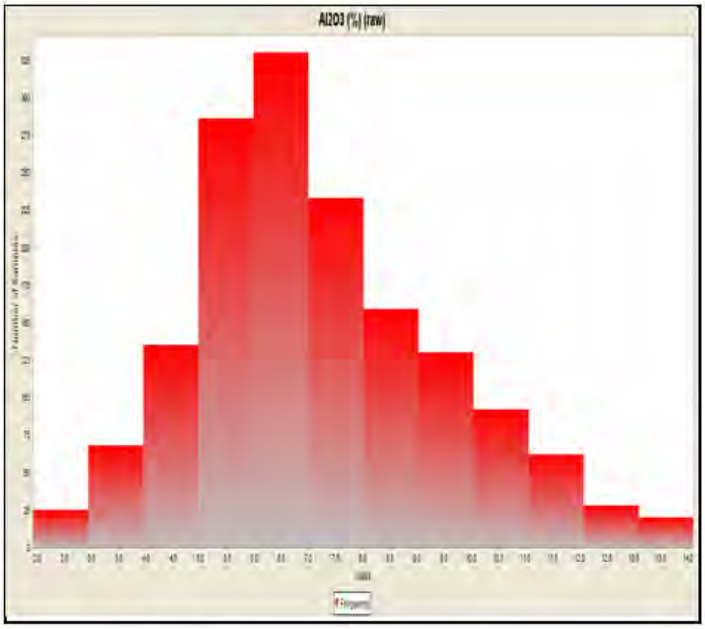


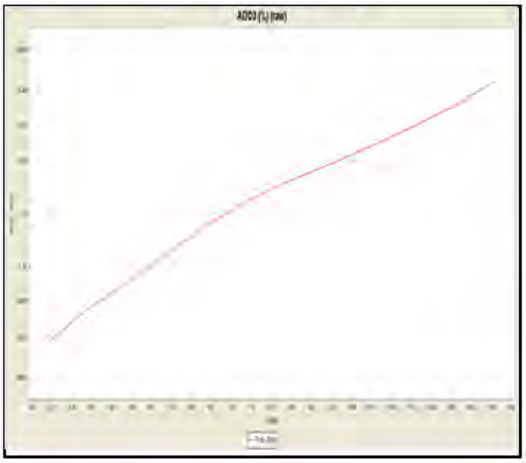
Target:	area2 Ext
Lithology:	Sar
Variable:	Al2O3

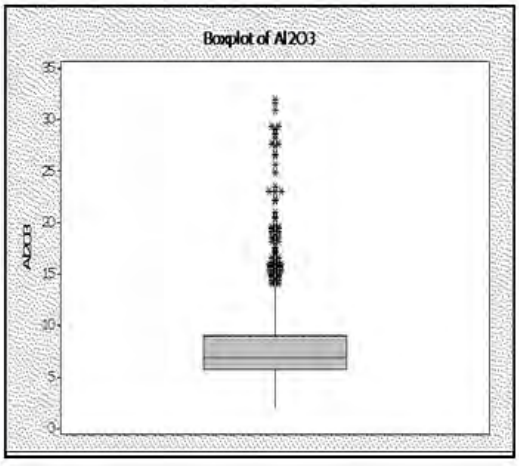
Sample Number:	1 568
Minimum:	1,92
Maximum:	14,10
N° Classes (Sturges):	12
Interval (Sturges):	1,05

Quantiles	
2.5%:	3,12
5.0%:	3,78
25.0%:	5,64
Median:	6,78
75.0%:	8,60
95.0%:	11,60
97.5%:	12,25

Mean:	7,80
Variance:	13,71
Standard Deviation:	3,70
Coef. de variation:	47%
Range interquartil:	2,97





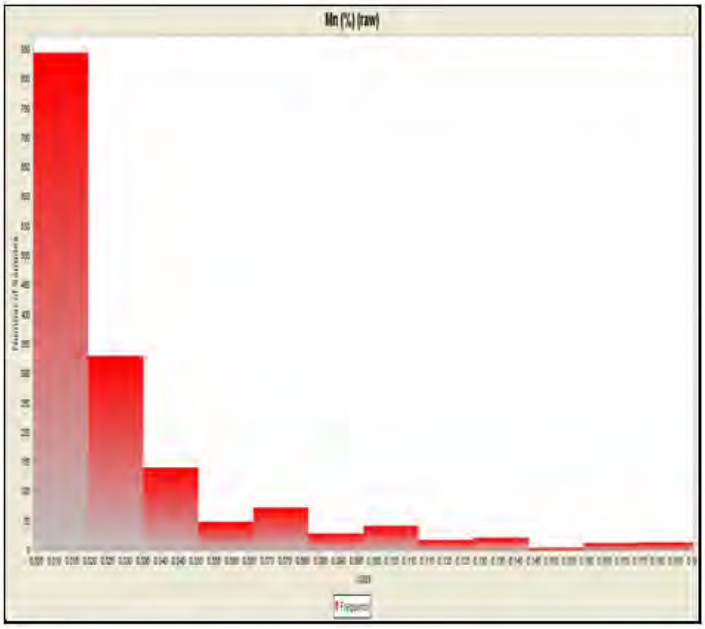


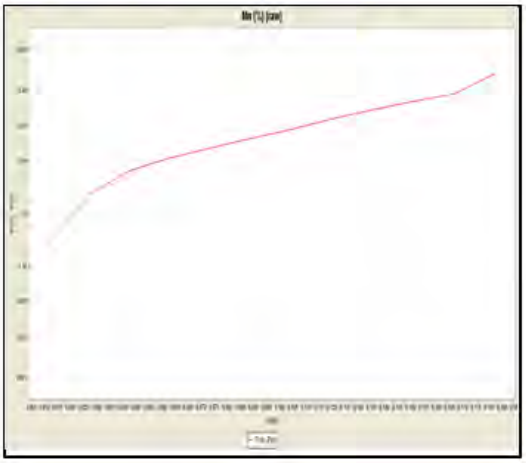
Target:	area2 Ext
Lithology:	Sar
Variable:	Mn

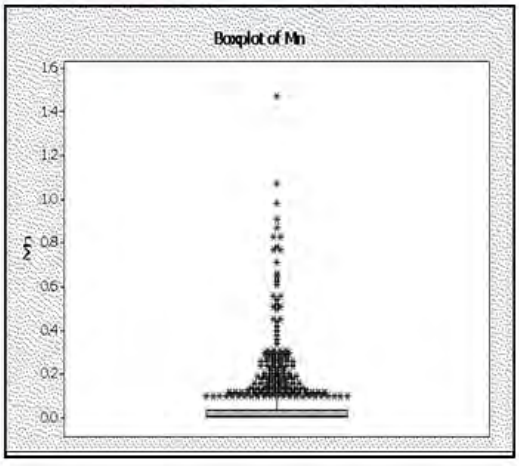
Sample Number:	1 570
Minimum:	0,00
Maximum:	0,19
N° Classes (Sturges):	12
Interval (Sturges):	0,02

Quantiles	
2.5%:	0,00
5.0%:	0,00
25.0%:	0,00
Median:	0,01
75.0%:	0,04
95.0%:	0,11
97.5%:	0,14

Mean:	0,05
Variance:	0,01
Standard Deviation:	0,10
Coef. de variation:	223%
Range interquartil:	0,04





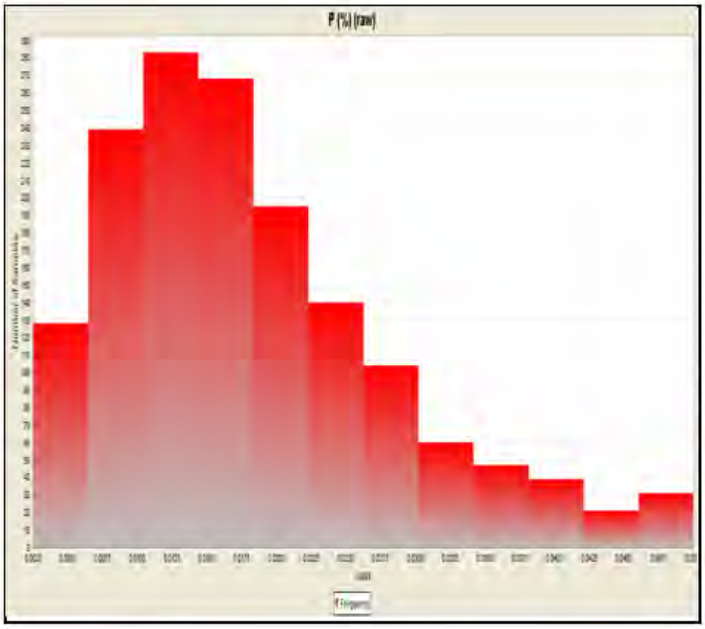


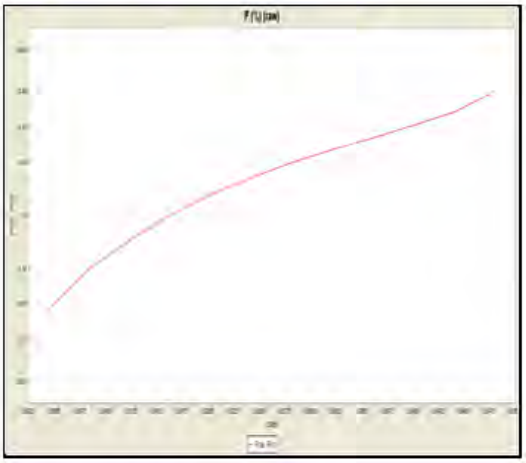
Target:	area2 Ext
Lithology:	Sar
Variable:	P

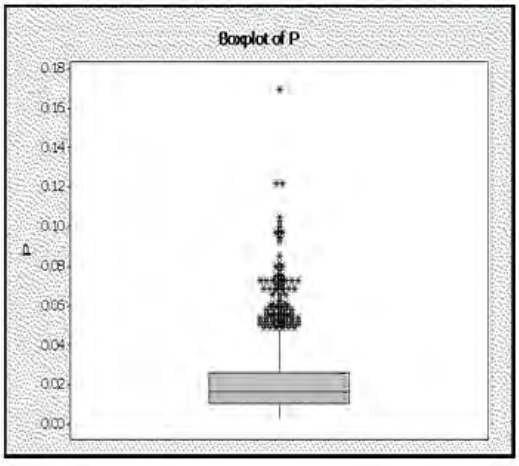
Sample Number:	1 555
Minimum:	0,00
Maximum:	0,05
N° Classes (Sturges):	12
Interval (Sturges):	0,00

Quantiles	
2.5%:	0,00
5.0%:	0,01
25.0%:	0,01
Median:	0,02
75.0%:	0,02
95.0%:	0,04
97.5%:	0,04

Mean:	0,02
Variance:	0,00
Standard Deviation:	0,02
Coef. de variation:	75%
Range interquartil:	0,01





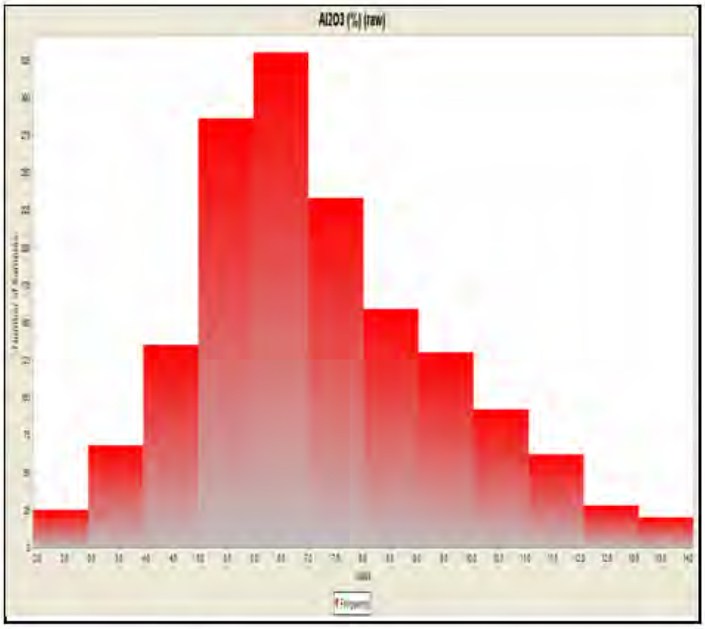


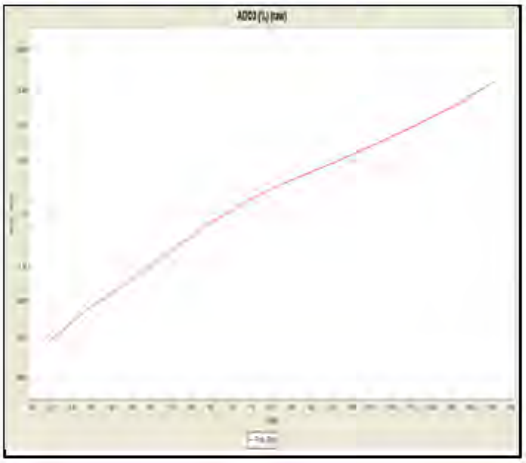
Target:	area2 Ext
Lithology:	Sar
Variable:	Al2O3

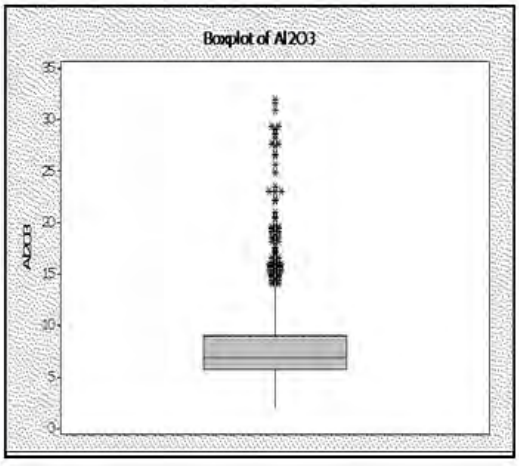
Sample Number:	1 568
Minimum:	1,92
Maximum:	14,10
N° Classes (Sturges):	12
Interval (Sturges):	1,05

Quantiles	
2.5%:	3,12
5.0%:	3,78
25.0%:	5,64
Median:	6,78
75.0%:	8,60
95.0%:	11,60
97.5%:	12,25

Mean:	7,80
Variance:	13,71
Standard Deviation:	3,70
Coef. de variation:	47%
Range interquartil:	2,97





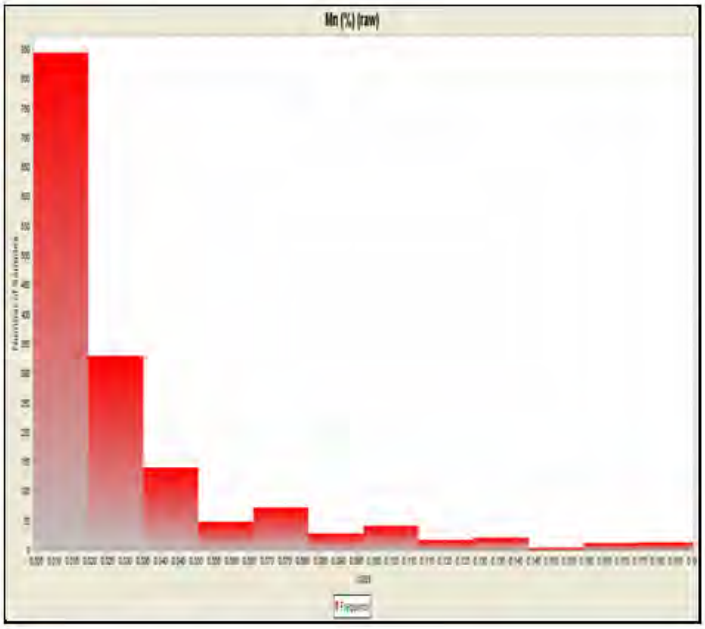


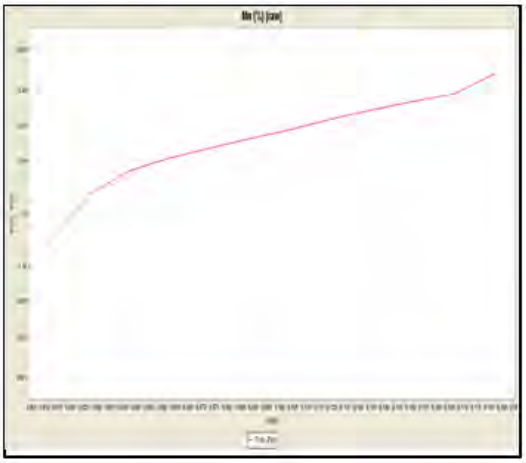
Target:	area2 Ext
Lithology:	Sar
Variable:	Mn

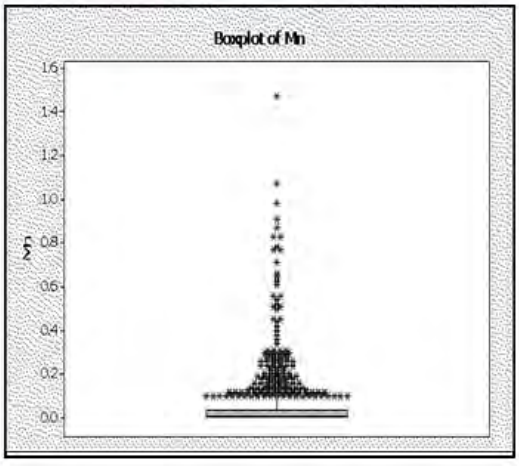
Sample Number:	1 570
Minimum:	0,00
Maximum:	0,19
N° Classes (Sturges):	12
Interval (Sturges):	0,02

Quantiles	
2.5%:	0,00
5.0%:	0,00
25.0%:	0,00
Median:	0,01
75.0%:	0,04
95.0%:	0,11
97.5%:	0,14

Mean:	0,05
Variance:	0,01
Standard Deviation:	0,10
Coef. de variation:	223%
Range interquartil:	0,04





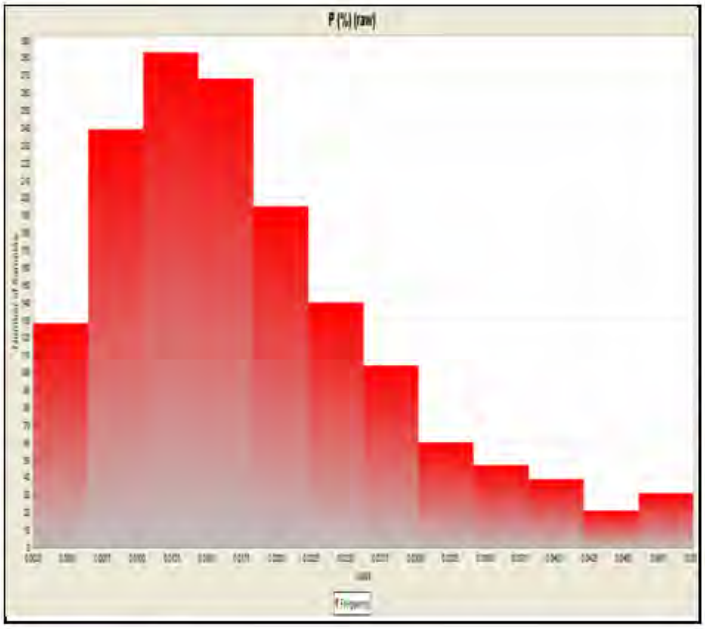


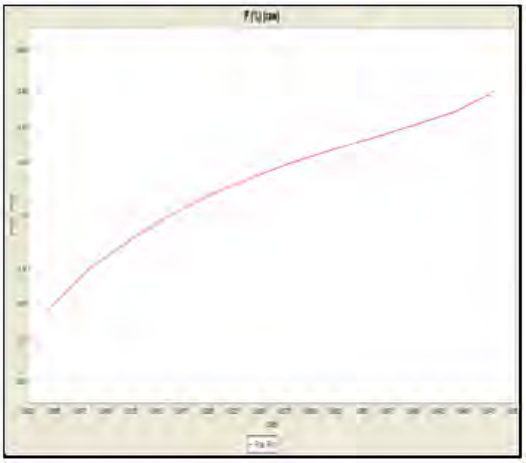
Target:	area2 Ext
Lithology:	Sar
Variable:	P

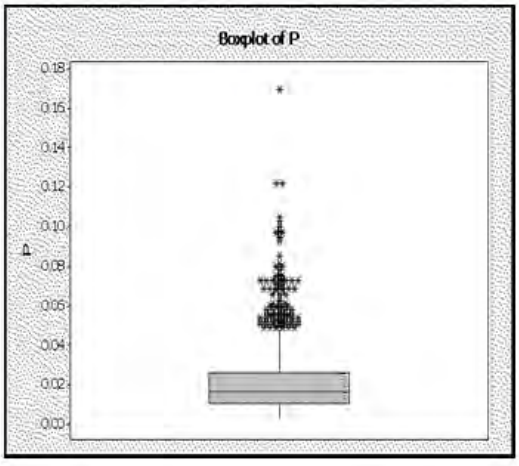
Sample Number:	1 555
Minimum:	0,00
Maximum:	0,05
N° Classes (Sturges):	12
Interval (Sturges):	0,00

Quantiles	
2.5%:	0,00
5.0%:	0,01
25.0%:	0,01
Median:	0,02
75.0%:	0,02
95.0%:	0,04
97.5%:	0,04

Mean:	0,02
Variance:	0,00
Standard Deviation:	0,02
Coef. de variation:	75%
Range interquartil:	0,01





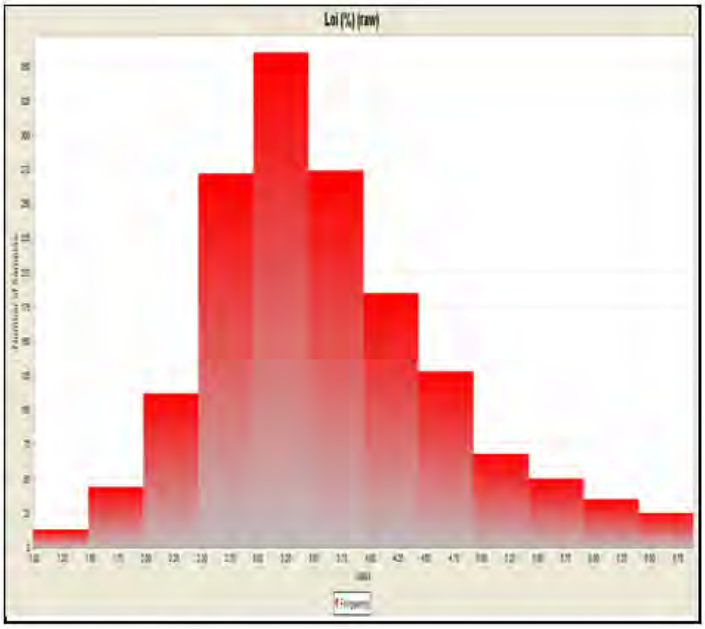


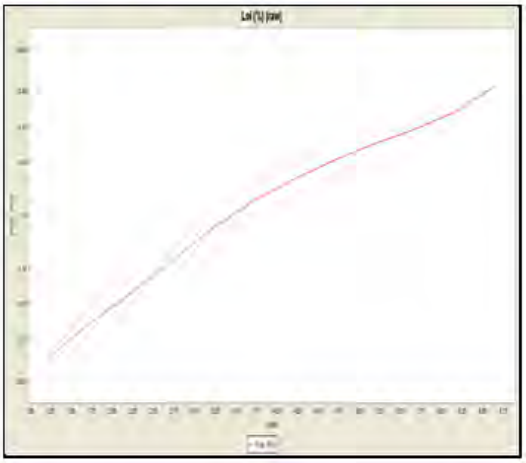
Target:	area2 Ext
Lithology:	Sar
Variable:	LOI

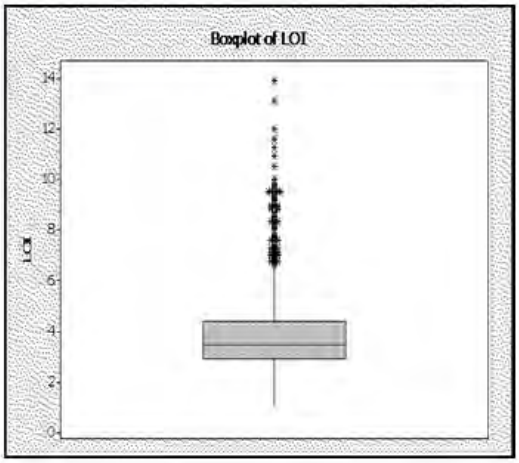
Sample Number:	1 566
Minimum:	0,99
Maximum:	6,89
N° Classes (Sturges):	12
Interval (Sturges):	0,51

Quantiles	
2.5%:	1,79
5.0%:	2,12
25.0%:	2,88
Median:	3,42
75.0%:	4,20
95.0%:	5,65
97.5%:	6,16

Mean:	3,85
Variance:	2,30
Standard Deviation:	1,52
Coef. de variation:	39%
Range interquartil:	1,32





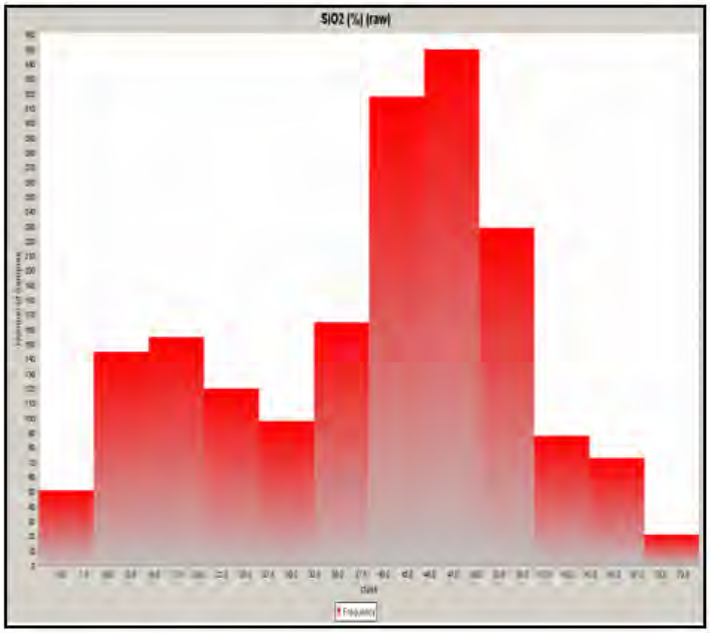


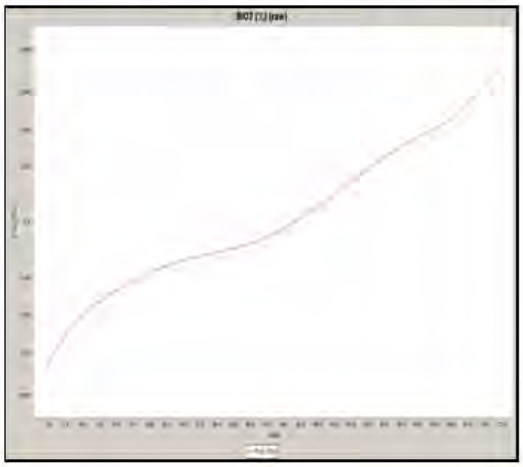
Alvo:	area3
Litologia:	Sap
Variável:	SiO2(%)

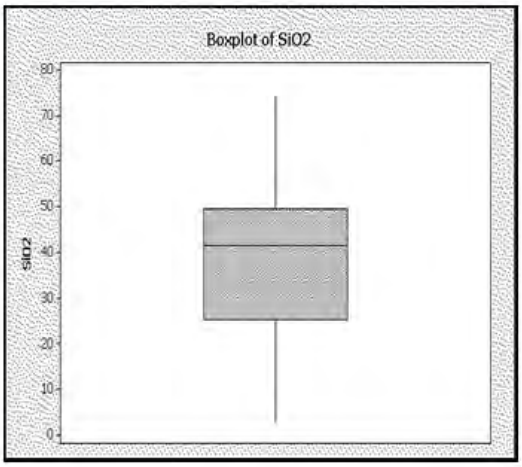
Número de Amostras:	1 813
Mínimo Valor:	2,56
Máximo Valor:	74,20
N° Classes (Sturges):	12
Intervalo (Sturges):	6,04

Quantiles	
2.5%:	7,98
5.0%:	10,25
25.0%:	25,40
Mediana:	41,60
75.0%:	49,60
95.0%:	62,95
97.5%:	65,40

Média:	38,35
Variância:	249,53
Desvio Padrão:	15,80
Coef. de variação:	41%
Range interquartil:	24,20







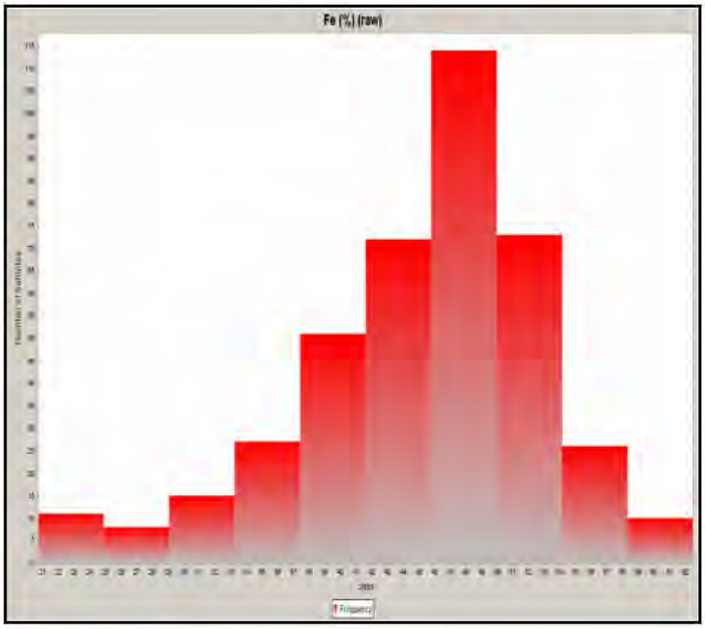
Litologia	Variável	Média	Variância	Desvio Padrão	CV	N° Amostras	Lim. Inferior	Lim. Superior
Cob	Fe(%) CAP	45,10	62,03	7,88	17%	407	20,70	62,50
	SiO2(%) CAP	13,02	41,82	6,47	50%	402	2,29	39,30
	Al2O3(%) CAP	12,63	14,80	3,85	30%	402	2,98	22,00
	Mn(%) CAP	0,044	0,001	0,032	73%	403,000	0,004	0,100
	P(%) CAP	0,054	0,000	0,022	40%	399,000	0,005	0,110
	LOI(%)	8,24	5,55	2,36	29%	424	1,58	16,79
Sap	Fe(%) CAP	26,27	173,20	13,16	50%	1633	6,01	51,00
	SiO2(%)	38,35	249,53	15,80	41%	1813	2,56	74,20
	Al2O3(%)	15,20	87,29	9,34	61%	1812	1,38	34,60
	Mn(%)	0,050	0,001	0,039	78%	1 251,000	0,004	0,140
	P(%) CAP	0,030	0,001	0,025	84%	1 661,000	0,003	0,130
	LOI(%) CAP	6,66	7,63	2,76	41%	1811	0,91	13,96
Sar	Fe(%) CAP	28,77	67,79	8,23	29%	1 971	8,54	50,50
	SiO2(%)	43,47	176,04	13,27	31%	2 074	5,51	98,20
	Al2O3(%) CAP	9,10	19,15	4,38	48%	2023	0,05	23,80
	Mn(%) CAP	0,081	0,007	0,084	104%	1 935,000	0,004	0,440
	P(%) CAP	0,026	0,001	0,024	92%	2 024,000	0,003	0,120
	LOI(%)	4,96	4,86	2,21	44%	2 070	0,68	12,26

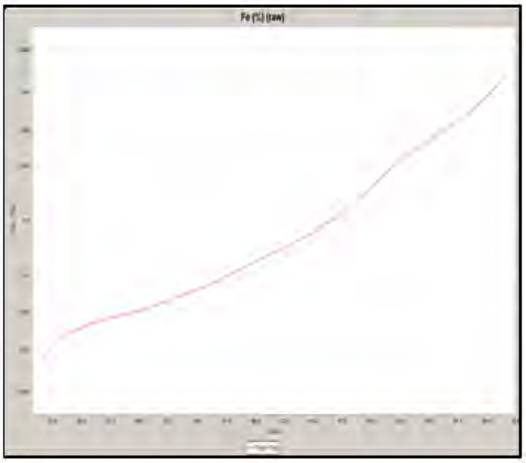
Alvo:	area3
Litologia:	COB
Variável:	Fe(%)

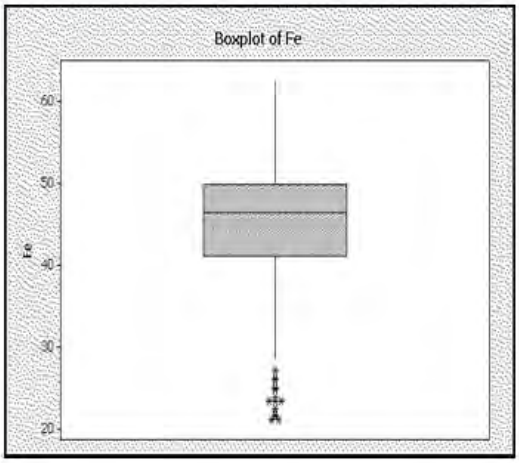
Número de Amostras:	407
Mínimo Valor:	20,70
Máximo Valor:	62,50
N° Classes (Sturges):	10
Intervalo (Sturges):	4,31

Quantiles	
2.5%:	24,30
5.0%:	29,55
25.0%:	40,85
Mediana:	46,50
75.0%:	50,25
95.0%:	56,35
97.5%:	57,65

Média:	45,10
Variância:	62,03
Desvio Padrão:	7,88
Coef. de variação:	17%
Range interquartil:	9,40





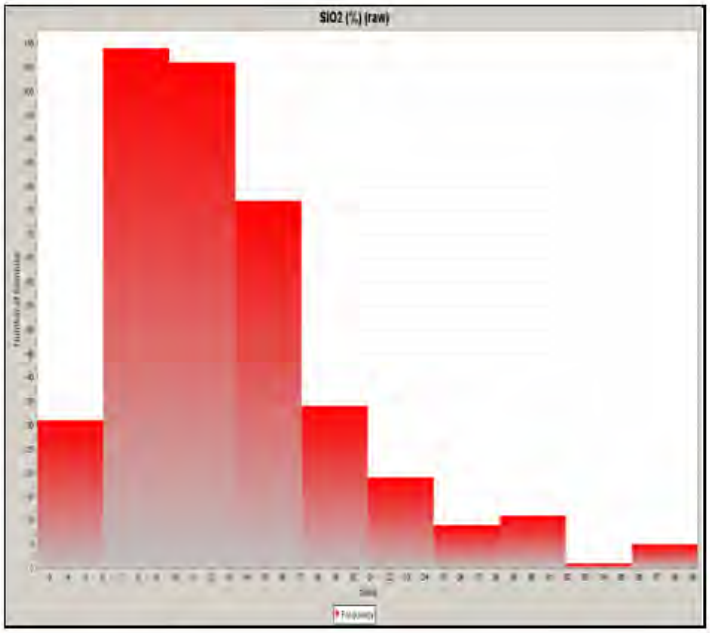


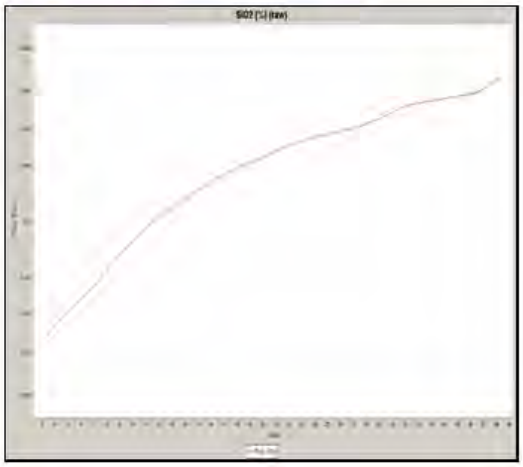
Alvo:	area3
Litologia:	COB
Variável:	SiO2(%)

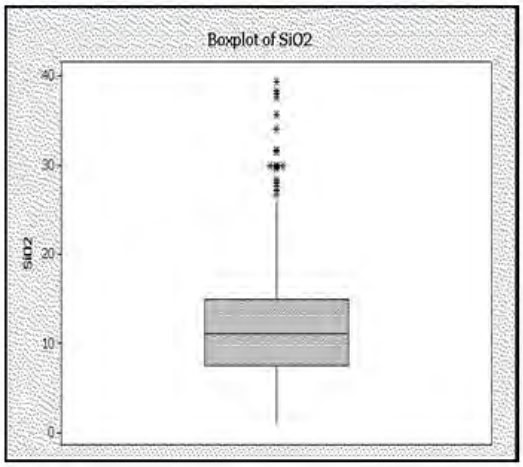
Número de Amostras:	402
Mínimo Valor:	2,29
Máximo Valor:	39,30
N° Classes (Sturges):	10
Intervalo (Sturges):	3,82

Quantiles	
2.5%:	3,70
5.0%:	4,72
25.0%:	8,72
Mediana:	11,50
75.0%:	15,50
95.0%:	27,00
97.5%:	29,90

Média:	13,02
Variância:	41,82
Desvio Padrão:	6,47
Coef. de variação:	50%
Range interquartil:	6,78





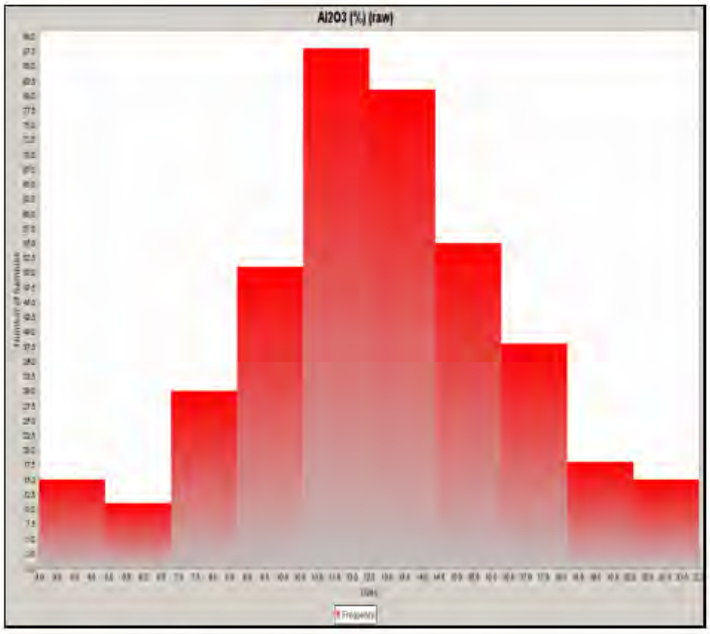


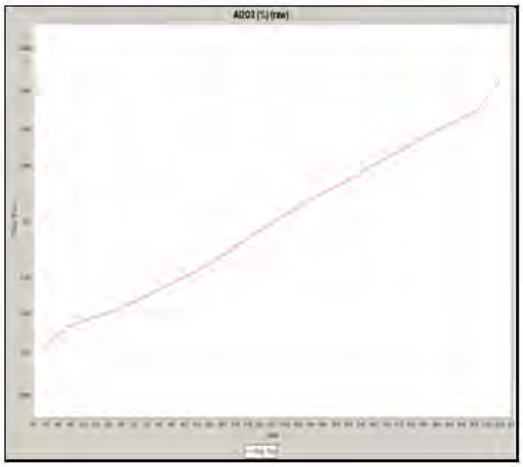
Alvo:	area3
Litologia:	COB
Variável:	Al2O3(%)

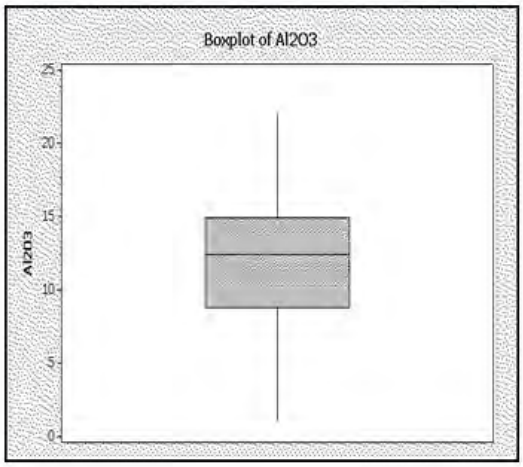
Número de Amostras:	402
Mínimo Valor:	2,98
Máximo Valor:	22,00
N° Classes (Sturges):	10
Intervalo (Sturges):	1,97

Quantiles	
2.5%:	3,94
5.0%:	5,87
25.0%:	10,30
Mediana:	12,55
75.0%:	15,30
95.0%:	18,95
97.5%:	20,30

Média:	12,63
Variância:	14,80
Desvio Padrão:	3,85
Coef. de variação:	30%
Range interquartil:	5,00





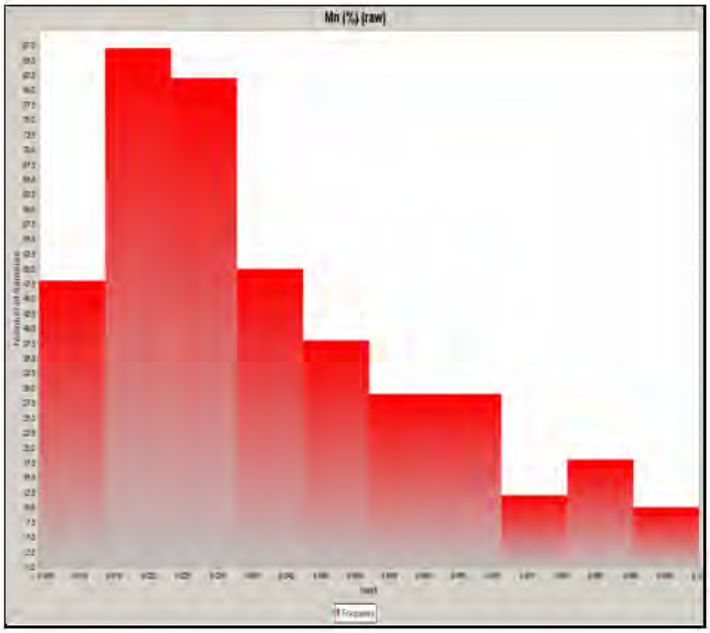


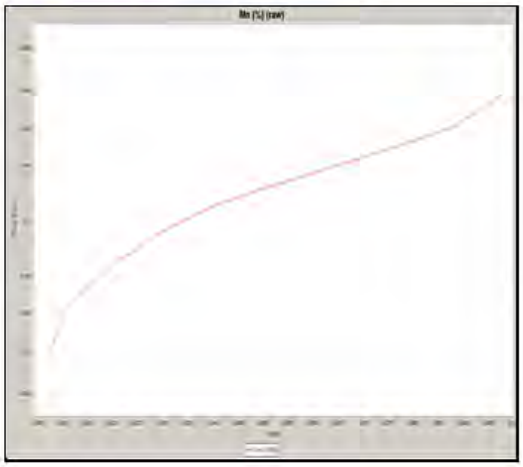
Alvo:	area3
Litologia:	COB
Variável:	Mn(%)

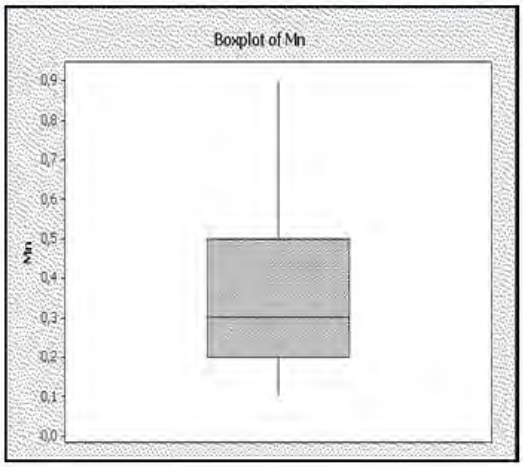
Número de Amostras:	403
Mínimo Valor:	0,00
Máximo Valor:	0,10
N° Classes (Sturges):	10
Intervalo (Sturges):	0,01

Quantiles	
2.5%:	0.01
5.0%:	0.01
25.0%:	0.02
Mediana:	0.03
75.0%:	0.05
95.0%:	0.09
97.5%:	0.09

Média:	0,04
Variância:	0,00
Desvio Padrão:	0,03
Coef. de variação:	73%
Range interquartil:	0,03





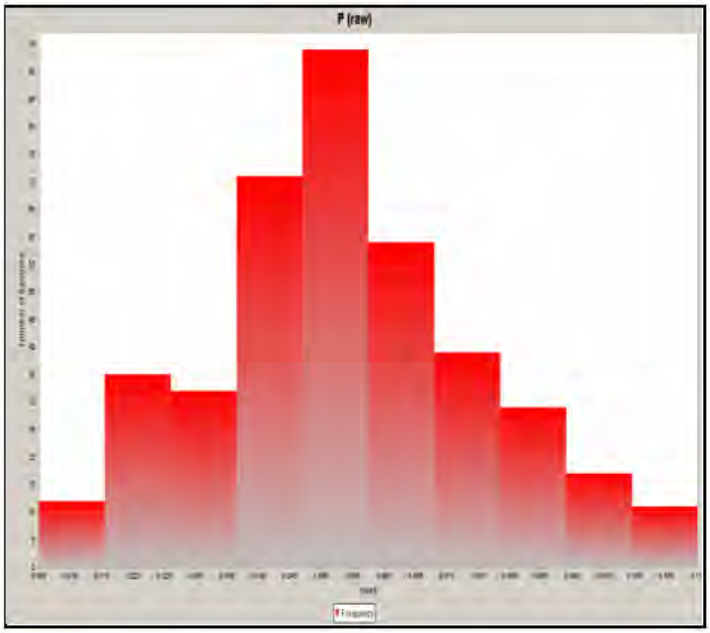


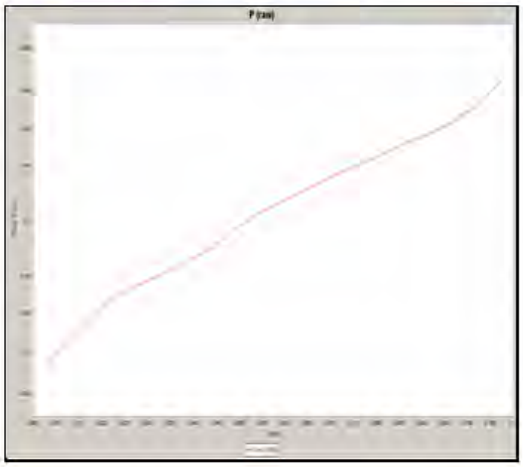
Alvo:	area3
Litologia:	COB
Variável:	P(%)

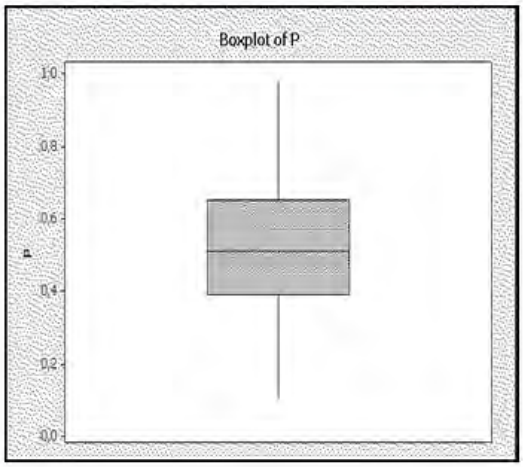
Número de Amostras:	399
Mínimo Valor:	0,01
Máximo Valor:	0,11
N° Classes (Sturges):	10
Intervalo (Sturges):	0,01

Quantiles	
2.5%:	0.02
5.0%:	0.02
25.0%:	0.04
Mediana:	0.05
75.0%:	0.07
95.0%:	0.09
97.5%:	0.10

Média:	0,05
Variância:	0,00
Desvio Padrão:	0,02
Coef. de variação:	40%
Range interquartil:	0,03





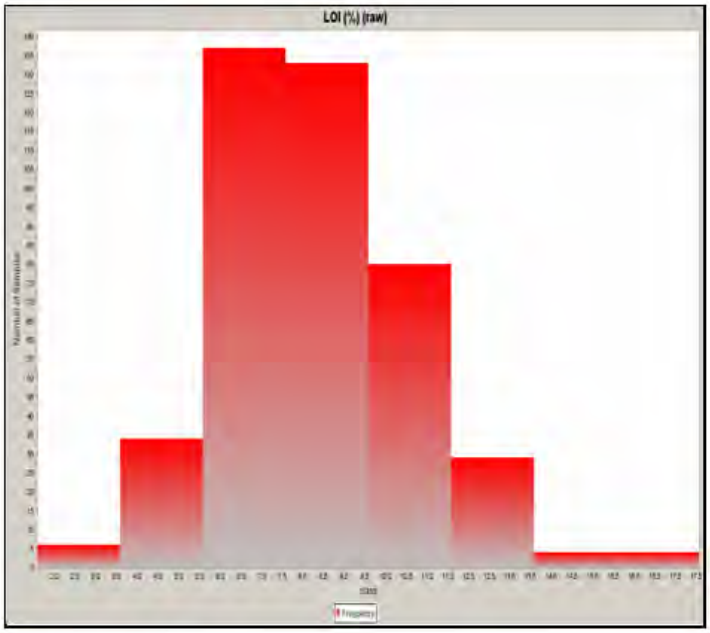


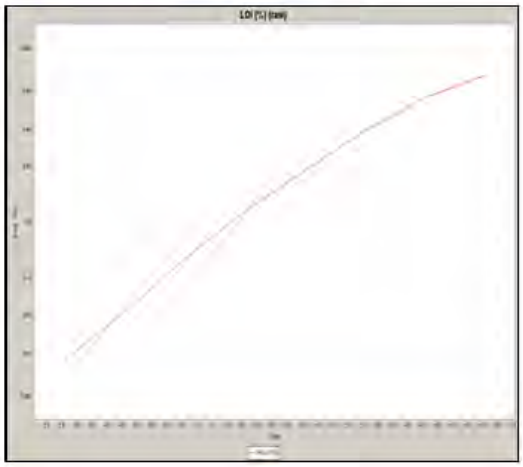
Alvo:	area3
Litologia:	COB
Variável:	LOI(%)

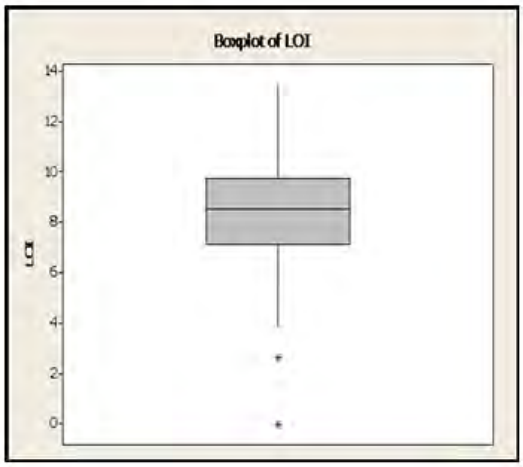
Número de Amostras:	424
Mínimo Valor:	1,58
Máximo Valor:	16,79
N° Classes (Sturges):	10
Intervalo (Sturges):	1,56

Quantiles	
2.5%:	3,95
5.0%:	4,64
25.0%:	6,59
Mediana:	7,88
75.0%:	9,66
95.0%:	12,29
97.5%:	13,08

Média:	8,24
Variância:	5,55
Desvio Padrão:	2,36
Coef. de variação:	29%
Range interquartil:	3,08





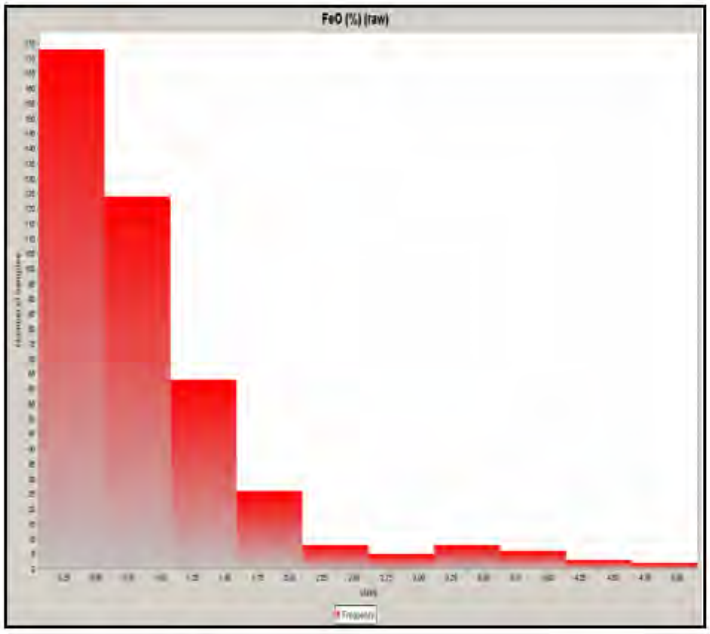


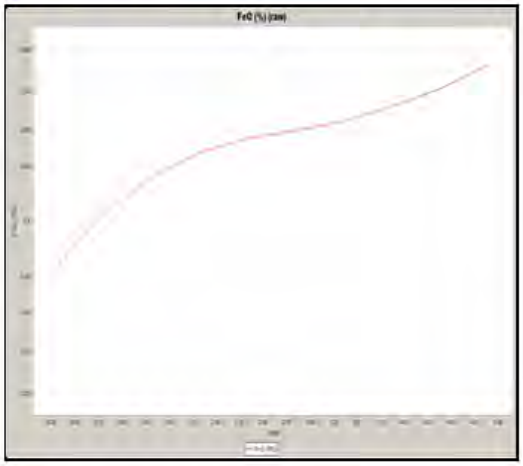
Alvo:	area3
Litologia:	COB
Variável:	FeO(%)

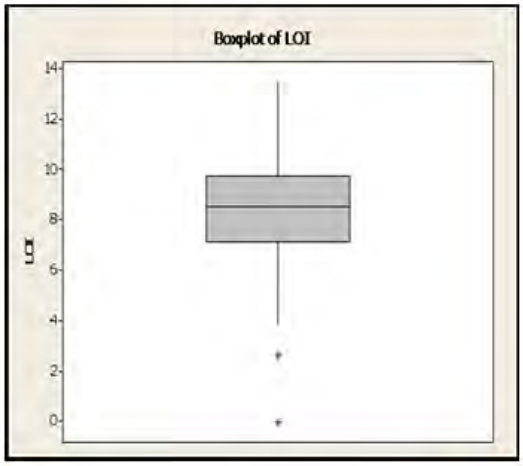
Número de Amostras:	415
Mínimo Valor:	0,05
Máximo Valor:	5,16
N° Classes (Sturges):	10
Intervalo (Sturges):	0,53

Quantiles	
2,5%:	0,14
5,0%:	0,17
25,0%:	0,36
Mediana:	0,68
75,0%:	1,18
95,0%:	2,72
97,5%:	3,78

Média:	0,92
Variância:	0,72
Desvio Padrão:	0,85
Coef. de variação:	92%
Range interquartil:	0,82





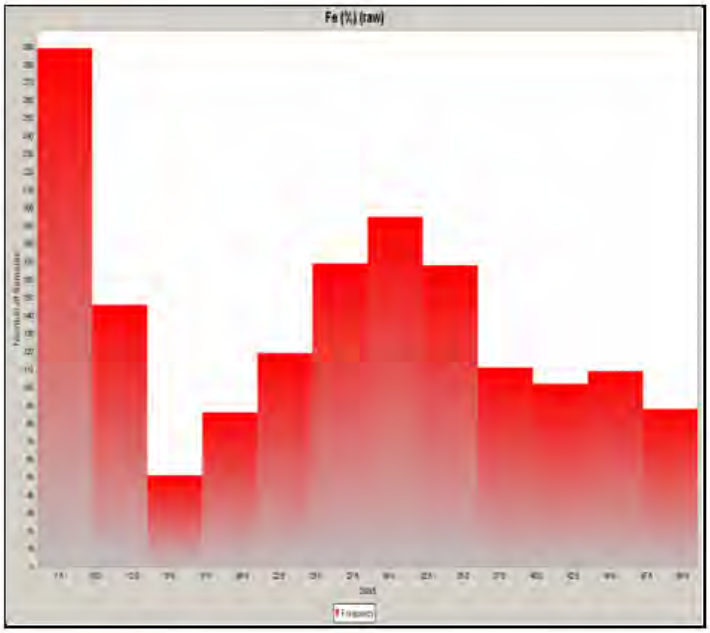


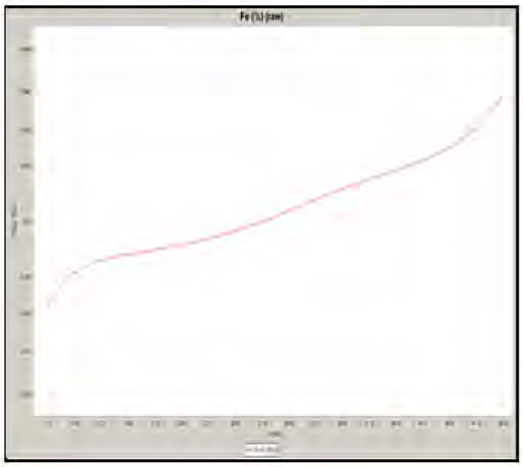
Alvo:	area3
Litologia:	Sap
Variável:	Fe(%)

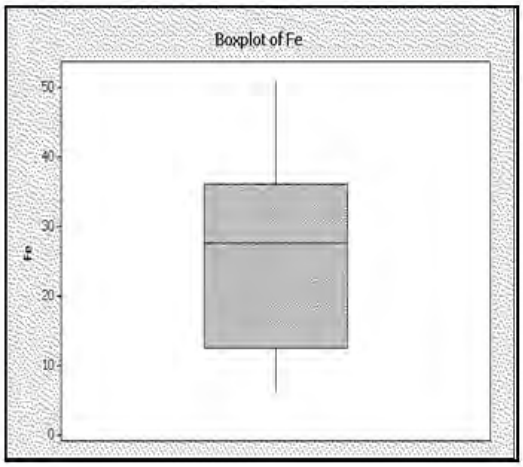
Número de Amostras:	1 633
Mínimo Valor:	6,01
Máximo Valor:	51,00
N° Classes (Sturges):	12
Intervalo (Sturges):	3,84

Quantiles	
2.5%:	6,63
5.0%:	6,98
25.0%:	12,50
Mediana:	27,60
75.0%:	36,10
95.0%:	47,50
97.5%:	48,60

Média:	26,27
Variância:	173,20
Desvio Padrão:	13,16
Coef. de variação:	50%
Range interquartil:	23,60





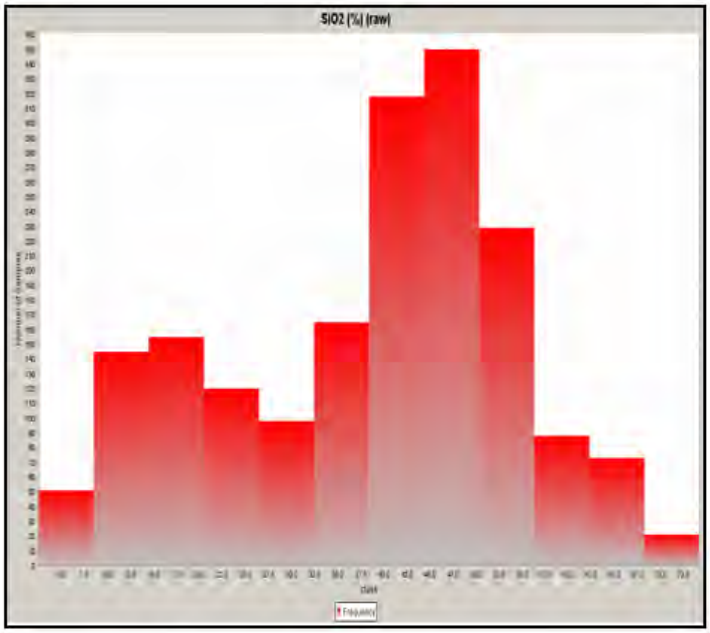


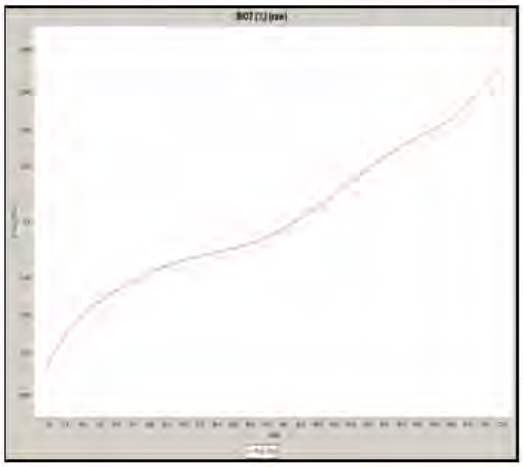
Alvo:	area3
Litologia:	Sap
Variável:	SiO2(%)

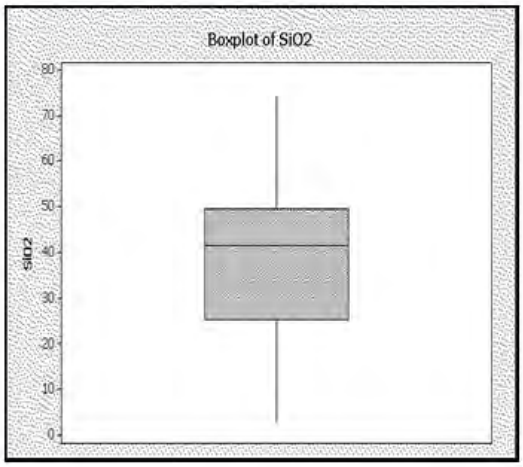
Número de Amostras:	1 813
Mínimo Valor:	2,56
Máximo Valor:	74,20
N° Classes (Sturges):	12
Intervalo (Sturges):	6,04

Quantiles	
2.5%:	7,98
5.0%:	10,25
25.0%:	25,40
Mediana:	41,60
75.0%:	49,60
95.0%:	62,95
97.5%:	65,40

Média:	38,35
Variância:	249,53
Desvio Padrão:	15,80
Coef. de variação:	41%
Range interquartil:	24,20





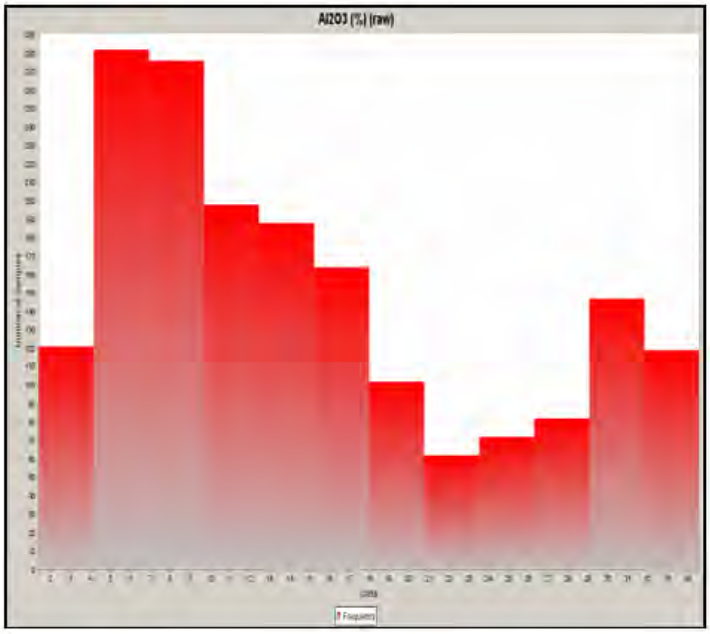


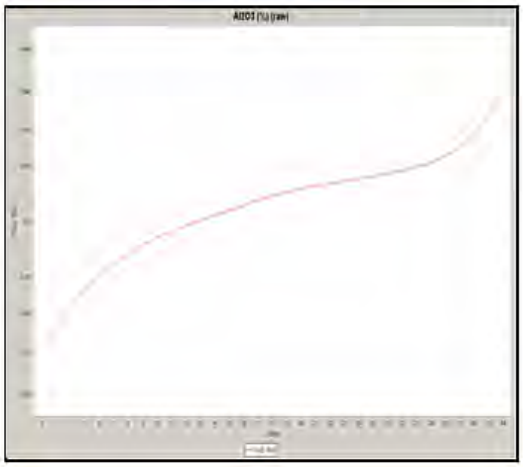
Alvo:	area3
Litologia:	Sap
Variável:	Al2O3(%)

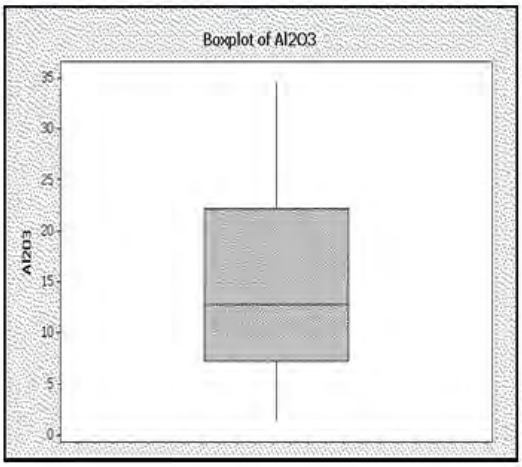
Número de Amostras:	1 813
Mínimo Valor:	1,38
Máximo Valor:	34,60
N° Classes (Sturges):	12
Intervalo (Sturges):	2,80

Quantiles	
2.5%:	2,91
5.0%:	3,72
25.0%:	7,31
Mediana:	12,80
75.0%:	22,15
95.0%:	32,20
97.5%:	32,95

Média:	15,20
Variância:	87,29
Desvio Padrão:	9,34
Coef. de variação:	61%
Range interquartil:	14,85





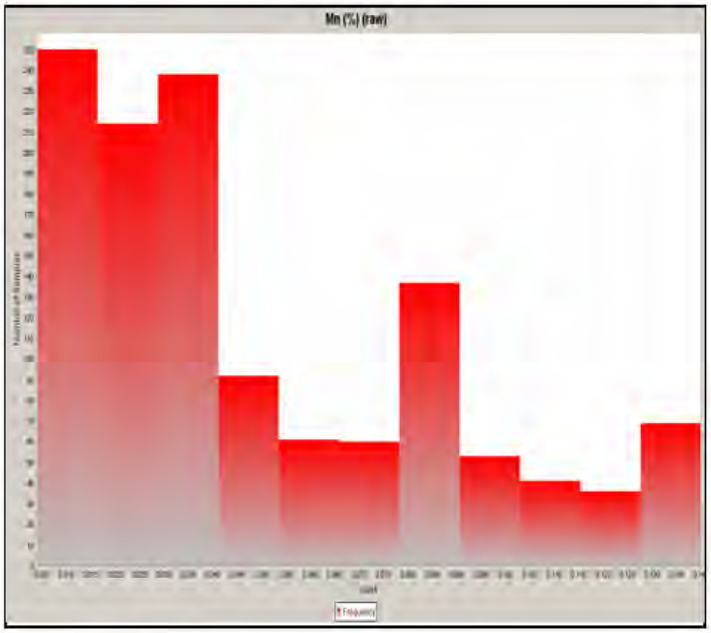


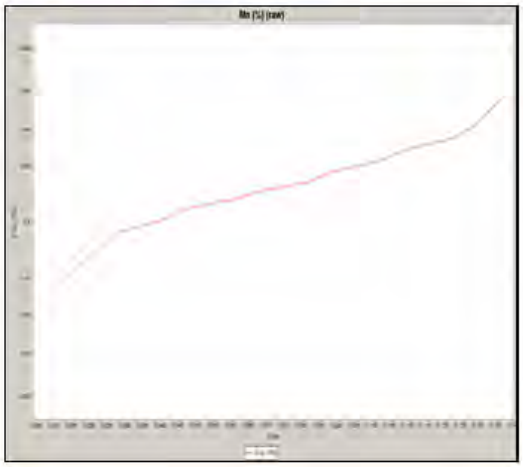
Alvo:	area3
Litologia:	Sap
Variável:	Mn(%)

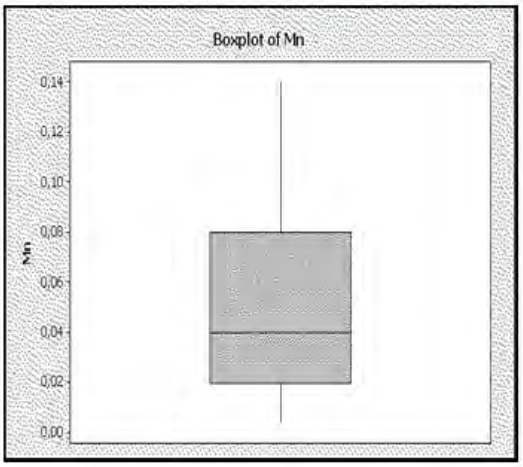
Número de Amostras:	1 251
Mínimo Valor:	0,004
Máximo Valor:	0,14
N° Classes (Sturges):	11
Intervalo (Sturges):	0,01

Quantiles	
2.5%:	0,004
5.0%:	0,00
25.0%:	0,02
Mediana:	0,04
75.0%:	0,08
95.0%:	0,13
97.5%:	0,13

Média:	0,05
Variância:	0,00
Desvio Padrão:	0,04
Coef. de variação:	78%
Range interquartil:	0,06





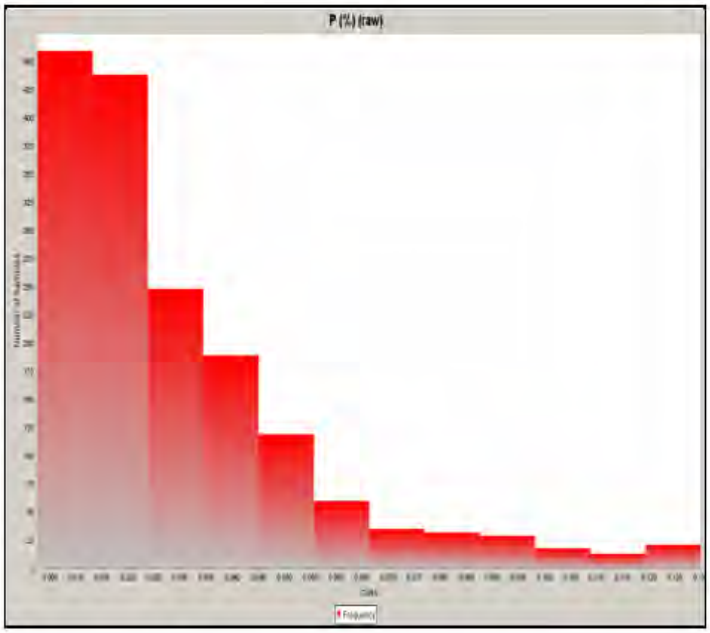


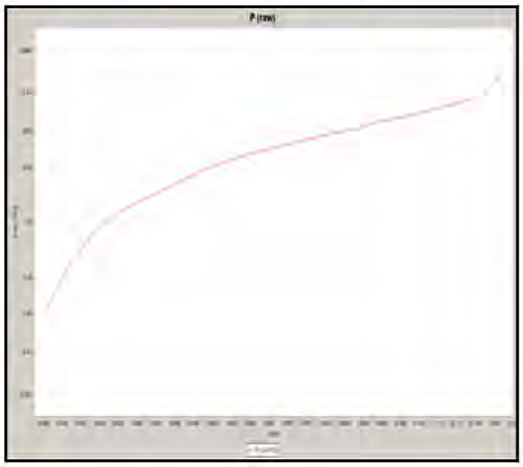
Alvo:	area3
Litologia:	Sap
Variável:	P(%)

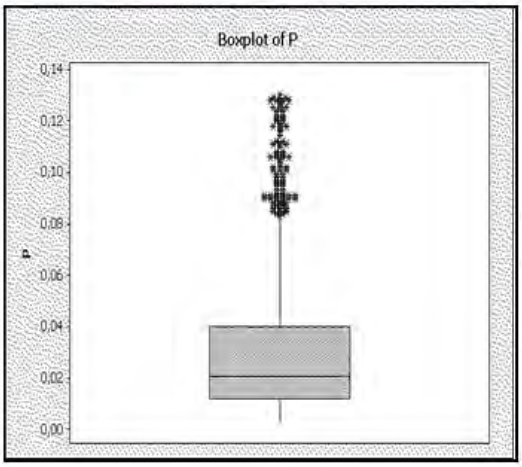
Número de Amostras:	1 661
Mínimo Valor:	0,00
Máximo Valor:	0,13
N° Classes (Sturges):	12
Intervalo (Sturges):	0,01

Quantiles	
2.5%:	0.01
5.0%:	0.01
25.0%:	0.01
Mediana:	0.02
75.0%:	0.04
95.0%:	0.09
97.5%:	0.10

Média:	0,03
Variância:	0,00
Desvio Padrão:	0,03
Coef. de variação:	84%
Range interquartil:	0,03





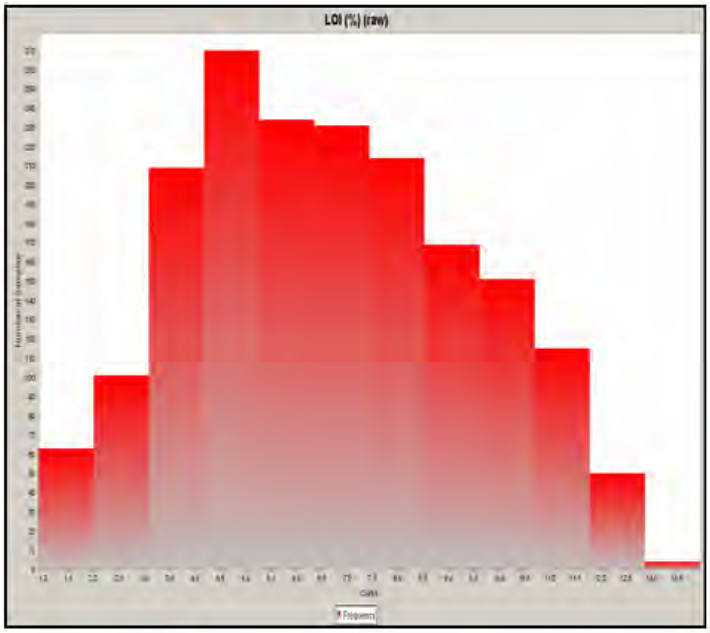


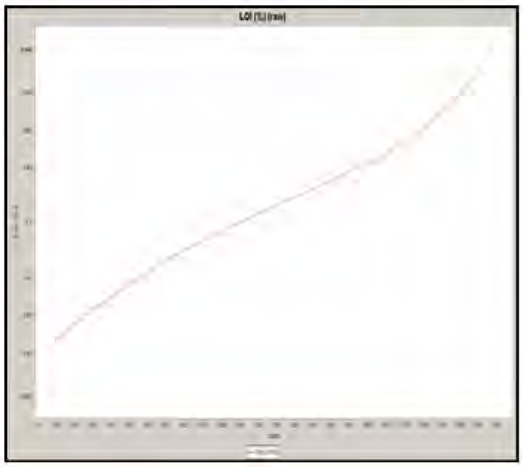
Alvo:	area3
Litologia:	Sap
Variável:	LOI(%)

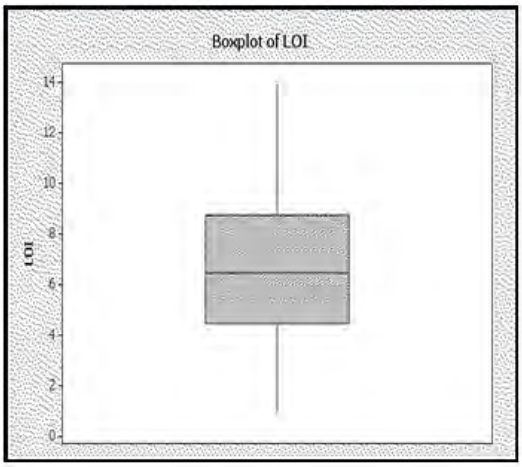
Número de Amostras:	1 811
Mínimo Valor:	0,91
Máximo Valor:	13,96
Nº Classes (Sturges):	12
Intervalo (Sturges):	1,10

Quantiles	
2.5%:	1,78
5.0%:	2,39
25.0%:	4,45
Mediana:	6,44
75.0%:	8,74
95.0%:	11,40
97.5%:	11,95

Média:	6,66
Variância:	7,63
Desvio Padrão:	2,76
Coef. de variação:	41%
Range interquartil:	4,29





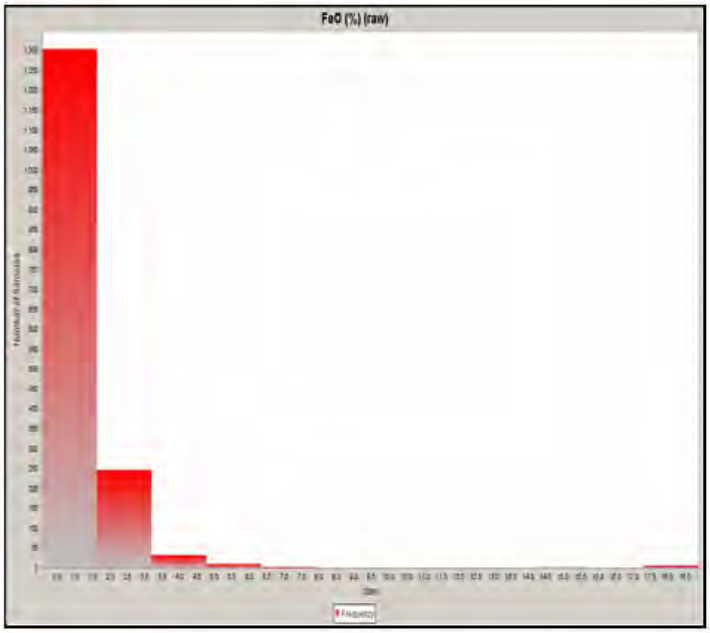


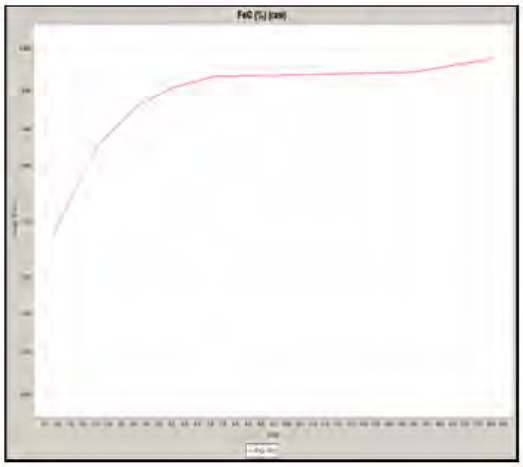
Alvo:	area3
Litologia:	Sap
Variável:	FeO(%)

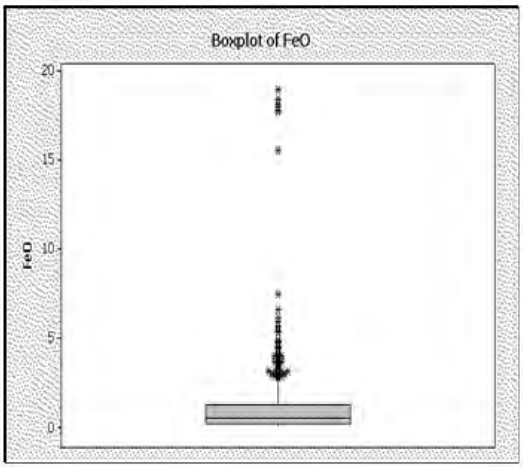
Número de Amostras:	1 600
Mínimo Valor:	0,05
Máximo Valor:	18,89
N° Classes (Sturges):	12
Intervalo (Sturges):	1,61

Quantiles	
2.5%:	0,14
5.0%:	0,14
25.0%:	0,28
Mediana:	0,57
75.0%:	1,30
95.0%:	2,81
97.5%:	3,69

Média:	0,99
Variância:	2,12
Desvio Padrão:	1,46
Coef. de variação:	147%
Range interquartil:	1,02





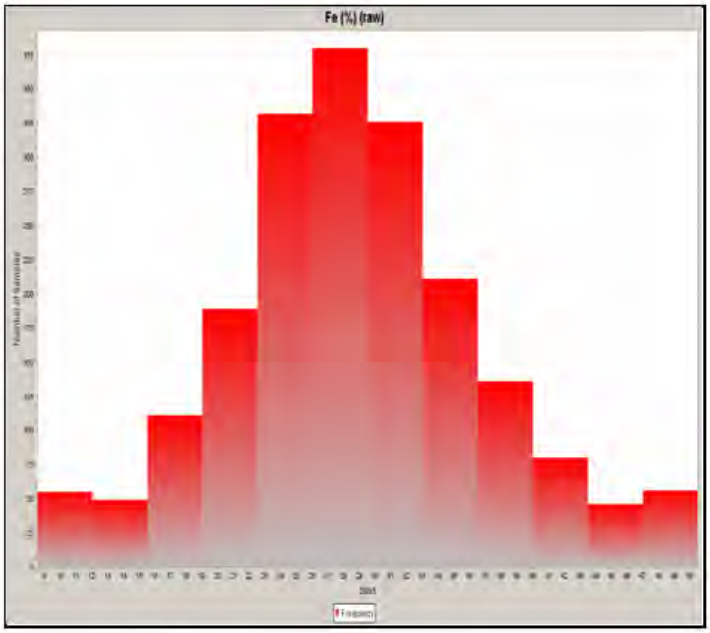


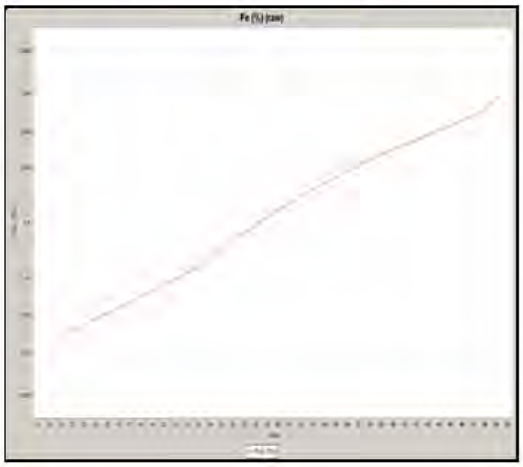
Alvo:	area3
Litologia:	Sar
Variável:	Fe(%)

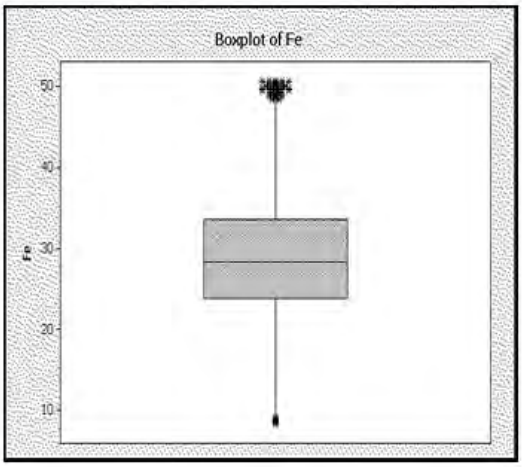
Número de Amostras:	1 971
Mínimo Valor:	8,54
Máximo Valor:	50,50
Nº Classes (Sturges):	12
Intervalo (Sturges):	3,50

Quantiles	
2.5%:	11,80
5.0%:	15,20
25.0%:	23,80
Mediana:	28,40
75.0%:	33,60
95.0%:	43,80
97.5%:	46,65

Média:	28,77
Variância:	67,79
Desvio Padrão:	8,23
Coef. de variação:	29%
Range interquartil:	9,80





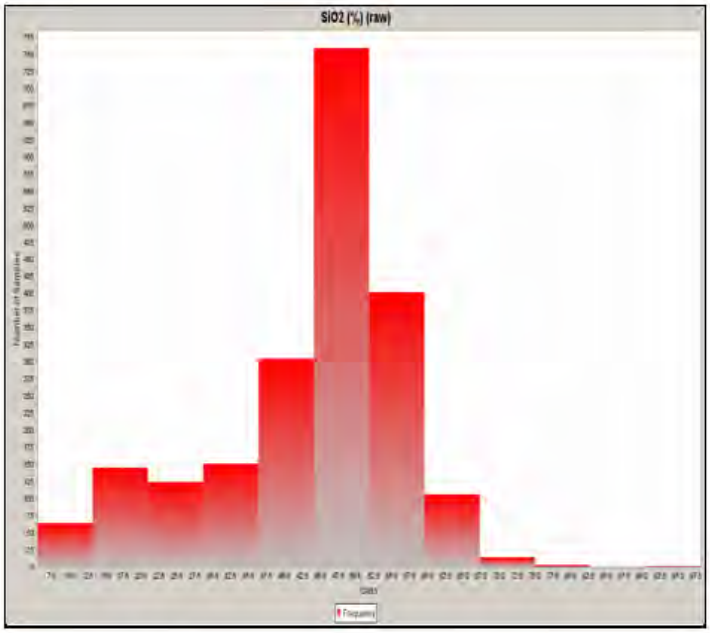


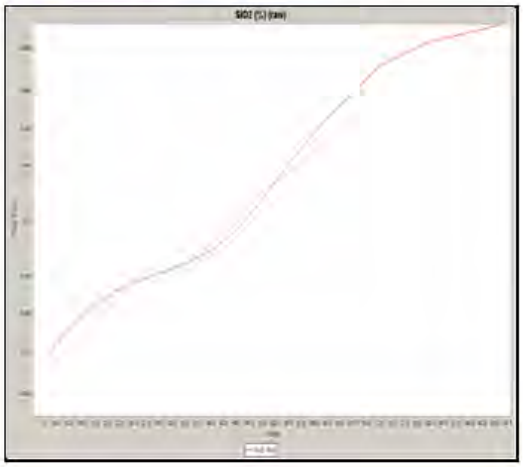
Alvo:	area3
Litologia:	Sar
Variável:	SiO2(%)

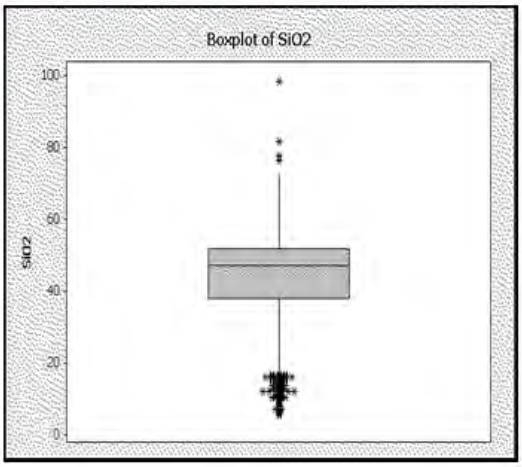
Número de Amostras:	2 074
Mínimo Valor:	5,51
Máximo Valor:	98,20
N° Classes (Sturges):	12
Intervalo (Sturges):	7,69

Quantiles	
2.5%:	12,10
5.0%:	16,30
25.0%:	37,90
Mediana:	47,05
75.0%:	51,90
95.0%:	60,25
97.5%:	62,20

Média:	43,48
Variância:	175,89
Desvio Padrão:	13,26
Coef. de variação:	31%
Range interquartil:	14,00





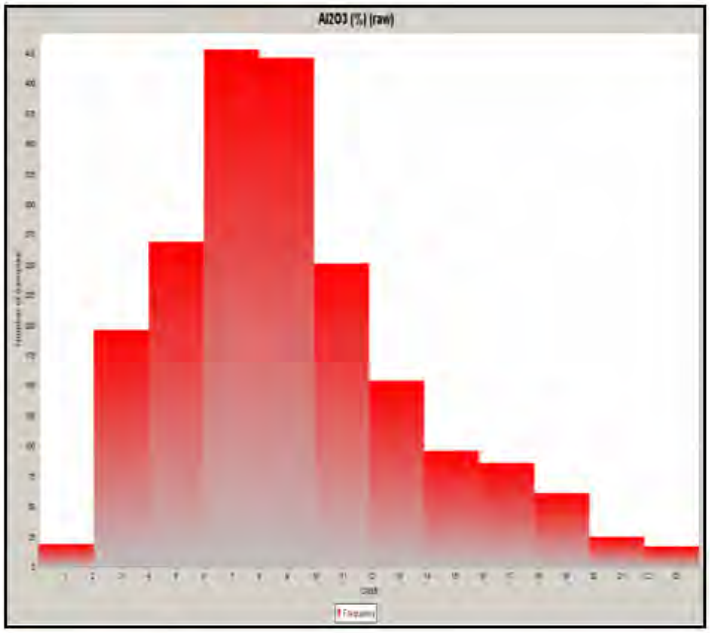


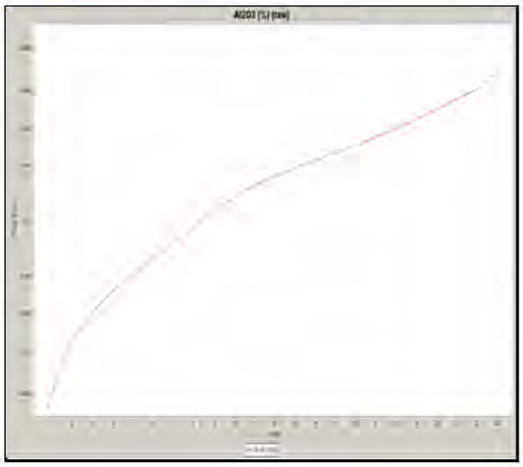
Alvo:	area3
Litologia:	Sar
Variável:	Al2O3(%)

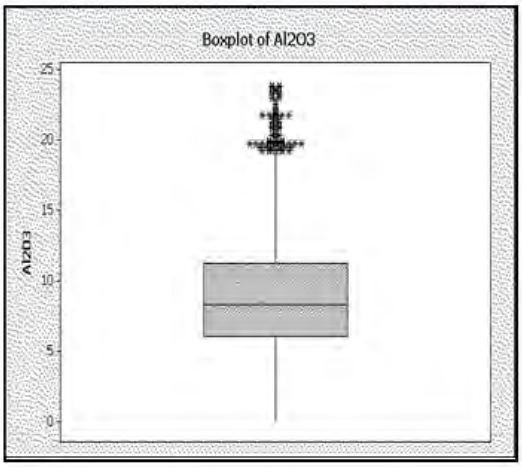
Número de Amostras:	2 023
Mínimo Valor:	0,05
Máximo Valor:	23,80
N° Classes (Sturges):	12
Intervalo (Sturges):	1,98

Quantiles	
2.5%:	2,50
5.0%:	3,11
25.0%:	6,09
Mediana:	8,34
75.0%:	11,30
95.0%:	17,95
97.5%:	19,40

Média:	9,10
Variância:	19,15
Desvio Padrão:	4,38
Coef. de variação:	48%
Range interquartil:	5,21





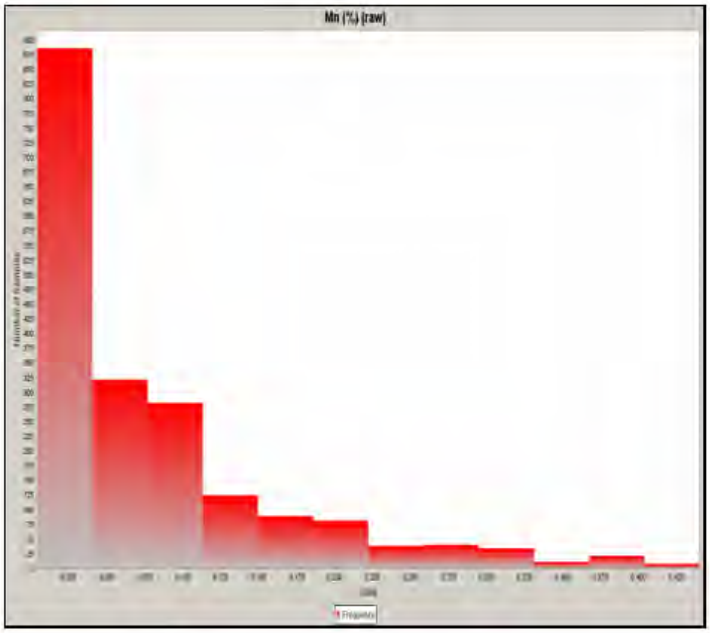


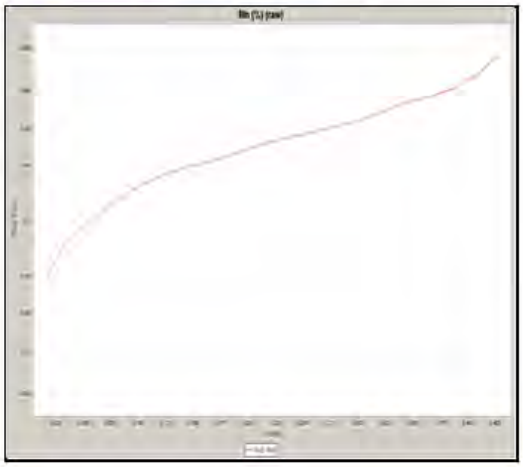
Alvo:	area3
Litologia:	Sar
Variável:	Mn(%)

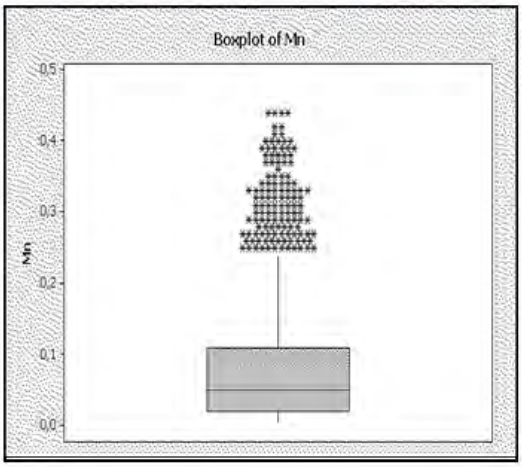
Número de Amostras:	1 935
Mínimo Valor:	0,00
Máximo Valor:	0,44
N° Classes (Sturges):	12
Intervalo (Sturges):	0,04

Quantiles	
2.5%:	0.00
5.0%:	0.00
25.0%:	0.02
Mediana:	0.05
75.0%:	0.11
95.0%:	0.27
97.5%:	0.32

Média:	0,08
Variância:	0,01
Desvio Padrão:	0,08
Coef. de variação:	104%
Range interquartil:	0,09





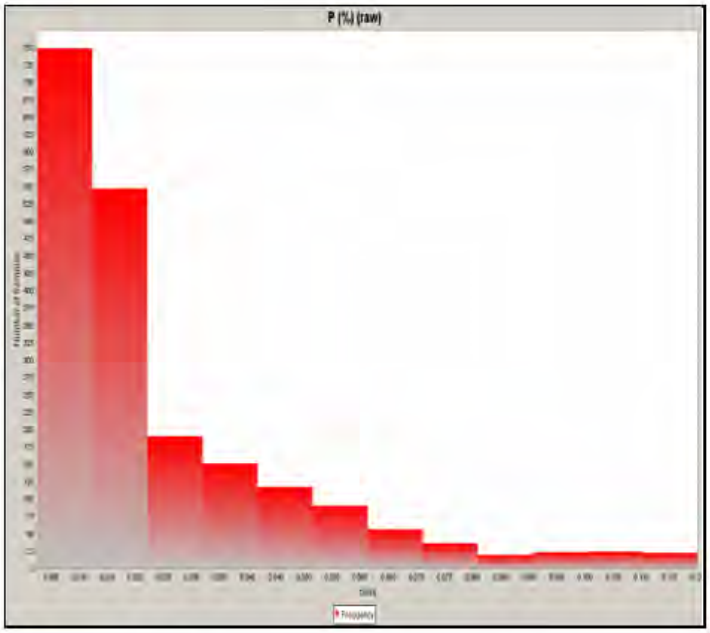


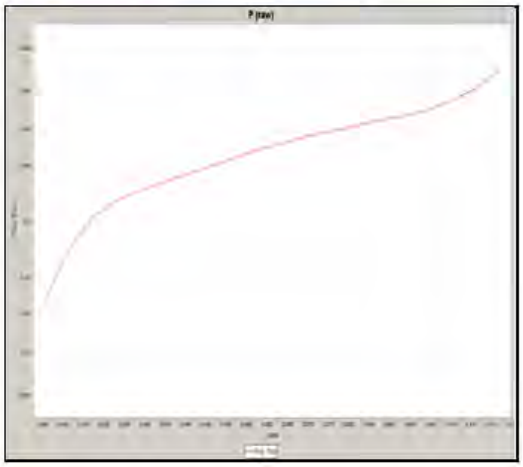
Alvo:	area3
Litologia:	Sar
Variável:	P(%)

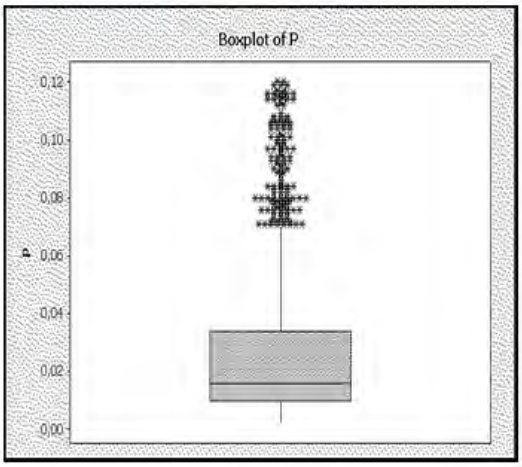
Número de Amostras:	2 024
Mínimo Valor:	0,00
Máximo Valor:	0,12
N° Classes (Sturges):	12
Intervalo (Sturges):	0,01

Quantiles	
2.5%:	0.01
5.0%:	0.01
25.0%:	0.01
Mediana:	0.02
75.0%:	0.04
95.0%:	0.08
97.5%:	0.09

Média:	0,03
Variância:	0,00
Desvio Padrão:	0,02
Coef. de variação:	92%
Range interquartil:	0,03





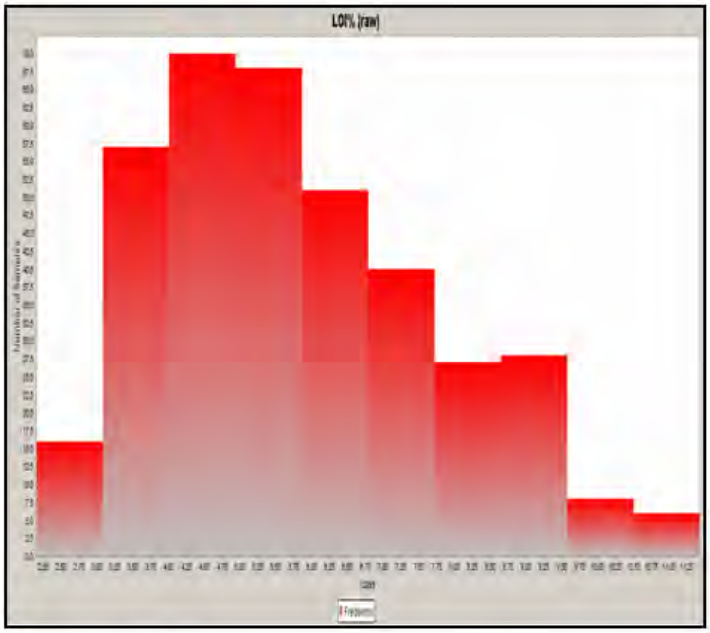


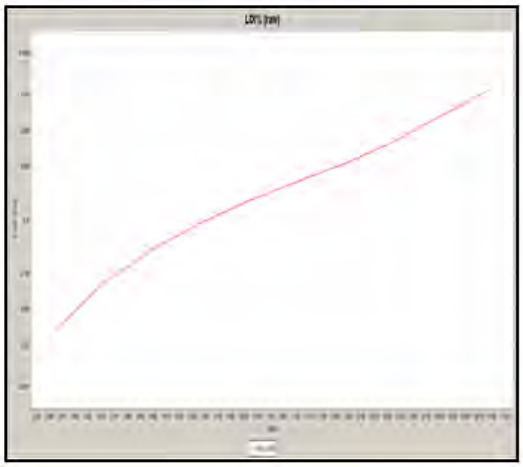
Alvo:	area3
Litologia:	Sar
Variável:	LOI(%)

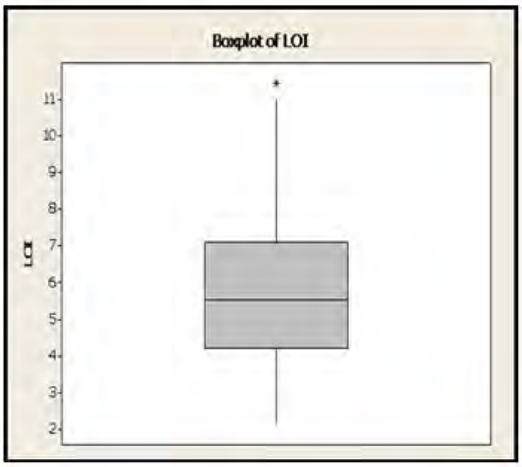
Número de Amostras:	2 070
Mínimo Valor:	0,68
Máximo Valor:	12,26
N° Classes (Sturges):	12
Intervalo (Sturges):	0,96

Quantiles	
2.5%:	1,52
5.0%:	1,93
25.0%:	3,45
Mediana:	4,60
75.0%:	5,96
95.0%:	9,44
97.5%:	10,38

Média:	4,96
Variância:	4,86
Desvio Padrão:	2,21
Coef. de variação:	44%
Range interquartil:	2,51





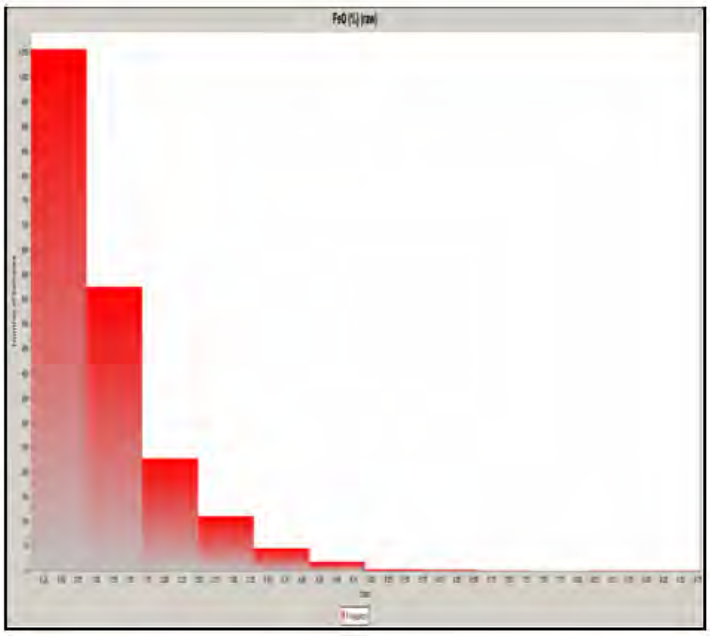


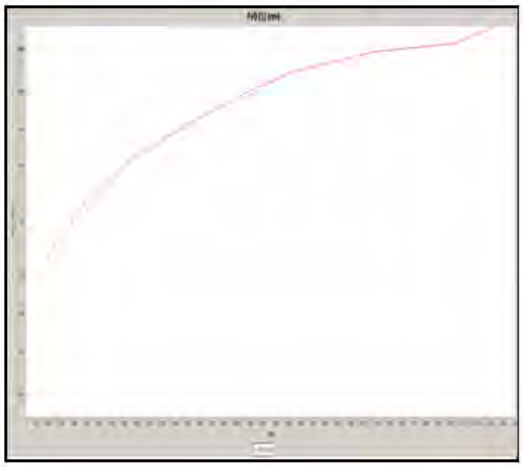
Alvo:	area3
Litologia:	Sar
Variável:	FeO(%)

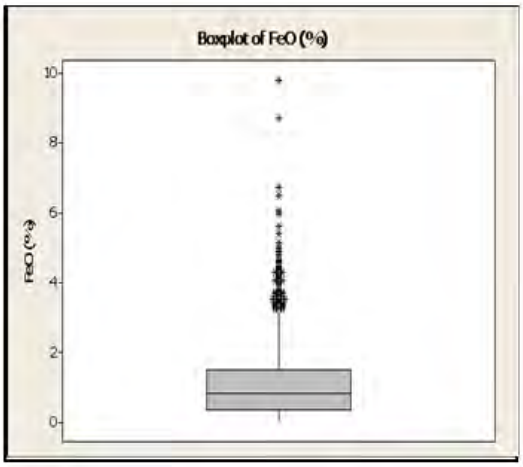
Número de Amostras:	2 045
Mínimo Valor:	0,05
Máximo Valor:	9,77
N° Classes (Sturges):	12
Intervalo (Sturges):	0,81

Quantiles	
2.5%:	0,05
5.0%:	0,19
25.0%:	0,37
Mediana:	0,84
75.0%:	1,51
95.0%:	3,03
97.5%:	3,64

Média:	1,10
Variância:	0,94
Desvio Padrão:	0,97
Coef. de variação:	88%
Range interquartil:	1,14







Appendix D

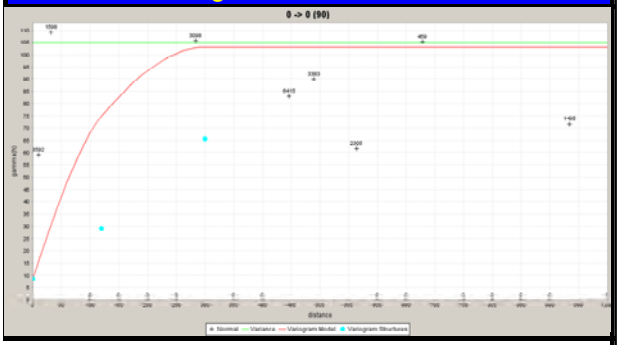
Variography

Alvo	Area 1
Material:	Saprolito
Variável:	Fe (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	8.60	
1	2.90	120
2	65.50	300

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	1.0
Maior/Menor	10.0

Variograma Omni direcional

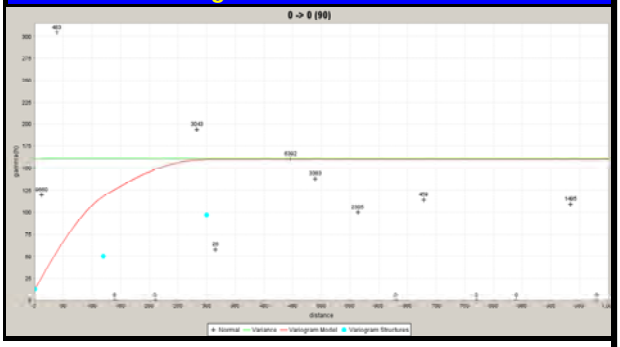


Alvo	Area 1
Material:	Saprolito
Variável:	SiO2 (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	13.00	-
1	50.00	120
2	97.00	300

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

Variograma Omni direcional

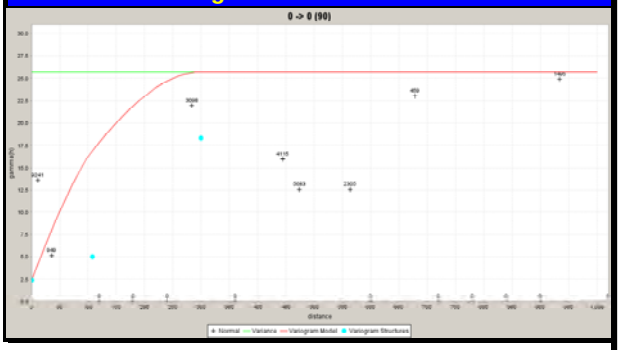


Alvo	Area 1
Material:	Saprolito
Variável:	Al2O3 (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	2.40	-
1	5.00	108
2	18.30	300

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

Variograma Omni direcional

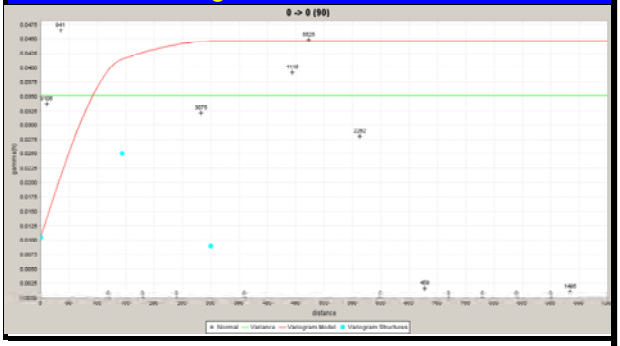


Alvo	Area 1
Material:	Saprolito
Variável:	Mn(%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0.01	-
1	0.03	144
2	0.01	300

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

Variograma Omni direcional

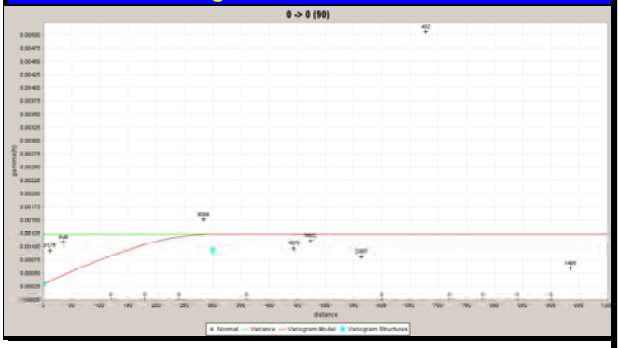


Alvo	Area 1
Material:	Saprolito
Variável:	P2O5 (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0.00	-
1	0.00	300

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

Variograma Omni direcional

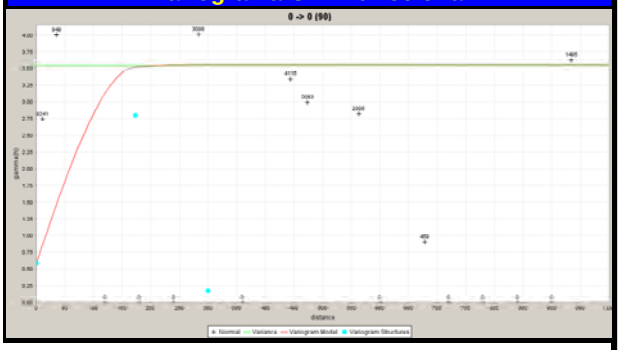


Alvo	Area 1
Material:	Saprolito
Variável:	LOI (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0.29	-
1	3.50	450

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

Variograma Omni direcional

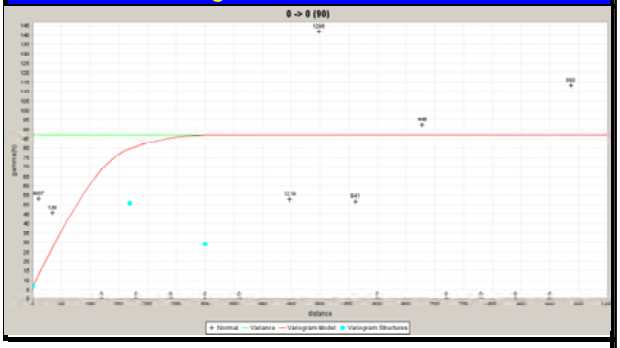


Alvo	Area 1
Material:	Saprock
Variável:	Fe (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	6.80	-
1	51.00	169
2	29.00	300

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

Variograma Omni direcional

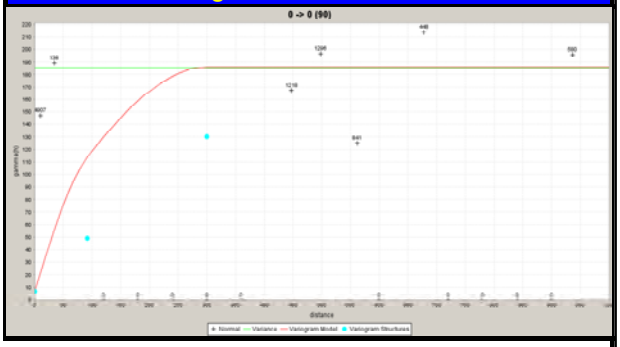


Alvo	Area 1
Material:	Saprock
Variável:	SiO2 (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	6.80	-
1	49.00	91
2	130.00	300

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

Variograma Omni direcional

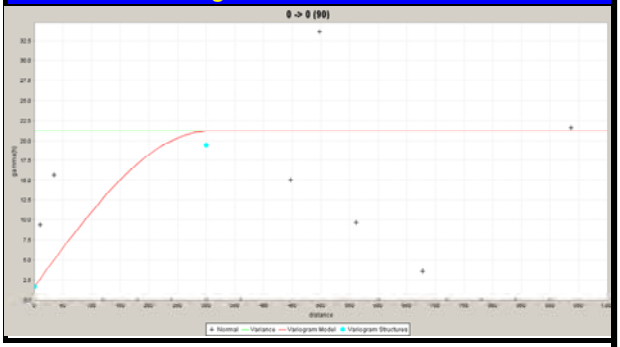


Alvo	Area 1
Material:	Saprock
Variável:	Al2O3 (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	1.67	-
1	19.42	300

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

Variograma Omni direcional

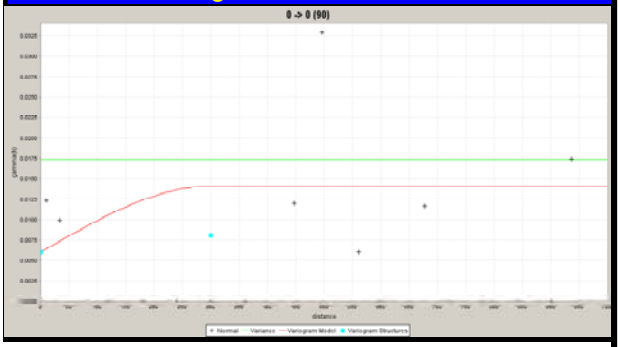


Alvo	Area 1
Material:	Saprock
Variável:	Mn(%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0.01	-
1	0.01	300

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

Variograma Omni direcional

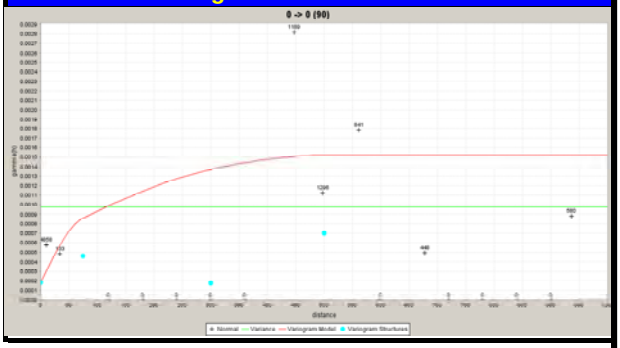


Alvo	Area 1
Material:	Saprock
Variável:	P(%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0.00	-
1	0.00	75
2	0.00	300
3	0.00	500

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

Variograma Omni direcional

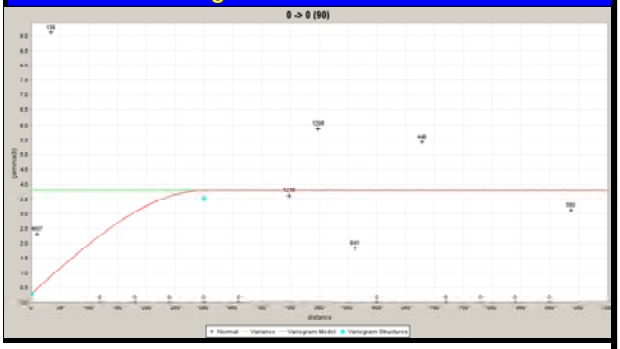


Alvo	Area 1
Material:	Saprock
Variável:	PPC (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0.29	-
1	3.50	450

Atitudes do Elipsoide	
Bearing	35
Plunge	0
Dip	0
Maior/Semi-maior	10.0
Maior/Menor	100.0

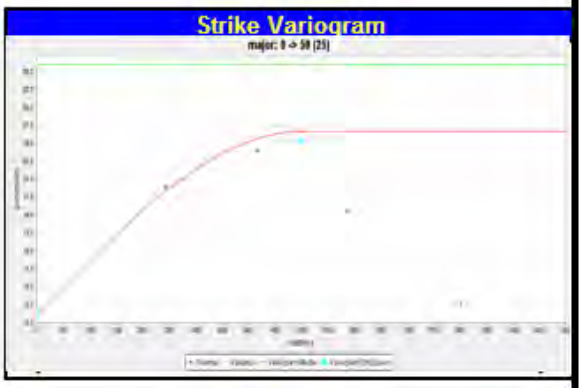
Variograma Omni direcional

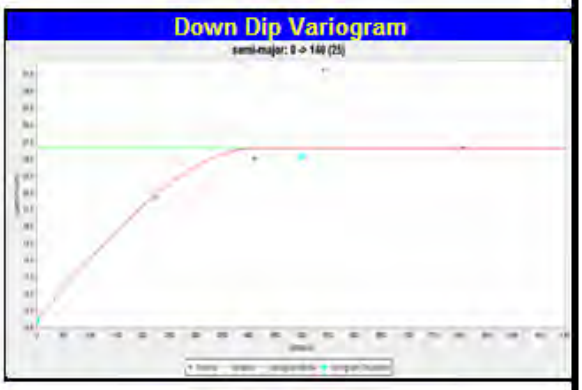


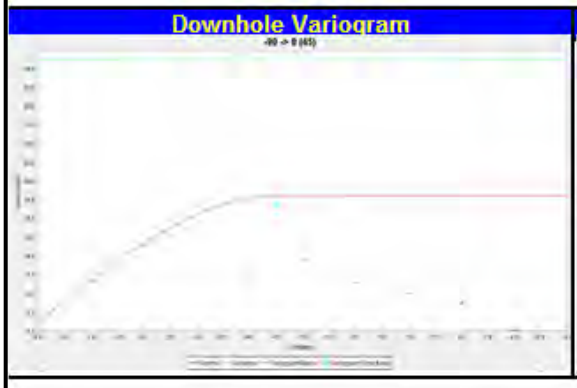
Target	Area 2
Ore:	Colluvium
Variable:	Fe

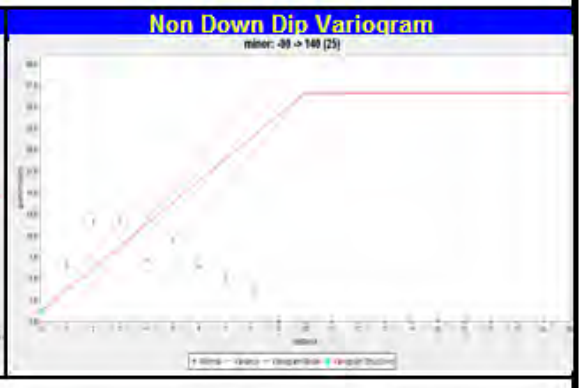
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	1,200	-
1	25,40	500
2	-	-

Ellipse Orientation	
Bearing	50
Plunge	0
Dip	0
Maior/Semi-maior	1,2
Maior/Menor	111,0





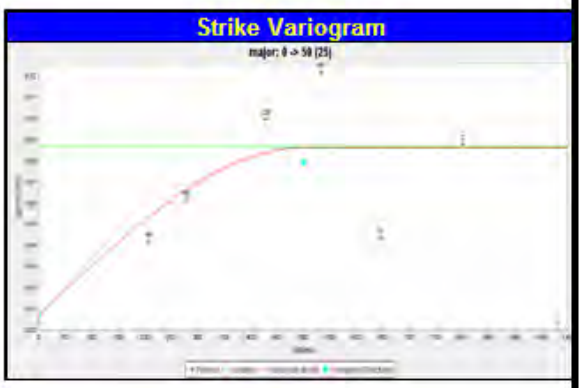


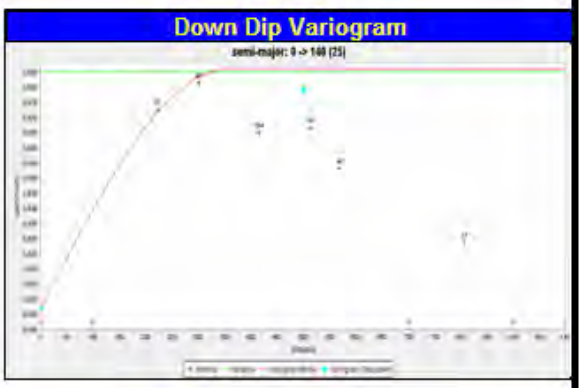


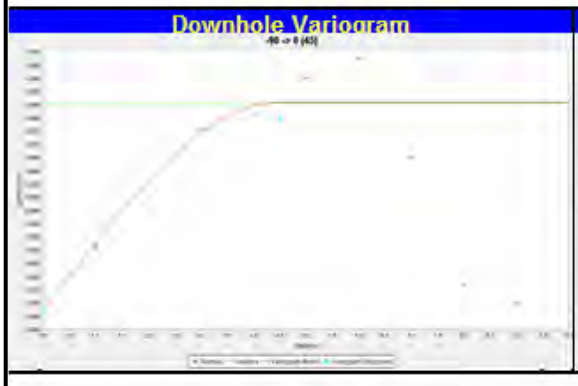
Target	Area 2
Ore:	Colluvium
Variable:	FeO

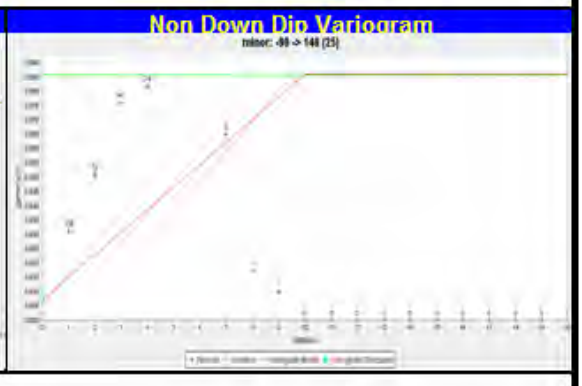
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0,01	-
1	0,08	500
2	-	-

Ellipse Orientation	
Bearing	50
Plunge	0
Dip	0
Maior/Semi-maior	1,4
Maior/Menor	116,1







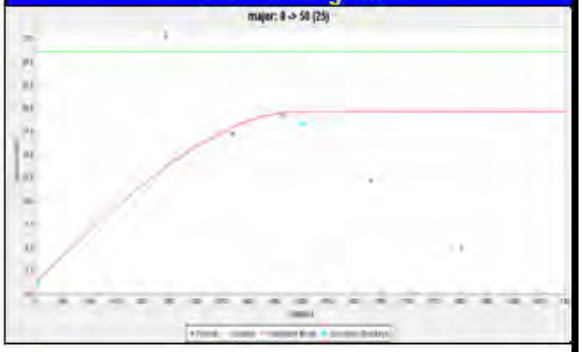


Target	Area 2
Ore:	Colluvium
Variable:	SiO2

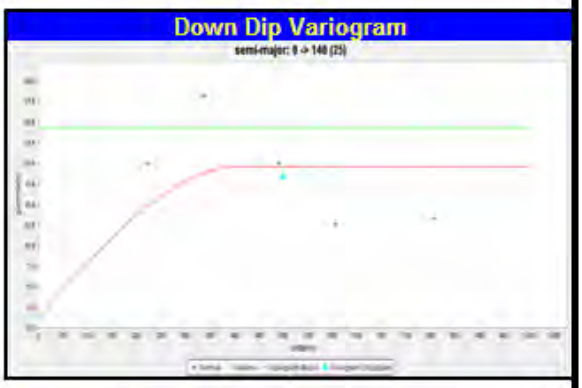
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	1,30	-
1	18,30	500
2	-	-

Ellipse Orientation	
Bearing	50
Plunge	0
Dip	0
Maior/Semi-maior	1,2
Maior/Menor	116,1

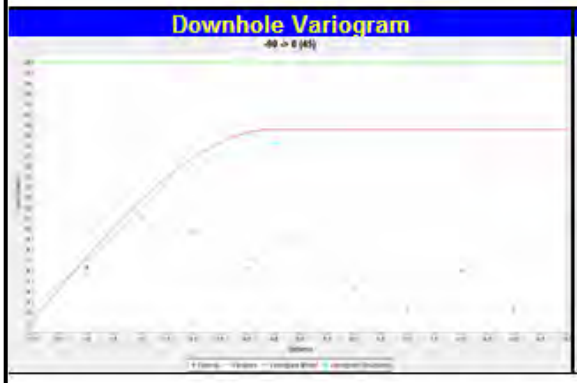
Strike Variogram



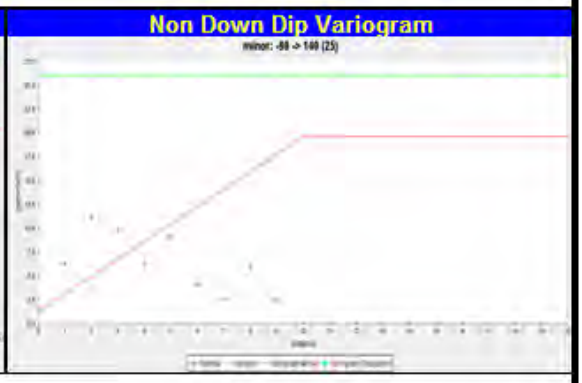
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

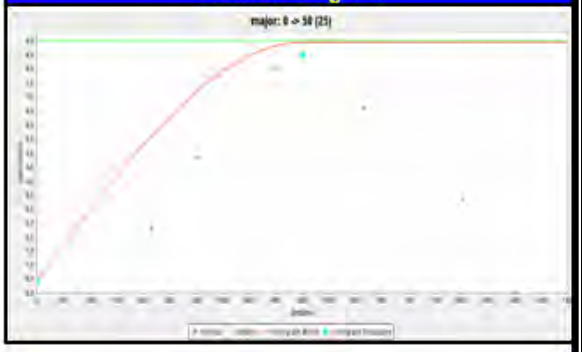


Target	Area 2
Ore:	Colluvium
Variable:	Al2O3

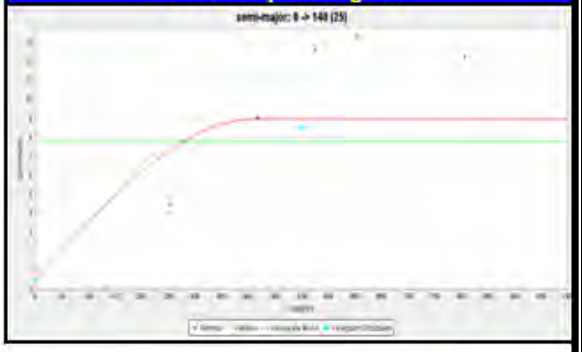
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0,450	-
1	8,50	500
2	-	-

Ellipse Orientation	
Bearing	50
Plunge	0
Dip	0
Maior/Semi-maior	1,2
Maior/Menor	116,1

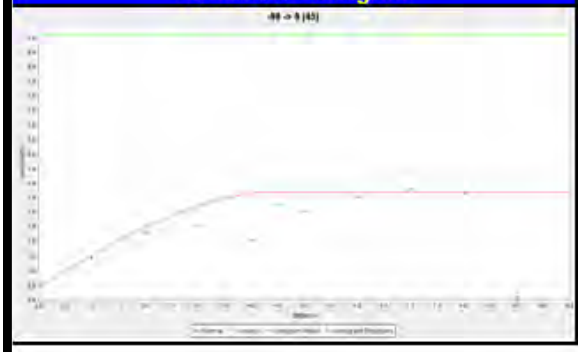
Strike Variogram



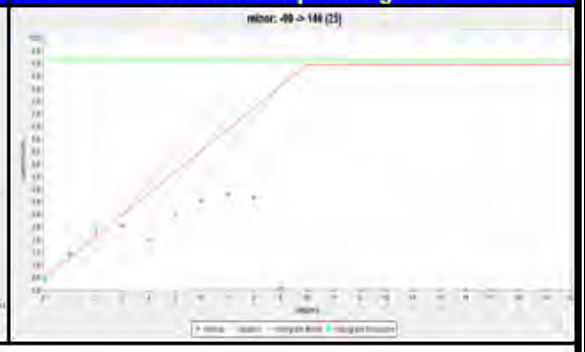
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

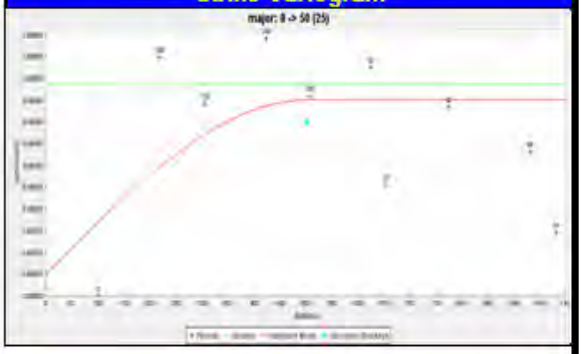


Target	Area 2
Ore:	Colluvium
Variable:	Mn

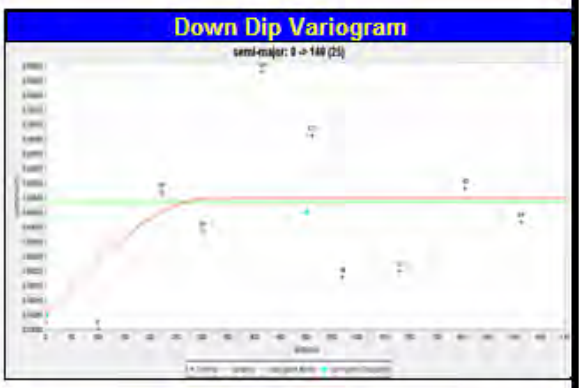
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0,00005	-
1	0,0004	500
2	-	-

Ellipse Orientation	
Bearing	50
Plunge	0
Dip	0
Maior/Semi-maior	1,6
Maior/Menor	102,7

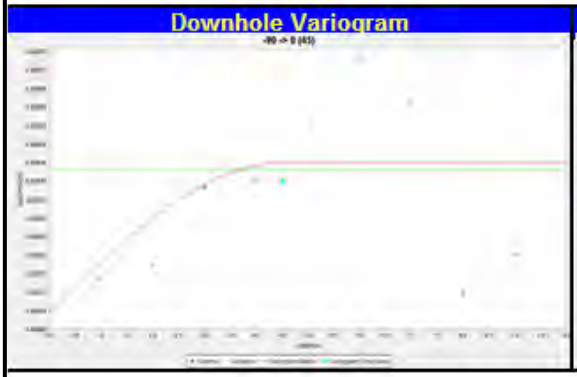
Strike Variogram



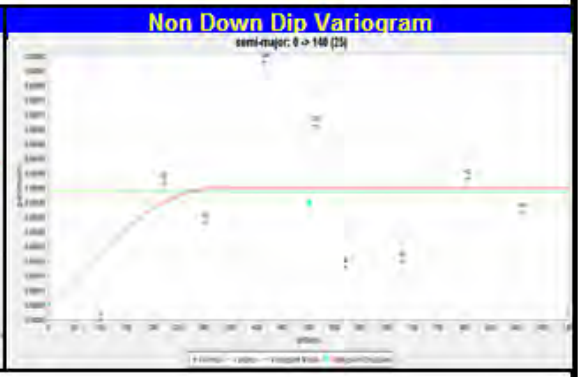
Down Dip Variogram



Downhole Variogram



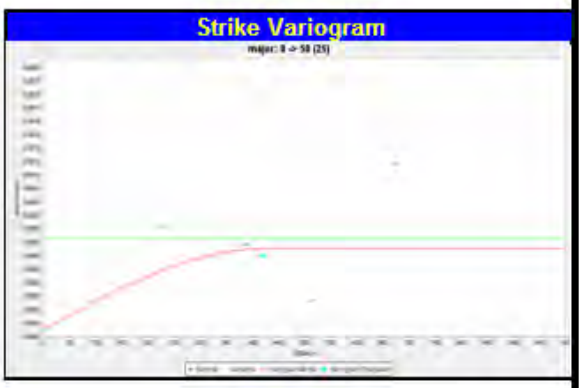
Non Down Dip Variogram

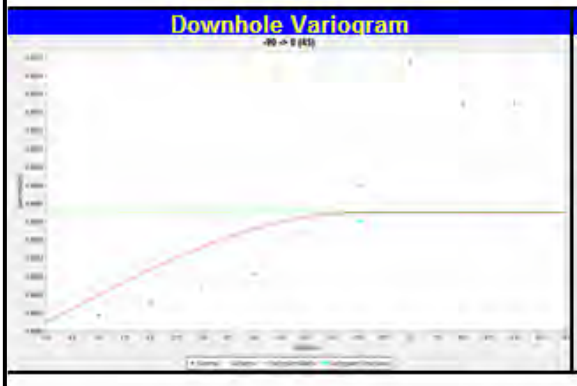


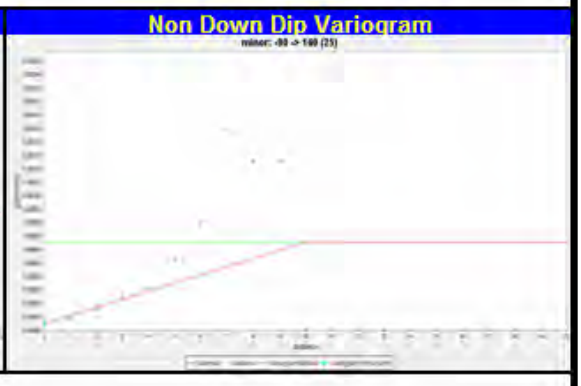
Target	Area 2
Ore:	Colluvium
Variable:	P

Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0,00005	-
1	0,0006	420
2	-	-

Ellipse Orientation	
Bearing	50
Plunge	0
Dip	0
Maior/Semi-maior	1,2
Maior/Menor	116,1





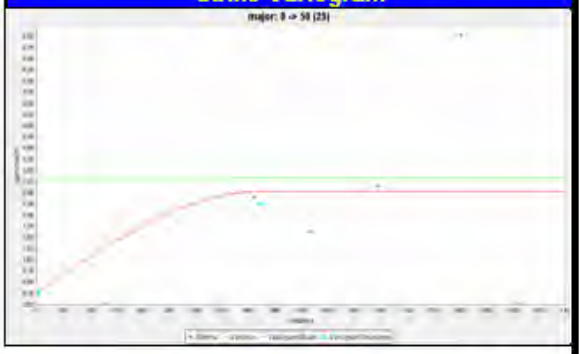


Target	Area 2
Ore:	Colluvium
Variable:	Loi

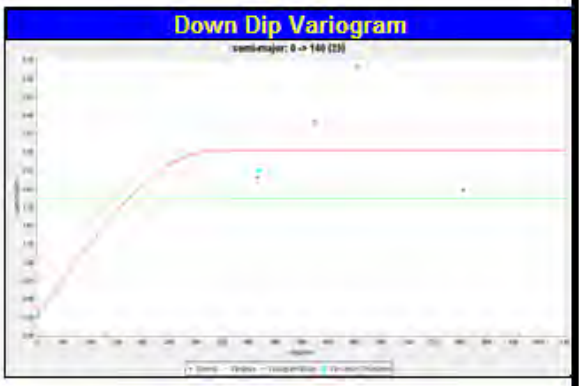
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0,27	-
1	2,25	420
2	-	-

Ellipse Orientation	
Bearing	50
Plunge	0
Dip	0
Maior/Semi-maior	1,3
Maior/Menor	116,1

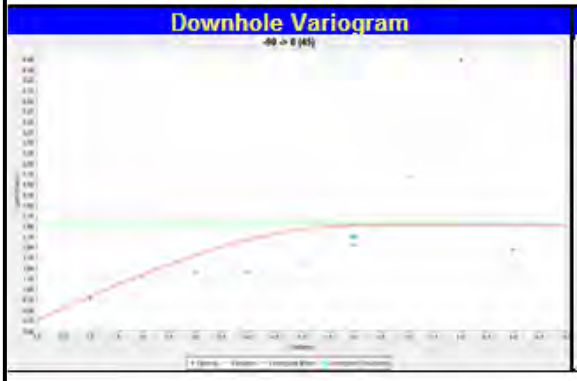
Strike Variogram



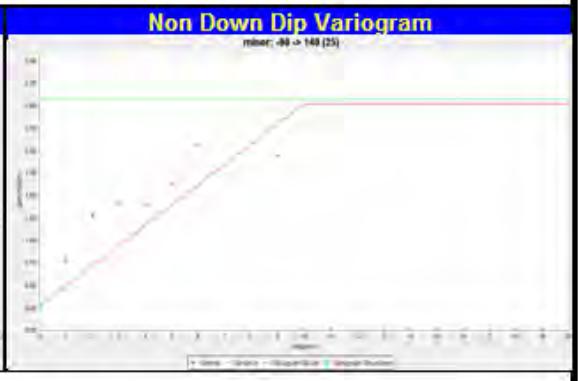
Down Dip Variogram



Downhole Variogram



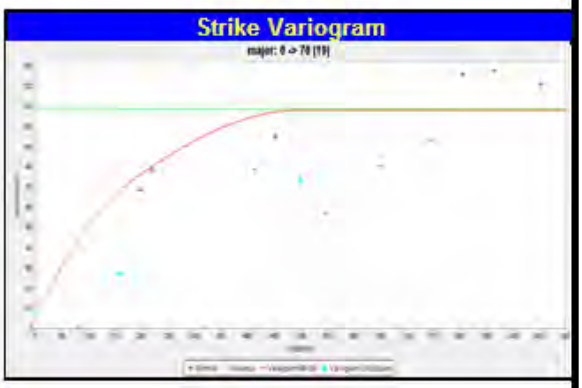
Non Down Dip Variogram

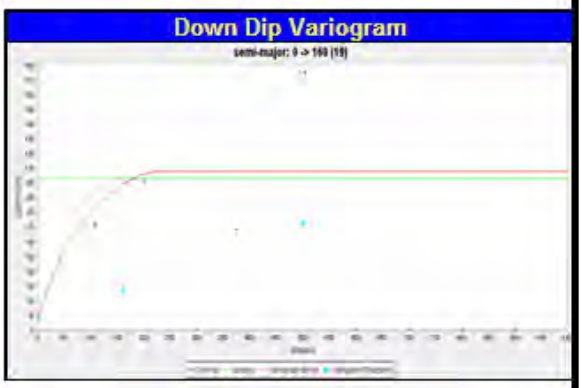


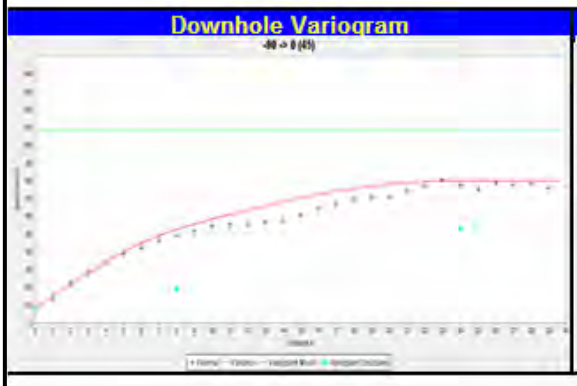
Target	Area 2
Ore:	Saprolite
Variable:	Fe

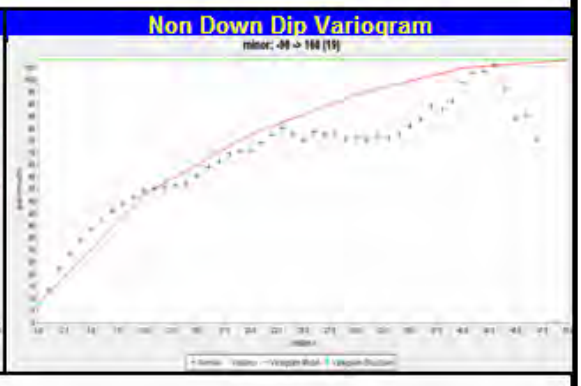
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	8,00	-
1	27,00	160
2	73,00	500

Ellipse Orientation	
Bearing	0
Plunge	0
Dip	0
Maior/Semi-maior	-
Maior/Menor	-







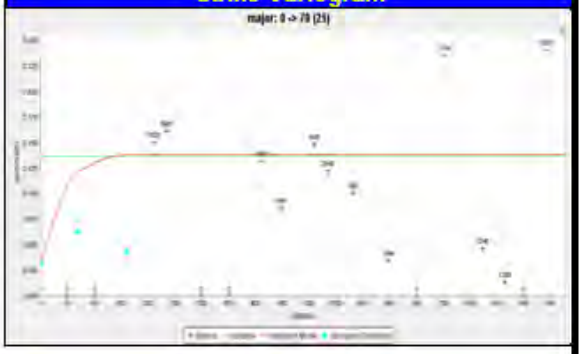


Target	Area 2
Ore:	Saprolite
Variable:	FeO

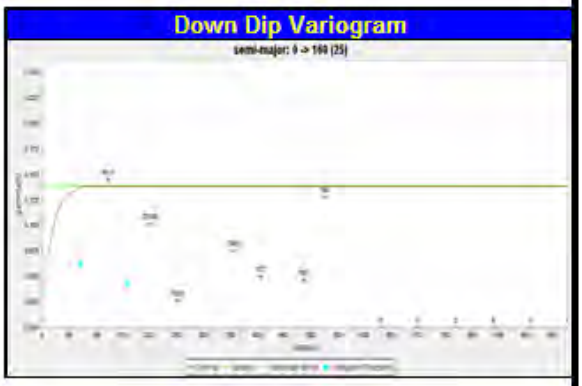
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0,03	-
1	0.06	70
2	0.04	160

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	2,0
Maior/Menor	10,3

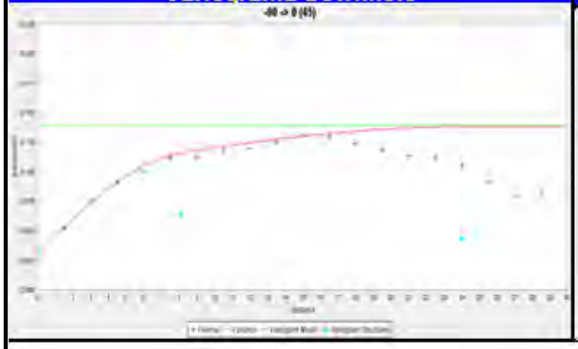
Strike Variogram



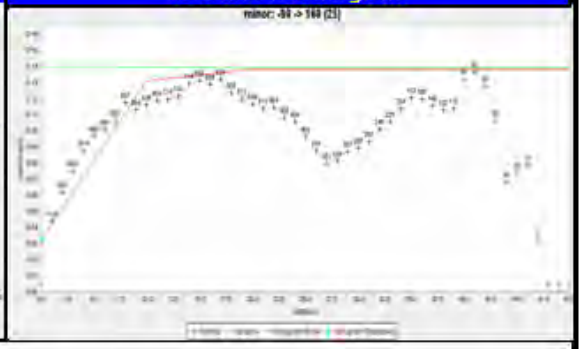
Down Dip Variogram



Variograma Downhole



Downhole Variogram

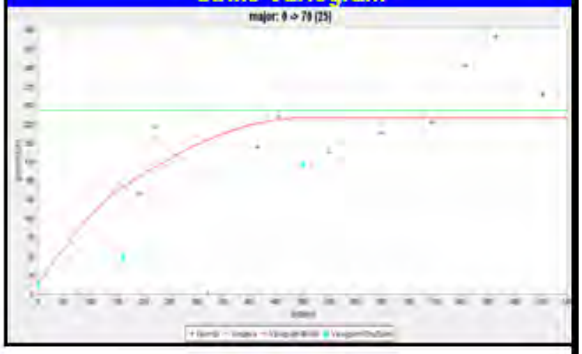


Target	Area 2
Ore:	Saprolite
Variable:	SiO2

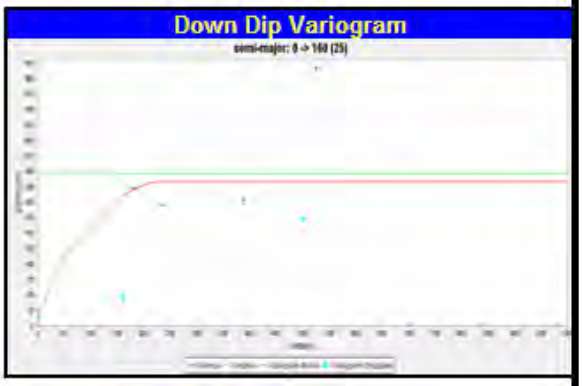
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	13,60	-
1	47,60	160
2	172,28	500

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	2,1
Maior/Menor	10,3

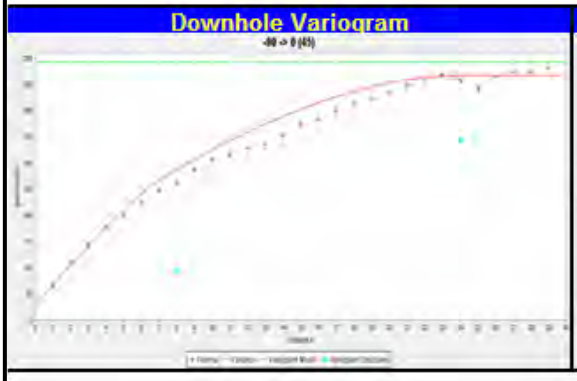
Strike Variogram



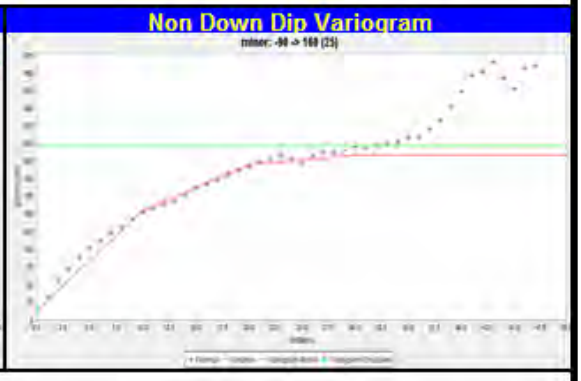
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

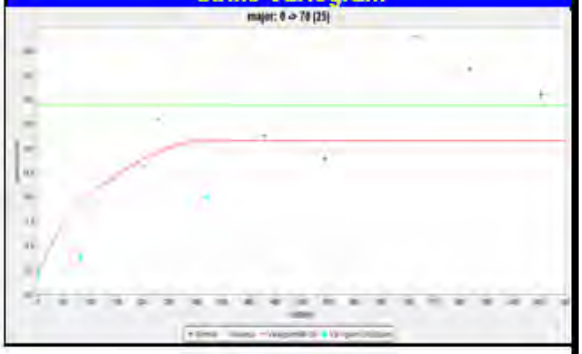


Target	Area 2
Ore:	Saprolite
Variable:	Al2O3

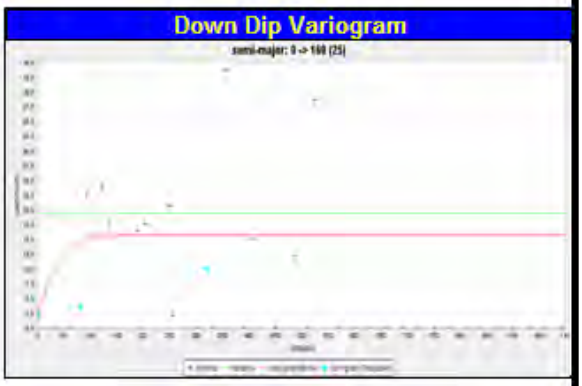
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	2,00	-
1	3,75	80
2	10,00	320

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	2,7
Maior/Menor	19,0

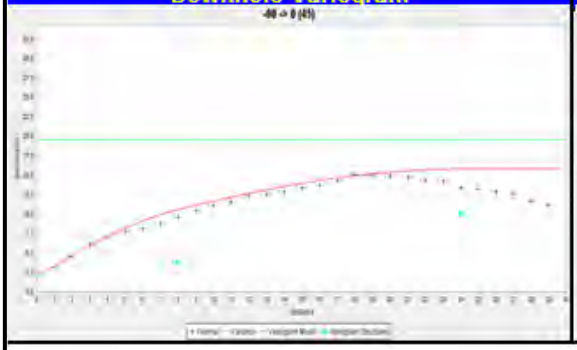
Strike Variogram



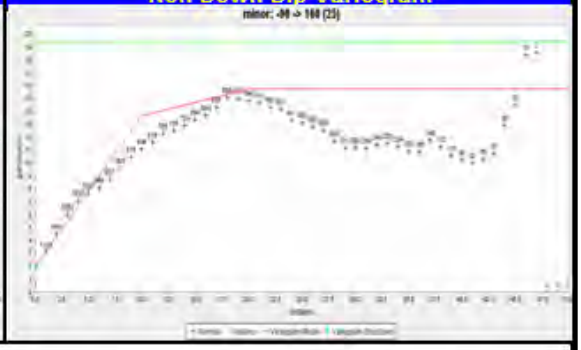
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

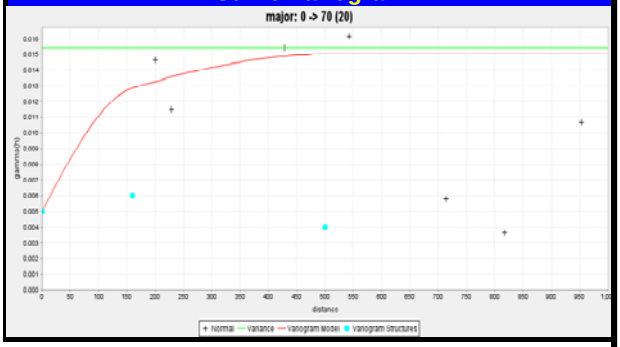


Target	Area 2
Ore:	Saprolite
Variable:	Mn

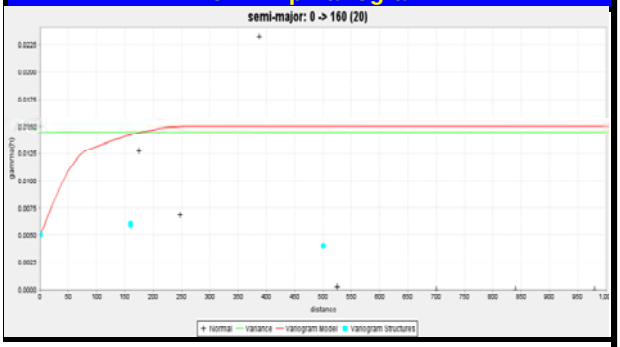
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0.01	-
1	0.01	160
2	0.00	500

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	1.9
Maior/Menor	14.7

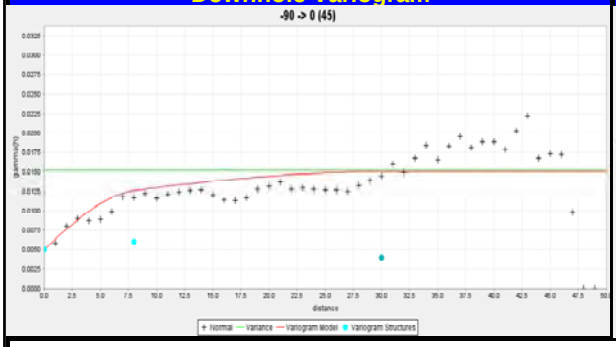
Strike Variogram



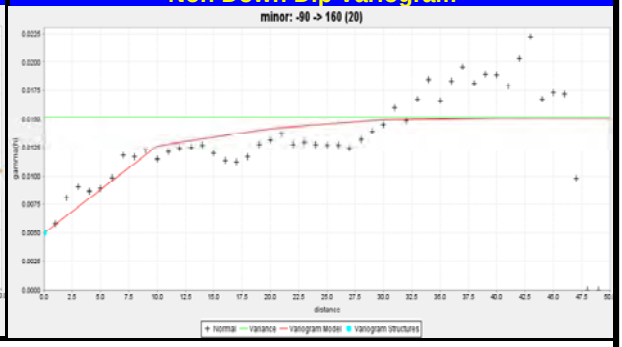
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

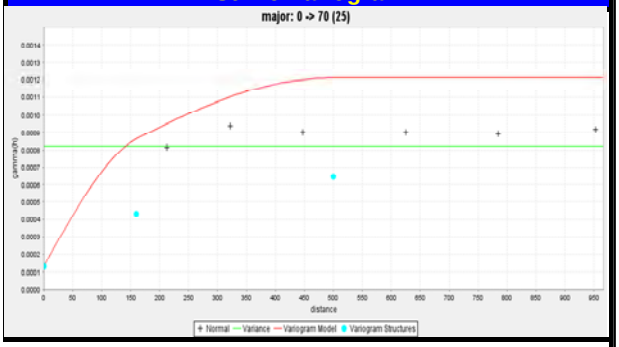


Target	Area 2
Ore:	Saprolite
Variable:	P

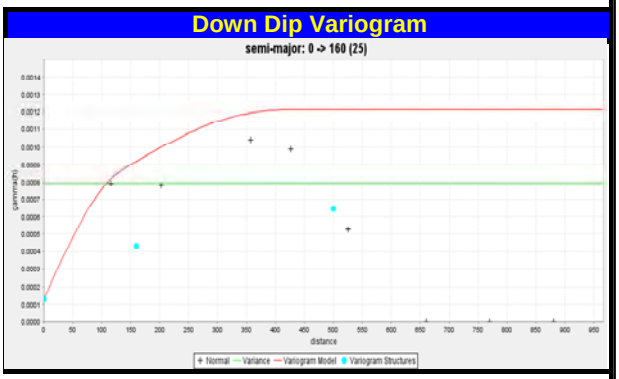
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0.0001	-
1	0.0003	160
2	0.0006	500

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	1.2
Maior/Menor	9.8

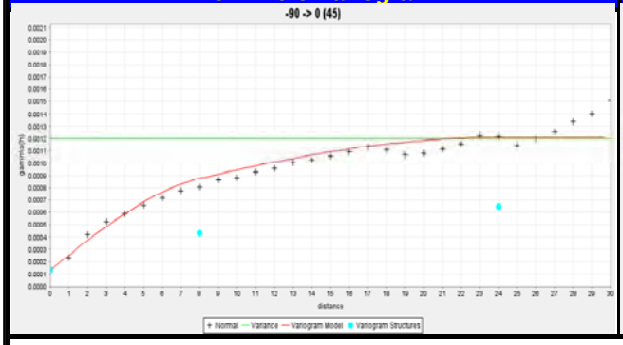
Strike Variogram



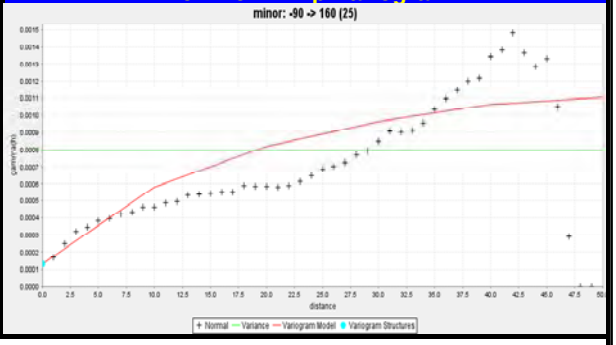
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

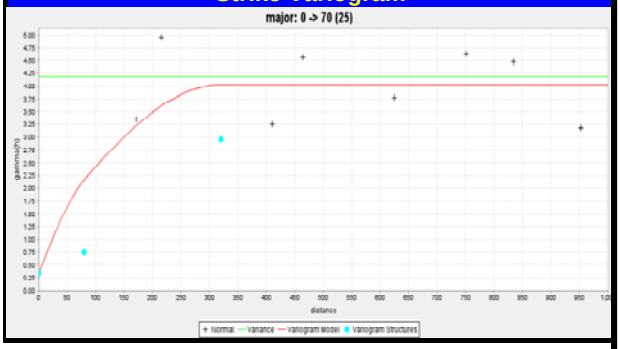


Target	Area 2
Ore:	Saprolite
Variable:	Loi

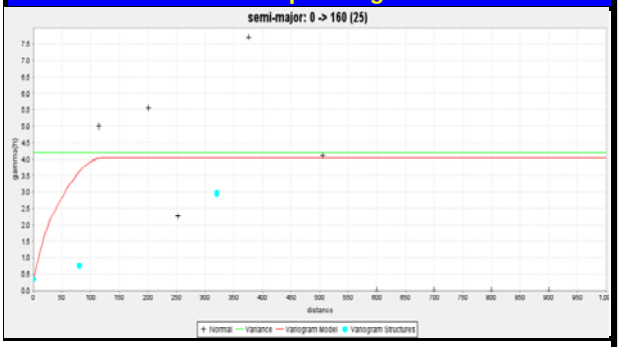
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0.34	-
1	0.74	80
2	2.95	320

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	2.7
Maior/Menor	14.7

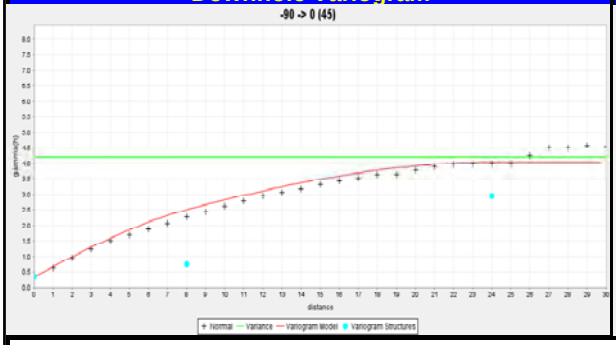
Strike Variogram



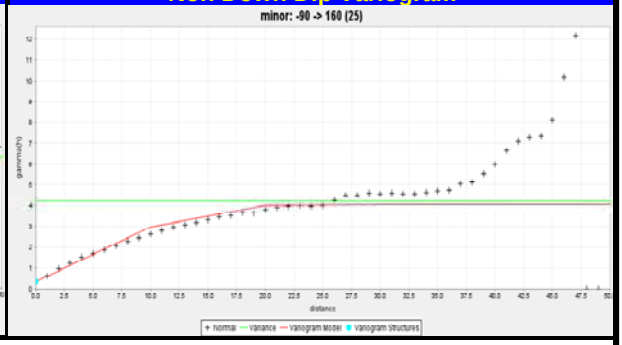
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

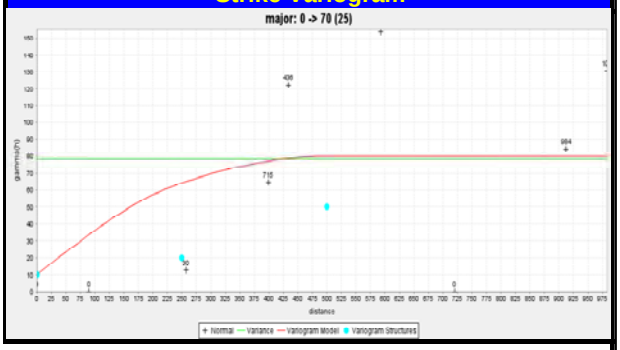


Target	Area 2
Ore:	Saprock
Variable:	Fe

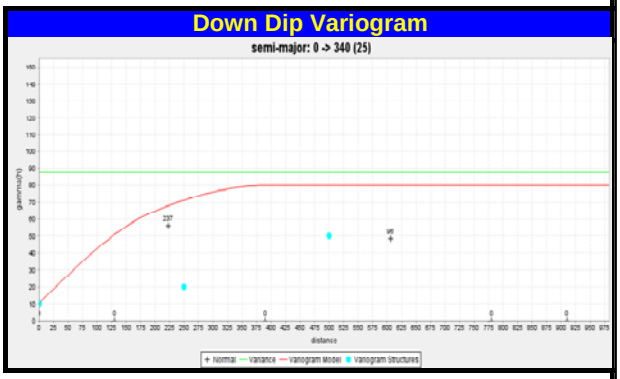
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	10.00	-
1	20.00	250
2	50.00	500

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	1.3
Maior/Menor	23.3

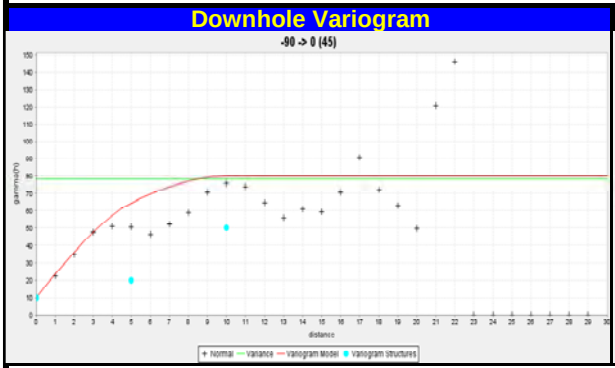
Strike Variogram



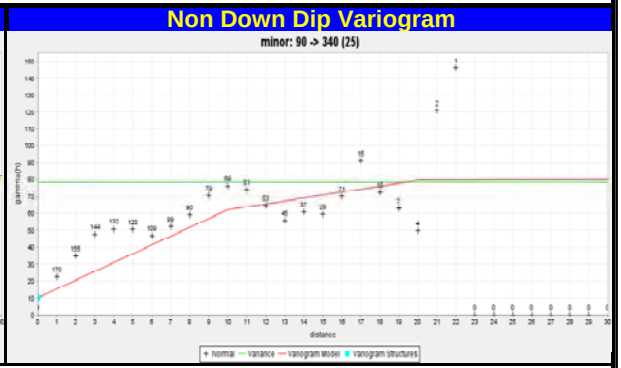
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

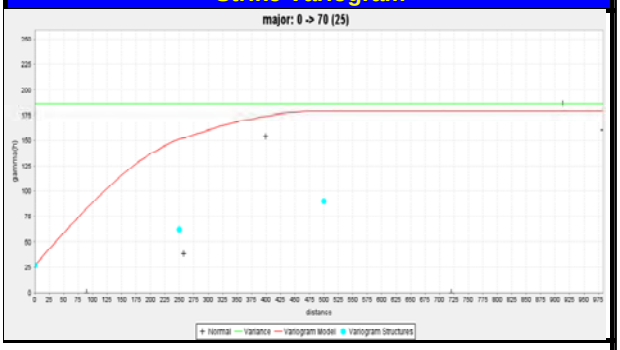


Target	Area 2
Ore:	Saprock
Variable:	SiO2

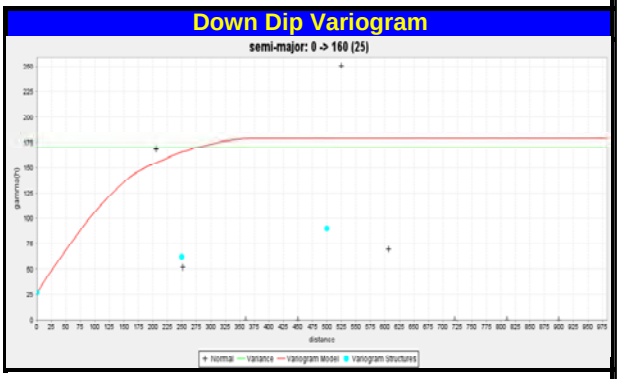
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	27.00	-
1	62.00	250
2	90.00	500

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	1.9
Maior/Menor	14.7

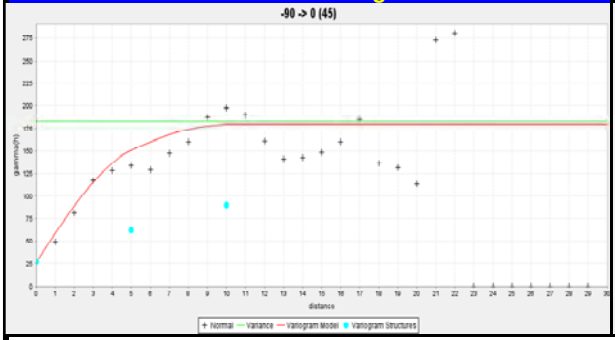
Strike Variogram



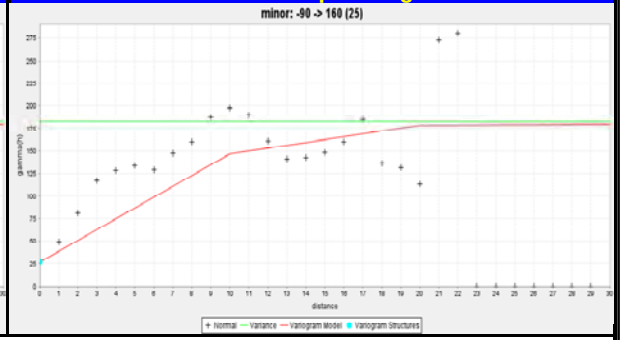
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

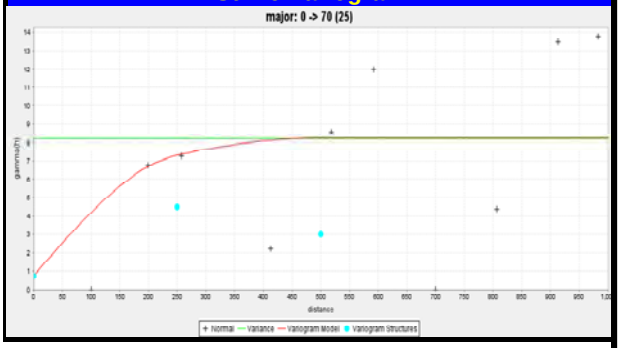


Target	Area 2
Ore:	Saprock
Variable:	Al2O3

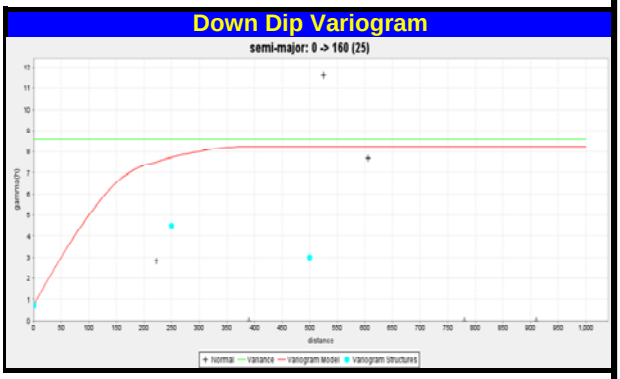
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0.75	-
1	4.50	250
2	3.00	500

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	1.9
Maior/Menor	14.7

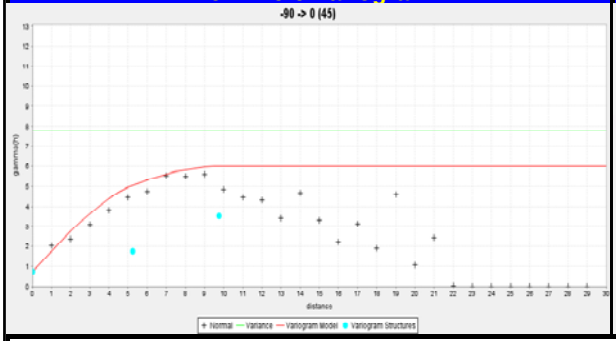
Strike Variogram



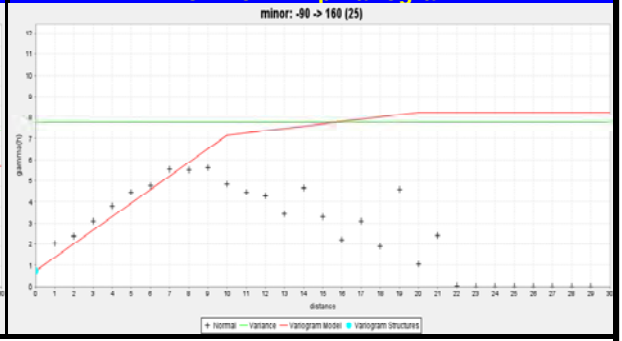
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

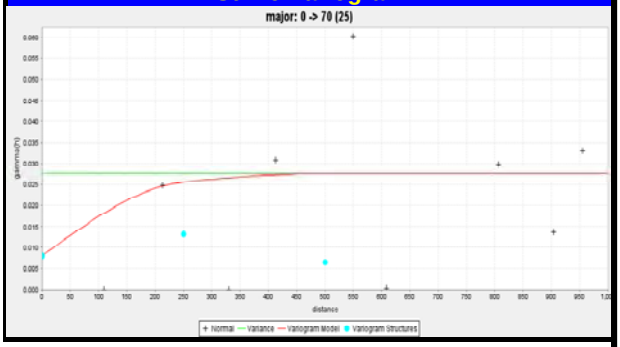


Target	Area 2
Ore:	Saprock
Variable:	Mn

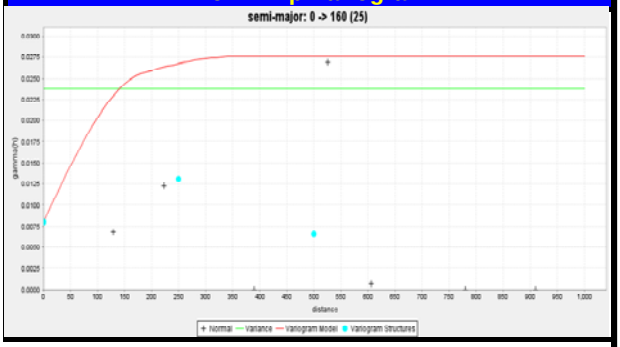
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0.008	-
1	0.013	250
2	0.007	500

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	1.4
Maior/Menor	23.3

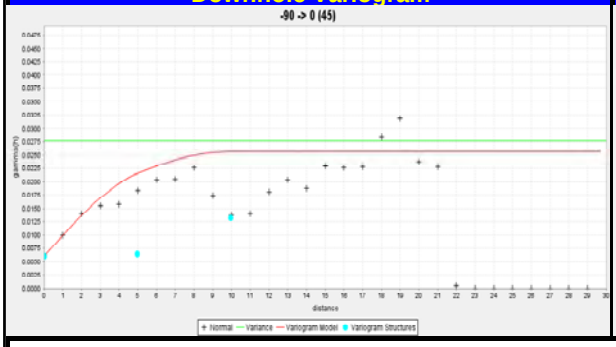
Strike Variogram



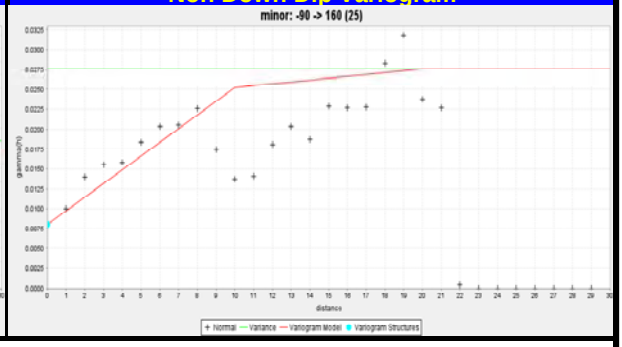
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

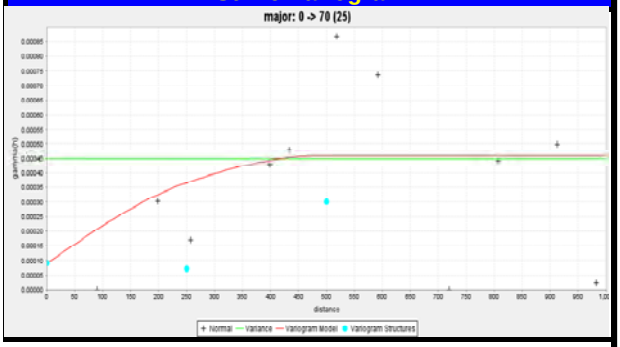


Target	Area 2
Ore:	Saprock
Variable:	P

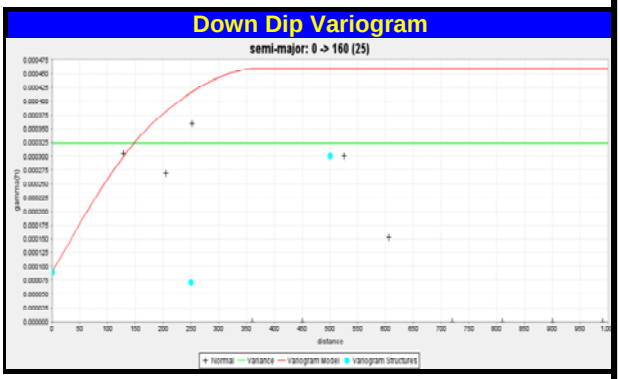
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0.0001	-
1	0.00007	250
2	0.00030	500

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	1.3
Maior/Menor	30.8

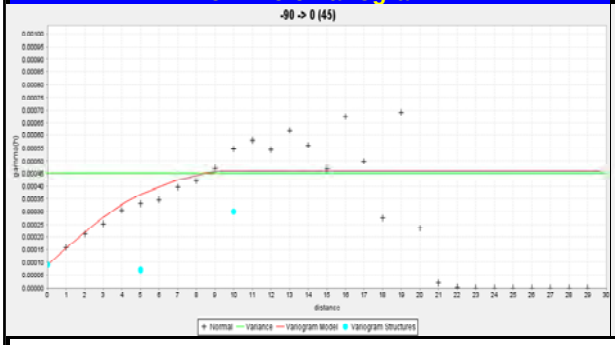
Strike Variogram



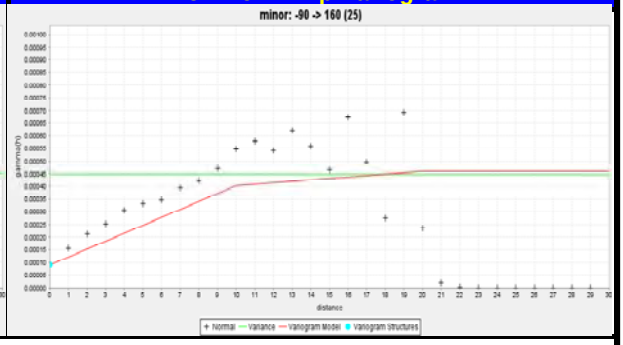
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram

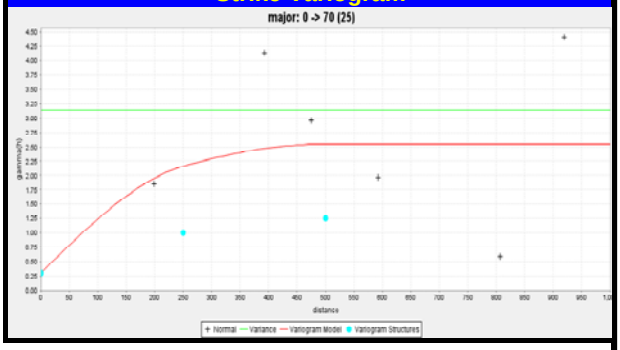


Target	Area 2
Ore:	Saprock
Variable:	Loi

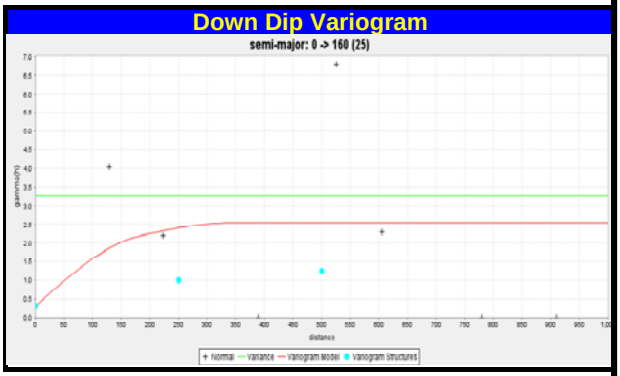
Variogram structures		
Model	Spherical	
Structure	Sill	Range
Nugget	0.30	-
1	1.00	250
2	1.25	500

Ellipse Orientation	
Bearing	70
Plunge	0
Dip	0
Maior/Semi-maior	1.4
Maior/Menor	30.8

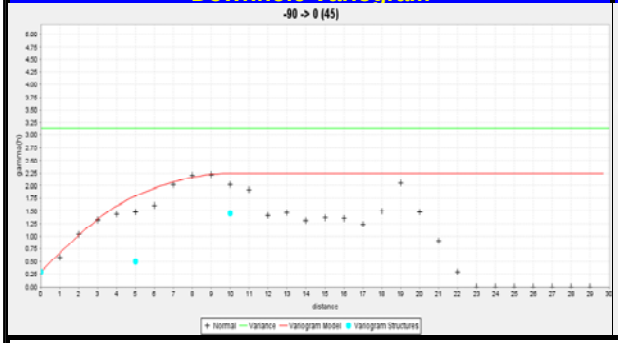
Strike Variogram



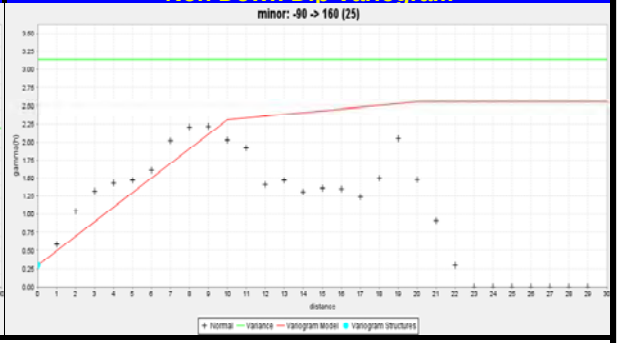
Down Dip Variogram



Downhole Variogram



Non Down Dip Variogram



Alvo	ext2
Material:	SAP
Variável:	Fe

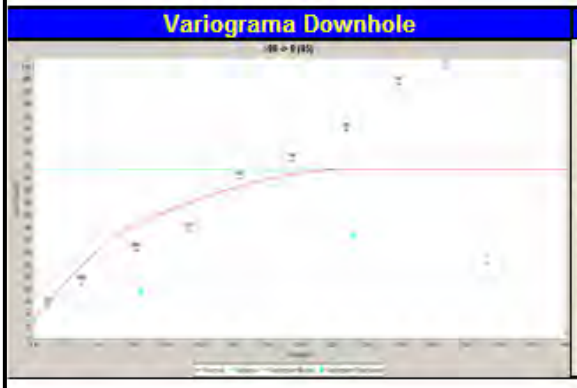
Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	8,00	-
1	19,00	200
2	42,00	400

Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,0
Maior/Menor	22,3

Variograma segundo Direção do Corpo

Variograma segundo Mergulho do Corpo

Variograma Downhole



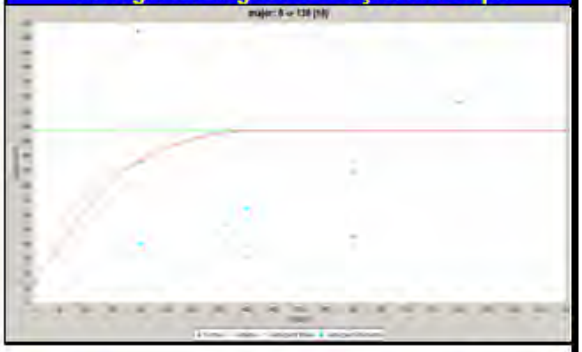
Variograma Contra-mergulho do Corpo

Alvo	ext2
Material:	SAP
Variável:	SiO2

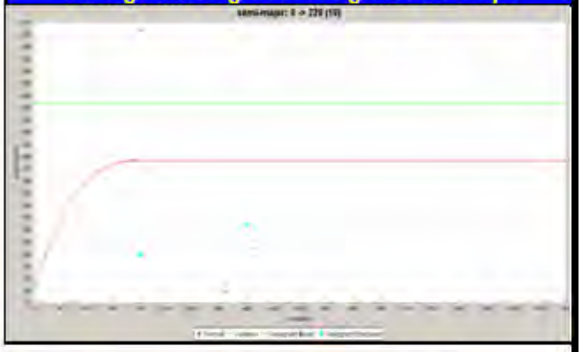
Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	32,00	-
1	100,00	200
2	160,00	400

Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,2
Maior/Menor	21,5

Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo



Variograma Downhole

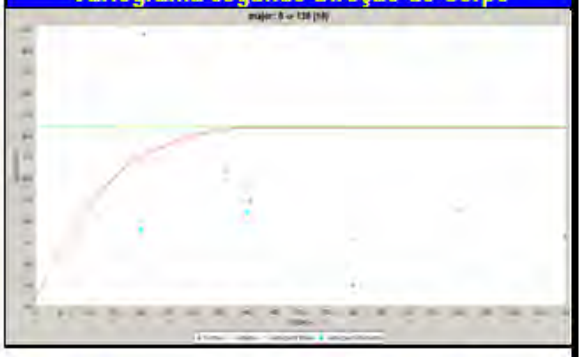
Variograma Contra-mergulho do Corpo

Alvo	ext2
Material:	SAP
Variável:	Al2O3

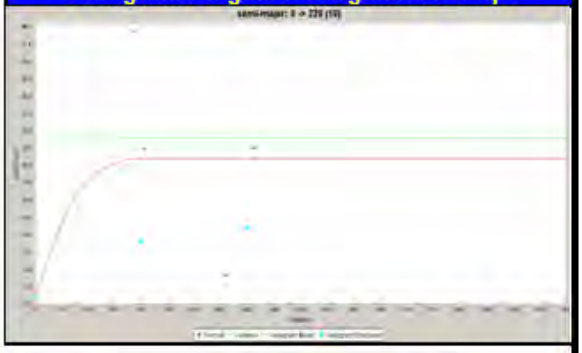
Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	1,00	-
1	9,00	200
2	11,00	400

Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,1
Maior/Menor	21,2

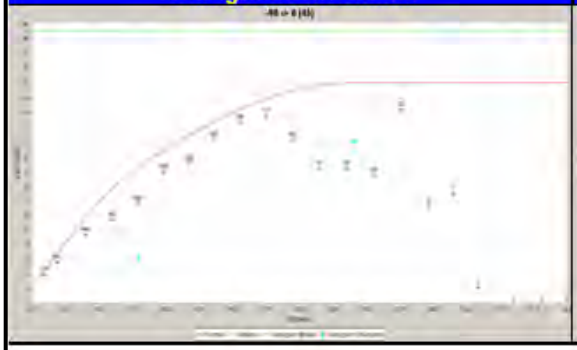
Variograma segundo Direção do Corpo



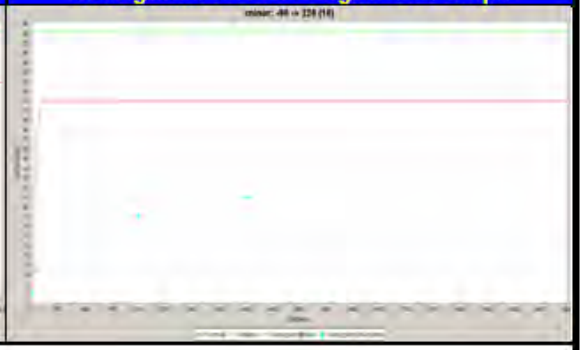
Variograma segundo Mergulho do Corpo



Variograma Downhole



Variograma Contra-mergulho do Corpo

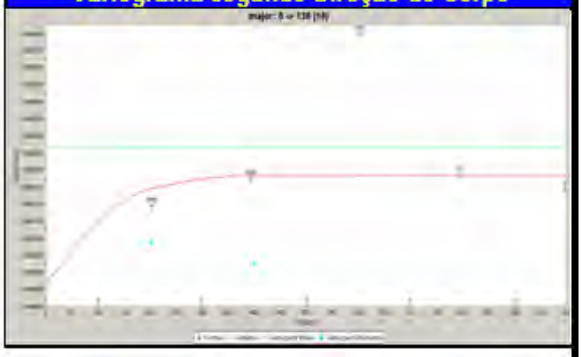


Alvo	ext2
Material:	SAP
Variável:	Mn

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,0005	-
1	0,0024	200
2	0,0036	400

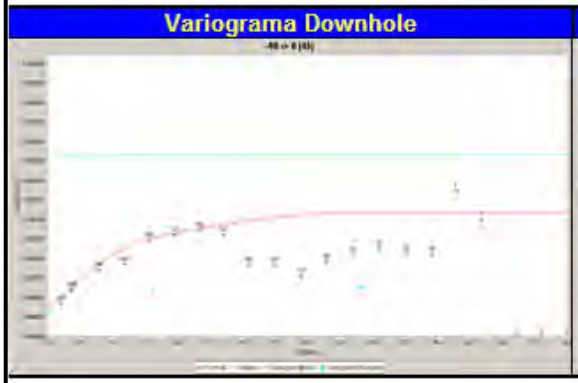
Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,0
Maior/Menor	21,2

Variograma segundo Direção do Corpo

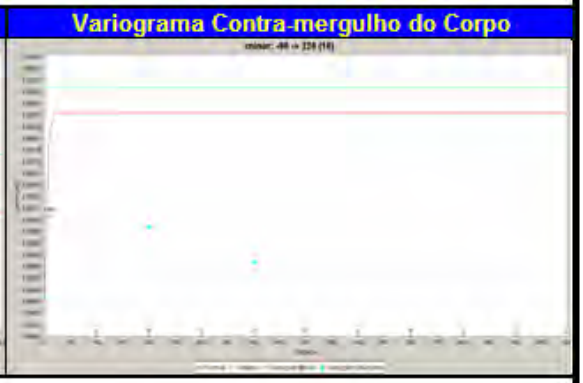


Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

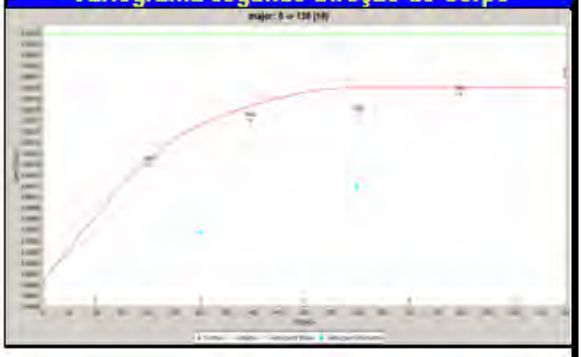


Alvo	ext2
Material:	SAP
Variável:	P

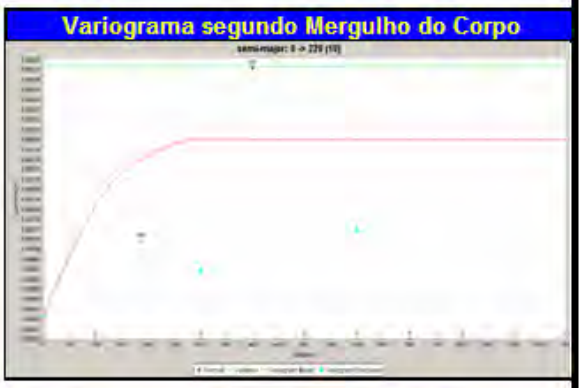
Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,00002	-
1	0,00007	300
2	0,00011	600

Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,0
Maior/Menor	22,5

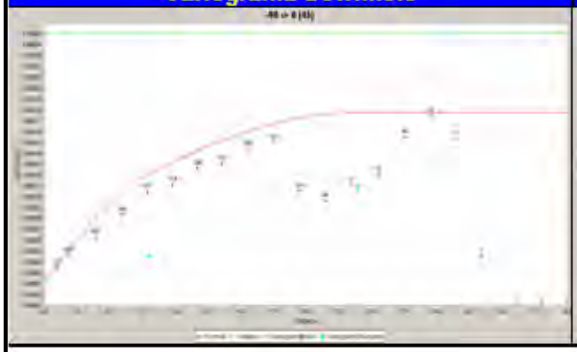
Variograma segundo Direção do Corpo



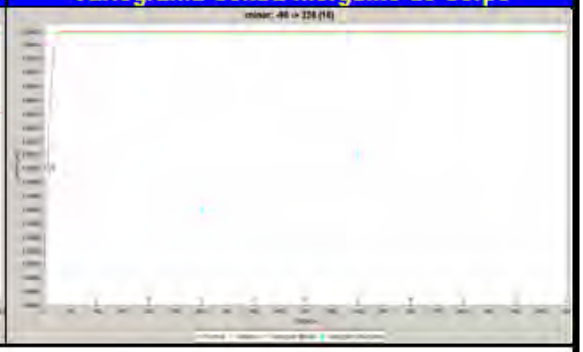
Variograma segundo Mergulho do Corpo



Variograma Downhole



Variograma Contra-mergulho do Corpo

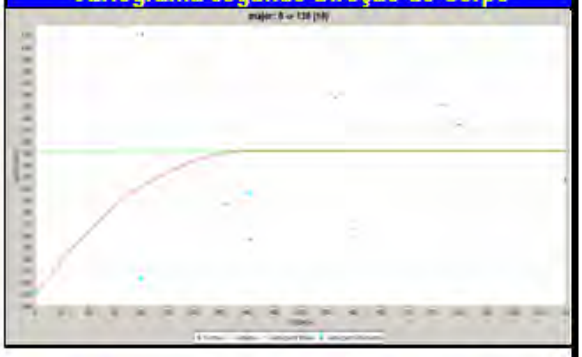


Alvo	ext2
Material:	SAP
Variável:	LOI

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,28	-
1	0,60	200
2	2,43	404

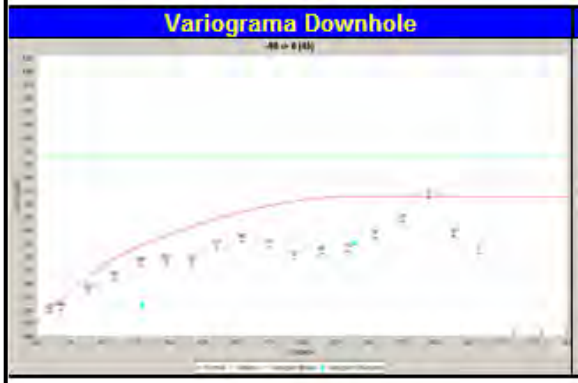
Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,2
Maior/Menor	22,5

Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo

Variograma Downhole



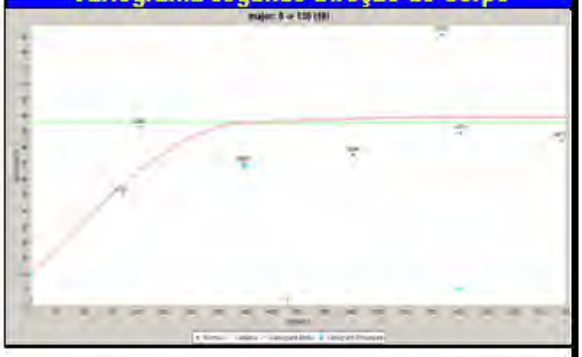
Variograma Contra-mergulho do Corpo

Alvo	ext2
Material:	SAR
Variável:	Fe

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	10,00	-
1	44,00	402
2	5,50	799

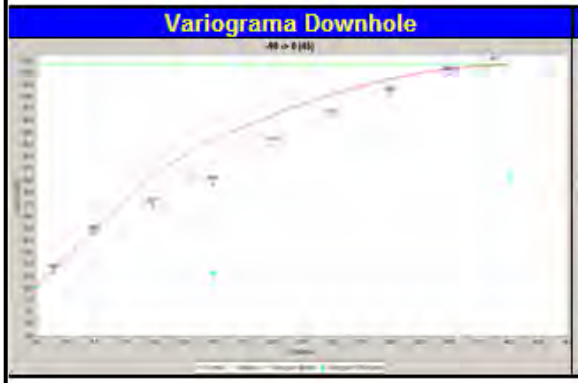
Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,1
Maior/Menor	20,0

Variograma segundo Direção do Corpo

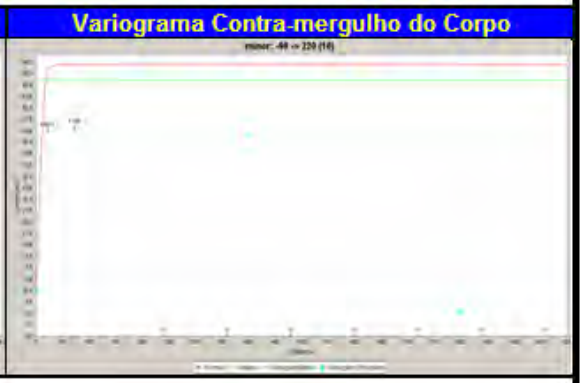


Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

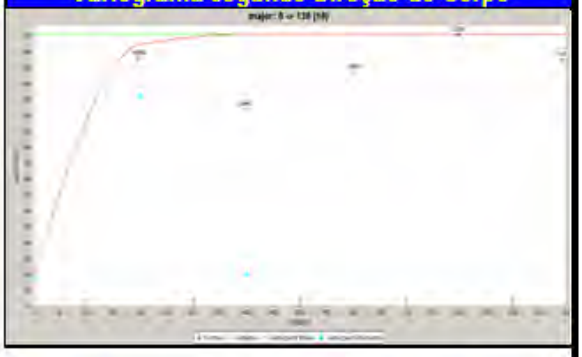


Alvo	ext2
Material:	SAR
Variável:	SiO2

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	18,50	-
1	132,00	200
2	20,50	400

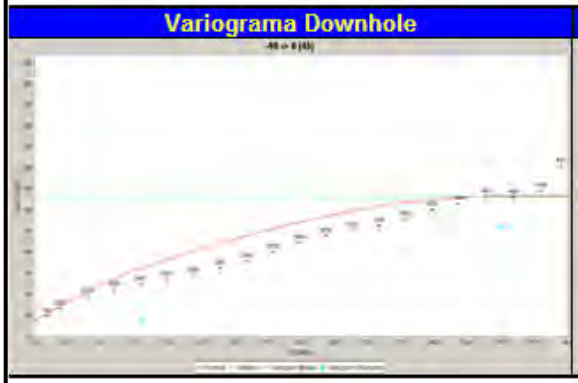
Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,1
Maior/Menor	21,2

Variograma segundo Direção do Corpo

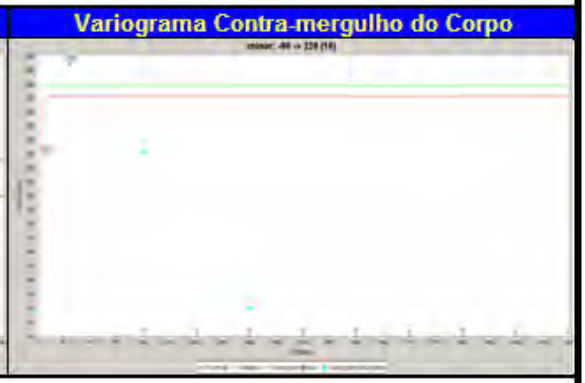


Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

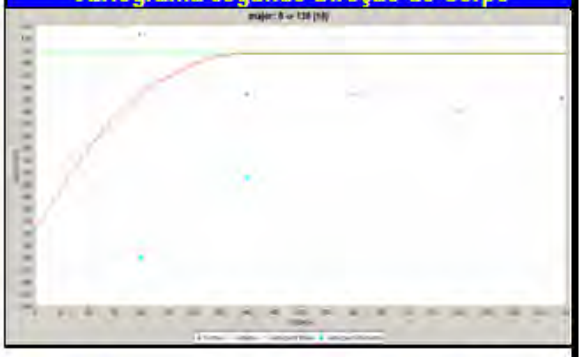


Alvo	ext2
Material:	SAR
Variável:	Al2O3

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	1,55	-
1	1,00	200
2	2,65	400

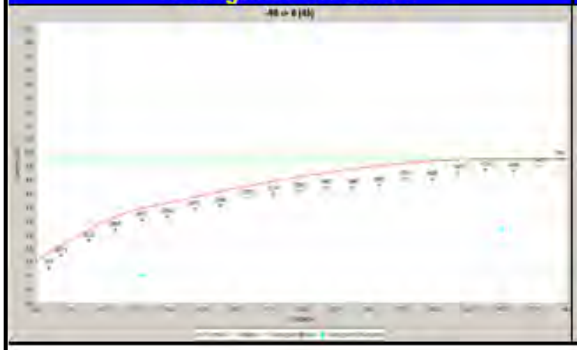
Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,2
Maior/Menor	21,2

Variograma segundo Direção do Corpo

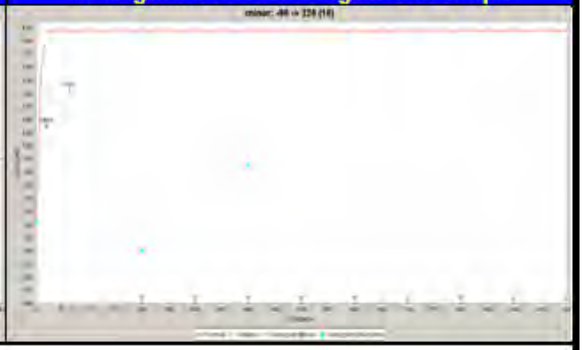


Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

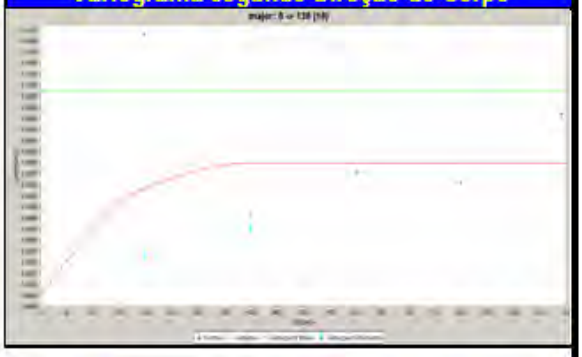


Alvo	ext2
Material:	SAR
Variável:	Mn

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,00052	-
1	0,00024	200
2	0,00056	400

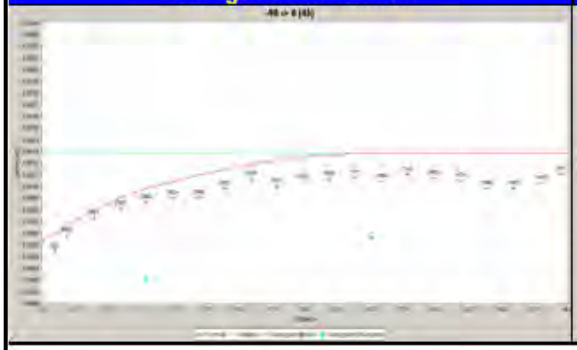
Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,1
Maior/Menor	21,2

Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo

Variograma Downhole



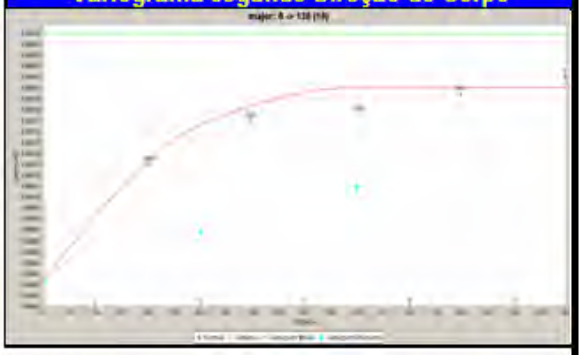
Variograma Contra-mergulho do Corpo

Alvo	ext2
Material:	SAR
Variável:	P

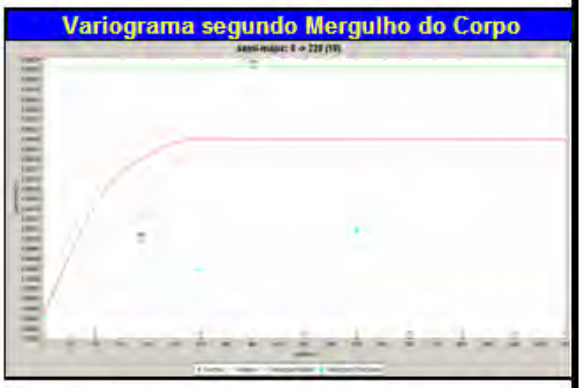
Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,00003	-
1	0,00004	200
2	0,00004	400

Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	2,0
Maior/Menor	21,2

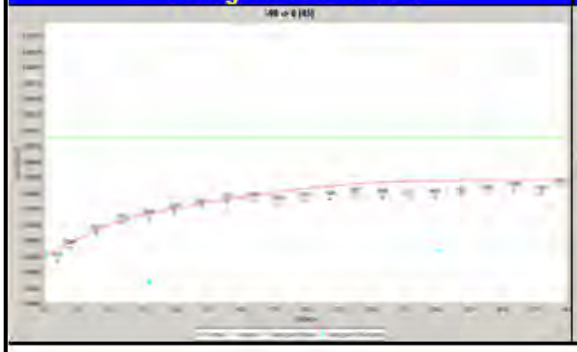
Variograma segundo Direção do Corpo



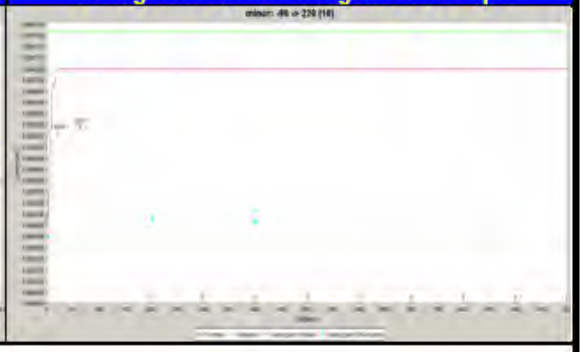
Variograma segundo Mergulho do Corpo



Variograma Downhole



Variograma Contra-mergulho do Corpo

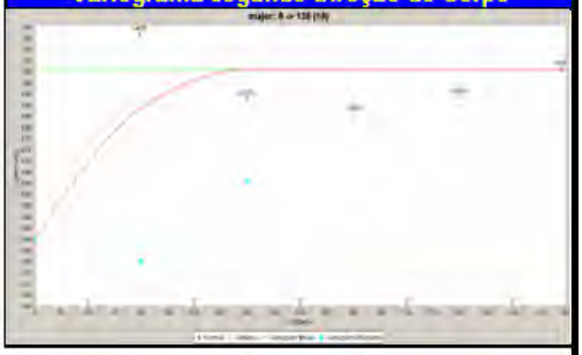


Alvo	ext2
Material:	SAR
Variável:	LOI

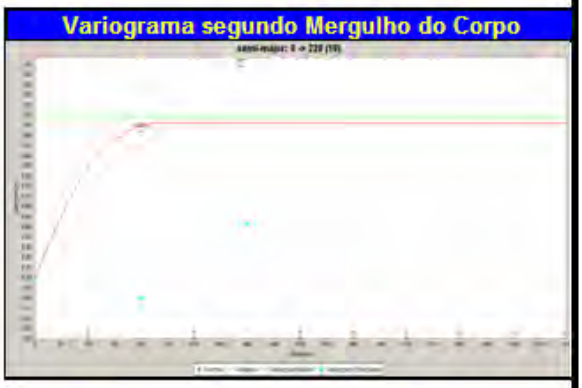
Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,30	-
1	0,20	200
2	0,56	400

Atitudes do Elipsoide	
Bearing	130
Plunge	0
Dip	0
Maior/Semi-maior	1,7
Maior/Menor	21,2

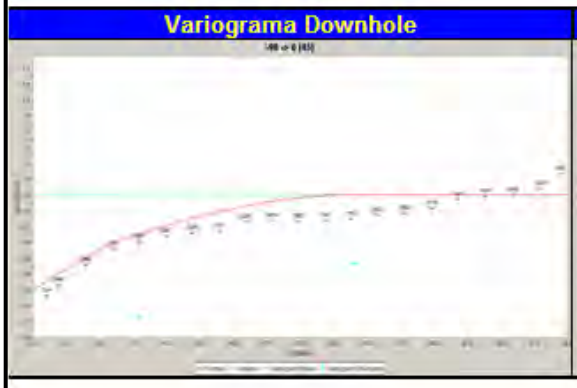
Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo



Variograma Downhole



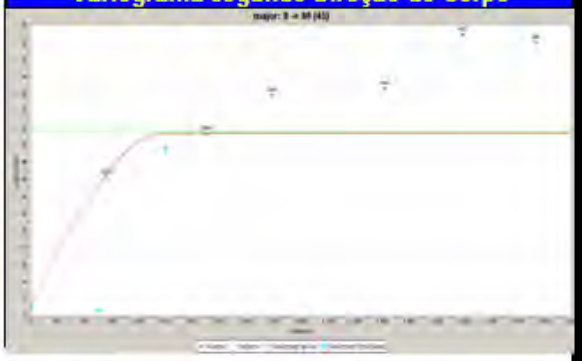
Variograma Contra-mergulho do Corpo

Alvo	Area 3
Material:	COB
Variável:	Fe (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	3,00	-
1	1,47	250
2	49,00	500

Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,3
Maior/Menor	11,0

Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo

Variograma Downhole

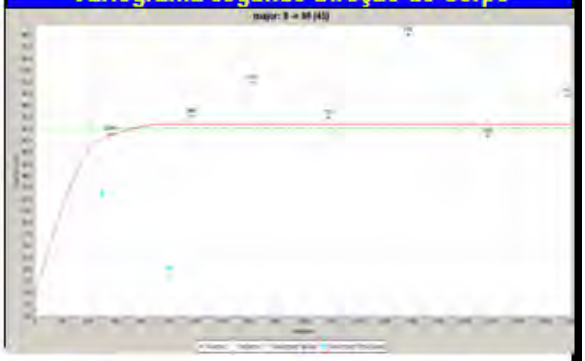
Variograma Contra-mergulho do Corpo

Alvo	Area 3
Material:	COB
Variável:	SiO2 (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	4,50	-
1	26,32	250
2	10,20	500

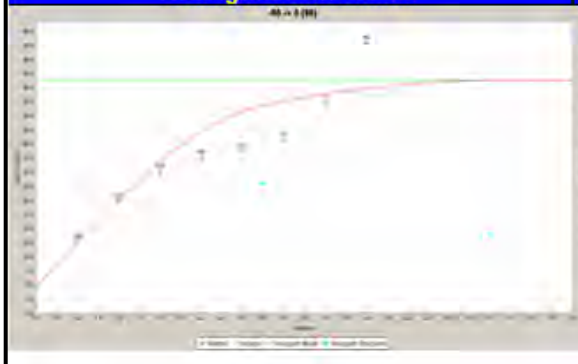
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,3
Maior/Menor	11,4

Variograma segundo Direção do Corpo

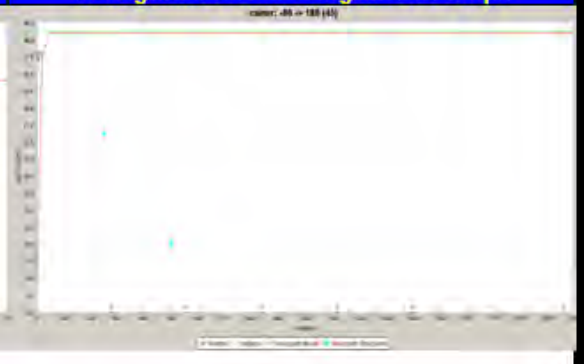


Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

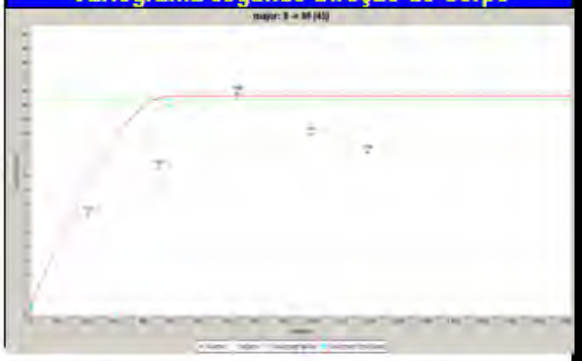


Alvo	Area 3
Material:	COB
Variável:	Al2O3 (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,75	-
1	0,0100	300
2	14,89	500

Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,4
Maior/Menor	10,6

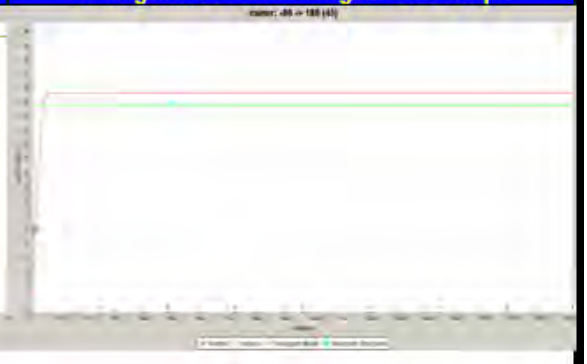
Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo

Variograma Downhole

Variograma Contra-mergulho do Corpo

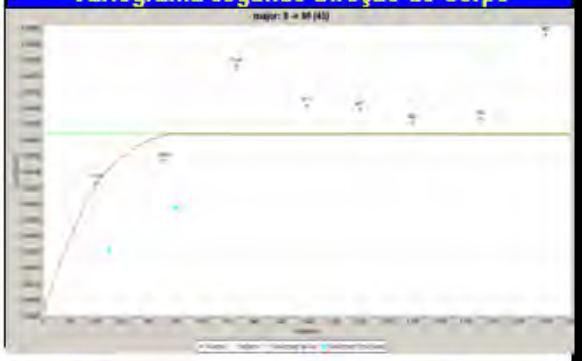


Alvo	Area 3
Material:	COB
Variável:	Mn (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,00	-
1	0,00	250
2	0,00	500

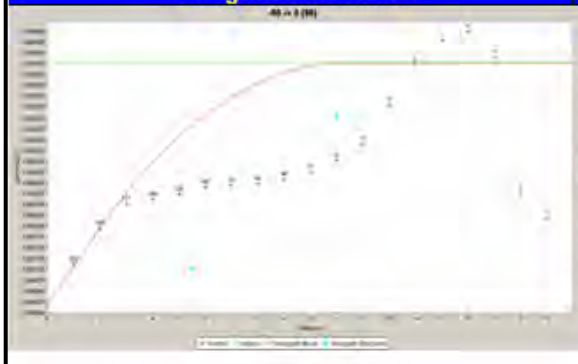
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,0
Maior/Menor	11,1

Variograma segundo Direção do Corpo

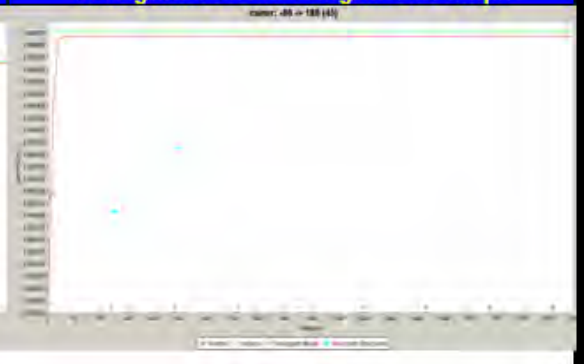


Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

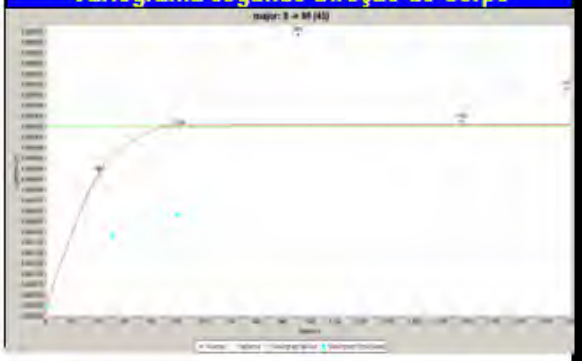


Alvo	Area 3
Material:	COB
Variável:	P (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,00	-
1	0,00	250
2	0,00	500

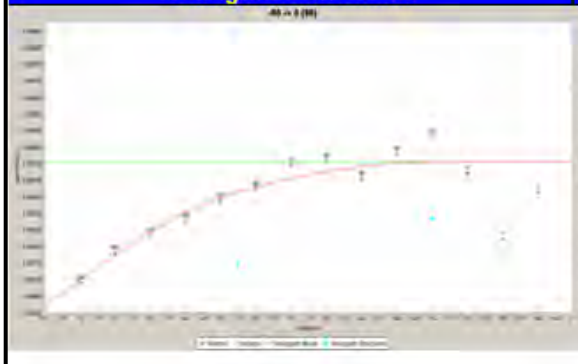
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,2
Maior/Menor	10,2

Variograma segundo Direção do Corpo

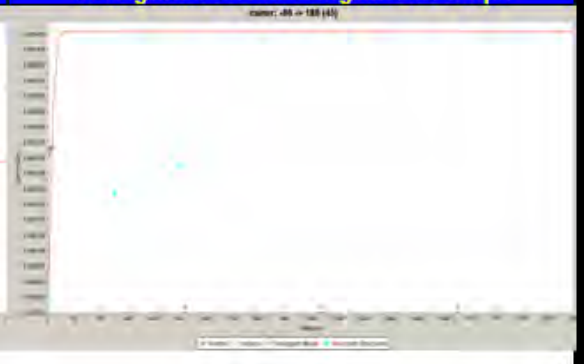


Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

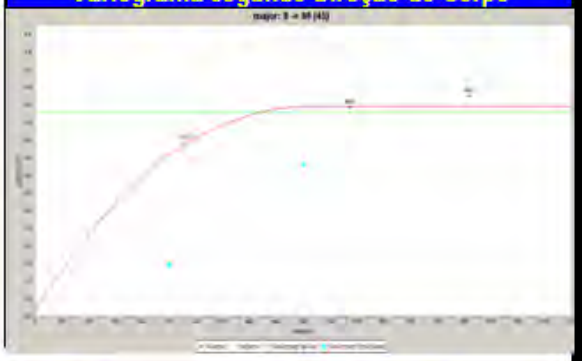


Alvo	Area 3
Material:	COB
Variável:	LOI (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,18	-
1	1,44	250
2	4,32	500

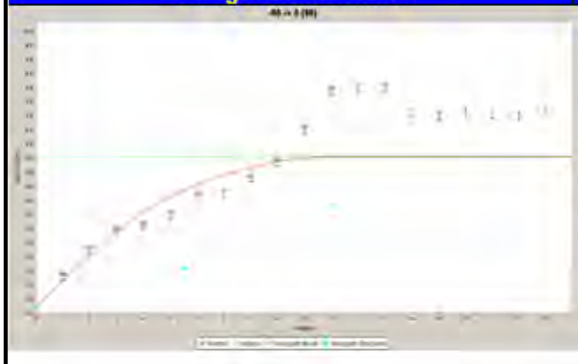
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,6
Maior/Menor	11,0

Variograma segundo Direção do Corpo

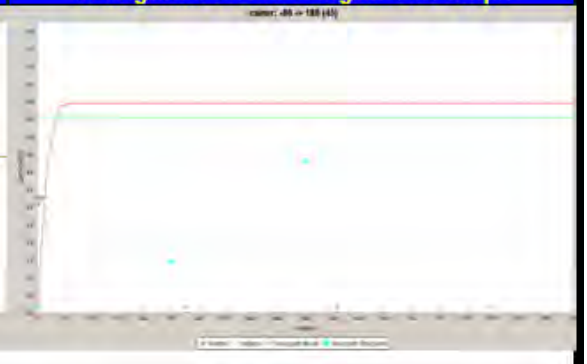


Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

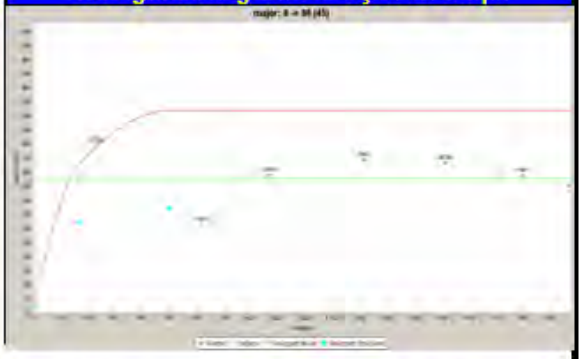


Alvo	Area 3
Material:	SAP
Variável:	SiO2 (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	14,00	-
1	160,49	170
2	184,91	500

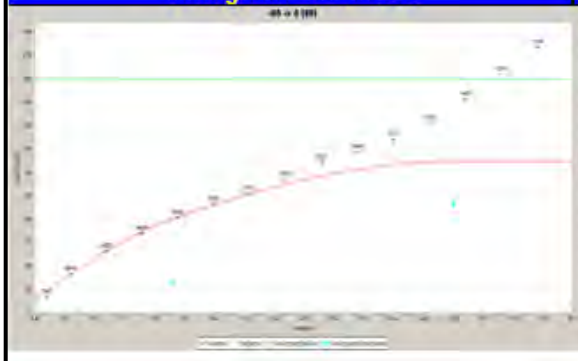
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,0
Maior/Menor	3,4

Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo

Variograma Downhole



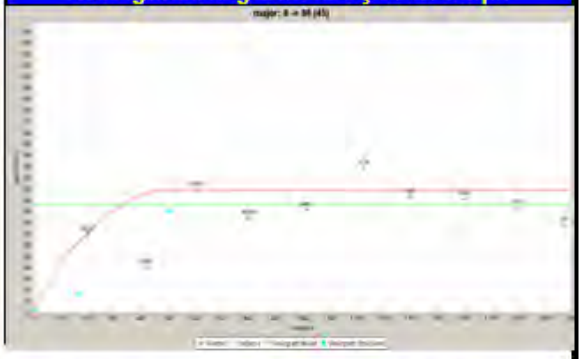
Variograma Contra-mergulho do Corpo

Alvo	Area 3
Material:	SAP
Variável:	Al2O3 (%)

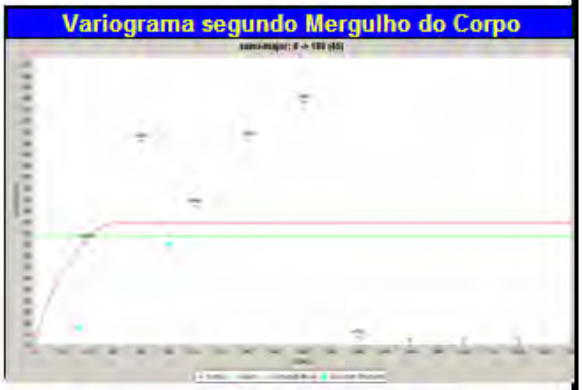
Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	2,80	-
1	15,95	170
2	90,49	500

Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,6
Maior/Menor	3,0

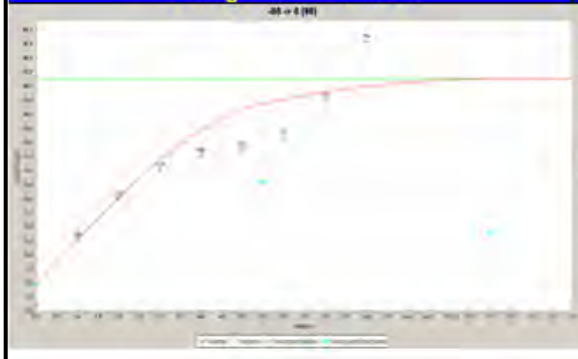
Variograma segundo Direção do Corpo



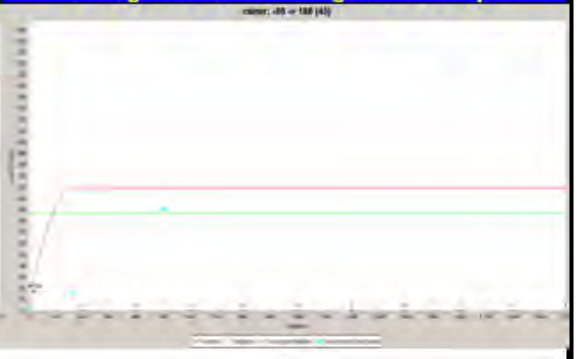
Variograma segundo Mergulho do Corpo



Variograma Downhole



Variograma Contra-mergulho do Corpo

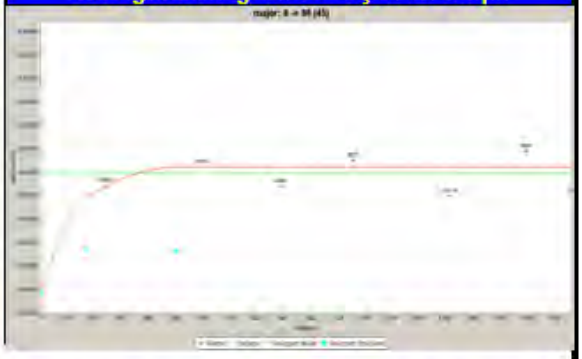


Alvo	Area 3
Material:	SAP
Variável:	Mn (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,00	-
1	0,00	170
2	0,00	500

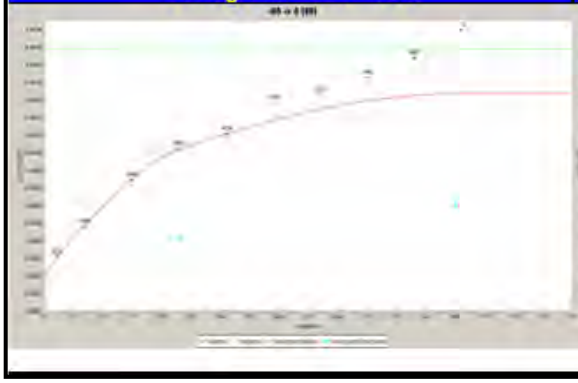
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,2
Maior/Menor	7,1

Variograma segundo Direção do Corpo

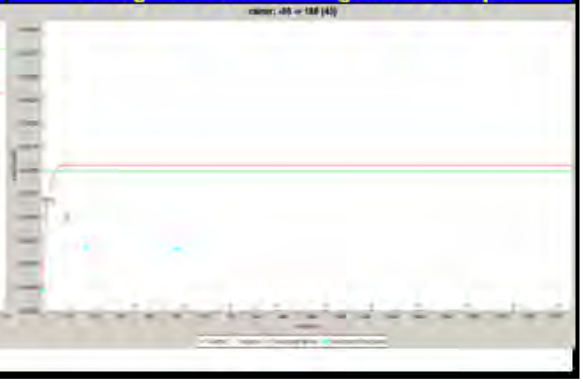


Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

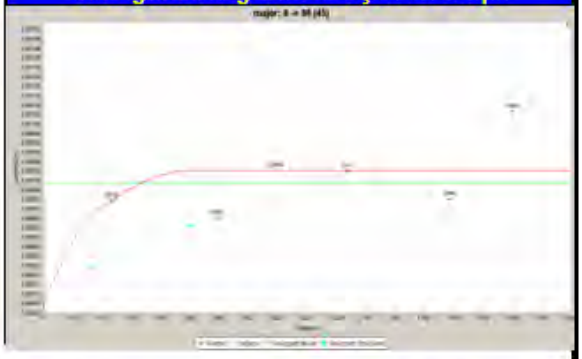


Alvo	Area 3
Material:	SAP
Variável:	P (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,00	-
1	0,00	170
2	0,00	500

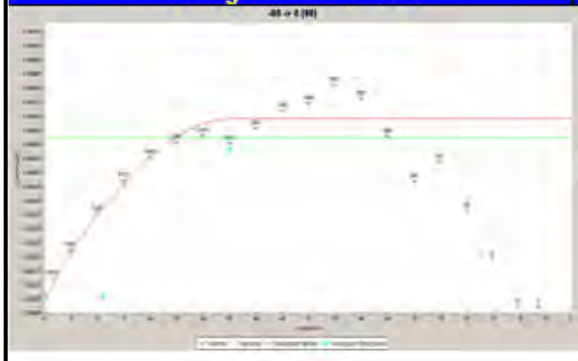
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,0
Maior/Menor	6,3

Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo

Variograma Downhole



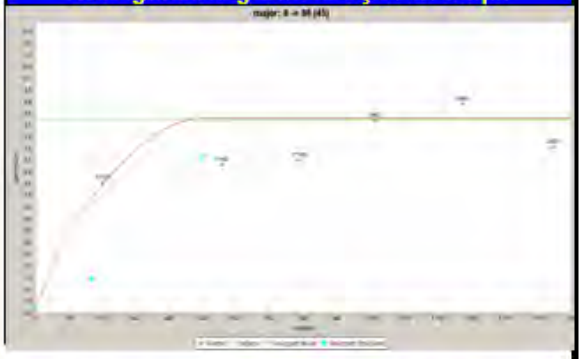
Variograma Contra-mergulho do Corpo

Alvo	Area 3
Material:	SAP
Variável:	LOI (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,20	-
1	1,44	170
2	6,66	500

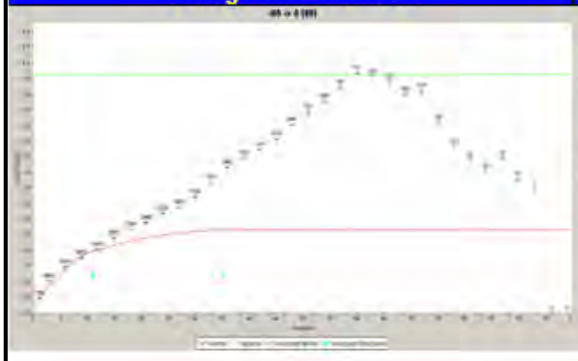
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,3
Maior/Menor	4,0

Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo

Variograma Downhole



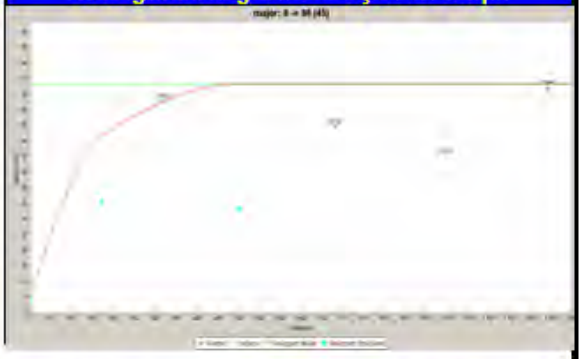
Variograma Contra-mergulho do Corpo

Alvo	Area 3
Material:	SAR
Variável:	Fe (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	5,00	-
1	35,12	170
2	33,14	500

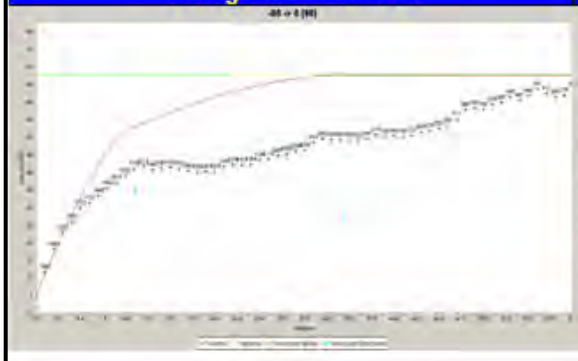
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,0
Maior/Menor	3,9

Variograma segundo Direção do Corpo

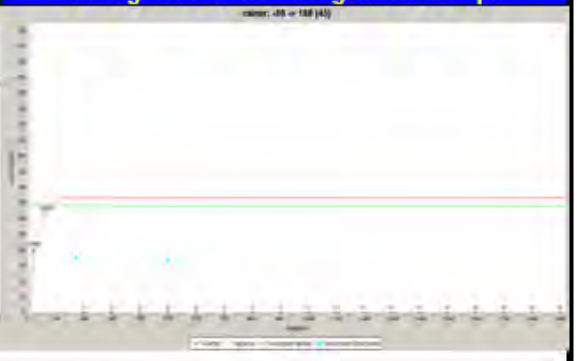


Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

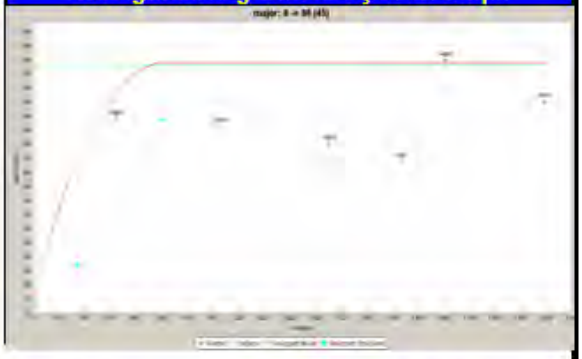


Alvo	Area 3
Material:	SAR
Variável:	SiO2 (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	7,20	-
1	33,28	170
2	137,03	500

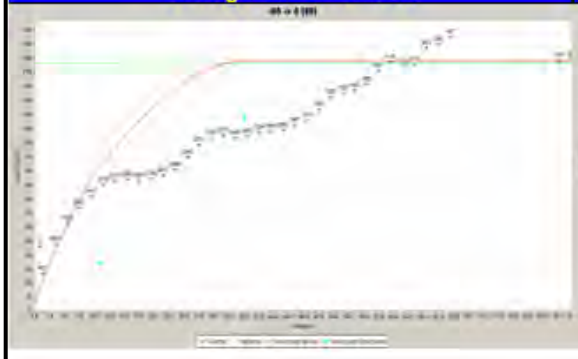
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,0
Maior/Menor	6,4

Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

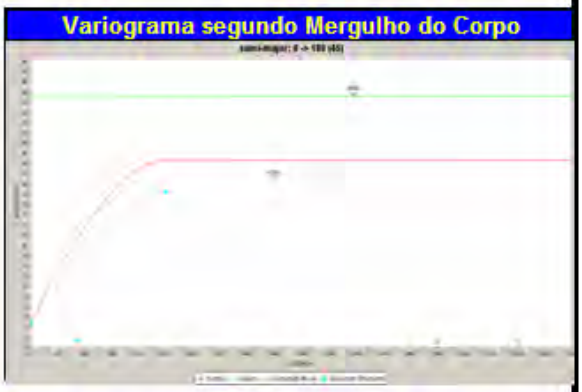
Alvo	Area 3
Material:	SAR
Variável:	Al2O3 (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	2,40	-
1	0,69	180
2	15,24	500

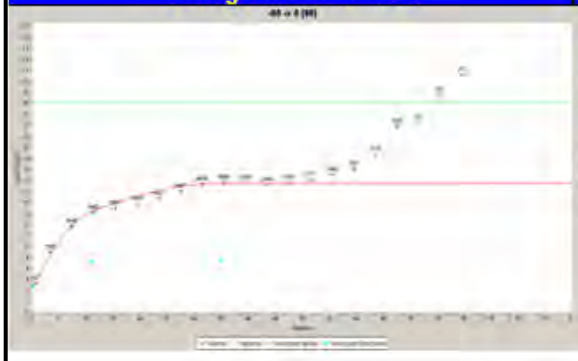
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,0
Maior/Menor	6,1

Variograma segundo Direção do Corpo

Variograma segundo Mergulho do Corpo



Variograma Downhole



Variograma Contra-mergulho do Corpo

Alvo	Area 3
Material:	SAR
Variável:	Mn (%)

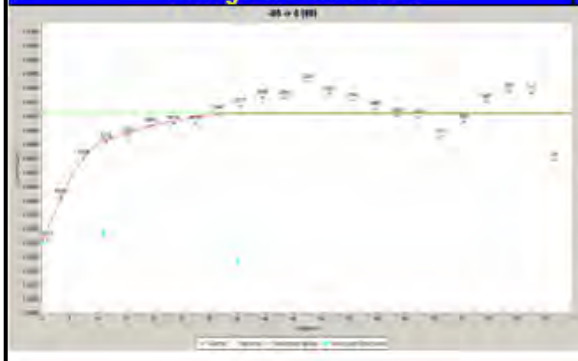
Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,00	-
1	0,00	170
2	0,00	500

Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,0
Maior/Menor	8,0

Variograma segundo Direção do Corpo

Variograma segundo Mergulho do Corpo

Variograma Downhole



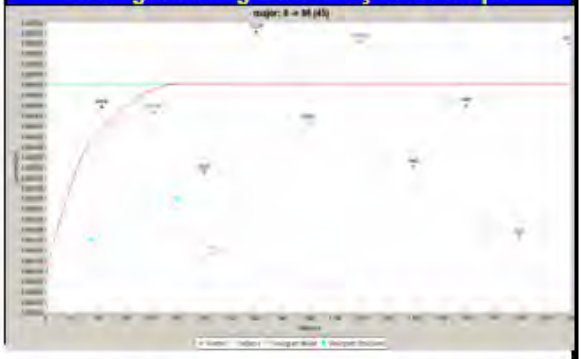
Variograma Contra-mergulho do Corpo

Alvo	Area 3
Material:	SAR
Variável:	P (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,00	-
1	0,00	170
2	0,00	500

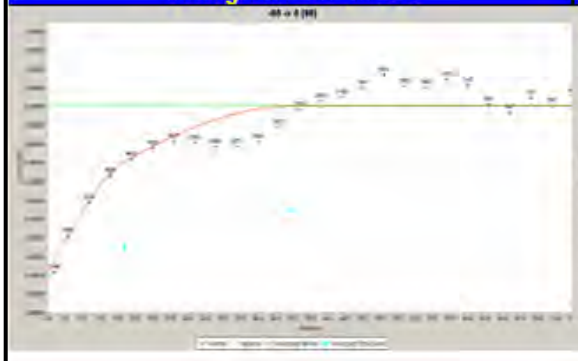
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,0
Maior/Menor	8

Variograma segundo Direção do Corpo



Variograma segundo Mergulho do Corpo

Variograma Downhole



Variograma Contra-mergulho do Corpo

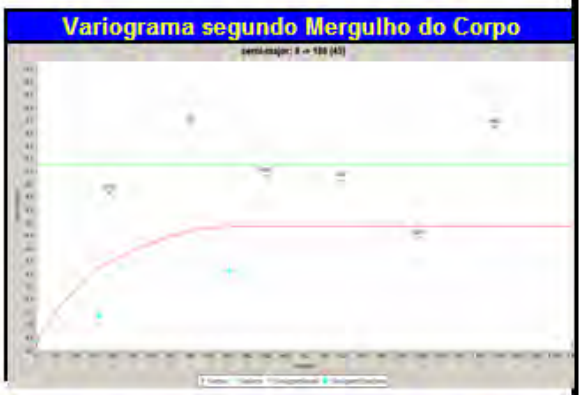
Alvo	Area 3
Material:	SAR
Variável:	LOI (%)

Estruturas do Variograma		
Modelo	Spherical	
Estrutura	Patamar	Alcance
Pepita	0,40	-
1	1,36	165
2	3,09	501

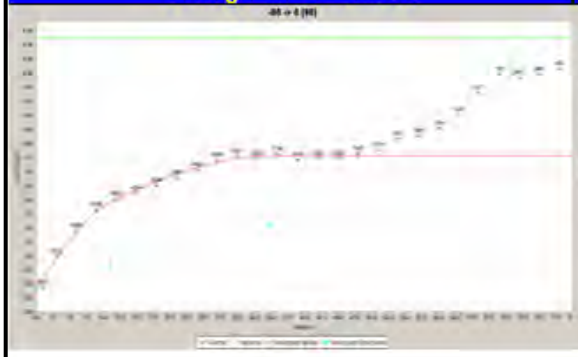
Atitudes do Elipsoide	
Bearing	0
Plunge	90
Dip	0
Maior/Semi-maior	1,0
Maior/Menor	3,8

Variograma segundo Direção do Corpo

Variograma segundo Mergulho do Corpo



Variograma Downhole



Variograma Contra-mergulho do Corpo

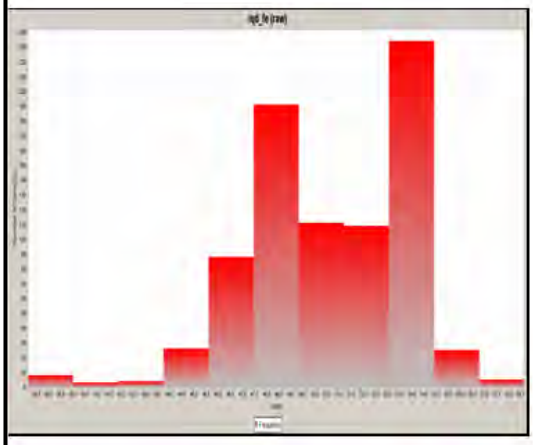
Appendix E

NN-Check

Projeto

Alvo:	Area 1
Litologia:	Solo
Variável:	Fe(%)
Recurso	Inferido

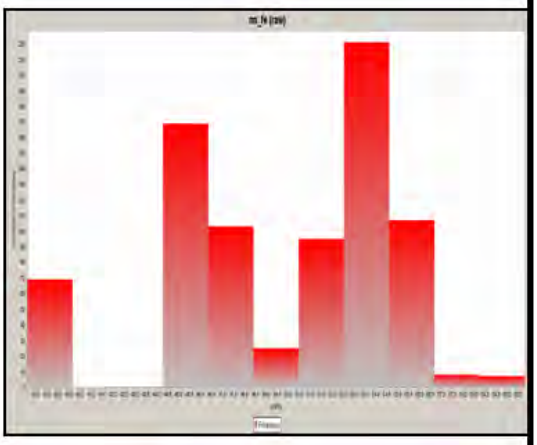
Inverse Distance



N° de amostras:	**804**
Mínimo:	38,15
Máximo:	**58,64**
Média:	**50,70**
Variância:	11,66
Desvio Padrão:	**3,42**

Quantiles	
2.5%:	44,53
1° Quartil:	48,15
Mediana:	50,70
3° Quartil:	54,12
97.5%:	55,62

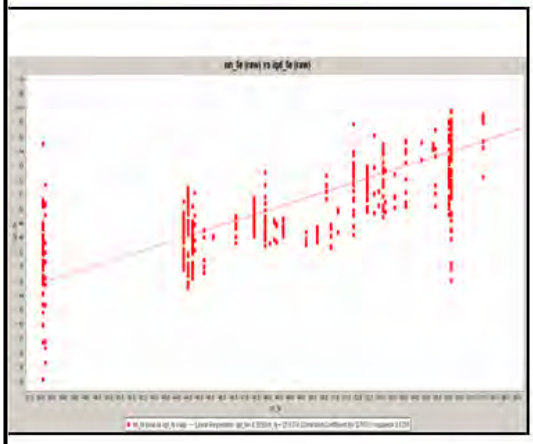
NN-Check



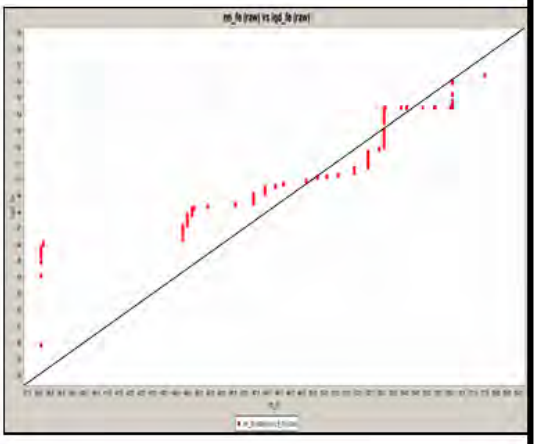
N° Be amostras:	**804**
Mínimo:	38,10
Máximo:	**60,80**
MéBia:	**49,58**
Variância:	28,32
Besvio PaBrão:	**5,32**

Quantiles	
2.5%:	38,10
1° Quartil:	44,70
MeBiana:	51,80
3° Quartil:	53,10
97.5%:	56,10

Correlação



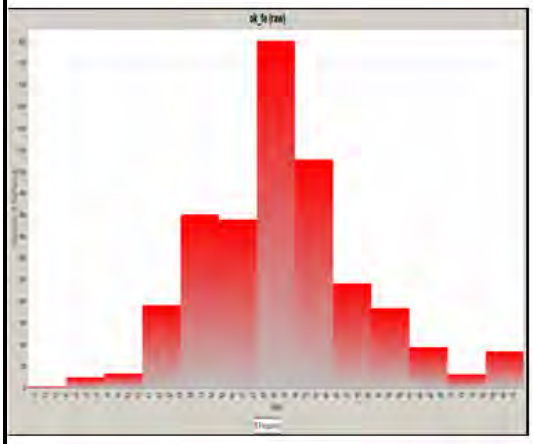
Q-Q Plot



Projeto

Alvo:	Area 1
Litologia:	Saprolito-saprock
Variável:	Fe(%)
Recurso	Inferido

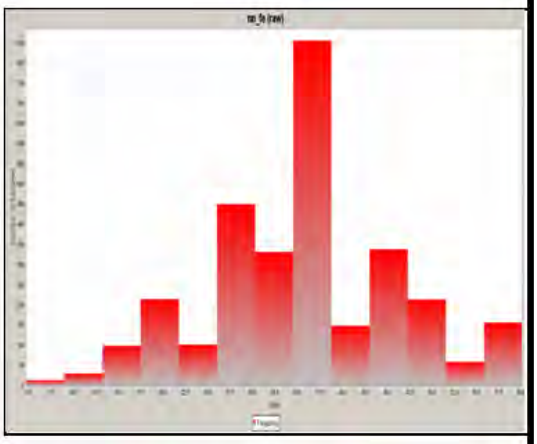
Krigagem Ordinária



N° de amostras:	3005
Mínimo:	10,40
Máximo:	57,97
Média:	35,00
Variância:	58,44
Desvio Padrão:	7,64

Quantiles	
2.5%:	21,58
1° Quartil:	29,43
Mediana:	35,79
3° Quartil:	38,58
97.5%:	55,17

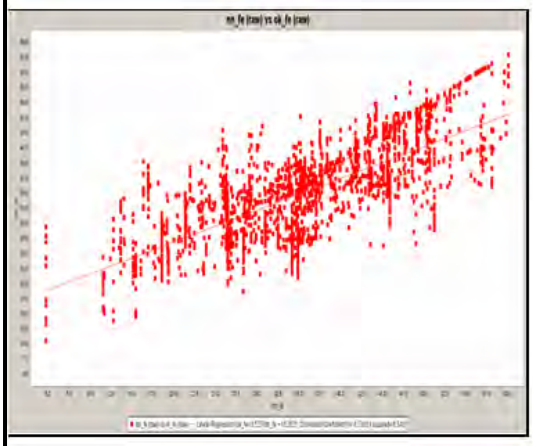
NN-Check



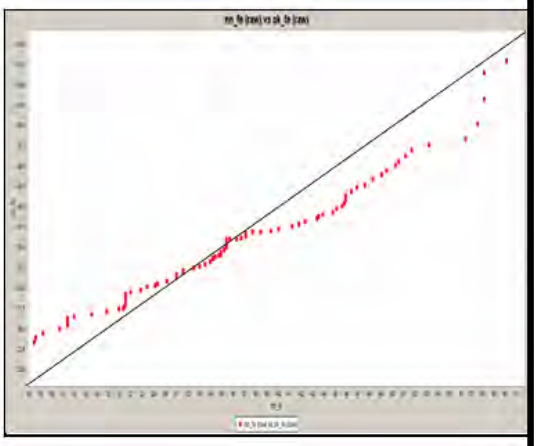
N° de amostras:	3005
Mínimo:	4,72
Máximo:	60,10
Média:	35,47
Variância:	114,62
Desvio Padrão:	10,71

Quantiles	
2.5%:	15,20
1° Quartil:	26,97
Mediana:	35,40
3° Quartil:	43,40
97.5%:	58,10

Correlação



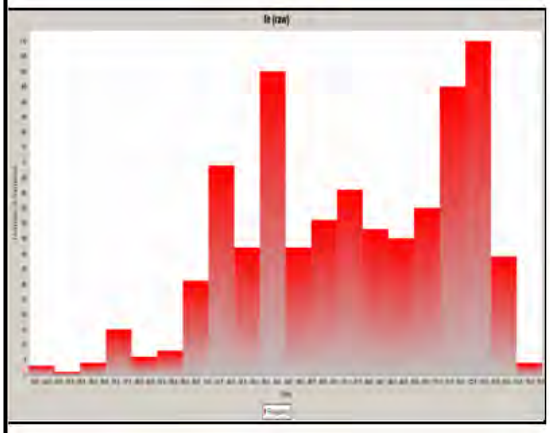
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	COB
Variable:	Fe (%)
Resource:	Inferred

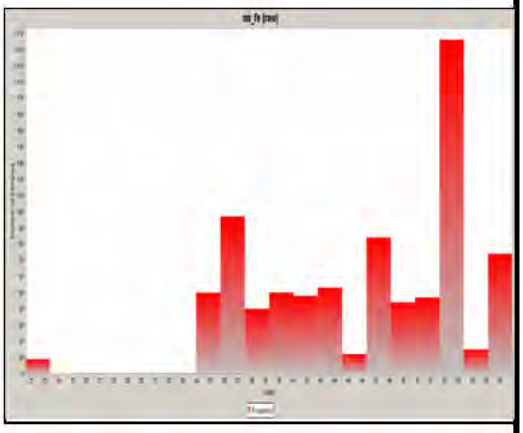
Ordinary Kriging



Number of Samples	829
Minimum:	33,21
Maximum:	55,54
Mean:	47,26
Variance:	21,18
Standard Deviation	4,60

Quantiles	
2.5%:	37,24
1° Quartil:	43,99
Median:	47,42
3° Quartil:	51,63
97.5%:	53,83

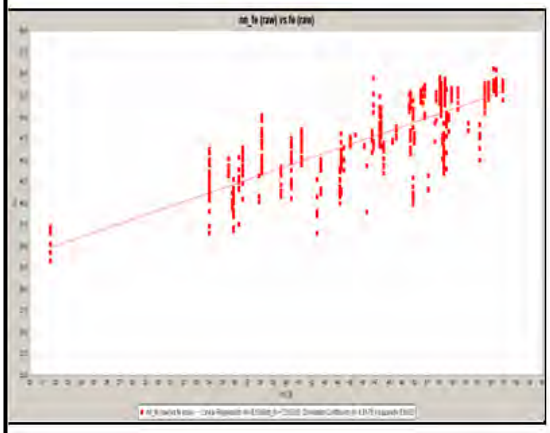
NN-Check



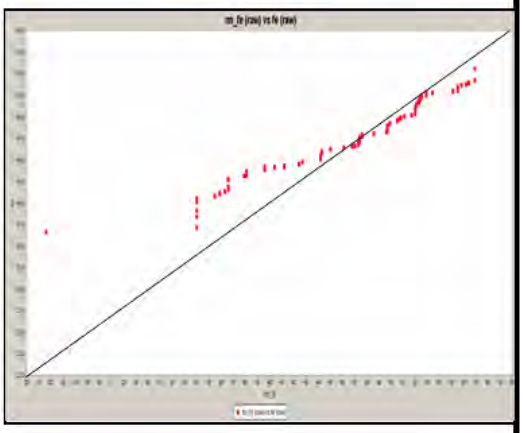
Number of Sampl	829
Minimum:	21,60
Maximum:	56,90
Mean:	45,95
Variance:	54,49
Standard Deviatic	7,38

Quantiles	
2.5%:	34,00
1° Quartil:	39,60
Median:	47,40
3° Quartil:	52,30
97.5%:	56,40

Correlation



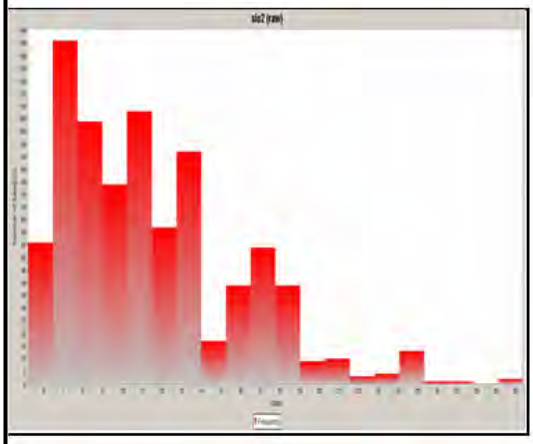
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	COB
Variable:	SiO2 (%)
Resource:	Inferred

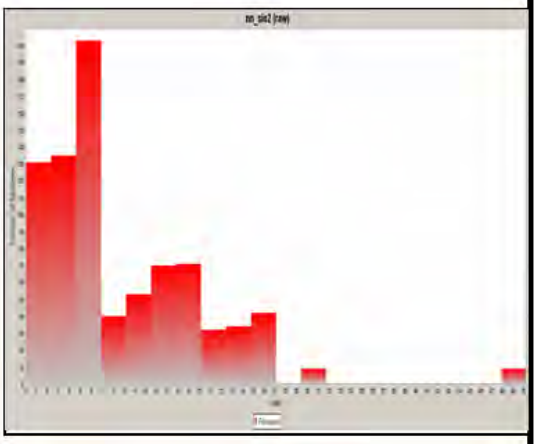
Ordinary Kriging



Number of Sampl	829
Minimum:	5,18
Maximum:	30,35
Mean:	11,50
Variance:	19,52
Standard Deviatic	4,42

Quantiles	
2.5%:	5,84
1° Quartil:	7,99
Median:	10,65
3° Quartil:	13,70
97.5%:	22,83

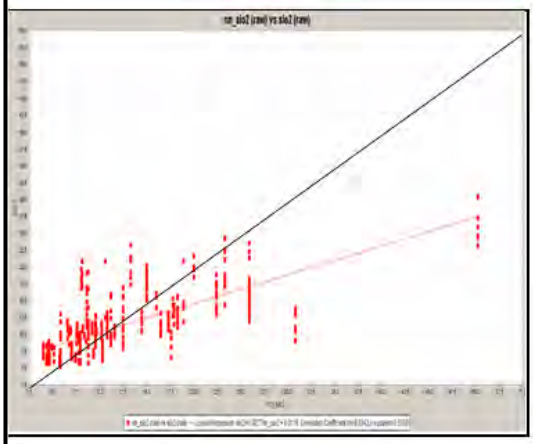
NN-Check



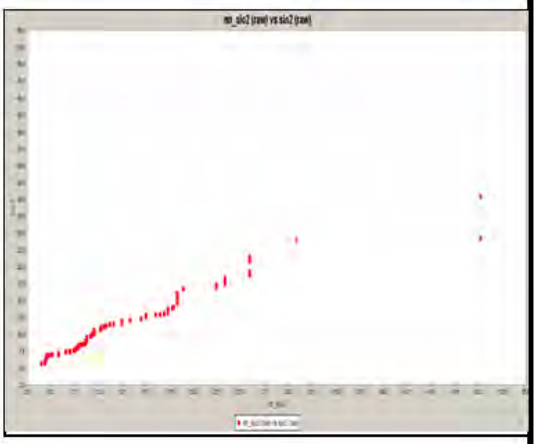
Number of Sampl	829
Minimum:	3,99
Maximum:	50,20
Mean:	12,84
Variance:	57,53
Standard Deviatic	7,58

Quantiles	
2.5%:	4,35
1° Quartil:	7,79
Median:	10,20
3° Quartil:	17,30
97.5%:	25,90

Correlation



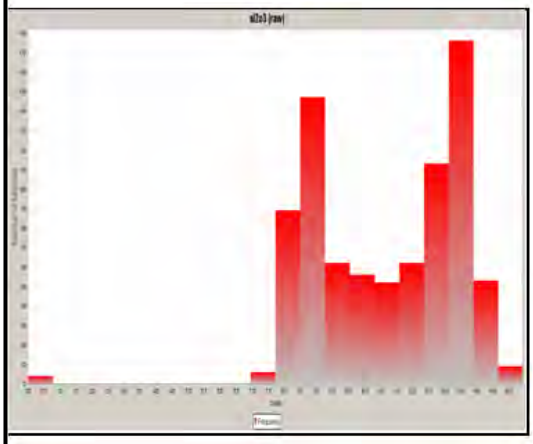
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	COB
Variable:	Al2O3 (%)
Resource:	Inferred

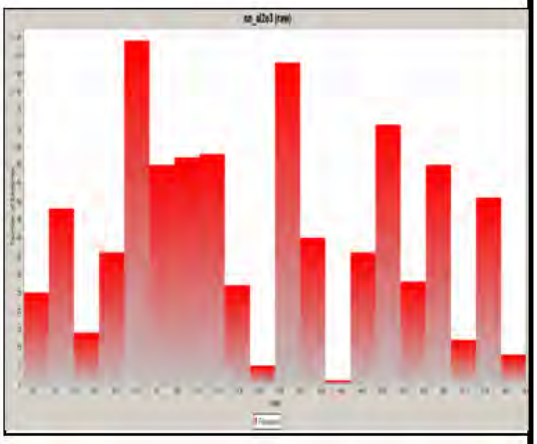
Ordinary Kriging



Number of Sampl	829
Minimum:	-
Maximum:	15,45
Mean:	11,23
Variance:	5,23
Standard Deviatic	2,29

Quantiles	
2.5%:	7,89
1° Quartil:	9,04
Median:	11,55
3° Quartil:	13,33
97.5%:	14,43

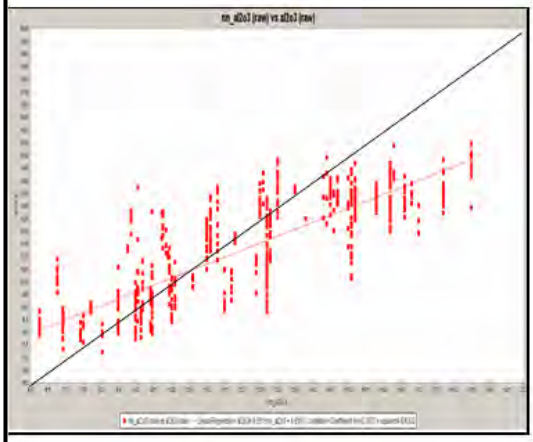
NN-Check



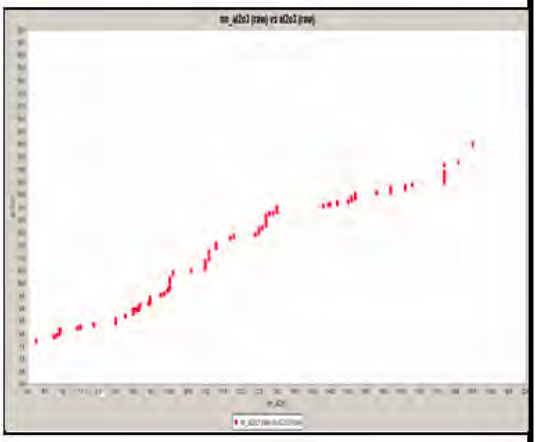
Number of Sampl	829
Minimum:	6,26
Maximum:	18,50
Mean:	11,99
Variance:	10,82
Standard Deviatic	3,29

Quantiles	
2.5%:	6,76
1° Quartil:	9,13
Median:	11,30
3° Quartil:	15,10
97.5%:	17,70

Correlation



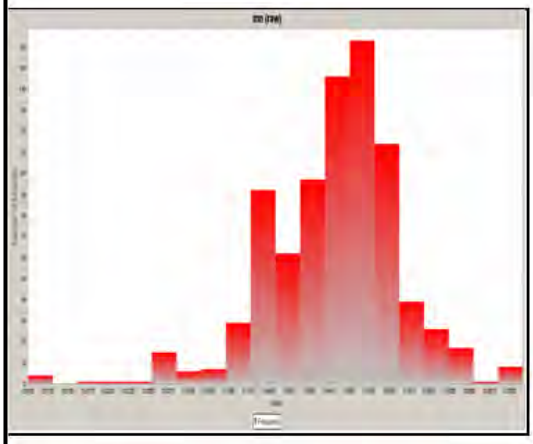
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	COB
Variable:	Mn (%)
Resource:	Inferred

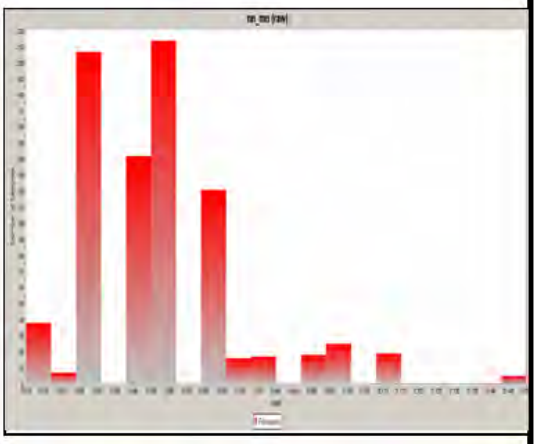
Ordinary Kriging



Number of Sampl	829
Minimum:	-
Maximum:	0,07
Mean:	0,05
Variance:	6.70E-05
Standard Deviatic	0,01

Quantiles	
2.5%:	0,03
1° Quartil:	0,04
Median:	0,05
3° Quartil:	0,05
97.5%:	0,06

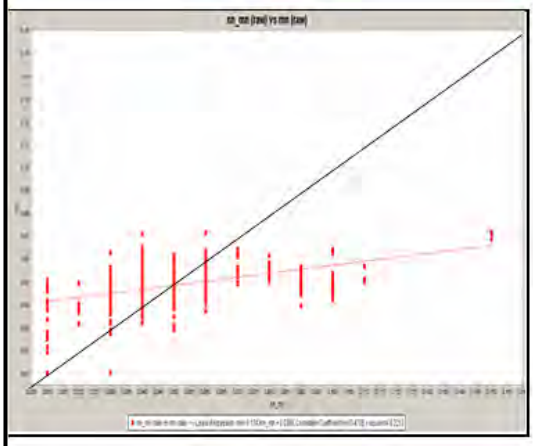
NN-Check



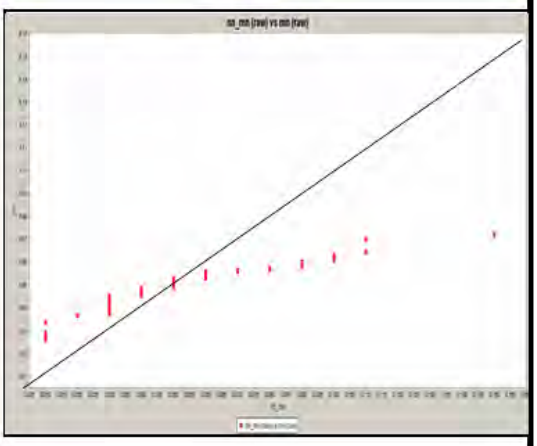
Number of Sampl	829
Minimum:	0,01
Maximum:	0,15
Mean:	0,05
Variance:	0,0005
Standard Deviatic	0,02

Quantiles	
2.5%:	0,01
1° Quartil:	0,03
Median:	0,05
3° Quartil:	0,06
97.5%:	0,11

Correlation



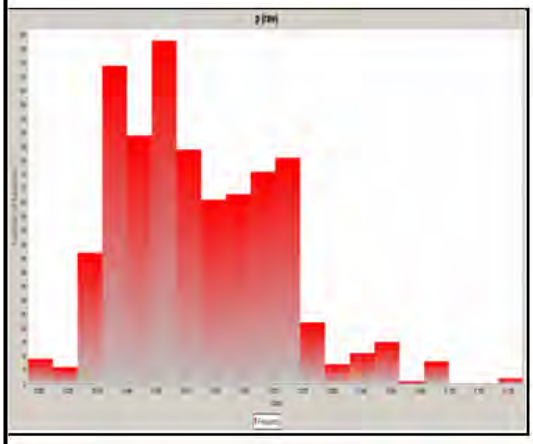
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	COB
Variable:	P (%)
Resource:	Inferred

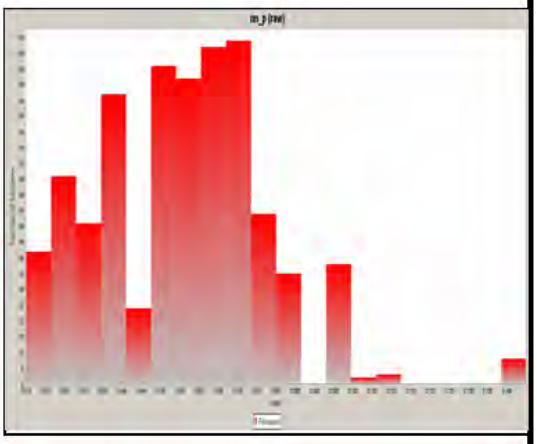
Ordinary Kriging



Number of Sampl	829
Minimum:	0,03
Maximum:	0,11
Mean:	0,06
Variance:	1.83E-04
Standard Deviatic	0,01

Quantiles	
2.5%:	0,04
1° Quartil:	0,05
Median:	0,05
3° Quartil:	0,07
97.5%:	0,09

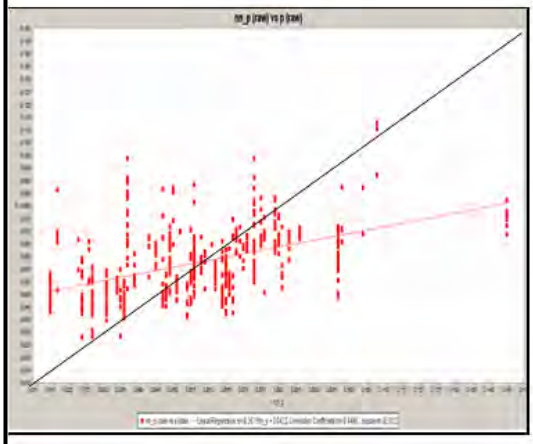
NN-Check



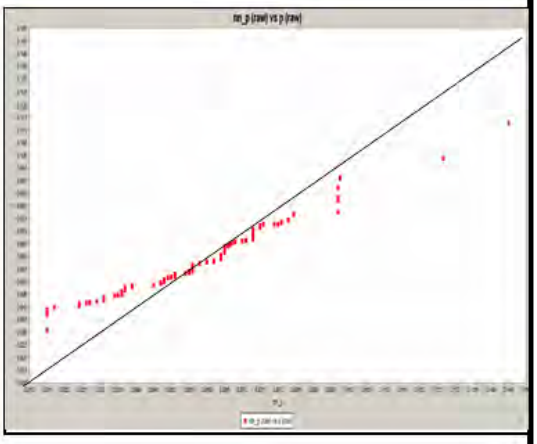
Number of Sampl	829
Minimum:	0,02
Maximum:	0,15
Mean:	0,06
Variance:	0,001
Standard Deviatic	0,02

Quantiles	
2.5%:	0,02
1° Quartil:	0,04
Median:	0,06
3° Quartil:	0,07
97.5%:	0,10

Correlation



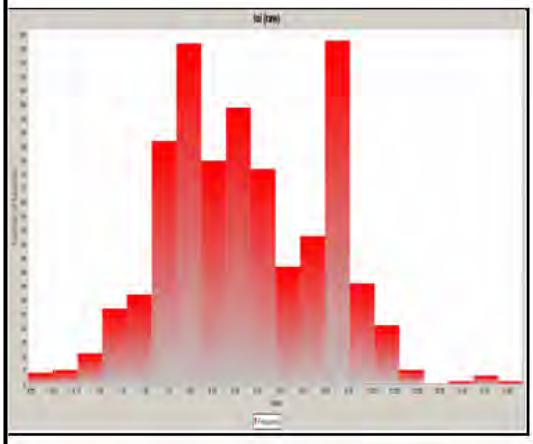
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	COB
Variable:	Loi (%)
Resource:	Inferred

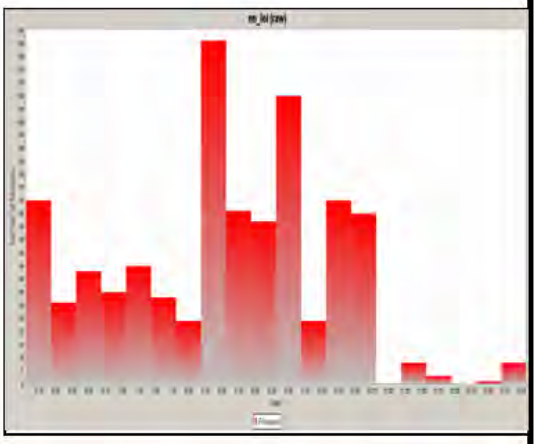
Ordinary Kriging



Number of Sampl	829
Minimum:	6,21
Maximum:	11,67
Mean:	8,60
Variance:	7,39E-01
Standard Deviatic	0,86

Quantiles	
2.5%:	7,03
1° Quartil:	7,95
Median:	8,48
3° Quartil:	9,39
97.5%:	10,11

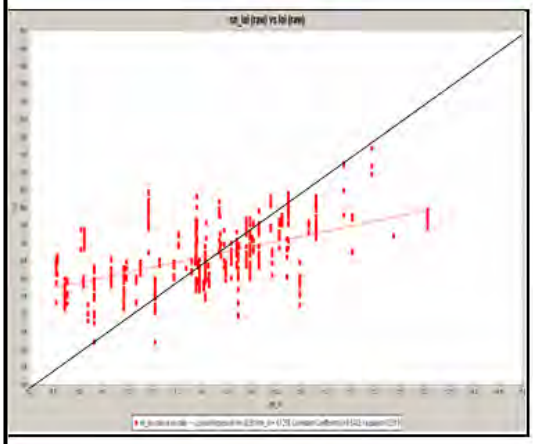
NN-Check



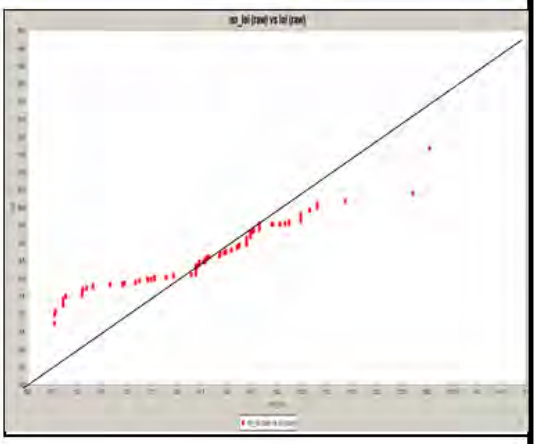
Number of Sampl	829
Minimum:	5,55
Maximum:	13,07
Mean:	8,50
Variance:	2,54
Standard Deviatic	1,59

Quantiles	
2.5%:	5,55
1° Quartil:	7,42
Median:	8,57
3° Quartil:	9,65
97.5%:	10,81

Correlation



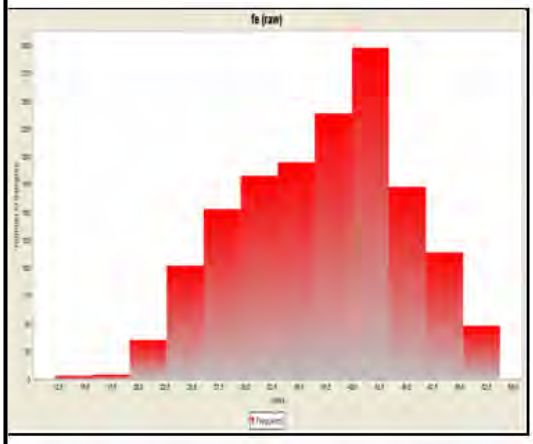
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	SAP
Variable:	Fe (%)
Resource:	Inferred

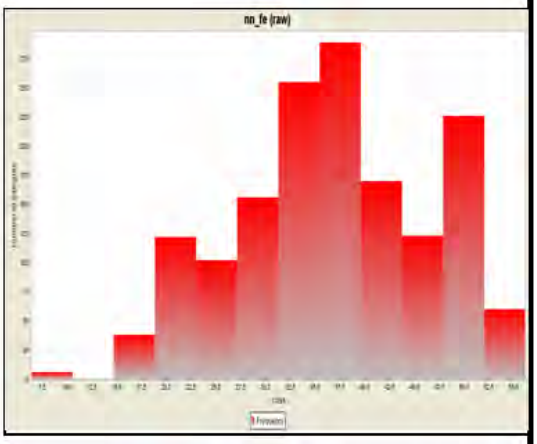
Ordinary Kriging



Number of Sampl	1547
Minimum:	4,11
Maximum:	59,62
Mean:	29,39
Variance:	116,78
Standard Deviatic	10,81

Quantiles	
2.5%:	8,19
1° Quartil:	20,93
Median:	29,10
3° Quartil:	38,49
97.5%:	48,35

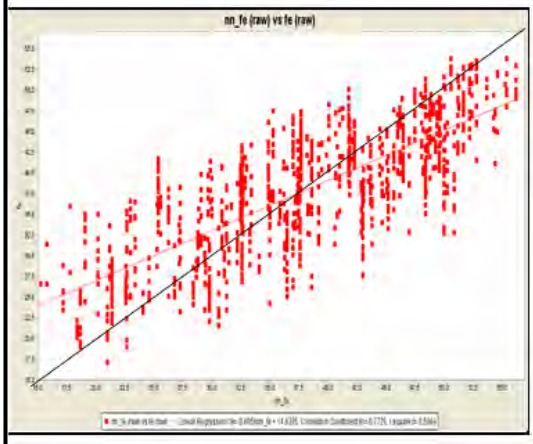
NN-Check



Number of Sampl	1547
Minimum:	3,09
Maximum:	65,70
Mean:	29,80
Variance:	213,95
Standard Deviatic	14,63

Quantiles	
2.5%:	6,59
1° Quartil:	16,50
Median:	30,10
3° Quartil:	42,90
97.5%:	54,80

Correlation

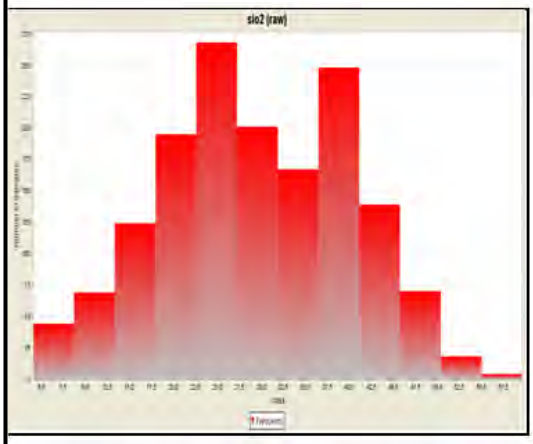


Q-Q Plot

Serra do Trairão

Target:	Area 2
Ore:	SAP
Variable:	SiO2 (%)
Resource:	Inferred

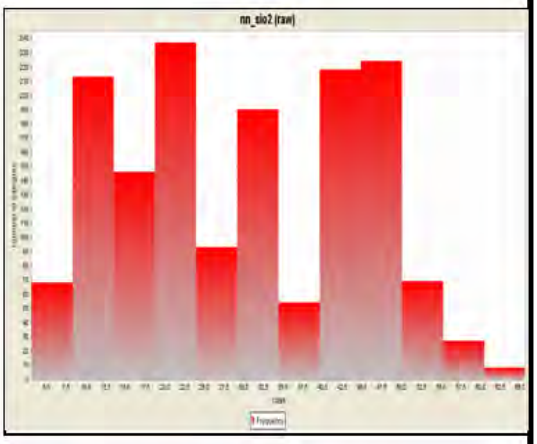
Ordinary Kriging



Number of Sampl	1547
Minimum:	4,39
Maximum:	22,70
Mean:	10,05
Variance:	7,26
Standard Deviatic	2,69

Quantiles	
2.5%:	6,08
1° Quartil:	7,85
Median:	9,55
3° Quartil:	11,90
97.5%:	15,86

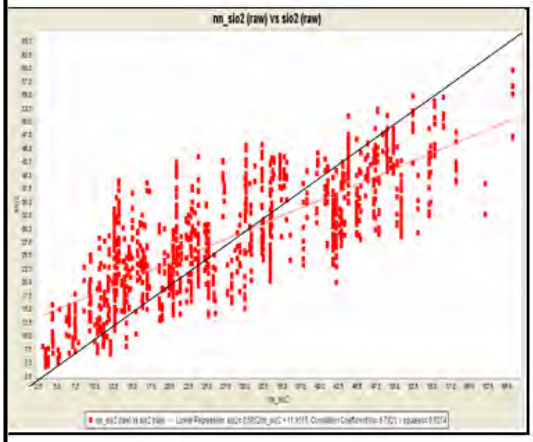
NN-Check



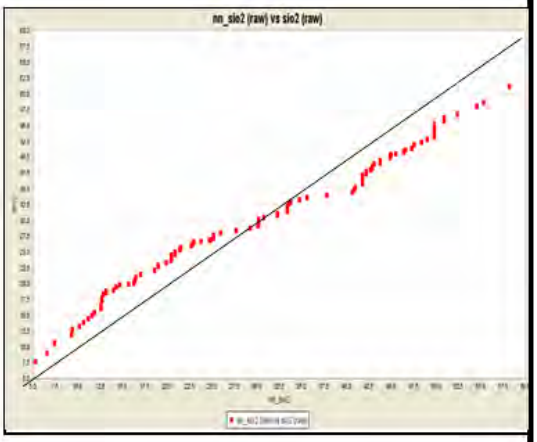
Number of Sampl	1547
Minimum:	3,21
Maximum:	27,20
Mean:	9,96
Variance:	16,17
Standard Deviatic	4,02

Quantiles	
2.5%:	3,69
1° Quartil:	7,13
Median:	9,20
3° Quartil:	12,55
97.5%:	19,00

Correlation



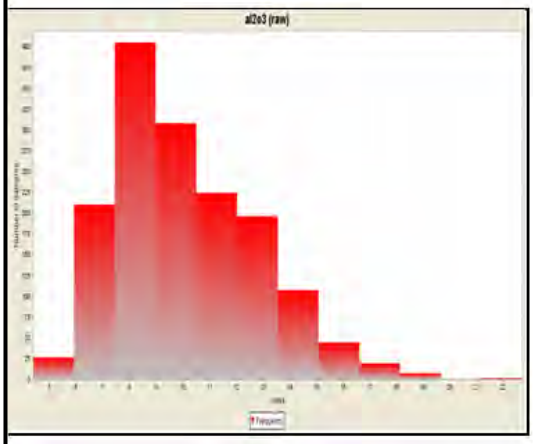
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	SAP
Variable:	Al2O3 (%)
Resource:	Inferred

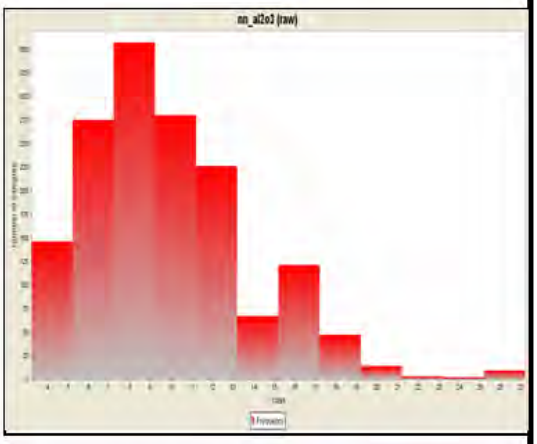
Ordinary Kriging



Number of Sampl	1547
Minimum:	0,01
Maximum:	1,28
Mean:	0,16
Variance:	0,02
Standard Deviatic	0,16

Quantiles	
2.5%:	0,03
1° Quartil:	0,06
Median:	0,11
3° Quartil:	0,18
97.5%:	0,64

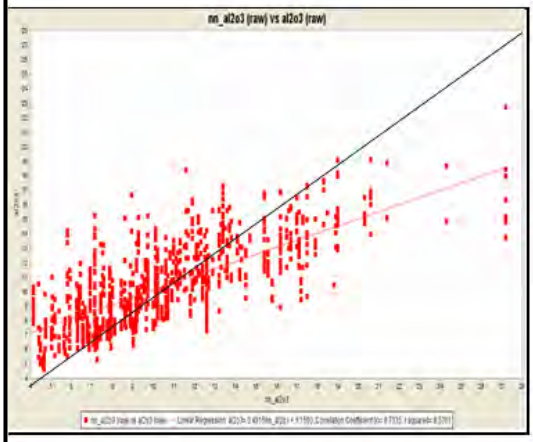
NN-Check



Number of Sampl	1547
Minimum:	0,00
Maximum:	3,19
Mean:	0,20
Variance:	0,26
Standard Deviatic	0,51

Quantiles	
2.5%:	0,00
1° Quartil:	0,03
Median:	0,07
3° Quartil:	0,15
97.5%:	3,19

Correlation

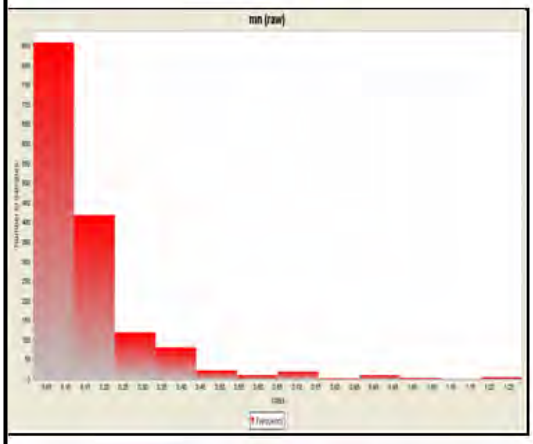


Q-Q Plot

Serra do Trairão

Target:	Area 2
Ore:	SAP
Variable:	Mn (%)
Resource:	Inferred

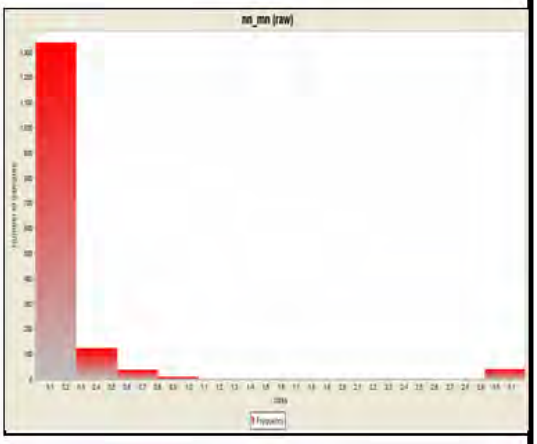
Ordinary Kriging



Number of Sampl	1547
Minimum:	0,01
Maximum:	0,14
Mean:	0,04
Variance:	0,0003
Standard Deviatic	0,02

Quantiles	
2.5%:	0,02
1° Quartil:	0,03
Median:	0,04
3° Quartil:	0,05
97.5%:	0,08

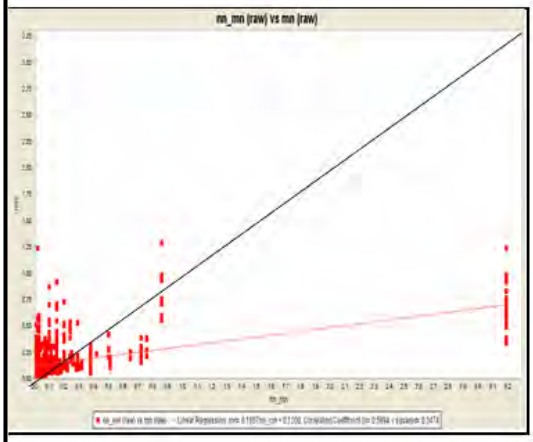
NN-Check



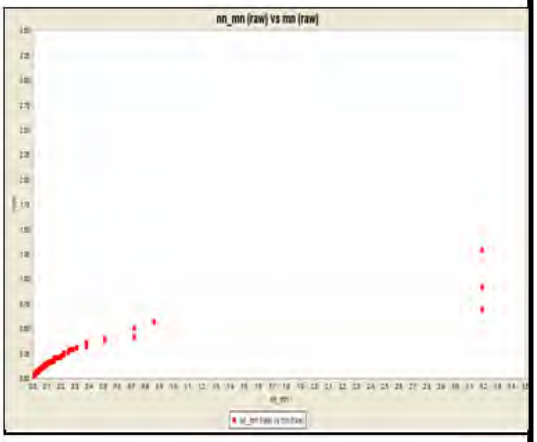
Number of Sampl	1547
Minimum:	0,003
Maximum:	0,17
Mean:	0,04
Variance:	0,001
Standard Deviatic	0,03

Quantiles	
2.5%:	0,01
1° Quartil:	0,02
Median:	0,04
3° Quartil:	0,06
97.5%:	0,11

Correlation



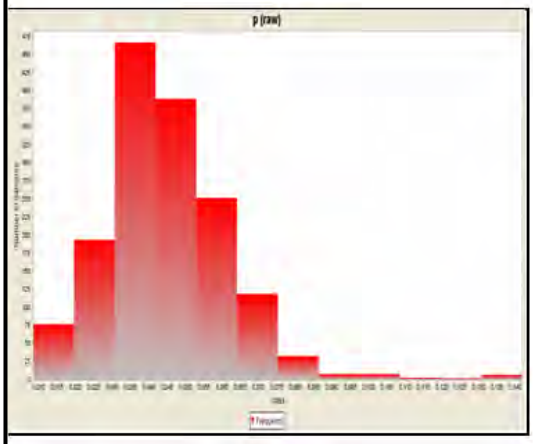
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	SAP
Variable:	P (%)
Resource:	Inferred

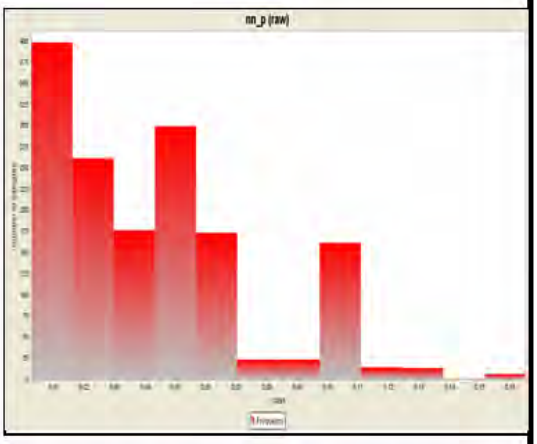
Ordinary Kriging



Number of Sampl	1547
Minimum:	-
Maximum:	11,18
Mean:	6,59
Variance:	1,58
Standard Deviatic	1,26

Quantiles	
2.5%:	4,57
1° Quartil:	5,77
Median:	6,31
3° Quartil:	7,41
97.5%:	9,28

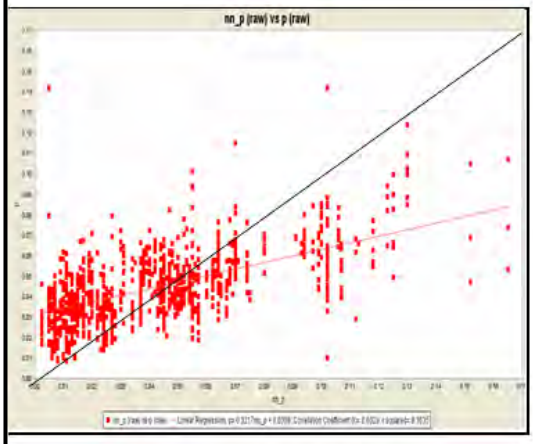
NN-Check



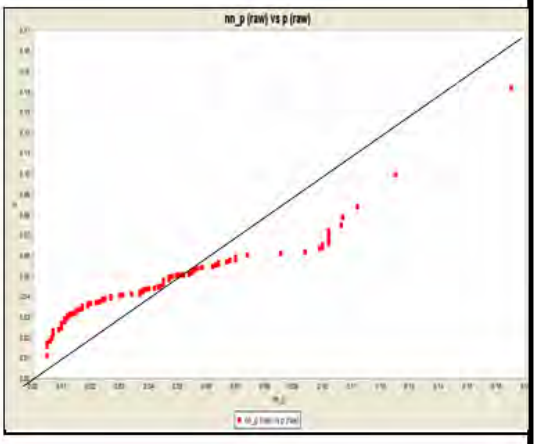
Number of Sampl	1547
Minimum:	2,35
Maximum:	11,91
Mean:	6,65
Variance:	4,06
Standard Deviatic	2,02

Quantiles	
2.5%:	2,71
1° Quartil:	5,27
Median:	6,68
3° Quartil:	8,06
97.5%:	10,44

Correlation



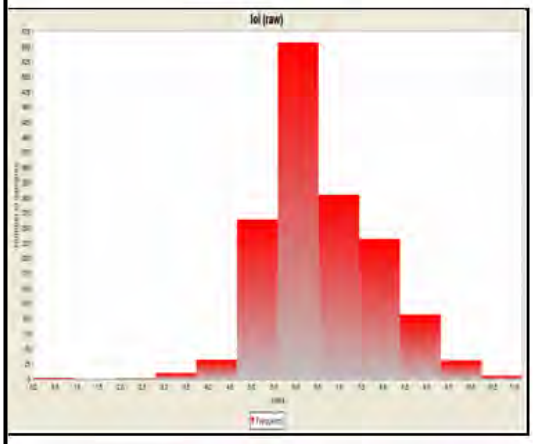
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	SAP
Variable:	Loi (%)
Resource:	Inferred

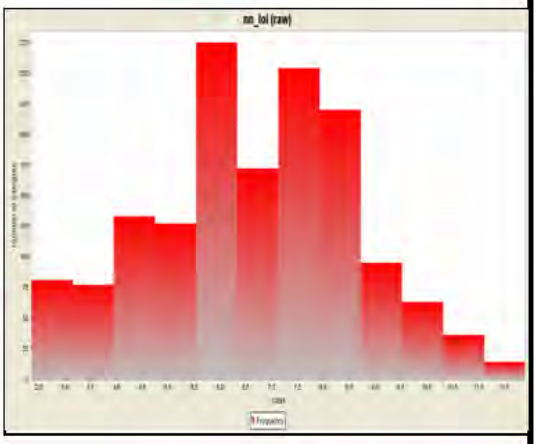
Ordinary Kriging



Number of Sampl	1547
Minimum:	12,25
Maximum:	53,76
Mean:	37,17
Variance:	58,17
Standard Deviatic	7,63

Quantiles	
2.5%:	22,16
1° Quartil:	31,11
Median:	37,93
3° Quartil:	42,71
97.5%:	51,15

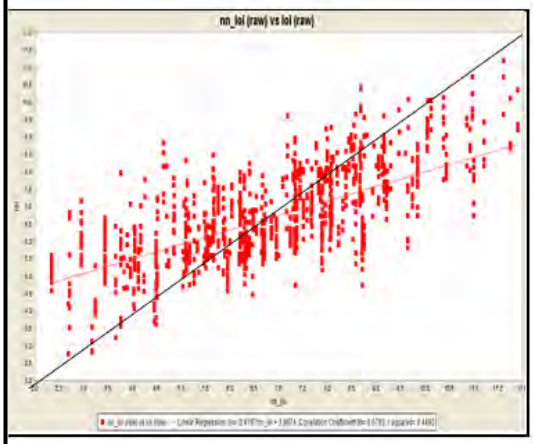
NN-Check



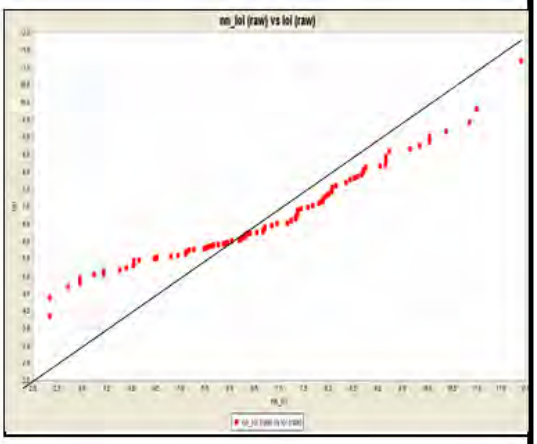
Number of Sampl	1547
Minimum:	6,39
Maximum:	56,20
Mean:	36,86
Variance:	94,60
Standard Deviatic	9,73

Quantiles	
2.5%:	18,70
1° Quartil:	29,90
Median:	37,00
3° Quartil:	45,10
97.5%:	52,80

Correlation



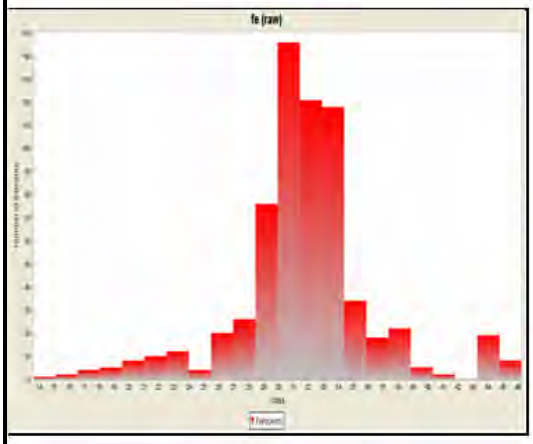
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	SAR
Variable:	Fe (%)
Resource:	Inferred

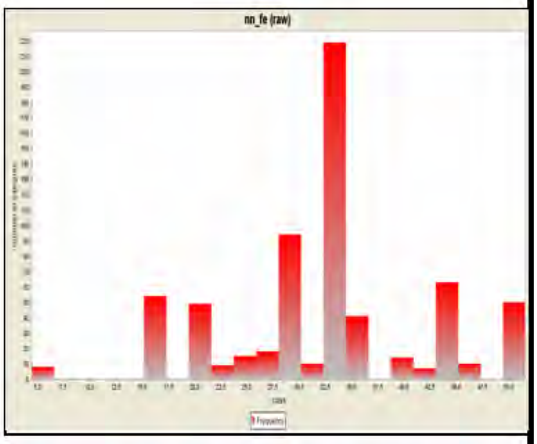
Ordinary Kriging



Number of Sampl	661
Minimum:	13,59
Maximum:	46,26
Mean:	31,70
Variance:	21,84
Standard Deviatic	4,67

Quantiles	
2.5%:	20,79
1° Quartil:	29,80
Median:	31,75
3° Quartil:	33,75
97.5%:	38,89

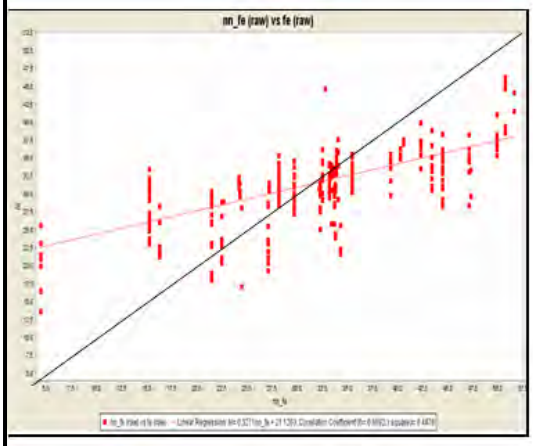
NN-Check



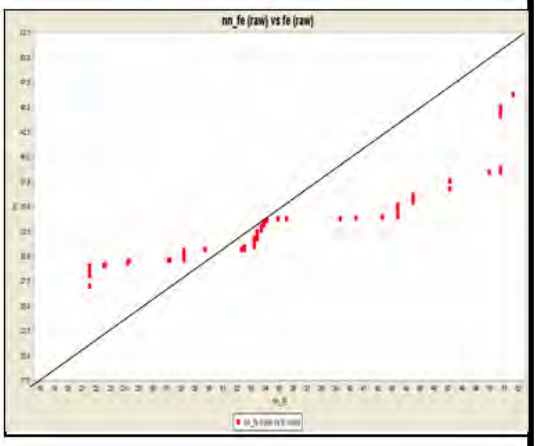
Number of Sampl	661
Minimum:	4,46
Maximum:	51,60
Mean:	32,32
Variance:	91,40
Standard Deviatic	9,56

Quantiles	
2.5%:	15,30
1° Quartil:	28,20
Median:	33,40
3° Quartil:	35,50
97.5%:	50,70

Correlation



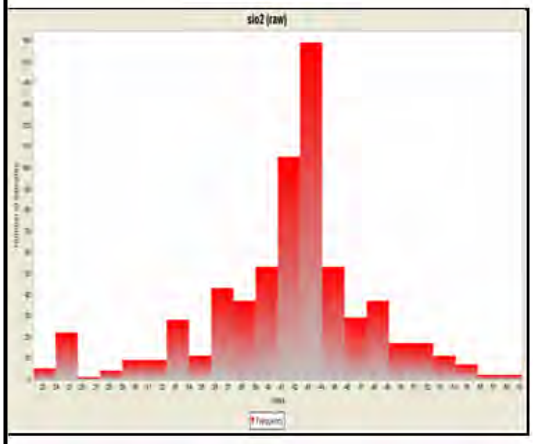
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	SAR
Variable:	SiO2 (%)
Resource:	Inferred

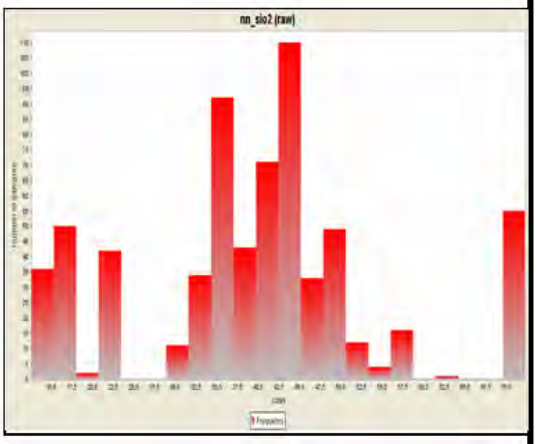
Ordinary Kriging



Number of Sampl	661
Minimum:	22,27
Maximum:	59,16
Mean:	41,51
Variance:	37,97
Standard Deviatic	6,16

Quantiles	
2.5%:	24,54
1° Quartil:	38,96
Median:	42,42
3° Quartil:	44,36
97.5%:	51,18

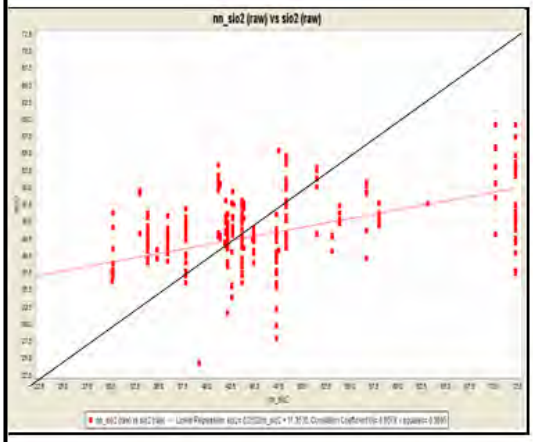
NN-Check



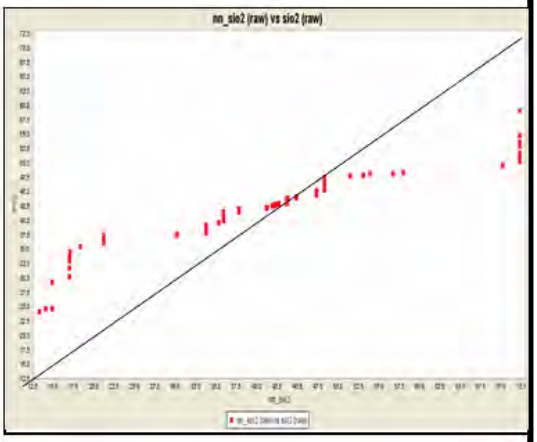
Number of Sampl	661
Minimum:	12,60
Maximum:	72,30
Mean:	39,64
Variance:	213,79
Standard Deviatic	14,62

Quantiles	
2.5%:	14,90
1° Quartil:	33,80
Median:	41,90
3° Quartil:	47,30
97.5%:	72,30

Correlation



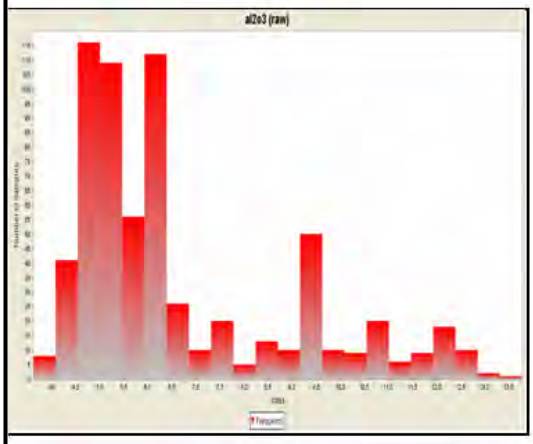
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	SAR
Variable:	Al2O3 (%)
Resource:	Inferred

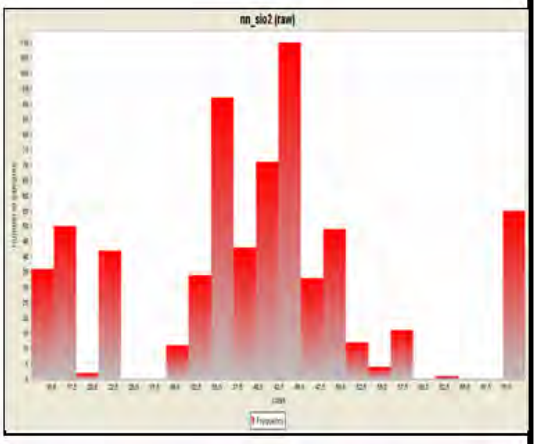
Ordinary Kriging



Number of Sampl	661
Minimum:	3,62
Maximum:	13,78
Mean:	6,67
Variance:	5,10
Standard Deviatic	2,26

Quantiles	
2.5%:	4,35
1° Quartil:	5,01
Median:	5,95
3° Quartil:	7,56
97.5%:	11,86

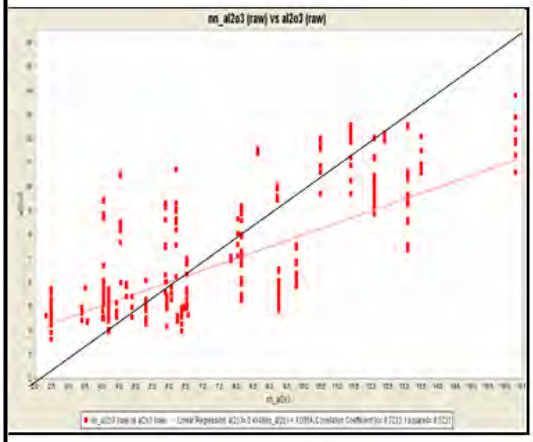
NN-Check



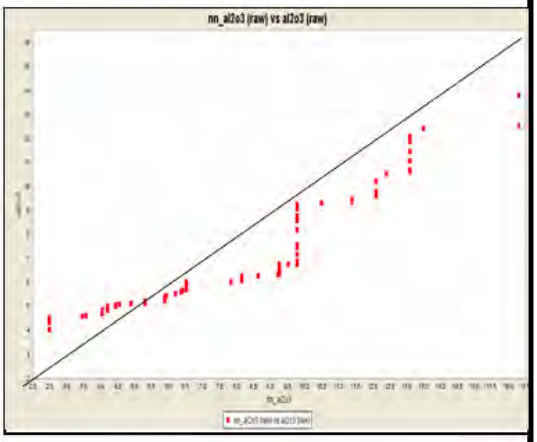
Number of Sampl	661
Minimum:	2,34
Maximum:	16,30
Mean:	7,34
Variance:	10,92
Standard Deviatic	3,30

Quantiles	
2.5%:	2,49
1° Quartil:	4,44
Median:	6,52
3° Quartil:	9,78
97.5%:	13,10

Correlation



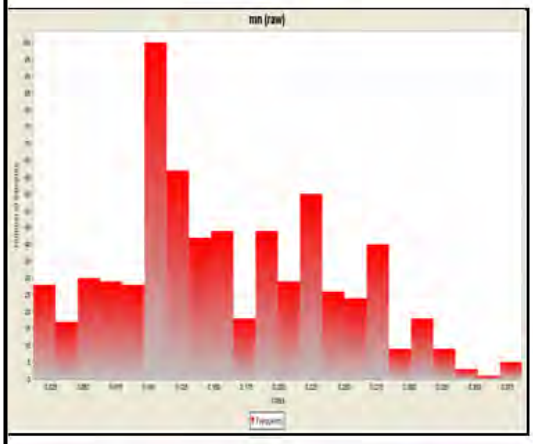
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	SAR
Variable:	Mn (%)
Resource:	Inferred

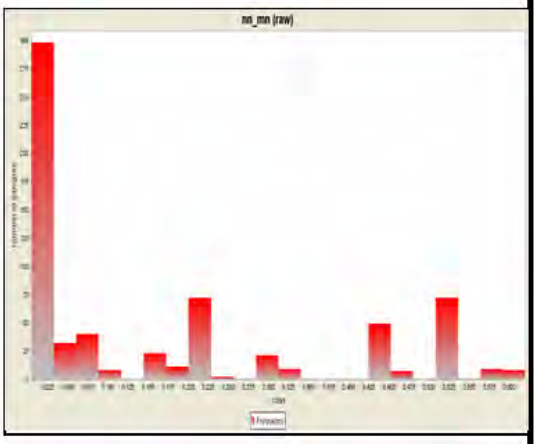
Ordinary Kriging



Number of Sampl	661
Minimum:	0,01
Maximum:	0,39
Mean:	0,16
Variance:	0,01
Standard Deviatic	0,08

Quantiles	
2.5%:	0,01
1° Quartil:	0,10
Median:	0,15
3° Quartil:	0,23
97.5%:	0,31

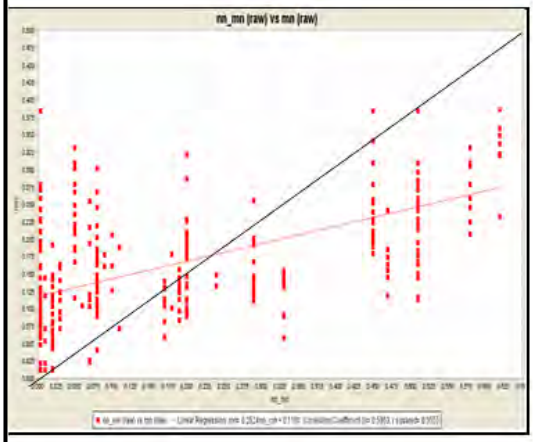
NN-Check



Number of Sampl	661
Minimum:	0,004
Maximum:	0,62
Mean:	0,17
Variance:	0,04
Standard Deviatic	0,19

Quantiles	
2.5%:	0,004
1° Quartil:	0,02
Median:	0,07
3° Quartil:	0,29
97.5%:	0,51

Correlation

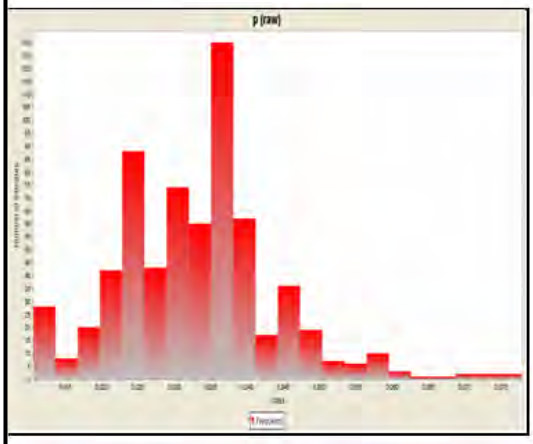


Q-Q Plot

Serra do Trairão

Target:	Area 2
Ore:	SAR
Variable:	P (%)
Resource:	Inferred

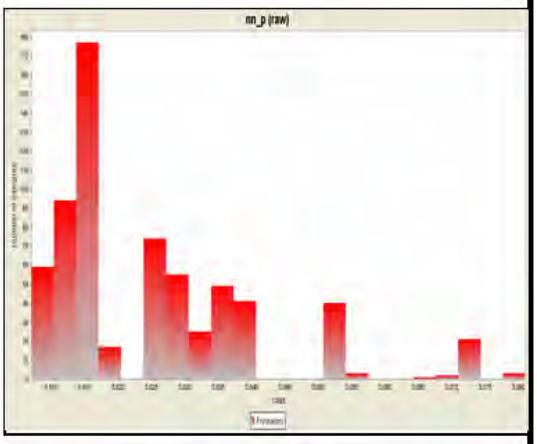
Ordinary Kriging



Number of Sampl	661
Minimum:	0,01
Maximum:	0,08
Mean:	0,03
Variance:	0,0001
Standard Deviatic	0,01

Quantiles	
2.5%:	0,01
1° Quartil:	0,02
Median:	0,03
3° Quartil:	0,04
97.5%:	0,05

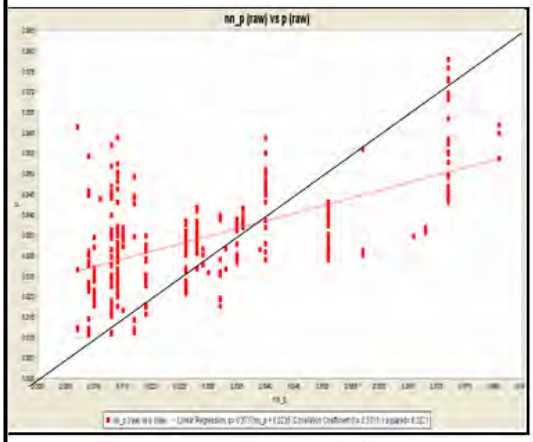
NN-Check



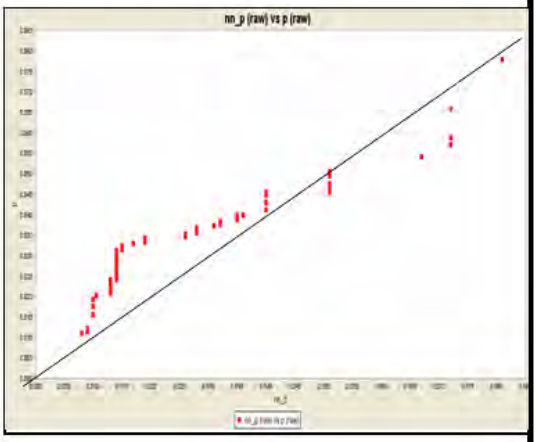
Number of Sampl	661
Minimum:	0,01
Maximum:	0,08
Mean:	0,02
Variance:	0,0002
Standard Deviatic	0,02

Quantiles	
2.5%:	0,01
1° Quartil:	0,01
Median:	0,02
3° Quartil:	0,03
97.5%:	0,05

Correlation



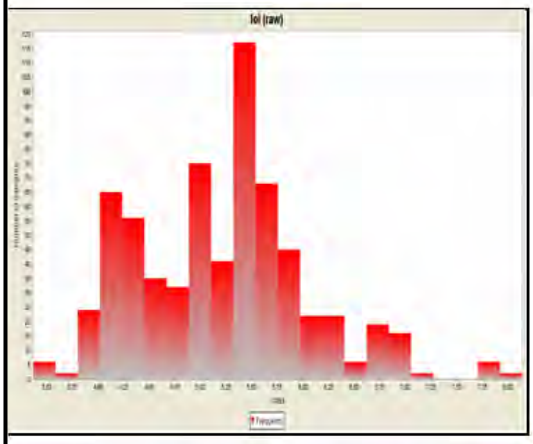
Q-Q Plot



Serra do Trairão

Target:	Area 2
Ore:	SAR
Variable:	Loi(%)
Resource:	Inferred

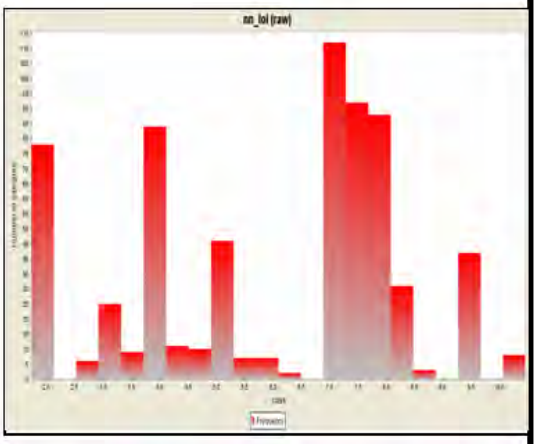
Ordinary Kriging



Number of Sampl	661
Minimum:	3,37
Maximum:	8,14
Mean:	5,21
Variance:	0,69
Standard Deviatic	0,83

Quantiles	
2.5%:	3,99
1° Quartil:	4,48
Median:	5,28
3° Quartil:	5,66
97.5%:	6,72

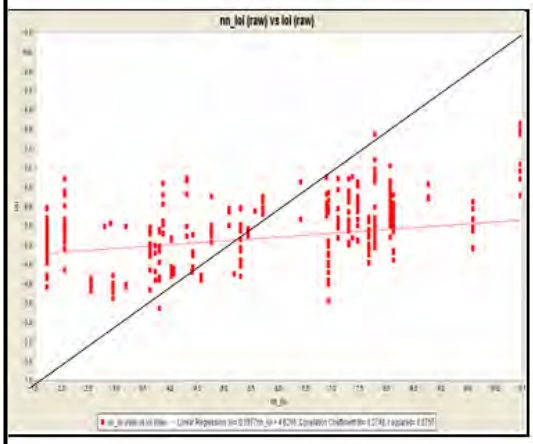
NN-Check



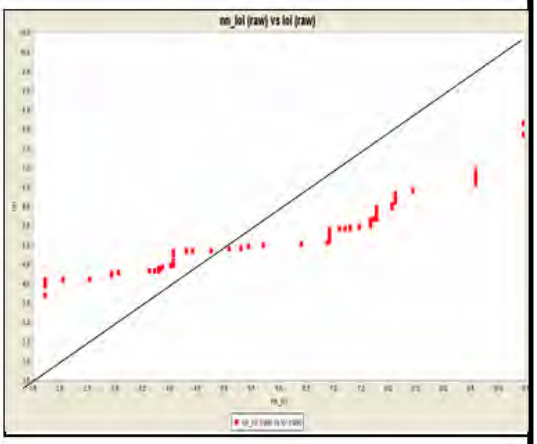
Number of Sampl	661
Minimum:	3,37
Maximum:	8,14
Mean:	5,21
Variance:	0,69
Standard Deviatic	0,83

Quantiles	
2.5%:	3,99
1° Quartil:	4,48
Median:	5,28
3° Quartil:	5,66
97.5%:	6,72

Correlation



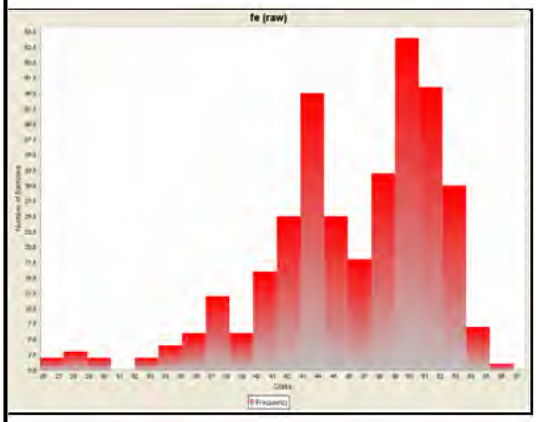
Q-Q Plot



Serra do Trairão

Target:	Area 2_ext2
Ore:	COB
Variable:	Fe (%)
Resource:	Inferred

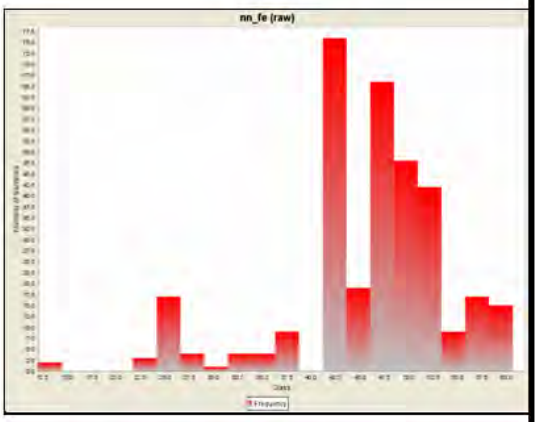
Ordinary Kriging



Number of Samples	336
Minimum:	25,77
Maximum:	55,23
Mean:	46,29
Variance:	30,82
Standard Deviation	5,55

Quantiles	
2.5%:	33,12
1° Quartil:	36,22
Median:	47,62
3° Quartil:	50,58
97.5%:	53,68

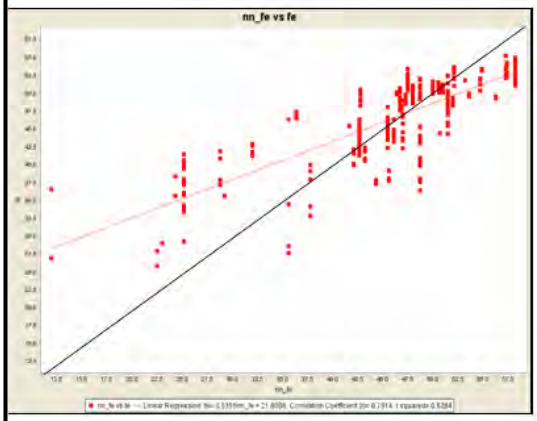
NN-Check



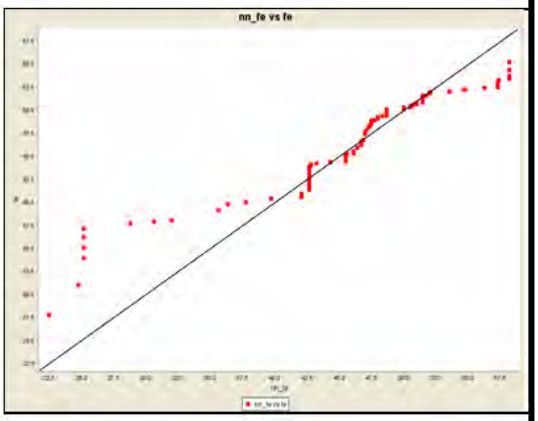
Number of Samples	336
Minimum:	12,00
Maximum:	58,20
Mean:	45,72
Variance:	67,30
Standard Deviation	8,20

Quantiles	
2.5%:	25,20
1° Quartil:	25,20
Median:	47,00
3° Quartil:	50,79
97.5%:	58,20

Correlation



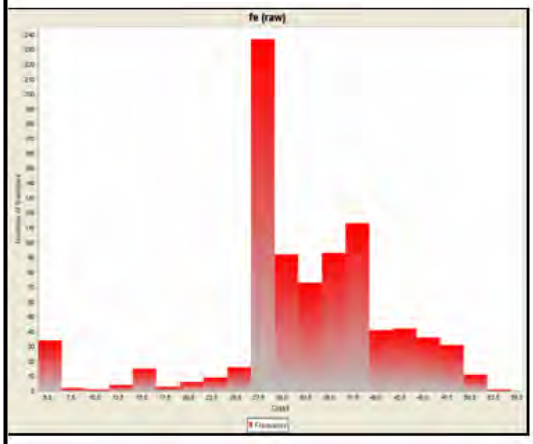
Q-Q Plot



Serra do Trairão

Target:	Area 2_Ext
Ore:	SAP
Variable:	Fe (%)
Resource:	Inferred

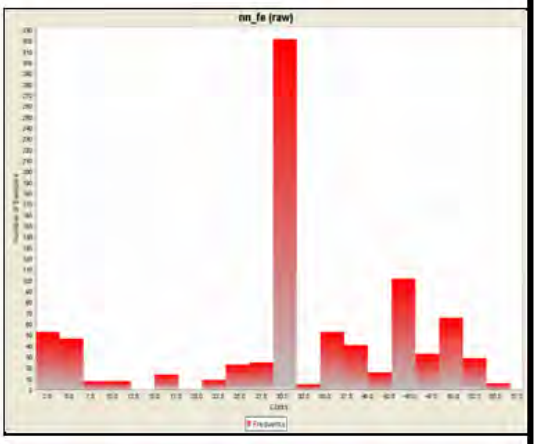
Ordinary Kriging



Number of Sampl	860
Minimum:	3,98
Maximum:	51,84
Mean:	32,35
Variance:	83,01
Standard Deviatic	9,11

Quantiles	
2.5%:	4,74
1° Quartil:	27,72
Median:	31,96
3° Quartil:	46,81
97.5%:	48,40

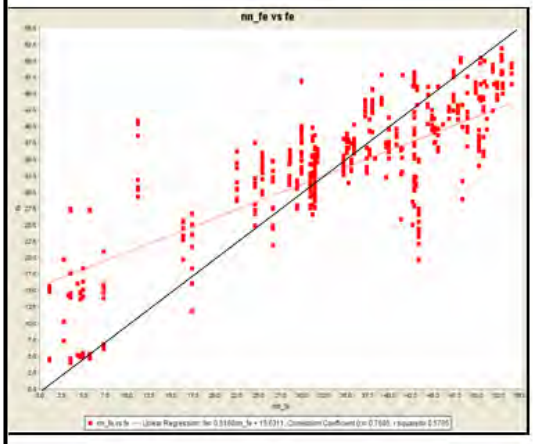
NN-Check



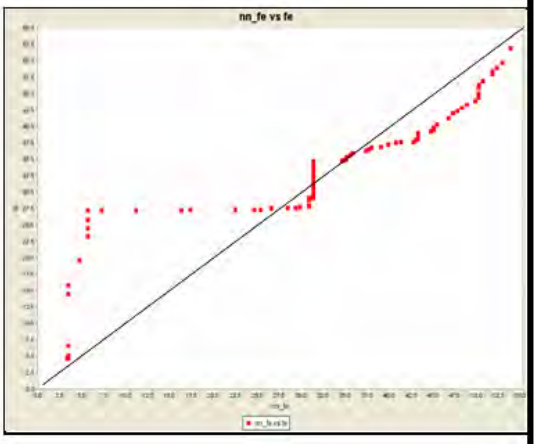
Number of Sampl	860
Minimum:	1,13
Maximum:	53,90
Mean:	32,27
Variance:	178,94
Standard Deviatic	13,38

Quantiles	
2.5%:	3,52
1° Quartil:	29,90
Median:	31,40
3° Quartil:	50,70
97.5%:	52,30

Correlation



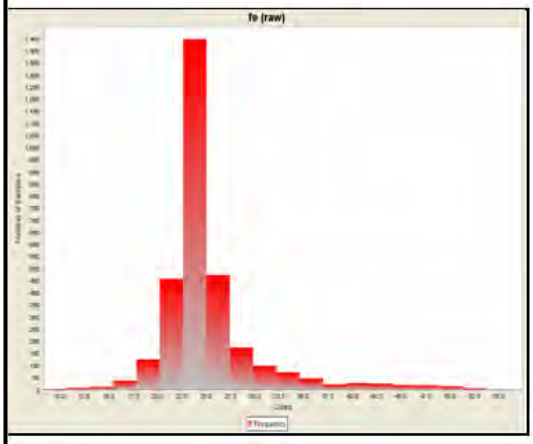
Q-Q Plot



Serra do Trairão

Target:	Area 2_Ext
Ore:	SAR
Variable:	Fe (%)
Resource:	Inferred

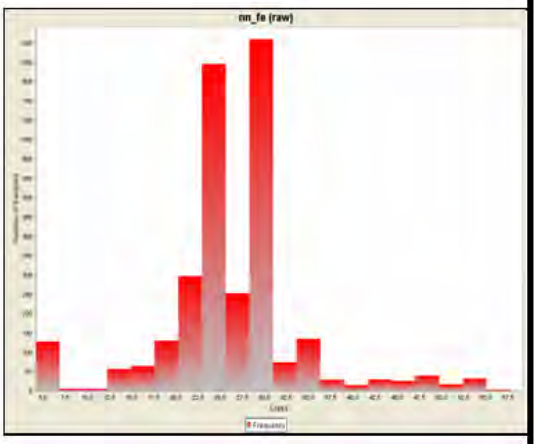
Ordinary Kriging



Number of Sampl	3099
Minimum:	8,27
Maximum:	53,74
Mean:	25,37
Variance:	27,40
Standard Deviatic	5,23

Quantiles	
2.5%:	18,24
1° Quartil:	22,95
Median:	24,49
3° Quartil:	36,00
97.5%:	42,87

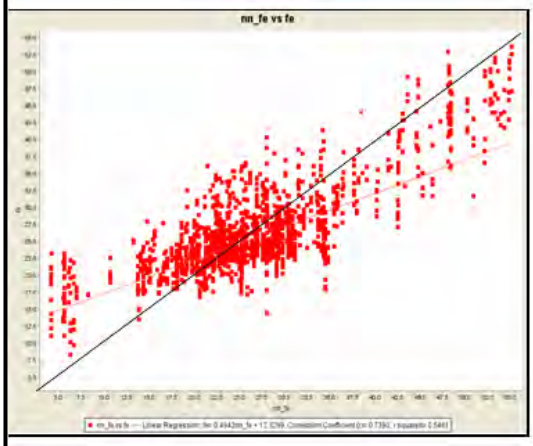
NN-Check



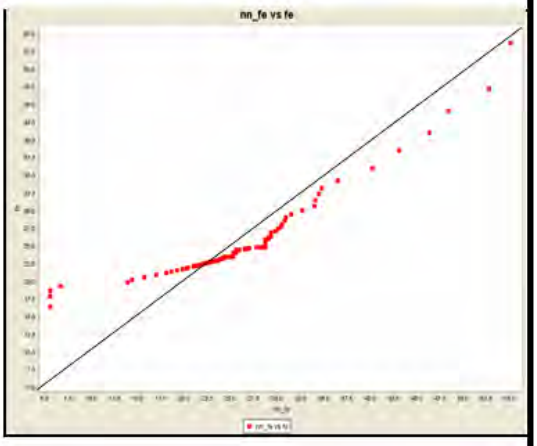
Number of Sampl	3099
Minimum:	4,20
Maximum:	55,10
Mean:	26,39
Variance:	61,27
Standard Deviatic	7,83

Quantiles	
2.5%:	5,62
1° Quartil:	23,59
Median:	25,90
3° Quartil:	40,25
97.5%:	48,20

Correlation



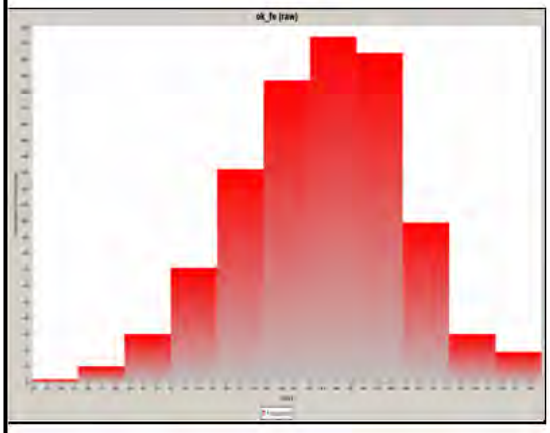
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	COB
Variable:	Fe (%)
Resource:	Inferred

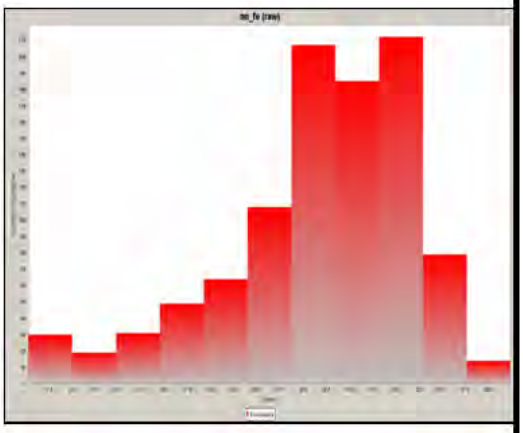
Ordinary Kriging



Number of Samples	998
Minimum:	21,90
Maximum:	58,87
Mean:	42,78
Variance:	36,07
Standard Deviation	6,01

Quantiles	
2.5%:	30,48
1° Quartil:	38,80
Median:	43,12
3° Quartil:	46,95
97.5%:	53,07

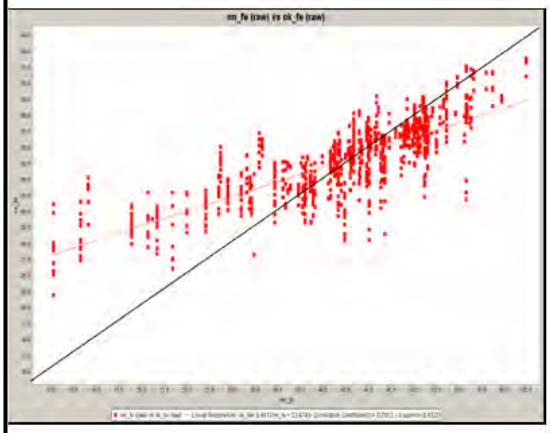
NN-Check



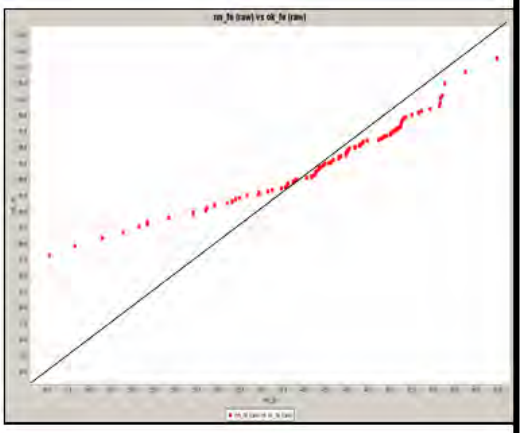
Number of Sampl	998
Minimum:	10,30
Maximum:	62,40
Mean:	41,81
Variance:	106,98
Standard Deviatic	10,34

Quantiles	
2.5%:	14,10
1° Quartil:	37,80
Median:	43,40
3° Quartil:	50,00
97.5%:	56,05

Correlation



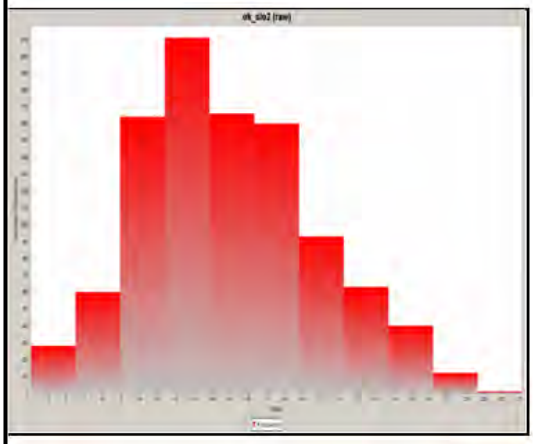
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	COB
Variable:	SiO2 (%)
Resource:	Inferred

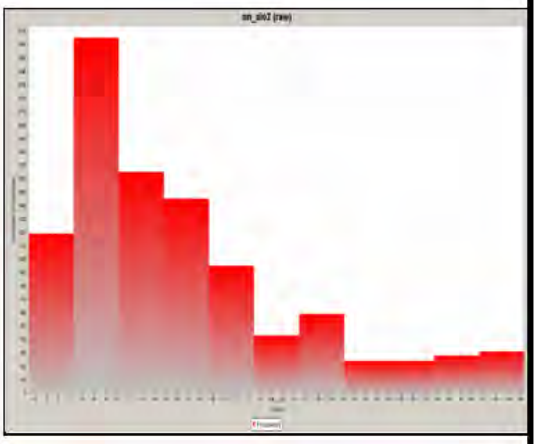
Ordinary Kriging



Number of Sampl	998
Minimum:	21,90
Maximum:	58,87
Mean:	42,78
Variance:	36,07
Standard Deviatic	6,01

Quantiles	
2.5%:	30,48
1° Quartil:	38,80
Median:	43,12
3° Quartil:	46,95
97.5%:	53,07

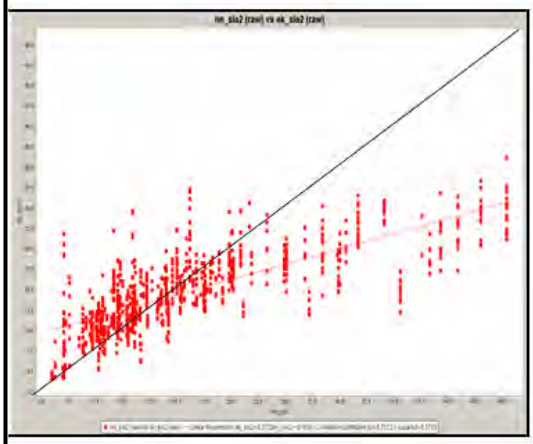
NN-Check



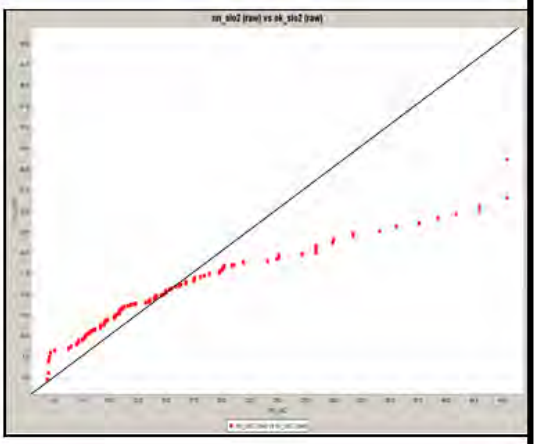
Number of Sampl	998
Minimum:	10,30
Maximum:	62,40
Mean:	41,81
Variance:	106,98
Standard Deviatic	10,34

Quantiles	
2.5%:	14,10
1° Quartil:	37,80
Median:	43,40
3° Quartil:	50,00
97.5%:	56,05

Correlation



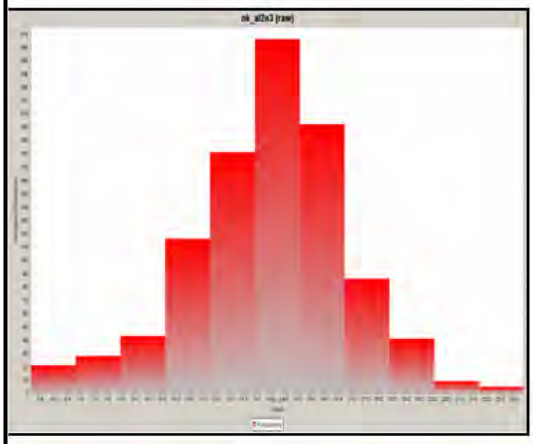
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	COB
Variable:	Al2O3 (%)
Resource:	Inferred

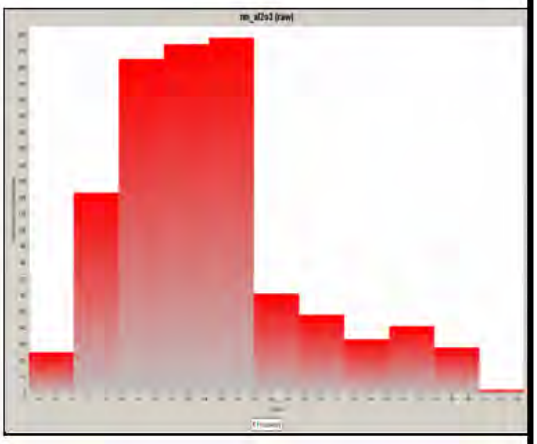
Ordinary Kriging



Number of Sampl	998
Minimum:	5,13
Maximum:	23,37
Mean:	13,95
Variance:	8,49
Standard Deviatic	2,91

Quantiles	
2.5%:	7,22
1° Quartil:	12,38
Median:	14,11
3° Quartil:	15,81
97.5%:	19,39

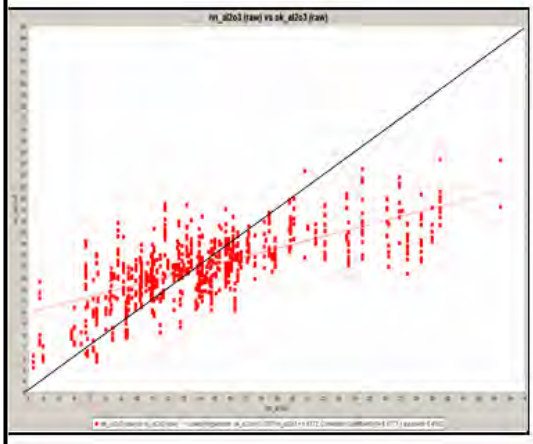
NN-Check



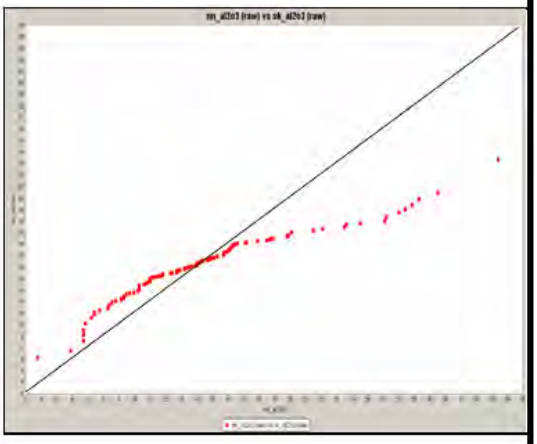
Number of Sampl	998
Minimum:	3,34
Maximum:	33,40
Mean:	14,30
Variance:	31,68
Standard Deviatic	5,63

Quantiles	
2.5%:	6,20
1° Quartil:	10,30
Median:	13,90
3° Quartil:	16,30
97.5%:	27,85

Correlation



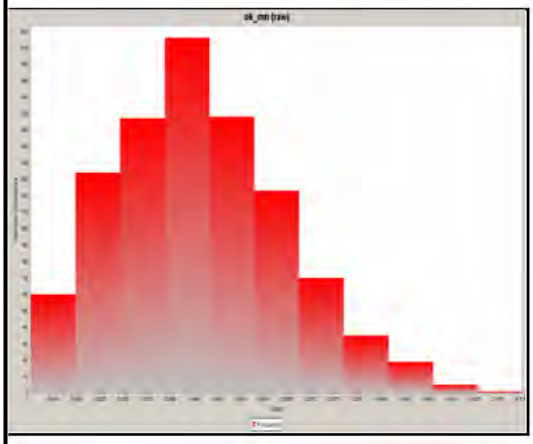
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	COB
Variable:	Mn (%)
Resource:	Inferred

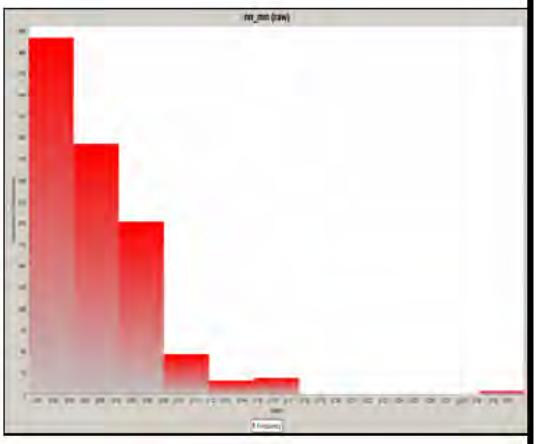
Ordinary Kriging



Number of Sampl	998
Minimum:	0,01
Maximum:	0,12
Mean:	0,05
Variance:	0,00
Standard Deviatic	0,02

Quantiles	
2.5%:	0,02
1° Quartil:	0,03
Median:	0,04
3° Quartil:	0,06
97.5%:	0,08

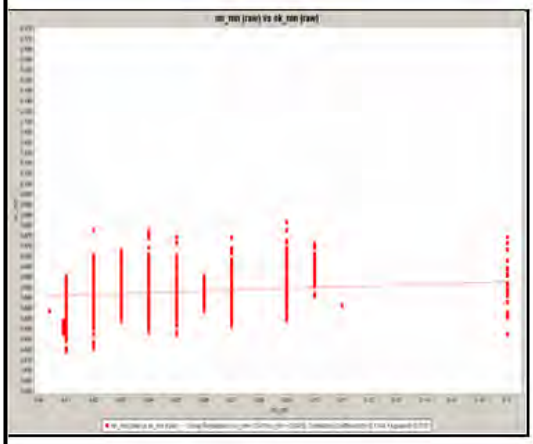
NN-Check



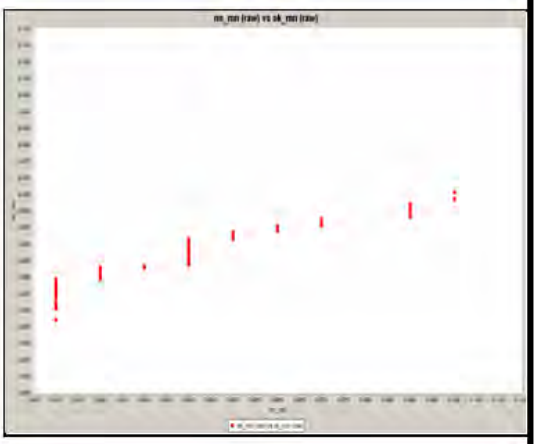
Number of Sampl	998
Minimum:	0,00
Maximum:	0,32
Mean:	0,05
Variance:	0,0014
Standard Deviatic	0,04

Quantiles	
2.5%:	0,01
1° Quartil:	0,02
Median:	0,04
3° Quartil:	0,07
97.5%:	0,13

Correlation



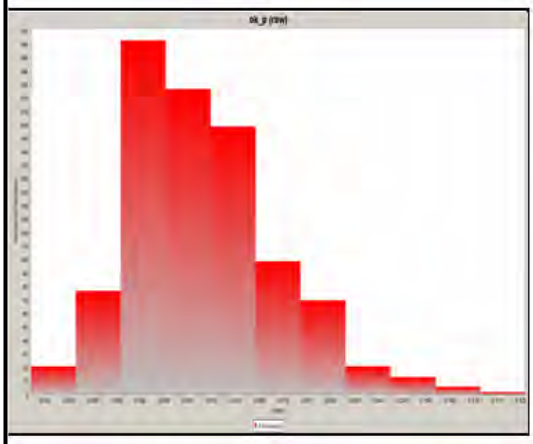
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	COB
Variable:	P (%)
Resource:	Inferred

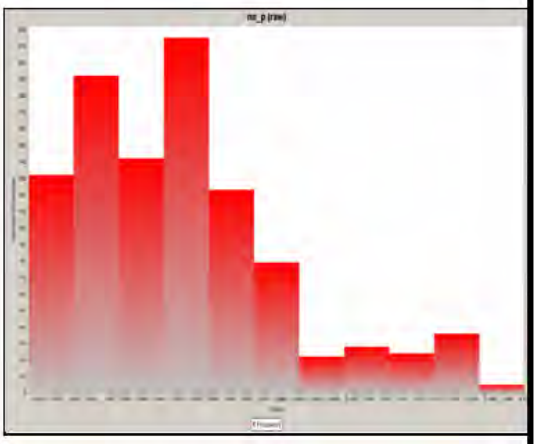
Ordinary Kriging



Number of Sampl	998
Minimum:	0,02
Maximum:	0,12
Mean:	0,05
Variance:	0,00
Standard Deviatic	0,02

Quantiles	
2.5%:	0,03
1° Quartil:	0,04
Median:	0,05
3° Quartil:	0,06
97.5%:	0,09

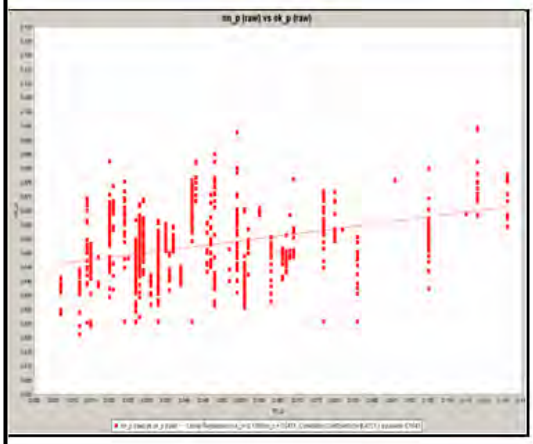
NN-Check



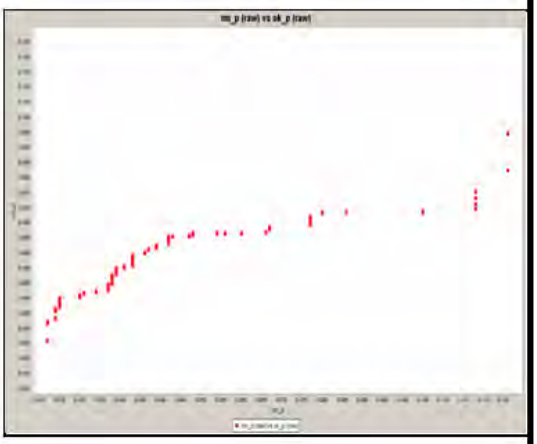
Number of Sampl	998
Minimum:	0,01
Maximum:	0,15
Mean:	0,05
Variance:	0,001
Standard Deviatic	0,03

Quantiles	
2.5%:	0,01
1° Quartil:	0,03
Median:	0,05
3° Quartil:	0,07
97.5%:	0,13

Correlation



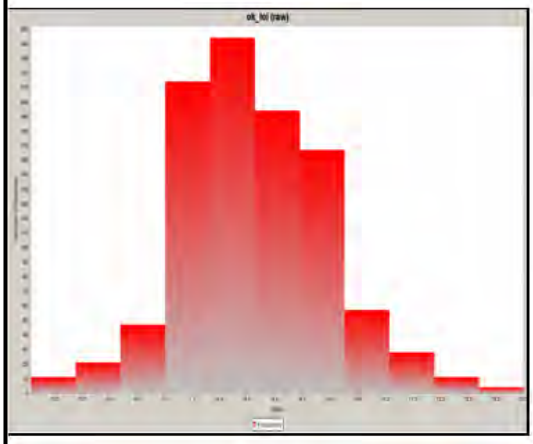
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	COB
Variable:	Loi (%)
Resource:	Inferred

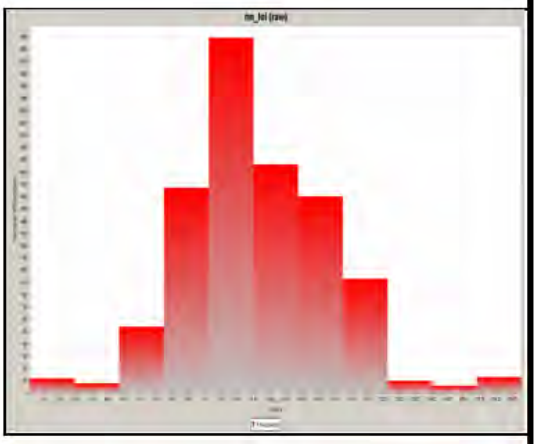
Ordinary Kriging



Number of Sampl	998
Minimum:	4,56
Maximum:	13,52
Mean:	8,61
Variance:	1,79
Standard Deviatic	1,34

Quantiles	
2.5%:	5,99
1° Quartil:	7,66
Median:	8,51
3° Quartil:	9,49
97.5%:	11,43

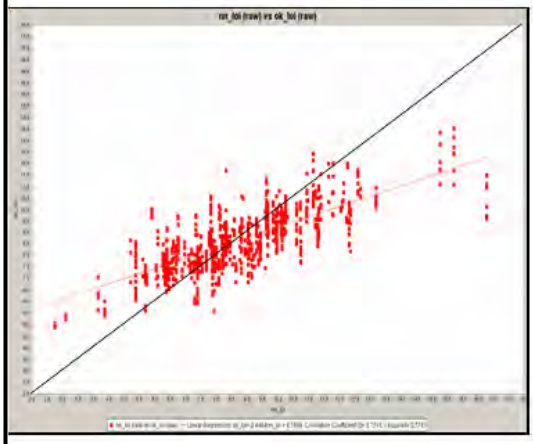
NN-Check



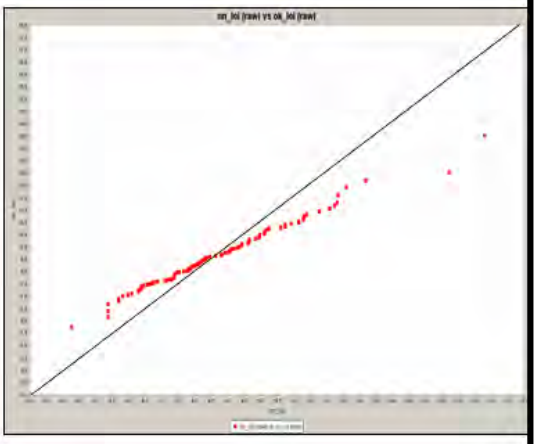
Number of Sampl	998
Minimum:	1,58
Maximum:	16,79
Mean:	8,63
Variance:	5,18
Standard Deviatic	2,28

Quantiles	
2.5%:	4,79
1° Quartil:	7,19
Median:	8,32
3° Quartil:	9,97
97.5%:	12,60

Correlation



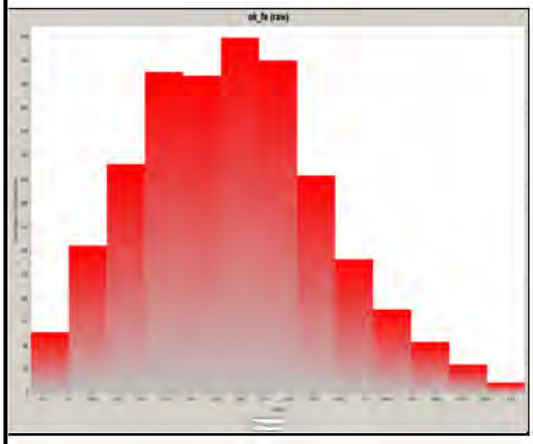
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	SAP
Variable:	Fe (%)
Resource:	Inferred

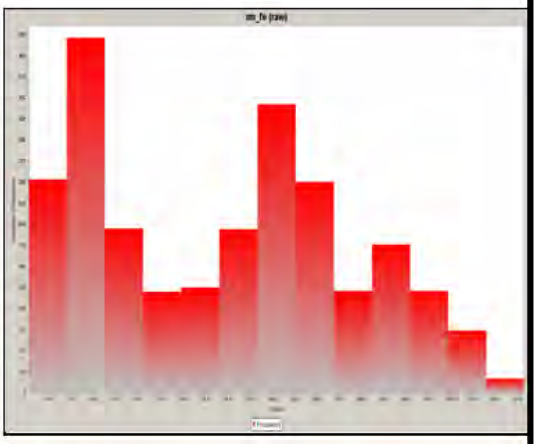
Ordinary Kriging



Number of Sampl	2409
Minimum:	3,75
Maximum:	53,93
Mean:	24,12
Variance:	90,47
Standard Deviatic	9,51

Quantiles	
2.5%:	7,53
1° Quartil:	17,08
Median:	23,88
3° Quartil:	30,25
97.5%:	43,91

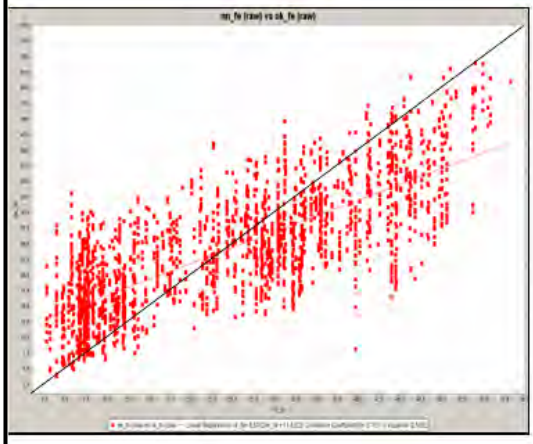
NN-Check



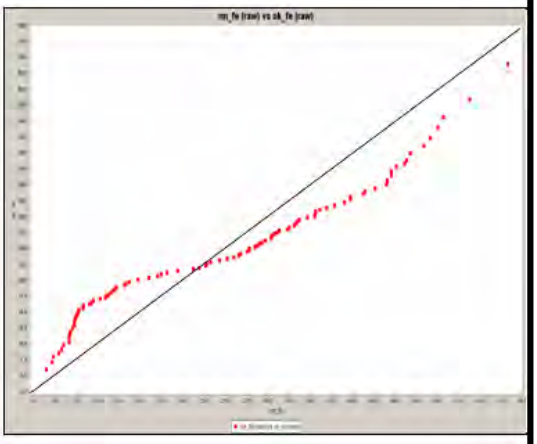
Number of Sampl	2409
Minimum:	2,75
Maximum:	58,20
Mean:	24,58
Variance:	204,33
Standard Deviatic	14,29

Quantiles	
2.5%:	4,72
1° Quartil:	10,30
Median:	26,60
3° Quartil:	35,50
97.5%:	50,00

Correlation



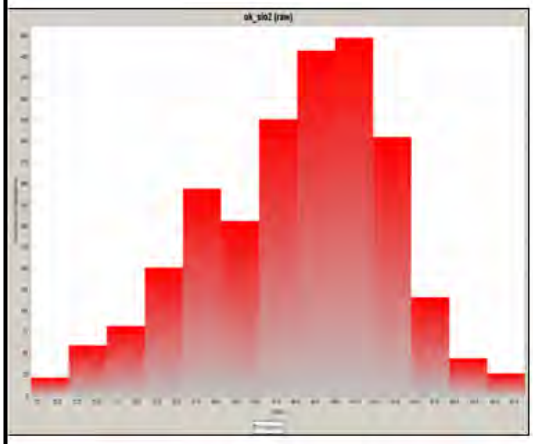
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	SAP
Variable:	SiO2 (%)
Resource:	Inferred

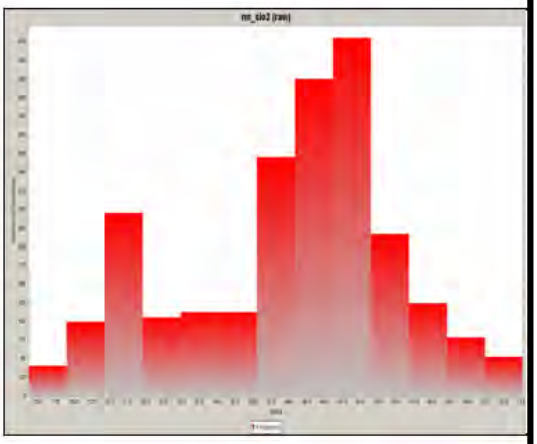
Ordinary Kriging



Number of Sampl	2409
Minimum:	6,70
Maximum:	68,88
Mean:	39,98
Variance:	134,42
Standard Deviatic	11,59

Quantiles	
2.5%:	14,93
1° Quartil:	31,71
Median:	41,49
3° Quartil:	48,67
97.5%:	59,01

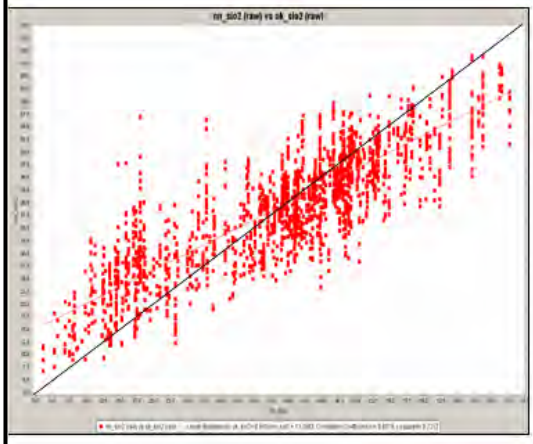
NN-Check



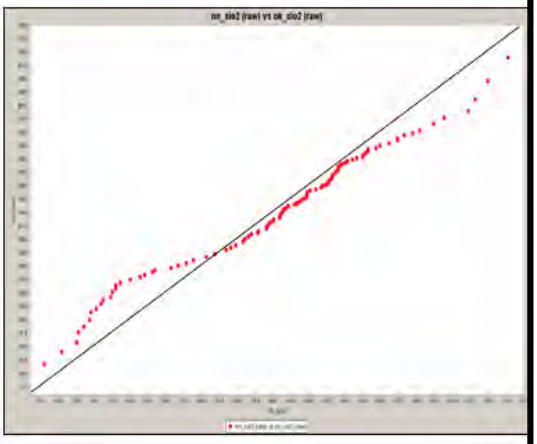
Number of Sampl	2409
Minimum:	3,66
Maximum:	72,70
Mean:	39,95
Variance:	220,06
Standard Deviatic	14,83

Quantiles	
2.5%:	10,90
1° Quartil:	30,60
Median:	42,90
3° Quartil:	49,20
97.5%:	67,10

Correlation



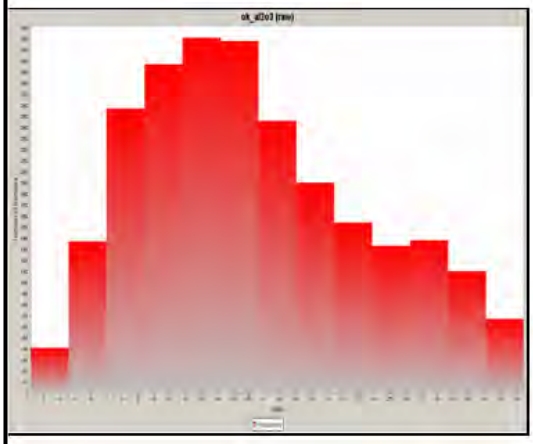
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	SAP
Variable:	Al2O3 (%)
Resource:	Inferred

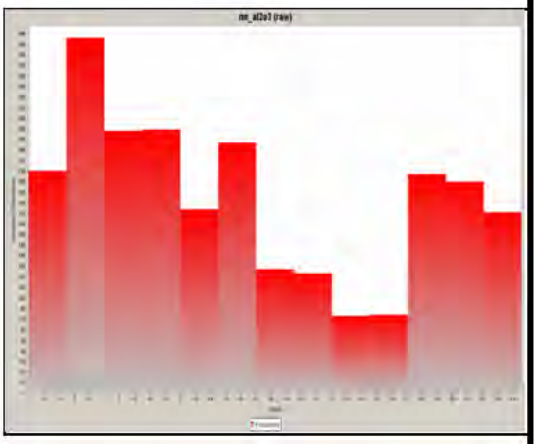
Ordinary Kriging



Number of Sampl	2409
Minimum:	2,16
Maximum:	33,51
Mean:	16,43
Variance:	52,39
Standard Deviatic	7,24

Quantiles	
2.5%:	5,04
1° Quartil:	10,77
Median:	15,35
3° Quartil:	21,47
97.5%:	31,03

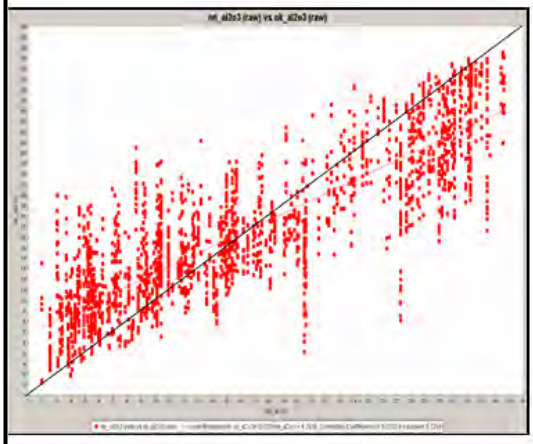
NN-Check



Number of Sampl	2409
Minimum:	1,96
Maximum:	34,60
Mean:	16,12
Variance:	95,77
Standard Deviatic	9,79

Quantiles	
2.5%:	3,05
1° Quartil:	7,37
Median:	14,30
3° Quartil:	26,30
97.5%:	32,60

Correlation

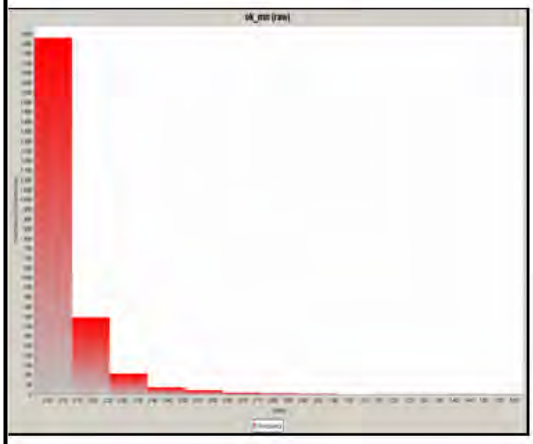


Q-Q Plot

Serra do Trairão

Target:	Area 3
Ore:	SAP
Variable:	Mn (%)
Resource:	Inferred

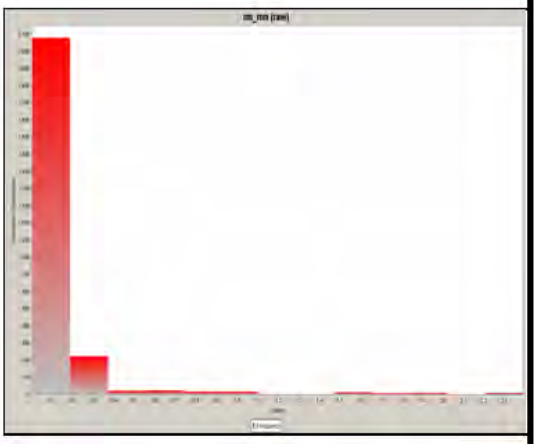
Ordinary Kriging



Number of Sampl	2409
Minimum:	0,01
Maximum:	1,63
Mean:	0,11
Variance:	0,0156
Standard Deviatic	0,12

Quantiles	
2.5%:	0,01
1° Quartil:	0,04
Median:	0,07
3° Quartil:	0,13
97.5%:	0,40

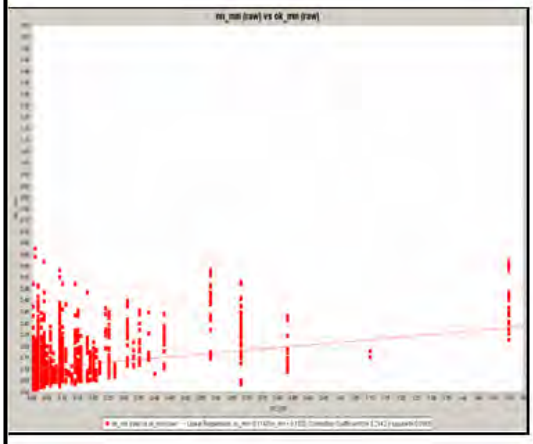
NN-Check



Number of Sampl	2409
Minimum:	0,004
Maximum:	2,39
Mean:	0,12
Variance:	0,066
Standard Deviatic	0,26

Quantiles	
2.5%:	0,00
1° Quartil:	0,02
Median:	0,04
3° Quartil:	0,11
97.5%:	0,68

Correlation

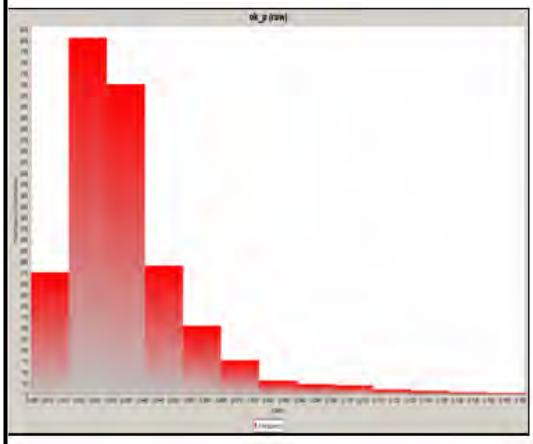


Q-Q Plot

Serra do Trairão

Target:	Area 3
Ore:	SAP
Variable:	P (%)
Resource:	Inferred

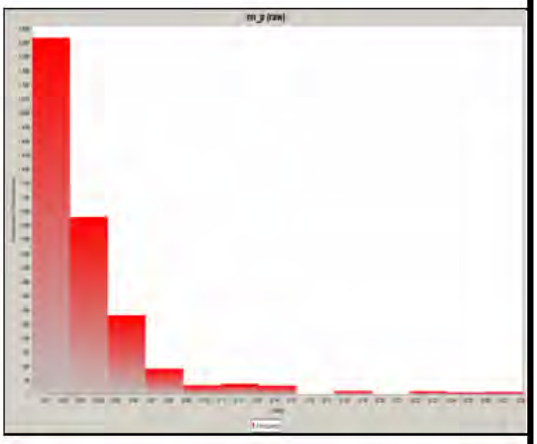
Ordinary Kriging



Number of Sampl	2409
Minimum:	0,00
Maximum:	0,16
Mean:	0,03
Variance:	0,00
Standard Deviatic	0,02

Quantiles	
2.5%:	0,01
1° Quartil:	0,02
Median:	0,03
3° Quartil:	0,04
97.5%:	0,09

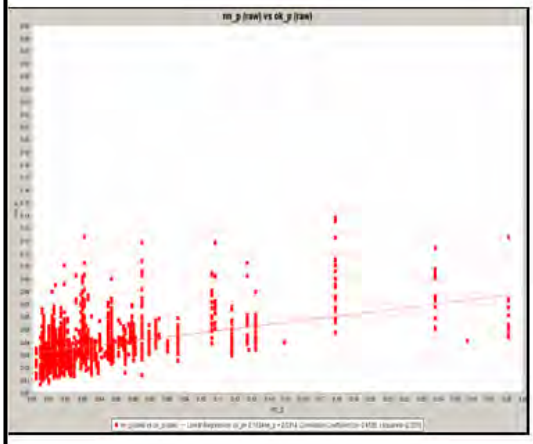
NN-Check



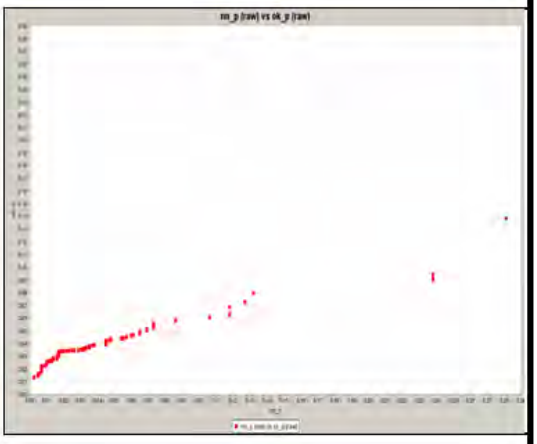
Number of Sampl	2409
Minimum:	0,00
Maximum:	0,28
Mean:	0,03
Variance:	0,00
Standard Deviatic	0,04

Quantiles	
2.5%:	0,01
1° Quartil:	0,01
Median:	0,02
3° Quartil:	0,04
97.5%:	0,13

Correlation



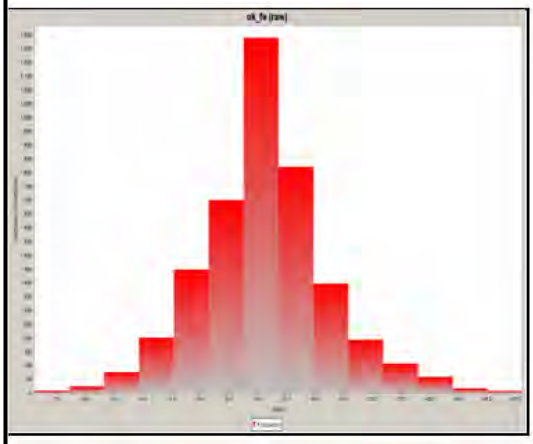
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	SAR
Variable:	Fe (%)
Resource:	Inferred

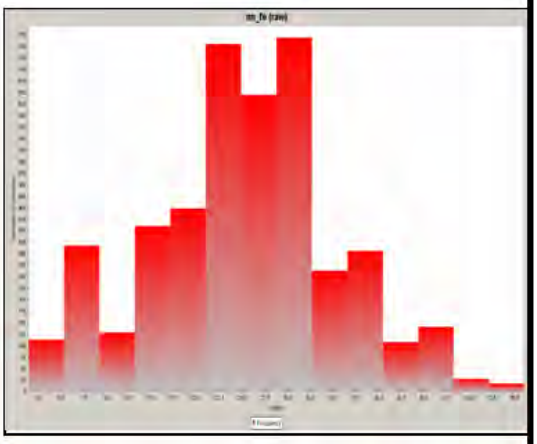
Ordinary Kriging



Number of Sampl	4350
Minimum:	5,56
Maximum:	48,06
Mean:	25,56
Variance:	30,49
Standard Deviatic	5,52

Quantiles	
2.5%:	14,61
1° Quartil:	22,43
Median:	25,44
3° Quartil:	28,45
97.5%:	37,23

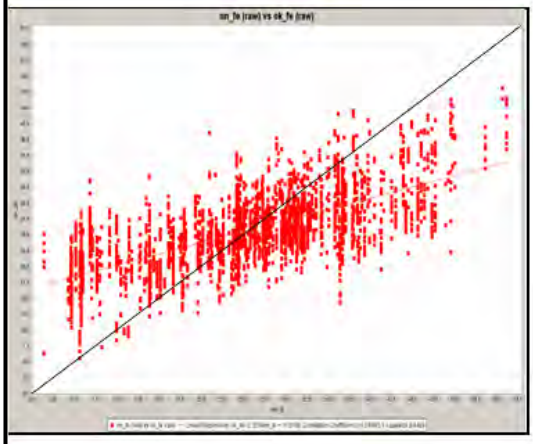
NN-Check



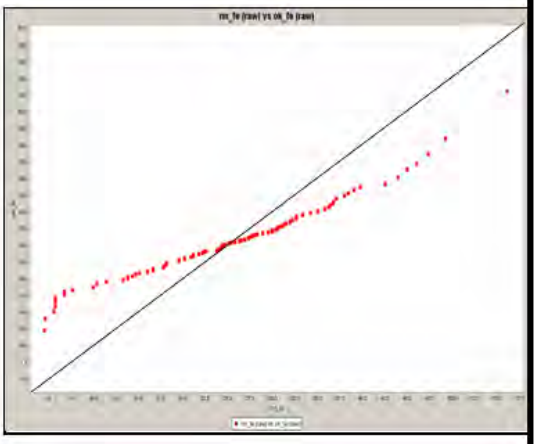
Number of Sampl	4350
Minimum:	1,44
Maximum:	56,10
Mean:	25,31
Variance:	109,13
Standard Deviatic	10,45

Quantiles	
2.5%:	5,21
1° Quartil:	18,20
Median:	25,40
3° Quartil:	28,45
97.5%:	37,23

Correlation



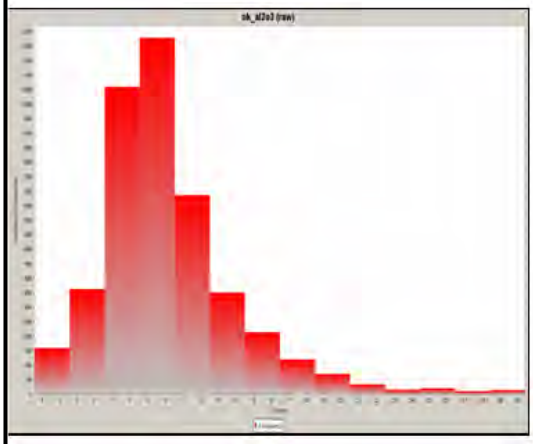
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	SAR
Variable:	Al2O3 (%)
Resource:	Inferred

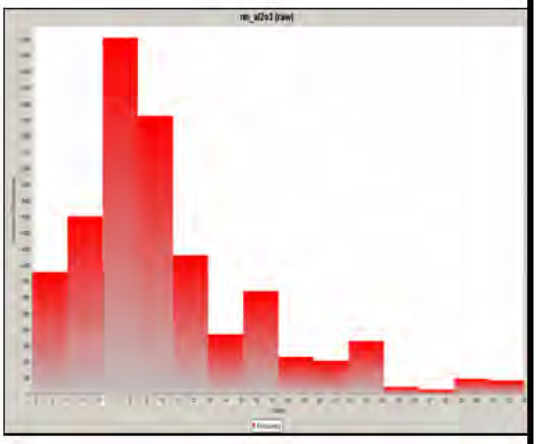
Ordinary Kriging



Number of Sampl	4350
Minimum:	2,57
Maximum:	30,44
Mean:	10,15
Variance:	15,18
Standard Deviatic	3,90

Quantiles	
2.5%:	4,01
1° Quartil:	7,81
Median:	9,45
3° Quartil:	11,67
97.5%:	19,20

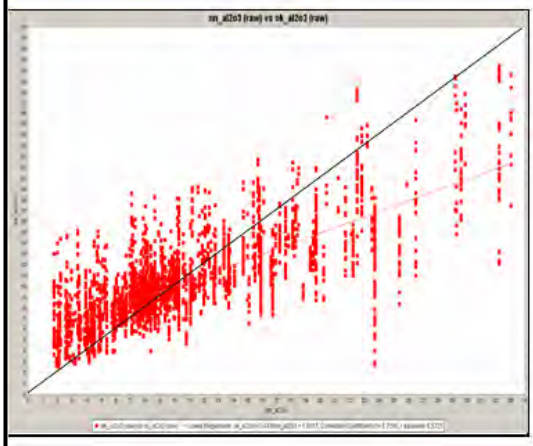
NN-Check



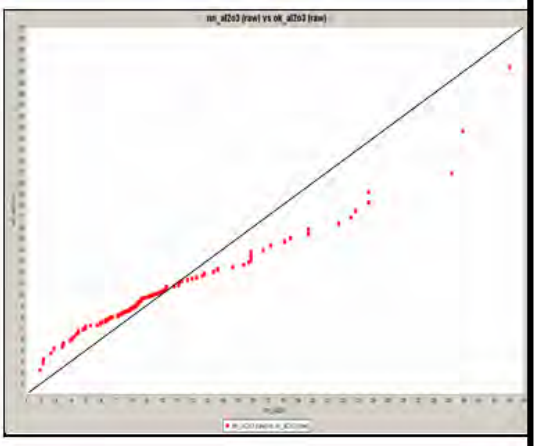
Number of Sampl	4350
Minimum:	1,75
Maximum:	33,00
Mean:	10,31
Variance:	35,66
Standard Deviatic	5,97

Quantiles	
2.5%:	2,11
1° Quartil:	6,51
Median:	8,64
3° Quartil:	12,70
97.5%:	23,70

Correlation



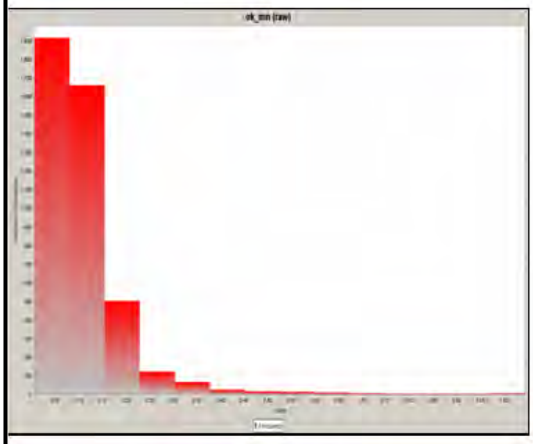
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	SAR
Variable:	Mn (%)
Resource:	Inferred

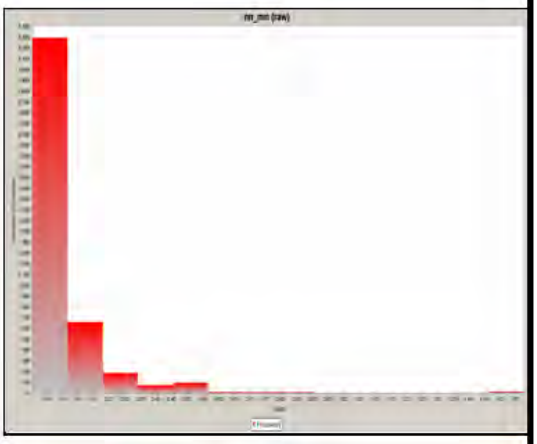
Ordinary Kriging



Number of Sampl	4350
Minimum:	0,01
Maximum:	1,05
Mean:	0,11
Variance:	0,01
Standard Deviatic	0,09

Quantiles	
2.5%:	0,02
1° Quartil:	0,06
Median:	0,09
3° Quartil:	0,13
97.5%:	0,32

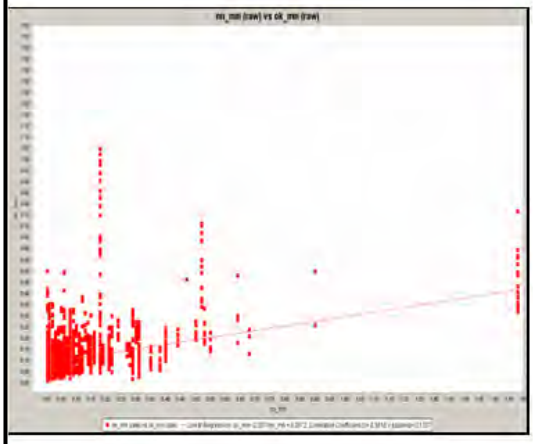
NN-Check



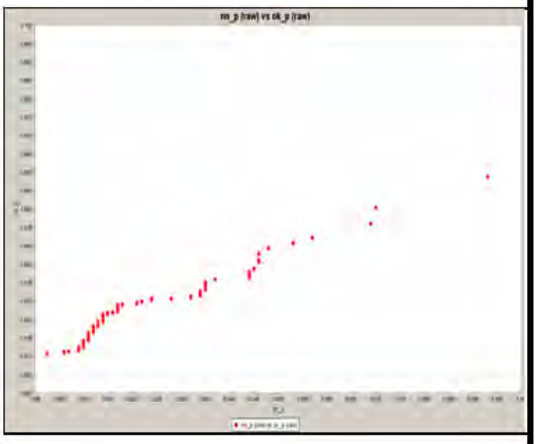
Number of Sampl	4350
Minimum:	0,004
Maximum:	1,58
Mean:	0,10
Variance:	0,02
Standard Deviatic	0,15

Quantiles	
2.5%:	0,004
1° Quartil:	0,02
Median:	0,05
3° Quartil:	0,11
97.5%:	0,47

Correlation



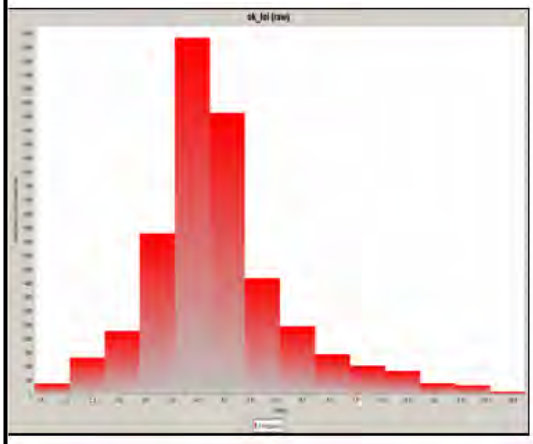
Q-Q Plot



Serra do Trairão

Target:	Area 3
Ore:	SAR
Variable:	Loi(%)
Resource:	Inferred

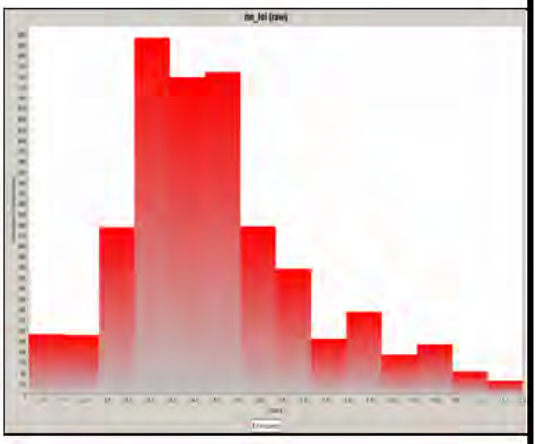
Ordinary Kriging



Number of Sampl	4350
Minimum:	1,39
Maximum:	10,73
Mean:	4,88
Variance:	1,86
Standard Deviatic	1,36

Quantiles	
2.5%:	2,38
1° Quartil:	4,12
Median:	4,68
3° Quartil:	5,38
97.5%:	8,31

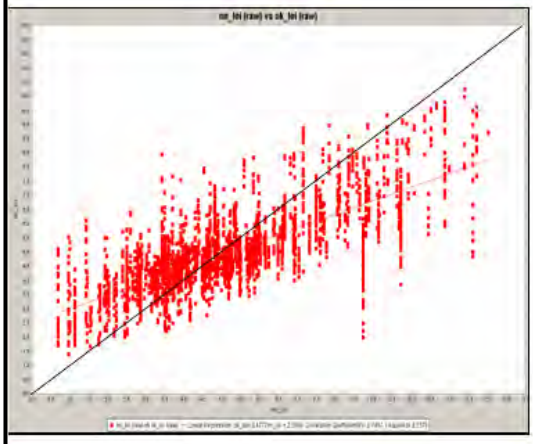
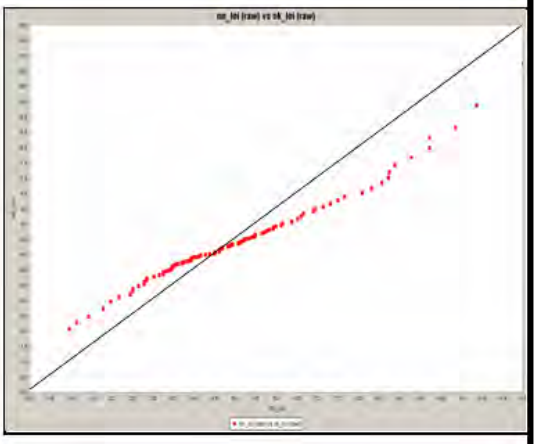
NN-Check



Number of Sampl	4350
Minimum:	0,69
Maximum:	12,02
Mean:	4,97
Variance:	4,55
Standard Deviatic	2,13

Quantiles	
2.5%:	1,13
1° Quartil:	3,49
Median:	4,65
3° Quartil:	5,92
97.5%:	9,72

Correlation



Q-Q Plot