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# Global Alumina Corporation

Consolidated Financial Statements
**December 31, 2007 and 2006**
(expressed in U.S. dollars)

PRICEWATERHOUSECOOPERS

## MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL REPORTING

The accompanying consolidated financial statements of Global Alumina Corporation (the "Company") were prepared by management in accordance with Canadian generally accepted accounting principles. Management acknowledges responsibility for the preparation and presentation of the consolidated financial statements, including responsibility for significant accounting judgments and estimates and the choice of accounting principles and methods that are appropriate to the Company's circumstances. The significant accounting policies of the Company are summarized in note 3 to the consolidated financial statements.

Management has established systems of internal control over the financial reporting process, which are designed to provide reasonable assurance that relevant and reliable financial information is produced.

PricewaterhouseCoopers LLP, Chartered Accountants, the Company's independent auditors, conduct an audit of the consolidated financial statements in accordance with Canadian generally accepted auditing standards. Their audit includes an examination, on a test basis, of evidence supporting the amounts and disclosures in the financial statements. As well, they make an assessment of the accounting principles used and significant estimates made by management and they evaluate the overall financial statement presentation.

The Board of Directors is responsible for reviewing and approving the consolidated financial statements and for ensuring that management fulfills its financial reporting responsibilities. An Audit Committee assists the Board of Directors in fulfilling this responsibility. The members of the Audit Committee are not officers of the Company. The Audit Committee meets with management as well as with the independent auditors to review the internal controls over the financial reporting process, the consolidated financial statements and the auditors' report. The Audit Committee also reviews the Annual Report to ensure that the financial information reported therein is consistent with the information presented in the financial statements. The Audit Committee reports its findings to the Board of Directors for its consideration in approving the consolidated financial statements for issuance to the shareholders.

Management recognizes its responsibility for conducting the Company's affairs in compliance with established financial standards, and applicable laws and regulations, and for maintaining proper standards of conduct for its activities.

(Signed) BRUCE WROBEL
Chairman and Chief Executive Officer

(Signed) MICHAEL J. CELLA
Chief Financial Officer

March 21, 2008

PricewaterhouseCoopers refers to the Canadian firm of PricewaterhouseCoopers LLP and the other member firms of PricewaterhouseCoopers International Limited, each of which is a separate and independent legal entity.

PRICEWATERHOUSECOOPERS

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## Auditors' Report

**To the Shareholders of**
**Global Alumina Corporation**

We have audited the consolidated balance sheets of **Global Alumina Corporation** as at December 31, 2007 and 2006 and the consolidated statements of operations and comprehensive income, retained earnings (deficit) and cash flows for the years then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with Canadian generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In our opinion, these consolidated financial statements present fairly, in all material respects, the financial position of the Company as at December 31, 2007 and 2006 and the results of its operations and its cash flows for the years then ended in accordance with Canadian generally accepted accounting principles.

**(Signed) "PricewaterhouseCoopers LLP"**

**Chartered Accountants, Licensed Public Accountants**

Toronto, Ontario, Canada

March 21, 2008

PricewaterhouseCoopers refers to the Canadian firm of PricewaterhouseCoopers LLP and the other member firms of PricewaterhouseCoopers International Limited, each of which is a separate and independent legal entity.

# Global Alumina Corporation

Consolidated Balance Sheets

**As at December 31, 2007 and 2006**

(expressed in U.S. dollars)

| | 2007<br>$ | 2006<br>$ |
|---|---|---|
| **Assets** | | |
| **Current assets** | | |
| Cash and cash equivalents | 20,203,943 | 10,894,621 |
| Restricted cash (note 5) | 86,049,033 | - |
| Prepaid expenses | 1,345,641 | 11,699,433 |
| Due from affiliates and other assets | 188,106 | 320,932 |
| | 107,786,723 | 22,914,986 |
| **Investment in and advances to Guinea Alumina** (note 5) | 207,617,787 | - |
| **Construction-in-progress** (note 4) | - | 192,295,864 |
| **Property, plant and equipment** (note 4) | 864,260 | 9,490,039 |
| | 316,268,770 | 224,700,889 |
| **Liabilities** | | |
| **Current liabilities** | | |
| Accounts payable and accrued liabilities | 830,040 | 26,230,473 |
| Loan payable (note 14) | - | 22,310,140 |
| | 830,040 | 48,540,613 |
| **Deferred dilution gain** | 63,445,269 | - |
| | 64,275,309 | 48,540,613 |
| **Shareholders' Equity** | | |
| **Capital stock and other equity** (note 6) | 238,698,836 | 238,593,736 |
| **Contributed surplus** | 1,963,400 | 1,477,886 |
| **Retained earnings (accumulated deficit)** | 11,331,225 | (63,911,346) |
| | 251,993,461 | 176,160,276 |
| | 316,268,770 | 224,700,889 |

**Approved by the Board of Directors**

(Signed) Bruce J. Wrobel
Bruce J. Wrobel, Director

(Signed) Michael J. Cella
Michael J. Cella, Director

# Global Alumina Corporation

Consolidated Statements of Operations and Comprehensive Income

(expressed in U.S. dollars)

| | Years ended December 31, | | Cumulative period from July 31, 1999 (date of incorporation) to December 31, 2007 |
|---|---|---|---|
| | 2007 | 2006 | |
| | $ | $ | $ |
| **Other income** | | | |
| Dilution gain (note 5) | 88,046,498 | - | 88,046,498 |
| Interest | 3,513,408 | 1,497,830 | 6,177,934 |
| Other | 160,108 | 207,502 | 1,355,338 |
| | 91,720,014 | 1,705,332 | 95,579,770 |
| **Expenses** | | | |
| Engineering | - | - | 15,041,729 |
| Professional fees | 4,955,631 | 6,708,540 | 28,858,221 |
| General and administrative | 10,186,036 | 12,198,010 | 34,658,941 |
| Amortization | 1,456,417 | 2,317,367 | 5,792,399 |
| | 16,598,084 | 21,223,917 | 84,351,290 |
| **Share of net income in Guinea Alumina** (note 5) | 1,006,018 | - | 1,006,018 |
| **Net income (loss) and comprehensive income for the period** | 76,127,948 | (19,518,585) | 12,234,498 |
| **Basic income (loss) per share** (note 8) | 0.37 | (0.10) | 0.06 |
| **Diluted income (loss) per share** (note 8) | 0.37 | (0.10) | 0.06 |

# Global Alumina Corporation

Consolidated Statements of Retained Earnings (Deficit)

**For the years ended December 31, 2007 and 2006**

(expressed in U.S. dollars)

| | 2007<br>$ | 2006<br>$ |
|---|---|---|
| **Balance - Beginning of year** | | |
| As previously reported | (63,911,346) | (44,392,761) |
| Effects of adoption of new accounting standard (note 2) | (885,377) | - |
| As restated | (64,796,723) | (44,392,761) |
| Net income (loss) and comprehensive income for the year | 76,127,948 | (19,518,585) |
| **Balance - End of year** | 11,331,225 | (63,911,346) |

# Global Alumina Corporation

Consolidated Statements of Cash Flows

(expressed in U.S. dollars)

| | Years ended December 31, | | Cumulative period from July 31, 1999 (date of incorporation) to December 31, |
|---|---|---|---|
| | 2007 | 2006 | 2007 |
| | $ | $ | $ |
| **Cash provided by (used in)** | | | |
| **Operating activities** | | | |
| Net income (loss) for the year | 76,127,948 | (19,518,585) | 12,234,498 |
| Stock options/common stock issued for services (note 6) | 485,514 | 495,719 | 2,263,398 |
| Dilution gain (note 5) | (88,046,498) | - | (88,046,498) |
| Amortization | 1,456,417 | 2,317,367 | 5,792,399 |
| Share of net income in equity investment | (1,006,018) | - | (1,006,018) |
| | (10,982,637) | (16,705,499) | (68,762,221) |
| Changes in non-cash items relating to operating activities | | | |
| Prepaid expenses | 1,787,470 | (9,568,216) | (9,907,136) |
| Accounts payable and accrued liabilities | 5,717,764 | 10,803,550 | 31,893,867 |
| Effects of adoption of new accounting standard (note 2) | (885,377) | - | (885,377) |
| Due from affiliates and other assets | 132,826 | (285,408) | (280,045) |
| | (4,229,954) | (15,755,573) | (47,940,912) |
| **Investing activities** | | | |
| Acquisition of Aluminpro | - | - | (576,684) |
| Additions to property, plant and equipment | (114,908) | (3,163,312) | (12,861,283) |
| Additions to construction-in-progress | (45,188,035) | (116,459,696) | (237,483,899) |
| Cash flows relating to deconsolidation and investment in Guinea Alumina (note 5) | 167,096,292 | - | 167,096,292 |
| Restricted cash | (86,049,033) | 15,316,955 | (86,049,033) |
| Payments to affiliates | - | - | (71,099) |
| | 35,744,316 | (104,306,053) | (169,945,706) |
| **Financing activities** | | | |
| Proceeds from issuances of common shares | 105,100 | 37,232,849 | 237,894,837 |
| Deferred offering expenses | - | - | (4,827) |
| Collection of stock subscription receivable | - | - | 4,000 |
| Loan payable | (22,310,140) | 22,310,140 | - |
| Proceeds from affiliates | - | - | 196,551 |
| | (22,205,040) | 59,542,989 | 238,090,561 |
| **Net increase (decrease) in cash and cash equivalents during the year** | 9,309,322 | (60,518,637) | 20,203,943 |
| **Cash and cash equivalents - Beginning of year** | 10,894,621 | 71,413,258 | - |
| **Cash and cash equivalents - End of year** | 20,203,943 | 10,894,621 | 20,203,943 |

(expressed in U.S. dollars)

## 1 Nature of operations

Global Alumina Corporation's ("Global Alumina" or the Company") business is the development of an alumina refinery located in the bauxite mining region of the Republic of Guinea ("Guinea"). Global Alumina intends to accomplish this initiative through its one-third interest in Guinea Alumina Corporation, Ltd. ("Guinea Alumina"), a British Virgin Islands company, and its wholly owned Guinean subsidiary, Guinea Alumina Corporation, S.A. ("Guinea Alumina S. A.").

The Company is in the development stage and is subject to the risks and challenges similar to other companies in a comparable stage of development. These risks include, but are not limited to, the dependence on key individuals, successful development, and the ability to secure adequate financing to meet the minimum capital required to successfully complete the project. The Company is directing substantially all of its efforts through a joint venture partnership with certain parties (as described under note 5, "Formation of joint venture").

In addition, the properties may be subject to sovereign risk, including political and economic instability, government regulations relating to mining, currency fluctuations and local inflation. Changes in future conditions could require material write-downs of the carrying values.

## 2 Adoption of new accounting recommendations

### Financial instruments

Effective January 1, 2007, the Company adopted The Canadian Institute of Chartered Accountants ("CICA") Handbook Section 1530, Comprehensive Income; Section 3855, Financial Instruments - Recognition and Measurement; and Section 3865, Hedges. These new standards contain comprehensive requirements for the recognition and measurement of financial instruments, the treatment of financing costs and the application of hedge accounting. Section 1530 also introduces a new component of equity referred to as comprehensive income.

The primary impact on the consolidated financial statements resulting from the adoption of the new standards is an increase in the Company's deficit of $885,377 to reflect the write-off of the balance of deferred financing costs related to the Company's debt (see note 14). Except for the foregoing adjustment, the carrying values of all of the Company's financial assets and liabilities at January 1, 2007 approximated their fair values.

### Accounting changes

Effective January 1, 2007, the Company adopted CICA Handbook Section 1506, Accounting Changes, which replaced and updated the previous standard. The new standard allows for voluntary changes in accounting policy only when they result in the financial statements providing reliable and more relevant information, requires changes in accounting policy to be applied retrospectively unless doing so is impracticable, requires prior period errors to be corrected retrospectively and calls for enhanced disclosures about the effects of changes in accounting policies, estimates and errors on the financial statements. The adoption of this standard had no impact on the Company.

(expressed in U.S. dollars)

**Future accounting changes**

In December 2006, CICA Handbook Section 3862, Financial Instruments - Disclosures; Section 3863, Financial Instruments - Presentation; and Section 1535, Capital Disclosures were issued. All three sections will be applicable for interim and annual financial statements relating to fiscal years beginning on or after October 1, 2007. Section 3862 on financial instrument disclosures places an increased emphasis on disclosures about risks associated with both recognized and unrecognized financial instruments and how these risks are managed and is consistent with Section 3861. The new section removes duplicative disclosures and simplifies the disclosures relating to concentration of risk, credit risk, liquidity risk and price risk currently found in Section 3861. Section 3863 on the presentation of financial instruments is unchanged from the presentation requirements included in Section 3861. Section 1535 on capital disclosures requires the disclosure of information about an entity's objectives, policies and processes for managing capital.

Effective January 1, 2009, the Company will adopt Section 3064, "Goodwill and Intangible Assets," which establishes revised standards for recognition, measurement, presentation and disclosure of goodwill and intangible assets. Concurrent with the introduction of this standard, the CICA withdrew EIC 27, "Revenues and Expenses," during the pre-operating period. As a result of the withdrawal of EIC 27, the Company will no longer be able to defer costs and revenues incurred prior to commercial production at new mine operations.

The Company has not yet determined the impact of adopting the above accounting standards.

**IFRS convergence**

In January 2006, the CICA Accounting Standards Board adopted a strategic plan for the direction of accounting standards in Canada. As part of the plan, accounting standards in Canada for public companies are expected to converge with International Financial Reporting Standards ("IFRS") by the end of 2011. The Company continues to monitor and assess the impact of the convergence of Canadian GAAP and IFRS.

## 3 Basis of presentation and summary of significant accounting policies

**Basis of presentation**

The accompanying consolidated financial statements have been prepared in accordance with Canadian generally accepted accounting principles. The principal accounting policies adopted in the preparation of these consolidated financial statements are set out below.

**Principles of consolidation**

The consolidated financial statements include the accounts of Global Alumina Corporation and its direct and indirect wholly-owned subsidiaries, Aluminpro Aluminium Industry Professionals Inc., Global Alumina Services Company, and Global Alumina International, Ltd. The consolidated financial statements included the accounts of Guinea Alumina Corporation, Ltd. on a fully-consolidated basis until May 17, 2007, on a proportionate consolidation basis from May 17, 2007 to September 30, 2007 and on an equity basis thereafter (see note 5). All references to the Joint Venture after September 30, 2007 are intended to reflect the Company's

(expressed in U.S. dollars)

equity interest in Guinea Alumina on the basis of significant influence over its affairs pursuant to the Shareholders' Agreement.

**Investments**

The Company accounts for its investments in companies over which it has significant influence using the equity basis of accounting, whereby the investments are initially recorded at cost and subsequently adjusted to recognize the Company's share of earnings or losses of the investee companies and reduced by dividends received, if any. Carrying values of investments would be reduced to estimated market values if there is other than a temporary decline in the value of the investments. Such reduction would be recorded in the statement of operations.

**Use of estimates**

The preparation of financial statements in accordance with Canadian generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

**Income taxes**

The Company uses the asset and liability method of accounting for income taxes, under which future income tax assets and liabilities are recognized for the estimated future income tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax bases. Future income tax assets and liabilities are measured using income tax rates in effect for the period in which those temporary differences are expected to be recovered or settled. The effect on future income tax assets and liabilities of a change in income tax rates or laws is recognized as part of the provision for income taxes in the period the changes are considered substantively enacted.

Future income tax benefits attributable to these differences, if any, are recognized to the extent that the realization of such benefits is more likely than not.

**Foreign currency translation**

- Reporting currency

  The consolidated financial statements are presented in U.S. dollars (the reporting currency).

  The financial statements of the Company's fully integrated subsidiaries are translated into U.S. dollars using the temporal method. Monetary items are translated into U.S. dollars at the rate of exchange in effect at the balance sheet date. Non-monetary items are translated at historical exchange rates, with corresponding amortization translated at the same exchange rates as the assets to which they relate. Revenues and expenses are translated into U.S. dollars at the rates of exchange prevailing when the

(expressed in U.S. dollars)

underlying transactions occurred. Foreign exchange gains or losses on translation are recognized in the consolidated statements of operations.

- Foreign currency transactions and balances

  The U.S. dollar is the functional currency of the Company. Foreign currency transactions are translated using the exchange rates prevailing at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation of monetary assets and liabilities denominated in foreign currencies are recognized in the consolidated statements of operations.

**Basic and diluted income per share**

Basic income/(loss) per share is computed by dividing income/(loss) for the year by the weighted number of common shares outstanding during the year. Diluted income/(loss) per share is computed using the treasury stock method whereby the weighted average number of common shares used in the basic income/(loss) per share calculation is increased to include the number of additional common shares that would have been outstanding if the dilutive potential common shares had been issued at the beginning of the year. Potential common shares represent the common shares issuable upon the exercise of stock options or warrants. Potential common shares are excluded from the calculation if their effect is antidilutive.

**Development costs**

The Company follows the provisions of Accounting Guideline No. 11 ("AcG-11"), "Enterprises in the Development Stage." Development costs are capitalized only if they meet the following criteria: the product or process is clearly defined and costs attributable thereto can be defined; the technical feasibility of the process has been established; management of the Company has indicated its intention to produce and market the product; the future market has been clearly defined; and adequate resources exist, or are expected to be available, to complete the project. As at December 31, 2007, the Company has determined that it did not meet all of these criteria. Accordingly, all development costs incurred during 2007 were expensed and classified within the income statement as "Professional Fees."

**Property, plant and equipment**

Property, plant and equipment are comprised of construction-in-progress, leasehold improvements, motor vehicles and equipment and are recorded at carrying values less amortization. Construction-in-progress is recorded at cost. Amortization will commence when the alumina refinery is available for commercial production. Leasehold improvements are amortized on a straight-line basis over the life of the related lease. The other capital assets are amortized on a straight-line basis over their estimated useful lives, as follows:

| | |
|---|---|
| Motor vehicles | 30% |
| Construction equipment | 20% |
| Equipment | 30% |

(expressed in U.S. dollars)

The construction equipment amortization charge is expensed until completion of a feasibility study in accordance with the Shareholders' Agreement governing the Joint Venture (see note 5 and thereafter capitalized to construction-in-progress).

Property, plant and equipment are reviewed for impairment whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable in accordance with CICA Handbook Section 3063, "Impairment of Long-lived Assets." Under that standard, an impairment loss is recognized when the carrying amount of an asset exceeds the projected undiscounted future net cash flows expected from its use and disposal. The impairment loss is measured as the amount by which the carrying amount of the asset exceeds its fair value, which is determined by discounted cash flows when quoted market prices are not available. Future amortization will be charged based on the post-impairment carrying value.

**Stock option plans**

The fair value of stock options granted is recognized as compensation expense on a straight-line basis over the applicable stock option vesting period and included in general and administrative expenses in the consolidated statements of operations and as contributed surplus within capital stock on the consolidated balance sheets. The consideration received on the exercise of stock options is credited to share capital at the time of exercise.

## 4 Property, plant and equipment

| | | | 2007 |
|---|---|---|---|
| | **Cost** | **Accumulated amortization** | **Net** |
| | **$** | **$** | **$** |
| Motor vehicles (i) | - | - | - |
| Construction equipment (i) | - | - | - |
| Equipment (ii) | 267,768 | 170,398 | 97,370 |
| Leasehold improvement | 1,196,902 | 430,012 | 766,890 |
| Construction-in-progress (i) | - | - | - |
| | 1,464,670 | 600,410 | 864,260 |

i) These assets were deconsolidated upon formation of the Joint Venture - see note 5.

ii) A portion of these assets were deconsolidated upon formation of the Joint Venture - see note 5.

(expressed in U.S. dollars)

| | | | 2006 |
|---|---|---|---|
| | **Cost** | **Accumulated amortization** | **Net** |
| | **$** | **$** | **$** |
| Motor vehicles | 622,331 | 185,163 | 437,168 |
| Construction equipment | 10,442,833 | 2,677,537 | 7,765,296 |
| Equipment | 484,310 | 165,918 | 318,392 |
| Leasehold improvement | 1,196,902 | 227,719 | 969,183 |
| Construction-in-progress | 192,295,864 | - | 192,295,864 |
| | 205,042,240 | 3,256,337 | 201,785,903 |

## 5 Formation of joint venture

Effective May 17, 2007, Global Alumina, Global Alumina International, Ltd. ("GAI"), and Guinea Alumina Corporation, Ltd. ("Guinea Alumina"), and The Broken Hill Proprietary Company Pty Limited ("BHP Billiton"), Dubai Aluminium Company Limited ("DUBAL") and Mubadala Development Company PJSC ("Mubadala") completed the transaction contemplated by a share subscription agreement and related agreements forming a joint venture (the "Joint Venture") to develop and operate the alumina refinery Project in the Republic of Guinea, near Sangarédi.

Global Alumina received the first US$151.1 million instalment of the aggregate US$260 million proceeds for the issuance to the venture partners of a 66.67% interest in Guinea Alumina (BHP Billiton - 33.33%; DUBAL - 25%; and Mubadala - 8.33%), which is developing the Sangarédi Refinery Project through its wholly-owned Guinean subsidiary, Guinea Alumina Corporation, S.A. (the "Project Company"). The Company, through its wholly-owned subsidiary GAI, retains a 33.33% interest in Guinea Alumina.

Simultaneous with completion, each joint venture party made its proportionate share of an US$80 million capital contribution to Guinea Alumina to repay US$55.3 million of project-related borrowings under its loan facility plus interest and to establish a US$24.7 million cash reserve to fund two months of budgeted, future project expenditures. Global Alumina also contributed an additional US$4.4 million to repay borrowings under the loan facility for corporate costs. Upon repayment in full, the loan facility was terminated (see note 14).

After funding its share of the initial capital contribution to repay 100% of the debt under Guinea Alumina's loan facility and fund two months of expected Project costs, Global Alumina had remaining US$120 million of the initial subscription proceeds deposited: US$101.8 million in an escrow account the use of which is restricted to prospective budgeted expenditures of the Project Company and which is also pledged as security for warranty and indemnity obligations under the subscription agreement; and US$18.3 million in an unrestricted account for general corporate purposes.

(expressed in U.S. dollars)

| | Interest earned $ | Joint Venture capital contributions $ | Restricted escrow account balance $ |
|---|---|---|---|
| As at May 17, 2007 | - | - | 101,759,449 |
| Subsequent activity | 2,843,584 | (18,554,000) | (15,710,416) |
| As at December 31, 2007 | | | 86,049,033 |

The remainder of the subscription proceeds will be paid in three additional instalments due on the successful completion of specified milestones. The first and second instalments, totalling an aggregate $75.55 million, are due on the earlier of the subscribers' confirmation of satisfaction that the Guinean mining concession related to the Project has been transferred from the Company to the Project Company and debt financing for the Project Company being committed. The third instalment, totalling $33.33 million, is due upon the debt financing for the Project being committed. Commitments for final debt financing are expected to be in place by mid-2008.

As a result of the events described in the preceding paragraphs, the Company deconsolidated the assets and liabilities of its formerly wholly-owned subsidiary Guinea Alumina as of May 17, 2007.

Upon formation of the Joint Venture, the shareholders of Guinea Alumina entered into a shareholders' agreement (the "Shareholders' Agreement") regarding the governance and conduct of the Joint Venture. On execution of the Shareholders' Agreement, the Company determined that, for accounting purposes, the contractual arrangement underlying the economic activity of the Project Company constituted joint control and recorded its remaining one-third interest investment using the proportionate consolidation method from May 17, 2007. Based on actual experience with respect to the conduct of the Project, the Company has determined that effective October 1, 2007, its relationship to Guinea Alumina changed from one of "joint control" to one of "significant influence" as those terms are defined in the CICA Handbook. Accordingly, the Company has changed the method of accounting for its interests in the Joint Venture from the proportionate consolidation method to the equity method as required for investments that are subject to significant influence.

The impact of this change on the Company's financial statements is summarized as follows:

- The proportionate consolidation method used by the Company up to September 30, 2007 resulted in the Company recognizing: (a) in its balance sheet, the Joint Venture's assets that it controlled and the Joint Venture's liabilities that it incurred; and (b) in its income statement, its share of income earned and expenses incurred by the Joint Venture. The above items were presented on a line-by-line basis.

- The equity method of accounting used by the Company commencing October 1, 2007 resulted in the Company recognizing: (a) in its balance sheet, the Company's investment in Guinea Alumina, consisting of the cost of the investment and the investment income or loss subsequent to September 30, 2007; and (b) in its income statement, its share of the net income earned by the Joint Venture. The above items are presented as single lines on the balance sheet and the income statement. Supplementary information with respect to the Company's one-third interest in Guinea Alumina is also presented (see note 9), as the Company considers such information to be meaningful to the Company's overall financial statements.

(expressed in U.S. dollars)

The effects of the deconsolidation, the formation of the Joint Venture, and the equity investment are summarized as follows:

| | Cash flow impact $ | Dilution gain $ |
|---|---|---|
| Proceeds received | | 151,111,113 |
| Proceeds receivable in future instalments | | 108,888,887 |
| | | 260,000,000 |
| Company's share of capital contributed by Joint Venture partners | 8,232,000 | |
| Company's share of cash in Guinea Alumina deconsolidated | (1,366,029) | |
| Capital contributed by the Company | (26,684,965) | |
| Loan repaid | 59,718,923 | |
| Other cash contributions | (4,360,027) | |
| | 35,539,902 | 35,539,902 |
| Other assets, net of liabilities - sold | | (144,048,135) |
| Dilution gain | | 151,491,767 |
| Recognized in income for the period | | 88,046,498 |
| Deferred pending receipt of subscription proceeds | | 63,445,269 |
| First instalment of subscription proceeds received | 151,111,113 | |
| Company's proportionate share of cash at September 30, 2007 | (13,583,840) | |
| Net contributions in fourth quarter 2007 | (5,970,883) | |
| Cash component of deconsolidation and investment in Guinea Alumina | 167,096,292 | |

The Company's investment in Guinea Alumina at December 31, 2007 amounted to $207,617,787 and is comprised of proceeds receivable in future instalments amounting to $108,888,887 and net investment of $98,728,900.

(expressed in U.S. dollars)

## 6 Capital stock and other equity

a) Share capital

Common shares, no par value, authorized unlimited number of shares, issued and outstanding 203,857,644 and 203,752,544 shares as at December 31, 2007 and 2006, respectively.

| | Number of common shares | Amount $ | Number of warrants | Amount $ | Total $ |
|---|---|---|---|---|---|
| Balance - January 1, 2006 | 177,682,746 | 197,536,738 | 30,834,099 | 3,824,149 | 201,360,887 |
| Shares cancelled during the year | (94,601) | - | - | - | - |
| Warrants exercised or expired during the year | 26,164,399 | 41,056,998 | (28,043,249) | (3,824,149) | 37,232,849 |
| Balance - December 31, 2006 | 203,752,544 | 238,593,736 | 2,790,850 | - | 238,593,736 |
| Warrants exercised during the year | 105,100 | 105,100 | (105,100) | - | 105,100 |
| Balance - December 31, 2007 | 203,857,644 | 238,698,836 | 2,685,750 | - | 238,698,836 |

b) During the year ended December 31, 2007, a total of 105,100 (2006 - 26,164,399) warrants were exercised for proceeds of $105,100 (2006 - $37,232,849). Details of the share purchase warrants issued and outstanding as at December 31, 2007 are as follows:

| Number of shares exercisable | Expiry date | Exercise price $ |
|---|---|---|
| 2,685,750 | February 3, 2008 | 1.00 |

Subsequent to year-end, the remaining 2,685,750 warrants were exercised for cash proceeds of $2,685,750.

**Stock options**

The Company has a stock option plan (the "Plan"), which provides employees, directors, officers and consultants of the Company with the opportunity to acquire common shares of the Company through the exercise of stock options. Ten million common shares have been reserved for issuance under the Plan. Stock options granted under the Plan are limited to a maximum term of ten years. During 2007, no awards were granted. During 2006, a total of 2,020,000 options (1,785,000 net of cancellations) were granted.

(expressed in U.S. dollars)

**Stock-based compensation**

The Company accounts for stock options granted under its employee stock option plan using the fair value based method of accounting. Using the Black-Scholes option pricing model, the weighted average fair value of stock options granted during the year ended December 31, 2006 was estimated to be $662,333. Expenses in the amount of $485,514 and $495,719 have been recognized for the years ended December 31, 2007 and 2006, respectively. No stock options have been exercised as of December 31, 2007 and the unvested, unamortized fair value of stock options granted amounts to $246,494 (2006 - $838,446).

The Black-Scholes option pricing model was developed for use in estimating the fair value of traded stock options that have no vesting restrictions. Such models require the use of subjective assumptions, including expected share price volatility. The principal assumptions used in applying the Black-Scholes option pricing model for the awards for the years ended December 31 were as follows:

| | 2007 | 2006 |
|---|---|---|
| Risk-free interest rate | 4.75% | 4.75% |
| Dividend yield | n/a | n/a |
| Volatility factor | 55% | 55% |
| Expected life | 3 years | 3 years |

A summary of the status of the Company's Plan is as follows:

| | Number of stock options | Weighted average exercise price $ |
|---|---|---|
| Outstanding - January 1, 2006 | 2,345,500 | 1.80 |
| Forfeited | (3,000) | 2.13 |
| Granted | 2,020,000 | 1.02 |
| Outstanding - December 31, 2006 | 4,362,500 | 1.44 |
| Forfeited | (360,000) | 1.19 |
| Outstanding - December 31, 2007 | 4,002,500 | 1.46 |
| Exercisable - December 31, 2007 | 2,401,667 | 1.58 |

(expressed in U.S. dollars)

| | 2007 | | | 2007 | | |
|---|---|---|---|---|---|---|
| | Options outstanding | | | Options exercisable | | |
| Range of exercise prices $ | Number outstanding as at December 31, 2007 | Weighted average remaining contractual life | Weighted average exercise price $ | Number outstanding as at December 31, 2007 | Weighted average remaining contractual life | Weighted average exercise price $ |
| 1.50 | 960,000 | 1.4 years | 1.50 | 960,000 | 1.4 years | 1.50 |
| 1.52 | 25,000 | 1.7 years | 1.52 | 25,000 | 1.7 years | 1.52 |
| 2.50 | 750,000 | 2.2 years | 2.50 | 500,000 | 2.2 years | 2.50 |
| 1.40 | 482,500 | 2.6 years | 1.40 | 321,667 | 2.6 years | 1.40 |
| 1.75 | 45,000 | 3.2 years | 1.75 | 15,000 | 3.2 years | 1.75 |
| 1.00 | 1,740,000 | 3.9 years | 1.00 | 580,000 | 3.9 years | 1.00 |
| | 4,002,500 | | 1.46 | | | |

| | 2006 | | | 2006 | | |
|---|---|---|---|---|---|---|
| | Options outstanding | | | Options exercisable | | |
| Range of exercise prices $ | Number outstanding as at December 31, 2006 | Weighted average remaining contractual life | Weighted average exercise price $ | Number outstanding as at December 31, 2006 | Weighted average remaining contractual life | Weighted average exercise price $ |
| 1.50 | 1,010,000 | 2.4 years | 1.50 | 1,010,000 | 2.4 years | 1.50 |
| 1.52 | 25,000 | 2.7 years | 1.52 | 12,500 | 2.7 years | 1.52 |
| 2.50 | 750,000 | 3.2 years | 2.50 | 250,667 | 3.2 years | 2.50 |
| 1.40 | 482,500 | 3.6 years | 1.40 | 160,833 | 3.6 years | 1.40 |
| 1.57 | 75,000 | 3.9 years | 1.57 | 25,000 | 3.9 years | 1.57 |
| 1.75 | 45,000 | 4.2 years | 1.75 | - | - | - |
| 1.00 | 1,975,000 | 4.9 years | 1.00 | - | - | - |
| | 4,362,500 | | 1.44 | | | |

**Contributed surplus**

| | 2007 $ | 2006 $ |
|---|---|---|
| Balance - Beginning of year | 1,477,886 | 982,167 |
| Stock compensation expense | 485,514 | 495,719 |
| | 1,963,400 | 1,477,886 |

(expressed in U.S. dollars)

## 7 Income taxes

The Company's income tax provision (recovery) has been calculated as follows:

| | 2007<br>$ | 2006<br>$ |
|---|---|---|
| Income (loss) for the year | 76,127,948 | (19,518,585) |
| Income tax (recovery) provision at combined Canadian federal and provincial statutory rates | 26,736,135 | (6,847,723) |
| Current year losses not recognized | 4,177,183 | 6,174,069 |
| Permanent differences | (30,751,418) | 181,131 |
| Increase in valuation allowance | (161,900) | 492,523 |
| Provision for (recovery of) income taxes | - | - |

The following summarizes the principal temporary differences and the related future income tax effect:

| | 2007<br>$ | 2006<br>$ |
|---|---|---|
| Capital assets | - | 4,272,000 |
| Non-capital losses carried forward | 3,301,000 | 2,913,000 |
| Reorganization costs | 305,000 | 1,193,000 |
| Equity investment | (1,568,000) | - |
| Net future income tax asset | 2,038,000 | 8,378,000 |
| Valuation allowance | (2,038,000) | (8,378,000) |
| Net future income tax asset recorded | - | - |

As at December 31, 2007, the Company has Canadian non-capital losses that expire as follows:

| Year of expiry | $ |
|---|---|
| 2014 | 1,101,000 |
| 2015 | 4,466,000 |
| 2026 | 2,246,000 |
| 2027 | 3,364,404 |

(expressed in U.S. dollars)

## 8 Income (loss) per share

The computations for basic and fully diluted income (loss) per common share are as follows:

| | 2007 | 2006 |
|---|---|---|
| Net income (loss) for the year | $76,127,948 | $(19,518,585) |
| Weighted average number of common shares - basic | 203,785,000 | 198,000,000 |
| Weighted average number of common shares - diluted | 207,101,000 | 198,000,000 |
| Income (loss) per common share - basic | $0.37 | $(0.10) |
| Income (loss) per common share - diluted | $0.37 | $(0.10) |

## 9 Investment in Guinea Alumina

The Company's one-third interest in Guinea Alumina (note 5), as adjusted for the Company's accounting policies, is summarized as follows:

| | 2007<br>$ | Company's one-third interest<br>$ |
|---|---|---|
| Cash | 40,751,519 | 13,583,840 |
| Other current assets | 8,332,770 | 2,777,590 |
| Construction-in-progress | 269,144,612 | 89,714,871 |
| Other property, plant and equipment | 7,430,394 | 2,476,798 |
| Current liabilities | (46,403,358) | (15,467,786) |
| Net assets | 279,255,937 | 93,085,313 |
| Revenues | 310,555 | 103,518 |
| Costs and expenses | (2,603,111) | (867,704) |
| Net loss | (2,292,556) | (764,186) |

(expressed in U.S. dollars)

## 10 Commitments

The Company has an operating lease arrangement for its leased premises. For the year ended December 31, 2007, the total cost under this operating lease was $692,351 (2006 - $698,665). The Company's commitments for the operating lease for the next five years are as follows:

| | $ |
|---|---|
| 2008 | 692,492 |
| 2009 | 692,492 |
| 2010 | 692,492 |
| 2011 | 519,369 |
| 2012 | - |
| Total | 2,596,845 |

The commitment amounts have not been reduced by the sublease income earned by the Company, as disclosed in note 12.

From time to time, the Company enters into employment contracts with its senior executives that reflect standard commercial terms, including employment guarantees, in the alumina industry.

## 11 Segmented information

The Company considers that it operates only in one reportable industry segment, namely, the design, finance, construction and operation of an alumina refinery and associated infrastructure improvements.

## 12 Related party transactions

During the year ended December 31, 2007, the Company had the following related party transactions:

On October 9, 2006, the Board of Directors approved, and the Company entered into, a written consulting contract (the "Karalco Agreement") with Karalco Resources Ltd. ("Karalco"), a corporation controlled by Karim Karjian, Co-Chairman and a shareholder of the Company. The Karalco Agreement covers Mr. Karjian's professional services regarding the development of the Company's proposed alumina refinery in the Republic of Guinea and all ancillary infrastructure (the "Project"). In addition, the Company agreed to reimburse certain overhead expenses incurred by Karalco in respect thereof, including office facilities and administrative staffing. The Company and Karalco agreed that the Karalco Agreement is retroactively effective from January 1, 2006. Under the Karalco Agreement, the Company agreed to pay Karalco $60,000 per month. As of May 17, 2007, the Joint Venture (note 5) reimburses the Company for this monthly retainer. Karalco is also eligible to participate under the Company's employee stock option plan. In the event that the Company terminates the Karalco Agreement without cause (as defined under the Karalco Agreement), Karalco will be entitled to a minimum payment equal to $1,440,000. Prior to the execution of the Karalco Agreement, the Company had an oral agreement to pay Karalco a monthly retainer of $60,000 for similar services in connection with the Project. The oral contract also provided for the payment of incentive fees based on Project related milestones (being the ratification of the mining concession and the signing of the DUBAL subscription agreement) being achieved.

(expressed in U.S. dollars)

Both milestones were achieved and the associated incentive fees were paid during the year ended December 31, 2006. The Karalco Agreement does not currently contemplate further incentive fees or milestones. Compensation arrangements under the Karalco Agreement will remain subject to review based on the status of the Project and the level of activity required of Karalco on behalf of the Company.

The cost, including the monthly retainer, incentive fees and reimbursement of certain overhead expenses, for the year ended December 31, 2007 totalled $750,500 (2006 - $996,500), of which $447,100 (2006 - $nil) was reimbursed by the Joint Venture. In addition, the Company paid to Mr. Karjian in 2007 a bonus of $300,000 in connection with negotiation of the Joint Venture.

Per terms of the Shareholders' Agreement (see note 5), the Company has been reimbursed $217,100 related to the salary costs of certain individuals that are billed back to the Joint Venture at cost.

On October 9, 2006, the Board of Directors approved, and the Company entered into, a written consulting contract (the "Herakles Agreement") with Herakles Capital Corp. ("Herakles"), one of its shareholders. Herakles is controlled by Bruce Wrobel, Co-Chairman, Chief Executive Officer and a shareholder of the Company. The Herakles Agreement covers Mr. Wrobel's services as the Co-Chairman and Chief Executive Officer of the Company. The Company and Herakles agreed that the Herakles Agreement is retroactively effective from January 1, 2006. Under the Herakles Agreement, the Company agreed to pay Herakles $200,000 per annum. The Herakles Agreement was amended to provide an annual payment of $250,000 as of January 1, 2007. Herakles is also eligible to participate under the Company's employee stock option plan. In the event that the Company terminates the Herakles Agreement without cause (as defined under the Herakles Agreement), Herakles will be entitled to a minimum payment equal to $500,000.

The cost attributable to the Herakles Agreement for the year ended December 31, 2007 totalled approximately $550,000 (2006 - $207,700), including a 2007 bonus of $300,000 in connection with negotiation of the Joint Venture.

Bruce Wrobel is also the Chief Executive Officer of Sithe Global Power, LLP ("Sithe Global"), which provided until May 17, 2007, professional services to the Company. Sithe Global was reimbursed at cost. The total charge for the year ended December 31, 2007 was approximately $47,400 (2006 - $407,200). Formerly, the President of Sithe Global provided consulting services to the Company at a rate of $15,000 per month. Those services terminated as of May 31, 2007. For the year ended December 31, 2007, the total costs were $75,000 (2006 - $180,000). Additionally, the Company provided, at cost, professional services to Sithe Global. The total charge for the year ended December 31, 2007 was approximately $3,800 (2006 - $nil).

On July 19, 2004, the Company entered into a consulting agreement with Bernard Cousineau with respect to his services as President of the Company. On April 25, 2007, Mr. Cousineau stepped down as President of the Company. Effective June 1, 2007, Mr. Cousineau's agreement was amended to reflect his current services as Senior Operations Advisor and director of the Company as well as Vice-President and director of Aluminpro. Mr. Cousineau's consulting agreement provides a monthly retainer of $5,000 paid in equal portions by the Company and Aluminpro and an annual incentive payment of 10% of the profits realized by Aluminpro in such year. Mr. Cousineau also receives a fee for his services as a director of the Company. As of June 1, 2007, the Company has also amended its consulting agreements with each of Ian Porteus, the Senior Technical Advisor to the Company and Vice-President and director of Aluminpro and Brian Gallagher, the Business Manager,

(expressed in U.S. dollars)

Secretary and Treasurer of Aluminpro. Mr. Porteus' consulting agreement provides a monthly retainer of $8,500 paid one-third by the Company and two-thirds by Aluminpro and an annual incentive payment of 10% of the profits realized by Aluminpro. Mr. Gallagher's consulting agreement provides a monthly retainer of $8,663 paid by Aluminpro and an annual incentive payment of 5% of the profits realized by Aluminpro.

Since December 2005, the Company has shared office space with Sithe Global. Sithe Global reimburses the Company for its pro rata share of occupancy expenses. Occupancy costs charged to Sithe Global by the Company for the year ended December 31, 2007 totalled approximately $715,400 (2006 - $627,900).

Mr. Ahmed Fikree, a director of the Company, is the Director, Commercial and Corporate Development for DUBAL and Dr. Abdulrahman Al Awar, a director of the Company until April 25, 2007, is Chief Risk Officer for DUBAL. DUBAL and the Company are parties to a subscription agreement dated August 10, 2005 (the "DUBAL Subscription Agreement"), and an off -take agreement dated September 30, 2005 with respect to the anticipated alumina production from the Project. DUBAL and the Company were also parties to each of the Shareholders' Agreement, the Framework Agreement and the Loan Facility Agreement (as defined and described under note 5).

Until April 25, 2007, Mr. Mehdi Dazi was a director of the Corporation and Chief Executive Officer, Investments for EIIC, a shareholder of the Corporation. EIIC and the Corporation are parties to a subscription agreement dated August 16, 2005 and amended September 22, 2005.

A former employee who left the Company during 2007 performs certain services and incurs certain expenses for Herakles Telecom, a company in which certain of the Company's officers are shareholders. Approximately $98,700 has been billed at cost related to this work.

Amounts due from affiliates represent short-term, unsecured, non-interest bearing advances, which are due on demand.

The above transactions are in the normal course of operations and are measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties.

## 13 Financial instruments

### Fair value of financial instruments

The Company's financial instruments include cash, amounts due from affiliates, other assets and accounts payable and accrued liabilities. The fair values of these financial instruments approximate their carrying values.

### Interest rate exposure

The Company does not have significant exposure to interest rate fluctuations.

(expressed in U.S. dollars)

**Foreign currency risk**

The Company is exposed to foreign currency translation risk due to cash and accounts payable denominated in Canadian dollars and, formerly, Guinean francs. As at December 31, 2007, assets, consisting principally of cash denominated in Canadian dollars, totalled $10,902 (2006 - $13,905) and in Guinean francs totalled $nil (2006 - $185,582). The Company does not enter into arrangements to hedge its foreign currency risk.

## 14 Loan agreement

On November 5, 2006, Guinea Alumina (as borrower), Global Alumina and GAI (as guarantors) and BHP Development Finance Proprietary Limited, an affiliate of BHP Billiton, DUBAL, and Mubadala (collectively, the "Lenders") entered into a $100 million secured loan facility agreement. The proceeds of the facility could only be applied to the payment of approved Project costs and could not be used for any other purpose, except as permitted by the Lenders. The facility was secured by a pledge by GAI of its shares of Guinea Alumina. The facility bore interest at a rate of 8.8% per annum, which accrued until the maturity date of the facility.

The loan and accrued interest were repaid in full on May 17, 2007 (see note 5) and the agreement was terminated.

## 15 Comparative figures

Certain comparative figures have been reclassified to conform with the presentation adopted in the current year.

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## MANAGEMENT'S DISCUSSION AND ANALYSIS

The following discussion and analysis is management's assessment of the results of operations and financial condition of Global Alumina Corporation ("Global Alumina" or the "Corporation") and should be read in conjunction with the audited annual consolidated financial statements for the year ended December 31, 2007, together with the related notes contained therein. The Corporation's most recent filings are available on the System for Electronic Document Analysis and Retrieval ("SEDAR") and can be accessed through the Internet at www.sedar.com.

All dollar amounts are in United States dollars. The date of this management's discussion and analysis is March 21, 2008.

***Forward Looking Information***

*Certain information in this discussion is "forward looking information", which reflects management's expectations regarding the Corporation's future growth, results of operations, performance and business prospects and opportunities. In this discussion, the words "may", "would", "could", "should", "will", "intend", "plan", "anticipate", "believe", "seek", "propose", "estimate" and "expect" and similar expressions, as they relate to the Corporation and its assets and interests, are often, but not always, used to identify forward looking information. Such forward looking information reflects management's current beliefs and is based on information currently available to management. Forward looking information involves significant risks and uncertainties, should not be read as a guarantee of future performance or results, and will not necessarily be accurate indications of whether or not or the times at, or by which, such performance or results will be achieved. In particular, this discussion contains forward looking information pertaining to the following: the achievement by Guinea Alumina Corporation, Ltd. ("Guinea Alumina") of certain milestones set out in the Subscription Agreement (as defined below); the decisions of the joint venture with respect to the conduct of the Project (as defined below); the approval of a development plan based on the bankable feasibility study conducted on the Project and the making of a decision by the joint venture partners to proceed with the development of the Project; expectations regarding the debt financing of the Project, the terms, timing and amount of such financing and the sources of financing; the amount, nature and timing of capital expenditures to complete the Project; the timing of refinery construction and mine start up; future production levels; expectations regarding the negotiation of contractual rights; prices for alumina and aluminium; operating and other costs; treatment of Guinea Alumina under the fiscal terms of the "tax exhibit" to the Basic Agreement (as defined below) and the negotiation and terms of agreements relating to the access of Guinea Alumina to and use of certain infrastructure required for the development and operation of the Project and business strategies and plans of management with respect to the Project. A number of factors could cause actual results to differ materially from the results discussed in the forward looking information, including, but not limited to: the failure or delay of Guinea Alumina to fulfill the conditions precedent necessary for the subsequent subscription payments under the Subscription Agreement to become available to the Corporation; the limited control by the Corporation of the assets and operations of the Project and its inability to make major decisions with respect to the Project without agreement from the other joint venture partners; the requirement that the Corporation hold 85% of subscription proceeds received pursuant to the Subscription Agreement in escrow*

*and the possibility the Corporation may need to seek additional financing to fund corporate expenses and Project costs; a delay in finalizing financing for the Project; the amount of such financing being insufficient to fund the Project to complete development; the inability of the Corporation to raise sufficient financing to fund its share of the development costs of the Project; the possibility that the Corporation's interest will be diluted if it is unable to meet a capital call with respect to the Project; the current political and economic risks of investing in a developing country; material inaccuracies in the cost estimates and time estimates for development of the Project in the bankable feasibility study; a decision by the joint venture partners not to proceed with the Project after the development plan has been finalized; construction risks such as cost overruns, delays and shortages of labour, materials or equipment; the Corporation's dependence on an interest in a single asset; the possible forfeiture of the Mining Concession (as defined below) in certain circumstances; operational risks such as access to infrastructure and skilled labour; currency fluctuations; price volatility of alumina, aluminium or raw materials and certain other factors related to the Project discussed under the heading "Risk Factors" in the Corporation's Annual Information Form.*

*The forward looking information contained in this discussion is based on the following principal assumptions: that the data, estimates and projections in the bankable feasibility study of the Project are within the range of accuracy suggested therein; that the joint venture partners will agree on a final schedule for development of the Project and will make a decision to proceed with the Project upon delivery of a final development plan; that issues relating to the Mining Concession title will be resolved to the satisfaction of the joint venture partners and Project lenders; that general economic conditions will not become adverse to the completion of financing for the Project and will have no material adverse impact on the Project; that the negotiations with prospective Project lenders and between the prospective Project lenders and the Guinean government will be successfully concluded by the end of 2008; that the bidding process for contracted work in connection with the Project will be completed in a competitive manner and that actual costs to complete work will be within the range of quotes provided by contractors to date; that the joint venture will be able to acquire necessary labour at currently assumed labour costs and productivity rates; that the development plan for the Project is conducted according to schedule; that general economic factors and trends relating to construction costs remain constant and that the future political and economic climate in Guinea has no material adverse effect on the Project. Although the forward looking information contained in this discussion is based upon what management of the Corporation believes are reasonable assumptions, Global Alumina cannot assure investors that actual results will be consistent with this forward looking information. If the assumptions underlying forward looking information prove incorrect or if other risks or uncertainties materialize, actual results may vary materially from those anticipated in this discussion. This forward looking information is made as of the date of this discussion, and Global Alumina assumes no obligation to update or revise it to reflect new events or circumstances, except as required by applicable law.*

**Business of Global Alumina**

Global Alumina's principal asset is its one-third equity interest in Guinea Alumina, held through its wholly-owned subsidiary, Global Alumina International Ltd. ("GAI"). Guinea Alumina's business is the development, construction and operation of an alumina refinery in a major

bauxite mining region of the Republic of Guinea ("Guinea"), together with a bauxite mine, power plant, port, railway, road and other ancillary infrastructure (the "Project"), through its wholly-owned Guinean subsidiary, Guinea Alumina Corporation, S.A. (the "Project Company") (formerly Boké Alumina Corporation S.A.R.L.).

Global Alumina's business was originated by its predecessor, GAPCO (Guinea Aluminium Products Corporation) Ltd. ("GAPCO"), a British Virgin Islands corporation incorporated on July 21, 1999, until May 25, 2004 when GAPCO completed a share exchange transaction by plan of arrangement with PL Internet Inc., which thereafter changed its name to Global Alumina Products Corporation and continued on May 26, 2004 as a New Brunswick corporation. The Corporation subsequently changed its name to Global Alumina Corporation on April 29, 2005. On May 8, 2006, the Corporation amended its articles to restrict the business of the Corporation to: (a) the ownership, development, construction, operation, maintenance and expansion, directly or through one or more subsidiaries, of (i) bauxite mines in the Republic of Guinea, (ii) an alumina refinery in the Prefecture of Boké, Republic of Guinea, (iii) any other alumina refinery located in the Republic of Guinea, and (iv) roads, railroads, port facilities and other infrastructure that is associated with the operation of any such mines and refineries; and (b) other related business activities reasonably determined by the board of directors of the Corporation (the "Board") to be necessary or complementary in connection therewith including the ownership by the Corporation of Aluminpro Aluminium Industry Professionals Inc. ("Aluminpro").

On April 27, 2007, the Corporation, GAI, Guinea Alumina and the Subscribers (as defined below) entered into a Subscription Agreement (as defined below) under which the Subscribers agreed to subscribe for, collectively, a two-thirds equity interest in Guinea Alumina with GAI retaining a one-third interest. The initial issuance of the two-thirds interest was effective May 17, 2007 ("Completion") when the Subscribers made an aggregate initial payment of approximately $151.1 million for their equity interests in Guinea Alumina. The remaining $108.9 million of the aggregate $260 million total subscription price is payable in three instalments, none of which have been received to date. The first and the second deferred payments, totalling an aggregate $75.55 million, are due upon the earlier of the Subscribers' confirmation of satisfaction that the Mining Concession (as defined below) has been transferred from the Corporation to the Project Company and debt financing for the Project being committed. Although an order was issued by the Guinean Minister of Mines and Geology on November 16, 2006 to transfer the Mining Concession to the Project Company, one of the Subscribers requires additional assurances with respect to the Mining Concession. The Corporation believes that the issue will be resolved in a timely fashion and that the Subscribers will meet their obligations under the Subscription Agreement.

A third deferred payment in the amount of approximately $33.33 million is due upon the debt financing for the Project being committed, bringing the total subscription price to $260 million. Commitments for final debt financing of the Project are expected to be in place by September 2008.

On October 18, 2007 Global Alumina disclosed that it had entered into discussions with a third party concerning the possible sale of Global Alumina at an indicative price of $2.65 per common share. Global Alumina entered into exclusivity and confidentiality agreements with the

prospective buyer and a comprehensive due diligence review of Global Alumina and the Project was undertaken with the cooperation of the Subscribers. On December 11, 2007 the exclusivity agreement with the prospective purchaser expired and discussions regarding a potential transaction were thereafter suspended.

***Basic Agreement and Mining Concession***

On October 15, 2004, the Corporation, Guinea Alumina and the Ministry of Mines and Geology of the Republic of Guinea signed an agreement (the "Basic Agreement") for the development, construction and operation of the Project. The Basic Agreement is a comprehensive investment and concession agreement that grants Guinea Alumina and the Project Company exclusive rights to build and operate an alumina refinery within a 690 square kilometre mining concession area (the "Mining Concession") near Sangarédi. On May 16, 2005, the Basic Agreement was amended to modify certain terms, including changing the 15 year corporate tax exemption to a schedule of fixed annual payments beginning on the commencement of operation of the Project. On July 4, 2005, the President of Guinea signed a decree publishing the amended Basic Agreement as law and on January 23, 2006, the Government of Guinea issued a decree granting the Mining Concession in the name of Global Alumina. Under the terms of the decree, the concession has an initial term of 25 years, renewable in accordance with the Basic Agreement.

On January 13, 2006, an agreement (the "Tripartite Agreement") was entered into between Global Alumina, the Government of Guinea and Compagnie des Bauxites de Guinée ("CBG"), a joint venture between Halco (Mining) Inc. and the Government of Guinea. Under the Tripartite Agreement, CBG agreed to transfer the area which would become the subject of the Mining Concession to the Government of Guinea in exchange for exploitation permits for certain additional areas in the Cogon Tominé region of Guinea. The Tripartite Agreement contemplates that the Mining Concession will revert to the Government of Guinea if Guinea Alumina does not realize the refinery within six years of the publication of the decree granting the Mining Concession to Global Alumina, and, in the case of such reversion, CBG retains a right to request by written notice that the Government of Guinea return the Mining Concession to CBG's management. The Mining Concession will also revert to the Government of Guinea upon: the bankruptcy, cessation of business or liquidation of Global Alumina; or the transfer by Global Alumina to a third party of its mining rights with respect to the Mining Concession, if such transfer is made without the written consent of the Government of Guinea and the proposed refinery has not been realized in accordance with the terms of the Basic Agreement. Any such reversion would be governed by the procedures established under the Mining Code and the Basic Agreement.

At the request of the Corporation, an order was issued by the Minister of Mines and Geology on November 16, 2006 to transfer the Mining Concession from the Corporation to the Project Company. On March 5, 2007 the Government of Guinea issued a letter confirming notice of the joint venture transaction (as described below) and its non-objection thereto pursuant to the Basic Agreement.

The Project Company is in the process of finalizing the accounting and tax exhibit to the Basic Agreement (the "Tax Exhibit") and the other remaining exhibits to the Basic Agreement regarding the construction, operation and use of port facilities, a container terminal, railway and

other ancillary infrastructure to be used by the Project in Kamsar. On execution of the remaining exhibits to the Basic Agreement, which is expected in 2008, the Project Company will make a $1.5 million advance payment to the Guinean government with respect to mining royalties. The Project Company will also make an additional $5.0 million of advance royalty payments by the end of 2009 in connection with the bauxite that will be mined from the Mining Concession and converted to alumina by the Project. The advance royalties will be offset from royalties owing in the first three years of refinery operations. Additionally, pursuant to the Tax Exhibit the Project Company will be subject to a schedule of fixed annual lump sum tax payments beginning on the commencement of operation of the Project of (i) $5,000,000 per year for the first five years of production, (ii) $8,000,000 per year for the next five years of production and (iii) $12,500,000 per year for years 11 to 15 of production. Annual lump sum tax payments will be tax deductible charges for the purpose of computing taxable profits. The fixed annual payments will be accumulated and deferred over taxable profits starting the first fiscal year following the expiry of the 15 year period.

***Joint Venture Transaction Summary***

*Subscription Agreement*

On April 27, 2007, the Corporation, GAI, Guinea Alumina, The Broken Hill Proprietary Company Pty Limited ("BHP Billiton"), Dubai Aluminium Company Limited ("DUBAL") and Mubadala Development Company PJSC ("Mubadala", Mubadala, BHP Billiton and DUBAL together being the "Subscribers") entered into a subscription agreement (the "Subscription Agreement"). Pursuant to the Subscription Agreement, on Completion, Guinea Alumina issued fractional interests in the equity capital of Guinea Alumina to the Subscribers which resulted in the ownership structure of Guinea Alumina being: 33⅓% GAI; 33⅓% BHP Billiton; 25% DUBAL; and 8⅓% Mubadala. The Subscribers paid Guinea Alumina a combined initial subscription price of approximately $151.1 million which was distributed by Guinea Alumina to GAI. Completion entailed five steps: (1) subscription by Subscribers for shares of Guinea Alumina ($151,111,113); (2) distribution to GAI of the subscription proceeds ($151,111,113); (3) subscription pro rata by all shareholders for preferred shares the proceeds of which were to be used to repay loans made by the Subscribers and fund Guinea Alumina expenditures budgeted for April and May 2007 ($80,054,896; $55,358,896 of which was used to repay Subscriber loans and $24,696,000 used for Guinea Alumina's budgeted costs); (4) repayment by Guinea Alumina of Subscriber loans ($55,353,896); and (5) repayment by GAI of that portion of Subscriber loans deemed to be GAI's responsibility ($4,360,027). As a result of this netting at Completion, GAI received net proceeds of $120,066,121, of which $101,759,481 was deposited in the escrow account and $18,306,640 of which remained freely available. Completion resulted in the effective sale by GAI of a two-third interest and retention by GAI of a one-third interest in Guinea Alumina, an increase in GAI's capital account in Guinea Alumina of $26,684,965, and a debt-free Guinea Alumina with $24,696,000 cash infusion. A copy of the Subscription Agreement is available under the Corporation's reference page at www.sedar.com.

The Subscribers have not made the first and second deferred subscription payments of approximately $75.55 million in aggregate pursuant to the Subscription Agreement. Although an order was issued by the Guinean Minister of Mines and Geology on November 16, 2006 to

transfer the Mining Concession to the Project Company, one of the Subscribers requires additional assurances with respect to the Mining Concession. The Corporation believes that the issue will be resolved in a timely fashion and that the Subscribers will meet their obligations under the Subscription Agreement.

Pursuant to the Subscription Agreement, the Subscribers will collectively pay a combined third deferred subscription price of approximately $33.33 million within five business days of the date of a binding commitment for final debt financing of the Project. The Corporation expects Guinea Alumina to achieve this milestone by September 2008 and that payment of the third deferred subscription price will then be made.

GAI has agreed to place 85% of the subscription payments into an escrow account, the use of which is restricted to GAI's capital calls under the Shareholders' Agreement and any warranty and indemnity obligations that may arise under the Subscription Agreement. GAI and the Corporation have granted a security interest over the escrow account to Citibank N.A., as security agent, in respect of their obligations under the Subscription Agreement.

On the day of Completion GAI contributed capital to the joint venture totalling $26,684,965. Subsequently, GAI has contributed capital to the joint venture totalling approximately $32.55 million using funds from the escrow account. At March 21, 2008, the Corporation had approximately $72.6 million in its escrow account and $22.1 million of unrestricted cash.

*Shareholders' Agreement*

On May 17, 2007, GAI, Guinea Alumina and the Subscribers entered into a shareholders' agreement (the "Shareholders' Agreement") governing the management of Guinea Alumina. Pursuant to the Shareholders' Agreement, GAI has appointed three directors on the nine director board; BHP Billiton has appointed three directors; DUBAL has appointed two directors; and Mubadala has appointed one director. BHP Billiton has appointed Guinea Alumina's chief executive and its chief financial officers.

A shareholder that fails to comply with any material obligation under the Shareholders' Agreement (other than the requirement to provide capital to the Project), fails to make payment pursuant to an off-take agreement with the Project Company or becomes insolvent, will be in breach of the Shareholders' Agreement. In such circumstances, a defaulting shareholder and its appointed directors may not vote on any matter and the defaulting shareholder may not dispose of its shares in Guinea Alumina or exercise the pre-emptive rights provided by the Shareholders' Agreement. In the event that such breach is not cured prior to the expiry of the applicable cure period, the defaulting shareholder will be deemed to have served an offer on each other shareholder to sell all of its interests in the Project. The price for such shareholder's interests will be the lower of: (a) the aggregate of: (i) in the case of the Subscribers, the consideration paid by such shareholder or, in the case of GAI, $80,000,000; and (ii) the aggregate of all amounts advanced by the defaulting shareholder to Guinea Alumina up to that date; and (b) 90 per cent of the fair market value of the relevant interests in the Project, and such defaulting shareholder's off-take rights (taken as a whole), where the fair market value is determined by an independent expert.

If a shareholder fails to provide capital to the Project pursuant to the Shareholders' Agreement the remaining shareholders have an option to provide the required capital and thereby increase their equity holdings in Guinea Alumina. In addition the defaulting shareholder must transfer at no cost to the shareholder or shareholders electing to provide the defaulting shareholder's portion of capital, equity of Guinea Alumina equal in value to 20% of the missed capital contribution. If no other shareholder elects to supply the defaulting shareholder's required capital, the defaulting shareholder must transfer at no cost rateably to all of the non-defaulting shareholders, a portion of its equity of Guinea Alumina equal in value to 20% of the missed capital contribution. Regardless of whether another shareholder or shareholders provides the required capital to Guinea Alumina, the defaulting shareholder and its appointed directors may not vote on any matter, dispose of its shares in Guinea Alumina (other than as set out above) or exercise the pre-emptive rights provided by the Shareholders' Agreement until the missed capital contribution is made.

A copy of the Shareholders Agreement is available under the Corporation's reference page at www.sedar.com.

*Project Services Agreements*

On Completion, the Project Company and an affiliate of BHP Billiton entered into a ten-year agreement under which BHP Billiton provides technical services and support to the Project (the "Technical Services Agreement"). BHP Billiton is entitled to recover its costs and expenses incurred in providing services under the Technical Services Agreement plus the following fees: (i) an aggregate fixed fee of $30 million for the period up to mechanical completion of the Project payable in 16 equal quarterly instalments of $1,875,000 beginning on the last day of June, 2007; (ii) $3.00 per tonne of alumina produced by the Project (as adjusted and excluding any expansion) up to the fifth anniversary of the Project being operational; and (iii) $2.50 per tonne of alumina produced by the Project (as adjusted and excluding any expansion) thereafter. In the case of an expansion of the Project BHP Billiton would be entitled to additional fees equal to 50% of the non-expansion fee rate on alumina produced by the expansion.

The Project Company has also entered into a services agreement with Aluminpro (the "Services Agreement") in connection with the Project. Pursuant to the Services Agreement, Aluminpro will provide additional services to the Project as requested, including of a technological support nature in connection with the design, construction and operation of the Project.

***Off-take Agreements***

On May, 17, 2007, the Project Company entered into an off-take agreement on similar terms and at the same price with each shareholder of Guinea Alumina for each shareholder's proportionate share of all available alumina production from the Project. Prior existing alumina commitments of the Project Company under the 2006 off-take agreement with Glencore International AG ("Glencore") for 420,000 tonnes per year and the 2005 agreement with DUBAL for the 15% of production in excess of its existing 25% shareholder entitlement have been allocated from GAI's shareholder entitlement, and consideration paid by GAI to the Project Company will be adjusted as necessary to equalize consideration paid under all shareholder off-take agreements.

The 2005 agreement between DUBAL and the Project Company is a 20 year purchase and sale agreement (the "DUBAL Off-take Agreement") on a take or pay basis for 40% of the proposed refinery's annual production at a price expressed as a percentage of the three-month forward price of high-grade aluminium as set on the London Metal Exchange.

The 2006 agreement between Glencore and the Project Company is a 20 year purchase and sale agreement on a take or pay basis for 420,000 tonnes per year of alumina at a price expressed as a percentage of the three-month forward price of high-grade aluminium as set on the London Metal Exchange subject to a minimum price. The percentage is fixed for the life of the contract.

On December 7, 2001, a predecessor to the Corporation granted an option to Mitsubishi Corporation ("Mitsubishi") to enter into good faith negotiations for the purchase of up to 25% of the proposed refinery's expected annual production. In February 2007, Mitsubishi exercised its option and Global Alumina entered into negotiations with Mitsubishi regarding the potential terms of a supply agreement. The parties did not reach an agreement and discussions were discontinued.

On October 30, 2001, a predecessor to the Corporation granted an option (the "Marubeni Option") to Marubeni Corporation ("Marubeni") to enter into good faith negotiations for the purchase of up to 20% of the proposed refinery's expected annual production. Under an amendment agreement dated March 2, 2006 (the "Amended Marubeni Option"), Marubeni agreed to terminate the Marubeni Option in consideration for a lump-sum payment of $50,000 and an option to enter into good faith negotiations for the purchase of up to an aggregate of 20% of the annual alumina output resulting from any addition of a third production line to the proposed refinery.

**Accounting for Investment in Joint Venture**

Upon formation of the joint venture, the Corporation determined that for accounting purposes the contractual arrangement underlying the economic activity of the Project constituted joint control of Guinea Alumina and recorded its remaining one-third equity investment using the proportionate consolidation method from May 17, 2007. Based on actual experience with respect to the conduct of the Project, the Corporation has determined that effective October 1, 2007 its relationship to Guinea Alumina changed from one of "joint control" to one of "significant influence" as those terms are defined in the Canadian Institute of Chartered Accountants ("CICA") Handbook. Accordingly, the Corporation has changed the method of accounting for its interests in the joint venture from the proportionate consolidation method to the equity method as required for investments that are subject to significant influence. The impact of this change on the Corporation's financial statements is summarized as follows.

The proportionate consolidation method used by the Corporation up to September 30, 2007 resulted in the Corporation recognizing (a) in its balance sheet, the assets of the joint venture that it controlled and the liabilities of the joint venture that it incurred; and (b) in its income statement, its share of income and expenses incurred by the joint venture. The above items were presented on a line-by-line basis.

The equity method of accounting used by the Corporation commencing October 1, 2007 has resulted in the Corporation recognizing (a) in its balance sheet, the Corporation's investment in Guinea Alumina consisting of the cost of the investment and the investment income or loss subsequent to September 30, 2007 and (b) in its income statement, its share of net income incurred by the joint venture. The above items are presented as a single line on each of the balance sheet and the income statement. All references to the joint venture after September 30, 2007 are intended to reflect the Corporation's equity interest in Guinea Alumina on the basis of a significant influence over its affairs pursuant to the Shareholders' Agreement.

Completion of the joint venture transaction described above involved the issuance by the Corporation's then subsidiary, Guinea Alumina, of its own shares to interests outside the consolidated group. Under Canadian generally accepted accounting principles, shareholders' equity transactions with interests outside the consolidated group have the following accounting consequences. The issue of equity securities by the subsidiary decreases the proportionate interest of the parent company. The change in the parent's share of the subsidiary's net identifiable assets as a result of the equity issuance is, from the point of view of the parent company, similar to the change that arises on the sale by a parent of some of its holdings in a subsidiary and is therefore accounted for as an income item. This involves reducing the carrying value of the investment and reporting a gain or loss on deemed disposal – such an amount is commonly referred as dilution gain. The Corporation's determination of the dilution gain and the associated cash flow impact is set out in the following table.

| | Cash flow impact | Dilution gain |
|---|---|---|
| | $ | $ |
| Proceeds received | | 151,111,113 |
| Proceeds receivable in future instalments | | 108,888,887 |
| | | 260,000,000 |
| Corporation's share of capital contributed by joint venture partners | 8,232,000 | |
| Corporation's share of cash in Guinea Alumina deconsolidated | (1,366,029) | |
| Capital contributed by Corporation | (26,684,965) | |
| Loan repaid | 59,718,923 | |
| Other cash contributions | (4,360,027) | |
| | 35,539,902 | 35,539,902 |
| Other assets, net of liabilities, deconsolidated | | (144,048,135) |
| Dilution gain: | | 151,491,767 |
| Recognized in income for the period | | 88,046,498 |
| Deferred pending receipt of subscription proceeds | | 63,445,269 |
| First instalment of subscription proceeds received | 151,111,113 | |
| Company's proportionate share of cash at September 30, 2007 | (13,583,840) | |
| Net contribution in fourth quarter 2007 | (5,970,883) | |
| Cash component of deconsolidation and investment in Guinea Alumina | (167,096,292) | |

## Selected Annual Information

The following table provides selected information for each of the three years ended December 31, 2007. For more detailed information, refer to Global Alumina's audited consolidated financial statements.

| | Year ended December 31, 2007 | Year ended December 31, 2006 | Year ended December 31, 2005 |
|---|---|---|---|
| Total revenues (dilution gain, interest and fee income) | $91,720,014 | $1,705,332 | $1,057,420 |
| Expenses | $16,598,084 | $21,223,917 | $18,325,708 |
| Income (loss) before taxes | $76,127,948 | ($19,518,585) | ($17,268,288) |
| Net income (loss) | $76,127,948 | ($19,518,585) | ($17,268,288) |
| Share of net income in Guinea Alumina | $1,006,018 | - | - |
| Net income (loss) per share | $0.37 | ($0.10) | ($0.14) |
| | **As at December 31, 2007** | **As at December 31, 2006** | **As at December 31, 2005** |
| Cash and restricted cash | $106,252,976 | $10,894,621 | $86,730,213 |
| Working capital (deficit) | $43,511,414 | ($25,625,627) | $73,470,031 |
| Total assets | $316,268,770 | $224,700,889 | $173,377,216 |
| Total long-term liabilities | $nil | $nil | $nil |

## Selected Quarterly Information (unaudited)

| | Quarter ended December 31, 2007 | Quarter ended September 30, 2007 | Quarter ended June 30, 2007 | Quarter ended March 31, 2007 | Quarter ended December 31, 2006 | Quarter ended September 30, 2006 | Quarter ended June 30, 2006 | Quarter ended March 31, 2006 |
|---|---|---|---|---|---|---|---|---|
| Total revenues (dilution gain, interest and fee income) | $1,327,403 | $1,532,692 | $88,822,908 | $37,011 | $80,701 | $259,328 | $632,660 | $732,643 |
| Net income (loss) | $32,158 | ($2,275,693) | $84,289,420 | ($5,917,937) | ($6,214,878) | ($4,432,596) | ($5,014,005) | ($3,857,106) |
| Net income (loss) per share | 0.00 | (0.01) | 0.41 | (0.03) | (0.03) | (0.02) | (0.03) | (0.02) |

## Results of Operations

Global Alumina has reported operating losses since inception and to date has not earned any revenue, except interest income, dilution gain on issuance of shares by Guinea Alumina and other ancillary income related to fees earned on sales made by engineering consultants at Aluminpro, a subsidiary of Global Alumina. Global Alumina expects to continue to sustain

operating losses in the future as its principal asset, its one-third equity interest in the Project, is expected to generate no alumina sales revenue prior to 2012 at the earliest.

Global Alumina's results for the year ended December 31, 2007 reflect both the dilution gain of $88,046,498, and post May 17, 2007 to September 30, 2007, its one-third proportionately consolidated interest in Guinea Alumina (versus 100% interest through May 17, 2007) and, from October 1, 2007 to December 31, 2007, its one-third interest in Guinea Alumina accounted for by the equity method, all resulting from the completion of the joint venture transaction and subsequent developments described above. Global Alumina operations for the year ended December 31, 2007 produced net income of $76,127,948 or $0.37 per share (2006 – ($19,518,585) or $(0.10) per share). Interest income for the year was $3,513,408 (2006- $1,497,830).

The "Breakdown of Expenses" table which follows provides a summary analysis of the expenses of the Corporation for the year ended December 31, 2007 compared to the corresponding period in 2006 and 2005. The column for the year ended December 31, 2007 reflects the Corporation's expenses on a fully consolidated basis up to May 17, 2007, on a one-third proportionate consolidation basis from May 17, 2007 to September 30, 2007 and from October 1, 2007 to December 31, 2007 its one-third interest accounted for by the equity method. The columns for the year ended December 31, 2006 and 2005 reflect the Corporation's expenses on a fully consolidated basis.

*Breakdown of Expenses*

| Expenses | Year ended December 31, 2007 | Year ended December 31, 2006 | Year ended December 31, 2005 |
|---|---|---|---|
| Engineering | -nil- | -nil- | 25,178 |
| Professional fees | 4,955,631 | 6,708,540 | 8,488,390 |
| General and administrative | 10,186,036 | 12,198,010 | 8,285,347 |
| Amortization | 1,456,417 | 2,317,367 | 1,526,793 |
| **Total expenses** | **16,598,084** | **21,223,917** | **18,325,708** |

Professional fees include expenses relating to consulting, legal, financing, tax and accounting services. The 2007 balance also includes an executive bonus totalling $300,000 related to the negotiation of the joint venture. Professional fees for the year ended December 31, 2007 decreased by $1,752,909 or 26% from the same period in 2006 primarily due to the change in consolidation methodology in 2007 versus 2006. In 2007, professional fees include Project Company charges incurred through May 17, 2007 totalling $1.1 million and an additional $0.5 million attributable to the period during which Project Company costs were consolidated using the proportionate consolidation method. In 2006, $4.6 million of professional fees were attributable to the Project Company.

General and administrative expenses for the year ended December 31, 2007 decreased $2,011.974 or 16% from the comparable period in 2006. The significant components include

salaries, travel and living expenses, directors' remuneration, interest expense, Guinea in country operating expenses, certain executive bonuses totalling $500,000 related to the negotiation of the joint venture, stock option expenses, telecommunications, insurance and healthcare. Directors' remuneration includes $389,345 of directors' fees plus $200,000 of fees paid to the independent committee of the Board formed on October 24, 2007 to assist and advise the Board regarding the discussions then ongoing with a potential purchaser of Global Alumina. General and administrative expenses for 2007 include Project Company charges incurred through May 17, 2007 totalling $5.4 million and an additional $1.0 million attributable to the period during which Project Company costs were consolidated using the proportionate consolidation method. In 2006, $11.1 million of general and administrative fees were attributable to the Project Company.

**Capital Expenditures**

Guinea Alumina's costs capitalized into construction in progress as of December 31, 2007 and December 31, 2006 were $285.1 million and $192.5 million, respectively. In March 2008, the board of directors of Guinea Alumina approved an interim work plan and budget of $110.8 million for the period from January 2008 through May 2008. Including an additional approximate $8 million of net property, plant and equipment costs as of December 31, 2007, Guinea Alumina is expected to have incurred in excess of $400 million of capital expenditures from inception through May 2008.

Guinea Alumina began construction works (and capitalizing direct engineering and construction costs) in December 2004 on certain elements of the Project deemed to be the most valuable toward controlling future costs and maintaining schedule advantages ("enabling works"), pending completion of the financing required to complete its development plan. These early-stage, enabling works included construction, operation and subsequent expansion of a pioneer construction camp, construction of resettlement housing and related social facilities, dredging the port areas in Kamsar, land-filling and maintenance of the port terminal site, road construction to the refinery, quarry and township sites (and ongoing maintenance), construction of a new, heavy-duty bridge at Boké, quarry development and construction, rail spur earthworks, cutting, filling and piling work at the refinery site, bauxite sampling and mine development work. Upon Completion of the joint venture in May 2007, Guinea Alumina's shareholders, including Global Alumina, agreed to perform a bankable feasibility study of the Project according to BHP Billiton's standards, and to continue the enabling works construction program pending conclusion of the feasibility study and preparation by the Project management team of a development plan.

The feasibility study was delivered to the joint venture board on March 13, 2008. It confirms the economic viability of the Project and recommends approval by the joint venture partners to proceed to the execution phase. The feasibility study will form the basis for the Project development plan which will also include a detailed timetable for implementation as well as a financing plan and associated equity drawdown schedule from June 2008 forward. The development plan is expected to be finalized and tabled for approval by Guinea Alumina's board of directors in June 2008. The current draft development plan schedule contemplates:

- notice to proceed under an engineering, procurement and construction management contract in the third quarter of 2008 with preliminary work, together with orders for long lead items, continuing and ramping up substantially in June 2008 in order to preserve the Project's construction schedule
- first concrete to be poured at the refinery site by February 2009
- completion of the Kamsar container quay in March 2009
- power substation operational in August 2011
- the startup process transitioning from the construction phase into the operating phase commencing in late 2011 with bauxite first fed into the first refinery line around yearend 2011, first alumina shipments there from and bauxite first fed into the second refinery line following three months thereafter and shipments from the second refinery line beginning three months after that
- full operation of refinery at capacity by the end of April 2012

Though the refinery, configured initially with two processing lines, is expected to be initially capable of producing 3.3 million metric tons annually at start up, its annual production capacity is expected to reach the refinery's nominal capacity of 3.6 million metric tons as a steady state within five years and gradually increase to a capacity of 3.95 million metric tons through its life as the operating staff gain experience. The refinery layout is configured to accommodate a third processing line which would increase the refinery's total nominal capacity to over 5.4 million metric tons per year. Current benchmarking against existing global refining capacity shows the refinery's projected cash operating costs to be among the world's lowest 10%.

The $110.8 million interim budget through May 2008 includes $40.6 million towards continued site works and development including work on the container quay at the port in Kamsar, $27 million in engineering, procurement and construction management services provided by Bechtel and its subcontractors, $22.9 million in corporate and staffing costs through the period and $14.5 million contingency. Project activities through the period have concentrated and will concentrate on:

- finalization of the bankable feasibility study and the issuance of an independent engineers' report on the Project;
- finalization of the Tax Exhibit, infrastructure agreement, port agreement and operations agreement exhibits to the Basic Agreement;
- finalization of geotechnical test work at the refinery site, commencement of production piling, continuation of terracing and bulk earthworks and initial geotechnical investigations of the Kamsar port area;
- completion of rail spur earthworks and the commencement of construction of the railway bridge;
- completion of the pioneer camp expansion and design of a 400 bed camp at the refinery site;

- design and construction of the container quay at Kamsar;
- negotiations with contractors and preparation of procurement packages for vendors in anticipation of mobilization on the joint venture partners making a decision to proceed with the Project;
- initiation of Project communications infrastructure and systems;
- inauguration and hand-over ceremony of the Boké bridge to the Government of Guinea.

On March 18, 2008, the joint venture partners contributed capital of $42 million towards the approved interim budget with Global Alumina contributing its $14 million one-third share. Additional capital calls to the joint venture partners of $18 million in April and $21 million in May (of which Global Alumina will be responsible for $6 million and $7 million, respectively) have been approved by the board of directors of Guinea Alumina to fund these expenditures.

Based on projections provided by the Project management team, the Corporation currently expects the total construction costs of the Project at completion to be approximately $5.21 billion including $431 million of costs expected to have been incurred from inception through May 2008. The increase in estimated costs vis-à-vis prior estimates is attributable to (i) a significant decline in the value of the U.S. dollar; (ii) a significant rise in the cost of diesel and fuel oil affecting both transportation and construction costs; (iii) continued increases in the price of key bulk construction materials such as structural steel, cement, piping and electrical cable; (iv) higher than expected increases in labour costs due to a restricted world wide labour market; and (v) rising prices for industrial equipment and construction services. The actual cost of the development of the Project will depend on the negotiation of construction contracts, debt financing arrangements and other factors. The Corporation's share of the final Project costs will be based on its proportionate interest in Guinea Alumina.

The Project is a large, complex undertaking that requires substantial engineering, construction and operating expertise. Potential cost overruns and completion delays are significant risks in projects of this size, particularly in less developed countries. Price escalation is a concern especially in current market conditions where unstable markets for building materials and consumables have risen steadily over the past five years.

**Liquidity and Capital Resources**

As at December 31, 2006 and until immediately prior to Completion of the joint venture transaction, Guinea Alumina primarily funded its expenses through borrowings under a secured loan from DUBAL, Mubadala and an affiliate of BHP Billiton. On May 17, 2007, the $59,718,923 (including accrued interest) outstanding under the loan was repaid in full and the loan agreement was terminated. Of the amounts outstanding under the loan as of Completion, $55,358,896 was repaid by Guinea Alumina from subscription proceeds and $4,360,027 was repaid directly by GAI.

The Corporation is non-revenue generating and is wholly dependent on external sources of financing to meet its operating costs and to fund capital expenditures.

At December 31, 2007, the Corporation had a working capital surplus of $43,511,414 compared to a working capital deficiency of $25,625,627 at December 31, 2006. Prepaid expenses decreased from $11,699,433 at December 31, 2006, to $1,345,641 at December 31, 2007, a decrease of 88%. The December 31, 2007 balance includes $1.3 million of prepaid rent related to the New York office and minimal prepaid insurance. The decrease is due primarily to the change in methodology for consolidating Guinea Alumina in the financial statements of the Corporation at year end 2007 versus 2006. The December 31, 2006 balance included $9.0 million of down payments related to contracts of the Project Company, $1.6 million of prepaid rent, $0.9 million of deferred financing costs which were written off in 2007 (see Note 2 to the audited financial statements of the Corporation for the year ended December 31, 2007, describing the adoption of a new accounting standard) and prepaid insurance. Accounts payable and accrued liabilities decreased by approximately 97% to $830,040 at December 31, 2007 due primarily to the fact that the balances at December 31, 2007 no longer include those of Guinea Alumina that were previously fully consolidated.

At December 31, 2007, the Corporation had unrestricted cash of $20,203,943 and restricted cash totalling $86,049,033 in an escrow account for future Project capital calls and to fund any warranty and indemnity obligations that may arise under the Subscription Agreement. At March 21, 2008 the Corporation had unrestricted cash of $22.1 million and restricted cash totalling $72.6 million of which $13 million is expected to be remitted for budgeted capital calls through the end of May 2008. The Corporation expects that the unrestricted funds will be sufficient to enable it to meet its corporate operating expense requirements through 2011 and that the escrowed funds will be sufficient to fund its one-third share of Project equity requirements at least through to finalization of debt financing for the Project.

The Project is in the process of raising approximately $1.8 billion to $2.55 billion of long-term, senior secured project debt financing from a consortium of export credit agencies, official development agencies and commercial bank lenders. Certain affiliates of the joint venture partners may also participate in the Project lending syndicate. The increase in proposed borrowing has been facilitated by higher forecasted aluminium prices and broader interest in providing debt financing to the Project.

The substantial amount of debt capital required for the Project necessitates a complex financing plan with emphasis on official development, export credit and insured commercial sources. Project debt commitments are expected to be finalized by September 2008 with financial closing anticipated to follow by the fourth quarter of 2008. Prospective lenders are seeking direct agreements with key contractors for the Project as well as with the Government of Guinea. Negotiations for a direct agreement between Project lenders and the Government of Guinea are expected to be completed by the fourth quarter 2008 and a definitive agreement executed concurrently with the close of debt financing arrangements for the Project. Such a direct agreement with the Government of Guinea would be a condition to financing. Prospective Project lenders are also expected to seek guarantees from each of the Subscribers and Global Alumina with respect to completion of the Project. Such guarantees would be of a several nature and Global Alumina would be expected to guarantee cost overruns in proportion to its one-third interest in the Project. Global Alumina may be required to provide cash collateral as partial security for any such guarantee at financial closing.

The absence of a developed legal regime in Guinea, especially with respect to real and personal property security, will make more complicated and less certain the ability of lenders to take a security interest in the Project's assets. This may limit the universe of lenders willing to lend or may increase the borrowing costs or otherwise result in more onerous financing terms. Management of the Corporation believes that BHP Billiton's direct participation as a major equity investor and technical services provider will enhance the Project and facilitate the project financing process. However, there is no assurance that Guinea Alumina will secure sufficient financing on terms and conditions acceptable to it or at all.

The approximately $2.55 billion to $3 billion of capital required to complete the Project over and above the amount expected to be raised in the Project debt financing will have to be funded through additional equity contributions by the joint venture partners. To fund its one-third share of this cost the Corporation will be required to raise substantial additional financing in the form of debt or equity. Any such equity financing may result in substantial dilution to the holdings of existing shareholders. There is a risk that debt or equity financing in the amounts required will not be available on favourable terms, or at all. If the Corporation is unable to raise additional financing, its interest in the Project will be diluted.

**Contractual Commitments**

The board of directors of Guinea Alumina has approved an interim Project budget of $110.8 million for incurred costs for the period from January 2008 through May 2008 towards which the joint venture partners contributed $42 million in capital on March 11, 2008. The Project's current schedule of approved cash calls contemplates that the joint venture partners will make approximately $39 million of capital contributions through May 31, 2008 of which Global Alumina will be responsible to contribute further capital of $13 million.

All Project related contracts were novated by the joint venture as of May 17, 2007 and, as a consequence, are no longer direct contractual commitments of the Corporation.

No letters of credit were outstanding during 2007.

**Financing Agreements**

The following agreements and private placements form part of the Corporation's efforts to secure financing for the Project prior to implementation of the joint venture with the Subscribers. Each is described below.

***The Mitsubishi Subscription Agreement***

Under an agreement entered into by a predecessor of the Corporation in 2001 and assumed by the Corporation following the arrangement with PLI Internet Inc. in 2004, Mitsubishi has an option to purchase an underdetermined number of common shares of the Corporation, exercisable upon Financial Closure (as defined in the agreement), at a price per share equal to the fair market value of the common shares at Financial Closure as agreed by the parties. Financial Closure is defined as the date on which all conditions precedent under the credit and security

documents evidencing the debt financing arrangements for the Project have been satisfied or waived and funds are available for disbursement thereunder.

*The DUBAL Subscription Agreement*

On August 10, 2005, the Corporation entered into a subscription agreement with DUBAL (the "DUBAL Subscription Agreement") and issued to DUBAL 10,000,000 common shares at $2.00 per share on September 30, 2005. Pursuant to the agreement, DUBAL also has the right to subscribe for additional common shares constituting 25% of the Corporation's shares outstanding on a fully-diluted basis, for a subscription price estimated at the date of the DUBAL Subscription Agreement of $180 million (the "Additional Subscription"). On April 27, 2007, the Corporation and DUBAL entered into an agreement providing that the DUBAL Subscription Agreement will terminate on the date that sufficient funding is secured to complete the Project and that in the interim DUBAL will not exercise its Additional Subscription right. If Project financing has not been completed by September 30, 2008, DUBAL's Additional Subscription right will be restored and will be exercisable provided that DUBAL first transfers to GAI all of its interest in Guinea Alumina. Under the DUBAL Subscription Agreement, DUBAL has the right to nominate one representative for election to the Board prior to the completion of the Additional Subscription. Ahmed Fikree, the DUBAL representative, was appointed to the Board in November 2005.

*The EIIC Subscription Agreement*

Under a subscription agreement with Emirates International Investment Corporation LLC ("EIIC") dated August 16, 2005 and amended September 26, 2005 (collectively, the "EIIC Subscription Agreement"), EIIC purchased 25,000,000 common shares at $2.00 per share on October 20, 2005.

*The IDBIF Subscription Agreement*

On December 29, 2005, the Corporation closed a private placement to IDB Infrastructure Fund L.P. ("IDBIF"), a limited partnership established in the Kingdom of Bahrain, of 22,222,222 common shares at $2.25 per share for gross proceeds of $50 million. Under the subscription agreement dated November 29, 2005 between the Corporation and IDBIF (the "IDBF Subscription Agreement"), as long as IDBIF holds more than 5% of the Corporation's issued and outstanding common shares, the Corporation will not issue any common shares at a price per share of less than $2.25, other than pursuant to: (i) the terms of certain pre-existing agreements; (ii) an exercise of warrants issued by the Corporation prior to the execution of the IDBIF Subscription Agreement; (iii) an exercise of options granted in the ordinary course and consistent with past practices; or (iv) a public offering of common shares by way of prospectus.

**Off-Balance Sheet Arrangements**

The Corporation had no off-balance sheet arrangements as at December 31, 2007.

**Critical Accounting Policies and Estimates**

The preparation of financial statements in accordance with Canadian generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts or revenues and expenses during the reporting year. Actual results could differ from those estimates.

The Corporation's significant accounting policies are summarized in Note 2 to the audited financial statements for the year ended December 31, 2007. The policies described below have the most significant effect in the preparation and presentation of the Corporation's consolidated financial statements.

As described under "Accounting for Investment in Joint Venture", effective May 17, 2007 the Corporation changed its method of accounting for Guinea Alumina and the Project Company from full consolidation to proportionate consolidation and on October 1, 2007, based on actual experience with respect to the conduct of the Project, the Corporation changed its method of accounting from the proportionate consolidation method to the equity method.

***Development Costs***

Based on the criteria set out in CICA Handbook section 3450 "Research and Development Costs" and Accounting Guideline 11 "Enterprises in the Development Stage", the Corporation has determined that all of its past development costs should be expensed.

***Investments***

The Corporation accounts for its investments in companies over which it has significant influence using the equity basis of accounting whereby the investments are initially recorded at cost and subsequently adjusted to recognize the Corporation's share of earnings or losses of the investee companies and reduced by dividends received, if any. Carrying values of investments would be reduced to estimated market values if there was other than a temporary decline in the value of the investment; such reduction would be recorded in the statement of operations.

***Financial Instruments and Other Instruments***

The Corporation's financial instruments include cash and cash equivalents, amounts due from affiliates, other assets and accounts payable and accrued liabilities. The fair values of these financial instruments approximate their carrying values.

***Financial Instruments and Comprehensive Income***

In January 2005, the CICA issued Handbook Sections 3855, "Financial Instruments – Recognition and Measurement" and 1530, "Comprehensive Income". These new standards are effective for interim and annual financial statements relating to fiscal years commencing on or after October 1, 2006 on a prospective basis. The Corporation has adopted these new standards effective January 1, 2007.

## Outstanding Share Data

### *Common Shares*

The Corporation has authorized an unlimited number of common shares, with no par value, of which 203,857,644 common shares were issued and outstanding as at December 31, 2007 and 206,543,394 common shares are issued and outstanding as of the date hereof.

### *Share Purchase Warrants*

During the year ended December 31, 2007, 105,100 warrants were exercised for cash proceeds of $105,100. After December 31, 2007, 2,685,750 warrants were exercised at an exercise price of $1 each for cash proceeds of $2,685,750. The exercised warrants represent all of the outstanding warrants of the Corporation. There are no share purchase warrants outstanding as at the date hereof.

### *Employee Stock Options*

As of December 31, 2007, 4,002,500 options are outstanding under the Corporation's stock option plan for employees, directors, officers and consultants of the Corporation. Each option is exercisable for one common share. Since December 31, 2007, no options have been exercised. Ten million common shares have been reserved for issuance under the stock option plan. Options for 5,997,500 common shares remain available for future issuance. The following table summarizes the expiry dates and exercise prices for options granted under the stock option plan as of the date hereof.

| Number of Shares Subject to Options | Vested | Unvested | Expiry Date | Exercise Price |
|---|---|---|---|---|
| 960,000 | 960,000 | Nil | May 27, 2009 | $1.50 |
| 25,000 | 25,000 | Nil | August 24, 2009 | $1.52 |
| 750,000 | 500,000 | 250,000 | March 10, 2010 | $2.50 |
| 482,500 | 321,667 | 160,833 | July 25, 2010 | $1.40 |
| 45,000 | 15,000 | 30,000 | March 7, 2011 | $1.75 |
| 1,740,000 | 580,000 | 1,160,000 | December 11, 2011 | $1.00 |

The fair value of stock options is recognized in income over the applicable vesting period as compensation expense. Compensation expense in the amount of $485,514 (2006 - $495,719) has been recognized in the financial statements for the year ended December 31, 2007.

On April 25, 2007 the Board resolved to preserve previously granted and unexpired stock options of certain employees of the Corporation or its affiliates that would otherwise have terminated on the consummation of the joint venture transaction. On December 19, 2007 the

Board additionally preserved previously granted and unexpired stock options of a former consultant to the Corporation that was contracted by Guinea Alumina. Existing granted options that have been preserved will expire in accordance with their terms. The holders of such options are ineligible to receive additional options.

**Related Party Transactions**

Related party transactions are disclosed in Note 12 to the audited financial statements for the year ended December 31, 2007 and are summarized below.

Due to its rights under the DUBAL Subscription Agreement, DUBAL was treated as a related party of the Corporation under Ontario securities law in connection with the joint venture transaction.

On October 9, 2006, the Board approved, and the Corporation entered into, a written consulting contract (the "Karalco Agreement") with Karalco, a corporation controlled by Karim Karjian, Co-Chairman and a shareholder of the Corporation. The Karalco Agreement covers Mr. Karjian's professional services regarding development activities with respect to the Project. The Corporation and Karalco agreed that the Karalco Agreement is retroactively effective from January 1, 2006. Under the Karalco Agreement, Karalco is entitled to a $60,000 monthly retainer. Bonuses may be paid under the Karalco Agreement based on the status of the Project and the level of activity required of Karalco on behalf of the Corporation. As of May 17, 2007, the joint venture reimburses the Corporation for this monthly retainer. Karalco is also eligible to participate under the Corporation's employee stock option plan. In the event that the Corporation terminates the Karalco Agreement without cause (as defined under the Karalco Agreement), Karalco will be entitled to a minimum payment equal to $1,440,000 of which Guinea Alumina, has agreed to pay one-half and the Corporation would be responsible for the other half. The total payments with respect to the monthly retainer and incentive fees for the year ended December 31, 2007 amounted to $720,000 (2006 - $970,000) of which $447,100 (2006 - $nil) was reimbursed by Guinea Alumina. In addition, the Corporation paid in 2007 a Board-approved bonus of $300,000 related to the negotiation of the joint venture. Since February 1, 2006, Karalco has been reimbursed an amount for office expenses. The cost of such office expenses for the year ended December 31, 2007 totalled approximately $30,500 (2006 - $26,500).

On October 9, 2006, the Board approved, and the Corporation entered into, a written consulting contract (the "Herakles Agreement") with Herakles Capital Corp. ("Herakles"), one of its shareholders. Herakles is controlled by Bruce Wrobel, Co-Chairman, Chief Executive Officer and a shareholder of the Corporation. The Herakles Agreement covers Mr. Wrobel's services as the Co-Chairman and Chief Executive Officer of the Corporation. The Corporation and Herakles agreed that the Herakles Agreement would be retroactively effective from January 1, 2006 and Herakles would be paid $200,000 per annum for Mr. Wrobel's services. Effective January 1, 2007, the Herakles Agreement was amended to increase the annual payment to $250,000. Herakles is also eligible to participate under the Corporation's employee stock option plan. In the event that the Corporation terminates the Herakles Agreement without cause (as defined under the Herakles Agreement), Herakles will be entitled to a minimum payment equal to $500,000. The total cost attributable to the Herakles Agreement for the year ended December

31, 2007 amounted to approximately $550,000 (2006 - $207,700) including a Board-approved bonus of $300,000 relating to the negotiation of the joint venture in 2007.

In addition to the bonuses paid to Karalco and Herakles, the Board approved and the Corporation paid bonuses totalling $200,000 to other officers of the Corporation in connection with the negotiation of the joint venture.

Bruce Wrobel is also the Chief Executive Officer of Sithe Global Power, LLP ("Sithe Global"), which provided, until May 17, 2007, professional services to the Project. Sithe Global was reimbursed at cost. The total cost for the year ended December 31, 2007 was approximately $47,400 (2006 – $407,200). Formerly, the President of Sithe Global provided consulting services to the Corporation at a rate of $15,000 per month. These services terminated as of May 31, 2007. The total cost for the year ended December 31, 2007 amounted to $75,000 (2006 - $180,000). In addition, the Corporation has provided, at cost, professional services to Sithe Global. The total charge for the year ended December 31, 2007 was approximately $3,800 (2006 - $nil)

Sithe Global reimburses the Corporation for its *pro rata* share of occupancy expenses for use of the Corporation's office space at 245 Park Avenue, New York. Occupancy costs charged to Sithe Global for the year ended December 31, 2007 totalled approximately $715,400 (2006 - $627,900).

On July 19, 2004, the Corporation entered into a consulting agreement with Bernard Cousineau with respect to his services as President of the Corporation. On April 25, 2007, Mr. Cousineau stepped down as President of the Corporation. Effective June 1, 2007, Mr. Cousineau's agreement was amended to reflect his current services as Senior Operations Advisor and director of the Corporation as well as Vice President and director of Aluminpro. Mr. Cousineau's consulting agreement provides a monthly retainer of $5,000 paid in equal portions by the Corporation and Aluminpro and an annual incentive payment of 10% of the profits realized by Aluminpro in such year. Mr. Cousineau also receives a fee for his services as a director of the Corporation.

As of June 1, 2007, the Corporation also amended its consulting agreements with each of Ian Porteus, the Senior Technical Advisor to the Corporation and Vice President and director of Aluminpro, and Brian Gallagher, the Business Manager, Secretary and Treasurer of Aluminpro. Mr. Porteus' consulting agreement provides a monthly retainer of $8,500 paid one-third by the Corporation and two-thirds by Aluminpro and an annual incentive payment of 10% of the profits realized by Aluminpro. Mr. Gallagher's consulting agreement provides a monthly retainer of $8,663 paid by Aluminpro and an annual incentive payment of 5% of the profits realized by Aluminpro.

Mr. Ahmed Fikree, a director of the Corporation, is the Director, Commercial and Corporate Development, for DUBAL. Dr. Abdulrahman Al-Awar, a former director of the Corporation who stepped down on April 25, 2007, is Chief Risk Officer for DUBAL. DUBAL and the Corporation are parties to the DUBAL Subscription Agreement. See "Financing Agreements – The DUBAL Subscription Agreement". DUBAL and the Corporation are also parties to each of the Subscription Agreement and DUBAL Off-take Agreement. See "Liquidity and Capital

Resources" and "Business of Global Alumina – Joint Venture Transaction Summary". Mr. Mehdi Dazi a former director of the Corporation who stepped down on April 25, 2007, was Chief Executive Officer, Investments, for EIIC, a shareholder of the Corporation. EIIC and the Corporation were parties to a the EIIC Subscription Agreement. See "Financing Agreements – The EIIC Subscription Agreement".

A former employee who left the Corporation during 2007 performs certain services and incurs certain expenses for Herakles Telecom, a company in which certain of the Corporation's officers are shareholders. For the year ended December 31, 2007, approximately $98,700 has been billed at cost to Herakles Telecom related to this work.

Through December 31, 2007, the Corporation has paid and billed back to the joint venture costs totalling $1,426,400. Approximately $762,200 of this amount relates to payments specifically requested during transition when the joint venture was opening bank accounts and transitioning employees and benefit plans from the Corporation to the joint venture. A further $447,100 relates to the services of Karalco subsequent to the closing of the joint venture, and another $217,100 relates to the salaries of certain individuals that are billed back to the joint venture at cost. As of December 31, 2007 the Corporation has been reimbursed for all charges billed back to the joint venture.

Amounts due to and from affiliates represent short-term unsecured non-interest bearing advances due upon demand. The above transactions are in the normal course of operations and are measured at the exchange amount, which is the amount of consideration established and agreed by the related parties.

**Risk Factors**

The Corporation's principal asset is its one-third equity interest in Guinea Alumina, a development-stage company undertaking a large complex capital-intensive project in a developing country and is subject to numerous risks and challenges. The various risk factors relating to the Project are described herein and under the heading "Risk Factors" in the Corporation's Annual Information Form. These risk factors, including risks not currently known to the Corporation or that the Corporation currently considers immaterial, could materially and adversely affect Guinea Alumina's business, financial condition, results of operations and growth strategy, and consequently the Corporation.

**Evaluation of Disclosure Controls and Procedures**

Disclosure controls and procedures are designed to provide reasonable assurance that all relevant information is gathered and reported to senior management, including the Corporation's Chief Executive Officer and Chief Financial Officer, on a timely basis so that appropriate decisions can be made regarding public disclosure.

As at the end of the period covered by this management's discussion and analysis, management of the Corporation, with the participation of the Chief Executive Officer and the Chief Financial Officer, evaluated the effectiveness of the Corporation's disclosure controls and procedures as

required by Canadian securities laws. Based on that evaluation, the Chief Executive Officer and the Chief Financial Officer have concluded that, as of the end of the period covered by this management's discussion and analysis, the disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed in the Corporation's annual filings and interim filings (as such terms are defined under Multilateral Instrument 52-109 – *Certification of Disclosure in Issuers' Annual and Interim Filings*) and other reports filed or submitted under Canadian securities laws is recorded, processed, summarized and reported within the time periods specified by those laws and that material information is accumulated and communicated to management of the Corporation, including the Chief Executive Officer and the Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

On May 17, 2007 as a result of Completion of the joint venture transaction, the Corporation retained an indirect one-third equity interest in Guinea Alumina. On Completion GAI, Guinea Alumina and the Subscribers entered the Shareholders' Agreement which provides for the governance and management of Guinea Alumina and the Project. Although the Corporation exerts significant influence over Guinea Alumina, it no longer controls Guinea Alumina. Pursuant to the Shareholders' Agreement management of the Project and financial record keeping was transferred to BHP Billiton. The Corporation relies on the Project management team for timely and accurate information regarding the financial affairs of Guinea Alumina and the Project. Requirements imposed on the conduct of the Project and the governance on Guinea Alumina including: the Shareholders' Agreement, a manual of authorities implemented by Guinea Alumina and BHP Billiton policies, practices and procedures, are designed to ensure the integrity and availability of financial information regarding Guinea Alumina and the Project. The Chief Executive Officer and the Chief Financial Officer are satisfied that the current arrangements in place are appropriate to satisfy the obligations of the Corporation with respect to financial reporting.

**Additional Information**

Additional documents and information regarding the Corporation, including summaries of the material terms of the Subscription Agreement and Shareholders' Agreement, the EIIC, DUBAL and IDBIF transactions and the Corporation's Annual Information Form are available through SEDAR and can be accessed through the Internet at www.sedar.com.

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# Global Alumina Corporation

# Annual Information Form

**March 27, 2008**

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## EXPLANATORY NOTES

Unless otherwise indicated or the context otherwise indicates, in this document, "Global Alumina" refers to Global Alumina Corporation and the "Corporation" refers to Global Alumina and its direct and indirect subsidiaries on a consolidated basis excluding Guinea Alumina Corporation, Ltd. ("Guinea Alumina") and its subsidiaries.

Unless otherwise stated, all dollar amounts are expressed in United States dollars.

***Forward Looking Information***

*Certain information in this Annual Information Form is "forward looking information", which reflects management's expectations regarding the Corporation's future growth, results of operations, performance and business prospects and opportunities. In this Annual Information Form, the words "may", "would", "could", "should", "will", "intend", "plan", "anticipate", "believe", "seek", "propose", "estimate" and "expect" and similar expressions, as they relate to the Corporation and its assets and interests, are often, but not always, used to identify forward looking information. Such forward looking information reflects management's current beliefs and is based on information currently available to management. Forward looking information involves significant risks and uncertainties, should not be read as a guarantee of future performance or results, and will not necessarily be accurate indications of whether or not or the times at, or by which, such performance or results will be achieved. In particular, this Annual Information Form contains forward looking information pertaining to the following: the achievement by Guinea Alumina of certain milestones set out in the Subscription Agreement (as defined below); the decisions of the Joint Venture(as defined below) with respect to the conduct of the Project (as defined below); the approval of a Development Plan (as defined below)based on the bankable Feasibility Study (as defined below) conducted on the Project and the making of a decision by the Joint Venture partners to proceed with the development of the Project; expectations regarding the debt financing of the Project, the terms, timing and amount of such financing and the sources of financing; the amount, nature and timing of capital expenditures to complete the Project; the timing of refinery construction and mine start up; future production levels; expectations regarding the negotiation of contractual rights; prices for alumina and aluminium; operating and other costs; treatment of Guinea Alumina under the fiscal terms of the "tax exhibit" to the Basic Agreement (as defined below) and the negotiation and terms of agreements relating to the access of Guinea Alumina to and use of certain infrastructure required for the development and operation of the Project and business strategies and plans of Joint Venture management with respect to the Project. A number of factors could cause actual results to differ materially from the results discussed in the forward looking information, including, but not limited to: the failure or delay of Guinea Alumina to fulfill the conditions precedent necessary for the subsequent subscription payments under the Subscription Agreement to become available to the Corporation; the limited control by the Corporation of the assets and operations of the Project and its inability to make major decisions with respect to the Project without agreement from the other Joint Venture partners; the requirement that the Corporation hold 85% of subscription proceeds received pursuant to the Subscription Agreement in escrow and the possibility the Corporation may need to seek additional financing to fund corporate expenses and Project costs; a delay in finalizing financing for the Project; the amount of such financing being insufficient to fund the Project to complete development; the inability of the Corporation to raise sufficient financing to fund its share of the development costs of the Project; the possibility that the Corporation's interest will be diluted if it is unable to meet a capital call with respect to the Project; the current political and economic risks of investing in a developing country; material inaccuracies in the cost estimates and time estimates for development of the Project in the bankable Feasibility Study; a decision by the Joint Venture partners not to proceed with the Project after the Development Plan (as defined below) has been finalized; construction risks such as cost overruns, delays and shortages of*

*labour, materials or equipment; the Corporation's dependence on an interest in a single asset; the possible forfeiture of the Mining Concession (as defined below) in certain circumstances; operational risks such as access to infrastructure and skilled labour; currency fluctuations; price volatility of alumina, aluminium or raw materials and certain other factors related to the Project discussed under the heading "Risk Factors" below.*

*The forward looking information contained in this Annual Information Form is based on the following principal assumptions: that the data, estimates and projections in the bankable Feasibility Study of the Project are within the range of accuracy suggested therein; that the Joint Venture partners will agree on a final schedule for development of the Project and will make a decision to proceed with the Project upon delivery of a final Development Plan; that issues relating to the Mining Concession title will be resolved to the satisfaction of the Joint Venture partners and Project lenders; that general economic conditions will not become adverse to the completion of financing for the Project and will have no material adverse impact on the Project; that the negotiations with prospective Project lenders and between the prospective Project lenders and the Guinean government will be successfully concluded by the end of 2008; that the bidding process for contracted work in connection with the Project will be completed in a competitive manner and that actual costs to complete work will be within the range of quotes provided by contractors to date; that the Joint Venture will be able to acquire necessary labour at currently assumed labour costs and productivity rates; that the Development Plan for the Project is conducted according to schedule; that general economic factors and trends relating to construction costs remain constant; and that the future political and economic climate in Guinea has no material adverse effect on the Project. Although the forward looking information contained in this Annual Information Form is based upon what management of the Corporation believes are reasonable assumptions, Global Alumina cannot assure investors that actual results will be consistent with this forward looking information. If the assumptions underlying forward looking information prove incorrect or if other risks or uncertainties materialize, actual results may vary materially from those anticipated in this Annual Information Form. This forward looking information is made as of the date of this discussion, and Global Alumina assumes no obligation to update or revise it to reflect new events or circumstances, except as required by applicable law.*

## GLOSSARY OF TERMS

Capitalized terms used but not otherwise defined in this Annual Information Form have the following meanings:

"**Arrangement**" means the share exchange transaction by court approved plan of arrangement effective May 25, 2004 between GAPCO (Guinea Alumina Products Corporation) Ltd. and PL Internet Inc.

"**Basic Agreement**" means the investment and concession agreement dated October 15, 2004 between Global Alumina, Guinea Alumina Corporation, S.A. and the Ministry of Mines and Geology of Guinea, as amended and restated as of May 16, 2005.

"**BHP Billiton**" means The Broken Hill Proprietary Company Pty Limited.

"**CBG**" means Compagnie des Bauxites de Guinea.

"**Completion**" means the completion by the Subscribers of the initial subscription and the allotment of fractional interests in the share capital of Guinea Alumina pursuant to the Subscription Agreement, which occurred on May 17, 2007.

"**Development Plan**" means the development plan for the Project to be prepared by the Project management team and expected to be finalized by June 2008 which is based on the bankable Feasibility Study of the Project presented to the board of directors of Guinea Alumina on March 13, 2008.

"**DUBAL**" means Dubai Aluminium Company Limited.

"**DUBAL Subscription Agreement**" means the subscription agreement between Global Alumina and DUBAL dated August 10, 2005.

"**Feasibility Study**" means the bankable feasibility study of the Project performed according to BHP Billiton's standards, undertaken by the Shareholders in May 2007 and completed in March 2008.

"**GAI**" means Global Alumina International, Ltd.

"**Guinea**" means the Republic of Guinea.

"**Guinea Alumina**" means Guinea Alumina Corporation, Ltd.

"**Infrastructure Agreement**" means an agreement to be entered into between the Project Company and the Government of Guinea and annexed to the Basic Agreement which will set out the terms of use of existing infrastructure in Guinea.

"**Joint Venture**" means the joint venture formed by Global Alumina, through its wholly-owned subsidiary GAI and BHP Billiton, DUBAL and Mubadala for the purpose of developing and operating the Project.

"**JV Transactions**" means the transactions, agreements, documents and instruments resulting in the Joint Venture.

"**JV Transaction Agreements**" means collectively, the Subscription Agreement, the Shareholders' Agreement and all other agreements related to the JV Transactions.

"**Mining Concession**" means the 690 square kilometre mining concession of the Project area near Sangarédi in the Republic of Guinea granted by decree issued January 23, 2006.

"**MI 52-110**" means Multilateral Instrument 52-110 – *Audit Committees*.

"**Mubadala**" means Mubadala Development Company PJSC.

"**Operating Agreement**" means an agreement to be entered into between the Project Company and the Government of Guinea and annexed to the Basic Agreement which will set out the terms of construction, access and use of existing infrastructure in Guinea.

"**Options**" means Share purchase options of Global Alumina issued pursuant to the stock option plan of Global Alumina dated May 27, 2004, as amended.

"**Port Agreement**" means an agreement to be entered into between the Project Company and the Government of Guinea and annexed to the Basic Agreement which will set out the terms of use of the port installations to be constructed in Guinea.

"**Project**" means the development, construction and operation of an alumina refinery near Sangarédi, in the Prefecture of Boké, Guinea, together with a bauxite mine to supply the refinery and port, railway and road infrastructure and all other ancillary infrastructure, as contemplated under the Basic Agreement, as amended.

"**Project Company**" means Guinea Alumina Corporation, S.A., a wholly-owned subsidiary of Guinea Alumina.

"**Shareholders**" means the shareholders of Guinea Alumina, collectively, GAI, BHP Billiton, DUBAL and Mubadala.

"**Shareholders' Agreement**" means the shareholders' agreement between GAI, Guinea Alumina and the Subscribers dated May 17, 2007 to govern management of Guinea Alumina and the Project.

"**Shares**" means the common shares in the capital of Global Alumina, and each a "**Share**".

"**Subscribers**" means, collectively, BHP Billiton, DUBAL and Mubadala.

"**Subscription Agreement**" means the subscription agreement dated April 27, 2007 between the Corporation, GAI, Guinea Alumina and the Subscribers, pursuant to which the Subscribers agree to subscribe for, and Guinea Alumina agrees to issue, fractional interests in the equity capital of Guinea Alumina.

"**Tax Exhibit**" means the accounting and tax exhibit to the Basic Agreement which will establish the tax regime to which the Project Company will be subject.

"**Warrants**" means Share purchase warrants of Global Alumina.

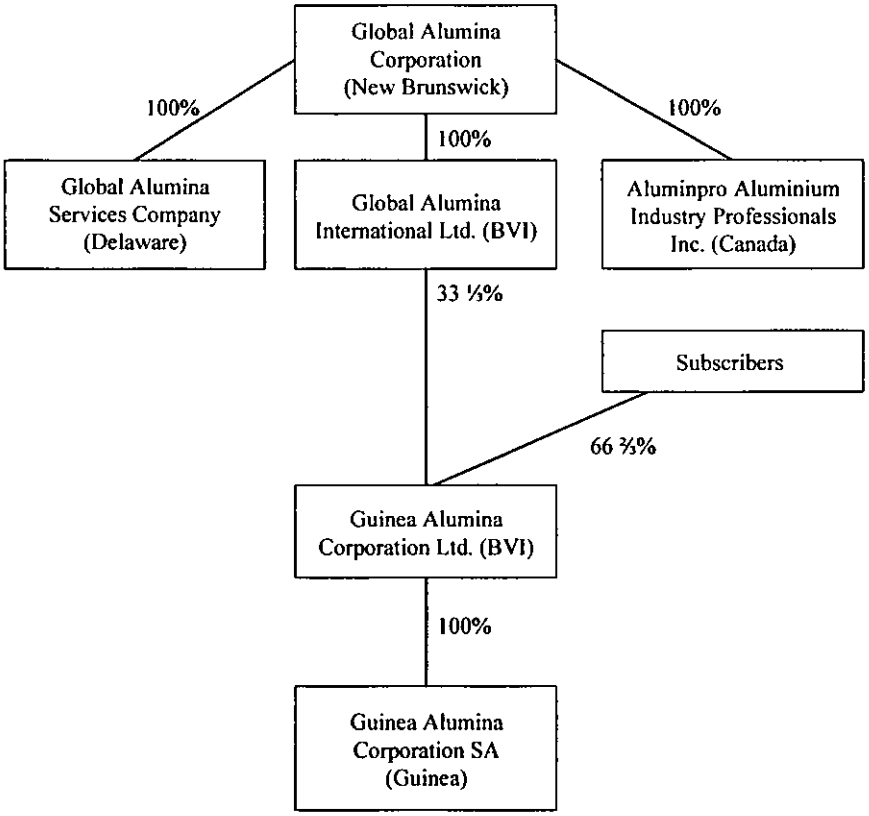
## CORPORATE STRUCTURE

### Name and Incorporation

Global Alumina filed articles of continuance under the *Business Corporations Act* (New Brunswick) (the "NBBCA") on May 26, 2004. GAPCO (Guinea Aluminium Products Corporation) Ltd. ("GAPCO"), a British Virgin Islands company and Global Alumina's predecessor corporation and current subsidiary, completed a reverse takeover transaction with PL Internet Inc. ("PLI") on May 25, 2004. PLI subsequently changed its name to Global Alumina Products Corporation. Global Alumina filed articles of amendment under the NBBCA to change its name to Global Alumina Corporation effective as of April 29, 2005. The registered office of Global Alumina is located at: 44 Chipman Hill, Suite 1000, Saint John, New Brunswick, E2L 4S6. The Corporation's administrative office is located at: 245 Park Avenue, 38th Floor, New York, New York, 10167.

### Intercorporate Relationships

The following chart sets forth the name, jurisdiction of incorporation and ownership structure of Global Alumina and its direct and indirect subsidiaries.



## GENERAL DEVELOPMENT OF THE BUSINESS

Global Alumina's principal asset is its one-third equity interest in Guinea Alumina, held through its subsidiary GAI. Guinea Alumina's business is the development of an alumina refinery located in a major bauxite-mining region of Guinea, together with a bauxite mine to supply the refinery and port, railway and road infrastructure and all other ancillary infrastructure. Guinea Alumina, through its subsidiary the Project Company, has a mining concession granted by the Government of Guinea covering 690 square kilometres within the Prefecture of Boké in the north-western sector of Guinea. This region is one of the largest bauxite producing regions in the world.

### Initial Listing

On May 25, 2004, GAPCO completed the Arrangement with PLI, an Ontario reporting issuer, whereby GAPCO shareholders exchanged their shares of GAPCO for shares of PLI, resulting in GAPCO becoming a wholly-owned subsidiary of PLI. After completion of the Arrangement, GAPCO changed its name to Global Alumina International, Ltd. and PLI changed its name to Global Alumina Products Corporation. For accounting purposes, the transaction was considered a reverse take-over whereby GAPCO was considered the acquiring company as the shareholders of GAPCO acquired more than 50% of the issued and outstanding stock of PLI.

Global Alumina listed its Shares on the TSX Venture Exchange effective June 15, 2004. Effective February 16, 2005, Global Alumina listed its Shares on the Toronto Stock Exchange (the "TSX") and delisted its Shares from the TSX Venture Exchange. Effective April 29, 2005, Global Alumina filed articles of amendment under the NBBCA to change its name to Global Alumina Corporation. Global Alumina is a reporting issuer in the provinces of Alberta, British Columbia, Ontario, Quebec and New Brunswick.

### Acquisition of Aluminpro

On July 19, 2004, Global Alumina acquired all of the outstanding share capital of Aluminpro Aluminium Industry Professionals Inc. ("Aluminpro"), a company formed by a group of aluminium industry professionals in 2000 to provide marketing and administrative services to its shareholders and others providing technical consulting services to the aluminium industry.

The purchase price of $1,000,000 consisted of $500,000 in the form of cash payments and 500,000 units of Global Alumina (each a "Unit") valued at $1 per Unit and each consisting of one Share and one-half Warrant. Each Warrant entitled the holder thereof to purchase an additional Share at a price of $1.50 per Share. The Warrants expired on July 19, 2006.

The total cost of purchase, including transaction costs, amounted to $1,095,000 and was primarily allocated to engineering contracts in the amount of $1,079,645. Engineering contracts were amortized over a twelve-month period commencing on July 19, 2004, the effective date of the transaction.

Concurrently with the Aluminpro transaction, Global Alumina entered into a consulting services agreement (each an "Aluminpro Consulting Agreement") with each of the shareholders of Aluminpro under which the former Aluminpro shareholders agreed to provide specified services to Global Alumina in connection with the Project for a stated fee. The Aluminpro Consulting Agreements were amended as of June 1, 2007. The agreements may be terminated by either party by delivering written notice to the other party at least 30 days prior to the end of any renewal term. To date, none of the Aluminpro Consulting Agreements has been terminated. Aggregate fees paid by Global Alumina under these

agreements during 2007 and 2006 were $233,539 and $821,351, respectively. See "Directors and Officers – Contractual Relationships with Directors and Executive Officers" below.

**The Basic Agreement**

On October 15, 2004, Global Alumina, Guinea Alumina and the Ministry of Mines and Geology of Guinea (the "Ministry of Mines") signed the Basic Agreement for the development, construction and operation of the Project. The Basic Agreement is a comprehensive investment and concession agreement that grants Guinea Alumina and the Project Company exclusive rights to build and operate an alumina refinery within the Mining Concession. On December 3, 2004, the Project Company commenced pre-construction activities at the port of Kamsar, marked by a groundbreaking ceremony.

On May 16, 2005, the Basic Agreement was amended by, among other things, changing the 15 year corporate tax exemption to fixed annual payments beginning on commencement of operation of the Project. On May 19, 2005, the Guinean National Assembly unanimously ratified the amended Basic Agreement. On July 4, 2005, the President of Guinea signed a decree publishing the amended Basic Agreement as law and on January 23, 2006, the Government of Guinea issued a decree granting the Mining Concession in the name of Global Alumina. Under the terms of the decree, the concession has an initial term of 25 years, renewable in accordance with the Basic Agreement. At the request of the Corporation, an order was issued by the Minister of Mines and Geology of Guinea on November 16, 2006 to transfer the Mining Concession from the Corporation to the Project Company. On March 5, 2007, the Government of Guinea issued a letter confirming notice of the JV Transactions and its non-objection thereto pursuant to the Basic Agreement.

The material terms of the Basic Agreement, as amended, are as follows:

***Refinery***

The Government of Guinea granted Guinea Alumina and the Project Company exclusive right to design, develop, construct, operate and maintain the Project and carry out certain related activities. The term of this grant is 75 years. The Project is to be conducted through the Project Company. The Government of Guinea has the right to designate a representative to sit on the executive committee of Guinea Alumina. To date, the Government of Guinea has not designated a representative.

***Mining Concession Term***

The initial term of the Mining Concession is 25 years. The Mining Concession is to be renewed as follows: (i) at the end of the initial term, automatic renewal for an additional period of 25 years; (ii) if in the six months preceding the expiry of the second 25-year period referred to in (i) above, the Project Company delivers to the Government of Guinea a plan of upkeep and maintenance for the Project (a "Maintenance Plan") for the following ten years, the Mining Concession will be automatically renewed for an additional period of ten years; (iii) if in the six months preceding the expiry of the ten year period referred to in (ii) above, the Project Company confirms to the Government of Guinea that its Maintenance Plan applicable to that term has been implemented and submits a new Maintenance Plan for the following ten years, the Mining Concession will be automatically renewed for a further period of ten years; and (iv) commencing with the six months preceding the expiry of the ten-year term referred to in (iii) above, the Project Company has the right to continue to renew the Mining Concession for successive ten-year terms in accordance with the procedure set out under (iii) above. See " – Bauxite Mining Concession Rights" below.

*Infrastructure and Port Installations*

The terms of the use by the Project Company of the existing infrastructure will be set out in the Infrastructure Agreement and the terms of use of the port installations to be constructed will be governed by the Port Agreement. Additionally, the Operating Agreement will specify the practical and logistical terms and methods of upgrading the existing port and railway infrastructure to be used by the Project Company. The Corporation expects that the terms of the Infrastructure Agreement, the Port Agreement and the Operating Agreement will be finalized by the Project Company and the Government of Guinea and executed by the parties in 2008.

The Project Company has the right to design, develop and use certain port installations, including the right to expand and improve the access channel and construct a quay and jetty. Although expected to be financed by the Project Company, these port installations will be owned by the Government of Guinea. No royalties will be owed by the Project Company in respect of their use for an initial 25-year period following the start of alumina exportation, except for the use of the access channel. Following such initial period, an annual royalty of 2% of the construction costs of the port installations will be payable to the Government of Guinea for the next 25 years, rising to 5% for the following 25-year period. During this 50-year period, an amount equal to 10% of the royalties payable to the Government of Guinea is to be withheld and deposited by the Project Company in an escrow account to be used to fund maintenance costs for the port installations. It is possible that the installations may be financed through concessionary loans obtained by the Government of Guinea, in which case the Project Company would be obligated to pay royalties in an amount equal to the sum of all principal and interest owing under such loans and a fee.

*Financing*

Guinea Alumina and the Project Company have agreed to use best efforts to obtain the financing necessary for the Project within 18 months of the date that the Basic Agreement became effective, provided that: all of the necessary authorizations (including, decrees granting the Mining Concession and all permits) required in Guinea to carry out the Project have been irrevocably provided to the Project Company; all of the rights have been made available to the Project Company, as contemplated under the Basic Agreement, such that the Project can be implemented; and the necessary land has been made available or transferred to the Project Company, as contemplated under the Basic Agreement.

*Production*

The Project Company has the right to produce and market alumina and to export alumina from Guinea without any restriction. The Government of Guinea may request that the Project Company enter into a long term agreement for the sale of alumina to Guinea. The Project Company has no obligation to enter into such an agreement if the terms are not as advantageous as those which the Project Company may obtain from a third party and taking into account the financing imperatives of the Project. To date, the Government of Guinea has not requested that the Project Company enter into such an agreement. All alumina production expected from the first two processing lines of the Project has been committed by the Project Company through off-take agreements with the Subscribers, GAI and Glencore International AG ("Glencore").

*Local Supplies, Services and Employees*

To the extent Guinea Alumina and the Project Company are responsible for transport, Guinea Alumina and the Project Company have agreed to transport 50% of exported alumina on certain vessels designated by the Government of Guinea and sailing under the Guinean or assimilated flag. The Project Company has agreed to use services, products and raw materials from Guinean sources, so long as those services, products and raw materials are available on comparable terms to those available on the international

market. The Project Company has also agreed to employ as a matter of priority Guinean nationals or residents for its unskilled labour requirements while retaining the right to employ expatriate personnel who are necessary to the efficient conduct of the Project.

*Mining Royalties*

Starting with the first fiscal year following the start-up of commercial alumina production by the Project, the Project Company will be subject to a mining royalty on the bauxite transformed into alumina upon its exit from inventory equal to 5% of the "free on board" value of CBG shipped bauxite on the date of the Basic Agreement. On execution of the Infrastructure Agreement, Port Agreement, Operating Agreement and Tax Exhibit, which is expected in 2008, the Project Company will make an advance payment of $1.5 million to the Guinean Government with respect to mining royalties. The Project Company will also make an additional $5.0 million of advance royalty payments by the end of 2009 in connection with the bauxite that will be mined from the Mining Concession and converted to alumina by the Project. The advance royalties will be offset from royalties owing in the first three years of operations.

*State Assistance, Guarantees and Guinean Tax and Exchange Controls*

The Government of Guinea has agreed to facilitate all steps and procedures and provide all reasonable assistance necessary for the implementation of the Project.

An advantageous Guinean tax regime for the Project Company is specified in the Basic Agreement and will be detailed in the Tax Exhibit:

(a) Until the start-up of commercial alumina production, the Project Company and its sub-contractors will be exempt from all Guinean taxes, except for employee withholdings.

(b) Following commercial start-up and for a period of 15 years, the Project Company will make fixed annual lump sum tax payments to the Government of Guinea in accordance with the following schedule: $5 million in the first five years of production; $8 million in the next five years of production; and $12.5 million for years 11 to 15 of production. The Project Company will also be subject to an annual local development tax of $500,000 for the 15 years following commercial start-up and $1,000,000 for the next following 15 years.

(c) After the 15 years following commercial start-up, the Project Company will pay corporate income tax at a rate of 35%. The fixed annual lump sum payments made from year one to 15 of refinery operation will be tax deductible charges for the purpose of computing taxable profits and will be accumulated and deferred over taxable profits starting the first fiscal year following the 15 year period.

The Government of Guinea has agreed that the Project Company and Guinea Alumina may transfer currency freely and that the Project Company and Guinea Alumina are not required to repatriate to Guinea amounts held in overseas accounts except amounts necessary for expenses incurred in Guinean Francs in Guinea for the project.

*Additional Guarantees of the Government of Guinea*

In addition to the foregoing guarantees and assurances, the Government of Guinea has, under the Basic Agreement, guaranteed that it will not expropriate or nationalize all or part of the assets of the Project, whether through direct action or the implementation of indirect measures including legislation, court

decisions or third-party agreements. The Government of Guinea has also agreed not to restrict: the employment of expatriate personnel; the free choice of manufacturers and direct subcontractors; the free movement in Guinea of equipment, goods and expatriate personnel; the free importation of foodstuffs, spares, materials, consumables and other goods necessary for the Project; and the importation of satellite equipment in compliance with applicable regulations.

*Termination*

Each party has the right to terminate the Basic Agreement in the event of a serious breach of one of the material obligations of the Basic Agreement by the other party or a force majeure. A force majeure includes wars, military insurrection, riots, civil unrest, earthquakes, fires, storms, flooding or other events beyond the control of a party which renders impossible the performance by that party of its obligations. If following a force majeure, the parties are not able to agree on how to remedy the event, the Government of Guinea will pay to the Project Company and Guinea Alumina compensation equal to the value of the Project assets, taking into account their potential use for the greater of the remaining term of the Basic Agreement and 50 years.

*Interpretation*

Having been ratified by the Guinean National Assembly, the Basic Agreement has the force of law in Guinea. The Basic Agreement derogates in certain respects from pre-existing Guinean laws and regulations. Under the Basic Agreement, the Government of Guinea recognizes these derogations and has agreed that, to the extent there are discrepancies between the Basic Agreement and pre-existing laws and regulations, the Basic Agreement will prevail. The parties have agreed that the Basic Agreement will be interpreted in accordance with the laws of France. The Government of Guinea has waived its right to sovereign immunity under the Basic Agreement.

**Bauxite Mining Concession Rights**

Pursuant to the Basic Agreement, as amended, on January 23, 2006, the Government of Guinea issued a formal decree granting the Mining Concession in the name of Global Alumina. Under the terms of the decree, the concession has an initial term of 25 years, renewable in accordance with the Basic Agreement (as described under "– The Basic Agreement – Mining Concession Term" above). At the request of the Corporation, an order was issued by the Minister of Mines and Geology of Guinea on November 16, 2006 to transfer the Mining Concession from the Corporation to the Project Company. On March 5, 2007 the Government of Guinea issued a letter confirming notice of the JV Transactions and its non-objection thereto pursuant to the Basic Agreement.

On January 13, 2006, an agreement (the "Tripartite Agreement") was entered into between Global Alumina, the Government of Guinea and CBG, a joint venture between Halco (Mining) Inc. and the Government of Guinea. Under the Tripartite Agreement, CBG agreed to transfer the area which would become the subject of the Mining Concession, which initially formed a portion of the original CBG concession, back to the Government of Guinea in exchange for exploitation permits for certain additional areas in the Cogon Tominé region of Guinea. The Government of Guinea subsequently granted the Mining Concession area in the name of Global Alumina. The Tripartite Agreement states that neither Global Alumina nor CBG may make any claims against the other and none of the parties to the agreement has any claim against any one of the other parties. The Tripartite Agreement contemplates that Mining Concession will revert to the Government of Guinea if Guinea Alumina does not realize the refinery within six years of the publication of the decree granting the Mining Concession to Global Alumina, and, in the case of such reversion, CBG retains a right to request by written notice that the Government of Guinea return the Mining Concession to CBG's management. The Mining Concession will also revert to

the Government of Guinea upon: the bankruptcy, cessation of business or liquidation of Guinea Alumina or the Project Company; or the transfer by the Joint Venture to a third party of the mining rights with respect to the Mining Concession, if such transfer is without the written consent of the Government of Guinea and the proposed refinery has not been realized in accordance with the terms of the Basic Agreement. Any such reversion would be governed by the procedures established under the Mining Code of Guinea (the "Mining Code") and the Basic Agreement.

**Financing Activities**

Based on projections provided by the Project management team, the Corporation currently expects the total construction costs of the Project at completion to be approximately $5.21 billion including $431 million of costs expected to have been incurred from inception of the Project through May 2008. The Project is in the process of raising approximately $1.8 billion to $2.55 billion of long-term, senior secured project debt financing from a consortium of export credit agencies, official development agencies and commercial bank lenders. The approximately $2.25 billion to $3.00 billion of capital required to complete the Project over and above the amount expected to be raised in the Project debt financing is expected to be funded through additional equity contributions by the Shareholders, of which the Corporation will be responsible for its one-third contribution. The following sections describe the financings that the Corporation has completed to date or that are substantially advanced as of the date of this Annual Information Form. At March 27, 2008 the Corporation had cash on hand to fund additional equity contributions to the Joint Venture of approximately $72.6 million in an escrow account for future Project capital calls and to fund any warranty and indemnity obligations that may arise under the Subscription Agreement.

***Marubeni Subscriptions***

Between March 7, 2000 and November 21, 2001, GAPCO issued an aggregate of 75,000 GAPCO common shares (3,000,000 Shares) to Marubeni Corporation ("Marubeni") and certain of its affiliates for total gross proceeds of $1.2 million.

***Mitsubishi Subscription***

On December 7, 2001, GAPCO entered into an agreement (the "Mitsubishi Agreement") with Mitsubishi Corporation ("Mitsubishi") pursuant to which Mitsubishi acquired 40,000 GAPCO common shares (1,600,000 Shares) at $25 per common share for gross proceeds of $1,000,000. In addition, GAPCO granted Mitsubishi an irrevocable option to purchase, at an exercise price per common share equal to the fair market value of a GAPCO common share to be agreed upon by the parties upon and at the date of satisfaction of certain conditions related to the debt financing necessary for completing the Project, an undetermined number of additional GAPCO Common Shares. The obligations of GAPCO under the Mitsubishi Agreement were assumed by the Corporation following the Arrangement.

***Unit Private Placement***

On February 3, 2004, GAPCO closed a private placement, which raised gross proceeds of $50 million before commissions, fees and related transaction costs of approximately $5 million, of 50,000,000 Units at $1.00 per Unit. Each Unit consisted of one common share of GAPCO and one-half of a Warrant, each whole Warrant being exercisable at an exercise price of $1.50 per common share for 24 months after the closing date. The Warrants expired on February 3, 2006. The proceeds of the offering, net of offering costs, amounted to $44,776,614.

A total of 23,371,150 Warrants were exercised resulting in aggregate proceeds of $35,056,725. In connection with this Unit private placement, GAPCO issued broker Warrants exercisable for an aggregate of 4,000,000 common shares at an exercise price of $1.00 per common share. As of the date hereof all of the broker Warrants have been exercised, resulting in gross aggregate proceeds of $4,000,000.

***December 2004 Private Placement***

On December 23, 2004, Global Alumina closed a private placement which raised gross proceeds of $30,000,750 through the issuance of 15,385,000 Shares at $1.95 per Share. The proceeds of the offering were used to fund early stage construction of the Project. The net proceeds from the offering amounted to $27,994,310 after deducting commissions, fees and related transaction costs of approximately $2,006,440.

***DUBAL Private Placement***

On August 10, 2005, Global Alumina entered into the DUBAL Subscription Agreement and on September 30, 2005, closed a private placement to DUBAL of 10,000,000 Shares at $2.00 per Share for gross proceeds of $20 million. Pursuant to the agreement, DUBAL also has the right to subscribe for additional Shares constituting up to 25% of the Shares outstanding on a fully-diluted basis for an aggregate subscription price estimated at the date of the DUBAL Subscription Agreement of $180 million (the "Additional Subscription"). On April 27, 2007, the Corporation and DUBAL entered into an agreement providing that the DUBAL Subscription Agreement will terminate on the date that sufficient funding is secured to complete the Project and that in the interim DUBAL will not exercise its Additional Subscription right. If Project financing (defined in the DUBAL Subscription Agreement as the entering into of definitive agreements for funding at least equal to the total capital cost of the Project) has not been completed by September 30, 2008, DUBAL's Additional Subscription right will be restored and will be exercisable provided that DUBAL first transfers to GAI all of its interest in Guinea Alumina. The Corporation does not expect that Project financing will be completed by September 30, 2008, however, management of the Corporation does not expect that the Additional Subscription right will be exercised. Under the DUBAL Subscription Agreement, DUBAL has the right to nominate one representative for election to the Board prior to the completion of the Additional Subscription. Ahmed Fikree, the DUBAL representative, was appointed to the Board in November 2005.

The DUBAL Subscription Agreement is summarized under "– Contractual Commitments – The DUBAL Subscription Agreement" below.

***EIIC Private Placement***

On October 20, 2005, Global Alumina closed a private placement to Emirates International Investment Company LLC ("EIIC"), an investment company resident in the United Arab Emirates, of 25,000,000 Shares at $2.00 per Share for gross proceeds of $50 million. Offering expenses of $49,135, the commission of $2.5 million paid to SW Source Capital UK as placement agent and an additional $78,440 of listing expenses were recorded in the fourth quarter of 2005 as a reduction of share capital.

Under the subscription agreement dated August 16, 2005 between Global Alumina and EIIC, as amended by an amending agreement dated September 26, 2005 (together, the "EIIC Subscription Agreement"), Global Alumina had agreed to issue, and EIIC agreed to purchase, a $50,000,000 convertible debenture (the "Debenture"). On December 1, 2005, EIIC failed to purchase the Debenture and repudiated the agreement. The Corporation is no longer bound by the EIIC Subscription Agreement.

***IDBIF Private Placement***

On December 29, 2005, Global Alumina closed a private placement to IDB Infrastructure Fund L.P. ("IDBIF"), a limited partnership established in the Kingdom of Bahrain, of 22,222,222 Shares at $2.25 per Share for gross proceeds of $49,999,999.50. Under the subscription agreement dated November 29, 2005 between Global Alumina and IDBIF (the "IDBIF Agreement"), as long as IDBIF holds more than 5% of Global Alumina's issued and outstanding Shares, Global Alumina will not issue any Shares at a price per share of less than $2.25, other than pursuant to: (i) the terms of certain pre-existing agreements; (ii) an exercise of Warrants issued by Global Alumina prior to the execution of the IDBIF Agreement; (iii) an exercise of Options granted in the ordinary course and consistent with past practice; or (iv) a public offering of Shares by way of prospectus.

***Joint Venture Transaction Agreements***

*Summary*

On April 27, 2007, the Corporation and Guinea Alumina entered into the Subscription Agreement with BHP Billiton, DUBAL and Mubadala. Pursuant to the Subscription Agreement, on Completion, Guinea Alumina issued fractional interests in the equity capital of Guinea Alumina to the Subscribers which resulted in the ownership structure of Guinea Alumina being: 33⅓% GAI; 33⅓% BHP Billiton; 25% DUBAL; and 8⅓% Mubadala. The Subscribers paid Guinea Alumina a combined initial subscription price of approximately $151.1 million which was distributed by Guinea Alumina to GAI. Completion entailed five steps: (1) subscription by the Subscribers for shares of Guinea Alumina ($151,111,113); (2) distribution to GAI of the subscription proceeds ($151,111,113); (3) subscription pro rata by all Shareholders for preferred shares the proceeds of which were to be used to repay loans made by the Subscribers to Guinea Alumina prior to Completion and to fund Guinea Alumina expenditures budgeted for April and May 2007 ($80,054,896; $55,358,896 of which was used to repay such loans and $24,696,000 used for Guinea Alumina's budgeted costs); (4) repayment by Guinea Alumina of Subscribers loans ($55,353,896); and (5) repayment by GAI of that portion of Subscribers loans deemed to be GAI's responsibility ($4,360,027). As a result of netting at Completion, GAI received net proceeds of $120,066,121, of which $101,759,481 was deposited in the escrow account and $18,306,640 of which remained freely available. Completion resulted in the effective sale by GAI of a two-third equity interest and retention by GAI of a one-third equity interest in Guinea Alumina, an increase in GAI's capital account in Guinea Alumina of $26,684,965, and a debt-free Guinea Alumina with $24,696,000 cash infusion. A copy of the Subscription Agreement is available under the Corporation's reference page at www.sedar.com.

| Party | Fractional Shares | Completion Payment | First Deferred Payment | Second Deferred Payment | Third Deferred Payment | Totals |
|---|---|---|---|---|---|---|
| GAI | 1,000,000 | – | – | – | – | – |
| BHP Billiton | 1,000,000 | $80 million | $20 million | $20 million | $20 million | $140 million |
| DUBAL | 750,000 | $51.11 million | $17.22 million | $8.33 million | $8.34 million | $85 million |
| Mubadala | 250,000 | $20 million | $5 million | $5 million | $5 million | $35 million |
| **Totals** | **3,000,000** | **$151.11 million** | **$42.22 million** | **$33.33 million** | **$33.34 million** | **$260 million** |

The Subscribers have not made the first and second deferred subscription payments of approximately $75.55 million in aggregate pursuant to the Subscription Agreement. Although an order was issued by the Guinean Minister of Mines and Geology on November 16, 2006 to transfer the Mining Concession to the Project Company, one of the Subscribers requires additional assurances with respect to the Mining Concession. The Corporation believes that the issue will be resolved in a timely fashion and that the Subscribers will meet their obligations under the Subscription Agreement.

Pursuant to the Subscription Agreement, the Subscribers will collectively pay a combined third deferred subscription price of approximately $33.34 million within five business days of the date of a binding commitment for final debt financing of the Project. The Corporation expects Guinea Alumina to achieve this milestone by the third quarter of 2008 and that payment of the third deferred subscription price will then be made.

GAI has agreed to place 85% of the subscription payments into an escrow account, the use of which is restricted to GAI's capital calls under the Shareholders' Agreement and any warranty and indemnity obligations that may arise under the Subscription Agreement. GAI and the Corporation have granted a security interest over the escrow account to Citibank N.A., as security agent, in respect of its obligations under the Subscription Agreement. For details of the escrow agreement see "Financing Activities – Ancillary Agreements".

*Additional Provisions*

Under the Subscription Agreement, GAI has agreed to indemnify the Subscribers from, among other things, (i) claims of a third party to obtain share capital of Guinea Alumina, GAI or the Corporation, (ii) claims of such third party to obtain off-take of alumina production from the Project, (iii) any claim of such third party brought against the Subscribers for interference in the exercise of rights under (i) or (ii) above, (iv) the failure of the Corporation and its subsidiaries to transfer, or satisfy any requirements with respect to the transfer of, the Mining Concession to the Project Company and (v) liabilities arising from any taxes in connection with the Project arising prior to Completion that the Subscribers are called upon to pay. All of the obligations of GAI under the Subscription Agreement are unconditionally guaranteed by the Corporation.

***Shareholders' Agreement***

*Summary*

On May 17, 2007, GAI, Guinea Alumina and the Subscribers entered into the Shareholders' Agreement to govern management of Guinea Alumina and the Project. Pursuant to the Shareholders' Agreement, Guinea Alumina's board of directors has overall responsibility and control over management of Guinea Alumina and the Project. GAI has appointed three directors on the nine director board, BHP Billiton has appointed three directors and Guinea Alumina's chief executive and chief financial officers, DUBAL has appointed two directors and Mubadala has appointed one director. If the shareholdings of the parties in Guinea Alumina vary in the future, entitlement to board representation will be adjusted to reflect a voting entitlement of the directors appointed by each party being equal to the aggregate proportionate shareholdings of the appointing Shareholder. Only DUBAL and Mubadala are permitted to agree to vote together.

*Voting Provisions*

For certain special matters, minimum combined votes are required from directors who represent Shareholders holding in the aggregate at least 76% of the outstanding capital of Guinea Alumina in order

to pass such special resolutions including: (i) borrowings in excess of $100,000 during the development stage, $200,000 during the construction stage and $1,000,000 during operation of the Project; (ii) capital expenditures approved in the business plan in excess of $3 million during development, $40 million during construction and $10 million during operation of the Project and capital expenditures equal to 10% of these values if such expenditures not in approved business plan; (iii) execution of contracts: (a) with a term in excess of three years; (b) approved in the business plan and valued in excess of $6 million during development, $40 million during construction and $20 million during operation of the Project; or (c) 10% of the values in (b) if such a contract is not approved in the business plan; (iv) changes in accounting policies of Guinea Alumina or its subsidiaries, auditors or financial year-end; (v) retaining of any profits by Guinea Alumina that could be distributed; (vi) granting security interests in property of Guinea Alumina or any of its subsidiaries; (vii) entering into any related party contracts by Guinea Alumina or any of its subsidiaries; (viii) disposals of assets approved in the business plan in excess of $3.5 million during development, $10 million during construction and $1 million during operation of the Project and disposals representing 10% of these values if such disposal is not approved in business plan; (ix) legal settlements in excess of $0.5 million during development of the Project or $8.5 million thereafter; (x) lending money in excess of $50,000 by Guinea Alumina or any of its subsidiaries; (xi) approval of the business plan, any suspension or expansion to the Project or any change of related policies; (xii) sale or transfer of any intellectual property relating to the Project; (xiii) appointment of key employees by the Shareholders as entitled under the Shareholders' Agreement; and (xiv) entering into a hedging arrangement.

Unanimous consent of the directors of Guinea Alumina is required for certain matters including: (i) any change in the constating documents or in share capital of Guinea Alumina or any of its subsidiaries; (ii) expansion of business beyond the Project; (iii) subscription of Guinea Alumina or any of its subsidiaries for equity interests in another entity or joint venture; (iv) delegation of powers of the board other than to the chief executive officer or to a committee of directors of Guinea Alumina; (v) amendment or termination of any JV Transaction Agreement or off-take agreement with respect to the Project; (vi) merger of Guinea Alumina or any of its subsidiaries into another entity; (vii) winding-up or liquidation of Guinea Alumina or any of its subsidiaries; (viii) approval of a final development plan with respect to the Project; and (ix) disposal of all or substantially all of the assets of Guinea Alumina or any of its subsidiaries.

*Development Plan*

Upon Completion of the JV Transactions in May 2007, the Shareholders agreed to undertake a bankable Feasibility Study of the Project according to BHP Billiton's standards, and to continue the enabling works construction program in progress pending conclusion of the Feasibility Study and preparation by the Project management team of the Development Plan for the Project. The Feasibility Study was delivered to the board of directors of Guinea Alumina on March 13, 2008. It confirms the economic viability of the Project and recommends approval by the Shareholders to proceed to the execution phase. The Feasibility Study will form the basis for the Development Plan which will also include a detailed timetable for implementation as well as a financing plan and associated equity drawdown schedule from June 2008 forward. The Development Plan is expected to be finalized and tabled for approval by Guinea Alumina's board of directors in June 2008. The board of directors of Guinea Alumina will consider the Development Plan and may approve it by either (i) unanimous resolution of the directors or (ii) the affirmative vote of all the directors appointed by any three Shareholders.

A Shareholder which does not approve the Development Plan (a "Non-Approving Shareholder) and its appointed directors may not vote on any resolution at any general meeting or board meeting of Guinea Alumina (other than with respect to matters requiring a unanimous resolution). Persons appointed by the Non-Approving Shareholder to the management of the Project Company will be immediately removed

from office. The Non-Approving Shareholder may not dispose of its interests in the Project, except to another Shareholder or to a third party that has approved the Development Plan in which case the other Shareholders may exercise their pre-emptive right but must do so within 21 days.

The Non-Approving Shareholder will not be required to provide capital (whether debt or equity) to the Project as may otherwise be required, but will not be entitled to exercise any rights of pre-emption under the Shareholders' Agreement.

A Non-Approving Shareholder will have the option, exercisable by notice given to each of the other Shareholders, to return to Project participation upon a re-entry payment proportionate to the additional funds contributed by the other Shareholders since the date that the Non-Approving Shareholder failed to approve the Development Plan plus an additional amount depending on when the re-entry is effected. This option may be exercised by the Non-Approving Shareholder at any time up to and including the date that falls five business days prior to the date of final debt funding of the Project.

If the Non-Approving Shareholder does not exercise the re-entry option, the Non-Approving Shareholder will be deemed to have offered to sell all of its interest in the Project to the remaining Shareholders, at a price determined by reference to the contributions to the share capital of Guinea Alumina by the Non-Approving Shareholder.

*Key Employees*

BHP Billiton is entitled to nominate the chief executive officer and the chief financial officer of Guinea Alumina. The chief executive officer has carriage of day-to-day management and must meet with the directors of Guinea Alumina at least once a month during development of the Project and once per quarter thereafter. The chief executive officer is subject to a manual of authorities including expenditure limits that will be approved by the board of Guinea Alumina.

Each of GAI and DUBAL is entitled to nominate two management representatives, and Mubadala is entitled to nominate one management representative.

*Financing*

Guinea Alumina is in the process of raising approximately $1.8 billion to $2.55 billion of long-term, senior secured Project debt financing from a consortium of export credit agencies, official development agencies and commercial bank lenders. Certain affiliates of the Subscribers may also participate in the Project lending syndicate. The increase in proposed borrowing has been facilitated by higher forecasted aluminium prices.

The substantial amount of debt capital required for the Project necessitates a complex financing plan with emphasis on official development, export credit and insured commercial sources. Project debt commitments are expected to be finalized by the second quarter of 2008 with financial closing anticipated to follow in the third quarter of 2008. Prospective lenders are seeking direct agreements with key contractors for the Project as well as with the Government of Guinea. Negotiations for a direct agreement between Project lenders and the Government of Guinea are expected to be completed by the fourth quarter of 2008 and a definitive agreement executed concurrently with the close of debt financing arrangements for the Project. Such a direct agreement with the Government of Guinea would be a condition to financing. Prospective Project lenders are also expected to seek guarantees from each of the Shareholders and Global Alumina with respect to completion of the Project. Such guarantees would be of a several nature and Global Alumina would be expected to guarantee cost overruns in proportion to its

one-third interest in the Project. Global Alumina may be required to provide cash collateral as partial security for any such guarantee at financial closing.

The absence of a developed legal regime in Guinea, especially with respect to real and personal property security, will make more complicated and less certain the ability of lenders to take a security interest in the Project's assets. This may limit the universe of lenders willing to lend or may increase the borrowing costs or otherwise result in more onerous financing terms. Management of the Corporation believes that BHP Billiton's direct participation as a major equity investor and technical services provider will enhance the Project and facilitate the project financing process. However, there is no assurance that Guinea Alumina will secure sufficient financing on terms and conditions acceptable to it or at all.

The approximately $2.25 billion to $3.00 billion of capital required to complete the Project over and above the amount expected to be raised in the Project debt financing is expected to be funded through additional equity contributions by the Shareholders. To fund its one-third share of this cost Global Alumina will be required to raise substantial additional financing in the form of debt or equity. Any such equity financing may result in substantial dilution to the holdings of existing shareholders of Global Alumina. There is a risk that debt or equity financing in the amounts required by Global Alumina will not be available on favourable terms, or at all. If the Corporation is unable to raise additional financing, its interest in the Project will be diluted.

*Off-Take Agreements*

On May, 17, 2007, the Project Company entered into an off-take agreement on similar terms and at the same price with each shareholder of Guinea Alumina for each shareholder's proportionate share of all available alumina production from the Project. Prior existing alumina commitments of the Project Company under the 2006 off-take agreement with Glencore for 420,000 metric tons per year and the 2005 agreement with DUBAL for the 15% of production in excess of its existing 25% shareholder entitlement have been allocated from GAI's shareholder entitlement, and consideration paid by GAI to the Project Company will be adjusted as necessary to equalize consideration paid under all shareholder off-take agreements. For details of the prior existing alumina off-take agreements in place prior to Completion, see "-Contractual Commitments – Off-take Agreements".

*Material Breach*

A Shareholder that fails to comply with any material obligation under the Shareholders' Agreement, fails to make payment pursuant to an off-take agreement with the Project Company or becomes insolvent, will be in breach of the Shareholders' Agreement. In such circumstances, a defaulting Shareholder and its appointed directors may not vote on any matter and the defaulting Shareholder may not dispose of its shares in Guinea Alumina or exercise the pre-emptive rights provided by the Shareholders' Agreement.

In the case of a material breach other than failure to provide capital to the Project, if the breach is not cured prior to the expiry of the applicable cure period, the defaulting Shareholder will be taken to have served an offer on each other Shareholder to sell all of its interests in the Project. The price for such Shareholder's interest will be the lower of: (i) the aggregate of: (a) in the case of the Subscribers, the consideration paid by such Shareholder or, in the case of GAI, $80,000,000; and (b) the aggregate of all amounts advanced by the defaulting Shareholder to Guinea Alumina up to that date; and (ii) 90 per cent of the fair market value of the relevant interests in the Project, and the such defaulting Shareholder's off-take rights (taken as a whole), where the fair market value is as determined by an independent expert.

If a Shareholder fails to provide capital to the Project pursuant to the Shareholders Agreement, the remaining Shareholders have an option to provide the required capital and thereby increase their equity

holdings in Guinea Alumina. In addition, the defaulting Shareholder must transfer at no cost to the Shareholder or Shareholders electing to provide the defaulting Shareholder's portion of capital, equity in Guinea Alumina equal in value to 20% of the missed capital contribution. If no other Shareholder elects to supply the defaulting Shareholder's required capital, the defaulting Shareholder must transfer at no cost rateably to all of the non-defaulting Shareholders, a portion of its equity of Guinea Alumina equal in value to 20% of the missed capital contribution. Regardless of whether another Shareholder or Shareholders provides the required capital to Guinea Alumina, the defaulting Shareholder and its appointed directors may not vote on any matter, dispose of its shares in Guinea Alumina (other than as set out above) or exercise the pre-emptive rights provided by the Shareholders' Agreement until the missed capital contribution is made.

*Change of Control*

If a controlling interest is acquired in any Shareholder, other than a publicly listed corporation, the other Shareholders have the right, exercisable within 45 days, to make an offer to purchase all (but not some) of the interests of such party in Guinea Alumina.

The Corporation will be deemed to cease to be a publicly listed corporation for the purposes of the Shareholders' Agreement in the event that it or any of its affiliates (other than Guinea Alumina or its subsidiaries) engages in any business that is not located and operating solely in the Republic of Guinea and that is not confined to the natural resources, infrastructure or related service industries, other than any business conducted as at the date of the Shareholders' Agreement.

*Restrictions and Requirements Regarding Transfer of Interests*

Unless otherwise agreed in writing by the Shareholders, a Shareholder of Guinea Alumina may not dispose of all or any of its interests in Guinea Alumina except by a transfer of the entire legal and beneficial interest in such interests to a transferee permitted by the Shareholders' Agreement. A Shareholder may transfer its interest in Guinea Alumina to an affiliate and, in the case of DUBAL and Mubadala only, to an affiliate of either of them. In the case of a transfer to an affiliate, the Shareholder will be jointly and severally liable with such affiliate for all obligations under the Shareholders' Agreement.

A Shareholder is also permitted to transfer its interest in Guinea Alumina to a third party where a *bona fide* written offer for the interest has been made. Before the selling Shareholder transfers its interests in the Guinea Alumina it must give a notice in writing to all Shareholders that it has received a *bona fide* offer from another Shareholder or a third party. Any such offer must be in writing, for *bona fide* cash consideration or consideration readily convertible to cash and expressly subject to the condition precedent that all necessary authorisations are obtained. The other Shareholders will then have the right to purchase the interests of the selling Shareholder on the same terms within 30 days.

If at any time the shareholding percentage of any Shareholder falls below five per cent, that Shareholder will be deemed to offer to sell all (but not some) of its interests in Guinea Alumina to the other Shareholders.

***Ancillary Agreements***

The Corporation is required to escrow 85% of the subscription funds in an escrow account maintained with the escrow bank, Citibank N.A., together with, all investments acquired with escrow account funds and any interest from the escrow account balance. The Corporation and GAI paid into the escrow account

85% of the initial subscription price received pursuant to the Subscription Agreement and will place 85% of the deferred subscription payments into the escrow account.

Any investments of escrow account funds must be held in the escrow account, have the proceeds credited to the escrow account, be charged in favour of the escrow agent and be a deposit or debt security of a specific type or approved by the escrow agent. The Corporation is only permitted to withdraw funds from the escrow account for the payment of Shareholder funding on GAI's behalf in respect of GAI's obligations under the Shareholders' Agreement, or for the payment of any amounts owed by GAI or the Corporation in respect of an indemnity or warranty claim by the Subscribers under the Subscription Agreement.

Citibank N.A., as security agent on behalf of the Subscribers under the agreement, has a security interest over all contents of the escrow account and the Corporation must ensure that no other security interests exist with respect to the account.

The Project Company and an affiliate of BHP Billiton entered into a ten-year agreement (the "Technical Services Agreement") under which such affiliate has agreed to provide technical services and support to the Project Company, including: (i) bauxite and alumina technology services, including support services to enable optimization of the mining and refining processes of the Project and to enable the Project to remain technically competitive; (ii) mining services, maintenance services and processing services, in the form of access to and support from affiliates of BHP Billiton; (iii) procurement, logistics and supply services, including support on procurement, logistics and supply matters; (iv) group accounting, audit and risk management services; (v) Project development services, including support services in connection with the preparation and completion of the Feasibility Study and the Development Plan; and (vi) personnel training services.

BHP Billiton is entitled to recover its costs and expenses incurred in providing services under the Technical Services Agreement plus the following fees: (i) an aggregate fixed fee of $30 million for the period up to mechanical completion of the Project payable in 16 equal quarterly instalments of $1,875,000 beginning on the last day of June 2007; (ii) $3.00 per metric ton of alumina produced by the Project (as adjusted) up to the fifth anniversary of the Project being operational; and (iii) $2.50 per metric ton of alumina produced by the Project (as adjusted) thereafter.

The Project Company and Aluminpro entered into a services agreement (the "Services Agreement") in connection with the Project. Pursuant to the Services Agreement, Aluminpro will provide additional services to the Project Company as requested, including services of a technological support nature in connection with the design, construction and operation of the Project.

The Project Company and Global Alumina, GAI and Aluminpro entered into an intellectual property rights deed of transfer which provides for the assignment by Global Alumina, GAI and Aluminpro of all their intellectual property rights, business information and goodwill related to the Project to the Project Company. The Project Company and Guinea Alumina, Global Alumina and GAI have similarly entered into an asset transfer agreement where the Corporation and GAI assigned certain tangible assets related to the Project to the Project Company.

**Contractual Commitments**

As of May 17, 2007, all Project-related contracts were novated with Guinea Alumina or the Project Company with the result that the Corporation was released from its direct obligations under such contracts. All Project construction and development activities are carried out by the Joint Venture.

*DUBAL Subscription Agreement*

On August 10, 2005, the Corporation entered into the DUBAL Subscription Agreement pursuant to which it issued to DUBAL 10,000,000 Shares at $2.00 per share on September 30, 2005. Pursuant to the DUBAL Subscription Agreement, DUBAL was also granted the Additional Subscription right. The final aggregate subscription price for the Additional Subscription will depend on the cumulative amount of equity necessary to satisfy the requirements of the Project lenders for equity capital. At the date of the DUBAL Subscription Agreement, it was estimated that the Project lenders would require a cumulative amount of $700 million of equity to be raised, resulting in an estimated Additional Subscription price of $180 million. The amount of equity required by Project lenders is currently expected to exceed $700 million and consequently the Additional Subscription price will be increased by 25% of such difference.

In consideration for its initial subscription and Additional Subscription, DUBAL will also be entitled to receive a number of Shares such that its shareholding in the Corporation would equal 25% of the Shares issued by the Corporation. DUBAL's entitlement to receive Shares upon conversion of convertible debt held by third parties, if any, arises upon the completion of the Additional Subscription but the delivery of such Shares to DUBAL will be made, at no additional cost to DUBAL, at dates in the future if and when the convertible debt is issued and converted and the number of such Shares is known. In addition, after the closing of the Additional Subscription and for so long as DUBAL owns not less than 10% of the outstanding Shares, DUBAL will be entitled to subscribe for up to 25% of any future issuances of Shares (or securities that may be converted into or exchanged for Shares) by the Corporation at the same price at which the securities are offered to others.

The DUBAL Subscription Agreement restricts the Corporation's ability to raise equity financing by placing the following restrictions on issuances of equity securities by the Corporation: (i) the Corporation may not, prior to the final closing date, issue equity securities to any person if the effect of such issuance would be that such person would own more than 25% of the total number of Shares immediately following the final closing date; (ii) the Corporation may not, prior to the final closing date, issue equity securities at a price of $2.00 or less, unless the issuance is pursuant to a public offering of Shares; and (iii) the Corporation may not, at any time following the final closing date (provided that DUBAL owns at least 10% of the issued and outstanding Shares of the Corporation), issue any securities unless it offers DUBAL the opportunity to subscribe for that number of such securities representing 25% of the securities proposed to be issued.

Under the DUBAL Subscription Agreement, DUBAL has the right to nominate one representative for election to the Corporation's board of directors prior to the completion of the Additional Subscription. Ahmed Fikree, the DUBAL representative, was appointed to the board of directors in November 2005. After the completion of the Additional Subscription, for so long as DUBAL holds not less than 19.9% of the issued and outstanding Shares, DUBAL will have the right to nominate 25% of the board of directors of Global Alumina, and for so long as DUBAL holds not less than 10% but less than 19.9% of the issued and outstanding Shares, DUBAL will have the right to nominate 16.67% of the board of directors of Global Alumina.

On April 27, 2007, the Corporation and DUBAL entered into an agreement providing that the DUBAL Subscription Agreement will terminate on the date that sufficient funding is secured to complete the Project and that in the interim DUBAL will not exercise its Additional Subscription right. If Project financing has not been completed by September 30, 2008, DUBAL's Additional Subscription right will be restored and exercisable provided that DUBAL first transfers to GAI all of its interest in Guinea Alumina. The Corporation does not expect that Project financing will be completed by September 30, 2008, however, management of the Corporation does not expect that the Additional Subscription right will be exercised.

*Financial Advisors*

Effective March 1, 2004, GAPCO engaged Citigroup Global Markets Inc. ("Citigroup") in connection with raising debt financing for development and construction of the Project. The Corporation agreed to pay to Citigroup a monthly retainer of $50,000 and success fees based on an agreed upon formula. Citigroup suspended work and payment of the retainer as of October 1, 2006. On November 29, 2007 Citigroup was appointed the financial advisor to Guinea Alumina in connection with the debt financing of the Project on substantially the same terms.

*Willis Risk Solutions*

On February 25, 2005, Global Alumina entered into an insurance service agreement with Willis Risk Solutions ("Willis") pursuant to which Willis would conduct an evaluation of the Project's risks, procure insurance coverage, in its capacity as an insurance broker, and provide account management services in connection with the Project. The total fee payable to Willis under the agreement is $785,000, excluding premiums applicable to insurance policies purchased though Willis as insurance broker. To date, Global Alumina paid $196,250 to Willis under the terms of the contract. As of Completion, the agreement with Willis and all remaining obligations thereunder was assumed by Guinea Alumina.

*Letters of Credit*

From time to time, Global Alumina enters into letter of credit arrangements in the ordinary course of business. There are no letter of credit arrangements outstanding as at the date hereof.

*Off-take Agreements*

Prior to Completion of the JV Transactions, in the ordinary course of business, Guinea Alumina entered into agreements with DUBAL and Glencore for the purchase and sale of alumina production from the proposed refinery. An option for 20% of the annual alumina production previously granted to Marubeni was terminated by mutual consent on March 2, 2006 and Marubeni was granted an option to purchase up to 20% of any expansion to the Project. After Completion, the Project Company entered into an off-take agreement on similar terms and at the same price with each Shareholder for its proportionate share of alumina production from the Project. Obligations of Guinea Alumina existing prior to Completion have been allocated from GAI's Shareholder entitlements to off-take from the Project.

Details regarding the foregoing arrangements are as follows:

*DUBAL Off-take Agreement*

On September 30, 2005, Guinea Alumina entered into the DUBAL Off-take Agreement for the purchase over a 20 year term on a take or pay basis of 40% of the annual production from the proposed refinery (based on the then-anticipated annual production of 2.8 million metric tons) at a price expressed as a percentage of the three-month forward price of aluminium as set on the London Metal Exchange. The percentage is fixed for the first ten years of the contract. If the London Metal Exchange ceases to issue, or if either party has reasonable evidence that the London Metal Exchange no longer represents the then-current market price of aluminium, upon notice from one party, the parties will commence negotiations within ten days with a view to agreeing on a new pricing basis for the alumina.

If Guinea Alumina fails to deliver the required amount of alumina in any given year, Guinea Alumina must deliver an amount of alumina equal to the short-fall within the first two months of the following year. The short-fall amount will be priced as if it had been delivered in the preceding year. If Guinea Alumina delivers an excess of alumina in any given year, the excess will be deducted from the amount

required to be delivered by Guinea Alumina in the following year and must be priced as if it had been delivered in the first scheduled delivery of that following year.

Alumina delivered to DUBAL must satisfy certain chemical and physical specifications set out in the DUBAL Off-take Agreement. Should any shipment of alumina not conform to the required specifications, Guinea Alumina and DUBAL will enter into discussions to determine the appropriate actions to be taken. Generally, if DUBAL determines, in its sole discretion and acting reasonably, that the non-conforming alumina can be safely used for production of aluminium, it will accept delivery of the alumina and purchase the alumina at a discount to be agreed upon by the parties.

The DUBAL Off-take Agreement was amended and restated on May 17, 2007 to reduce the entitlement thereunder to alumina off-take to 15% of refinery production, reflecting DUBAL's new Shareholder entitlement to obtain 25% of off-take directly from the Project Company. DUBAL's entitlement to an additional 15% of alumina under the DUBAL Off-take Agreement will be satisfied from GAI's Shareholder entitlement to Project off-take. See " – Off-take Agreements with the Project Company" below.

*Glencore Off-take Agreement*

On January 24, 2006, Guinea Alumina entered into the Glencore Off-take Agreement for the purchase over a 20 year term on a take or pay basis of 420,000 metric tons of alumina (representing approximately 12% of the currently estimated 3.6 million metric ton annual nominal production capacity) at a price expressed as a percentage of the three-month forward price of aluminium as set on the London Metal Exchange subject to a minimum price. The percentage is fixed for the life of the contract. If the London Metal Exchange ceases to issue, or if either party has reasonable evidence that the London Metal Exchange no longer represents the then-current, market price of aluminium, upon notice from one party, the parties will commence negotiations within ten days with a view to agreeing on a new pricing basis for the alumina. See "Narrative Description of the Business – Business Overview" below. Glencore's off-take entitlements pursuant to the Glencore Off-take Agreement will be satisfied from GAI's Shareholder entitlement to Project production. See "– Off-take Agreements with the Project Company" below.

Alumina delivered to Glencore must satisfy certain chemical and physical specifications set out in the Glencore Off-take Agreement. Should any shipment of alumina not conform to the required specifications, Guinea Alumina and Glencore will enter into discussions to determine the appropriate actions to be taken. Generally, if Glencore determines, in its sole discretion and acting reasonably, that the non-conforming alumina can be safely used for production of aluminium, it will accept delivery of the alumina and purchase the alumina at a discount to be agreed upon by the parties.

*Marubeni Option*

Under an agreement dated March 2, 2006 (the "Marubeni Option Agreement"), Marubeni agreed to terminate its pre-existing off-take option to purchase up to 20% of the annual production from the proposed refinery under agreements with GAPCO in consideration for a lump sum payment of $50,000 from Global Alumina. Under the Marubeni Option Agreement, the Corporation granted Marubeni an option to enter into good faith negotiation for the purchase up to an aggregate of 20% of the annual alumina output resulting from any addition of a third production line to the proposed refinery.

*Mitsubishi Option*

Pursuant to the Mitsubishi Agreement, GAPCO granted to Mitsubishi an option to enter into good faith negotiations for the purchase of up to 25% of the proposed refinery's expected annual production. The

obligations under the Mitsubishi Agreement were assumed by the Corporation after the Arrangement. In February 2007, Mitsubishi exercised its option and the Corporation entered into negotiations with Mitsubishi regarding the potential terms of a supply agreement. The parties did not reach an agreement and discussions were discontinued.

*Off-take Agreements with the Project Company*

The Project Company has entered into an off-take agreement on similar terms and at the same price with each Shareholder for its proportionate share of alumina production from the Project. Alumina commitments under the pre-existing off-take agreements with Glencore for 420,000 metric tons per year and DUBAL for the 15% of Project production in excess of its existing 25% Shareholder entitlement will be allocated from GAI's Shareholder entitlement, and consideration paid by GAI to the Project Company will be adjusted as necessary to equalize consideration paid under all Shareholder off-take agreements.

**Global Alumina Services Company**

On June 7, 2005, Global Alumina incorporated Global Alumina Services Company, a Delaware company, to provide management services to the Corporation, including day-to-day management activities and direction of operations, regulatory compliance and investor relations. The foregoing services are being provided by Global Alumina Services Company upon terms and conditions which will be formalized pursuant to a services agreement between Global Alumina and Global Alumina Services Company. To date, the services agreement has not been completed or executed by either party.

## NARRATIVE DESCRIPTION OF THE BUSINESS

**Business Overview**

The Corporation's principal asset is its one-third equity interest in Guinea Alumina, held through GAI. Guinea Alumina's business is the development, construction and operation of an alumina refinery in the Prefecture of Boké, Guinea, together with a bauxite mine, power plant, port, railway, road and other ancillary infrastructure, through the Project Company. The Project consists of the development of:

- a 3.6 million metric tons per year nominal capacity alumina refinery, comprised of two processing lines;
- a coal-fired cogeneration power plant capable of producing approximately 150 megawatts of electricity and supplying all of the steam required by the refinery;
- an approximately 30-metre high earthfill dam to provide storage for the eight million cubic metre water supply reservoir required for the refinery and power plant;
- red mud disposal areas capable of storing the approximate 4.3 million metric tons of red mud, a non-hazardous by-product of the alumina refining process, that the Project is expected to produce each year;
- port facilities at the port of Kamsar, located approximately 125 kilometres from the refinery site, to import the approximately 2.2 million metric tons per year of coal, limestone, heavy fuel oil, diesel oil, sulphuric acid, caustic soda and other supplies necessary to operate the refinery, and to export the alumina produced by the refinery (to be built by the Project Company but owned by the Government of Guinea);
- town and related infrastructure facilities to support approximately 1,000 of the expected 1,500 full-time employees and their families when the refinery is operational; and
- a bauxite mine within a 690 square kilometre mining concession area near Sangarédi, a major bauxite mining region of Guinea, to supply the bauxite needs of the Project.

Guinea Alumina began early stage enabling works in December 2004. These early-stage, enabling works included construction, operation and subsequent expansion of a pioneer construction camp, construction of resettlement housing and related social facilities, dredging the port areas in Kamsar, land-filling and maintenance of the port terminal site, road construction to the proposed refinery, quarry and township sites (and ongoing maintenance), construction of a new, heavy-duty bridge at Boké, quarry development and construction, rail spur earthworks, cutting, filling and piling work at the refinery site, bauxite sampling and mine development work. Upon Completion of the JV Transactions in May 2007, Guinea Alumina's Shareholders, including Global Alumina through GAI, agreed to undertake a bankable Feasibility Study of the Project according to BHP Billiton's standards, and to continue the enabling works construction program pending conclusion of the Feasibility Study and preparation by the Project management team of a Development Plan.

The Feasibility Study was delivered to the board of directors of Guinea Alumina on March 13, 2008. It confirms the economic viability of the Project and recommends approval by the Shareholders to proceed to the execution phase. The Feasibility Study will form the basis for the Project Development Plan which will also include a detailed timetable for implementation as well as a financing plan and associated equity drawdown schedule from June 2008 forward. The Development Plan is expected to be finalized and tabled for approval by Guinea Alumina's board of directors in June 2008. The Corporation currently expects that the board of directors of Guinea Alumina will issue a full notice to proceed for the Project

under an engineering, procurement and construction management ("EPCM") contract in the third quarter of 2008. The EPCM contract is expected to be a comprehensive development agreement for the Project with a primary contractor, including detailed engineering and design of facilities, procurement of equipment and services and management of subcontractors, according to the Development Plan. The current draft Development Plan schedule contemplates:

- notice to proceed under the EPCM contract in the third quarter of 2008 with preliminary work, together with orders for long lead items, continuing and ramping up substantially in June 2008 in order to preserve the Project's construction schedule;
- first concrete to be poured at the refinery site by February 2009;
- completion of the Kamsar container quay in March 2009;
- power substation operational in August 2011;
- the startup process transitioning from the construction phase into the operating phase commencing in late 2011 with bauxite first fed into the first refinery line around yearend 2011, first alumina shipments there from and bauxite first fed into the second refinery line following three months thereafter and shipments from the second refinery line beginning three months after that; and
- full operation of the refinery by the end of April 2012.

Though the refinery, configured initially with two processing lines, is expected to be initially capable of producing 3.3 million metric tons annually, its annual production capacity is expected to reach the refinery's nominal capacity of 3.6 million metric tons within five years as a steady state and gradually increase to a capacity of 3.95 million metric tons through its life as the operating staff gain experience. The refinery layout is configured to accommodate a third processing line which if built would increase the refinery's total nominal capacity to over 5.4 million metric tons per year. The current Development Plan and capital cost estimates do not include the construction of the third processing line.

In March 2008, the board of directors of Guinea Alumina approved an interim work plan and budget of $110.8 million for the period from January 2008 through May 2008. The interim budget through May 2008 includes $40.6 million towards continued site works and development including work on the container quay at the port in Kamsar, $27 million in engineering, procurement and construction management services provided by Bechtel Australia Pty Ltd. and its subcontractors, $22.9 million in corporate and staffing costs through the period and $14.5 million contingency. Project activities through the period have concentrated and will concentrate on:

- finalization of the Feasibility Study and the issuance of an independent engineers' report on the Project;
- finalization of the Tax Exhibit, Infrastructure Agreement, Port Agreement and Operating Agreement exhibits to the Basic Agreement;
- finalization of geotechnical test work at the refinery site, commencement of production piling, continuation of terracing and bulk earthworks and initial geotechnical investigations of the Kamsar port area;
- completion of rail spur earthworks and the commencement of construction of the railway bridge;

- completion of the pioneer camp expansion and design of a 400 bed camp at the refinery site;
- design and construction of the container quay at Kamsar;
- negotiations with contractors and preparation of procurement packages for vendors in anticipation of mobilization on the Shareholders making a decision to proceed with the Project;
- initiation of Project communications infrastructure and systems; and
- inauguration and hand-over ceremony of the Boké bridge to the Government of Guinea.

On March 18, 2008, the Shareholders contributed capital of $42 million towards the approved interim budget with Global Alumina contributing its $14 million one-third share. Additional capital calls to the joint venture partners of $18 million in April and $21 million in May (of which Global Alumina will be responsible for $6 million and $7 million, respectively) have been approved by the board of directors of Guinea Alumina to fund these expenditures.

Based on projections provided by the Project management team, the Corporation currently expects the total construction costs of the Project at completion to be approximately $5.21 billion including $431 million of costs expected to have been incurred from inception through May 2008. The increase in estimated costs vis-à-vis prior estimates is attributable to (i) a significant decline in the value of the U.S. dollar; (ii) a significant rise in the cost of diesel and fuel oil affecting both transportation and construction costs; (iii) continued increases in the price of key bulk construction materials such as structural steel, cement, piping and electrical cable; (iv) higher than expected increases in labour costs due to a restricted world wide labour market; and (v) rising prices for industrial equipment and construction services. The actual cost of the development of the Project will depend on the negotiation of construction contracts, debt financing arrangements and other factors. The Corporation's share of the final Project costs will be based on its proportionate interest in Guinea Alumina.

The Project is a large, complex undertaking that requires substantial engineering, construction and operating expertise. Potential cost overruns and completion delays are significant risks in projects of this size, particularly in less developed countries. Price escalation is a concern especially in current market conditions where unstable markets for building materials and consumables have risen steadily over the past five years.

**Overview of the Aluminium and Alumina Industry**

Aluminium is one of the most plentiful metals in the earth's crust. It occurs naturally in the form of bauxite, an ore containing aluminium oxide ($Al_2O_3$), commonly called alumina. Alumina is extracted from bauxite ore through a refining process. Refined alumina is the primary raw material used for aluminium smelting.

Aluminium products compete with other materials, such as steel and plastics for automotive and building applications; magnesium, titanium composites and plastics for aerospace and defence applications; steel, plastics and glass for packaging applications; and wood and vinyl for building and construction applications. Aluminium's diverse characteristics, particularly its light weight, resistance to corrosion, high strength, and recyclability have made it an essential material for modern economies.

The global aluminium market has been growing for many years at rates slightly higher than the world gross domestic product, driven largely by growth in the transportation sector and by advances in refining

and smelting technologies that have kept the price of aluminium competitive compared to competing materials. Market growth for alumina is typically tracked by reference to levels of primary aluminium production. Approximately 1.95 metric tons of alumina is required to produce one metric ton of primary aluminium. Annual smelter grade alumina consumption of 68 million metric tons in 2006 reflected growth over a ten-year period of 28 million metric tons relative to the 40 million metric tons of consumption in 1996 (as reported at the Athens Metal Bulletin Conference, March 2007). Historically, world alumina supply and demand had been balanced, with annual production capacity of aluminium and alumina now totalling approximately 35 million metric tons and 70 million metric tons, respectively. Due to the vertically integrated nature of the major aluminium companies, this supply and demand balance has been achieved more by companies adjusting alumina production to meet demand than by external supply and demand forces. However, due to significantly increased production of aluminium in China, which initially resulted in a significant shortfall in alumina refining capacity, growth in the demand for alumina outpaced its historic levels.

Industry professionals forecast an increase in annual alumina demand of approximately 50 million metric tons, for a cumulative annual demand of 124 million metric tons by 2017 (Brook Hunt Metal Bulletin Research, as reported at the Dubai Metal Bulletin Conference, September 2007). Production capability has to be above this by approximately 5%, as current utilization rates are too high for sustainability. Most of the forecasters are predicting year on year growth in excess of 5% (representing over five million metric tons per year of new demand). Currently, there are preliminary plans in place for capacity expansions of existing refineries ("brown-field expansions") which, when combined with the Project's proposed refinery, would result in increased world-wide alumina production of approximately 15 million metric tons per year within the next five years. However, the potential to continue such brown-field expansions (which generally is the lower cost means of adding capacity to a refinery) at many of the existing refineries is limited by various constraining factors, including depletion of local bauxite supply, environmental factors, political concerns, limitations of existing infrastructure, availability of water and high operating costs. It is therefore expected that the current shortfall in the market will begin to ease in 2008 and that the industry will regain its balance, but that significant additional new capacity will be needed within the next five to ten years to keep pace with the rapid growth in demand in the newly industrializing markets led by China and India. The Corporation believes that a lack of suitable, low cost bauxite reserves will result in substantial investment in refineries on the major deposits in Guinea which possesses over one-third of the world's bauxite resources.

Between 2004 and 2006, there was an increase in the percentage of the London Metal Exchange price used for the sale of alumina due to greater demand for alumina and increased operating costs for smelters. The contract price for alumina is normally set as a percentage of the three-month forward price of aluminium on the London Metal Exchange which has ranged between $2,500 and $3,000 per metric ton during the last six months. Long term contracts are now being based on approximately 13.5% or more of the three-month forward price, whereas three or four years ago the percentage was closer to 12.5%. Shorter term contracts have been based on percentages exceeding 14%. Early in 2006, increased demand pushed alumina spot prices above $600 per metric ton for a short time, representing over 20% of the then-current London Metal Exchange aluminium price. By late 2006 this price had fallen back to $250 per metric ton and in 2007 the alumina spot price climbed back to $400 per metric ton (14.5% of the London Metal Exchange metal price). The Corporation anticipates that long-term alumina contracts will continue to fall to within a range of 13-14% of the London Metal Exchange three-month aluminium price for the foreseeable future.

The major developments in the aluminium industry over the last couple of years have been (i) the consolidation of industry participants through acquisitions and mergers and (ii) the rise of alumina production in China. The aluminium industry has been consolidating in recent years and is now highly concentrated due to the high costs of entry. In October, 2006, Russian Aluminium Company, SUAL

Group and Glencore announced an agreement to merge their aluminium and alumina businesses into United Company Rusal ("UCR"). The parties announced successful completion of the merger on March 27, 2007. According to published figures, Alcoa Inc. ("Alcoa"), Aluminium Corp. of China ("Chalco"), Alcan Inc. ("Alcan"), UCR and BHP Billiton accounted for or controlled close to 60% of the almost 70 million metric tons of alumina that was produced world-wide in 2006.

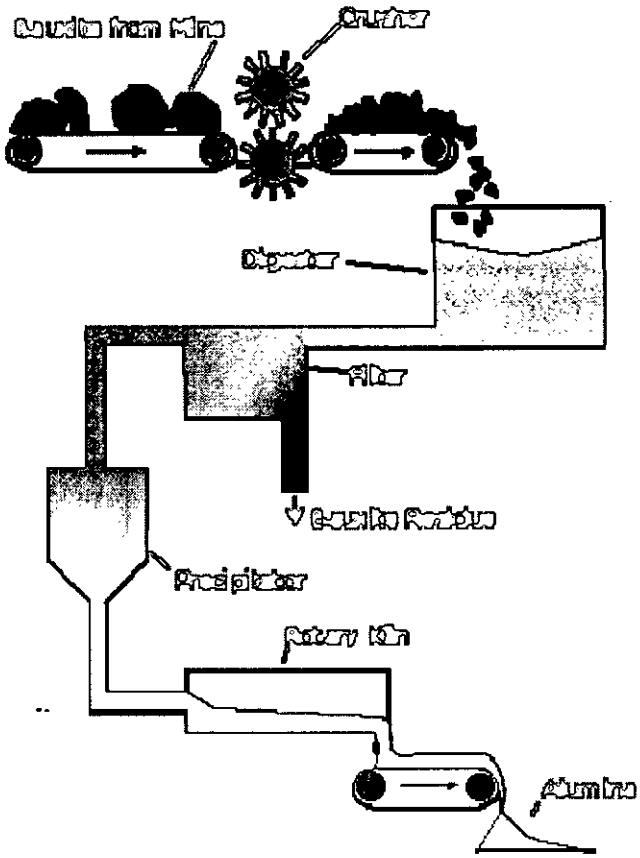
The market for smelter grade alumina is primarily controlled by integrated aluminium companies. In 2007, worldwide alumina refining capacity totalled approximately 85 million metric tons per year including non-metallurgical aluminiums. It is estimated that approximately 80-85% of alumina production from alumina refineries is transferred to, and consumed by, smelters owned by the same entities that own the applicable alumina refineries. The "third party" market for alumina amounts to approximately 18-20 million metric tons per year. Historically, it was estimated that Alcoa supplied approximately 45% of the third party market for alumina. While Alcoa's market share was substantially reduced following the sale of certain of its alumina interests, it is anticipated that its market share will begin to rise again. Chalco, BHP Billiton and Alcan are also major third party market sellers. Glencore was a major third party seller and is expected to continue trading alumina but its production assets have now been transferred into UCR, which has become a small net supplier as a result. The primary buyers of alumina are independent smelters and integrated aluminium companies that have smelting capacity that requires alumina in excess of alumina produced by their own alumina refineries. There has been a recent increase in the number and size of independent smelters in China and the Middle East.

The growth of alumina production in China has been led by Chalco but also involves a number of other Chinese companies unrelated to Chalco. China is nearly self-sufficient in terms of alumina production, but it is expected that demand will outpace supply in future years and that China will become a net importer of approximately five million metric tons per year of alumina. China is not expected to be a significant exporter at any time due primarily to the high cost of production. In addition, Chinese production is typically dependent upon imported bauxite which could be either in short supply or expensive.

**Overview of the Alumina Refinery Process**

To produce aluminium, bauxite ore must first be refined into alumina, a white granular powder somewhat finer than table salt. The Bayer refining process is used by alumina refineries worldwide to separate alumina from bauxite ore. The Bayer refining process involves four steps – digestion, clarification, precipitation and calcination. The process is based on the fact that the solubility of aluminium hydroxides and aluminium oxyhydroxides in caustic soda solution increases with increasing temperature and with increasing caustic concentration of the solutions. Mined bauxite is crushed, ground and dissolved in caustic soda solution (sodium hydroxide) at increased pressure and rising temperatures. The resulting liquor contains a solution of sodium aluminate and undissolved bauxite residues containing iron-oxides, silica-oxides and titanium-oxides. These residues, commonly referred to as "red mud", sink gradually to the bottom tank and are removed.

The clear sodium aluminate solution is pumped into a large tank called a precipitator. Fine particles of alumina are added to seed the precipitation of pure alumina particles as the liquor cools. The particles sink to the bottom of the tank, are removed, and then passed through a rotary of fluidized calciner to drive off the chemically combined water. The result is pure alumina. The caustic soda is returned to the start of the process and is used again. The diagram below illustrates the Bayer refining process.




*Source: International Aluminium Institute (www.world-aluminium.org)*

Analysis of the components of the production cost of alumina shows that bauxite is the most important - typically accounting for as much as 30% of the total production cost of alumina. Also, bauxite has a cost effect beyond its simple cost as a raw material. The nature and quantity of the silica minerals in the bauxite fix the amount and, therefore, the consumption and cost of caustic soda needed to produce alumina. Bauxite and caustic together typically constitute 50% of the total production cost of alumina. However, there is a large variation in the cost of these components in different alumina plants based mostly on the quality of its bauxite feedstock, and the proximity of the refinery to the mine from which its bauxite is sourced. The lowest bauxite cost is in the order of $15 to $20 per metric ton of alumina in Western Australia, representing approximately 20% of the cash cost of production of the alumina. The highest bauxite cost is in the order of $90 to $100 per metric ton of alumina (where the bauxite has to be shipped long distances), representing over 60% of the cash cost of the production of alumina. Though final capital and operating costs for the proposed alumina refinery have not been developed, based on the assumed low cost, good quality and proximity of bauxite to be made available to the refinery and other factors, the Corporation expects that it will be among the lowest cash operating cost and most efficient alumina producers in the world.

## Guinea

### *Introduction*

Guinea is located in Western Africa and has 320 kilometres of coastline on the Atlantic Ocean, between Guinea-Bissau to the north and Sierra Leone to the south. Its eastern neighbours are Senegal, Mali, Côte d'Ivoire and Liberia. It covers an area of approximately 246,000 square kilometres, making it slightly smaller than the State of Oregon. Guinea has a population of approximately 9.9 million people, of whom approximately 85% are Muslim. In addition to the official language French, there are eight national languages: Malinke, Susu, Fulani, Kissi, Basari, Loma, Koniagi, and Kpelle.

Education is free and compulsory for all children between seven and twelve years of age. In practice only 30% of eligible children actually go to school. The adult literacy rate is approximately 30%. Higher education is provided by universities at Conakry and Kankan and by several other institutions.

There is a critical shortage of skilled managers and administrators with private sector experience. Labour is ample but generally lacking in training, contributing to low productivity.

Bauxite is Guinea's most significant export and is Guinea's most important foreign exchange earner. Guinea also has large resources of iron ore and exports diamonds and gold. Other industries in Guinea include processing plants for beer, juices, soft drinks and tobacco. Agriculture employs approximately 80% of the nation's labour force. The Government of Guinea encourages a free market economy and promotes foreign investment.

### *Infrastructure*

Guinea remains one of the poorest countries in the world, even though it possesses significant mineral and hydro-power resources and considerable potential for agricultural development. Initial progress has been achieved in the privatization of power and oil distribution sectors.

Long-term improvements in literacy, financial institutions and the legal framework are needed if the country is to ease the spiral of poverty, ignorance and disease. Except in the bauxite industry, foreign company investment remains minimal.

Guinea's infrastructure is considered poor. Principal sectors are accessible by paved primary roadways; however, communication links between Conakry and the interior remain inferior and unreliable. Electricity and water shortages are frequent and sustained, and many businesses are forced to use expensive power generators and fuel. Demand for electricity and water grossly exceeds the production and supply capacity.

Local commercial transport is plentiful but of poor quality. Development assistance from a wide variety of international sources is aimed at facilitating economic adjustment and capitalising on the nation's potential for growth. Improvement efforts have concentrated on communications and transportation facilities, mineral exploration, agricultural development, and technical training. The distribution infrastructure of petroleum products consists of road, rail and retail networks all in need of rehabilitation. The Guinean government agency, Administration du Secteur Pétrolier, handles all retail and consumer petroleum market products with the exception of aviation fuels.

Personal hygiene is considered poor. Yellow fever, cholera, malaria, typhoid and polio are still considered serious potential health risks throughout the country, especially in urban areas. Rabies and

biharziasis (schistosomiasis) are endemic with most cases occurring in rural areas. All water is regarded as contaminated. Meningitis, hepatitis, filariasis and onchocerciasis have been reported in recent years.

Current environmental issues include deforestation, inadequate supplies of potable water, soil contamination, soil erosion and over-fishing.

***Political History***

Beginning in the nineteenth century, Guinea (then known as French Guinea) was governed by France. After World War II, several labour political parties were established, including the Parti Démocratique de Guinée led by Ahmed Sekou Touré. In 1958, this party organized support to vote against Charles de Gaulle's proposed French community and then declared independence, resulting in Guinea becoming ineligible for France's financial aid and other assistance programs. Sekou Touré continued to rule Guinea until his death in 1984, after which the Guinean military took control of the government and established the Second Guinean Republic under Lansana Conté. Through the end of the 1980's, Guinea undertook steps to achieve substantial political liberalization, now enshrined in the Guinean constitution. The constitution was approved by referendum in December 1990, paving the way for multi-party elections. Presidential and parliamentary elections took place in late 1993 and Lansana Conté was declared president of Guinea. He again won the presidential election in 1998 and, while serving what would normally have been his final term in office, a constitutional amendment that removed presidential term limits was approved in 2001 through a referendum. President Conté was again re-elected president of Guinea in December 2003. Guinea has experienced some political unrest in the past. General strikes in 2007 ended when President Conté appointed Lansana Kouyaté as prime minister of Guinea on March 1, 2007. There has been no significant unrest in Guinea since that time.

***Guinean Bauxite Industry***

Guinea possesses some of the world's highest quality bauxite and almost one-third of the world's known recoverable bauxite. Guinea is also the world's largest exporter of bauxite. In particular, Guinean bauxite supplies nearly 50% of the U.S. and Canadian import markets. On a global scale, it is estimated that over 10% of all primary aluminium is produced from Guinean bauxite. At the present time, Guinea has three active bauxite mining operations, located at Boké, Fria and Kindia, each of which has been in operation for over 26 years. The Boké mine exports more bauxite to offsite refineries than any other bauxite mine in the world, supplying some 13 million metric tons per year of high grade bauxite to alumina refineries in North America and Europe. The mine at Fria supplies bauxite to a refinery in Friguia, Guinea, Africa's only existing alumina refinery. This refinery is currently owned and operated by the Alumina Company of Guinea, which is owned by UCR (85%) and the Government of Guinea (15%). The refinery produces up to 700,000 metric tons per year of alumina and exports alumina primarily to UCR's smelters in Russia and the Ukraine. The mine at Kindia is owned by Societe des Bauxites de Kindia ("SBK"). SBK's mine is leased and operated by Compagnie des Bauxite de Kindia, a subsidiary of UCR; it exports approximately two million metric tons of bauxite per year primarily to UCR's alumina refineries in Russia and the Ukraine.

The bauxite produced at the existing mine in the Prefecture of Boké is particularly rich in alumina content and economically recoverable bauxite is spread over many square kilometres and is tens of metres deep under minimal overburden. This mine is operated by CBG under a 75-year concession agreement awarded by the Government of Guinea in the late 1960s. CBG is owned 51% by Halco, a consortium of integrated aluminium companies comprised of Alcoa (45%), Alcan (45%) and Dadco Ltd. (10%), and 49% by the Government of Guinea. Alcoa serves as the contract mine operator on behalf of CBG. See "General Development of the Business – Bauxite Mining Concession Rights" above.

*Summary of the Guinean Investment Code*

Guinea updated its investment code (the "Investment Code") in June of 1995 to define the terms and conditions governing investments in Guinea. The Investment Code also established the National Commission on Investments to administer the Investment Code and facilitate its privatization mission.

The Investment Code establishes a number of fundamental investment guarantees in order to provide the foundation for an open, fair and competitive investment environment in Guinea. Specifically, it guarantees that any person is free to establish any lawful business in Guinea (except that power production and distribution and running water distribution, other than with respect to the investor's own needs, mail, telecommunications and arms are reserved for the public sector, and that foreign investors are limited to 40% ownership of mass media companies), and has the right to import, export and manage its business, including establishing its own sourcing, production, marketing, personnel employment and termination and pricing policies. Furthermore, foreign investors are free to convert and transfer currency representing any sort of income and any liquidation proceeds from investments. To promote a competitive climate, public sector businesses are subject to the same rights and obligations as the private sector. Further, the Government of Guinea guarantees that expropriation measures will be taken only where the public welfare is involved and that compensation consistent with international standards will be paid. Finally, foreign investors are entitled to the same fundamental rights and responsibilities and access to the judicial system as Guinean nationals.

The Investment Code establishes a system of tax incentives for new investments that:

- employ Guinean nationals;
- constitute at least 33% (25% for small businesses) equity capital; and
- address one or more of Guinea's priority objectives.

These priority objectives include:

- the promotion of small and medium sized businesses;
- the development of non-traditional exports;
- the processing in Guinea of local natural resources and raw materials; and
- the establishment of activities in less economically developed regions.

Investments addressing any of these priorities enjoy, among other things, the following incentives:

- relief of import duty and taxes during the initial investment period;
- abatement of raw material duty taxes; and
- exemption of income taxes, apprenticeship taxes and the flat-rate payment on salaries (and then abatement for a certain number of years depending upon the region in Guinea within which the business is located).

Beyond these specific fiscal incentives available to all foreign investors, each priority sector has been accorded certain special advantages as set out in the Investment Code. Activities involving the mining of minerals and hydrocarbons are eligible for preferential treatment as defined under the Mining Code.

*Summary of the Mining Code*

In 1995, Guinea established a comprehensive mining code to help promote the development of mining activities and in-country processing of its mineral resources through private sector investment. The Mining Code sets out investment guarantees and fiscal incentives that the Government of Guinea offers to all prospective investors in Guinea. Concession agreements or conventions between the Government of Guinea and any particular investor further define and enhance as a general rule the basic principles laid in the Mining Code as they apply to a specific investment.

As is common in many countries, the Government of Guinea owns all surface and subsurface minerals and the Mining Code provides for the conditions of awarding specific mining rights. Mining title is awarded for a specified (but potentially expandable) mineral, location and term by the Ministry of Mines based upon an application demonstrating technical and financial competence, an operating plan and an indicated level of commitment. Holders of such titles own, under the terms of a concession agreement, the exclusive right to develop, extract and freely dispose of the minerals covered by such concession agreement.

Mining titles are issued in conjunction with concession agreements. Concession agreements define the rights and obligations of the parties and set out the legal, tax and social conditions which govern the operation of the concession for the duration of the agreement. In cases where the Government of Guinea participates, the level and nature of its participation is expressly defined in the concession agreement and may be changed only by mutual agreement of the parties. Mining rights are revocable in accordance with a procedure – which includes a right to appeal – in the event the title-holder breaches the provisions of the Mining Code that are applicable to it, fails to pay taxes or fails to meet defined development expenditure targets agreed to by the Government of Guinea and the title-holder. The Mining Code also lays out the framework for relations with surface occupants and their property and the rules applicable to prevent competing mines. Title-holders are permitted under the Mining Code to transport and transform the mined product and to construct any infrastructure necessary for its operations. Title holders must comply with regulations addressing hygiene, safety, supervision and inspection, and must restore abandoned mine sites to pre-project conditions (for instance, forest or agricultural use).

Concession agreements, as a matter of general practice, further define and detail the basic principles laid in the Mining Code for the benefit of the investor and include exceptions to the general provisions of the Mining Code. Concession agreements become effective and binding upon the parties as soon as they are executed by them and ratified by the National Assembly of Guinea. Once a concession agreement is in effect, it has force of law. Its terms have precedence over any contradictory legal provisions including the provisions of the Mining Code.

The royalty regime in the Mining Code includes a mining royalty of five to ten percent of the "free on board" value of the mined minerals, depending upon mineral type, which mining royalty decreases as value is added in Guinea to the minerals through refining and other processing. Income taxes are paid at the statutory 35% rate with a 50% tax on the portion of unreinvested profits which have not been taxed at the statutory rate and which exceed "profitability international standards". However, new mining investment in certain economically depressed zones is entitled to exemption from tax for specified periods. Additionally, dividends are taxed at 15% and employers are subject to a tax on salaries at 6% plus a 1.5% training contribution if training expenses fall below a certain threshold, and social security contributions are statutory. Mining equipment, materials, supplies and personal effects are granted certain exemptions from, or reduced, duties and taxes depending upon the stage of development.

**Inception of the Project**

The initial process design and the basic engineering for the refinery were started in March 2004 and completed by the end of March 2005. The basic engineering design of the power, steam supply, compressed air and water systems started in October 2004 and finished in March 2005. The basic engineering design of the port facilities, including the jetty and quay, bulk storage facilities and material handling facilities was started in January 2004 and completed in September 2004. Construction work entailing the clearing and reclamation of land for the future bulk storage facilities began in December 2004 and was completed in April 2006. Since that time, various works have continued in association with securing the refinery site and preparing for the primary construction contract. The Project Company commenced construction at the refinery site in March 2005 with the installation of a new access road, which was completed in July 2006. On-site works also proceeded with the preparation of a quarry, and the erection and commissioning of a crushing plant and a concrete batching plant. In addition, in May 2006, the Project Company initiated the earthworks and the construction of a bridge which should be completed in 2008, for the 15 kilometre rail spur that will connect the national railroad to the refinery. The Project Company also completed the construction of a 100-metre bridge at Boké that will allow for the road transport of heavy equipment to the refinery site. As of May 17, 2007 all Project development continued under the management of the Joint Venture's Project management team.

***Refinery***

The site of the mine, alumina refinery and associated facilities is approximately 100 kilometres east of Kamsar. The selected site for the refinery in the north east sector of the Mining Concession area is comprised of approximately 200 hectares for the refinery and 300 hectares for mud disposal, or tailings area. The refinery and associated facilities will be accessed from the main rail line by a rail spur approximately 15 kilometres in length. Additionally, there will be dedicated haul road access to the main road from Kamsar to Sangarédi and connecting the various associated facilities. A road system will connect the mining operations to the refinery.

The Project Company had initially retained the Hatch Group ("Hatch"), the largest designer of alumina refineries in the world, to design the alumina refinery. The Project Company commissioned Hatch to develop an implementation plan in 2001 to assist in the selection of the recommended process technology for the alumina refinery and the preferred location of the alumina refinery and to enable progression to the detailed planning phase of the Project. Hatch completed the basic design work for the refinery and, in March 2005, transferred all Project engineering summaries including all process flow diagrams; process and instrumentation diagrams; electrical single line diagrams; water balance; equipment requirements; and proposals for the supply of major equipment items, complemented by historical information on bulk quantities, to Technip. Technip assumed the design responsibilities and carried out the front-end engineering design for the refinery under the supervision of Aluminpro and the Project Company's operating team. Following the formation of the Joint Venture, the work was transferred to another international engineering, construction and project management firm. A value engineering study was carried out after Completion to incorporate technology available from BHP Billiton that would benefit the Project. Thereafter, the Joint Venture undertook a detailed bankable Feasibility Study of the Project which was presented to the board of directors of Guinea Alumina on March 13, 2008. The refinery design has been confirmed utilizing technology and information provided by BHP Billiton.

The refinery is designed for low temperature digestion to produce an initial rated capacity of 3.3 million metric tons per year of smelter grade alumina and will consist of two processing lines. Over the years experience has shown that refineries can improve their performance over time and alumina production from the refinery is expected to reach its nominal capacity of 3.6 million metric tons per year in its steady state within five years of operation and gradually increase to a capacity of 3.95 million metric tons over

10 to 15 years as the operating staff gain experience. The refinery layout is configured to accommodate the addition at a later date of a third processing line with an expected nominal capacity of 1.8 million metric tons per year which would increase the refinery's total nominal capacity to 5.4 million metric tons per year. The Corporation expects the refinery to be designed to operate 24 hours per day, 365 days per year and to achieve the nominal capacity of 3.6 million metric tons per year. The refinery will be provided with storage capacity sufficient for all consumables and for alumina. Additional bulk storage facilities will be provided at the port, based on maximum anticipated ship's cargo capacities and the consumption rate of the refinery. The design standards for the refinery are expected to be equivalent to or exceed the relevant standards of the American Society of Mechanical Engineers, International Organization for Standardization, British Standards and European Standards.

Construction of the access road to the refinery has been completed. The site of the refinery has been cleared and the boundary fence erected. Bulk earthworks are well under way and piling has commenced in the most time critical areas. The Project Company is expected to commence earth-moving works shortly and first concrete is scheduled to be poured on site in February 2009.

***Power Plant***

The energy requirements of the refinery are expected to be met by a steam and electricity cogeneration plant designed on circulating fluidized bed boiler technology to be built concurrent with the construction of the refinery. The Corporation believes that the refinery and associated town will require approximately 90 megawatts of electricity and 750 metric tons per hour of process steam. The Project management team has evaluated various technology and fuel alternatives (oil, coal, petroleum coke, biomass, etc.) and selected the circulating fluidized bed boiler technology, which is suited for burning coal and/or petroleum coke. Coal for the power plant is likely to be sourced from South Africa. The cogeneration plant will consist of three fluidized bed boilers and three steam turbines, totalling approximately 150 megawatts. The design provides for a greater than 50% electric and steam capacity reserve to be available in hot standby. The Corporation anticipates that the final contract approved by the Project management team will be a lump-sum turn-key engineering, procurement and construction contract. The power plant is currently expected to be fully operational in August 2011.

***Water Supply***

The refinery's water supply is expected to be served by a new reservoir and related delivery system to be built concurrently with the refinery. The scope of the work to be completed includes a 30-metre high dam with associated spillway and outlet works, to be built using laterite material available near the site. The reservoir created by the dam will store 8.0 million cubic metres of water, enough to supply the annual water requirements of the refinery and the contemplated future expansions. The location of the dam has been changed to ensure there is sufficient water to supply an expanded steady state production of up to 5.4 million metric tons of alumina per year. The new site is further downstream than that which had been earmarked but upstream of the original site and requires little additional investment. The environmental work for this new location has been completed. The water works will include a pumping station, dual underground water pipes connecting the reservoir to the refinery's water treatment plant and a 33 kilo-volt transmission line connecting the pumping station to the power plant. Wells will also be used at the refinery during construction and will be maintained as a further reserve to ensure that the refinery has a source of water during unforeseen prolonged periods of drought.

***Red Mud Disposal***

Red mud is a residue of the bauxite refining process, consisting primarily of undissolved iron-oxides, silica-oxides and titanium-oxides. At its nominal capacity of 3.6 million metric tons per year, the refinery

is expected to produce 4.3 million metric tons of red mud on a dry basis annually. The Project Company intends to manage disposal of the red mud to be produced by the alumina refinery in accordance with international standards by processing, transporting and storing it as a thickened tailings product in a lined storage facility. The Project Company has retained SNC-Lavalin Inc. to develop the specific elements of its red mud storage program to ensure that the storage facility adequately isolates the red mud from groundwater, captures and recycles all runoff from the red mud stack back to the refinery, routes clean stormwater around the red mud storage area, and protects surface water from potential contamination.

***Port Facilities***

The port facility is located at the port of Kamsar, which is located approximately 160 kilometres northwest of Conakry, Guinea. The port is connected by road to Boffa and Conakry in the southeast direction, and to Boké and Sangarédi to the northeast. An existing railroad running from the bauxite mines to the port is in good condition and is currently operated by CBG.

The alumina refinery will require an expansion of the existing port of Kamsar, which was built for and currently serves the import and export needs of the existing CBG bauxite mining operations. The expansion is required in connection with the importation of coal, limestone, heavy fuel oil, diesel oil, sulphuric acid, caustic soda and other supplies necessary to operate the refinery and to export the alumina to be produced by the Project.

In 2002, the Project Company retained Berger/ABAM Engineers Inc. to prepare a basis of design report and concept design report for the expansion of the port of Kamsar. The reports were prepared using international best practice standards and address technical, geotechnical, engineering, transport and environmental issues associated with the expansion of the existing facilities at the port of Kamsar to accommodate the exports and imports required for the Project.

The final concept design report, which incorporated the findings of the basis of design report, analyzed the following operational issues in-depth: marine terminal operations; alumina export operations; drybulk import operations; liquid bulk import operations; breakbulk and container operations; rail terminal operations; and material handling systems. The report also addressed infrastructure development items such as dredging, quay, trestle and bridge design, causeway and road design, building requirements, rail requirements, electrical power and distribution, instrumentation and construction schedule.

The Project Company is in the process of conducting a more detailed shipping and ocean transport study to update its cost estimates and optimize its shipping strategy for both imports and exports.

Construction of the port facilities commenced in January 2005. The expansion is being constructed to the south of the existing port. Dredging of the berthing area and reclamation of the main port lands have been completed. The Project Company has entered into an early works agreement with the proposed port contractor to progress the final design and initiate orders for long lead equipment and materials relating to the port construction.

***Container Quay***

A new quay to be constructed at the end of the existing quay at the port of Kamsar will allow for the transportation of bulk goods and equipment for construction of the refinery. This quay will be able to handle vessels up to 10,000 metric tons and will greatly facilitate the import of containers and general cargo to both the refinery and the region. The Project Company has completed the detailed engineering of this extension and is negotiating with the selected contractor for its early construction. Initial site development is about to begin.

*Rail Transportation*

The existing railway extends approximately 130 kilometres from CBG's mining operations in Sangarédi to the port of Kamsar and has capacity sufficient to handle 12 trains per day provided that one of the railway's passing loops is extended. CBG currently operates up to seven trains per day and it is expected that the Project's refinery operations will require an additional two trains per day. The Project Company engaged Canarail Consultants Inc. ("Canarail"), a Canadian rail company majority owned by the French National Railroad, in 2004 to complete an analysis of the rail transportation requirements. The study concluded that the Project's proposed rail transportation needs will require two spurs on, and the extension of the passing loop to, the existing railway. Canarail has extensive international operating experience and currently provides technical assistance and maintenance for the railway under a contract with CBG. Prior to the commencement of the JV Transaction negotiations, the Project Company had been negotiating a rail services contract with a contractor. The Project Company has resumed negotiations and the Corporation expects that under a final agreement with the contractor, the contractor will agree to (i) develop an efficient and reliable railway operation, (ii) procure and own all rolling stock, (iii) maintain and operate all rolling stock, and (iv) employ and train all transportation-related personnel. The contractor's design work and railcar selection for smooth interface with the port of Kamsar and refinery loading and unloading facilities is currently underway.

*Town and Infrastructure Facilities*

The proposed refinery will require the construction of housing, utility, social and recreational facilities to accommodate approximately 1,000 of the expected 1,500 full-time employees and their families. The remaining workers are expected to be drawn from existing communities in the surrounding area. In addition to arranging the housing, the Project Company intends to provide electricity, potable water, health services, public safety services, waste disposal, recreational space and transportation. The Project Company will promote responsible use of these services and facilities by encouraging ownership or leasing of houses and payment for services and utilities to establish the necessity of market participation and eliminate problems that can be associated with user entitlements. In 2006, the Project Company requested and received contractor bids for construction of the town and infrastructure facilities. Due to changes made to the plans for such facilities, the Corporation expects that the Project Company will request another round of bids before September 2008.

*Training of local Guineans*

Throughout the development of the Project, the Project Company has stressed the importance of job creation for the Guinean people. In the early years of development, the Project management team and senior Government of Guinea officials discussed the importance of adding value to Guinean natural resources and transferring skills to the Guinean workforce. To reach this objective, four primary categories of jobs have been identified that will be created by the Project investment: (1) indirect jobs associated with services required during construction and operations; (2) construction jobs; (3) operation jobs; and (4) government jobs.

The Project Company has identified and developed four related training programs in connection with development and operation of the Project to ensure that opportunities are created and that Guineans are equipped with the skills necessary to participate in employment opportunities. Although most of these training programs have not begun, several years have been spent on the development of such programs. The following is a summary of each program.

- *Indirect*: There are two initiatives aimed at creating indirect jobs: (a) the Project Affected People Program (the "PAP Program"); and (b) the Country-Wide Program (the "CW Program"). The

PAP Program is intended to provide training in a variety of areas such as micro-finance and agricultural development. The Project Company will establish this program in partnership with the African Development Foundation ("ADF"). The CW Program, also developed in partnership with the ADF, is designed to enable local enterprises to participate in the Project through the provision of various services, including transport, construction and catering, among others. The Project Company and ADF will provide funding to set up programs designed to enable local enterprises to establish proper management and accounting systems and to enhance their contractual knowledge and execution capacities so that they are more attractive contracting partners for Project-related services.

- *Construction*: Three years ago, the Project Company, in conjunction with the Canadian International Development Agency, United States Agency for International Development and the Guinean Ministry of Technical Education (the "Ministry of Education"), established a construction training program conducted by the Project Company. Local Guineans are trained in a variety of construction-related skills including welding, electrical, pipe fitting and carpentry. The program is aimed at improving the job opportunities available to Guineans.
- *Operations*: The Project's operating team has put together a program which will educate local Guineans about the importance of sound safety, environmental and operational practices. This will help to ensure that operations at the refinery will continue on a sustainable and efficient basis for many years.
- *Government*: Guinea Alumina and the Shareholders have agreed to work with the Government of Guinea in the development of the refinery. A unit has been established within the Ministry of Mines to track the development of the refinery so that the Government can learn more about the process. A unit has also been established within the Ministry of Environment to work with the Project Company team during the development and approval of the environmental impact assessment ("EIA").

***Environmental Impact Assessment***

In addition to complying with Guinean requirements, the Project Company elected to conduct its environmental impact assessments ("EIAs") in accordance with the guidelines, policies and requirements of the Equator Principles and the International Finance Corporation ("IFC"). The IFC is a member of the World Bank Group and a recognized authority and standard for the conduct of environmental impact assessments. The Equator Principles are a set of guidelines, broadly based on the IFC guidelines that have been adopted by many major commercial lending institutions as criteria for evaluating the environmental and social acceptability of projects. By conducting the EIAs to these standards, the Corporation believes the Project Company is both demonstrating its commitment to environmentally responsible sustainable development and maximizing the likelihood of acceptance of the studies by potential multilateral and bilateral official development agencies, commercial lending institutions and equity investors. The Project Company retained SNC-Lavalin Environment, Inc. ("SNC-Lavalin") in 2001, an expert in both the aluminium industry and environmental matters, to prepare the EIAs. SNC-Lavalin, in turn, contracted with numerous local Guinean entities to conduct specialized work associated with preparing the EIAs.

Because of the physical separation of Project features and differences in affected environments, two EIAs were prepared – one for the port facilities in Kamsar and one for the refinery and related facilities in the Sangarédi region. On September 10, 2004, the EIA for the port site was approved by the Ministry of Environment after public consultations by both the Project Company and the Ministry of Environment. On May 23, 2005, the EIA for the refinery site and associated infrastructure was approved by the Ministry of Environment, also after public consultations by both entities. During the course of project design, the Project Company identified a number of opportunities to optimize the Project and some of these resulted

in changes to the project configuration from an environmental impact perspective. The Project Company contracted with SNC-Lavalin to prepare an addendum to the two EIAs in order to provide the Government of Guinea with an analysis of the changes made to the Project since the port and refinery EIAs were approved by the Ministry of Environment. The Ministry of Environment approved the EIA addendum on June 29, 2006 which permitted the Project Company to proceed with the construction of port facilities.

In September 2006, the Project Company submitted an analysis of the environmental impact associated with an extension of the existing general cargo quay at Kamsar to accept bulk imports during construction of the Project. The Ministry of Environment approved the construction of this facility by letter dated November 22, 2006. During the course of the preparation of the Feasibility Study by the Project management team, the EIA's were updated and repackaged and comprehensive risk assessments of various aspects of the Project resulted in the identification of further risk mitigation strategies including for health, safety, environmental and community risks.

***Resettlement Activities***

The EIAs are supported by two resettlement action plans that were developed to address the relocation and compensation mitigation measures required as a result of the Project. These plans were developed in accordance with the requirements of the IFC and describe the assets and livelihood activities affected by the Project and how people will be compensated for lost or damaged assets and livelihood activities.

The resettlement action plans set out the framework for the detailed, person-specific compensation and resettlement packages required in connection with the Project. Any household identified as having assets affected by the Project is eligible for a resettlement and/or compensation package that is proportionate to the level of impact, regardless of the land tenure regime (formal or customary, ownership or tenancy). The compensation and resettlement process provides a range of options from which households can choose. To ensure transparency, a third party mediation committee will oversee any grievances.

Households, both those eligible for resettlement and those that are not, are entitled to compensation for their annual and perennial crops, buildings and other improvements to the land. All compensation is calculated based on fair market or replacement value, as applicable.

The resettlement and compensation packages for affected persons located in the port area have been developed and implemented. Approximately 104 families were either relocated or compensated at an approximate cost to the Project Company of $300,000 as of the end of December 2007 .

Compensation for all physical assets that have been affected by the Project in the refinery area has been provided to those affected by the Project Company. These payments totalled approximately $1.4 million as of the end of 2007. In addition, the populations of the two villages, Touldé and Petoun Djiga, have been resettled to accommodate the refinery facilities. These villages were invited to identify potential resettlement sites and following extensive consultations and technical analyses, the villages decided to be resettled together in the northern part of the Lopé valley. The Project Company has constructed the resettlement villages based on the site plan agreed to with the villagers and the housing types selected by the villagers; the beneficiaries moved in their new houses February, 2008.

The official inauguration of the new villages and the first community buildings (school, health post and accommodations) took place on February 14, 2008 with the presence of the local authorities.

In developing the resettlement packages for the villagers, the Project Company prepared a contract for each family which sets out the total compensation package for the family. The compensation contract

was read to the concerned parties and to trusted persons (e.g., the Imam) in the village before being signed by the parties. Included in the resettlement packages are:

- provision of replacement homes;
- provision of a school and health facility for the villages;
- plots for agricultural use;
- cash compensation for the replacement of lost structures (other than homes);
- cash compensation for the value of lost annual and perennial crops (in most cases to be paid over time in a bank account at six-month intervals to better replicate lost income);
- cash compensation for the palm oil transformation of lost palms to the women;
- cash compensation of three months' rent for tenants;
- a disturbance allowance; and
- compensation for the cost of the actual move to the new village.

No villages are located within the area presently designated by the Project Company for mining within the first 15 years of operations. The total cost for the resettlement of the 94 households within these two villages is approximately $1.3 million.

## BAUXITE MINING

### Mining Concession

The Mining Concession granted by the Government of Guinea covers 690 square kilometres within the Prefecture of Boké in the northwestern sector of Guinea. The Mining Concession Area for the Project also includes the Port Area and the Industrial Zone (as those terms are defined under the Basic Agreement) at Kamsar.

Pursuant to the Basic Agreement, on January 23, 2006, the Government of Guinea issued a formal decree granting the Mining Concession to Global Alumina. The Mining Concession has an initial term of 25 years, renewable in accordance with Section 34.2.2 of the Basic Agreement. At the request of the Corporation, the Minister of Mines issued an order dated November 16, 2006 to transfer the Mining Concession to the Project Company. See "General Development of the Business – The Basic Agreement – Mining Concession Term" above.

The Mining Concession constitutes a single contiguous area and there are no other prospecting or mining titles within the boundaries of this area. However, under the terms of the decree issued by the Government of Guinea, the Mining Concession excludes an area of 50 metres on either side of the railway line which runs through the Mining Concession area.

The Mining Concession contains 19 bauxite-bearing plateaux distributed throughout the property. No mining activities have exploited the bauxite within the Mining Concession.

Starting with the first fiscal year following the start-up of commercial alumina production by the Project, the Project Company will be subject to a mining royalty on the bauxite transformed into alumina upon its exit from inventory equal to 5% of the "free on board" value of CBG shipped bauxite on the date of the

Basic Agreement. Royalties will be levied from the first fiscal year following the date of the commercial production start up. On execution of the Infrastructure Agreement, Port Agreement, Operating Agreement and Tax Exhibit, which is expected in 2008, the Project Company will make an advance payment of $1.5 million to the Guinean Government with respect to mining royalties. The Project Company will also make an additional $5.0 million of advance royalty payments by the end of 2009 in connection with the bauxite that will be mined from the Mining Concession and converted to alumina by the Project. The advance royalties will be offset from royalties owing in the first three years of operations.

The property is not known to be subject to any environmental liabilities.

For the mining aspects of the Project, the process for obtaining most of the necessary permits, clearances, and authorizations is addressed in the Mining Code, published by the Government of Guinea. Most of these processes have been streamlined and centralized under the Ministry of Mines or the Centre for Mining Development and Promotion within the Ministry of Mines. In other specific cases, such as the import and use of explosives, the procedure for obtaining the necessary permits is established in a joint ministerial order.

The following permits are normally required before mining and refining operations may start, and for construction of the town, water supply dam and power plant:

- Permit for Alumina Refinery*;
- Permits for Construction;
- Permit for the Use of Explosives;
- Permits for Tree Cutting and Excavation Activities*;
- Permit for the Development of Transportation Facilities*;
- Permit for the Construction of a Power Station*;
- Permits for the Building of Dams and Water Supply; and
- Permit for Compensation (Expropriation, if necessary).

The foregoing permits designated by "*" are addressed under the Mining Code; for these permits the Minister of Mines will issue the necessary permit in cooperation with other concerned ministries. As of the date hereof, the permit for the use of explosives, permits for tree cutting and a permit for quarry activities have been obtained for the refinery construction. The Corporation expects the Project Company to obtain the remaining permits in the normal course of development and construction activities. All necessary permits have been obtained for the port construction.

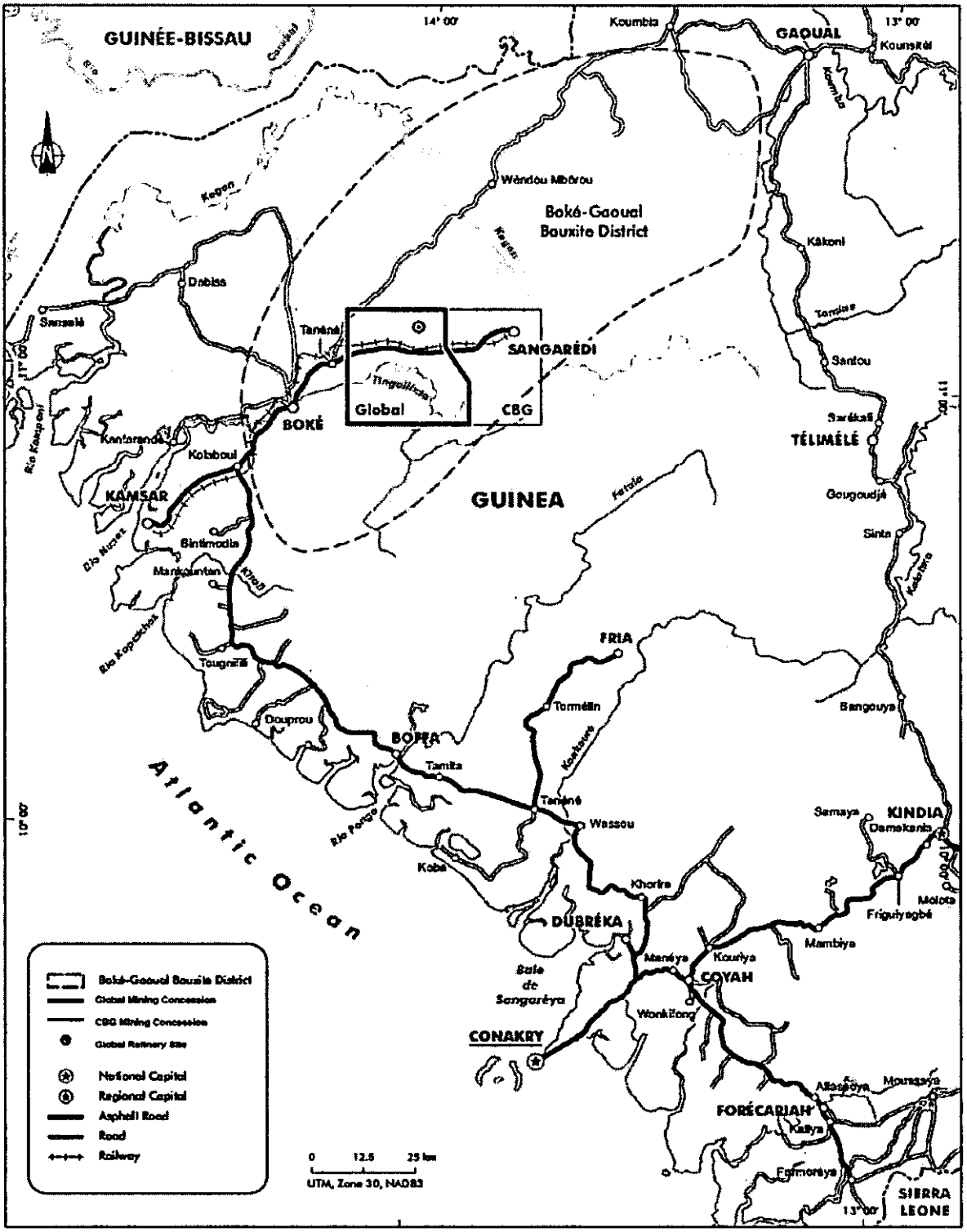



**Fig. 1 Project Location**

*Climate*

Guinea has a defined rainy season that occurs from the months of May to November. During this seven-month period, the monthly rainfall increases from about 150 millimetres to a maximum monthly average of 500 millimetres in July, August and September, before declining.

The hottest month is March when the daily mean maximum temperature is 37 degrees Celsius and the minimum is 21 degrees Celsius. The coolest month is August when the daily mean maximum temperature is 29 degrees Celsius and the minimum is 22 degrees Celsius.

Mining operations in Guinea are little affected by the climatic conditions with only exceptional rainstorms or periods of mist temporarily slowing down operations.

**History**

With increasing demand for aluminium after the Second World War, Bauxites du Midi, a French subsidiary of Alcan, prospected the Boké region between 1948 and 1961. In 1963, Halco (51% interest), the principal shareholders of which were at that time Alcan, a subsidiary of Alcoa and Pechiney S.A., formed CBG with the Government of Guinea (49% interest), in order to mine and export the bauxite of the Sangarédi and surrounding deposits from the original CBG concession.

The Mining Concession is the western area of the original concession covering 1,292 square kilometres that was issued to the CBG consortium in 1963. After a long period of construction which included the construction of cities of Kamsar and Sangarédi, the mining facilities at Sangarédi, a 135 kilometre railroad to Kamsar, a bauxite crushing and drying facility and deep sea ship loading port at Kamsar, CBG started shipping bauxite in 1973.

Between March 1998 and December 2000, CBG carried out an extensive exploration program to assess the full potential of the original CBG concession both for exportable bauxite and also for bauxite that could be of lower grade and suitable to feed a local alumina plant. The program explored, to various detail, 36 plateaux that are located within the original CBG Concession. In 2001, reserve and resource estimates on the Concession Area were prepared by Geoconsult Ltd. (now Geoprospects Ltd.) on behalf of CBG. It was discovered that most of the bauxite deposits meeting the export criterion were located in the eastern half of the original CBG concession, adjacent to the mining zone. The 690 square kilometres covered by the Mining Concession have been released from the western half of the original CBG concession to provide bauxite resources for the Corporation's proposed refinery.

**Geology**

The Mining Concession is within the Boké bauxite belt, a typical geological and physiographic region for bauxite mineralization. The bauxite is derived from a flat-lying sequence of Palaeozoic sedimentary strata and dolerite sills that have been subjected to tropical weathering over millions of years since the Middle Meocene period, 15 million years ago. The combined effects of tropical weathering and good drainage, provided by the topographic relief, have led to the concentration of alumina and iron oxides within the upper layer by leaching of the silicate rocks

**Exploration**

The Project Company conducted extensive drilling, trenching, pitting, sampling and field studies on the bauxites of the Mining Concession from April 2004 to Completion. Since Completion, the Project

Company has continued its drilling, trenching, pitting, sampling and field studies work supporting the preparation of a detailed mine plan for the Project in conjunction with the preparation of the Feasibility Study of the Project.

The Corporation has been informed that in 2007, under the direction of the Joint Venture, additional drilling work was carried out on the plateaux planned prior to Completion for the initial mine development to further characterise the bauxite and to improve the borehole date for mine planning purposes. These results have been generally in line with the earlier work. A drilling programme has been planned by the Joint Venture starting in late 2008 to extend the range of the mine plan over the next nearest of the 19 plateaux.

**Mine Plan and Feasibility Study**

A draft mine plan has been developed as part of the Feasibility Study and demonstrates that a reliable source of bauxite of consistent quality can be achieved over initial mine life. A draft production schedule has been prepared by the Project management team, based on a nominal annual production capacity for the refinery of 3.6 million metric tons of alumina, covering a 16-year period to confirm the grades of the expected feedstock quality and to illustrate the mining sequence of the overall mine plan as the five plateaux are developed. This could be extended to 20 years depending on the final mining plan. The Corporation expects that over the life of the Project, the Project Company will conduct continual resource development and mine planning work to maintain adequate resources for the Project.

Bauxite production is anticipated to commence in 2010. The refinery is expected to transition from the construction phase into the operating phase commencing in late 2011 with bauxite being first fed into the first refinery line around yearend 2011. First alumina shipments from the first production line and bauxite first fed into the second refinery line will follow three months thereafter and shipments from the second refinery line will begin three months subsequent to that.

The estimated capital cost of the mine development and equipment is minor compared to the overall cost to complete development and construction of the refinery (currently estimated to be approximately $5.21 billion). Thus the impact of a small change in bauxite supply costs is minimal in terms of overall Project viability.

The recently completed Feasibility Study for the Project demonstrates and confirms the economic viability of the Project and recommends the Shareholders proceed to the execution phase of the Project. The recommendations of the Feasibility Study are based on the following conclusions by the Project management team:

- Guinea provides a very attractive strategic opportunity for the Shareholders;
- The Project is located within the world's largest known bauxite region;
- The Project ranks as the largest and one of the most significant greenfield alumina projects yet to be developed;
- Based on current information, the cost to produce alumina from the Project will be in the bottom quartile of the operating cost curve of world wide alumina producers;
- The Bayer process, on which the process design is based, is a well known and proven technology and the bauxite in the Mining Concession is relatively easy to process at low temperature;
- Production creep opportunities are expected to be realized;

- Future potential capacity increases through extension of the refinery to a third production train enhances the financial attractiveness of the Project;
- The presence of large corporations within Guinea has the potential to provide mutual benefits for investors and the Guinean population, through economic growth and increased employment; and
- BHP Billiton is contracted to support the Project under the Technical Services Agreement which makes provision for BHP Billiton standards, systems, procedures and key resources to be utilised on the Project and facilitates provision of BHP Billiton management expertise and technical support to the Project.

The Feasibility Study is not the property of the Corporation and the Corporation is strictly prohibited by contract from publicly filing the report or allowing it to be used to support resource and reserve data. Moreover, the Corporation no longer has direct control over the exploration and development plan for the Project. Accordingly, the Corporation has decided to cease reporting mineral reserves. Given that the Project Company is moving to the execution phase of refinery development, this change appropriately reflects the transition of the Corporation's business from that of a holder of a mining concession to that of a holder of an interest in a refinery development. The Feasibility Study is not a "technical report" within the meaning of National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* and the report may not and should not be relied up on by any person, other than the addressee thereof.

## RISK FACTORS

The Corporation's principal asset is a one-third interest in Guinea Alumina, a development-stage company undertaking a large and complex capital-intensive project in a developing country that is subject to numerous risks and challenges. In addition to the risk factors described below, further risks and uncertainties, including risks not currently known to the Corporation or that the Corporation currently considers immaterial, may also adversely affect the Project or the Corporation. Any of these risks could materially and adversely affect the Corporation's business, financial condition, results of operations and growth strategy.

***The Corporation has reported operating losses since inception***

Global Alumina has reported operating losses since inception. Global Alumina expects to continue to sustain operating losses in the future as it is expected to incur substantial costs related to capital calls during the development and construction phase of the Project and earn no revenue prior to 2012 at the earliest. There is no guarantee that Global Alumina will ever be profitable.

***The Project is conducted as a joint venture***

The Corporation's interest in the Project is held through a 33.33% interest in Guinea Alumina. Global Alumina does not control the operations and assets of the Joint Venture, nor is it able to make decisions with respect to the Project unless the other Shareholders agree. Accordingly, although the Corporation has the ability to veto certain decisions with respect to the Project, it has no ability to make unilateral decisions. This structure may constrain the ability of the Joint Venture to take action in some circumstances. In addition, any failure by the other Shareholders to meet their obligations to the Corporation or to third parties could have a material adverse effect on the Joint Venture as a whole and the Corporation as a result. It is also possible that the interests of the Corporation and those of its Joint Venture partners may not be aligned, resulting in delays, additional costs or disagreements, which could adversely affect the Corporation's business. There is a risk that the Corporation may be unable to meet a capital call to fund the Project. If the Corporation is unable to meet a capital call its interest in the Project

will be diluted. The other Shareholders have significantly greater resources than does the Corporation and accordingly do not face the same constraints on their ability to finance the Project with additional equity.

***The Project has substantial capital requirements and the Joint Venture may not be able to secure sufficient financing***

Based on projections provided by the Project management team, the Corporation's current estimate of the total cost to complete development and construction of the Project from an assumed notice to proceed date of June 1, 2008 is approximately $4.78 billion. The Joint Venture will not be able to complete the Project unless it is successful in its financing efforts. The Corporation expects that the Joint Venture will be able to borrow approximately $1.8 to $2.55 billion of the capital required to complete the Project. The substantial amount of debt capital required for the Project necessitates a complex financing plan with emphasis on official development, export credit and insured commercial sources. In addition, Guinea's status as a developing country, the amount of financing required, the size of the Project, the required 14 to 16 year term of the loan, political risk considerations and the fact that the Project Company's existing off-take agreements do not provide certainty on price may make it more difficult for the Joint Venture to obtain the required financing for the Project. Prospective lenders are seeking a direct agreement with the Government of Guinea. No assurance can be given regarding the timing or outcome of such negotiations. Project lenders are also expected to seek completion guarantees from each of the Subscribers and Global Alumina. Global Alumina may be required to provide cash collateral as partial security for any such guarantee. In such a case, the Corporation may be required to raise additional capital. The absence of a developed legal regime in Guinea, especially with respect to real and personal property security, will make more complicated and less certain the ability of lenders to take a security interest in the Project's assets. This may limit the universe of lenders willing to lend to the Joint Venture or increase the Joint Venture's borrowing costs or otherwise subject the joint venture to more onerous financing terms. There is no assurance that the Joint Venture will secure sufficient capital on terms and conditions acceptable to it or at all. Failure to raise additional funding would have a material adverse effect on the Corporation and its ability to participate in the continued development and construction of the Project.

***The Corporation will need to seek additional financing to meet its obligations with respect to future capital requirements of the Project***

The cost estimates for completion of the first two production lines of the Project from an assumed notice to proceed date of June 1, 2008 have increased by 60% to $4.78 billion from the Corporation's initial estimates before establishing the Joint Venture. Escrowed funds will be sufficient to fund the Corporation's one-third share of Project equity requirements at least through to finalization of debt financing of the Project expected in the fourth quarter of 2008. Thereafter, in order to fund its share of these increased costs, the Corporation will be required to raise substantial additional funding in the form of debt or equity. Any such equity financing will result in substantial dilution to the holdings of existing shareholders. Debt or equity financing in the amounts required may not be available on favourable terms, or at all. If the Corporation is unable to raise additional financing, its interest in the Project will be diluted.

***The Corporation may need to seek additional financing to fund corporate overhead***

Pursuant to the Subscription Agreement, the Corporation is required to escrow 85% of all subscription proceeds in order to fund future capital calls by the Joint Venture and to serve as security for its warranty and indemnity obligations under the JV Transaction Agreements. As at March 21, 2008 the Corporation had $22.1 million of the initial subscription proceeds freely available to it to fund ongoing corporate expenses. The Corporation expects that the unrestricted funds will be sufficient to fund its ongoing

corporate expenses through 2011. If, however, some or all of the deferred payments under the Subscription Agreement are not made by the Subscribers or if the Corporation is required to supply cash collateral to lenders in connection with Project completion guarantees or if the Corporation has underestimated its ongoing corporate expenses, it will be necessary for the Corporation to seek alternative sources of financing for this purpose. The Corporation is subject to restrictions on its ability to raise additional debt and equity financing under the DUBAL Subscription Agreement and the IDBIF Subscription Agreement.

The DUBAL Subscription Agreement prohibits the Corporation from issuing equity securities to any person if the effect of such issuance would be that such person would own more than 25% of the total number of the outstanding Shares or from issuing equity securities at a price of $2.00 or less except pursuant to a public offering of Shares. In addition, at any time when DUBAL owns at least 10% of the issued and outstanding Shares of the Corporation, the Corporation may not issue any securities unless it offers DUBAL the opportunity to subscribe for that number of such securities representing 25% of the securities proposed to be issued. Under the IBDIF Subscription Agreement, as long as IDBIF holds more than 5% of the Corporation's issued and outstanding Shares, the Corporation may not issue any Shares at a price per Share of less than $2.25, other than pursuant to: (i) the terms of certain pre-existing agreements; (ii) an exercise of warrants issued by the Corporation prior to the execution of the IDBIF Subscription Agreement; (iii) an exercise of Options granted in the ordinary course and consistent with past practices; or (iv) a public offering of Shares by way of prospectus.

***An investment in Guinea is subject to political, economic and other risks***

Any investment in Guinea is subject to a variety of other possible political and commercial risks inherent in developing countries, including, among others, labour disputes, invalidation of governmental orders and permits, government renegotiation of tax incentives, government and business corruption, uncertain political and economic environments, sovereign risk, war (including in neighboring states), terrorist actions, arbitrary changes in laws or policies, the failure of foreign parties to honour contractual relations, foreign taxation, delays in obtaining or the inability to obtain necessary governmental permits, opposition to mining from environmental or other non-governmental organizations, limitations on foreign ownership, limitations on the repatriation of earnings, instability due to economic under-development, inadequate infrastructure and increased financing costs. In addition, the enforcement by Guinea Alumina of its legal rights to develop and operate the Project may not be recognized by the government of Guinea or by its court system. Guinea's status as a developing country also may make it more difficult for the Joint Venture to obtain the required financing for the Project. In addition, civil strife in countries bordering Guinea may affect the cost of doing business or otherwise impact the Joint Venture's performance. The Corporation has not insured its investment in the Project against such political risks.

The Corporation's one-third interest in the Project, its primary asset, is located solely in Guinea. The economy and political system of Guinea are less predictable than those in most developed countries. While Guinea's political situation has not experienced the same disruptions as some of its neighboring countries, there is no guarantee that Guinea will be stable in the future. President Conté has experienced serious and on-going health issues. If the President were to die while in office, the transition to a new government could result in significant political and economic instability within Guinea. In addition, it is possible that the current, or a future, government may adopt substantially different policies, take arbitrary action which might halt development or production, nationalize private assets, cancel, change or renegotiate existing contracts, revoke or limit mining and exploration rights and/or change tax policies. Any of these or similar factors could have a material adverse effect on the Project and Corporation's business, results of operations and financial condition.

Although the Corporation mandates strict compliance with applicable laws, including laws which prohibit corrupt payments to government officials or other businesses or persons, there is no assurance that such internal policies have been or will be adhered to by employees of the Joint Venture. Findings against the Joint Venture, its directors, officers or employees, or their involvement in corruption or other illegal activity could result in criminal or civil penalties, including substantial monetary fines, against the Joint Venture, its directors, officers or employees. Any government investigations or other allegations against the Joint Venture, its directors, officers or employees, or finding of involvement in corruption or other illegal activity by such persons, could significantly damage the Joint Venture's reputation and its ability to do business, including by the loss of key personnel, and could materially adversely affect its financial condition and results of operations. Furthermore, alleged or actual involvement in corrupt practices or other illegal activities by the Joint Venture, its contractors or others with whom the Joint Venture conducts business, could also significantly damage the Joint Venture's reputation and business and materially adversely affect the Corporation's financial condition and results of operations.

***Interpretation and application of the laws and regulations of Guinea can be uncertain and could adversely affect the Joint Venture***

Guinea has a less developed legal system than more established economies which may result in risks such as: (i) effective legal redress in the courts of such jurisdictions, whether in respect of a breach of law or regulation or in an ownership dispute, being more difficult to obtain; (ii) a higher degree of discretion on the part of governmental authorities; (iii) the lack of judicial or administrative guidance on interpreting applicable rules and regulations; (iv) inconsistencies or conflicts between and within various laws, regulations, decrees, orders and resolutions; or (v) the relative inexperience of the judiciary and courts in such matters. Enforcement of laws may depend on and be subject to the interpretation placed upon such laws by the relevant local authority, and such authority may adopt an interpretation of an aspect of local law which differs from the advice that has been given to the Corporation. There can be no assurance that contracts, permits, licences, licence applications or other legal arrangements would not be adversely affected by the actions of government authorities and the effectiveness of and enforcement of such arrangements in these jurisdictions. In certain jurisdictions, the commitment of local businesses, government officials and agencies and the judicial system to abide by legal requirements and negotiated agreements may be more uncertain and may be susceptible to revision or cancellation, and legal redress may be uncertain or delayed.

***A decision to proceed with the Project has not been made***

Although the Feasibility Study has recommended that the Project be approved to proceed to the execution phase, such approval has not yet been obtained and a decision to proceed will not be considered by the Shareholders until the Development Plan is presented to the board of directors of Guinea Alumina. A decision to proceed will require either a unanimous resolution of the directors of Guinea Alumina or an affirmative vote of all the directors appointed by any three Shareholders. It is expected that the Development Plan will be presented to the board for consideration in June 2008. There is no assurance that the Shareholders will decide to proceed with development of the Project. Assuming a decision to proceed is made, construction of the project will not commence until Project financing has been secured and a notice to proceed has been issued by Guinea Alumina under the engineering, procurement and construction management contract, currently anticipated to occur in the third quarter of 2008. The failure of the Project to meet this timetable may delay the Project's development schedule which may expose the Project to further escalations in costs and delay the start-up of the refinery.

***Construction of the Project has been affected by costs overruns, delays, labour shortages, labour unrest and other construction risks***

The Project is a large, complex undertaking that will require substantial engineering, construction and operating expertise and execution. Cost estimates for the Project have increased by 60%. Detailed final cost estimates to build and operate the Project have not been finalized. Potential costs overruns and completion delays are significant risks in projects of this size, particularly in less developed countries. Price escalation is a concern especially in current market conditions where unstable markets for building materials and consumables have risen steadily annually over the past five years. The Project will experience four rainy seasons during the planned construction phase which may result in delay in completion. Management of the substantial logistical and coordination issues in connection with the Project will require extensive planning, experience and skill. The Project Company may incur additional costs required to provide security the Project, including fencing, private security or other deterrents, as well as community education costs to discourage squatting and unauthorized access to the Project.

There is no assurance that the Project Company will be able to hire or retain the significant number of experienced technical staff to manage the development and construction of the Project and its subsequent operation. There can be no assurance that the Project Company will successfully build the alumina refinery within budget, on schedule, or at all.

***Guinea Alumina must bear the cost of resettlement and payment of compensation to affected populations***

Guinea Alumina must relocate households affected by the development of the Project and will incur the cost of developing resettlement areas and compensating households for loss of lands, structures and crops. The cost of the resettlement plan will depend on the number of affected persons and on the outcome of negotiations with those persons and cannot be predicted with certainty. Such costs could be material. In addition, a refusal by affected persons to comply with the relocation program may result in delays to the Project and adverse publicity to Guinea Alumina which could damage its ability to conduct business and consequently adversely affect the financial condition of the Corporation.

***The Corporation will be dependent on an interest in a single mining property***

The Project's bauxite will be sourced entirely from mines within the Mining Concession area granted by the Government of Guinea. Any adverse development affecting the mines on this property would have a material adverse effect on the amount of bauxite produced by the Project, which would materially adversely affect the operation of the refinery and consequently the Corporation's financial performance and results of operations. The Project Company's right to explore for and mine bauxite and produce and sell alumina from the Mining Concession area is based on the Basic Agreement. Should Guinea Alumina and the Project Company's rights under the Basic Agreement, or the agreement itself, not be honoured or be unenforceable for any reason, or if any material term of the Basic Agreement is arbitrarily or unilaterally changed by the Government of Guinea, including the boundaries of the Mining Concession area or title to the Mining Concession itself, or the Project Company's ability to explore and produce bauxite from the Mining Concession, the Project Company's ability to produce bauxite from the Mining Concession area would be materially adversely affected and would consequently have a material and adverse effect on the Corporation's financial performance and results of operations.

***The Project Company may forfeit the Mining Concession in certain circumstances***

If the Project Company does not realize the refinery within six years of the publication of the decree granting the Mining Concession to Global Alumina, the Mining Concession could revert to the Government of Guinea. The Mining Concession will also revert to the Government of Guinea upon the

bankruptcy, cessation of business or liquidation of the Project Company or the transfer by the Project Company to a third party of the mining rights with respect to the Mining Concession, if transfer is made without the written consent of the Government of Guinea and the proposed refinery has not been realized in accordance with the terms of the Basic Agreement. Beginning with the second 25 year Mining Concession term, if the Project Company fails to deliver a Maintenance Plan to the Government of Guinea within six months of the expiry of such term or each subsequent term, or if the Project Company fails to confirm that the previously delivered Maintenance Plan has been implemented, the Project Company would not be entitled to the automatic renewal of the Mining Concession. If the Joint Venture experiences obstacles to the completion of its financing requirements which cannot be overcome, the Joint Venture has an obligation to meet with the Government of Guinea in order to assess the consequences of the situation, which consequences may include loss of the Mining Concession. Under the Mining Code, mining rights are revocable in accordance with a procedure – which includes a right to appeal – in the event the title-holder breaches the provisions of the Mining Code that are applicable to it, fails to pay taxes or fails to meet defined development expenditures agreed to by the Government of Guinea and the title-holder.

***Volatility of aluminium and alumina prices could have a material adverse effect on the Corporation's business, financial conditions and results of operations***

Aluminium and alumina are commodities and compete with other materials such as steel, glass and plastic, among others, in the aerospace, ground transportation, construction, container and other markets. As a result, aluminium and alumina pricing can be highly volatile. Any significant declines in international market prices could materially adversely affect the profitability and viability of the Project and consequently the Corporation's business, financial condition and results of operations.

In addition, the various stages of aluminium processing, from bauxite mining to alumina refining and aluminium smelting, are extremely capital intensive. The high initial capital cost exacerbates the commodity price/revenue volatility and serves as a significant market-entry barrier. All of the Corporation's entitlement to alumina production from the Project is committed under long-term contractual arrangements. The purchase price of the alumina under these contracts is set as a percentage of the price of aluminium on the London Metal Exchange. Therefore, these contracts do not insulate the Corporation from fluctuations in aluminium prices and the profitability of the Corporation's operations will be dependent on the fluctuating market price of aluminium. If aluminium prices decline for a substantial period, resulting in the purchase price under one or more long-term contracts becoming less than the cost of production at the proposed refinery, the off-take arrangements in place with the Project Company may not be economically feasible and could result in losses to the Corporation.

The nature of the Corporation's operations will result in exposure to fluctuations in commodity prices. The Corporation may decide in the future to use financial instruments and physical delivery contracts to hedge its exposure to these risks. If the Corporation engages in hedging, it will be exposed to credit related losses in the event of non-performance by counterparties to the financial instruments. Additionally, if product prices increase above those levels specified in any future hedging agreements, the Corporation could lose the cost of floors or ceilings or a fixed price could limit the Corporation from receiving the full benefit of commodity price increases. If the Corporation enters into hedging arrangements, it may suffer financial loss if it is unable to commence operations on schedule or is unable to produce sufficient quantities of alumina to fulfill its obligations.

***The Project's operations will be subject to risks, including the construction and operations of transportation infrastructure improvements and utilities and access to skilled labour***

Infrastructure in the vicinity of the Project's proposed operations, in particular port and bridge facilities, is currently inadequate to meet the Project's requirements. The Project Company's ability to operate the proposed alumina refinery on a profitable basis may be adversely affected by risks that could potentially slow or stop alumina production. The refinery will be dependent on approximately 90 megawatts of electricity and 750 metric tons per hour of process steam from the power plant to maintain full production capacity. Should the power plant be incapable of providing the necessary power and steam, the refinery would not be able to run at full production.

The refinery also will be dependent on local and international transportation infrastructure to supply raw materials for continued operations and to deliver alumina to its customers. The Project Company's ability to operate the refinery on a profitable basis would be adversely affected if the railway, port or other transportation infrastructure is not brought up to and maintained at the Project Company's standards or if they are temporarily disabled. The terms under which Guinea Alumina and the Project Company will have access to the infrastructure and port installations will be contained in the Infrastructure Agreement and Port Agreement, respectively. If the Project Company is unable to meet the terms of these agreements or the Guinea Government refuses to abide by the agreements, access to necessary infrastructure could be impaired. In addition, the Project Company will be dependent on CBG for rail traffic coordination on the rail line to be used for transportation of materials and alumina. While CBG is required under their concession from the Government of Guinea to give third parties access to the rail line, there can be no assurance that CBG will comply with this obligation. CBG is a joint venture between the Government of Guinea and Halco. Halco is controlled by Alcan and a subsidiary of Alcoa, two of the Joint Venture's competitors. See " – The Corporation operates in a highly competitive industry" below.

The development and the operation of the Project will depend on the importation and use of skilled labour. If the cost of acquiring, importing or maintaining a skilled labour force increases significantly, it may have a material adverse effect on the development and operation of the Project. Once the infrastructure is complete there is a risk of accidents, including fatal accidents, occurring during the use of the infrastructure. This risk extends to the communities surrounding the infrastructure.

***Mining operations are inherently risky***

The Project Company's operations are subject to operational risks and hazards inherent in the mining industry, including but not limited to, variations in grade, deposit size, density and other geological problems, hydrological conditions, metallurgical and other processing problems, mechanical equipment performance problems, the unavailability of materials and equipment including fuel, labour force disruptions, unanticipated transportation costs, unanticipated regulatory changes, unanticipated or significant changes in the costs of supplies and adverse weather conditions. Should any of these risks and hazards affect the Project Company's mining operations or its exploration activities, it may cause, among other things, the cost of production to increase to a point where it would no longer be economic to produce bauxite from the Project Company's mineral reserves found in the Mining Concession. This could cause delays or a complete stoppage in the production of bauxite, all of which would consequently have a material adverse effect on the Corporation's business, results of operations and financial condition.

***The Project Company's business is subject to risks that may not be covered by insurance***

The exploration for and the production of bauxite and the refining, storage, transportation and marketing of alumina involve many risks. These risks include equipment failures and other accidents, weather conditions, natural disasters and changes to the political environment in Guinea, any of which could result

in personal injury or damage or destruction to the mine, equipment, the refinery and the environment as well as the interruption of operations. The impact of these risks upon the Project Company is increased because it is dependent on a single project.

The Project Company is insured against some, but not all, potential risks appropriate to its stage of development; however there can be no assurance that such insurance will be adequate to cover any losses or exposure for liability. As the Project continues to develop toward operation of the mine and proposed refinery, the Project Company will have to acquire additional insurance coverage. There can be no assurance that the Project Company will be able to acquire adequate insurance coverage for the future increases in construction and operational activities associated with the Project. The Project Company may also become subject to liability for pollution or other hazards against which it cannot insure or against which it may elect not to insure because of high premium costs or other reasons. The Project Company may also become subject to liabilities which exceed policy limits. In such circumstances, the Project Company may be required to incur significant costs that could have a material adverse effect upon its performance, results of operations and economic viability.

***Volatility of prices of raw materials required for the refinery could have a material adverse effect the Corporation's business, financial condition and results of operations***

The Joint Venture's ability to operate the proposed alumina refinery profitably will be affected by increases in the cost of raw materials, including coal, heavy fuel oil, petroleum coke, caustic soda, lime, lime stone, flocculants and bauxite. The Joint Venture may not be able to offset fully the high cost of raw materials with increased alumina prices or higher productivity resulting in the Project being unprofitable, potentially causing a material adverse effect on the Corporation's business, financial condition and results of operations.

***The Corporation operates in a highly competitive industry***

The Joint Venture's business is intensely competitive and it competes with companies that have significant resources and experience. The global aluminium and alumina markets are dominated by a small number of large vertically integrated companies, including Alcan, Alcoa and BHP Billiton, one of its Joint Venture partners. These companies dominate on a global scale the mining of bauxite, the refining of alumina and the production and sale of aluminium. In addition, the Corporation's interest in the Project may be far more vulnerable to volatility in the alumina market than to vertically integrated competitors. If the Project is completed, the Corporation will simply have an interest in the supply of alumina to the industry and will not have the benefit of vertical integration enjoyed by its competitors and Joint Venture partners who operate bauxite mines and aluminium smelters.

***The Corporation has not prepared a current technical report with respect to mineral resources and reserves data***

The technical report previously published by the Corporation is no longer current. Since the formation of the Joint Venture, the conduct of the Project has passed from the Corporation to the Project management team. The Corporation no longer directly conducts drilling and exploration activities in the Mining Concession. The Feasibility Study undertaken by the Project Company is premised on somewhat lower resource data than that previously published by the Corporation due primarily to effect of applying different assumptions with respect to the average grade of feedstock bauxite. The Project management team may characterize reserves and resources differently than the Corporation has in the past and may choose to mine different grades of minerals than the Corporation has contemplated in the past. In addition, the grade of mineralization ultimately mined may differ from that indicated by drilling results and such differences could be material. Material changes in mineral resources, grades, stripping ratios or

recovery rates may affect the economic viability of the Project. Estimated reserves may need to be recalculated based on actual production experience. The Feasibility Study is not the property of the Corporation and the Corporation is strictly prohibited by a contract from publicly filing the report or allowing it to be used to support resource and reserve data. The Corporation will no longer report mineral resources and reserves.

***Failure to obtain government permits would adversely affect the Joint Venture's business***

The ability of the Joint Venture to implement and operate the Project is dependent on obtaining several licenses and permits from various Guinean governmental authorities. Certain of the permits required for the mine and refinery areas have been issued. There can be no assurance that the Project Company will be able to obtain on a timely basis and on reasonable conditions and maintain, at all times, all necessary licenses and permits required to continue its proposed exploration and development of the Mining Concession area, operate mining facilities thereon or commence production of alumina from the proposed refinery.

***The Project Company could face significant liabilities and compliance costs under environmental regulations***

The Project Company's operations will be subject to environmental regulations promulgated by the Ministry of Mines, Ministry of Environment and other Guinean government agencies as existed on the date of the Basic Agreement and will comply with World Bank Standards. Such regulations provide for restrictions and prohibitions on spills, releases or emissions of various substances produced in association with certain mining industry operations. A breach of such regulations may result in the imposition of severe fines and penalties, which could harm the Project Company's business. In addition, if such standards become more stringent or if current standards are enforced in a more rigorous manner, the Project Company may be required to make additional environmental expenditures, which could have an adverse impact on its financial condition.

***The Project Company could face significant liabilities under other government regulations***

The Project Company's operations and properties are subject to a variety of other governmental regulations. Guinea regulators have broad authority to shut down and levy fines against facilities that do not comply with regulations or standards. Operations may also be affected in varying degrees by government regulations with respect to restrictions on production, price controls, export controls, income taxes, expropriation of property and mine safety. See "Bauxite Mining – Property Location and Ownership" above.

***The loss of any of the Joint Venture's key officers and employees could have an adverse impact on its business***

The Joint Venture's success is highly dependent on the founders of the Project, key personnel supplied by Global Alumina and the Subscribers, the Project management team and key employees. The loss of the services of certain members of the Corporation or the Joint Venture's senior management or other key employees could make it more difficult to successfully operate the Joint Venture business and pursue its business goals. The Corporation does not maintain key man life insurance on any of its employees.

***The Corporation is exposed to currency risk***

Fluctuations in currency exchange rates could have a negative impact on the profitability of the Corporation's operations. The Corporation reports its financial results in U.S. dollars and anticipates that

most, but not necessarily all, of its revenues, debt, and capital and capital contributions to the Project will be denominated in U.S. dollars. Therefore, variations in the exchange rate when converting foreign currencies into U.S. dollars may negatively impact the financial results of the Corporation.

*The Corporation's common shares lack liquidity*

Global Alumina's Shares are thinly traded on the TSX in Canada, and the limited trading volume of the Shares will limit their liquidity.

*Global Alumina is likely a Passive Foreign Investment Company for U.S. tax purposes*

Global Alumina likely will be a "passive foreign investment company" ("PFIC") for United States federal income tax purposes, meaning that, absent a "qualified electing fund" ("QEF") election, (i) generally any gain derived from the disposition of Shares (including a gift or exchange in a corporate reorganization), as well as any "excess distribution" that is received from Global Alumina (i.e., a distribution that exceeds 125% of the average distributions from the shorter of the prior three years or a shareholder's holding Period for the Shares), would be treated as ordinary income that was earned ratably over each day in such shareholder's holding period for the Shares, (ii) the portion of such gain or distribution that is allocable to prior taxable years would be subject to United States federal income tax at the highest rate applicable to ordinary income for the relevant taxable years, regardless of the tax rate otherwise applicable to the shareholder, and (iii) an interest charge would be imposed on the resulting United States federal income tax liability as if such liability represented a tax deficiency for the past taxable years. If a shareholder makes a timely QEF election, the shareholder will be required to annually include in gross income (for any year that Global Alumina is treated as PFIC) (i) as ordinary income, a pro rata share of Global Alumina's ordinary earnings (as determined in accordance with United States federal income tax principles), if any, and (ii) as long-term capital gain, a pro rata share of Global Alumina's net capital gain (as determined in accordance with United States federal income tax principles), if any, in either case whether or not distributed by Global Alumina. The foregoing is not legal advice nor a complete discussion of consequences of owning Shares of a PFIC and shareholders of Global Alumina should consult their own tax advisors regarding such consequences.

## SHARE CAPITAL

### Common Shares

Global Alumina has authorized an unlimited number of Shares. As of March 27, 2008, 206,543,394 Shares were issued and outstanding.

### Warrants

During the year ended December 31, 2007, 105,100 Warrants were exercised for cash proceeds of $105,100. After December 31, 2007, 2,685,750 Warrants were exercised at an exercise price of $1 each for cash proceeds of $2,685,750. The exercised Warrants represent all of the outstanding warrants of the Corporation. There are no Warrants outstanding as at the date hereof.

### Options

On May 27, 2004, Global Alumina adopted a stock option plan (the "SOP") which provides employees, directors, officers and consultants of Global Alumina with the opportunity to acquire Shares through the

exercise of Options. Ten million Shares have been reserved for issuance under the SOP. Options granted under the SOP are limited to a term of ten years. An aggregate of 1,035,000 Options were granted during 2004 pursuant to the terms of the SOP and an aggregate of 1,400,500 Options were granted during 2005. Subsequently, 50,000 and 168,000 Options related to the 2004 and 2005 grants, respectively, were terminated.

On March 7, 2006, a total of 45,000 Options were granted with an exercise price of $1.75, a vesting period over three years and a maximum term of five years. On December 11, 2006, a total of 1,975,000 Options were granted with an exercise price of $1.00, a vesting period over three years and a maximum term of five years. Subsequently, 235,000 Options granted on December 11, 2006 were terminated.

No Options were granted in 2007. 5,997,500 Options remain available for future issuance under the SOP.

On March 16, 2007 the SOP was amended to provide that where a subsidiary of the Corporations ceases to be a subsidiary, employees of such subsidiary may retain Options earned to that point.

On March 16, 2007 the board of directors of Global Alumina approved proposed amendments to the SOP to specify certain amendments that cannot be made by the board of directors without shareholder approval. The amendments were approved by shareholders at the annual and special meeting on April 25, 2007. On February 28, 2008, the board of directors of Global Alumina approved amendments to the SOP clarifying payment procedures for the exercise of options and providing for adjustment to vesting dates of previously granted Options.

## DIVIDENDS

Global Alumina has not paid any dividends on its Shares to date and does not anticipate that dividends will be paid on the Shares until after the refinery commences production of alumina.

## MARKET FOR SECURITIES

The Shares are listed for trading on the TSX under the trading symbol "GLA.U".

| Common Stock Price per share Volumes Traded (in Canadian dollars) | | | | | |
|---|---|---|---|---|---|
| | Open | High | Low | Close | Volume |
| February 2008 | 1.59 | 1.86 | 1.20 | 1.81 | 7,228,842 |
| January 2008 | 1.96 | 2.00 | 1.20 | 1.58 | 8,180,789 |
| December 2007 | 2.50 | 2.50 | 1.80 | 2.00 | 10,362,603 |
| November 2007 | 2.56 | 2.59 | 2.22 | 2.50 | 14,705,910 |
| October 2007 | 1.90 | 2.85 | 1.89 | 2.57 | 36,066,143 |
| September 2007 | 1.86 | 2.01 | 1.80 | 1.97 | 8,151,427 |
| August 2007 | 1.90 | 2.01 | 1.61 | 1.98 | 15,273,569 |
| July 2007 | 1.51 | 2.10 | 1.50 | 1.90 | 30,489,939 |
| June 2007 | 1.75 | 1.79 | 1.41 | 1.60 | 8,154,285 |
| May 2007 | 1.65 | 2.10 | 1.60 | 1.75 | 10,784,135 |
| April 2007 | 1.40 | 1.80 | 1.28 | 1.65 | 23,507,932 |
| March 2007 | 1.20 | 1.45 | 0.99 | 1.40 | 6,451,914 |
| February 2007 | 1.10 | 1.28 | 0.98 | 1.15 | 5,029,521 |

| Common Stock Price per share Volumes Traded (in Canadian dollars) | | | | | |
|---|---|---|---|---|---|
| | Open | High | Low | Close | Volume |
| January 2007 | 1.10 | 1.25 | 0.94 | 1.05 | 2,498,505 |
| December 2006 | 1.03 | 1.18 | 0.83 | 1.17 | 6,804,606 |
| November 2006 | 1.30 | 1.52 | 0.96 | 1.05 | 2,915,083 |
| October 2006 | 1.42 | 1.44 | 1.09 | 1.32 | 3,508,111 |
| September 2006 | 1.46 | 1.72 | 1.20 | 1.40 | 1,861,995 |
| August 2006 | 1.40 | 1.57 | 1.38 | 1.46 | 1,739,504 |
| July 2006 | 1.34 | 1.50 | 1.34 | 1.45 | 3,811,193 |
| June 2006 | 1.52 | 1.56 | 1.15 | 1.40 | 6,014,080 |
| May 2006 | 1.73 | 1.75 | 1.30 | 1.55 | 3,476,296 |
| April 2006 | 1.57 | 1.82 | 1.46 | 1.73 | 11,848,088 |
| March 2006 | 1.70 | 1.86 | 1.37 | 1.55 | 11,374,416 |
| Feb. 2006 | 1.87 | 2.06 | 1.70 | 1.71 | 20,861,574 |
| Jan. 2006 | 1.70 | 1.92 | 1.61 | 1.87 | 18,602,116 |
| Dec. 2005 | 1.66 | 1.89 | 1.65 | 1.71 | 7,308,356 |
| Nov. 2005 | 1.54 | 1.75 | 1.51 | 1.66 | 3,533,027 |
| Oct. 2005 | 1.43 | 1.79 | 1.24 | 1.65 | 3,378,837 |
| Sept. 2005 | 1.70 | 1.80 | 1.25 | 1.42 | 4,212,845 |
| Aug. 2005 | 1.50 | 1.75 | 1.35 | 1.70 | 8,505,613 |
| July 2005 | 1.25 | 1.50 | 1.21 | 1.47 | 2,729,976 |
| June17–30, 2005 GLA.U | 1.25 | 1.30 | 1.15 | 1.25 | 1,808,464 |
| June 1-16, 2005 GPC.U | 1.39 | 1.40 | 1.01 | 1.22 | 2,964,652 |
| May 2005 | 1.55 | 1.70 | 1.34 | 1.35 | 5,454,471 |
| April 2005 | 2.00 | 2.09 | 1.33 | 1.55 | 1,747,873 |
| March 2005 | 2.31 | 2.75 | 1.60 | 2.00 | 3,546,332 |
| Feb. 16 – 28 /05 TSX | 2.15 | 2.40 | 1.94 | 2.25 | 3,298,403 |

The Shares traded on the TSX Venture Exchange from June 15, 2004 to February 15, 2005. On February 16, 2005, the Shares began trading on the TSX under the symbol "GPC.U". On June 17, 2005, Global Alumina's TSX listing symbol changed to "GLA.U".

## DIRECTORS AND OFFICERS

The following table sets forth the names and municipalities of residence, offices or positions with Global Alumina and principal occupations of the current directors and officers of Global Alumina during the past five years. The term of each director of Global Alumina expires as of the next annual general meeting of Global Alumina, expected to be held on June 4, 2008.

| Name and Address of Director or Officer | Position Presently Held | Principal Occupation | Number of Securities | |
|---|---|---|---|---|
| | | | Common Shares | Options |
| Michael J. Cella<br>Wilton, Connecticut | Director, Senior Vice President, Chief Financial Officer and Secretary since May 2004 | Director of Global Alumina, Senior Vice President, Chief Financial Officer and Secretary of Global Alumina, 2004 to present; Senior Vice President, Herakles Capital Corporation, 2001 to 2005; Senior Vice President, Finance of GAPCO, 2001 to 2004; Senior Vice President, Sithe Energies, Inc., 1997 to 2001. | 740,000[1] | 550,000 |
| Bernard Cousineau [2]<br>Westmount, Quebec | Director, President and Chief Operating Officer since May 2004 | Director of Global Alumina, President and Chief Operating Officer of Global Alumina, 2004 to 2007; Director and Vice President, Aluminpro Aluminium Industry Professionals Inc., 2000 to present. | 50,000 | 225,000 |
| Ahmed M. Fikree [3]<br>Dubai, UAE | Director since November 2005 | Director of Global Alumina; Director, Corporate Development and Commercial Operations, DUBAL, 2005 to present; General Manager, Marketing and Sales, DUBAL, 2001 to 2005. | 0 | 25,000 |
| Alan J. Gayer [4]<br>New Castle, New Hampshire, U.S.A. | Director since May 2004 | Director of Global Alumina, Independent management consultant and private equity investor, 2005 to present; Chief Executive Officer, Toronto Hospital for Sick Children, 2002 to 2004; Director, National Strategy Consulting Group, Arthur Andersen, 1998 to 2001. | 1,280,000 | 45,000 |
| Karim L. Karjian [5]<br>London, United Kingdom | Director since May 2004 | Director of Global Alumina; Co-Chairman of Global Alumina 2006 to present; Chairman and Managing Director of BusinessCom Europe Ltd., 1991 to present; Director and Chief Executive Officer of Karalco Resources Ltd., an international development and consulting company, 1997 to present. | 4,400,000[6] | 225,000 |

| Name and Address of Director or Officer | Position Presently Held | Principal Occupation | Number of Securities | |
|---|---|---|---|---|
| | | | Common Shares | Options |
| Anthony McCabe Crecora, County Limerick, Ireland | Senior Vice President and Project Director, Refinery since September 2004 | Senior Vice President and Project Director, Refinery of Global Alumina, 2004 to present; Project Director, BHP Billiton, 1998 - 2004 | 0 | 325,000 |
| Graham Morrey Chislehurst, Kent United Kingdom | Executive Vice President, Chief Development Officer since July, 2006 | President, Global Alumina since April 2007, Chief Development Officer of Global Alumina since July, 2006; Senior Vice President, Strategic Planning of Global Alumina, 2004 to July 2006; Managing Director, Europe, Hatch Associates Ltd., 2001 to 2004; Managing Director, Europe, Kaiser Engineers Ltd., 1986-2001. | 0 | 325,000 |
| David Suratgar (7) London, United Kingdom | Director since March 2005 | Director of Global Alumina, Independent financial and legal advisor, 1998 to present; Chairman, Fortune Funds Ltd., 2003 to present; Chairman of the Advisory Board of Taylor-DeJongh Inc., 2003 to present; Member of the Advisory Board, Pictet et Cie SA Water Fund, 2003 to 2006; Member of the Board of BMCE Bank, 1998 to present; Chairman and Director, Medicapital Bank PLC, 2007 to present; Vice Chairman, Medicapital (Holdings) PLC, 2007 to present; Director, DiscoveryTel Communications PLC, 2008. | 0 | 45,000 |
| Bruce J. Wrobel Brooklyn, New York U.S.A. | Chairman and Chief Executive Officer since May 2004 | Director of Global Alumina, Co-Chairman and Chief Executive Officer of Global Alumina, 2004 to present; Chief Executive Officer of Sithe Global Power, LLC, 2004 to present; President and Chief Executive Officer of Sithe Energies, Inc., 2003 to 2004;Chairman and Chief Executive Officer of GAPCO, 1999 to 2004. | 15,347,000(8) | 225,000 |

Notes:

(1) Mr. Cella directly owns 15,000 Shares registered in his name. Mr. Cella indirectly owns 725,000 Shares, all of which are held in the name of WCF Holdings LLC, a corporation wholly-owned by Mr. Cella.

(2) Member of the Compensation Committee. On April 25, 2007 Mr. Cousineau stepped down as President and Chief Operating Officer of the Corporation. Prior to the Arrangement (as defined below) Mr. Cousineau was a self-employed management consultant working with Aluminpro. On July 19, 2004, the Corporation acquired all of the outstanding share capital of Aluminpro. Mr Cousineau was paid an aggregate of $50,000 and 50,000 units consisting of one Share and one half of a warrant of the Corporation in payment for the sale of his interest in Aluminpro to the Corporation. The warrants expired unexercised on July 19, 2006.

(3) Member of the Audit Committee and Compensation Committee. Pursuant to the terms of the DUBAL Subscription Agreement, the Corporation is obligated to nominate one director at the request of DUBAL. Mr. Fikree is DUBAL's nominee.

(4) Chairman of the Audit Committee and member of the Compensation and Nominating and Corporate Governance Committees.

(5) Chairman of the Nominating and Corporate Governance Committee.

(6) Mr. Karjian indirectly controls 4,400,000 Shares, 1,200,000 of which are held in the name of Karalco Resources Ltd., 1,600,000 of which are held in the name of Urquin Finance Ltd. and 1,600,000 of which are held in the name of Zefan Ltd. Each of Karalco, Urquin Finance Ltd. and Zefan Ltd. are controlled by Mr. Karjian.

(7) Chairman of the Compensation Committee and member of the Audit and Nominating and Corporate Governance Committees.

(8) Mr. Wrobel directly owns 2,527,000 Shares registered in his name. Mr. Wrobel indirectly owns 12,820,000 Shares, all of which are held in the name of Herakles Capital Corp., a corporation wholly-owned by Mr. Wrobel.

As a group, the directors and executive officers listed own, directly or indirectly, or exercise control or direction over, 22,867,000 Shares, representing 11.22% of the total issued and outstanding Shares as of the date hereof. In addition, Global Alumina's directors and executive officers, as a group, hold Options for the purchase of an aggregate of 2,252,500 Shares. See "Share Capital – Options" above.

**Contractual Relationships with Directors and Executive Officers**

On October 9, 2006, the Board approved, and the Corporation entered into, a written consulting contract (the "Karalco Agreement") with Karalco, a corporation controlled by Karim Karjian, Co-Chairman and a shareholder of the Corporation. The Karalco Agreement covers Mr. Karjian's professional services regarding development activities with respect to the Project. The Corporation and Karalco agreed that the Karalco Agreement is retroactively effective from January 1, 2006. Under the Karalco Agreement, Karalco is entitled to a $60,000 monthly retainer. Bonuses may be paid under the Karalco Agreement based on the status of the Project and the level of activity required of Karalco on behalf of the Corporation. Since formation of the Joint Venture, the Joint Venture reimburses the Corporation for this monthly retainer. Karalco is also eligible to participate under the Corporation's employee stock option plan. In the event that the Corporation terminates the Karalco Agreement without cause (as defined under the Karalco Agreement), Karalco will be entitled to a minimum payment equal to $1,440,000 of which Guinea Alumina, has agreed to pay one-half and the Corporation would be responsible for the other half. The total payments with respect to the monthly retainer and incentives for the year ended December 31, 2007 amounted to $720,000 (2006 - $970,000) of which approximately $447,100 (2006 - $nil) was reimbursed by Guinea Alumina. In addition, the Corporation paid in 2007 a Board-approved bonus of $300,000 in connection with the negotiation of the Joint Venture. Since February 1, 2006, Karalco has been reimbursed an amount for office expenses. The cost of such office expenses for the year ended December 31, 2007 totalled approximately $30,500 (2006 - $26,500).

Pursuant to the terms of the Shareholders' Agreement the Corporation has been reimbursed $217,100 related to the salary costs of certain individuals that are billed back to the Joint Venture.

On October 9, 2006, the Board approved, and the Corporation entered into, a written consulting contract (the "Herakles Agreement") with Herakles Capital Corp. ("Herakles"), one of its shareholders. Herakles is controlled by Bruce Wrobel, Co-Chairman, Chief Executive Officer and a shareholder of the Corporation. The Herakles Agreement covers Mr. Wrobel's services as the Co-Chairman and Chief Executive Officer of the Corporation. The Corporation and Herakles agreed that the Herakles Agreement would be retroactively effective from January 1, 2006 and Herakles would be paid $200,000 per year for Mr. Wrobel's services. Effective January 1, 2007, the Herakles Agreement was amended to increase the annual payment to $250,000. Herakles is also eligible to participate under the Corporation's employee stock option plan. In the event that the Corporation terminates the Herakles Agreement without cause (as defined under the Herakles Agreement), Herakles will be entitled to a minimum payment equal to $500,000. The total cost attributable to the Herakles Agreement for the year ended December 31, 2007 amounted to approximately $550,000 (2006 - $207,700) including a Board-approved bonus of $300,000 in connection with the negotiation of the joint venture.

In addition to the bonuses paid to Karalco and Herakles, the Board approved and the Corporation paid bonuses totalling $200,000 to other officers of the Corporation in connection with the negotiation of the Joint Venture.

Bruce Wrobel is also the Chief Executive Officer of Sithe Global Power, LLP ("Sithe Global"), which provided, until May 17, 2007, professional services to the Project. Sithe Global was reimbursed at cost. The total cost for the year ended December 31, 2007 was approximately $47,400 (2006 – $407,200). Formerly, the President of Sithe Global provided consulting services to the Corporation at a rate of $15,000 per month. These services terminated as of May 30, 2007. The total cost for the year ended December 31, 2007 amounted to $75,000 (2006 - $180,000). In addition, the Corporation has provided, at cost, professional services to Sithe Global. The total charge for the year ended December 31, 2007 was approximately $3,800 (2006 - $nil).

Sithe Global reimburses the Corporation for its pro rata share of occupancy expenses for use of the Corporation's office space at 245 Park Avenue, New York. Occupancy costs charged to Sithe Global for the year ended December 31, 2007 totalled approximately $715,400 (2006 - $627,900).

On July 19, 2004, the Corporation entered into an Aluminpro Consulting Agreement with Bernard Cousineau, a former shareholder of Aluminpro, with respect to his services as President of the Corporation and as director and Vice President of Aluminpro. On April 25, 2007, Mr. Cousineau stepped down as President of the Corporation. Effective June 1, 2007, Mr. Cousineau's agreement was amended to reflect his current services as Senior Operations Advisor and continuation of services as director of the Corporation and Vice President and director of Aluminpro. Mr. Cousineau's consulting agreement provides a monthly retainer of $5,000 paid in equal portions by the Corporation and Aluminpro and an annual incentive payment of 10% of the profits realized by Aluminpro in such year. Mr. Cousineau also receives a fee for his services as a director of the Corporation.

On July 19, 2004, the Corporation also entered into Aluminpro Consulting Agreements with Ian Porteus and Brian Gallagher, the other former shareholders of Aluminpro. As of June 1, 2007, the Corporation also amended its consulting agreements with each of Ian Porteus, the Senior Technical Advisor to the Corporation and Vice President and director of Aluminpro and Brian Gallagher, the Business Manager, Secretary and Treasurer of Aluminpro. Mr. Porteus' consulting agreement provides a monthly retainer of $8,500 paid one-third by the Corporation and two-thirds by Aluminpro and an annual incentive payment of 10% of the profits realized by Aluminpro. Mr. Gallagher's consulting agreement provides a monthly retainer of $8,663 paid by Aluminpro and an annual incentive payment of 5% of the profits realized by Aluminpro.

Mr. Ahmed Fikree, a director of the Corporation, is the Director, Commercial and Corporate Development, for DUBAL. Dr. Abdulrahman Al-Awar, a former director of the Corporation who stepped down on April 25, 2007, is Chief Risk Officer for DUBAL. DUBAL and the Corporation are parties to the DUBAL Subscription Agreement. See "Financing Activities – The DUBAL Private Placement". DUBAL and the Corporation are also parties to each of the Subscription Agreement and DUBAL Off-take Agreement. See "Financing Activities – Joint Venture Transaction Agreements" and "Contractual Commitments – DUBAL Off-Take Agreement". Mr. Mehdi Dazi a former director of the Corporation who stepped down on April 25, 2007, was Chief Executive Officer, Investments, for EIIC, a shareholder of the Corporation. EIIC and the Corporation were parties to a the EIIC Subscription Agreement. See "Financing Activities – The EIIC Private Placement".

A former employee who left the Corporation in 2007 performs certain services and incurs certain expenses for Herakles Telecom, a company in which certain of the Corporation's officers are

shareholders. For the year ended December 31, 2007, approximately $98,700 related to this work has been billed at cost to and subsequently paid by Herakles Telecom .

To the extent the foregoing contractual relationships or any other relationships give rise to a conflict of interest between the relevant director or executive officer, the conflicts will be dealt with in accordance with the relevant provisions of the NBBCA.

## LEGAL PROCEEDINGS

On February 23, 2007, a complaint (the "Complaint") was filed against the Corporation, among others, alleging breach of contract and unjust enrichment. GAPCO, the Corporation's predecessor, contracted with the plaintiff to assist it in raising capital and alleged additional finders fees were due it in connection with its capital raising activities on behalf of the Corporation in 2004. The Complaint was summarily dismissed on July 30, 2007 by the U.S. District Court, Southern District of New York. The decision was not appealed and the right to appeal expired on August 31, 2007.

## MATERIAL CONTRACTS

The following are the only material contracts, other than contracts entered into in the ordinary course of business, which have been entered into by the Corporation within the most recently completed fiscal year or before the most recently completed fiscal year but still in effect:

- The Basic Agreement, as amended (see "General Development of the Business – The Basic Agreement" above)
- DUBAL Subscription Agreement (see "General Development of the Business – Contractual Commitments" above)
- Tripartite Agreement (see "General Development of the Business – Bauxite Mining Concession Rights" above)
- The Subscription Agreement (see "General Development of the Business – Joint Venture Transaction Summary" above)
- The Escrow Agreement (see "General Development of the Business – Ancillary Agreements" above)

## REGISTRAR AND TRANSFER AGENT

The registrar and transfer agent for the Shares is Computershare Trust Company of Canada, at its principal office in Toronto.

## AUDIT COMMITTEE AND AUDITORS

### Audit Committee Charter

The text of the charter of the audit committee (the "Audit Committee") of the board of directors of Global Alumina is attached hereto as Exhibit A.

**Composition of the Audit Committee**

The Audit Committee is composed of three independent directors. Mr. Gayer is the chairman of the Audit Committee and Mr. Suratgar and Mr. Fikree are the remaining members of the Audit Committee. Each member of the Audit Committee is financially literate (as defined under MI 52-110).

**Relevant Education and Experience**

*Alan J. Gayer* – Mr. Gayer has 31 years of management experience, including 17 years at McKinsey & Company advising Fortune 500 clients (including one of the world's largest chemical companies), three years as a Director in the national strategy consulting practice of a U.S. public accounting firm, eight years as Chief Executive Officer of a U.S. health care system and, most recently, two years as Chief Executive Officer of Toronto's Hospital for Sick Children. Mr. Gayer holds a M.Phil (Economics) from Yale University, a B.Phil (Economics) from Oxford University and a BA (Social Studies) from Wesleyan University.

*David Suratgar* – Mr. Suratgar is an independent financial and legal advisor. Mr. Suratgar was also the Deputy Chairman of Morgan Grenfell and Deutsche Morgan Grenfell, a position he held from 1992 to 1998. Mr. Suratgar has had extensive experience with development stage resource companies. Mr. Suratgar graduated from Oxford University with a MA (Jurisprudence) in 1959 and from Columbia University with a MIA (International Law and Economics) in 1961.

*Ahmed Fikree* – Mr. Fikree is Director, Corporate Development and Commercial Operations for DUBAL and has held various positions with DUBAL since 1989. DUBAL is one of the largest single site aluminium smelters in the western world. In his current position with DUBAL, Mr. Fikree has responsibility for marketing and sales, casting operations, DUBAL's supply and logistics division and the corporate development and strategic projects for all DUBAL external projects, including bauxite and alumina projects. Mr. Fikree received a BA (English Literature) from UAE University in 1984.

**Pre-Approval Policies and Oversight**

On March 9, 2007, the Audit Committee passed a resolution in connection with the pre-approval of all audit and non-audit services provided by the independent auditors of Global Alumina. Under the resolution, the Audit Committee authorized the Chair of the Audit Committee to pre-approve any audit and non-audit services provided by the independent auditors of Global Alumina. To the extent that the Chair pre-approves any such services, the Chair must inform the Audit Committee of such pre-approvals at the next meeting of the Audit Committee following the pre-approval and must provide appropriate details concerning the services provided or to be provided by the independent auditors.

**Auditor Service Fees**

The current auditors of the Corporation are PricewaterhouseCoopers LLP ("PwC"), Chartered Accountants, Suite 3000, Royal Trust Tower, Toronto Dominion Centre, 77 King Street West, Toronto, Ontario M5K 1G8. PwC have advised that they are independent with respect to the Corporation within the meaning of the Rules of Professional Conduct of the Institute of Chartered Accountants of Ontario.

*Audit Fees*

The aggregate fees billed by PwC in 2007 and 2006 were $199,738 and $154,931, respectively.

*Audit-Related Fees*

The aggregate fees billed by PwC in 2007 and 2006 for assurance and related services that were reasonably related to the performance of the audit of the Corporation's financial statements (and are not reported under "Audit Fees" above) were $nil for both years.

*Tax Fees*

The aggregate fees billed by PwC in 2007 and 2006 for professional services in connection with tax compliance, tax advice and tax planning were $107,747 and $201,060, respectively.

The services provided included preparation of annual income tax returns and other compliance matters and tax advice issues.

*All Other Fees*

There were no other fees billed by PwC in 2007 and 2006 for products and services other than those disclosed above under "Audit Fees", "Audit-Related Fees" and "Tax Fees".

## INDEPENDENCE OF EXPERTS

The Corporation's auditors are PwC, who have prepared an independent auditors' report dated March 21, 2008 in respect of the Corporation's consolidated financial statements with accompanying notes for the year ended December 31, 2007. PwC has advised that they are independent with respect to the Corporation within the meaning of the Rules of Professional Conduct of the Institute of Chartered Accountants of Ontario.

## ADDITIONAL INFORMATION

Global Alumina will provide to any person, without charge, following a written or oral request to Michael J. Cella, 245 Park Avenue, 38th Floor, New York, NY 10167 (telephone: 212-351-0000; fax: 212-351-0001), a copy of this Annual Information Form, Global Alumina's annual report for the fiscal year ended December 31, 2007, any interim financial statements since December 31, 2007, and any other documents incorporated therein by reference. Additional information, including director's and officer's remuneration and indebtedness, principal holders of Shares and securities authorized for issuance under the SOP, will be contained in Global Alumina's management proxy circular in connection with the annual and special meeting of Global Alumina's shareholders expected to be held on June 4, 2008, and will be made available under Global Alumina's profile at www.sedar.com. Additional information is provided in Global Alumina's financial statements and Management's Discussion and Analysis for the year ended December 31, 2007, which are also available under Global Alumina's profile at www.sedar.com. Additional information, including last year's proxy circular, is also available under Global Alumina's profile at www.sedar.com.

## EXHIBIT A

## GLOBAL ALUMINA CORPORATION

## AUDIT COMMITTEE CHARTER

***Purpose of the Audit Committee***

The purpose of the audit committee (the "Committee") of the board of directors (the "Board") of Global Alumina Corporation ("Global Alumina") is to assist the Board in its oversight of:

- the accounting and financial reporting processes of Global Alumina and audits of financial statements of Global Alumina,
- the integrity of the financial statements of Global Alumina,
- compliance with legal and regulatory requirements related to the auditing of the financial statements of Global Alumina and Global Alumina's financial reporting,
- the qualifications and independence of Global Alumina's independent auditors, and
- the performance of the independent auditors and Global Alumina's internal audit function.

The Committee is directly responsible for the appointment, retention, termination, compensation and oversight of the work of the independent auditors of Global Alumina.

Management of Global Alumina is responsible for the preparation, presentation and integrity of the financial statements and any financial information filed with securities regulatory authorities or stock exchanges or otherwise publicly disseminated and for maintaining appropriate accounting and financial reporting principles and policies and internal controls and procedures that provide for compliance with accounting standards and applicable laws and regulations.

The independent auditors of Global Alumina are responsible for planning and carrying out an audit of the annual financial statements of Global Alumina, reviewing quarterly unaudited financial statements of Global Alumina prior to the filing of each quarterly report and conducting any other procedures approved by the Committee in accordance with applicable laws, rules, regulations and auditing standards. The independent auditors shall report directly to the Committee.

The independent auditors of Global Alumina shall submit to the Committee annually a formal written statement (the "Auditors' Statement") described under "Committee Duties and Responsibilities" below.

***Committee Membership***

- The Committee shall consist of three or more or independent directors of Global Alumina appointed by the Board.
- The Board shall appoint a chair of the Committee.

- Any member of the Committee may be removed by a resolution of the Board.
- Each member of the Committee shall be "financially literate", as such terms is defined in applicable securities legislation.

***Committee Duties and Responsibilities***

The duties and responsibilities of the Committee are as follows:

- with respect to the independent auditors of Global Alumina,
  - recommend to the Board the independent auditors to be nominated to provide audit services to Global Alumina as well as the compensation of the independent auditor,
  - pre-approve and monitor all audit and non-audit services and to the extent required, publicly disclose audit and non-audit fees,
  - ensure the annual delivery of the Auditors' Statement in accordance with CICA Handbook Section 5751, *Communications With Those Having Oversight Responsibility For The Financial Reporting Process*.
  - obtain annually a formal written statement of the fees billed in each of the last two fiscal years for the services rendered,
  - oversee the work of the independent auditor for Global Alumina,
  - obtain, in connection with any audit, a timely report relating to the annual audited financial statements describing all critical accounting policies and practices used, all alternative treatments of financial information within generally accepted accounting principles that have been discussed with management, ramifications of the use of such alternative disclosures and treatments, and the treatment preferred by the independent auditors, and any material written communications between the independent auditors and management, such as any "management" letter or schedule of unadjusted differences,
  - resolve any disagreements between management and the independent auditors regarding financial reporting,
  - review and evaluate the qualifications, performance and independence of the lead audit partner,
  - discuss with management the rotation of the lead audit partner, the concurring audit partner and any other active audit engagement team partner and consider whether there should be a regular rotation of the audit firm itself,
  - take into account the opinions of management and internal audit function personnel in assessing the independent auditors' qualifications, performance and independence, and

- instruct the independent auditors that they are ultimately accountable to the Board and the Committee, as representatives of Global Alumina's shareholders;

- with respect to the internal audit function of Global Alumina,

  - review the appointment and replacement of the person with principal responsibility for the internal audit function, and

  - advise that person they are expected to provide to the Committee summaries of and significant reports to management prepared in relation to the internal audit function; and

- with respect to financial reporting principles and policies and internal audit controls and procedures of Global Alumina,

  - advise management, internal audit function personnel and the independent auditors that they are expected to provide to the Committee a timely analysis of significant financial reporting issues and practices,

  - meet with management, internal audit function personnel and the independent auditors to discuss, and review before public disclosure of, among other things, the annual audited financial statements and quarterly unaudited financial statements, including disclosures under "Management's Discussion and Analysis of Financial Condition and Results of Operations",

  - consider any reports or communications (and management's responses) submitted to the Committee by the independent auditors required by applicable auditing standards,

  - discuss internal controls with the chief executive officer and chief financial officer of Global Alumina,

  - discuss guidelines and policies governing the process by which senior management and relevant departments assess and manage exposure to risk, and to discuss major financial risk exposures and the steps management has taken to monitor and control such exposures,

  - obtain from the independent auditors assurance that the audit was conducted in a manner consistent with applicable generally accepted auditing standards,

  - discuss with the chief legal officer or outside legal counsel, any significant legal, compliance or regulatory matters that may have a material effect on the financial statements, business, operations or compliance policies,

  - review earnings press releases of Global Alumina, if any,

  - discuss and advise management of the types of financial information and earnings guidance, if any, provided, and the types of presentations made, to analysts and rating agencies,

- establish procedures for the receipt, retention and treatment of complaints received regarding accounting, internal accounting controls or auditing matters of Global Alumina, and for the confidential, anonymous submission by employees of Global Alumina of concerns regarding questionable accounting or auditing matters, and

- establish policies relating to the hiring by Global Alumina for partners and employees or former partners of employees of the present or former independent auditors of Global Alumina.

**Resources/Delegation**

The Committee shall have the resources and authority appropriate to discharge its duties and responsibilities, including the authority and discretion to retain independent counsel, experts, advisors and/or consultants, as it deems necessary to carry out its duties and to set and pay compensation for any such advisors employed by the Committee. The duties and responsibilities of the Committee may be delegated to a subcommittee to the extent permissible under applicable laws and stock exchange requirements. The Committee shall have authority to inspect the books and records of Global Alumina and to discuss (independently of management of Global Alumina whenever requested) such books and records, and any matters relating to the financial position or condition of Global Alumina, with Global Alumina's independent or internal auditors.

**Meetings**

No business shall be transacted by the Committee except at a meeting of the members thereof at which a majority of the members are present or by a resolution in writing signed by all of the members of the Committee. The Committee shall meet separately at least quarterly with management, internal audit function personnel and the independent auditors. Any actions of the Committee may also be taken by unanimous written consent, except with respect to the mandatory meetings described above.

**Committee Reports**

The Committee shall produce and provide to the Board:

- reports or other information required to be prepared under applicable laws and stock exchange requirements,

- an annual performance evaluation of the Committee, and a summary of the actions taken at each Committee meeting.

**FORM 52-109F1**
**CERTIFICATION OF ANNUAL FILINGS**

I, Michael Cella, Senior Vice-President, Chief Financial Officer and Secretary of Global Alumina Corporation, certify that:

1. I have reviewed the annual filings (as this term is defined in Multilateral Instrument 52-109 - *Certification of Disclosure in Issuers' Annual and Interim Filings)* of **Global Alumina Corporation** (the issuer) for the period ending **December 31, 2007**;

2. Based on my knowledge, the annual filings do not contain any untrue statement of a material fact or omit to state a material fact required to be stated or that is necessary to make a statement not misleading in light of the circumstances under which it was made, with respect to the period covered by the annual filings;

3. Based on my knowledge, the annual financial statements together with the other financial information included in the annual filings fairly present in all material respects the financial condition, results of operations and cash flows of the issuer, as of the date and for the periods presented in the annual filings;

4. The issuer's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures for the issuer, and we have:

   (a) designed such disclosure controls and procedures, or caused them to be designed under our supervision, to provide reasonable assurance that material information relating to the issuer, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which the annual filings are being prepared;

   (b) designed such internal control over financial reporting, or caused it to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the issuer's GAAP; and

   (c) evaluated the effectiveness of the issuer's disclosure controls and procedures as of the end of the period covered by the annual filings and have caused the issuer to disclose in the annual MD&A our conclusions about the effectiveness of the disclosure controls and procedures as of the end of the period covered by the annual filings based on such evaluation.

5. I have caused the issuer to disclose in the annual MD&A any change in the issuer's internal control over financial reporting that occurred during the issuer's most recent interim period that has materially affected, or is reasonably likely to materially affect, the issuer's internal control over financial reporting.

Date: March 28, 2008

*(signed) Michael Cella*
Michael Cella
Senior Vice-President, Chief Financial Officer and Secretary
Global Alumina Corporation

**FORM 52-109F1**
**CERTIFICATION OF ANNUAL FILINGS**

I, Bruce Wrobel, Co-Chairman and Chief Executive Officer of Global Alumina Corporation, certify that:

1. I have reviewed the annual filings (as this term is defined in Multilateral Instrument 52-109 - *Certification of Disclosure in Issuers' Annual and Interim Filings)* of **Global Alumina Corporation** (the issuer) for the period ending **December 31, 2007**;

2. Based on my knowledge, the annual filings do not contain any untrue statement of a material fact or omit to state a material fact required to be stated or that is necessary to make a statement not misleading in light of the circumstances under which it was made, with respect to the period covered by the annual filings;

3. Based on my knowledge, the annual financial statements together with the other financial information included in the annual filings fairly present in all material respects the financial condition, results of operations and cash flows of the issuer, as of the date and for the periods presented in the annual filings;

4. The issuer's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures for the issuer, and we have:

   (a) designed such disclosure controls and procedures, or caused them to be designed under our supervision, to provide reasonable assurance that material information relating to the issuer, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which the annual filings are being prepared;

   (b) designed such internal control over financial reporting, or caused it to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with the issuer's GAAP; and

   (c) evaluated the effectiveness of the issuer's disclosure controls and procedures as of the end of the period covered by the annual filings and have caused the issuer to disclose in the annual MD&A our conclusions about the effectiveness of the disclosure controls and procedures as of the end of the period covered by the annual filings based on such evaluation.

5. I have caused the issuer to disclose in the annual MD&A any change in the issuer's internal control over financial reporting that occurred during the issuer's most recent interim period that has materially affected, or is reasonably likely to materially affect, the issuer's internal control over financial reporting.

Date: March 28, 2008

*(signed) Bruce Wrobel*
Bruce Wrobel,
Co-Chairman and Chief Executive Officer
Global Alumina Corporation

Computershare
530-8th Avenue SW, 6th floor
Calgary AB, T2P 3S8
www.computershare.com

Date: 28/03/2008

To: All Canadian Securities Regulatory Authorities

**Subject: GLOBAL ALUMINA CORPORATION**

Dear Sirs:

We advise of the following with respect to the upcoming Meeting of Security Holders for the subject Issuer:

| | |
|---|---|
| Meeting Type : | Annual Meeting |
| Record Date for Notice of Meeting : | 23/04/2008 |
| Record Date for Voting (if applicable) : | 23/04/2008 |
| Meeting Date : | 04/06/2008 |
| Meeting Location (if available) : | Toronto, ON |

**Voting Security Details:**

| Description | CUSIP Number | ISIN |
|---|---|---|
| NEW COMMON GLOBAL ALUMINA CORP | 37944L104 | CA37944L1040 |

Sincerely,

**Computershare Trust Company of Canada /**
**Computershare Investor Services Inc.**

Agent for GLOBAL ALUMINA CORPORATION

RECEIVED
2008 APR 23 A 4: 54
OFFICE OF INTERNATIONAL CORPORATE FINANCE

**Form 51-102F3**

# MATERIAL CHANGE REPORT

**Section 7.1 of National Instrument 51-102**
**Continuous Disclosure Obligations**

## ITEM 1: NAME AND ADDRESS OF REPORTING ISSUER

Global Alumina Corporation (the "Corporation")
44 Chipman Hill, 10th Floor
P.O. Box 7289
Saint John, New Brunswick E2C 4S6

Principal Offices:
245 Park Avenue
38th Floor
New York, New York 10167

## ITEM 2: DATE OF MATERIAL CHANGE

March 25, 2008.

## ITEM 3: PRESS RELEASE

A press release was issued by the Corporation on March 25, 2008. A copy of the press release was filed on the System for Electronic Document Analysis and Retrieval ("SEDAR") and is available at the Corporation's reference page on the Internet at www.sedar.com.

## ITEM 4: SUMMARY OF MATERIAL CHANGE

On March 21, 2008, the board of directors of the Corporation approved the audited financial statements and notes thereto (the "Financial Statements") and management's discussion and analysis thereof (the "MD&A") for the year ended December 31, 2007.

The Corporation's results for the year-ended December 31, 2007 reflect both a dilution gain from the sale of interests in a joint venture to develop an alumina refinery, mine and associated infrastructure located in the bauxite-rich region of the Republic of Guinea (the "Project") and, from May 17, 2007, its one-third proportional interest in the Project resulting from the completion of the joint venture transaction.

On March 13, 2008 the board of directors of Guinea Alumina Corporation, Ltd. ("Guinea Alumina") which together with its wholly-owned Guinean subsidiary, Guinea Alumina Corporation, S.A., is the owner and developer of the Project, accepted as final the recently completed bankable feasibility study of the Project ("Feasibility Study"), and directed the joint venture's management to complete a Project development plan (the "Development Plan") which will add a financing plan and implementation schedule to the Feasibility Study for consideration by the board of directors of Guinea Alumina by the beginning of June 2008.

## ITEM 5: FULL DESCRIPTION OF MATERIAL CHANGE

On March 21, 2008, the Board of Directors of the Corporation approved the Financial Statements and MD&A for the financial year ended December 31, 2007. A copy of the Financial Statements and MD&A has been filed on SEDAR and is available at the Corporation's reference page on the Internet at www.sedar.com.

The Corporation's results for the year ended December 31, 2007 reflect both a dilution gain of $88,046,498, and post May 17, 2007 to September 30, 2007, its one-third proportionately consolidated interest in Guinea Alumina (versus 100% interest through May 17, 2007) and, from October 1, 2007 to December 31, 2007, its one-third interest in Guinea Alumina accounted for by the equity method, all resulting from the completion of the joint venture transaction and subsequent developments. The Corporation's operations for the year ended December 31, 2007 produced net income of $76,127,948 or $0.37 per share (2006 – ($19,518,585) or $(0.10) per share). Interest income for the year was $3,513,408 (2006-$1,497,830).

At December 31, 2007, the Corporation had unrestricted cash of $20,203,943 and restricted cash totalling $86,049,033 in an escrow account for future Project capital calls and to fund any warranty and indemnity obligations that may arise under the Subscription Agreement (as defined in the MD&A). At March 21, 2008 the Corporation had unrestricted cash of $22.1 million and restricted cash totalling $72.6 million of which $13 million is expected to be remitted for budgeted capital calls through the end of May 2008. The Corporation expects that the unrestricted funds will be sufficient to enable it to meet its corporate operating expense requirements through 2011 and that the escrowed funds will be sufficient to fund its one-third share of Project equity requirements at least through to finalization of debt financing for the Project.

The Feasibility Study was delivered to the board of directors of Guinea Alumina on March 13, 2008. It confirms the economic viability of the Project and recommends approval by the joint venture partners to proceed to the execution phase of the Project. The Feasibility Study will form the basis for the Project Development Plan which will also include a detailed timetable for implementation as well as a financing plan and associated equity drawdown schedule from June 2008 forward. The Development Plan is expected to be finalized and tabled for approval by Guinea Alumina's board of directors in June 2008. The current draft Development Plan schedule contemplates:

- notice to proceed under an engineering, procurement and construction management contract in the third quarter of 2008 with preliminary work, together with orders for long lead items, continuing and ramping up substantially in June 2008 in order to preserve the Project's construction schedule
- first concrete to be poured at the refinery site by February 2009
- completion of the Kamsar container quay in March 2009
- power substation operational in August 2011
- the startup process transitioning from the construction phase into the operating phase commencing in late 2011 with bauxite first fed into the first refinery line around yearend 2011, first alumina shipments there from and bauxite first fed into

the second refinery line following three months thereafter and shipments from the second refinery line beginning three months after that

- full operation of refinery at capacity by the end of April 2012

Though the refinery, configured initially with two processing lines, is expected to be initially capable of producing 3.3 million metric tons annually at start up, its annual production capacity is expected to reach the refinery's nominal capacity of 3.6 million metric tons as a steady state within five years and gradually increase to a capacity of 3.95 million metric tons through its life as the operating staff gain experience. The refinery layout is configured to accommodate a third processing line which would increase the refinery's total nominal capacity to over 5.4 million metric tons per year. Current benchmarking against existing global refining capacity shows the refinery's projected cash operating costs to be among the world's lowest 10%.

The Project is in the process of raising approximately $1.8 billion to $2.55 billion of long-term, senior secured project debt financing from a consortium of export credit agencies, official development agencies and commercial bank lenders. Certain affiliates of the joint venture partners may also participate in the Project lending syndicate.

In March 2008, the board of directors of Guinea Alumina approved an interim work plan and budget of $110.8 million for the period from January 2008 through May 2008. Including an additional approximate $8 million of net property, plant and equipment costs as of December 31, 2007, Guinea Alumina is expected to have incurred in excess of $400 million of capital expenditures from inception through May 2008.

## ITEM 6: RELIANCE ON SUBSECTION 7.1(2) or (3) of NATIONAL INSTRUMENT 51-102

Not applicable.

## ITEM 7: OMITTED INFORMATION

Not applicable.

## ITEM 8: SENIOR OFFICER

The following senior officer of the Company is knowledgeable about the material change and this report:

Michael J. Cella
Senior Vice President and Chief Financial Officer
(212) 351-0000
cella@globalalumina.com

**ITEM 9: DATE OF REPORT**

DATED at New York, New York this 31st day of March, 2008.

By: *(signed) Michael J Cella*

Michael J. Cella
Senior Vice President and Chief Financial Officer

Global Alumina

245 Park Avenue
38th Floor
New York NY 10167

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April 10, 2008

New Brunswick Securities Commission
Ontario Securities Commission
British Columbia Securities Commission
Alberta Securities Commission
Saskatchewan Financial Services Commission Securities Division
The Manitoba Securities Commission
Autorité des marchés financiers
Nova Scotia Securities Commission
Registrar of Securities, Prince Edward Island
Securities Commission of Newfoundland and Labrador

Dear Sirs/Mesdames:

**Global Alumina Corporation – Amended and Restated Technical Report**

On February 23, 2006, we filed a NI 43-101 technical report dated February 23, 2006 (the "Original Technical Report") in respect of our bauxite mining concession and alumina refinery project as then evaluated by the qualified persons who authored the Original Technical Report (the "Qualified Persons").

Attached hereto is the Original Technical Report with certain clarification amendments made thereto which are effective as of the date of the Original Technical Report. No other changes were made to the Original Technical Report and it has not been updated to reflect any revised information.

For your convenience, below, we have set out the changes made to the Original Technical Report.

1. The fourth paragraph on page 16 of the Original Technical Report under the heading "Reliance on Other Experts" was amended as follows:

> "Based on the feasibility study for the project of July 2001, as updated in December 2005, (collectively, the Prefeasibility Study) BH&P is satisfied that all of the key technical, engineering, legal, operating economic, social and environmental factors have been evaluated and provide a reasonable basis for the conversion of Resources to Reserves. BH&P has carried out a resource estimate,

developed a mine plan and produced a reserve estimate based on exploration data generated by Global Alumina. ~~However, BH&P cannot offer an opinion on the technical viability, costs or recoveries of the proposed Refinery process. BH&P has not audited or verified the land position, ownership and conditions of tenure for the Global Concession. BH&P has not audited or verified the economic or~~**While BH&P did not audit or separately verify the reports and studies regarding the economic and** financial analysis of the ~~overall alumina Refinery project, for which it is not qualified. For this purpose, BH&P have relied upon the information provided by Michael Cella, Chief Financial Officer of Global Alumina.~~**alumina Refinery, they examined such reports and studies and have confidence in their accuracy and their suitableness for use in the preparation of this technical report.**"

2. The first paragraph in Section 19.3 of the Technical Report under the heading "Mineral Reserve Estimate – Key Assumptions" was amended as follows:

"The Mineral Reserve estimate is specifically prepared as part of Global Alumina's plans for the Refinery in the Concession Area ~~and the economic viability of mining is assumed on the basis of Global Alumina's overall economic projections which are not further discussed in this technical report on bauxite resources and reserves~~. The mine plan presented in Section 20 demonstrates the feasibility and practicality of supplying bauxite to the Refinery and the specified levels of available alumina and reactive silica at a modest and predictable cost. **The economic and financial analysis of the Refinery examined by BH&P demonstrated that the mineral reserves are economical.**"

These changes were made by the Qualified Persons who authored the Original Technical Report.

If you have any questions, please do not hesitate to contact me.

Yours very truly,

Michael Cella
Chief Financial Officer and Senior Vice President

# GLOBAL ALUMINA REFINERY PROJECT

# BAUXITE RESOURCES, RESERVES AND MINE PLAN

# REPUBLIC OF GUINEA

BUTTY HERINCKX & PARTNERS
GEOLOGICAL AND MINING CONSULTANTS


NI 43-101 Technical Report prepared for Guinea Alumina Corporation S.A.
(a wholly owned subsidiary of Global Alumina Corporation)

by


Dominique L. Butty, Geologist
*MSc, MA, EuroGeol, CHGeolcert*

Rob F. Herinckx, Mining Engineer
*MSc MinEng, EurIng, Ceng, MIMM*


---

**23rd February, 2006**

## 1. TITLE PAGE

# GLOBAL ALUMINA REFINERY PROJECT

# BAUXITE RESOURCES, RESERVES AND MINE PLAN

# REPUBLIC OF GUINEA

This technical report was prepared for Guinea Alumina Corporation S.A., a wholly owned subsidiary of Global Alumina Corporation, to be specifically in conformance with the requirements of Canadian National Instrument 43-101 - Standards of Disclosure for Mineral Projects, effective 30th December 2005 and provides the technical data necessary to support the resource and reserves estimates.

Prepared by

Dominique L. Butty, Geologist
*MSc, MA, EuroGeol, CHGeolcert*

Rob F. Herinckx, Mining Engineer
*MSc, EurIng, Ceng, MIMM*

**Effective date 23rd February, 2006**

# CONVENTIONS

**Abbreviations**

| | |
|---|---|
| COG | Cutoff grades |
| Ac | Accumulation |
| ROM | Run of Mine |
| TOC | Total Organic Carbon |
| AA | Available Alumina |
| TGA | Thermo-Gravimetric Analyser |
| QA | Quality Assurance |
| QC | Quality Control |
| CRM | Certified Reference Material |
| LMG | Low monohydrate Metal Grade |
| SMG | Standard Metal Grade |
| Totox | Sum of major oxides and LOI |
| LOI | Loss on ignition, a measure of combined $H_2O$ |

**Grid System**
UTM WGS-84 co-ordinate system

**Standards, Resources and Reserves**
The standards and terminology used in this document are in accordance with National Instrument 43-101 - Standards of Disclosure for Mineral Projects (NI 43-101). The reserve estimates have been made in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (the CIM) Definition Standards on Mineral Resources and Mineral Reserves (the CIM Definition Standards) adopted by the CIM Council on December 11, 2005.

Mineral Resources are reported in terms of undiluted grades and dry tonnage in situ. Mineral Reserves are reported in terms of economically recoverable bone dry metric tonnes and grades, taking full account of mine losses and dilution. All terms used but not otherwise defined herein have the meanings given thereto under CIM Definition Standards.

**Units**
All units are metric unless otherwise stated.
Grade percentages are indicated in absolute terms, unless otherwise stated.

| | |
|---|---|
| Density | $t/m^3$, on a bone dry basis unless otherwise stated |
| bdmt | Bone-dry Metric Tonne |
| kt | Kilo tonne, on a bone dry basis unless otherwise stated |
| Mt | Million tonne, on a bone dry basis unless otherwise stated |

**Chemical constituents**

| Assays | Description | Mineral Phases |
|---|---|---|
| $Al_2O_3$ | Total alumina | Gibbsite, Kaolinite and Aluminous Goethite |
| AA | Available alumina | Gibbsite, unless stated otherwise AA stands for $AA_{150}$ |
| $SiO_2$ | Total silica | Kaolinite, Quartz and amorphous silica |
| $RSiO_2$ | Reactive silica | Kaolinite and amorphous silica |
| $Fe_2O_3$ | Iron oxide | Haematite, Goethite, Limonite |

**Available Alumina (AA)**
Temperature digests are indicated as $AA_{150}$, $AA_{225}$

**Composite**
Bauxite intercept within specified cutoff grades.

**Top Soil**
Unconsolidated material containing visible organics and a variable proportion of ferruginous concretions within a claylike matrix consisting of iron oxides/hydroxides, boehmite, gibbsite, organic matter and kaolin. Top soil is excluded from the resources and reserves.

**Overburden**
Consolidated off-grade material, generally described as duricrust or ferruginous hardpan capping bauxite. However, material described as duricrust, hardpan or hard cap may not necessarily be overburden. Throughout this study, overburden excludes top soil.

**Names of Companies**

**GAC** Guinea Alumina Corporation S.A. is a wholly owned subsidiary of Global Alumina Corporation (Global Alumina). The latter company name is used throughout the report.

**BH&P** Butty Herinckx & Partners BV, The Netherlands, with an office in Switzerland.

**CBG** Compagnie des Bauxites de Guinée S.A., held 51% by Halco and 49% by the Government of Guinea.
The **CBG Concession** is defined as the eastern portion of the original concession issued to CBG in 1963, now covering approximately 602km², and encompassing all of the mining operations of CBG. The western boundary of the CBG concession is contiguous with the eastern boundary of the Global Mining Concession.

**Friguia** Friguia Alumina Refinery of Guinea taken over by RUSAL for 22 years in 2002. The estimated capacity of the refinery stands at 780 thousand tonnes of alumina and 2.8 million tonnes of bauxite per annum.

**Halco** Halco (Mining) Inc., consortium of companies including Alcoa World Alumina (45%), Alcan Inc. (45%) and Dadco Investments (10%). Pechiney S.A. of France was shareholder in former years.

**Geoprospects Ltd. (formerly Geoconsult Ltd.)**
Exploration company, specialised in bauxite and based in Conakry, Guinea, headed by Dr. Vladimir Mamedov.

**Hindalco (formerly Indal)**
Indian integrated aluminium producing company with research facilities.

**ALS** ALS Chemex – Vancouver based chemical testing laboratories.

**Ultra Trace** Ultra Trace Laboratories, Canning Vale, Western Australia – chemical testing laboratories.

**SRK** SRK Consulting Engineers and Scientists.

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## 3. SUMMARY

**Introduction**
Butty, Herinckx and Partners (BH&P) have been retained by Guinea Alumina Corporation S.A., an indirect wholly owned subsidiary of Global Alumina, to carry out resource modelling, mine planning and reserve estimation for the company's bauxite concession in the Boké region of the Republic of Guinea (Guinea). This technical report has been prepared by BH&P in conformance with the requirements of NI 43-101 and provides the technical data necessary to support the resource and reserves estimates.

The bauxite will supply an alumina refinery (the Refinery), with a capacity of 2.8 million tonnes of alumina per annum, to be built by Global Alumina in the Boké region of Guinea. The bauxite supply is to be to the specifications set by the Refinery and the quality of the bauxite is to be consistent with achieving the specified levels of available alumina and reactive silica throughout the 25-year period. Bauxites will be required at the rate of 7.6 million tonnes per annum.

**Property Description and Location**
The concession area (the Global Concession) has been granted to Global Alumina pursuant to a Basic Agreement dated October 15, 2004 between Global Alumina and the Government of Guinea, as amended by an Amending Agreement dated May 16, 2005.

The bauxite mining concession (the Mining Concession) covers 690 km² and adjoins a concession held by CBG to the east and a concession held by Russian Aluminium (Rusal) to the north. Mining operations have exploited bauxite from the CBG concession since 1973 and the current production rate is approximately 12.8 million tonnes annually of bauxite that is exported to a consortium of aluminium producing companies, the Halco partners, who hold a 51% interest in CBG. The Government of Guinea holds the remaining 49% interest in CBG. The Rusal concession is currently undeveloped.

The Concession Area held by Global Alumina through GAC also comprises a port (Port Area) and an industrial zone (Industrial Zone) in the area of Kamsar that is in addition to the 690 km² Mining Concession. Kamsar is located approximately 100km west of the site of the company's planned Refinery; the Port Area will be linked to the Refinery by the railway that currently serves CBG although a spur line of some 15km will be necessary to link the Refinery with the existing railway.

**History**
The Mining Concession area had previously been explored by CBG, primarily for export bauxite. Since 2004, Global Alumina has conducted an extensive programme of exploration in the area, largely on three bauxite-bearing plateaux in close proximity to the proposed Refinery site. Bauxite samples from these plateaux have been subjected to process test work to allow for design of the Refinery flow sheet.

On the basis of the exploration data collected by Global Alumina, resource models of the deposits have been developed following validation of the sampling and analytical data and geostatistical analysis of the results. The resource models were used as a basis for open pit mine planning studies to demonstrate that an adequate supply of bauxite meeting the required quality specifications for the Refinery could be met from the three plateaux explored by Global Alumina.

Dominique Butty, EuroGeol., acted as Qualified Person and has been involved in the Global Alumina project since an early stage. He assisted Global Alumina in planning the sampling and analytical procedures for the resource definition drilling and monitored the programme that was supervised by Global Alumina in the field. Mr Butty has made two visits to the Mining Concession area. Robert Herinckx, Eur Ing, has been responsible for mine planning. Both persons have extensive experience in bauxite exploration and mining world wide but also, in particular, in the country of Guinea where they have been involved in adjacent exploration activities and mining operations of CBG and of Friguia since 1986.

This report confirms the accuracy of the work done in support of Global Alumina's Mineral Resource and Mineral Reserve estimates. BH&P consider that the proposed mining operations can supply bauxite with the grades of available alumina and reactive silica specified for the proposed Refinery over a twenty-five year period.

**Geology and Mineralisation**

The Mining Concession is within the Boké bauxite belt, one of the most prolific bauxite regions of the world. Bauxite is derived from a flat-lying sequence of Palaeozoic sedimentary strata and dolerite sills that have been subjected to tropical weathering over millions of years. The bauxite occurs as flat layers capping the plateaux that extend throughout the Boké region, typically at elevations above 200m. The combined effects of tropical weathering and good drainage, provided by the topographic relief, have led to a concentration alumina and iron oxides within the upper few metres of the sub-surface by leaching of most other oxides. Minor quantities of titanium oxides, kaolin and quartz also remain in the bauxite profile.

Nineteen bauxite-bearing plateaux have been identified within the Mining Concession. The bauxite layer is more-or-less continuous over the extent of the plateaux but of variable depths and quality. The average depth of the bauxite is approximately 8m and it is generally exposed at surface where it may form an iron-enriched cap. The bauxite within the Mining Concession (the Global Bauxite) consists largely of the aluminous trihydrate mineral gibbsite, ($Al_2O_3.3H_2O$) that can be treated in a low temperature Bayer plant to recover the alumina.

**Exploration**

Global Alumina has explored three bauxite plateaux in detail by a combination of auger and core drilling; these plateaux are in proximity to the proposed Refinery site. Auger drilling is a rapid and effective means of exploring for bauxite in the Boké region. The cuttings allow the geologist to recognize the principal lithological changes within the laterite profile and allow for sampling on a metre interval basis.

From April 2004 to December 2005, Global Alumina completed 609 drill holes for metallurgical test work, grade continuity studies and resource definition. The drilling was largely carried out at 300m and 150m drill hole centres. Two pits were also excavated through the bauxite profile to obtain *in situ* density data. Chemical analyses of the 5736 samples used for resource definition were carried out on a systematic basis at Ultra Trace Laboratories in Western Australia. A programme of third party check analyses, involving 273 samples, was carried out at the Hindalco laboratories in India. Mineralogical studies have also been made of the Global Bauxites.

Two series of sampling programmes were conducted to provide material for process test work that was also conducted at the Belgaum Research and Development Centre of Hindalco, a major Indian producer of alumina. This work has allowed for the definition of an appropriate process flow sheet for the Refinery that will use the Low Temperature Bayer process.

**Resources and Reserves**
The reserve estimates have been made in accordance with the CIM Definition Standards.

BH&P were provided with bauxite quality specifications for the proposed Refinery. Resource models were then prepared with 2D block kriging of borehole composites with cut-off grades of 38% Total $Al_2O_3$ and 10% Total $SiO_2$ to provide a broad envelope to the potentially economic mineralization. 2D modelling is considered the most appropriate method for such extensive yet relatively thin areas of mineralization. Grade continuity studies as referred to above have confirmed that resource categorization could be based on drill grids of 300 x 300m and 150 x 150m for Indicated and Measured Resources respectively.

**Table 3.a** **Reportable Mineral Resource as of November 25th, 2005**
Dry Density 2.0 t/m$^3$, Block Size 50 x 50m.

| Resources | Dry Mt | Overburd m | Bauxite Depth m | $Fe_2O_3$ % | $Al_2O_3$ % | $AA_{150}$ % | $SiO_2$ % | $RSiO_2$ % | Grid Size m x m |
|---|---|---|---|---|---|---|---|---|---|
| Measured | 122 | 0.9 | 8.6 | 25.1 | 45.2 | 38.9 | 2.0 | 1.0 | 150 x 150 |
| Indicated | 108 | 1.0 | 6.1 | 25.0 | 44.9 | 39.1 | 2.1 | 1.1 | 300 x 300 |
| Inferred | 2.9 | 1.5 | 4.9 | 25.7 | 44.6 | 38.8 | 1.9 | 0.9 | up to 600 x 600 |

An analysis of standard errors on the estimation parameters concluded that within the 95% confidence interval, the relative error on the alumina contained within the current limits to the three plateaux stood at 7.5% for Measured Resources and 14.3% for the Indicated Resources. The deposits remain largely open and there is potential to increase the tonnage with further drilling.

Mineral Reserves were derived from the Resources by applying mining and grade scheduling constraints including:

- A cut-off of 40% Total $Al_2O_3$ on the average of drill hole composites.
- A minimum mineable ore thickness of 2m.
- Grade dilution by footwall and overburden (exclusive of soil).
- A mine recovery factor of 95%.

The use of a 40% $Al_2O_3$ cut-off and the selected dilution parameters demonstrates that grades of close to 39% available alumina (AA) can be achieved as called for by the Refinery feedstock specification.

**Table 3.b** **Reportable Mineral Reserve as of November 25th, 2005**
Dry Density 2.0 t/m$^3$, Block Size 50 x 50m.

| Reserves | Dry Mt | Top Soil m | Bauxite Depth m | $Fe_2O_3$ % | $Al_2O_3$ % | $AA_{150}$ % | $SiO_2$ % | $RSiO_2$ % | Grid Size m x m |
|---|---|---|---|---|---|---|---|---|---|
| Proven | 101 | 0.2 | 9.1 | 25.3 | 45.0 | 38.8 | 2.0 | 1.0 | 150 x 150 |
| Probable | 87 | 0.2 | 6.7 | 25.7 | 44.4 | 38.6 | 2.1 | 1.0 | 300 x 300 |
| Reportable Mineral Reserve | 188 | 0.2 | 8.0 | 25.5 | 44.8 | 38.7 | 2.0 | 1.0 | |

Measured and Indicated Mineral Resources shown in Table 3.a are inclusive of those Mineral Resources modified to produce the Mineral Reserves as shown in Table 3.b

## Mine Planning

A complete and detailed mine plan has been developed based on the resource models of Plateaux 2, 7 and 15 to demonstrate that a reliable source of bauxite of consistent quality can be achieved over the projected mine life. A production schedule has been prepared on an annual basis covering a twenty-five year period to confirm the grades of the expected feedstock quality and to illustrate the mining sequence of the overall mine plan as the three plateaux are developed.

**Table 3.c Summarized Production Schedule with Grades and Haul Distances**

| Year | Project Yr | Alumina Kt | Ore Kt(dry) | AA % | Top soil | Bxt m | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % | $RSiO_2$ % | Haul Dist. km | No of 65t trucks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2008 | 1 | 370* | 1,000 | 39.0 | 0.2 | 9.8 | 24.6 | 1.9 | 2.4 | 25.1 | 45.4 | 0.9 | 1.0 | 3 |
| 2009 | 2 | 1,863 | 5,051 | 38.8 | 0.2 | 9.1 | 24.6 | 1.9 | 2.4 | 25.2 | 45.3 | 1.0 | 1.1 | 3 |
| 2010 | 3 | 2,800 | 7,578 | 38.9 | 0.2 | 8.0 | 24.6 | 2.2 | 2.5 | 25.1 | 45.0 | 1.1 | 1.6 | 5 |
| 2011 | 4 | 2,800 | 7,544 | 39.1 | 0.3 | 7.7 | 24.7 | 2.2 | 2.5 | 24.9 | 45.1 | 1.1 | 1.7 | 5 |
| 2012 | 5 | 2,800 | 7,551 | 39.0 | 0.2 | 8.5 | 24.7 | 2.1 | 2.5 | 25.0 | 45.2 | 1.0 | 2.5 | 6 |
| 2013 | 6 | 2,800 | 7,562 | 39.0 | 0.2 | 10.0 | 24.6 | 2.1 | 2.4 | 25.0 | 45.3 | 1.0 | 2.9 | 7 |
| 2014 | 7 | 2,800 | 7,586 | 38.8 | 0.2 | 10.2 | 24.6 | 2.0 | 2.4 | 25.2 | 45.2 | 1.0 | 3.2 | 7 |
| 2015 | 8 | 2,800 | 7,578 | 38.9 | 0.3 | 10.2 | 24.6 | 1.9 | 2.3 | 25.4 | 45.1 | 0.9 | 3.0 | 7 |
| 2016 | 9 | 2,800 | 7,572 | 38.9 | 0.2 | 10.2 | 24.6 | 1.9 | 2.3 | 25.4 | 45.1 | 0.9 | 3.0 | 7 |
| 2017 | 10 | 2,800 | 7,550 | 39.0 | 0.2 | 10.3 | 24.7 | 1.9 | 2.4 | 25.3 | 45.1 | 1.0 | 3.4 | 8 |
| 2018 | 11 | 2,800 | 7,627 | 38.7 | 0.2 | 9.9 | 24.5 | 2.0 | 2.4 | 25.7 | 44.8 | 1.0 | 3.4 | 8 |
| 2019 | 12 | 2,800 | 7,628 | 38.6 | 0.1 | 8.6 | 24.5 | 1.8 | 2.4 | 26.0 | 44.7 | 0.9 | 3.4 | 8 |
| 2020 | 13 | 2,800 | 7,628 | 38.6 | 0.1 | 8.6 | 24.5 | 1.8 | 2.4 | 26.0 | 44.7 | 0.9 | 3.4 | 8 |
| 2021 | 14 | 2,800 | 7,662 | 38.5 | 0.2 | 7.8 | 24.4 | 1.9 | 2.5 | 26.0 | 44.6 | 0.9 | 3.9 | 8 |
| 2022 | 15 | 2,800 | 7,627 | 38.6 | 0.2 | 7.1 | 24.5 | 2.2 | 2.6 | 25.4 | 44.6 | 1.1 | 7.6 | 13 |
| 2023 | 16 | 2,800 | 7,676 | 38.4 | 0.2 | 6.6 | 24.4 | 2.2 | 2.6 | 25.7 | 44.3 | 1.1 | 8.6 | 15 |
| 2024 | 17 | 2,800 | 7,676 | 38.4 | 0.2 | 6.5 | 24.4 | 2.2 | 2.6 | 25.9 | 44.1 | 1.1 | 11.4 | 18 |
| 2025 | 18 | 2,800 | 7,676 | 38.4 | 0.2 | 6.5 | 24.4 | 2.2 | 2.6 | 25.9 | 44.1 | 1.1 | 11.4 | 18 |
| 2026 | 19 | 2,800 | 7,589 | 38.8 | 0.2 | 7.0 | 24.6 | 2.4 | 2.6 | 24.9 | 44.6 | 1.2 | 11.2 | 18 |
| 2027 | 20 | 2,800 | 7,610 | 38.7 | 0.2 | 6.7 | 24.6 | 2.3 | 2.6 | 25.2 | 44.7 | 1.1 | 12.2 | 19 |
| 2028 | 21 | 2,800 | 7,608 | 38.7 | 0.2 | 6.7 | 24.6 | 2.3 | 2.6 | 25.0 | 44.8 | 1.1 | 12.0 | 19 |
| 2029 | 22 | 2,800 | 7,621 | 38.7 | 0.2 | 6.3 | 24.5 | 2.2 | 2.5 | 25.1 | 44.8 | 1.1 | 12.2 | 19 |
| 2030 | 23 | 2,800 | 7,635 | 38.6 | 0.2 | 6.4 | 24.5 | 2.1 | 2.5 | 25.4 | 44.7 | 1.0 | 11.6 | 18 |
| 2031 | 24 | 2,800 | 7,662 | 38.5 | 0.2 | 6.7 | 24.4 | 1.9 | 2.5 | 26.0 | 44.4 | 0.9 | 10.0 | 16 |
| 2032 | 25 | 2,800 | 7,659 | 38.5 | 0.2 | 7.1 | 24.4 | 1.8 | 2.5 | 26.2 | 44.3 | 0.9 | 8.2 | 14 |
| **Total** | | **66,636** | **181,156** | **38.7** | **0.2** | **8.0** | **24.5** | **2.1** | **2.5** | **25.5** | **44.8** | **1.0** | **6.4** | |

* Kt contained recoverable alumina on ROM stockpile

The mine methods are based on current mining practices in the Boké region. A conventional truck-and-shovel operation has been selected; the choice of equipment has been made as a function of the geometry of the Global Bauxite deposits and the proximity of a large bauxite reserve in very close proximity to the proposed Refinery. An estimate has been made of the capital and operating costs for the mining operation that will deliver 7.56 Mt annually of dry bauxite to the Refinery. Operating costs of 2.58 US$ per ton of bauxite are estimated for delivery to the crusher, excluding royalty and taxes. An initial capital investment of 19.8 million US$ in equipment is estimated for the mining operation.

**Conclusions and Recommendations**

The exploration programme has characterized the bauxite in sufficient detail and with the required accuracy for process design and resource evaluation. In addition, the exploration programme has established a reserve base, within easy distance of the Refinery, covering a twenty-five year period of bauxite production .

The Reserves, as shown in Table 3.b above, are considered to provide a robust reserve base for the project, capable of giving a reliable bauxite supply both in terms of tonnage and quality. The Global Bauxite can be supplied at a relatively modest and predictable cost since the mining operation uses current practices and is technically straightforward. The financial model for the overall Refinery Project demonstrates economic viability on the basis of the reserve estimates and the projected cost estimates associated with bauxite mining and grade control.

While there are minor issues to resolve in the short term concerning additional survey and bauxite density measurements, it is recommended that Global Alumina conduct development drilling covering the initial proposed mining area to assist in planning pre-production activities and the commencement of mining operations.

# 4. INTRODUCTION

**BH&P's Mandate**
Butty, Herinckx and Partners have been retained by GAC, an indirect wholly owned subsidiary of Global Alumina, to assist and monitor the exploration programme supervised by Global Alumina. In addition, BH&P has received the mandate from GAC to carry out resource modelling, mine planning and reserve estimation of the Mining Concession in the Boké region. The present report was prepared for GAC, in conformance with the requirements of NI 43-101.

**Purpose of Technical Report**
The present report is to demonstrate that

- Bauxite grades within the Mining Concession meet the Refinery specifications.
- Bauxite reserves are sufficient to provide a reliable bauxite supply to the Refinery, throughout the twenty-five year Project period, at the planned capacity of 2.8 million tonnes of alumina per annum.

**Sources of Information**
The Mineral Resource and Mineral Reserve estimates submitted in this report are based on exploration data and information referred to in Section 23 (References) and provided by Global Alumina in the form of:

- Complete drill hole database, including collars survey, assays and borehole logs.
- Maps and aerial photos, including a detailed DTM of the area.
- Reports on geology, QA/QC, exploration procedure manuals and exploration history.
- Bauxite characterisation and Process Simulation studies by BRDC-Hindalco Laboratories, India.
- Reports on check analyses and complementary bauxite analyses by Kimmerle Consultants and Hatch Associates, Canada.

**Field Involvement**
CBG's and Friguia's mining operations have been in production since the early 1970s and 1950s, respectively. BH&P have a long-standing involvement with both companies in the mining district and the adjacent bauxite concessions. R.F. Herinckx and D.L. Butty have both, as independent consultants, individually and jointly, been involved in bauxite exploration, resource and reserve modelling, mine development studies, mine planning, grade control and technical audits in connection with bank loans and mineral project development in Guinea and Sierra Leone for over twenty years.

Mr. D.L. Butty spent one week on site in February 2002 and again in November 2004, during which time he assisted Global Alumina in planning the sampling and analytical procedures for the resource definition drilling and monitored the exploration programme supervised by Global Alumina. R.F. Herinckx has not visited the Boké region in Guinea since 2001, but had meetings during the second half of 2005 with mining equipment suppliers currently active in Guinea, concerning heavy equipment performance and maintenance & repair contracts.

## 5. RELIANCE ON OTHER EXPERTS

In preparing this NI 43-101 technical report on Mineral Resources and Mineral Reserves as defined under CIM Definition Standards, BH&P have reviewed various reports and other documents listed in Section 23 and the material was found to be generally well organised and presented, and where applicable, the conclusions reached are judged to be reasonable.

BH&P consider that the Global Alumina technical team is well qualified and experienced in the field of bauxite development and processing. Key team members, acting as Consultants to Global Alumina, are Bryan S. Osborne, Professional Geologist, M.Sc. (Mineral Exploration 1967), Frank M. Kimmerle, Chemist Ph.D. (1967), Bryan Hiscox, B.Sc. and Paul Dixon B.Sc, both Bayer technology specialists. BH&P assume that all information or explanation given verbally or otherwise by Global Alumina's technical team or contractors was essentially complete and correct at the time of the preparation of this report and that no information has been intentionally withheld.

While BH&P assisted in setting up the procedures for sampling and analytical work, BH&P did not supervise the drilling, sample preparation, assaying, survey data or data capture into the exploration database. Field supervision was carried out by Bryan S. Osborne, P.Geo. on behalf of Global Alumina and was monitored by BH&P. On the evidence of duplicate drilling, the QC and QA reports supplied by Global Alumina, data validation and statistical checks performed on the data by the authors of this report, BH&P regard the exploration database as sound and reliable.

Based on the prefeasibility study for the project of July 2001, as updated in December 2005, (collectively, the Prefeasibility Study) BH&P is satisfied that all of the key technical, engineering, legal, operating economic, social and environmental factors have been evaluated and provide a reasonable basis for the conversion of Resources to Reserves. BH&P has carried out a resource estimate, developed a mine plan and produced a reserve estimate based on exploration data generated by Global Alumina. While BH&P did not audit or separately verify the reports and studies regarding the economic and financial analysis of the alumina Refinery, they examined such reports and studies and have confidence in their accuracy and their suitableness for use in the preparation of this technical report.

## 6. PROPERTY DESCRIPTION and LOCATION

The Mining Concession covers 690 km$^2$ within the Prefecture of Boké in the northwestern sector of the Republic of Guinea. The Global Concession area for the project also includes the Port Area and the Industrial Zone at Kamsar. The following geographic co-ordinates define the limits of the Mining Concession:

**Table 6. Mining Concession – Geographic Coordinates**

| Points | Latitude (N) | Longitude (W) |
|---|---|---|
| A | 11°10'00" | 14°10'00" |
| B | 11°10'00" | 13°58'00" |
| C | 11°02'00" | 13°58'00" |
| D | 11°00'00" | 13°54'00" |
| E | 10°55'00" | 13°54'00" |
| F | 10°55'00" | 14°10'00" |

The Mining Concession has been granted to Global Alumina pursuant to an agreement dated October 15, 2004 between Global Alumina, GAC and the Government of Guinea, as amended by an amending agreement dated May 16, 2005 (collectively, the Basic Agreement). Pursuant to the terms of the Basic Agreement, on January 23, 2006, the Government of Guinea registered a formal decree granting the Mining Concession to Global Alumina. Under the terms of the decree, the Mining Concession has an initial term of 25 years, renewable in accordance with Section 34.2.2 of the Basic Agreement. Section 34.2.2 provides that the initial 25-year term will be automatically renewed for an additional period of 25 years. Beginning with the second 25-year term, upon the delivery, within six months of the expiry of such term, of a maintenance plan with respect to the Refinery and project installation, the Mining Concession may be extended for successive ten-year terms. Under the terms of an agreement dated January 13, 2006 between Global Alumina, the Government of Guinea and Compagnie des Bauxites de Guinée, if Global Alumina does not realize its Refinery project within six years from the date of the agreement, the Mining Concession will revert to the Government of Guinea.

The Mining Concession constitutes a single contiguous area and there are no other prospecting or mining titles within the boundaries of this area. However, under the terms of the decree issued by the Government of Guinea, the Mining Concession does exclude an area of 50 metres on either side of the railway line which runs through the Mining Concession area described in Table 6 above.

Global Alumina has the exclusive right to implement the Project (as such term is defined under the Basic Agreement) in the Concession Area. The activities relating to the Project are described in Article 26 of the Basic Agreement. This right has been granted by the Government of Guinea. However, Global Alumina has the responsibility to carry out the resettlement of populations affected by the Project in accord with the applicable World Bank guidelines. Property limits are determined by reference to a network of survey bench marks that have been surveyed by high precision GPS, however these limits have not been legally surveyed. Figure 6.1a indicates the location of the Mining Concession and that of the CBG Concession being mined by the Compagnie des Bauxites de Guinée (CBG).

The Mining Concession contains nineteen bauxite-bearing plateaux distributed throughout the property. The bauxite occurs on the flat, elevated areas of the Mining Concession, usually at the + 200m elevation. Global Alumina has carried out systematic exploration on three plateaux only, numbered 2, 7 and 15 (refer to Figure 6.1b). A number of other plateaux

have yet to be explored. No mining activities have exploited the bauxite within the Mining Concession.

The Company shall be subject to a mining royalty on the bauxite transformed into alumina at the moment of its exit from inventory, equal to five (5) percent calculated on the FOB value of the CBG bauxite at the date of the Basic Agreement. Royalties shall be levied from the first fiscal year following the date of the commercial production start up.

The property is not known to be subject to any environmental liabilities. Environmental Impact Assessments (EIA) have been filed for the port facilities in June 2004 and the refinery complex in February 2005. The Ministry of Environment approved the Port and Refinery EIAs on September 10, 2004 and May 23, 2005, respectively. Since the submission of these documents, the detailed engineering phase has been initiated and modifications have been made to some Project components. Global Alumina is continually working to improve the Project, and the modifications will be presented in an Addendum to the original EIAs in the coming months. Approval of the Port EIA has permitted Global Alumina to proceed with the construction of the port facilities. Construction of the port facilities commenced in January 2005.

For the mining aspects of the Project, the process for obtaining most of the necessary permits, clearances, and authorizations is addressed in the Mining Code of 1995, published by the Government of Guinea. Most of these processes have been streamlined and centralized under the Ministry of Mines and Geology or the Centre for Mining Development and Promotion (CMDP) within this Ministry. In other specific cases, such as the import and use of explosives, the procedure for obtaining the necessary permits is established in a Joint Ministerial Order (JMO).

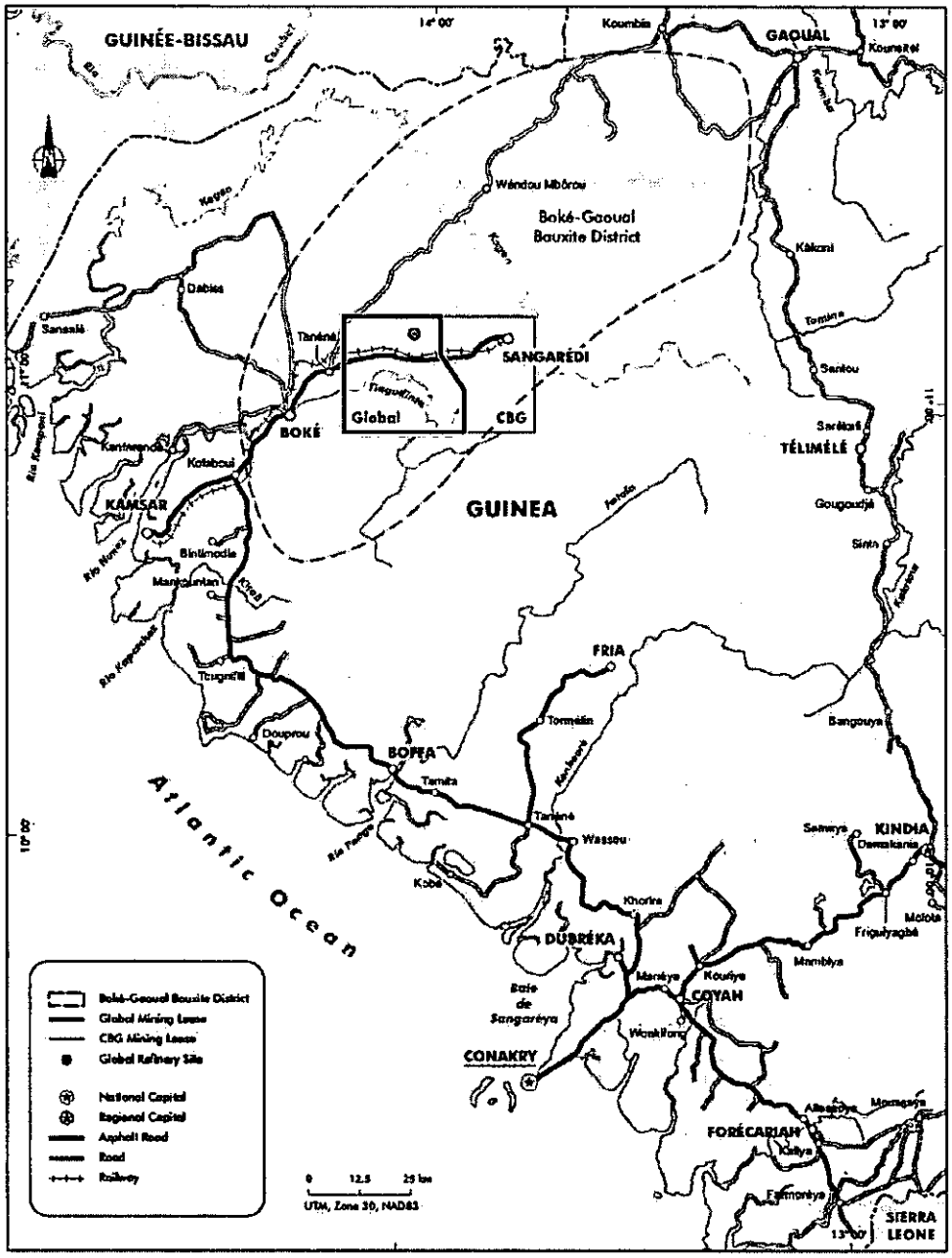
The following permits are normally required before mining and refining operations may start:

1. Permit for Alumina Refinery*
2. Permit for the Use of Explosives
3. Permits for Tree Cutting, Land Clearing, and Excavation Activities
4. Permits for Construction
5. Permit for the Development of Transportation Facilities*
6. Permit for the Construction of a Power Station*
7. Permits for the Building of Dams, for Waterworks and for Water Quality
8. Permit for Compensation (Expropriation)
9. Permit for Quarry (for aggregates)

The foregoing permits designated by "*" are provided for under the Mining Code; for these permits the Minister of Mines and Geology will issue the necessary permit in cooperation with other concerned ministries. As of the date hereof, none of the designated permits have been issued. Where other permits require a formal application, Global Alumina is actively working with the Minister of Mines and Geology to secure the necessary permits. As of January, 2006, Global Alumina has applied for the following permits:

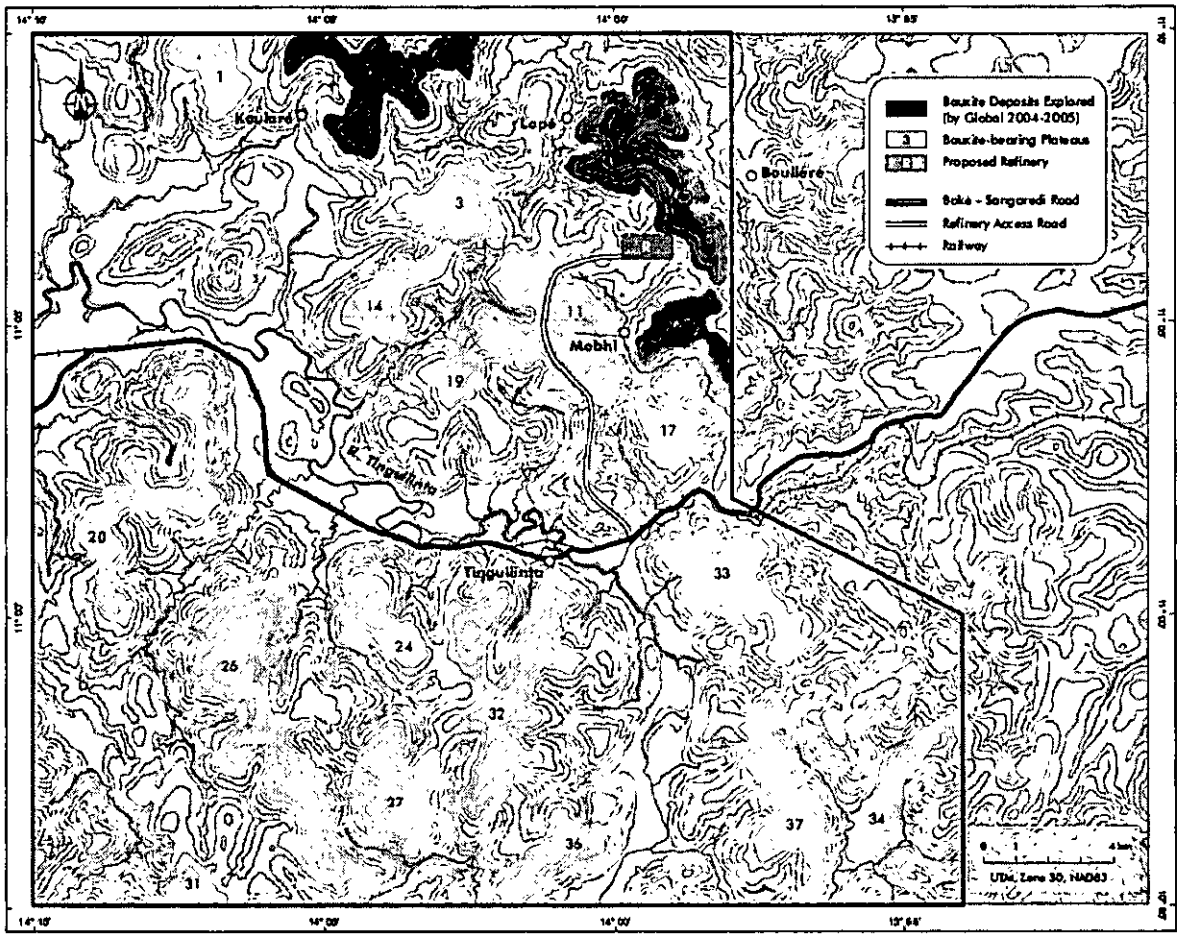
- Tree Cutting, Land Clearing and Excavation Work
- Waterworks
- Water Quality
- Quarry

Permits for the Use of Explosives, Water Supply Dam, Construction and Compensation have not yet been applied for. Other permits related to the port and town site development are required but not listed above.




**Location of Global Mining Lease and Refinery Site**
Boké Prefecture, Republic of Guinea

**Fig. 6.1a Project Location**




Global Alumina Bauxite Concession, Republic of Guinea
Principal Bauxite-bearing Plateaus and Proposed Refinery Site

**Fig. 6.1b Bauxite Plateaux of the Mining Concession**

## 7. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Project consists of a port facility with associated rail spur lines, marshalling yards, and support facilities, a mine, the Refinery with marshalling yards, a power plant, dams, and township for the workers and families, and an interconnecting rail line.

**Topography, elevation, and vegetation**
The Mining Concession area comprises a series of plateaux attaining heights of approximately 250m with steep valleys that drain into the Tinguilinta River basin whose elevation in the centre of the concession is approximately 50m above sea level. The plateaux are flat to gently sloping and support savannah vegetation of grasses and small clusters of trees; they provide grazing for the herds of cattle that migrate across the region. The steep valley slopes are forested and extensively used for cultivation by the local population who use traditional slash- and-burn farming methods of agriculture. The Tinguilinta River valley and its tributaries are home to most of the villagers who cultivate a range of crops such as maize, manioc, nuts and citrus fruits.

**Proposed Refinery Site**
The site of the mine, the Refinery and associated facilities will be approximately 210 meters above sea level at approximately 100 km east of Kamsar. The selected site for the Refinery in the north east sector of the Mining Concession, involves approximately 200 hectares for the Refinery and 300 hectares for mud disposal, or tailings area. The site is level or gently sloping and is not subject to flooding. The Refinery complex will include a coal-fired power plant capable of producing 156MW of electricity and 2000 tonnes per hour of steam. Geotechnical studies are underway at the Refinery area to assure appropriate foundation design. Hydrological studies are also underway to confirm the adequacy of the water supply for the Refinery.

**Access**
Port facilities are accessible by road and railroad. Sea access is provided via the Rio Nunez from the Atlantic Ocean. Typically, vessels enter the port at high tide and leave with the high tide.

The Refinery and associated facilities will be accessed from the main rail line by a rail spur approximately 15 km in length for bauxite shipments, delivery of various feedstock materials, and delivery of construction materials. Additionally there will be road access to and connecting the various associated facilities. A road system will connect the mining operations to the Refinery.

**Infrastructure**
The Port Area facility is located at the Port of Kamsar, which is located approximately 160km northwest of Conakry, Guinea. It is situated on the east bank of the Rio Nunez at roughly 15km from the Atlantic Ocean, near the mouth of the Dougoufissa Creek. The population of Kamsar is approximately 60,000.

The Port Area is connected by road to Boffa and Conakry in the southeast direction, and to Boké and Sangaredi to the northeast. The road to Conakry has recently been resurfaced and is in good condition. The road to Sangaredi has been asphalt paved within the past two years. An existing railroad running from CBG's bauxite mines to the Port of Kamsar is in

good condition and is currently operated by CBG.

The Refinery complex will be located near planned mining operations and about 30 km to the west of Sangaredi, which is approximately 125km from the Port of Kamsar. The population of Sangaredi is approximately 30,000.

**Climate**

Guinea has a defined rainy season that occurs from the months of May to November. During this seven-month period, the monthly rainfall increases from about 150mm to a maximum monthly average of 500 mm in July, August and September, before declining.

The hottest month is March when the daily mean maximum temperature is 37°C and the minimum is 21°C. The coolest month is August when the daily mean maximum temperature is 29°C and the minimum is 22°C.

Mining operations in Guinea are little affected by the climatic conditions with only exceptional rainstorms or periods of mist slowing down operations temporarily.

## 8. HISTORY

With increasing demand for aluminium after the Second World War, Bauxites du Midi, a French subsidiary of Alcan Inc., prospected the Boké region between 1948 and 1961. In 1963, Halco (51% interest), the principal shareholders of which were Alcan Inc., Alcoa World Alumina and Pechiney S.A., formed CBG with the Government of Guinea (49% interest), in order to mine and export the bauxite of the Sangaredi and surrounding deposits from the CBG concession.

The Mining Concession, covering 690 km², is the western area of the original CBG Concession that covered 1,292 km² and was issued to CBG in 1963. After a long period of construction which included construction of the cities of Kamsar and Sangaredi, the mining facilities at Sangaredi, a 135 km railroad to Kamsar, a bauxite crushing and drying facility and deep sea ship loading port at Kamsar, CBG started shipping bauxite in 1973.

Between March 1998 and December 2000, CBG carried out an extensive exploration programme to assess the full potential of the original CBG Concession both for exportable bauxite and also for bauxite that could be of lower grade and suitable to feed a local alumina plant grade. The programme explored, to various detail, 36 plateaux that are located within the original CBG concession but outside the actual CBG mining zone. It was discovered that most of the bauxite deposits meeting the export criterion were located in the eastern half of the original CBG concession, adjacent to the mining zone. The 690 km² covered by the Mining Concession has been released from the western half of the original CBG Concession to provide essentially non-export bauxite resources for Global Alumina's proposed Refinery.

Historical resource estimates on the Mining Concession prepared by Geoconsult Ltd., on behalf of CBG in 2001 were also reviewed for the purposes of preparing the technical report. These estimates show significantly greater resource estimates than those in the company's technical report. However, these estimates have not been prepared in accordance with CIM definition standards as required under NI 43-101. Global Alumina has not verified these estimates and cannot attest to their reliability. Accordingly, these data have not been used for purposes of the estimates contained in the technical report.

# 9. GEOLOGICAL SETTING

The bauxite deposits of the Boké-Sangaredi region are located in the centre of the Bové syncline, a large sedimentary basin infilled by Ordovician to Devonian strata and invaded by mafic sills and dykes. These strata rest unconformably on the older Archean-Proterozoic crystalline complex forming the West African Craton. The Bové basin trends NNW from Sierra Leone to Guinea Bissau, a distance of approximately 250km. The sediments exposed on the limbs of this structure show very low dips of one degree or so. The geology of the Boké region has been studied for in detail for many years by exploration teams led by Dr. Vladimir Mamedov of Geoprospects Ltd. (Section 23, References) to whom the description below of the regional and local geology, deposit types and mineralization may be largely attributed.

## 9.1 Paleozoic Stratigraphy

The sedimentary formations filling the Bové basin are described as follows:

**The Silurian Télimélé Suite**
Starting with a basal conglomerate the Télimélé group consists of black shales, argillites, and siltstones with local intercalations of sandstones. The age is based on graptolite species. At the base of the sequence the bedding is from 1.0 to 3.0 m thick thinning upwards to 5.0 to 10.0 cm. The thickness of the group is between 100 to 140 m.

**The Devonian Faro Suite**
Resting conformably on the Silurian sediments, the Faro Suite of Devonian age consists of two distinct members:

- The Lower Member is of fine grained quartzitic sandstone interbedded with thick lenses (1 to 5 m) of siltstones and argillites. The best exposures of this member are deep in the valley of the Tinquilinta River and the Kolinko and Puoutéré tributaries, in the center of the Mining Concession. A particular argillite horizon some 20 to 25 m thick may be traced laterally 7 to 8 km. Above this horizon is a sequence of alternating argillites and siltstones in units 3 to 7 m thick with sandstones intercalations 0.5 to 1.5 m thick. The overall thickness of the lower member is 160 to 170m.
- The Upper Member is made-up of essentially the same alternating sequence of argillites and siltstones from 0.5 to 3.0 m thick with lenses of quartz rich sandstones some 0.3 to 1.5 m thick. The overall thickness of the upper member is 150 to 160 m

The Devonian age of the Faro Suite has been established by its distinct fossil assemblage of brachiopods, crinoids and trilobites.

## 9.2 Mesozoic Intrusives

Cyclical epeirogenic movements related to the opening of the Atlantic Ocean during the Mesozoic resulted in widespread magmatic activity throughout West Africa. During the Late Triassic to Early Jurassic, the sediments of the Bové basin were extensively invaded by sills, dykes and irregular sheets of basic composition. They are fine to coarse grained with a massive appearance and homogeneous in composition with a very low sulfide content. The sills are generally up to 10m thick but can attain several tens of meters locally and extend laterally for several km. The dolerites or gabbro dykes are oriented parallel to the coastline. The argillaceous rocks in contact or in proximity to the dolerites are metamorphosed into flint-like hornfels.

Outcrops of fresh dolerite are exposed on the floor of major river valleys and sometimes in narrow gorges flanking the steep slopes of the plateaux. It has been extensively used for railroad ballast and construction material throughout the area.

### 9.3 Miocene Lateritic Sediments

Relicts of the Middle Miocene Sangaredi Formation have not been identified on the Mining Concession. This formation is essentially composed of coarse to fine grain clastic sediments eroded from a lateritic sequence, deposited and consolidated in a fluvio-lacustrine basin and exposed to further laterization that eventually produced the very high grade Sangaredi bauxite deposit and remnant deposits on parts of the surrounding plateaux. These deposits have been exploited by CBG since 1973. The Sangaredi Series erosional and depositional cycle is related to a late episode of tectonic activity.

### 9.4 Structural Geology

The evolution of the West African Atlantic margin is characterized by multiple deformation episodes of variable intensities in space and time. The Mining Concession straddles the axial zone of the Bové Paleozoic sedimentary basin that trends north northwest through the Boké region of Guinea. The basin covers an area of about 250 km long by 100 km wide and is infilled by the flat lying sequences of the upper member of the Faro Suite, flanked by its lower member to the east and west. The outer flanks and southern extension are occupied by the Silurian Télimélé Suite indicating a plunge of the fold axis towards the northwest. The dips are shallow towards the center of the fold.

The rocks of the Bové basin are cross cut by numerous regional fault and fracture systems. The two dominant fault systems run perpendicular to each other producing extensive block faulting. A deep-seated transform fault system extending from the mid-Atlantic ridge is oriented E-W to NE-SW along which transcurrent movements have taken place.

A long lasting rift fault system paralleling the Bové synclinal axis probably controlled the sagging and formation of the basin. This Proterozoic fault system was periodically reactivated during the Mesozoic and Cenozoic Eras. During the Cenozoic, prolonged crustal stability punctuated by tectonic activities and dip-slip movement along these faults resulted in the erosion of extensive surfaces creating large plateaux bound by scarps and arranged in step-like fashion upward towards the axis of the Fouta Djalon Uplift 100 km to the west. The present drainage system has preferably developed along the fault and fracture systems.

### 9.5 Geology of the Mining Concession

The Mining Concession is underlain by a stacked pile of argillite, siltstones and minor sandstone intercalations of the Lower and Upper Members of the Faro Suite, widely intruded by sills and dykes of Mesozoic dolerites. The bedrock on top of the plateaux may be either flat lying sediment or dolerite.

The general physiographic aspect of the Mining Concession is controlled by large flat to undulating lateritic plateaux deeply incised by a drainage network that has developed preferably along faults and fracture systems described above. It is only in the valleys of the streams and rivers that fresh rocks are exposed with the most frequent outcrops being dolerites. All surface rocks of the Mining Concession have been subjected to intense laterization since the Middle Miocene. This long lasting process has, for the most part, destroyed the original textures and transformed the bedrock into a typical lateritic profile with a hard near surface duricrust cap rock often hosting significant economic bauxite deposits. Both the sediments and dolerites may weather to bauxite with distinctive chemical and textural features.

## 10. DEPOSIT TYPE

The Boké region of Guinea is one of the world's most prolific sources of bauxite. The formation of such a large volume of lateritic bauxite concentrated in a relatively small area results from a combination of geological, climatic and geomorphologic factors that acted simultaneously over time.

As source rocks or protoliths, the argillite and siltstones of the Paleozoic formations have a high $Al_2O_3$ content ranging between 16.0 and 19.2% and a low $Fe_2O_3$+ FeO content in the order of 1.5 to 6.4%. Dolerite sills and related rocks have on average an $Al_2O_3$ content of about 15.0% but a higher iron oxide content in the order of 10.5%. The flat lying formations offer large continuous and homogeneous surfaces exposed to laterization.

Warm climatic conditions with alternating seasons saturate the rocks with water during the rainy season which, under variable pH and eH conditions, leaches soluble chemicals and percolates downward through the laterite column during the dry season. Stability in this seasonal regime and good drainage conditions must prevail over a long period of time to lead to a full desilication of the upper part of the profile. The oldest bauxitic plateaux of the Fouta Djalon date back to the Upper Cretaceous period some 83 My ago (Mamedov, 2001).

Some plateaux on the Mining Concession do not carry any bauxite because of insufficient drainage preventing leached chemicals precipitating at lower levels in the lateritic column or being flushed out into the drainage system. Usually, the step-like configuration and steep sided flanks of the various plateaux provides good drainage capability.

Laterization and bauxite formation is an unstable and evolving process over time. Once formed, bauxite deposits can be destroyed by a climatic change and erosion. A shift to a more humid environment, associated with denser and more active vegetation, promotes the solubility of the rock forming minerals, particularly that of iron phases which tend to be exported from the profile. Permanent water saturation favours re-silication. It is not unusual to find fields of bauxite fragments of all sizes and shapes littering the surface of bauxitic plateaux. This feature is most likely associated with past climatic variations. The degradation of the horizontal bauxite layer is done over large surface areas and once the climatic equilibrium is restored the underlying weathered level of the lateritic column favours the formation of a new bauxite horizon.

## 11. MINERALISATION

On the Mining Concession, bauxite deposits occur as flat layers forming a thick "blanket" type indurated cap covering the entire surface of the plateaux. Slightly tilted towards the west, they are bounded by steep sided slopes up to 200 m high. Nineteen bauxite-bearing plateaux occur within the Mining Concession. They range in size from 6.2 $km^2$ (No. 17) to 29.5 $km^2$ (No. 20).

Across any given plateau, the alternating sediments or dolerite sills cause the lateritic process to generate specific textures for each rock type. Some plateaux or portions of plateaux are covered with an iron-enriched capping of bauxite fragments, evidently derived from earlier periods of bauxite formation.

The general sequence of the lateritic profile stands as follows:

- The laterite (or duricrust) occupies the upper horizon of the lateritic alteration profile. It is essentially composed of consolidated oxides and hydroxides of aluminium and iron. The bauxite is developed in the upper part of the horizon where the $Al_2O_3$ content exceeds the $Fe_2O_3$ content. In the Boké region this horizon typically varies in thickness from 3.0 to 15.0m and is usually very hard near surface. The bottom 2.0 to 3.0 m of the horizon is more humid and friable and affected by the fluctuating water table. It is within these few meters that a sharp drop in $Al_2O_3$ content is often observed and the predominance of iron is marked by the presence of goethite, or alumogoethite, and hematite. The higher iron content is defined by a dark to wine red or brown coloration. Locally just before this transition, a very hard ironstone layer 10 to 25 cm thick may be present.
- The lithomarge immediately below the friable zone, is a compact but unconsolidated clay horizon, largely kaolinitic in composition. It is red to cream in colour and may reach several meters in thickness. During the exploration programme, this horizon was rarely drilled for more than a meter since it is of no economic interest.
- The saprolite zone develops just below the lithomarge. This horizon is characterized by highly oxidized bedrock but with preserved original textures. It can be 50 m deep and progressively becomes fresh bedrock.

Abundant fractures, fissures and vugs, often filled with iron oxide and hydroxide minerals, are conspicuous throughout the profile.

Generally, the lower part of the bauxite horizon is more aluminous with paler shades of colour; while the higher part shows an increase in iron and becomes reddish in colour. Locally, at the top of the horizon, iron rich minerals form a hard "iron cap" some 50 cm thick. Iron is also accumulated at the base of the bauxite as a hard and compact layer of laterite one or two meters thick. Typical logs and profiles are submitted in Section 26 (Illustrations).

## 12. EXPLORATION

In the framework of its development programme, Global Alumina has conducted field studies on the bauxites of the Mining Concession since April 2004.

### 12.1 Nature and Extent of Exploration Works

Global Alumina initiated a two-year exploration programme in 2004, completing during this period a total of 609 vertical drill holes for metallurgical testing, grade continuity studies and Resources definition mainly on grids of 300 x 300 m and 150 x 150 m, as shown in Table 12.1 and Fig. 12.1. Sampling was carried out at metric intervals, except for top soil, which was not sampled. In addition, two pits were excavated through the bauxite profile for in situ density tests. Samples from these same pits were also collected for bauxite characterisation, mineralogical and metallurgical studies that were carried out in support of process design.

Exclusive of duplicates and reference material, exploration assays added up to 7032. Except for holes drilled in 2004, samples were all logged for facies and physical description. In addition to two pits for dug for Global Bauxite characterisation, mineralogical and metallurgical studies were carried out in support of process design.

**Table 12.1 Summary of Global Alumina Exploration Holes 2004 – 2005**

| PLAT. | DRILL CAMPAIGN | PERIOD OF ACTIVITY | GRID IN m | NUMBER OF HOLES | | OBJECTIVE | ANALYSES |
|---|---|---|---|---|---|---|---|
| | | | | ACTUAL | NUMBERS | | LABORATORY |
| #2 | Series A* | April-04 | Sporadic | 10 | 2GP0001-0010 | Process tests on 20 yr feed* | CBG / Indalco |
| | Series B | June-04 | Sporadic | 7 | 2GPA0059-0065 | Process tests on initial 10 yr feed | CBG/Indalco |
| | Geostatistical sq | 2004 | 175 x 175 | 33 | 2GPA0026-0058 | Resource definition- Continuity (A) | CBG |
| | Pairing | June-04 | On square | 9D | 2GPDnnnn-nnnn | Continuity (B) | CBG |
| | 2005 | June-05 | 300 x 300 | 89 | | Indicated Resources | Ultra Trace |
| | 2005 | June-05 | Profiles | 16D | | Twin holes | Ultra Trace |
| #3 | | March-05 | 3 x 300 m squares | 15 | nnnnnn-nnnnnn | Confirmatory | Ultra Trace |
| #7 | Series A* | April-04 | Sporadic | 7 | 7GP0011-0017 | Process tests on 20 yr feed* | CBG / Indalco |
| | Series B | June-04 | Sporadic | 7 | 7GPA0066-0072 | Process tests on initial 10 yr feed | CBG / Indalco |
| | 2005 | May-05 | 150 x 150 | 283 | | Measured Resources | Ultra Trace |
| | 2005 | May-05 | 150 x 150 | 17D | | Twin Holes | Ultra Trace |
| | Geostatistical sq | June-05 | Cross | 24 | | Resource definition - continuity | Ultra Trace |
| #15 | Series A* | April-04 | Sporadic | 8 | 15GP0018-0025 | Process tests on 20 yr feed* | CBG / Indalco |
| | | March-05 | 3 x 300 m squares | 14 | nnnnnn-nnnnnn | Confirmatory | Ultra Trace |
| | 2005 | June-05 | 300 x 300 | 40 | nnnnnn-nnnnnn | Indicated Resources | Ultra Trace |
| #17 | | March-05 | 3 x 300 m squares | 15 | nnnnnn-nnnnnn | Confirmatory | Ultra Trace |
| #33 | | March-05 | 3 x 300 m squares | 15 | nnnnnn-nnnnnn | Confirmatory | Ultra Trace |

Drilling, pitting, sampling, field survey and sample preparation was carried out by Geoprospects Ltd.
D = Diamond Drill Holes twinned with Auger Holes

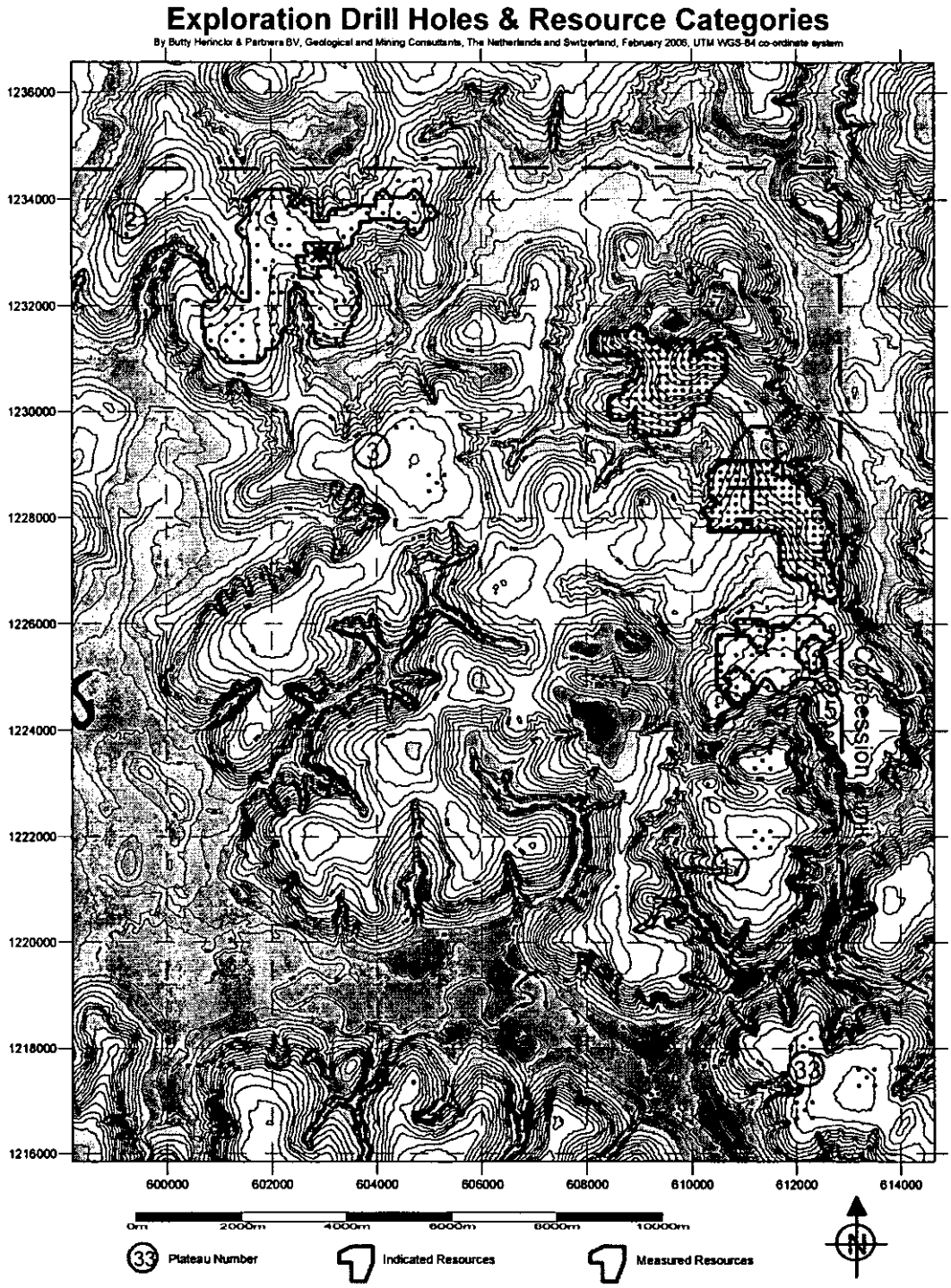



**Fig. 12.1 Drilling by Global Alumina 2004-2005**

### 12.2 Bauxite Characterization Studies

Global Alumina carried out two drill programmes in 2004 to collect appropriate Global Bauxite samples for two phases of process test work that were carried out at the Belgaum Research & Development Centre (BRDC) of Hindalco Industries Limited (Hindalco) in India from June 2004 until February 2005.

In April 2004, 25 auger holes were drilled by Geoprospects on Plateaux 2(Koulore), 7(Lopé) and 15(Mobhi). Referred to as the A Series, these samples provided bauxite from across the extent of the three plateaux in order to prepare composite samples with characteristics that would meet the range of possible Refinery feed quality(*). During the same period, CBG provided bauxite samples selected as representative of bauxite that could be supplied under contract to Global Alumina. Seven plateaux were sampled on behalf of Global Alumina. One sample presented by CBG was from Plateau 12 in close proximity to the eventual Refinery. Because of its proximity, large resource base and the quality of its bauxite in line with the expected plant specifications, the sample of this plateau was selected as the "average grade sample". In June 2004, a further fourteen holes were drilled on Plateaux 2 and 7 to provide bauxite representative of the expected plant feed in the initial ten years of production. These holes are referred to as the B Series. Larger quantities of sample were required for more detailed and varied tests. The two plateaux are in proximity to the proposed Refinery site.

The results, procedures, methodology and the various parameters considered in the above studies are presented and discussed in Section 18 (Mineral Processing and Metallurgical Testing)

### 12.3 Grade Continuity Studies

In June-July 2004, Global Alumina carried out drilling to establish a model for the continuity of the bauxite deposit of the Kouloré deposit (Plateau No. 2). This plateau carries bauxite typical of the area and is being selected as one of the first to be exploited. Thirty three auger holes and nine diamond drill holes were drilled on a closely spaced drill grid at hole separations varying from 12.5m to 50m. Sections are presented in Section 26 (Illustrations) and show the lateral variability of grades and ore thickness. Detailed statistics and variography are presented in Section 20.1 (Exploratory Data Analysis).

### 12.4 Confirmatory Drilling

Limited confirmatory drilling was carried out in March 2005 on four plateaux (Nos. 3, 15, 17, 33, refer to Fig. 12.1), already drilled on orthogonal grids of 300 x 300m by CBG. The programme provided a total of 59 holes and 558 samples, and confirmed the presence of commercial bauxite of these plateaux.

### 12.5 Mineralogy and Petrology

Under the supervision of Dr. Vladimir Seredkin, Geoprospects Ltd. completed a study to define the physical, chemical and mineralogical characteristics of the bauxite found on Plateau 2.
Following the completion and description of the nine core drill holes, selected samples were analyzed for chemical constituents, thin sections of bauxite were described under the microscope and mineralogy was reconciled with XR diffraction.

(*) Two of these 25 holes (which also form part of the 609 holes drilled during 2004-2005, as referred to under Section 12.1) were drilled east of the current Mining Concession limit, prior to the issuance of the formal decree by the Government of Guinea setting out the geographic coordinates of the Mining Concession. (Refer to Section 6. Property Description and Location.) These two holes have not been utilized in the determination of the mineral resource and reserve estimates under Section 19, Mineral Resource and Mineral Reserve Estimates.

## Table 12.5 X-Ray Diffraction Results – Bauxite Mineralogy

| Sample | Lithology | Gibbsite % | Boehmite % | Goethite % | Hematite % | Kaolinite % | Quartz % | Anatase % | Rutile % | Illite % | Ilmenite % | Sum % | Goe/Hem | AlOOH Subsitut | Qtz/$SiO_2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6883 | Basal Clay | 52.50 | 0.50 | 27.00 | 6.00 | 8.00 | 2.00 | 0.50 | 0.20 | | 2.00 | 98.70 | 4.50 | 11.9% | 0.43 |
| 1533 | Bauxite | 61.50 | 3.00 | 17.00 | 6.00 | 7.00 | 2.00 | 2.30 | 0.30 | | | 99.10 | 2.83 | 11.9% | 0.38 |
| 3257 | Bauxite | 64.00 | 2.50 | 20.00 | 8.00 | 1.60 | 1.00 | 1.60 | 0.50 | | | 99.20 | 2.50 | 10.0% | 0.58 |
| 3949 | Bauxite | 73.00 | 3.00 | 14.50 | 2.00 | 2.00 | 1.80 | 2.00 | 0.50 | | | 98.80 | 7.25 | 15.9% | 0.67 |
| 4103 | Bauxite | 43.50 | 10.00 | 28.00 | 12.50 | 3.20 | 0.50 | 1.50 | 0.30 | | | 99.50 | 2.24 | 4.3% | 0.25 |
| 4472 | Bauxite | 61.00 | 3.00 | 23.00 | 6.50 | 0.50 | 3.00 | 1.70 | 0.60 | | | 99.30 | 3.54 | 8.0% | 0.97 |
| 4861 | Bauxite | 60.00 | 2.00 | 25.00 | 7.00 | 1.50 | 2.00 | 1.70 | 0.40 | | | 99.60 | 3.57 | 4.3% | 0.38 |
| 5062 | Bauxite | 64.50 | 4.00 | 21.50 | 5.50 | 1.20 | 0.50 | 1.20 | 0.60 | | | 99.00 | 3.91 | 8.0% | 0.50 |
| 5497 | Bauxite | 54.00 | 2.00 | 31.50 | 6.00 | 3.50 | 0.10 | 1.50 | 0.50 | | | 99.10 | 5.25 | 11.9% | 0.06 |
| 5602 | Bauxite | 54.50 | 2.00 | 29.00 | 10.00 | 1.80 | 0.10 | 1.40 | 0.50 | | | 99.30 | 2.90 | 11.9% | 0.11 |
| 6188 | Bauxite | 79.50 | 3.00 | 10.50 | 1.50 | 1.20 | 0.50 | 2.00 | 0.80 | | | 99.00 | 7.00 | 11.9% | 0.45 |
| 6339 | Bauxite | 66.00 | 2.50 | 17.50 | 5.50 | 1.00 | 2.80 | 2.00 | 0.50 | | | 97.80 | 3.18 | 15.9% | 0.80 |
| 6448 | Bauxite | 75.00 | 0.50 | 17.00 | 3.00 | 1.00 | 0.10 | 2.00 | 0.40 | | | 99.00 | 5.67 | 13.9% | 0.17 |
| 7445 | Bauxite | 67.00 | 0.00 | 10.00 | 8.00 | 2.00 | 0.50 | 0.20 | 0.20 | 5.00 | 4.50 | 97.40 | 1.25 | 11.9% | 0.13 |
| 7552 | Bauxite | 64.00 | 0.00 | 21.00 | 9.00 | 0.50 | 0.20 | 1.40 | 0.50 | | 2.00 | 98.60 | 2.33 | 11.9% | 0.48 |
| 7790 | Bauxite | 68.50 | 1.00 | 20.00 | 3.50 | 1.00 | 1.30 | 1.50 | 0.20 | | 1.80 | 98.80 | 5.71 | 11.9% | 0.74 |
| **Avg.** | **Bauxite** | **63.73** | **2.57** | **20.37** | **6.27** | **1.93** | **1.09** | **1.60** | **0.45** | | | **98.90** | **3.94** | **10.9%** | **0.45** |
| 1794 | Lat. Bauxite | 54.50 | 2.00 | 26.00 | 12.00 | 1.50 | 1.00 | 1.50 | 0.20 | | | 98.70 | 2.17 | 2.5% | 0.60 |
| 2272 | Lat. Bauxite | 62.50 | 1.00 | 22.50 | 10.00 | 0.90 | 0.20 | 2.00 | 0.20 | | | 99.30 | 2.25 | 11.9% | 0.32 |
| 2445 | Lat. Bauxite | 63.50 | 2.00 | 16.00 | 9.00 | 4.00 | 2.50 | 1.50 | 0.30 | | | 98.80 | 1.78 | 8.1% | 0.52 |
| 2673 | Lat. Bauxite | 56.50 | 2.50 | 27.50 | 9.00 | 1.50 | 0.50 | 1.40 | 0.30 | | | 99.20 | 3.06 | 6.2% | 0.38 |
| 2847 | Lat. Bauxite | 55.00 | 4.00 | 22.00 | 12.50 | 1.50 | 2.00 | 1.50 | 0.40 | | | 98.90 | 1.76 | 11.9% | 0.78 |
| 4581 | Lat. Bauxite | 63.00 | 2.00 | 22.00 | 5.00 | 2.50 | 2.00 | 2.00 | 0.50 | | | 99.00 | 4.40 | 6.2% | 0.67 |
| 6079 | Lat. Bauxite | 48.00 | 3.00 | 30.00 | 7.00 | 5.50 | 1.00 | 1.50 | 0.50 | 2.00 | | 98.50 | 4.29 | 2.5% | 0.23 |
| **Avg.** | **Lat. Bauxite** | **57.57** | **2.36** | **23.71** | **9.21** | **2.49** | **1.31** | **1.63** | **0.34** | | | **98.91** | **2.81** | **7.0%** | **0.46** |
| 1946 | Laterite | 59.50 | 3.00 | 17.00 | 9.00 | 5.50 | 0.50 | 2.00 | 0.30 | | | 98.80 | 1.89 | 11.9% | 0.13 |

Laboratory scale alumina extraction tests at differing process temperatures were also conducted. The results of this study are presented in a comprehensive report submitted in December 2004 (Seredkin, M et al., 2004, in Section 23, References).

In 2005, diffractograms were prepared at Queen's University in Ontario and interpreted by Istvan Sajo at the Hungarian Academy of Sciences. The samples originated from plateaux 2,7,15 and 33 and from various lateritic facies. Results, summarized in Table 12.5, show a high Goethite/Hematite ratio of 3.9 in bauxite with close to 11% AlOOH substitution in Goethite. The boehmite content is generally below 3% as confirmed by bomb digest assays and a $SiO_2$/Quartz ratio of 0.45, close to the observed ratio $SiO_2$ /non-reactive $SiO_2$ of 0.49.

A study conducted by Dr. N. W. Bliss (February 2006) concluded that the bauxite contained within the Mining Concession, is essentially trihydrate, with a boehmitic $Al_2O_3$ content around 3%, but with patches of increased values of boehmitic $Al_2O_3$. This situation can be managed by careful monitoring of the boehmitic $Al_2O_3$ during grade control drilling so that appropriate blending is undertaken.

## 12.6 Physical Characteristics

### 12.6.1 In Situ Density

In situ density tests were conducted on two sites the northern and southern sectors of Plateau 7. Pits were excavated through the full bauxite profile and every metre was volumetrically measured and the material excavated was weighed at the site. A number of pieces of representative Global Bauxite were collected during excavation, immediately sealed in paraffin wax and sent to the laboratory in Sangaredi for moisture determination (Section 23, Global Alumina Exploration Manual). Results are reported in Table 12.6.1. An average dry density of 2 t/m$^3$ has been selected for resource and reserve estimation. Such a density figure is consistent with that used in the mining district and Friguia for similar bauxite.

### 12.6.2 Moisture Content

Moisture content of Global Bauxite varies with seasons. Based on statistics from the mine of Friguia, the run of mine is expected to average 9-10% moisture during the dry season and 10-12% during the rainy season.

### 12.6.3 Hardness, Rippability and Granulometry

Based on known overburden and bauxite characteristics in the mining district, borehole logs and pit description, estimates of hardness, rippability and granulometry stand as follows:

**Table 12.6.3 Hardness, Rippability and Granulometry**

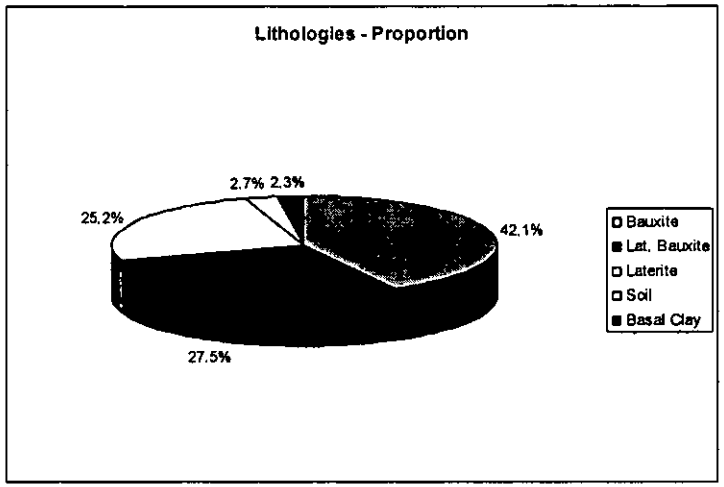
| Material | Hardness | Rippability | Granulometry mm |
|---|---|---|---|
| **Lateritic Hard Cap** | Very hard | Very Difficult | 0 to > 1000 |
| **Global Bauxite** | Hard to friable/soft | Difficult to easy | 0 to > 1000 |

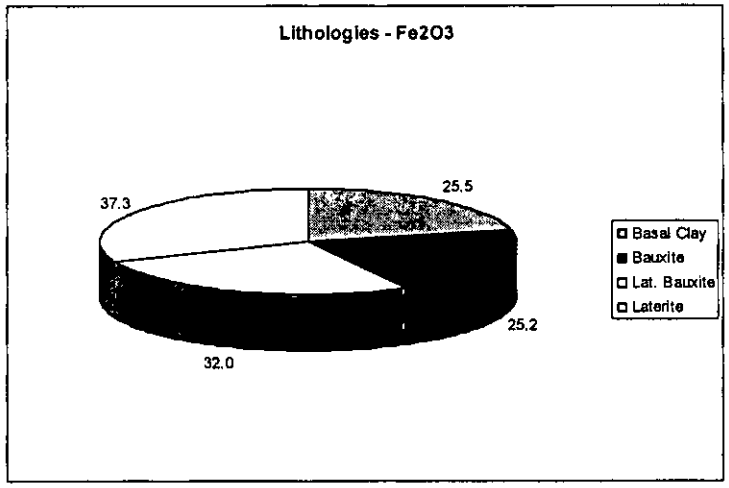
### 12.6.4 Handling Characteristics

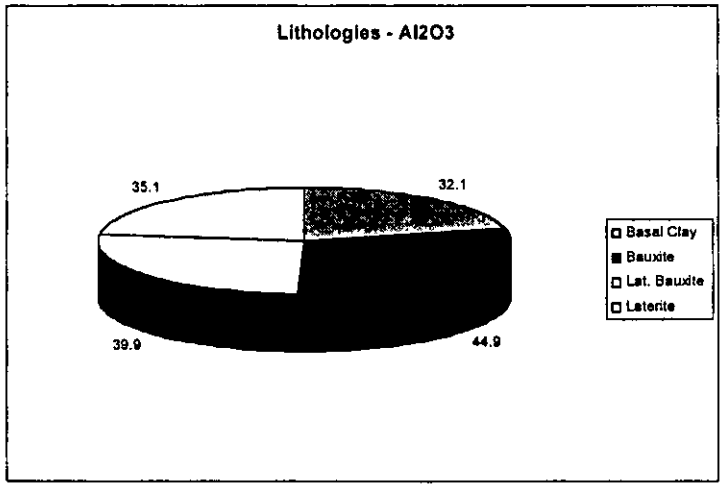
Based on borehole logs, no adverse handling characteristics are anticipated. Sticky material is rare.

**Table 12.6.1 In Situ Density Measurements**
By Geoprospects

| Site Id | Interval | Lithology of Bauxite | In Situ Density Dry t/m3 |
|---|---|---|---|
| GA-1 | 0.0-1.0 | Doleritic bauxites, yellow to red with veins of ferruginous laterite | 2,01 |
| GA-1 | 1.0-2.0 | Doleritic bauxites, yellow to red, weakly ferruginous | 1,92 |
| GA-1 | 2.0-3.0 | Doleritic bauxites, yellow to red, weakly amorphous | 2,16 |
| GA-1 | 3.0-4.0 | Doleritic bauxites, yellow to red, weakly amorphous and ferruginous | 2,08 |
| GA-1 | 4.0-5.0 | Doleritic bauxites, yellow to red with weakly amorphous patches and veins of ferruginous laterite | 1,99 |
| GA-1 | 5.0-6.0 | Doleritic bauxites, yellow, weakly ferruginous Non-amorphous | 2,05 |
| GA-1 | 6.0-7.0 | Doleritic bauxite, yellow, non-amorphous | 1,99 |
| GA-1 | 7.0-8.0 | Doleritic bauxite, yellow, non-amorphous | 1,89 |
| GA-1 | 8.0-9.0 | Doleritic bauxite and lateritic bauxite, non amorphous | 1,90 |
| GA-1 | 9.0-10.0 | Doleritic laterites, transition zone in iron banding | 2,03 |
| | | **Average for Doleritic Bauxites** | **2,00** |
| | | **Average for Doleritic Laterites** | **2,03** |
| GA-2 | 0.0-1.0 | Structural bauxite, strongly amorphous with veins of ferruginous laterite | 1,86 |
| GA-2 | 1.0-2.0 | Structural bauxite, strongly amorphous with veins of ferruginous laterite | 2,06 |
| GA-2 | 2.0-3.0 | Structural bauxites, weakly amorphous | 2,12 |
| GA-2 | 3.0-4.0 | Structural bauxite, strongly amorphous with veins of ferruginous laterite | 2,03 |
| GA-2 | 4.0-5.0 | Massive, structural bauxites, weakly amorphous | 2,06 |
| GA-2 | 5.0-6.0 | Massive, structural bauxites | 2,07 |
| GA-2 | 6.0-7.0 | Massive, structural bauxites | 2,09 |
| GA-2 | 7.0-8.0 | Massive, structural bauxites, ferruginous | 2,26 |
| | | **Average for Structural Bauxites** | **2,07** |



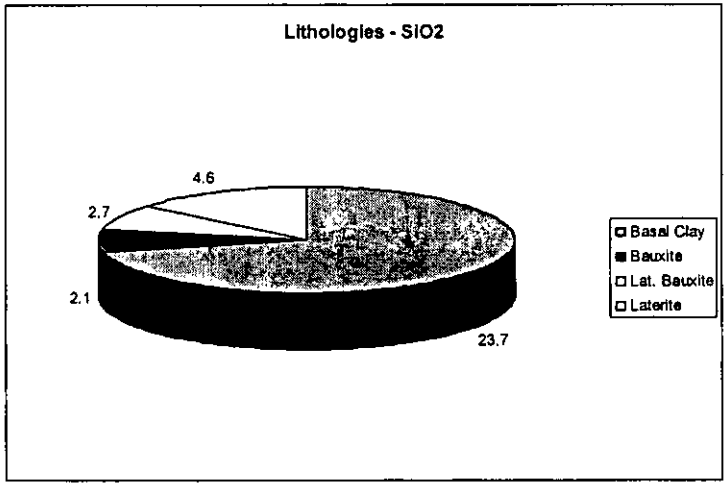
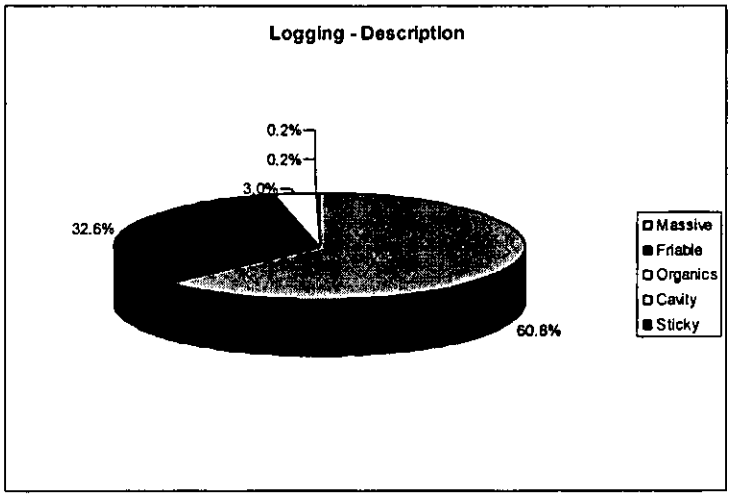
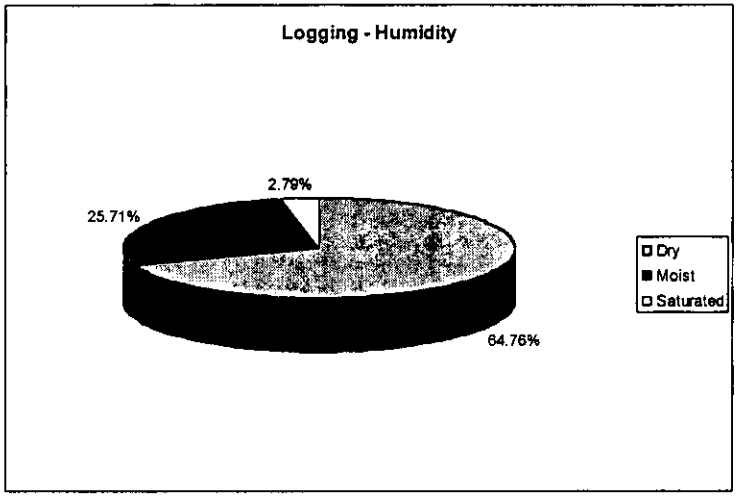




**Fig. 12.6.5a Facies and Grades**



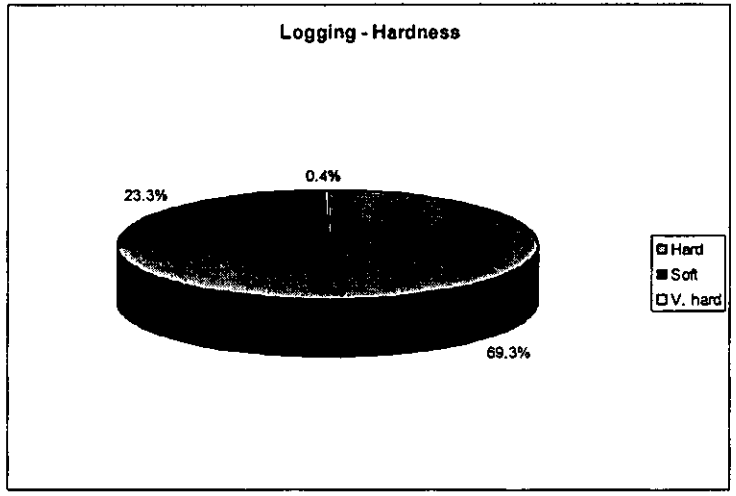




**Fig. 12.6.5b Facies and Physical Characteristics**

### 12.6.5 Facies

The following facies were described from borehole cuttings:

**Table 12.6.5 Facies, Grades and Physical Characteristics**

| LITHOLOGY | TALLY | | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % | Hardness | Humidity |
|---|---|---|---|---|---|---|---|---|---|
| **Basal Clay** | 136 | 2.3% | 14.6 | **23.7** | 1.9 | **25.5** | 32.1 | Soft | Humid |
| **Bauxite** | 2474 | 42.1% | 24.6 | **2.1** | 2.5 | **25.2** | **44.9** | Hard | Dry |
| **Lat. Bauxite** | 1617 | 27.5% | 22.3 | **2.7** | 2.3 | **32.0** | **39.9** | Soft | Moist |
| **Laterite** | 1482 | 25.2% | 19.9 | **4.6** | 2.0 | **37.3** | **35.1** | Hard | Moist |
| **Other** | 171 | 2.9% | | | | | | | |
| **Total** | **5880** | **100.0%** | | | | | | | |

Typical profiles and sections, showing the vertical and lateral distribution of the above facies, are presented in Section 26 (Illustrations).

### 12.7 Interpretation

The interpretation of exploration data is covered in subsequent sections covering all characteristics of the bauxite resources. Within the Mining Concession, bauxite occurs as a flat or gently sloping layer, forming a "blanket" type indurated cap 1-15 m thick, regularly spread across the plateaux. The bauxite layer is locally interrupted by islands of off-grade material and capped with thin top soil and/or a ferruginous hardcap. Bauxite resources of this nature are generally interpreted by

- X-sections to inspect the ore continuity, the distribution of the bauxite facies and their transitions to overburden, internal waste and floor material, and
- 2D modelling to represent the lateral distribution of grades and thickness (refer to Section 26, Illustrations, for X-sections and 2D maps).

### 12.8 Reliability of Data

Field works were carried out by an experienced contractor, Geoprospects Ltd., which has an excellent track record for reliability obtained during numerous and extensive exploration campaigns across the Boké bauxite belt. Field supervision was provided by Bryan S. Osborne, P. Geo., on behalf of Global Alumina.

Based on the witnessing of the drilling and sample collection procedures carried out by Geoprospects Ltd. and available QA/QC data developed by Global Alumina, BH&P are confident that the exploration data and sampling provide a sound basis for Resource and reserve estimates.

## 13. DRILLING

### 13.1 Drilling Method

In the bauxite fields of Guinea, both auger and core drilling are used to prospect and develop deposits. Drilling conducted by Global Alumina from 2004 to 2005 is summarized in Table 12.1 and Figure 12.1.

Auger drilling is a rapid, reliable and economic method to outline bauxite horizons. The cuttings generated are easy to handle and allow the geologist to recognize the presence of bauxite in the profile. Core drilling is used mainly for stratigraphic control. Both techniques are reviewed in this section. On account of the short drilling depths, down-hole survey is not carried out. There is no error related to true widths since the holes are vertical and the bauxite layer is essentially horizontal. Hence, sample lengths represent the true width of mineralization.

**Auger Drilling**

Since 1997, Geoprospects Ltd. (previously Geoconsult Ltd.) has been the main exploration drilling contractor for CBG. Global Alumina has been contracting Geoprospects Ltd. since early 2004. The field methods and procedures used by Global Alumina - essentially the same as the one used for CBG programmes – are fully described in Global Alumina's Exploration Manual (Section 23, References).

The auger consists of a trepan cutting bit of 142mm diameter, mounted on a drill stem with spiralled flanges of 138mm diameter to lift the bauxite to surface by reverse rotation. Geoprospects maintains a fleet of Russian made auger machines (UGB-50 M), mounted on all terrain 6 wheel military trucks (ZIL- 131) that provide good accessibility.

All holes are drilled vertically since the bauxite horizon is essentially horizontal and its lateral continuity defined by drilling. The true thickness of the lateritic and bauxitic units corresponds to the length of the drill rods drilled through these units as recognized by the logging geologists. Drilling is continued until one meter of lithomarge clay is encountered at the base of the bauxite profile. The average depth of drilling is 10 m. The topsoil on the surface is not sampled and is excluded from the first meter sample interval; the depth of the soil is however, recorded. For each meter drilled, the material is lifted to surface by reverse rotation of the screw-like drilling rod. To minimize sample contamination from cuttings left over from the previous sample lifted to surface, the first 10 to 20 cm of cuttings reaching the surface are discarded.

The remainder of the sample is raked onto a wooden scoop tray. The sample is then poured into a conventional chute sample splitter, remixed and separated three times to homogenize the sample as much as practical before taking a sample (about 3 kg) from one of the splitter trays. The rest of the sample (about 25 kg) is poured on the ground to form a heap from which small cuttings are extracted and broken with a hammer to identify the presence of bauxite and/or iron oxide minerals in the sample. Side by side, the heaps are logged individually by the geologist for physical characteristics.

The cuttings are sampled for each one meter interval. In moist ground conditions, it is necessary to pullout the entire drill string after each meter to be able to collect the material stuck onto the drilling rods. After each run in humid and sticky bauxite or laterite, the spiral rods are cleaned with metal brushes to avoid contamination of the following sample.

The auger drilling season is normally between December and July. From August to November access to the plateaux and drilling itself becomes difficult because of the frequent rain and the water saturation of the bauxitic column which impairs the sampling procedures.

**Diamond Core Drilling**

Coring is used in the Sangaredi region as a means to provide an undisturbed, continuous sample of the bauxitic horizon and adjacent material. It provides means to verify the bauxite

lithologies and precise thickness. Wireline PQ drill rods (core diameter of 114.3mm) have been used to provide large representative samples. To maximise recovery, drilling is slow and drill runs are short (around 1 .5m). The core is usually logged on site in wooden core boxes. The boxes are covered for transportation to Sangaredi where the core is split in half with a carbide blade bench saw for detailed lithological description and sampling.

Coring is not favoured as a systematic sampling tool. The method is slow, comparatively more expensive, requires water, and sample preparation is exhaustive. There is also the possibility of creating an analytical bias, since the circulating water necessary to lubricate the core bit has a tendency of washing out certain mineral species from the bauxite. As a result, on individual plateaux no more than 10% of the drilling should be done with core.

The detailed core drilling procedures are elaborated in Global Alumina's "Exploration Manual – Procedures and Standards" in Section 23 (References).

**Survey**

All survey work is tied into the UTM WGS-84 co-ordinate system. Two survey bench marks exist on each plateau which are used to tie in all the access roads and drill hole sites. All plateau survey data for the work completed has been collected by Geoprospects using a Nikon DTM 350 total station tachometer. The holes are spotted by tachometer prior to drilling. A re-check of a series of hole collars after drilling in May indicated some differences between the intended hole location and the actual.

In July MAPS, an internationally recognised survey company was commissioned by Global Alumina to set up a project system of bench marks and to undertake a detailed survey of these new bench marks and those previously set up by CBG on the various bauxite plateaux. Following these new validated co-ordinates, Geoprospects were asked to re-survey all the Plateau 7 boreholes to ensure accuracy in classifying the Reserves here as Proven. Results are shown in Figure 13.1b. The other plateau holes will be re-surveyed as appropriate to the status of exploration

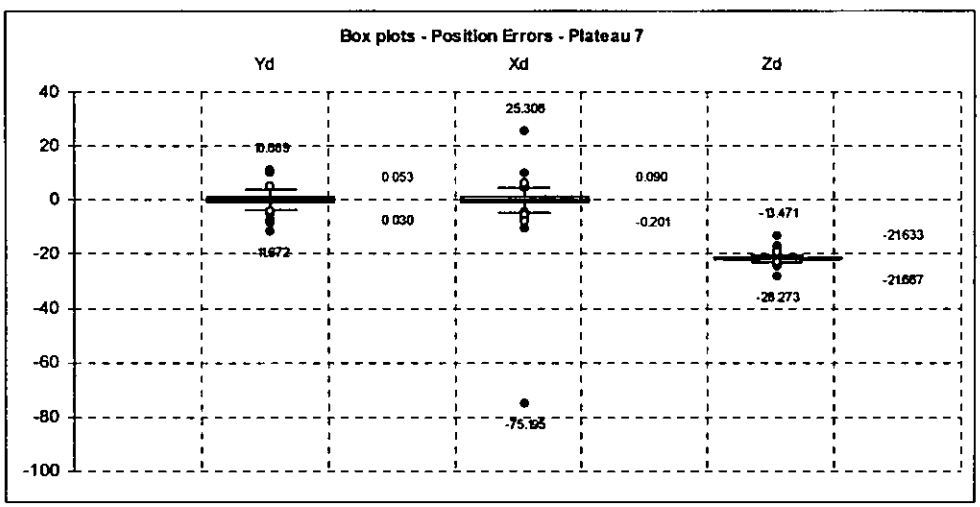



**Fig. 13.1a Difference between Planned and Actual Borehole Location**

Except for one hole misplaced and one hole shifted due to adverse ground conditions, survey of actual borehole positions in Plateau 7 resulted in minor coordinate differences only. The large difference in elevation is due to a change of datum.

A discrepancy of some 2m exists between field survey and the DTM provided by MAPS. Global Alumina plans to address this issue shortly.

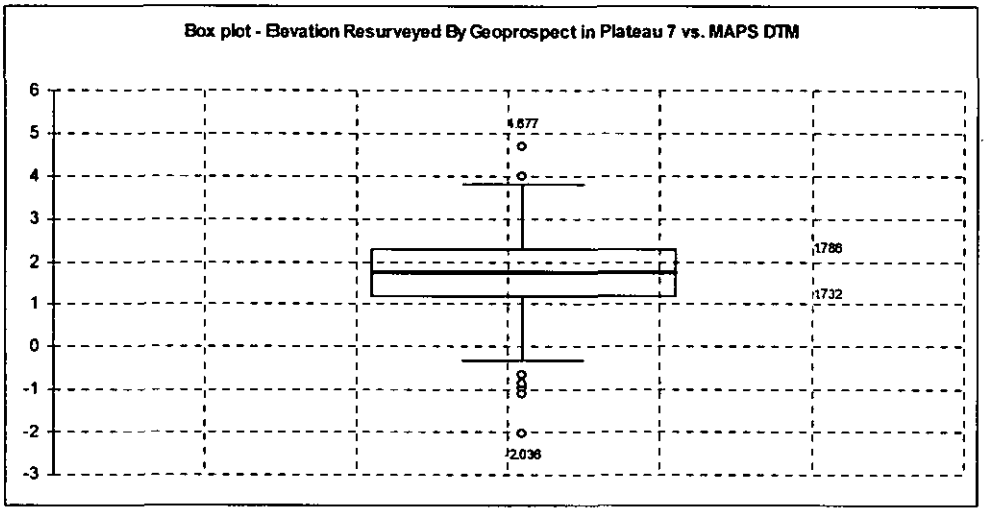



**Fig. 13.1b Difference between borehole elevation and DTM by MAPS**

## 13.2 Check Drilling

**Twin Holes – Auger**
While grade differences are significant, increasing with depths (Figure 14.2a), average grades remain consistent. This a standard feature with bauxite; similar grade scattering around a common mean is observed for half cores.

**Twin Holes – Auger vs. Core Drilling**
This comparison illustrates the grade bias generated by the removal of fines by fluids used in coring. It is a known fact in the mining district that core drilling tends to improve $Al_2O_3$ and reduce $SiO_2$. In this case, the improvement adds up to +0.95% $Al_2O_3$ and -0.3% $SiO_2$. The overburden and bauxite thicknesses are within tolerances, indicating that the definition of ore intercepts is consistent.

Twin auger/core holes have been used to estimate the $C_0$ (nugget) of grade accumulations, with the following results:

| | Ore Thickness | $SiO_2$ac | $Fe_2O_3$ac | $Al_2O_3$ac |
|---|---|---|---|---|
| Co | 0.18 | 0.55 | 0.27 | 0.17 |

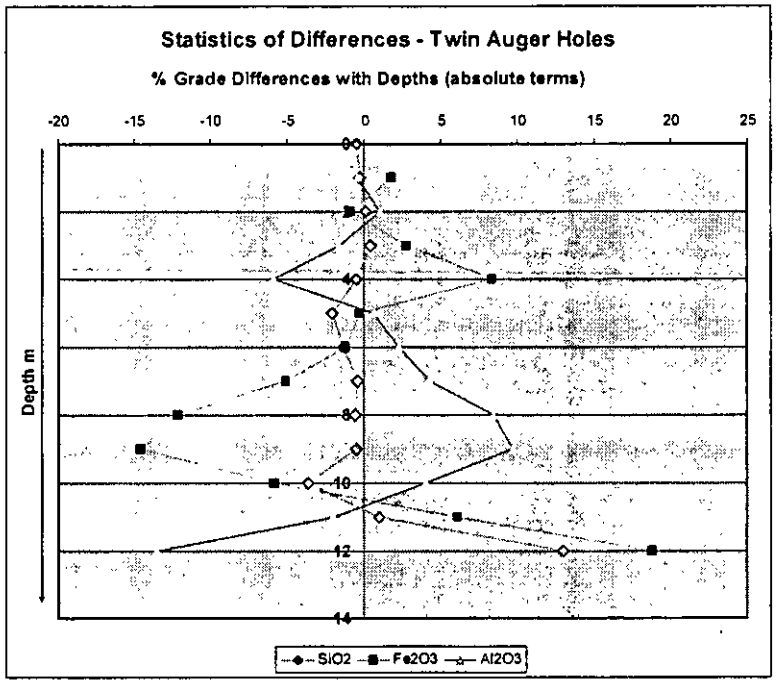
Because of the grade bias mentioned above, this data set is not ideal to compute $C_0$. Failing any better support at this stage, the above estimates provide an indication of the behaviour of variograms at the origin, which is helpful for variogram modelling.

**Table 13.2a Statistics of Differences – Twin Auger Holes**
Comparison of Paired Samples

| Statistics of Differences | LOId | $SiO_2$d | $TiO_2$d | $Fe_2O_3$d | $Al_2O_3$d |
|---|---|---|---|---|---|
| No. of values used | 34 | 34 | 34 | 34 | 34 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 1 | 1 | 1 |
| % of min. val. | 2.941 | 2.941 | 2.941 | 2.941 | 2.941 |
| Minimum | -5.700 | -5.570 | -0.860 | -26.300 | -13.500 |
| 1st quartile | -1.300 | -2.490 | -0.430 | -5.700 | -2.700 |
| Median | 0.730 | -0.215 | -0.265 | -0.200 | 0.450 |
| 3rd quartile | 2.900 | 0.950 | 0.130 | 6.100 | 4.000 |
| Maximum | 7.800 | 3.640 | 0.800 | 18.800 | 16.000 |
| Range | 13.500 | 9.210 | 1.660 | 45.100 | 29.500 |
| Sum | 22.000 | -21.150 | -5.050 | -28.710 | 34.400 |
| Mean | 0.647 | -0.622 | -0.149 | -0.844 | 1.012 |
| Geometric mean | | | | | |
| Harmonic mean | | | 1.077 | -1.044 | |
| Kurtosis (Pearson) | -0.372 | -0.365 | -0.570 | 0.277 | -0.046 |
| Skewness (Pearson) | 0.117 | -0.648 | 0.267 | -0.422 | 0.171 |
| Kurtosis | -0.046 | -0.037 | -0.291 | 0.757 | 0.357 |
| Skewness | 0.128 | -0.710 | 0.292 | -0.462 | 0.187 |
| CV (standard deviation/mean) | 5.007 | -3.539 | -2.609 | -11.653 | 6.570 |
| Sample variance | 10.186 | 4.704 | 0.146 | 93.981 | 42.891 |
| Estimated variance | 10.495 | 4.847 | 0.150 | 96.829 | 44.191 |
| Sample standard deviation | 3.192 | 2.169 | 0.382 | 9.694 | 6.549 |
| Estimated standard deviation | 3.240 | 2.202 | 0.388 | 9.840 | 6.648 |
| Mean absolute deviation | 2.416 | 1.756 | 0.323 | 7.252 | 4.971 |
| Median absolute deviation | 2.100 | 1.255 | 0.275 | 5.900 | 3.450 |
| Standard-error | 0.556 | 0.378 | 0.066 | 1.688 | 1.140 |
| Lower bound Mean CI | -0.483 | -1.390 | -0.284 | -4.278 | -1.308 |
| Upper bound Mean CI | 1.777 | 0.146 | -0.013 | 2.589 | 3.331 |

Percentage differences stated in absolute terms

**Fig. 13.2a Twin Auger Holes – Down Hole Differences**



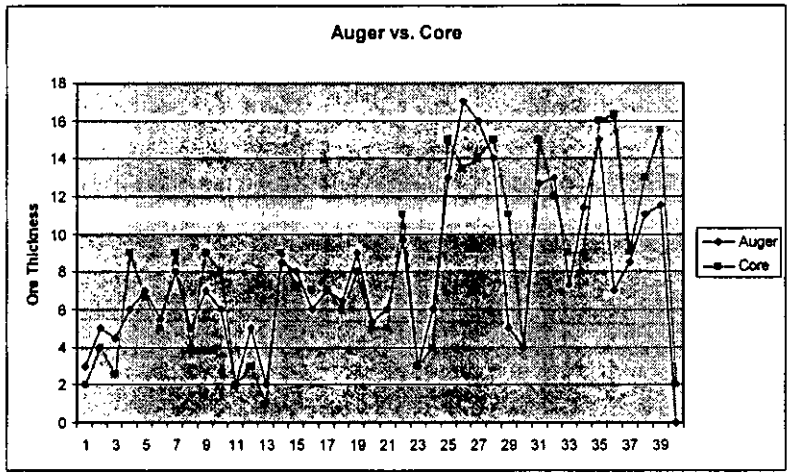

The above graph shows the grade differences (absolute %) of twin auger holes with depths. Note the negative correlations of $Fe_2O_3$d and $Al_2O_3$d. $SiO_2$d remains moderate until reaching the base of bauxite.

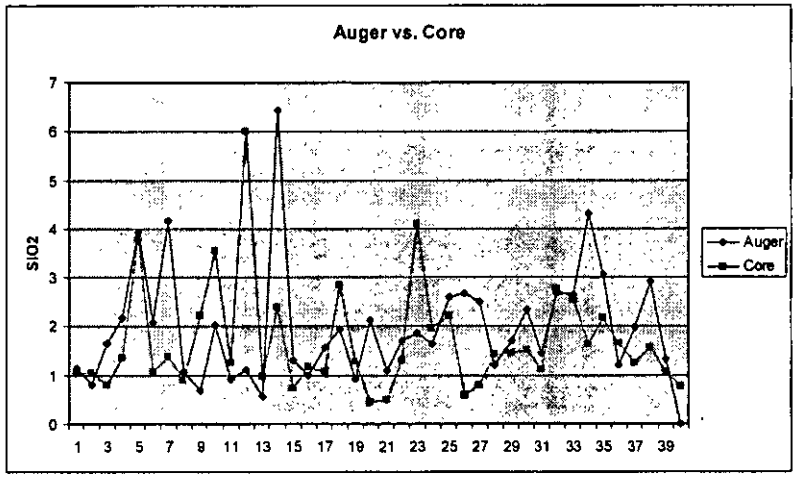
**Table 13.2b Statistics of Differences – Twin Auger/Core Holes**

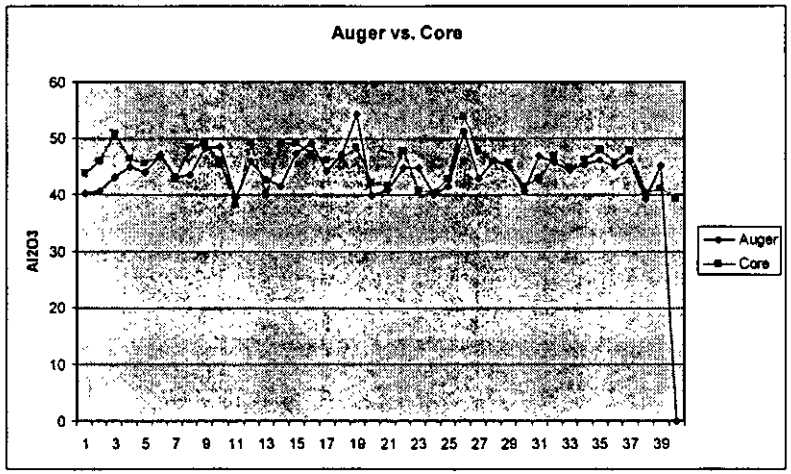
Comparison of Composite – Auger – Core Grades – Last Auger Hole Not Considered (refer to Fig. 13.2b)

| Statistics of Differences | Obd | OREd | LOId | $SiO_2$d | $TiO_2$d | $Fe_2O_3$d | $Al_2O_3$d |
|---|---|---|---|---|---|---|---|
| No. of values used | 39 | 39 | 39 | 39 | 39 | 39 | 39 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| % of min. val. | 2.564 | 2.564 | 2.564 | 2.564 | 2.564 | 2.564 | 2.564 |
| Minimum | -7.500 | -9.300 | -3.672 | -4.898 | -0.706 | -6.357 | -7.681 |
| 1st quartile | 0.000 | -1.700 | -1.221 | -0.314 | -0.329 | -0.956 | -2.376 |
| Median | 0.000 | 0.000 | -0.634 | 0.260 | -0.082 | 0.947 | -0.830 |
| 3rd quartile | 0.500 | 1.000 | 0.085 | 0.850 | 0.077 | 2.439 | 0.500 |
| Maximum | 2.000 | 3.500 | 9.742 | 4.056 | 0.746 | 10.944 | 5.943 |
| Range | 9.500 | 12.800 | 13.414 | 8.953 | 1.452 | 17.301 | 13.624 |
| Sum | -1.500 | -17.600 | -15.414 | 11.595 | -3.206 | 45.260 | -36.894 |
| **Mean** | **-0.038** | **-0.451** | **-0.395** | **0.297** | **-0.082** | **1.161** | **-0.946** |
| Geometric mean | | | | | | | |
| Harmonic mean | | | -0.483 | 1.607 | -0.033 | | -15.796 |
| Kurtosis (Pearson) | 14.561 | 3.450 | 12.265 | 3.118 | 0.226 | 0.293 | 0.175 |
| Skewness (Pearson) | -3.398 | -1.525 | 2.851 | -0.630 | 0.378 | 0.295 | -0.049 |
| Kurtosis | 17.856 | 4.501 | 15.096 | 4.101 | 0.626 | 0.705 | 0.564 |
| Skewness | -3.676 | -1.650 | 3.084 | -0.682 | 0.409 | 0.319 | -0.053 |
| CV (standard deviation/mean) | -38.289 | -5.229 | -5.236 | 4.909 | -3.553 | 3.217 | -3.141 |
| Sample variance | 2.113 | 5.426 | 4.172 | 2.076 | 0.083 | 13.577 | 8.601 |
| Estimated variance | 2.169 | 5.569 | 4.282 | 2.130 | 0.085 | 13.934 | 8.827 |
| Sample standard deviation | 1.454 | 2.329 | 2.043 | 1.441 | 0.288 | 3.685 | 2.933 |
| Estimated standard deviation | 1.473 | 2.360 | 2.069 | 1.460 | 0.292 | 3.733 | 2.971 |
| Mean absolute deviation | 0.682 | 1.689 | 1.163 | 0.953 | 0.229 | 2.692 | 2.136 |
| Median absolute deviation | 0.300 | 1.000 | 0.619 | 0.574 | 0.189 | 1.492 | 1.330 |
| Standard-error | 0.236 | 0.378 | 0.331 | 0.234 | 0.047 | 0.598 | 0.476 |
| Lower bound Mean CI | -0.516 | -1.216 | -1.066 | -0.176 | -0.177 | -0.050 | -1.909 |
| Upper bound Mean CI | 0.439 | 0.314 | 0.276 | 0.770 | 0.012 | 2.371 | 0.017 |

Percentage differences stated in absolute terms



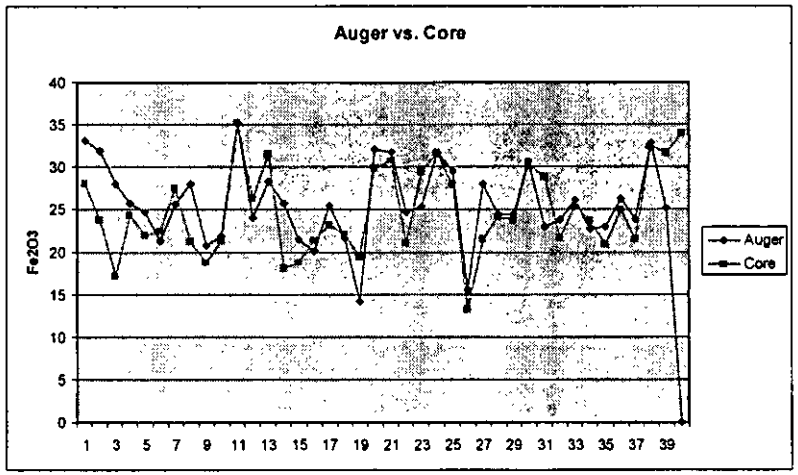




**Fig. 13.2b Statistics of Differences Twin Auger/Core Holes**
Note last Auger Hole (40) has no bauxite
Percentage differences stated in absolute terms

### 13.3 Interpretation

The auger drilling methods used by Global Alumina are appropriate for the nature of the mineralization and ground conditions; the same methods are used throughout the Boké region. It is important to supplement the auger drilling with limited core drilling to validate the lithologies and accuracy of depths determined by augering. Global Alumina has carried out sufficient coring to confirm the satisfactory results achieved by auger drilling. BH&P have used only the auger drill results in resource modelling however, given the grade bias that is common to coring bauxite as discussed above. True widths are achieved by drilling vertical holes through the horizontal bauxite horizon.

The interpretation of drilling results is examined in Section 20.1 (Exploratory data analysis), which covers univariate, bi-variate, multi-variate and spatial statistics as well as sensitivity to cutoff grades and modelling.

## 14. SAMPLING METHOD AND APPROACH

### 14.1 Sampling Method

The exploration and sampling of bauxite deposits in Guinea is predominantly done with drilling. Resources are outlined with orthogonal drill patterns covering the entire surface of bauxite bearing plateaux, which are successively drilled at reduced spacing, from 600 x 600 m for reconnaissance down to 25 x 25 m for pre-production.

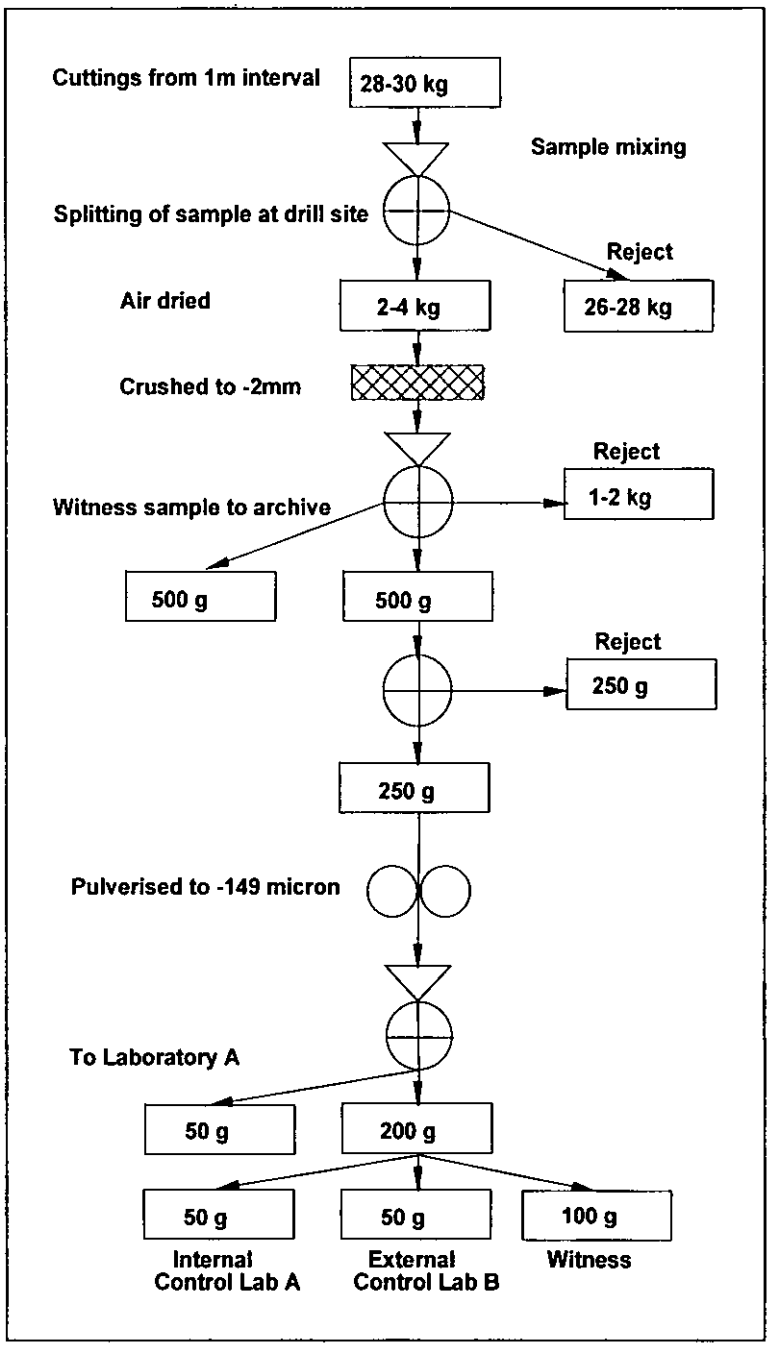
The sampling approach and procedures implemented by Geoprospects have been developed in their Guinean bauxite exploration programmes over the years and have been adopted, with minor modifications, by Global Alumina. They are similar to those employed by CBG. A general flow sheet on the sampling and sample preparation procedures is presented on Figure 14.1. Plates 14.1a-c display sampling being conducted by Geoprospects' drilling crew.

Factors that could materially affect sampling results include poor recovery and sample contamination.

### 14.2 Sampling Recovery

Each meter drilled by auger normally produces about 30 kg of cuttings in a powdery matrix. This material is sampled in its entirety onto a wooden palette from which the sample is passed through a chute sample splitter and by attrition sub-division is reduced to a 2 to 4 kg sub-sample. The remainder of the sample is stacked on the ground and a detailed log of physical characteristics is prepared by the geologist.

**Fig. 14.1 Flow Sheet of Auger Drilling Sample Preparation Procedures**




Note: For the May 2005 drilling, the samples were pulverised by Ultra Trace down to 75µm. Thereafter, sample pulverisation was entirely carried out at the Sangaredi sample preparation facilities by Geoprospects. Sixty check samples pulverized by Geoprospects were re-ground by Ultra Trace to ensure that proper pulverisation was achieved.

**Plates 14.1a – Collecting drill cuttings and splitting into samples**

Sample recovery is within 80 to 90%. Samples or part thereof may be lost due to small cavities, vugs or open fractures in the lateritic profile. To improve recovery of lower samples in deep holes, the entire drill string is retrieved from the hole to recover the portion of sample left on the screw that did not reach surface. Where present, the top soil horizon, usually from 0.3 m to 0.5 m is not sampled. The upper iron duricrust is sampled (this material normally contains in the order of 37.5% $Al_2O_3$) since it will eventually be mined with the underlying bauxite.

**Plates 14.1a**

Each sample is numbered on a tag on which the plateau and hole number, the interval sampled and the date are written. The tag is attached to the heavy duty plastic sample bag and is sealed with staples. All the samples collected from each hole are placed in large woven plastic bags for transportation to the sample preparation facility located at Geoprospect's technical base in Sangaredi.

**Plate 14.1b – Drill site logging of cutting heaps and labelling of samples**

All of Global Alumina's field and reference samples are stored in a container at the Geoprospects facilities in Sangaredi. The container in which shelves have been built to improve storage is for the exclusive use of Global Alumina. When not in use the container is kept locked at all times.

**Plate 14.1b**

## 14.3 Rock Types

Sample lengths are not based on rock types and resource modelling is not controlled by rock types. As described in Section 12.6, rock types are logged with a view to provide indications on physical characteristics, relevant for mining and material handling.

## 14.4 Sampling Quality

Drilling methods and field sampling procedures are consistent with accepted standards for bauxite exploration. The size of sample retrieved per meter (28-30 kg), the sample recovery (80-90%) and the method of drilling are deemed adequate to prevent excess random errors and/or sampling bias.

BH&P consider that the supervision by Global Alumina and quality control applied have been appropriate to ensure reliable sampling of bauxite.

A list of bauxite composites, with grades and lengths, is provided in Section 26 (Illustrations), together with a plan of borehole locations. Composite lengths represent the true width of the mineralization.

# 15. SAMPLE PREPARATION, ANALYSES AND SECURITY

## 15.1 Sample Preparation

In 2004, sample pulverisation was carried out by CBG in their sample preparation facilities at Sangaredi, in keeping with CBG's standards and under the supervision of Global Alumina (refer to "Summary of Data Available for Bauxite Evaluation, Sangaredi Refinery Project, Global Alumina", by Bryan S. Osborne, P.Geo., October 2005). The methods, sample flow sheet and equipment used subsequently for the sample preparation carried out by Geoprospects were to a large extent duplicated from CBG, as described below.

At the Geoprospects preparation laboratory, sample reduction is carried-out in conformity with International Standard ISO-6 140- Aluminum Ores-Preparation of Samples. Well-trained employees under the supervision of a geologist are:

1. Spreading every sample on plastic sheets or steel plates and left to dry under the sun for at least three hours before being sent to the crusher for reduction.
2. Each sample is then crushed with a 15 cm jaw crusher to -2mm.
3. Each sample is split to leave a 500g witness sample and then 250g is sent for grinding with a (Bico) disk pulverizer to -100 mesh.
4. After homogenisation by rolling the sample in a plastic sheet, each sample is spread to about one cm thick and divided into 20 squares from which a 50g sample is progressively scooped into a pre-labelled plastic bag (Plates 15.1b to d).
5. For internal and external laboratory quality control, at every twentieth sample, two duplicates of 50g samples are also prepared. One sample is included in the sequence of samples to be shipped to the principal laboratory and the other is sent to second laboratory for reproducibility.
6. The samples are packaged in properly labelled plastic sleeves and finally put in metal cases sealed with steel straps and ready for shipping to the laboratory.

**Plate 15.1a – Auger drill samples drying under the sun**

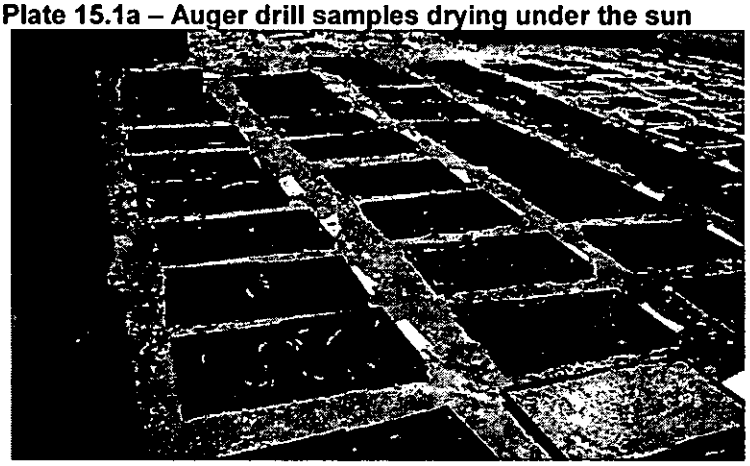


**Plate 15.1b – Sample being homogenized with plastic sheet**

**Plate 15.1c – 50 gram sample being scooped from homogenized sample**

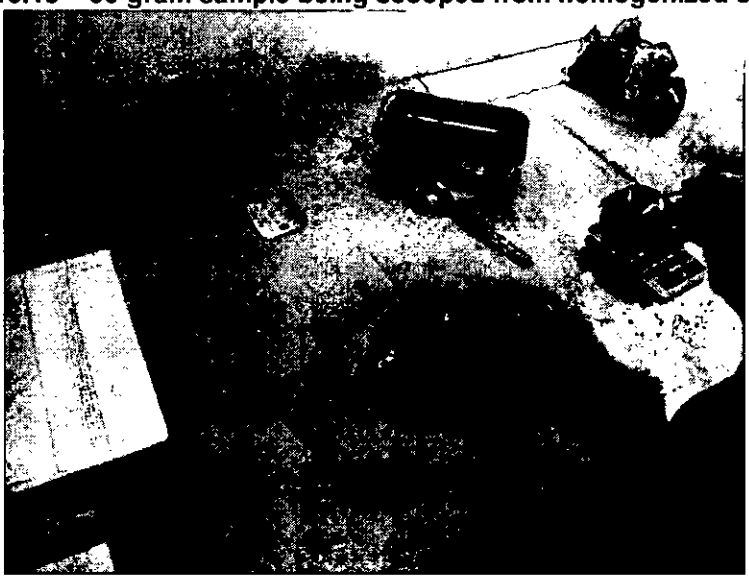


**Plate 15.1d – Samples in plastic sleeves, ready for shipping to the laboratory**

## 15.3 Analytical Procedures

**Reference Sample**

The initial Global Alumina Reference Sample was prepared from a composite of twelve bauxite intervals of 1m from the A and B Series process drilling of April and June, 2004, respectively. It was intended to represent typical bauxite from the project area. The twelve intervals, weighing approximately 1.5 kg each, had been analysed at both by CBG at Kamsar and by ALS in Vancouver. This work was done to ensure that the sample was close to average grade for the plant feed. The sample was thoroughly homogenised in the CBG sample preparation laboratory, split, and put into un-numbered 50g standard sample bags.

**Table 15.3a Reference Material**

| Reference Samples | | $SiO_2$ % | $Al_2O_3$ % | $Fe_2O_3$ % | $TiO_2$ % | LOM % |
|---|---|---|---|---|---|---|
| CBG | 12 Samples | 1.96 | 42.47 | 28.81 | 2.19 | 23.82 |
| ALS | 12 Samples | 2.15 | 42.38 | 28.51 | 2.33 | 23.68 |

**Laboratories**

For the Series A and B process samples, analytical work was carried out at the CBG laboratory and at Hindalco. The geostatistical drilling samples were analysed at the CBG laboratory.

Since 2005 all systematic analytical work has been carried out by Ultra Trace Laboratories in Western Australia. A comprehensive programme of validation of this laboratory for their XRF analytical methods has been carried out at Hindalco (India). A limited programme of validation of the Hindalco digestion tests has been carried out Windalco (Jamaica). Control reports are available covering the analytical work carried out at CBG, Hindalco and Ultra Trace.

**Table 15.3b Summary of Analytical Work**

| Date | Programme Name | Plateaux | Holes | Laboratory | XRFs | Duplicates | References | CRMs | Digests | TOC | Xstal. Size |
|---|---|---|---|---|---|---|---|---|---|---|---|
| April, 2004 | A Series - Process | 2,7,15 | 25 | CBG | 234 | 30 | | | 30 | | |
| | | | | Hindalco | 234 | | | | | | 23 |
| July, 2004 | Geostats. - Auger | 2 | 33 | CBG | | | | | | | |
| | Coring | 2 | 9 | CBG | 449 | | | | | | |
| June, 2004 | B Series - Process | 2,7 | 14 | CBG | 332 | | | | | | |
| Mar, 2005 | Confirmatory | 3,15,17,33 | 59 | Ultra Trace | 577 | 28 | 28 | | 24 | | |
| Mar, 2005 | Confirmatory | 3,15,17,33 | Composite | Hindalco | 24 | | | | 24 | | |
| May, 2005 | Resource Augering | 7 | 283 | Ultra Trace | | | | | | | |
| | Geostats. - Auger | 7 | 24 | Ultra Trace | | | | | | | |
| | Coring Profiles | 7 | 17 | Ultra Trace | | | | | | | |
| | Pits (2) | 7 | | | | | | | | | |
| June, 2005 | Resource Augering | 2 | 89 | Ultra Trace | | | | | | | |
| | Coring | 2 | 16 | Ultra Trace | | | | | | | |
| June, 2005 | Resource Augering | 15 | 40 | Ultra Trace | 5736 | 282 | 188 | 156 | 50 | 300 | |
| Sept., 2005 | Hindalco Validation | | | Hindalco | 273 | 15 | | 28 | 50 | | |
| June, 2005 | SRK Audit | 3,15,17,33 | | Hindalco | 10 | | | | 10 | | |
| | | | | Windalco | | | | | 10 | | |
| Oct., 2005 | XRD Phase analysis | 2,7,15 | | Queens,HAS | 20 | | | | | | |
| **2004/05 Total** | | | **609** | | **7865** | | | | | | |

**XRF and LOI Analysis**
CBG carried out XRF assays and TGA LOI determinations for 81 holes drilled in 2004 for process samples (the A and B series) and geostatistics. Ultra Trace, was contracted in 2005 for the major oxides assays. For the May 2005 drilling, the -2mm samples were dried in convection ovens at 105°C and pulverised to 75µm by Ultra Trace. For all subsequent work the samples were crushed to -2mm and pulverised to -149 µm by Geoprospects. A series of sixty samples were treated b both methods to ensure no bias in changing the methodology. The samples were then weighed in batches (30 at a time) in two glass vials placed in an oven at 105°C. One whole vial of sample was used for the LOI determination and the other whole vial for the XRF fusion.

LOI determination by TGA followed the Alcan procedure:

- Moist – 105°C, Nitrogen on, hold 20 min and weigh to 0.05% tolerance.
- Ramp to 1000°C at 25C per minute.
- LOI – 1000°C, Nitrogen off, hold 20 min and weigh to 0.05% tolerance.

XRF fusion discs were prepared by casting in a rocking furnace at 1050°C using 0.66g of sample and 7.0g of 12:22 flux. The samples were analysed using a Philips PW2404/2440 X-Ray Spectrometers using a 4KW end window Rh X-ray Tube. The following oxides were analysed: $SiO_2$ (0.01%), $Al_2O_3$ (0.01%), $Fe_2O_3$ (0.01%) and $TiO_2$ (0.01%). Hindalco, contracted for bomb digest assays, also carried out XRF and LOI assays of duplicates sent to Ultra Trace. In addition, Hindalco assayed CaO (0.01%), $Cr_2O_3$ (0.001%), $K_2O$ (0.01%), MgO (0.01%), $P_2O_5$ (0.001%), $SO_3$ (0.001%), $ZrO_2$ (0.01%), $V_2O_5$ (10ppm), BaO (0.01%) and MnO (0.01%). Figure in brackets is minimum detection limit.

**Total Organic Carbon (TOC)**
Sub-samples of 0.5g were warmed with hydrochloric acid to eliminate the presence of carbonate, reacted samples were then dried to remove residual acid and subjected to total combustion analysis. To this effect, Ultra Trace used a "Labfit" CS-2000 Carbon Sulphur analyser. This instrument is of the resistively heated type and is capable of determining Carbon to low detection limits (0.01%) in mineral samples. TOC was analysed for all holes falling on two chosen cross sections through Plateau 7N and 7S as shown in Table 15.3d. TOC levels are moderate to low and are not of concern for the Bayer process.

**Bomb Digests**
Bomb digests were conducted by the Hindalco laboratory to confirm the available alumina under low and high temperature conditions.

**Table 15.3c Bomb Digest Conditions**

| Designation | Bomb Digest | |
|---|---|---|
| | T = 150°C | T= 225°C |
| Caustic conc. g/l NaOH | 100g/l | 200g/l |
| Bauxite charge | 3.25 g | 1.0 g |
| Min. time to reach T | 5 min. | 5 min |
| Time at Temp in minutes | 25 | 60 |

CBG also carried out a few bomb digest for initial orientation work on bauxite characteristics (not used for resource evaluation) and provided phase estimates for $RSiO_2$ and AA (both low and high temperature) derived with the BQuant software developed by Alcan, which is the standard method used at the CBG for exploration and exploration samples.

**Table 15.3d TOC Assays by Ultra Trace**

Colour coding: >0.2% brown, 0.2 – 0.11% yellow, <0.11 green

| | South Block Holes Drill Holes | | | | | | | | North Block Holes Drill Holes | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Interval m | 102GS | 104GS | 423538 | 423544 | 423566 | 423562 | 423568 | 423550 | 531406 | 531412 | 531418 | 525424 | 537436 | 531430 | 537442 | Average TOC | |
| 0-1 | 0.16 | 0.35 | 0.06 | 0.21 | 0.02 | 0.15 | 0.18 | 0.16 | 0.16 | 0.28 | 0.07 | 0.24 | 0.10 | 0.05 | 0.19 | 0.16 | 0.16 |
| 1-2 | 0.11 | 0.17 | 0.23 | 0.17 | 0.00 | 0.05 | 0.18 | 0.05 | 0.13 | 0.12 | 0.03 | 0.14 | 0.10 | 0.05 | 0.12 | 0.11 | 0.13 |
| 2-3 | 0.04 | 0.10 | 0.16 | 0.05 | 0.01 | 0.07 | 0.18 | 0.10 | 0.16 | 0.14 | 0.08 | 0.14 | 0.06 | 0.03 | 0.12 | 0.10 | 0.12 |
| 3-4 | 0.07 | 0.10 | 0.14 | 0.06 | 0.00 | 0.07 | 0.11 | 0.05 | 0.14 | 0.12 | 0.06 | 0.10 | 0.03 | 0.10 | 0.10 | 0.08 | 0.10 |
| 4-5 | 0.04 | 0.11 | 0.16 | 0.11 | 0.06 | 0.02 | 0.08 | 0.06 | 0.19 | 0.18 | 0.13 | 0.10 | 0.07 | 0.11 | 0.13 | 0.10 | 0.10 |
| 5-6 | 0.07 | 0.07 | 0.14 | 0.23 | 0.05 | 0.05 | 0.11 | 0.08 | 0.19 | 0.15 | 0.06 | 0.10 | 0.05 | 0.12 | 0.08 | 0.11 | 0.11 |
| 6-7 | 0.04 | 0.07 | 0.16 | 0.14 | | 0.11 | 0.11 | 0.02 | 0.16 | 0.12 | 0.03 | 0.09 | 0.09 | 0.11 | 0.08 | 0.10 | 0.10 |
| 7-8 | 0.05 | 0.05 | 0.14 | 0.08 | | 0.03 | 0.05 | 0.02 | 0.14 | 0.07 | 0.05 | 0.08 | 0.10 | 0.09 | 0.08 | 0.07 | 0.09 |
| 8-9 | 0.05 | 0.02 | 0.12 | 0.06 | | 0.15 | 0.05 | 0.02 | 0.14 | 0.08 | 0.00 | 0.11 | 0.07 | 0.02 | 0.08 | 0.07 | 0.08 |
| 9-10 | 0.03 | 0.02 | 0.14 | 0.10 | | 0.14 | 0.05 | 0.07 | 0.14 | 0.12 | 0.02 | 0.09 | 0.02 | 0.02 | 0.16 | 0.08 | 0.08 |
| 10.11 | 0.04 | 0.11 | 0.14 | | | 0.12 | 0.13 | | 0.11 | 0.18 | 0.07 | 0.10 | 0.04 | 0.00 | 0.07 | 0.09 | 0.09 |
| 11.12 | | | 0.13 | | | | | | | 0.10 | 0.05 | 0.11 | 0.06 | 0.02 | 0.07 | 0.08 | 0.08 |
| 12-13 | | | | | | | | | | 0.08 | 0.05 | 0.09 | 0.07 | 0.00 | 0.08 | 0.06 | 0.07 |
| 13-14 | | | | | | | | | | 0.09 | 0.11 | 0.13 | 0.06 | | 0.07 | 0.09 | 0.08 |
| 14-15 | | | | | | | | | | | 0.04 | 0.14 | | | 0.09 | 0.09 | 0.09 |
| 16-16 | | | | | | | | | | | 0.03 | 0.13 | | | | 0.08 | 0.08 |
| 16-17 | | | | | | | | | | | 0.03 | 0.11 | | | | 0.07 | 0.08 |

**Table 15.3e Major and Minor Oxides by Hindalco**
Minor Oxides Add up to 0.68%

| Descriptive statistics | LOI | $ZrO_2$ | ZnO | $Fe_2O_3$ | MnO | $Cr_2O_3$ | $V_2O_5$ | $TiO_2$ | CaO | $K_2O$ | $P_2O_5$ | $SiO_2$ | $Al_2O_3$ | MgO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of values used | 326 | 326 | 326 | 326 | 326 | 326 | 326 | 326 | 326 | 326 | 326 | 326 | 326 | 326 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 163 | 8 | 2 | 1 | 1 | 3 |
| % of min. val. | 0.307 | 0.307 | 0.613 | 0.307 | 0.307 | 0.307 | 0.307 | 0.307 | 50.000 | 2.454 | 0.613 | 0.307 | 0.307 | 0.920 |
| Minimum | 8.950 | 0.009 | 0.001 | 5.200 | 0.004 | 0.028 | 0.010 | 1.170 | 0.000 | 0.000 | 0.040 | 0.270 | 17.300 | 0.000 |
| 1st quartile | 20.500 | 0.051 | 0.005 | 22.300 | 0.018 | 0.060 | 0.060 | 1.980 | 0.000 | 0.007 | 0.120 | 1.050 | 36.100 | 0.043 |
| Median | 22.850 | 0.064 | 0.006 | 28.400 | 0.024 | 0.077 | 0.070 | 2.330 | 0.001 | 0.017 | 0.150 | 1.830 | 41.750 | 0.061 |
| 3rd quartile | 25.100 | 0.078 | 0.009 | 36.400 | 0.041 | 0.098 | 0.080 | 2.600 | 0.010 | 0.044 | 0.220 | 3.440 | 46.300 | 0.076 |
| Maximum | 31.000 | 0.166 | 0.037 | 64.100 | 0.426 | 0.604 | 0.160 | 5.230 | 0.770 | 3.276 | 0.970 | 45.590 | 61.600 | 0.219 |
| Range | 22.050 | 0.157 | 0.036 | 58.900 | 0.422 | 0.576 | 0.150 | 4.060 | 0.770 | 3.276 | 0.930 | 45.320 | 44.300 | 0.219 |
| Sum | 7351.350 | 21.246 | 2.647 | 9577.600 | 14.012 | 28.317 | 22.850 | 762.340 | 9.304 | 39.662 | 63.960 | 1164.010 | 13397.800 | 21.089 |
| Mean | 22.550 | 0.065 | 0.008 | 29.379 | 0.043 | 0.087 | 0.070 | 2.338 | 0.029 | 0.122 | 0.196 | 3.571 | 41.098 | 0.065 |
| Geometric mean | 22.173 | 0.062 | 0.007 | 27.382 | 0.028 | 0.079 | 0.068 | 2.275 | | | 0.163 | 2.024 | 40.293 | |
| Harmonic mean | 21.727 | 0.057 | 0.006 | 25.093 | 0.022 | 0.074 | 0.066 | 2.213 | | | 0.141 | 1.373 | 39.386 | |
| Kurtosis (Pearson) | 0.695 | 1.407 | 10.141 | 0.139 | 21.296 | 41.262 | 5.668 | 3.445 | 27.228 | 27.790 | 13.170 | 21.790 | 0.026 | 4.967 |
| Skewness (Pearson) | -0.754 | 0.616 | 3.037 | 0.410 | 4.637 | 4.937 | 0.334 | 1.037 | 5.387 | 4.803 | 3.406 | 4.205 | -0.375 | 1.780 |
| Kurtosis | 0.747 | 1.475 | 10.399 | 0.180 | 21.797 | 42.198 | 5.828 | 3.558 | 27.858 | 28.432 | 13.494 | 22.302 | 0.064 | 5.113 |
| Skewness | -0.761 | 0.621 | 3.065 | 0.414 | 4.680 | 4.983 | 0.338 | 1.046 | 5.437 | 4.848 | 3.438 | 4.244 | -0.378 | 1.796 |
| CV (standard deviation/mean) | 0.170 | 0.328 | 0.806 | 0.356 | 1.665 | 0.561 | 0.207 | 0.240 | 4.544 | 2.900 | 0.823 | 1.563 | 0.188 | 0.560 |
| Sample variance | 14.705 | 0.000 | 0.000 | 109.271 | 0.005 | 0.002 | 0.000 | 0.314 | 0.017 | 0.124 | 0.026 | 31.065 | 59.725 | 0.001 |
| Estimated variance | 14.751 | 0.000 | 0.000 | 109.607 | 0.005 | 0.002 | 0.000 | 0.315 | 0.017 | 0.124 | 0.026 | 31.160 | 59.908 | 0.001 |
| Sample standard deviation | 3.835 | 0.021 | 0.007 | 10.453 | 0.071 | 0.049 | 0.014 | 0.560 | 0.129 | 0.352 | 0.161 | 5.574 | 7.728 | 0.036 |
| Estimated standard deviation | 3.841 | 0.021 | 0.007 | 10.469 | 0.072 | 0.049 | 0.014 | 0.561 | 0.130 | 0.353 | 0.161 | 5.582 | 7.740 | 0.036 |
| Mean absolute deviation | 2.937 | 0.017 | 0.004 | 8.399 | 0.032 | 0.029 | 0.010 | 0.414 | 0.045 | 0.172 | 0.095 | 3.094 | 6.144 | 0.024 |
| Median absolute deviation | 2.250 | 0.014 | 0.002 | 7.550 | 0.009 | 0.019 | 0.010 | 0.310 | 0.001 | 0.012 | 0.050 | 0.925 | 5.050 | 0.017 |
| Standard-error | 0.213 | 0.001 | 0.000 | 0.580 | 0.004 | 0.003 | 0.001 | 0.031 | 0.007 | 0.020 | 0.009 | 0.309 | 0.429 | 0.002 |
| Lower bound Mean CI | 22.132 | 0.063 | 0.007 | 28.238 | 0.035 | 0.082 | 0.069 | 2.277 | 0.014 | 0.083 | 0.179 | 2.962 | 40.254 | 0.061 |
| Upper bound Mean CI | 22.969 | 0.067 | 0.009 | 30.520 | 0.051 | 0.092 | 0.072 | 2.400 | 0.043 | 0.160 | 0.214 | 4.179 | 41.941 | 0.069 |

Two batches of samples were prepared. For the first batch, Ultra Trace prepared 24 composite samples derived from boreholes of plateaux 3, 15, 17 and 33. The second batch consisted of 50 samples derived from exploration, single interval samples from plateaux 7 (mainly), 2 and 15.

Excellent multilinear correlations were obtained between available alumina and major oxides and LOI (Figure 15.3b), as follows:

- $AA_{150} = 15.11 + 2.3005\ LOI - 0.30997\ SiO_2 - 0.07864\ Fe_2O_3$ $R^2$ 0.94 Std Err 1.42
- $AA_{225} = -2.51 + 0.1087\ LOI - 0.7633\ SiO_2 + 0.9526\ Al_2O_3$ $R^2$ 0.98 Std Err 0.98
- $RSiO_{2\ 150} = 0.49\ SiO_2$ $R^2$ 0.84 Std Err 0.24
- $RSiO_{2\ 225} = 0.85\ SiO_2$ $R^2$ 0.95 Std Err 0.19

Multilinear correlations, used to forecast phases in the resource and reserve model, were confirmed by stoichiometric calculations (Figure 15.3a), using the mineralogical phases described in Section 12.5.

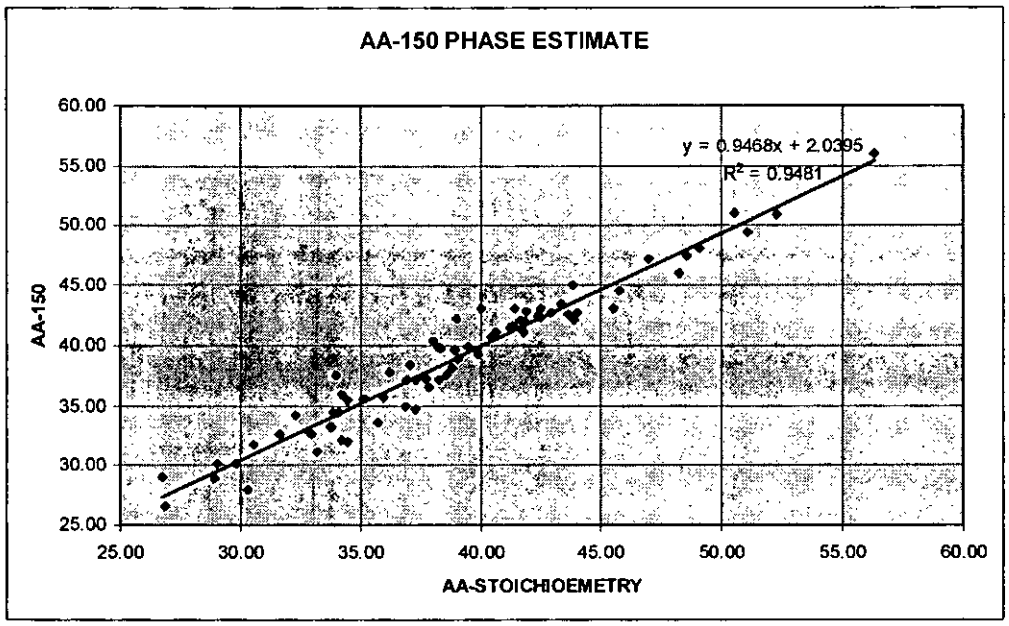
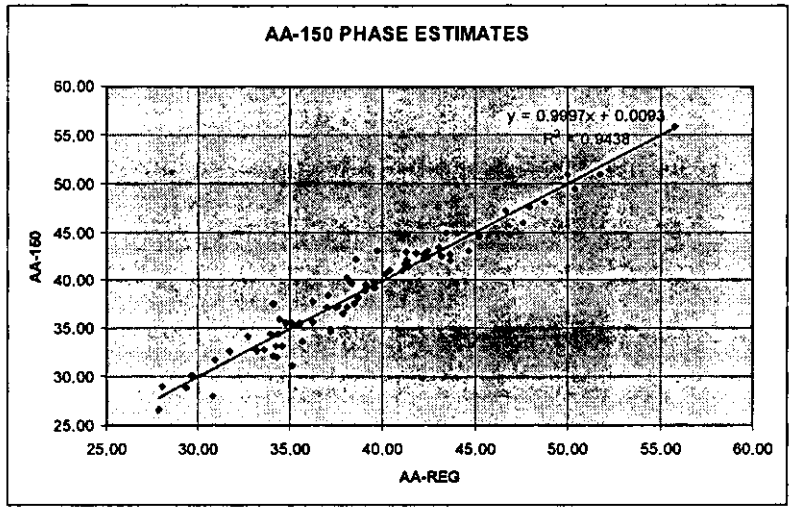
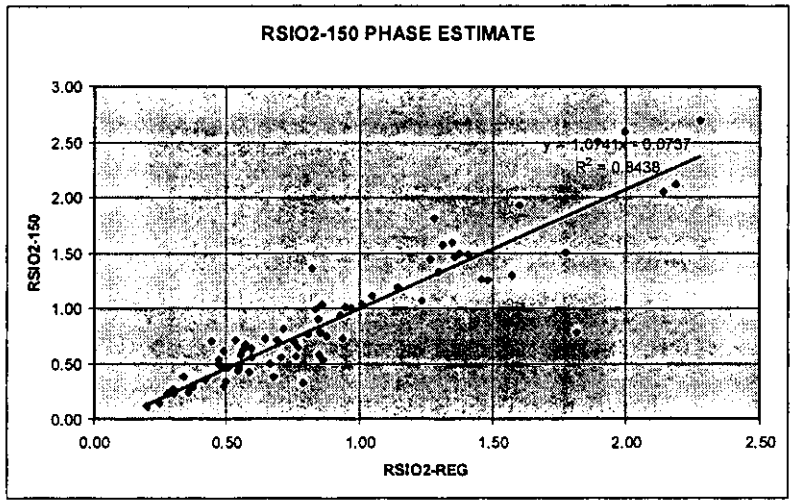
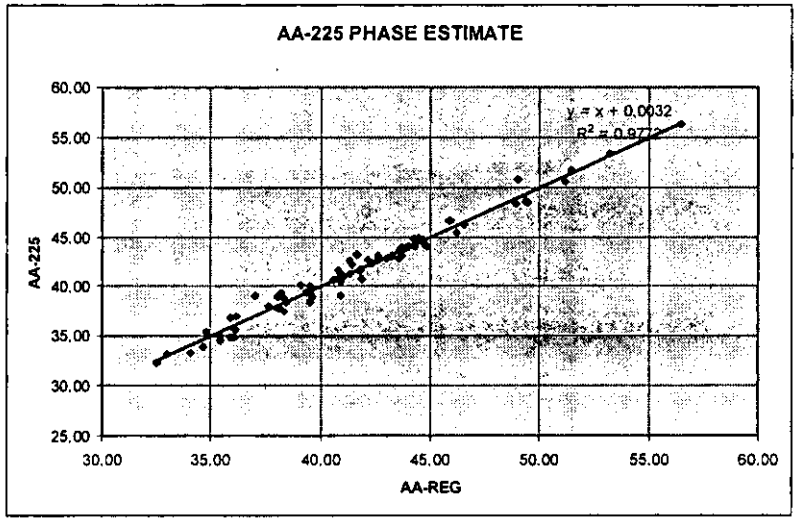



**Fig 15.3a $AA_{150}$ by Stoichiometric Calculations**



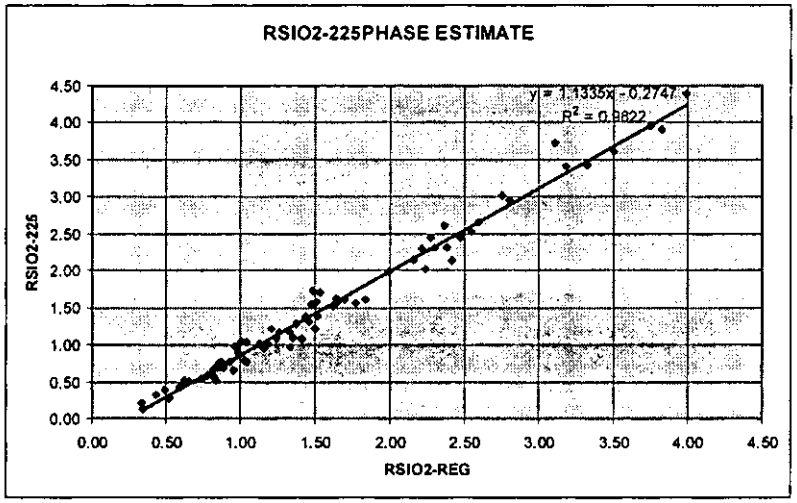




**Fig 15.3b AA and $RSiO_2$ Correlations**

### 15.4 Certification of Laboratories

Ultra Trace, Canning Vale, Western Australia, is an NATA accredited public testing service (National Association of Testing Laboratories of Australia, No. 14492) and the laboratory complies with the requirements of ISO/IEC 17025 (1999). All ALS Chemex laboratories in North America are registered to ISO 9001:2000 for the "provision of assay and geochemical analytical services" by BSI Quality Registrars. In addition to ISO 9001:2000 registration, ALS Chemex is actively pursuing accreditation to ISO 17025 under CAN-P-1579 "Guidelines for Accreditation of Mineral Analysis Testing Laboratories". CAN-P-1579 is the Amplification and Interpretation of CAN-P-4 "General Requirements for the Accreditation of Calibration and Testing Laboratories" (Standards Council of Canada ISO/IECGuide 25:1997(E)).

Hindalco, Belgaum Research Centre, India, is certified ISO 9001-2000 since in March 2001, Windalco Laboratories, Kirkvine, Jamaica, secured ISO 9002 accreditation in 1997, and CBG, Kamsar, Guinea is accredited ISO 9001-2000 since year 2000. In addition to the ISO certification programmes, Hindalco, Windalco and CBG participate in the Alcan QAN Benchmark Proficiency Programme and Ultra Trace Laboratories is vetted by Alcan-owned Gove Alumina.

### 15.5 Adequacy of Sample Preparation, Analyses and Security

**Sample Preparation**
BH&P consider that sample preparation followed accepted practices and standards for bauxite, and was carried out under appropriate owner-supervision, by Bryan S. Osborne, P.Geo..

**Analyses**
The assays, covering the full requirement of bauxite characterisation, were carried out by reputable laboratories with proven a track record for bauxite analysis. Analytical methods complied with the industry standards. BH&P consider that the nature and extent of quality control measures were sufficient to ensure reliable assay results.

**Security**
Security of sample and chain of custody are considered appropriate, given that field supervision was ensured by Global Alumina during drilling and sample preparation, that samples were stored in a container at Sangaredi for the exclusive use of Global Alumina and kept locked at all times and that samples were shipped to laboratories in sealed metal cases.

## 16. DATA VERIFICATION

### 16.1 Sample Preparation Control

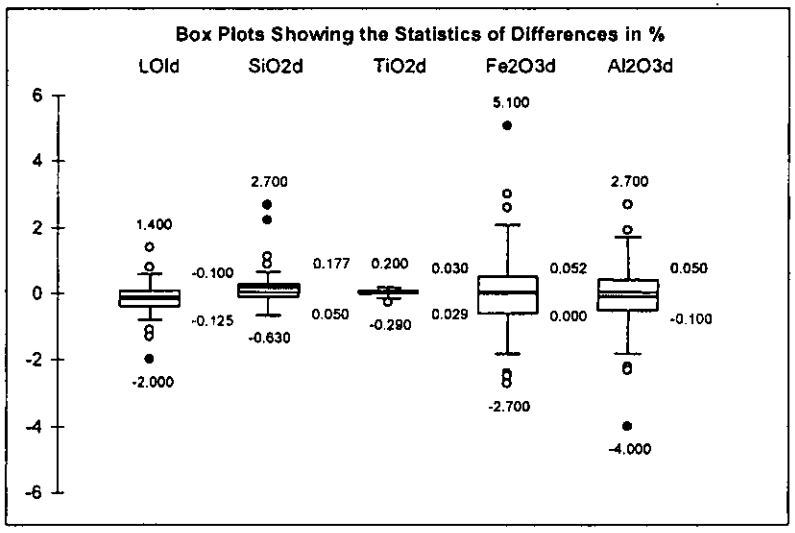
Excess auger cuttings were collected to build a large size sample (20.6 kg). It was crushed to -2mm and split into 28 equal sub-samples that were then sent through sample preparation and XRF analysis by Ultra Trace, together with control samples (*"Sampling Procedure for Reproducibility Test on Bauxite Sample from Hole 951565"*, October 2005). With a standard deviation of 0.35% on $Al_2O_3$, it is concluded that the division of the original sample at the drill collar or subsequent sample preparation did not result in appreciable random errors and did not generate any grade biases. In addition, duplicate field samples were taken from four auger holes. Sample pairs went through the standard sample preparation and assaying. results are shown overleaf.

**Table 16.1 Statistics of Differences – Duplicate Field Samples**

| Statistics of Differences | LOId | $SiO_2$d | $TiO_2$d | $Fe_2O_3$d | $Al_2O_3$d |
|---|---|---|---|---|---|
| No. of values used | 48 | 48 | 48 | 48 | 48 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 1 | 1 | 1 |
| % of min. val. | 2.083 | 2.083 | 2.083 | 2.083 | 2.083 |
| Minimum | -2.000 | -0.630 | -0.290 | -2.700 | -4.000 |
| 1st quartile | -0.350 | -0.100 | -0.020 | -0.600 | -0.500 |
| Median | -0.100 | 0.050 | 0.030 | 0.000 | 0.050 |
| 3rd quartile | 0.100 | 0.265 | 0.080 | 0.500 | 0.400 |
| Maximum | 1.400 | 2.700 | 0.200 | 5.100 | 2.700 |
| Range | 3.400 | 3.330 | 0.490 | 7.800 | 6.700 |
| Sum | -6.000 | 8.500 | 1.410 | 2.500 | -4.800 |
| **Mean** | **-0.125** | **0.177** | **0.029** | **0.052** | **-0.100** |
| Geometric mean | | | | | |
| Harmonic mean | | | | | |
| Kurtosis (Pearson) | 2.608 | 7.489 | 2.082 | 2.773 | 2.128 |
| Skewness (Pearson) | -0.632 | 2.462 | -0.701 | 0.973 | -0.730 |
| Kurtosis | 3.307 | 8.971 | 2.696 | 3.498 | 2.749 |
| **Skewness** | **-0.673** | **2.624** | **-0.747** | **1.037** | **-0.777** |
| CV (standard deviation/mean) | -4.305 | 3.321 | 2.968 | 26.173 | -11.227 |
| Sample variance | 0.284 | 0.339 | 0.007 | 1.820 | 1.234 |
| Estimated variance | 0.290 | 0.346 | 0.008 | 1.858 | 1.260 |
| **Sample standard deviation** | **0.532** | **0.582** | **0.086** | **1.349** | **1.111** |
| Estimated standard deviation | 0.538 | 0.588 | 0.087 | 1.363 | 1.123 |
| Mean absolute deviation | 0.369 | 0.357 | 0.065 | 0.921 | 0.779 |
| Median absolute deviation | 0.200 | 0.165 | 0.050 | 0.600 | 0.550 |
| Standard-error | 0.078 | 0.085 | 0.013 | 0.197 | 0.162 |
| Lower bound Mean CI | -0.281 | 0.006 | 0.004 | -0.344 | -0.426 |
| Upper bound Mean CI | 0.031 | 0.348 | 0.055 | 0.448 | 0.226 |

Percentage differences stated in absolute terms

**Fig. 16.1 Box Plot – Drill hole Sampled Twice**




NB: Details on the box plot format used throughout this document are found in Section 20.1.1.

- the lower edge of the box represents the first quartile Q1,
- a black line and the associated figure represent the median Q2,
- a red line and the associated figure represent the average,
- the upper edge of the box represents the third quartile Q3

Grade variations between paired samples are generally contained within narrow ranges and grade differences tend to zero means. Results are considered as excellent and validate the sampling procedure.

## 16.2 Analytical Control

### XRF and LOI Analysis

During sample preparation, Global Alumina took duplicate samples of the pulverised material at every twentieth sample interval. A reference sample was inserted at every thirtieth interval. In addition, Ultra Trace was asked to insert certified bauxite reference samples through the course of the programme. These Global Alumina control samples were in addition to Ultra Trace's own quality control samples.

A systematic scheme for inserting duplicates and reference material has the advantage of simplicity that minimizes the risk of errors in sample number allocation and sample submittal. A systematic scheme has the disadvantage to allow laboratories to predict the sequence and process control samples accordingly. In this project, this risk was eliminated by submitting the same duplicate samples to both Ultra Trace and Hindalco (refer to external checks hereafter).

Results of duplicates and reference material assays are submitted in Table.16.2a-f and Figures 16.2a-f. Results of external checks are shown in Tables 16.2g and 16.2h, as well in Fig. 16.2g and 16.2h.

Quality Control reports were prepared by Kimmerle Consultants Inc. namely, "*Quality Control of Ultra Trace Laboratories' Bauxite Analysis*" dated May 13, 2005 and *"Quality Control of Ultra Trace Laboratory – Elemental Analysis of Global Alumina Bauxite samples"* dated October 18, 2005, *"Quality Control of Hindalco Laboratory – Elemental Analysis and Low Temperature Digestion of Global Alumina Bauxite samples"* dated October 19, 2005.

### Conclusions from Above Reports

**Ultra Trace**

The accuracy – measured in absolute terms - of the analysis of alumina and iron oxides in individual bauxite samples is likely to lie in the 0.3 % and 0.4 % range respectively and the average results may fall about 0.1 % below true values based on the certified composition of the two NIST bauxite standards used. LOI for both samples and reference materials was found to be reproducible to better than 0.2% and within the uncertainty of the reference material. Excellent reproducibility was obtained for $SiO_2$ and $TiO_2$ with a precision better than 0.1% and average results likely to fall within 0.05 % of true values.

**Hindalco**

On the basis of the XRF results Kimmerle Consultants Inc found that average elemental values reported by Hindalco could underestimate alumina content by as much as 0.5% (absolute) but likely not more than 0.3% and overestimate iron oxide by about 0.3%. Analytical results for silica, titania were estimated to be reliable to within 0.1% (absolute) and minor oxides to within 0.02%. Average LOM results were expected to be accurate, but with reproducibility limited to about 0.2% (absolute).

**External Checks**

Two hundred and seventy-three (273) samples drawn from the duplicates sent to Ultra Trace were also submitted to Hindalco. The agreement between the Hindalco and Ultra Trace results provides assurance as to the reliability of the results reported

by both. The two laboratories agree within the respective reproducibility of their measurements, except for $Al_2O_3$ and $Fe_2O_3$. Average alumina values reported by Hindalco lie about 0.5 % lower than those reported by Ultra Trace, in line with the 0.3% lower values Hindalco recorded for CRM's. Average iron oxide values reported by Hindalco lie about 0.5 % higher than those reported for the same samples by Ultra Trace. Since Hindalco found results for CRM's 0.12 % higher and Ultra Trace reported $Fe_2O_3$ values 0.15% lower than the average certified CRM values and both reported an average reproducibility of 0.1%, this 0.5 % difference is not altogether unexpected.XRF and LOI assays were checked by Hindalco. The agreement of major oxide assays and LOI was found to be within acceptable tolerances, as summarized by Figure 16.2d extracted from the report by Kimmerle Consultants Inc.

**Bomb Digests**

QA/QC of bomb digest test work was carried out by Kimmerle Consultants Inc. (Oct 14, 2005, Section 23, References). Good agreement was reported for available alumina and reactive silica low temperature digest, as confirmed in Figure 16.2d. Comparing the experimental and certified values of the Alcan certified bauxites, Kimmerle Consultants Inc expected Hindalco to overestimate average Al150 by less than 0.25% (absolute) and report average Si150 values accurate to within 0.1% (absolute).

**Table 16.2a Statistics of Difference – Duplicates at CBG Lab.**
CBG Laboratory – 2004 Drilling

| Descriptive statistics | LOId | $SiO_2$d | $TiO_2$d | $Fe_2O_3$d | $Al_2O_3$d | $AA_{143}$d | $AA_{235}$d |
|---|---|---|---|---|---|---|---|
| No. of values used | 22 | 22 | 22 | 22 | 22 | 13 | 13 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 | 9 | 9 |
| No. of min. val. | 1 | 1 | 2 | 1 | 1 | 1 | 1 |
| % of min. val. | 4.545 | 4.545 | 9.091 | 4.545 | 4.545 | 7.692 | 7.692 |
| Minimum | -0.660 | -1.380 | -0.110 | -1.800 | -3.000 | -1.489 | -1.238 |
| 1st quartile | -0.110 | 0.020 | -0.070 | -0.800 | -1.000 | -0.439 | -0.228 |
| Median | 0.145 | 0.105 | -0.015 | -0.350 | -0.050 | 0.311 | 0.082 |
| 3rd quartile | 0.310 | 0.230 | 0.060 | 0.700 | 0.500 | 0.861 | 0.750 |
| Maximum | 0.710 | 1.760 | 0.150 | 3.200 | 1.700 | 1.800 | 1.600 |
| Range | 1.370 | 3.140 | 0.260 | 5.000 | 4.700 | 3.289 | 2.838 |
| Sum | 2.060 | 2.320 | -0.020 | -0.300 | -5.300 | 3.533 | 1.968 |
| Mean | 0.094 | 0.105 | -0.001 | -0.014 | -0.241 | 0.272 | 0.151 |
| Geometric mean | | | | | | | |
| Harmonic mean | | 0.219 | -0.172 | -2.727 | | 3.788 | 6.155 |
| Kurtosis (Pearson) | -0.354 | 3.126 | -1.161 | -0.135 | -0.526 | -0.897 | -0.912 |
| Skewness (Pearson) | -0.436 | 0.145 | 0.262 | 0.884 | -0.489 | -0.096 | 0.242 |
| Kurtosis | 0.210 | 5.064 | -0.916 | 0.516 | -0.030 | -0.158 | -0.185 |
| Skewness | -0.503 | 0.167 | 0.302 | 1.018 | -0.563 | -0.123 | 0.310 |
| CV | 3.634 | 5.323 | -87.994 | -101.065 | -5.334 | 3.358 | 5.643 |
| Sample variance | 0.111 | 0.301 | 0.006 | 1.813 | 1.576 | 0.769 | 0.673 |
| Estimated variance | 0.116 | 0.315 | 0.006 | 1.899 | 1.651 | 0.833 | 0.729 |
| Sample standard de | 0.332 | 0.548 | 0.078 | 1.346 | 1.255 | 0.877 | 0.820 |
| Estimated standard dev | 0.340 | 0.561 | 0.080 | 1.378 | 1.285 | 0.913 | 0.854 |
| Mean absolute dev | 0.263 | 0.305 | 0.066 | 1.037 | 0.994 | 0.708 | 0.613 |
| Median absolute dev | 0.170 | 0.115 | 0.075 | 0.500 | 0.900 | 0.700 | 0.260 |
| Standard-error | 0.073 | 0.120 | 0.017 | 0.294 | 0.274 | 0.253 | 0.237 |
| Lower bound Mean CI | -0.057 | -0.143 | -0.036 | -0.625 | -0.811 | -0.280 | -0.365 |
| Upper bound Mean CI | 0.245 | 0.354 | 0.035 | 0.597 | 0.329 | 0.823 | 0.667 |

Results of CBG duplicates show appreciable scatter around common means. Grade correlations are well within tolerances.

**Fig. 16.2a Statistics of Difference – Duplicates**
CBG Laboratory – 2004 Drilling

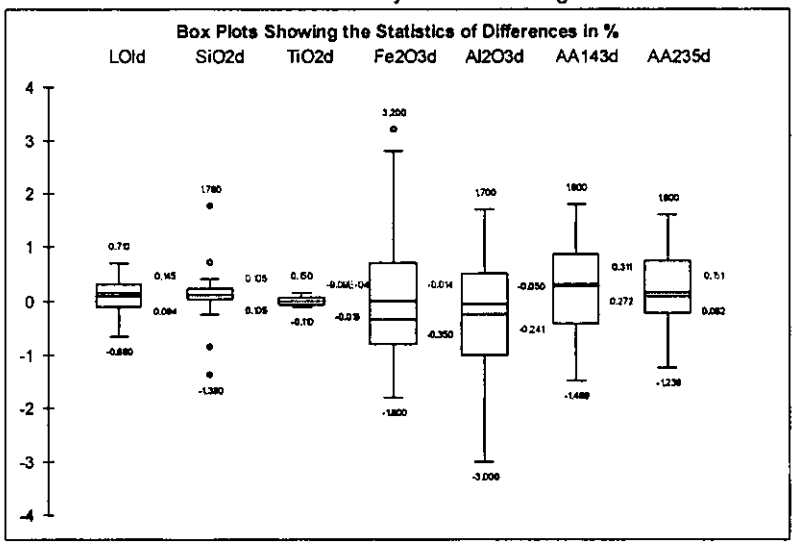



**Table 16.2b Matrix of Correlation – Duplicates**
CBG Laboratory – 2004 Drilling

| Correlat. | LOI_1 | $SiO_2$_1 | $TiO_2$_1 | $Fe_2O_3$_1 | $Al_2O_3$_1 | $AA_{143}$_1 | $AA_{235}$_1 |
|---|---|---|---|---|---|---|---|
| LOI_2 | 0.985 | -0.146 | 0.368 | -0.836 | 0.931 | 0.987 | 0.979 |
| $SiO_2$_2 | -0.164 | 0.988 | -0.081 | -0.408 | 0.190 | -0.081 | -0.057 |
| $TiO_2$_2 | 0.235 | 0.078 | 0.978 | -0.357 | 0.320 | 0.250 | 0.293 |
| $Fe_2O_3$_2 | -0.812 | -0.398 | -0.352 | 0.994 | -0.964 | -0.856 | -0.875 |
| $Al_2O_3$_2 | 0.911 | 0.164 | 0.341 | -0.952 | 0.980 | 0.935 | 0.951 |
| $AA_{143}$_2 | 0.976 | -0.063 | 0.376 | -0.876 | 0.952 | 0.986 | 0.980 |
| $AA_{235}$_2 | 0.964 | -0.080 | 0.370 | -0.864 | 0.948 | 0.968 | 0.980 |

**Table 16.2c Statistics of Difference – Duplicates at Ultra Trace**
Ultra Trace Laboratory – April to June 2005 Drilling

| Descriptive statistics | LOId | $SiO_2$d | $TiO_2$d | $Fe_2O_3$d | $Al_2O_3$d |
|---|---|---|---|---|---|
| No. of values used | 314 | 314 | 314 | 314 | 314 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 1 | 1 | 1 |
| % of min. val. | 0.318 | 0.318 | 0.318 | 0.318 | 0.318 |
| Minimum | -4.800 | -3.600 | -0.480 | -6.100 | -10.000 |
| 1st quartile | -0.100 | -0.040 | -0.020 | -0.200 | -0.200 |
| Median | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 3rd quartile | 0.100 | 0.030 | 0.020 | 0.200 | 0.200 |
| Maximum | 2.900 | 4.810 | 0.430 | 12.100 | 22.400 |
| Range | 7.700 | 8.410 | 0.910 | 18.200 | 32.400 |
| Sum | 0.340 | -0.910 | -1.460 | -2.620 | 29.300 |
| **Mean** | **0.001** | **-0.003** | **-0.005** | **-0.008** | **0.093** |
| Geometric mean | | | | | |
| Harmonic mean | | | | | |
| Kurtosis (Pearson) | 95.475 | 57.416 | 19.605 | 97.818 | 169.761 |
| Skewness (Pearson) | -4.273 | 1.770 | -0.805 | 5.923 | 10.088 |
| Kurtosis | 97.673 | 58.753 | 20.088 | 100.069 | 173.639 |
| Skewness | -4.314 | 1.787 | -0.812 | 5.980 | 10.185 |
| CV (standard deviation/mean) | 349.829 | -161.109 | -13.727 | -110.921 | 15.836 |
| Sample variance | 0.143 | 0.217 | 0.004 | 0.854 | 2.177 |
| Estimated variance | 0.143 | 0.218 | 0.004 | 0.857 | 2.184 |
| **Sample standard deviation** | **0.378** | **0.466** | **0.064** | **0.924** | **1.475** |
| Estimated standard deviation | 0.379 | 0.467 | 0.064 | 0.926 | 1.478 |
| Mean absolute deviation | 0.124 | 0.133 | 0.035 | 0.378 | 0.400 |
| Median absolute deviation | 0.100 | 0.040 | 0.020 | 0.200 | 0.200 |
| Standard-error | 0.021 | 0.026 | 0.004 | 0.052 | 0.083 |
| Lower bound Mean CI | -0.041 | -0.055 | -0.012 | -0.111 | -0.071 |
| Upper bound Mean CI | 0.043 | 0.049 | 0.002 | 0.094 | 0.257 |

**Fig. 16.2b Statistics of Difference – Duplicates**
Ultra Trace Laboratory – April to June 2005 Drilling

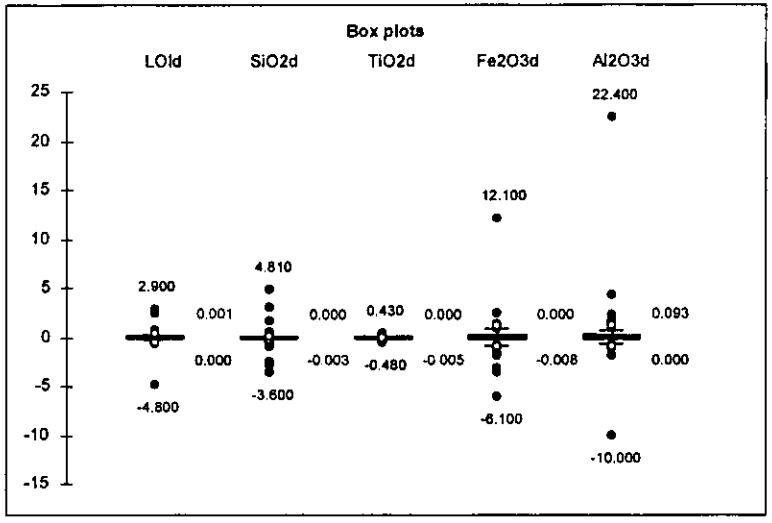



**Table 16.2d Matrix of Correlation – Duplicates**
Ultra Trace Laboratory – April to June 2005 Drilling

| Correlation | LOI_1 | $SiO_2$_1 | $TiO_2$_1 | $Fe_2O_3$_1 | $Al_2O_3$_1 |
|---|---|---|---|---|---|
| LOI_2 | **0.995** | **-0.616** | **0.493** | **-0.747** | **0.932** |
| $SiO_2$_2 | **-0.602** | **0.996** | **-0.253** | -0.041 | **-0.365** |
| $TiO_2$_2 | **0.498** | **-0.259** | **0.995** | **-0.507** | **0.543** |
| $Fe_2O_3$_2 | **-0.755** | -0.027 | **-0.502** | **0.996** | **-0.908** |
| $Al_2O_3$_2 | **0.920** | **-0.363** | **0.534** | **-0.899** | **0.983** |

Except for rare outliers, possibly due to error in sample dispatch, results of Ultra Trace duplicates show low scatter around common means. Grade correlations are well within tolerances.

**Table 16.2e Descriptive statistics – Standard Material at CBG**
CBG Laboratory –2004 Drilling

| Descriptive statistic | LOI% | $SiO_2$% | $TiO_2$% | $Fe_2O_3$% | $Al_2O_3$% |
|---|---|---|---|---|---|
| No. of values used | 38 | 38 | 38 | 38 | 38 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 4 | 1 | 1 | 2 | 1 |
| % of min. val. | 10.526 | 2.632 | 2.632 | 5.263 | 2.632 |
| Minimum | 27.070 | 1.630 | 3.230 | 12.700 | 52.500 |
| 1st quartile | 27.080 | 1.780 | 3.340 | 13.200 | 53.400 |
| Median | 27.115 | 1.805 | 3.370 | 13.300 | 53.600 |
| 3rd quartile | 27.170 | 1.860 | 3.400 | 13.400 | 53.800 |
| Maximum | 27.210 | 1.950 | 3.430 | 14.400 | 54.400 |
| **Range** | **0.140** | **0.320** | **0.200** | **1.700** | **1.900** |
| Sum | 1030.780 | 69.110 | 127.680 | 504.700 | 2037.700 |
| Mean | 27.126 | 1.819 | 3.360 | 13.282 | 53.624 |
| Geometric mean | 27.126 | 1.818 | 3.360 | 13.278 | 53.622 |
| Harmonic mean | 27.126 | 1.817 | 3.359 | 13.275 | 53.621 |
| Kurtosis (Pearson) | -1.264 | 0.875 | -0.282 | 2.785 | 1.090 |
| Skewness (Pearson) | 0.394 | -0.157 | -0.862 | 0.734 | -0.049 |
| Kurtosis | -1.162 | 1.421 | 0.024 | 3.729 | 1.681 |
| Skewness | 0.427 | -0.170 | -0.934 | 0.796 | -0.053 |
| CV | 0.002 | 0.034 | 0.016 | 0.023 | 0.007 |
| Sample variance | 0.002 | 0.004 | 0.003 | 0.093 | 0.133 |
| Estimated variance | 0.002 | 0.004 | 0.003 | 0.096 | 0.137 |
| Sample standard dev | 0.044 | 0.061 | 0.055 | 0.305 | 0.365 |
| Estimated standard dev | 0.045 | 0.062 | 0.055 | 0.309 | 0.370 |
| Mean absolute dev | 0.039 | 0.047 | 0.043 | 0.207 | 0.261 |
| Median absolute dev | 0.035 | 0.035 | 0.030 | 0.100 | 0.200 |
| Standard-error | 0.007 | 0.010 | 0.009 | 0.050 | 0.060 |
| Lower bound Mean CI | 27.111 | 1.798 | 3.342 | 13.180 | 53.502 |
| Upper bound Mean CI | 27.141 | 1.839 | 3.378 | 13.383 | 53.745 |

By contrast, with duplicate assays, reference material assays by CBG show low scatter. This may confirm errors of sample submittal.

**Fig 16.2c Descriptive statistics– Standard Material**
CBG Laboratory –2004 Drilling

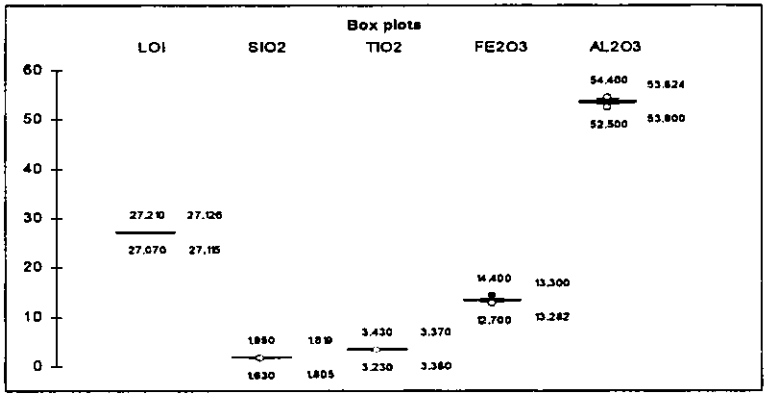



**Fig 16.2d Assay Variation with Time– Standard Material**
CBG Laboratory –2004 Drilling

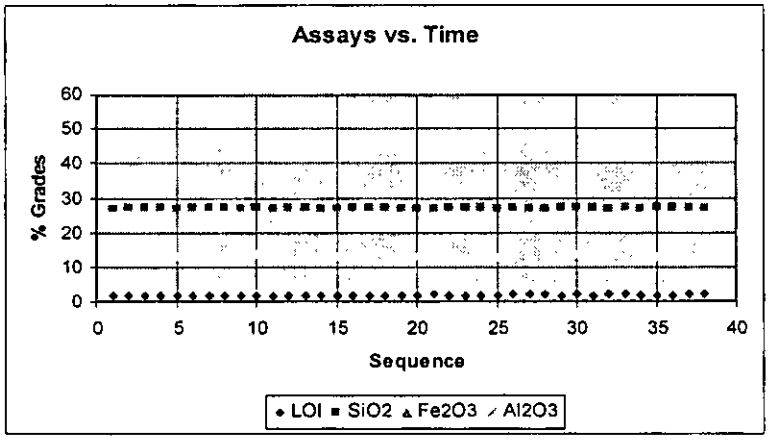


**Table 16.2f Descriptive statistics – Standard Material at Ultra Trace Laboratory**

Ultra Trace Laboratory – April to June 2005 Drilling

| Descriptive statistics | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % |
|---|---|---|---|---|---|
| No. of values used | 217 | 217 | 217 | 217 | 217 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 8 | 2 | 1 |
| % of min. val. | 0.461 | 0.461 | 3.687 | 0.922 | 0.461 |
| Minimum | 22.900 | 1.720 | 2.210 | 27.900 | 42.200 |
| 1st quartile | 23.900 | 2.080 | 2.230 | 28.100 | 42.800 |
| Median | 23.900 | 2.100 | 2.240 | 28.200 | 42.900 |
| 3rd quartile | 23.900 | 2.110 | 2.250 | 28.300 | 43.000 |
| Maximum | 24.400 | 2.190 | 2.330 | 29.400 | 43.300 |
| Range | 1.500 | 0.470 | 0.120 | 1.500 | 1.100 |
| Sum | 5183.600 | 447.630 | 486.190 | 6130.700 | 9306.400 |
| Mean | **23.888** | **2.063** | **2.241** | **28.252** | **42.887** |
| Geometric mean | 23.887 | 2.060 | 2.240 | 28.251 | 42.886 |
| Harmonic mean | 23.887 | 2.058 | 2.240 | 28.250 | 42.886 |
| Kurtosis (Pearson) | 28.624 | 3.524 | 3.000 | 6.381 | 1.368 |
| Skewness (Pearson) | -3.464 | -2.227 | 1.693 | 2.260 | -0.536 |
| Kurtosis | 29.623 | 3.697 | 3.155 | 6.647 | 1.470 |
| Skewness | -3.513 | -2.258 | 1.716 | 2.291 | -0.544 |
| CV (standard deviation/mean) | 0.005 | 0.048 | 0.010 | 0.008 | 0.004 |
| Sample variance | **0.013** | **0.010** | **0.001** | **0.054** | **0.023** |
| Estimated variance | 0.013 | 0.010 | 0.001 | 0.054 | 0.023 |
| Sample standard deviation | 0.115 | 0.098 | 0.023 | 0.233 | 0.150 |
| Estimated standard deviation | 0.115 | 0.099 | 0.023 | 0.233 | 0.150 |
| Mean absolute deviation | 0.054 | 0.064 | 0.015 | 0.154 | 0.118 |
| Median absolute deviation | 0.000 | 0.010 | 0.010 | 0.100 | 0.100 |
| Standard-error | 0.008 | 0.007 | 0.002 | 0.016 | 0.010 |
| Lower bound Mean CI | 23.872 | 2.050 | 2.237 | 28.221 | 42.867 |
| Upper bound Mean CI | 23.903 | 2.076 | 2.244 | 28.283 | 42.907 |

Reference material assays by Ultra Trace show very low scatter.

**Fig 16.2e Descriptive statistics– Standard Material**

Ultra Trace Laboratory – April to June 2005 Drilling

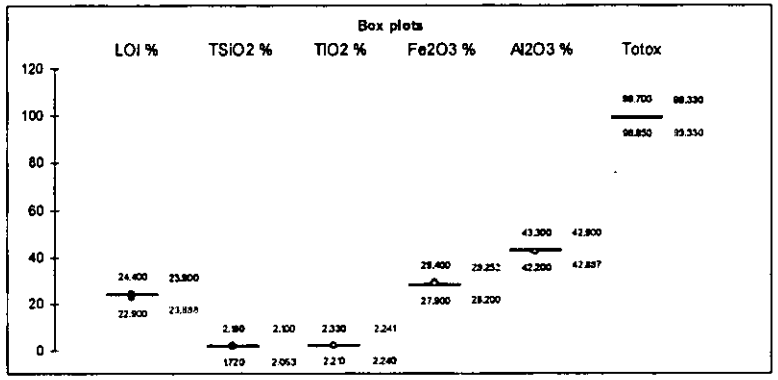



**Fig 16.2f Assay Variation with Time– Standard Material**

Ultra Trace Laboratory – April to June 2005 Drilling

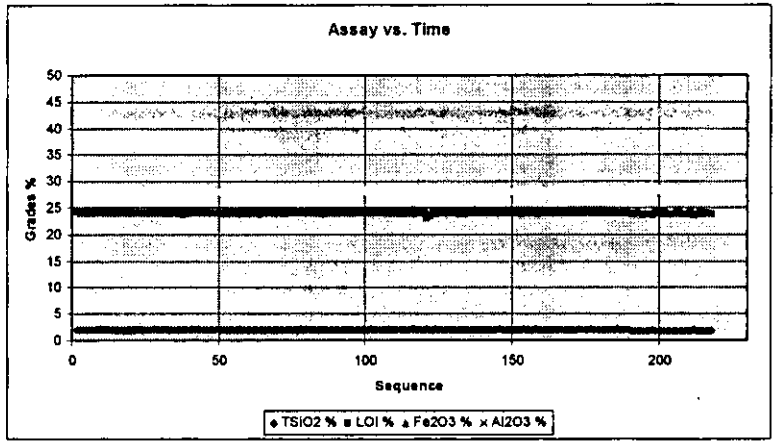
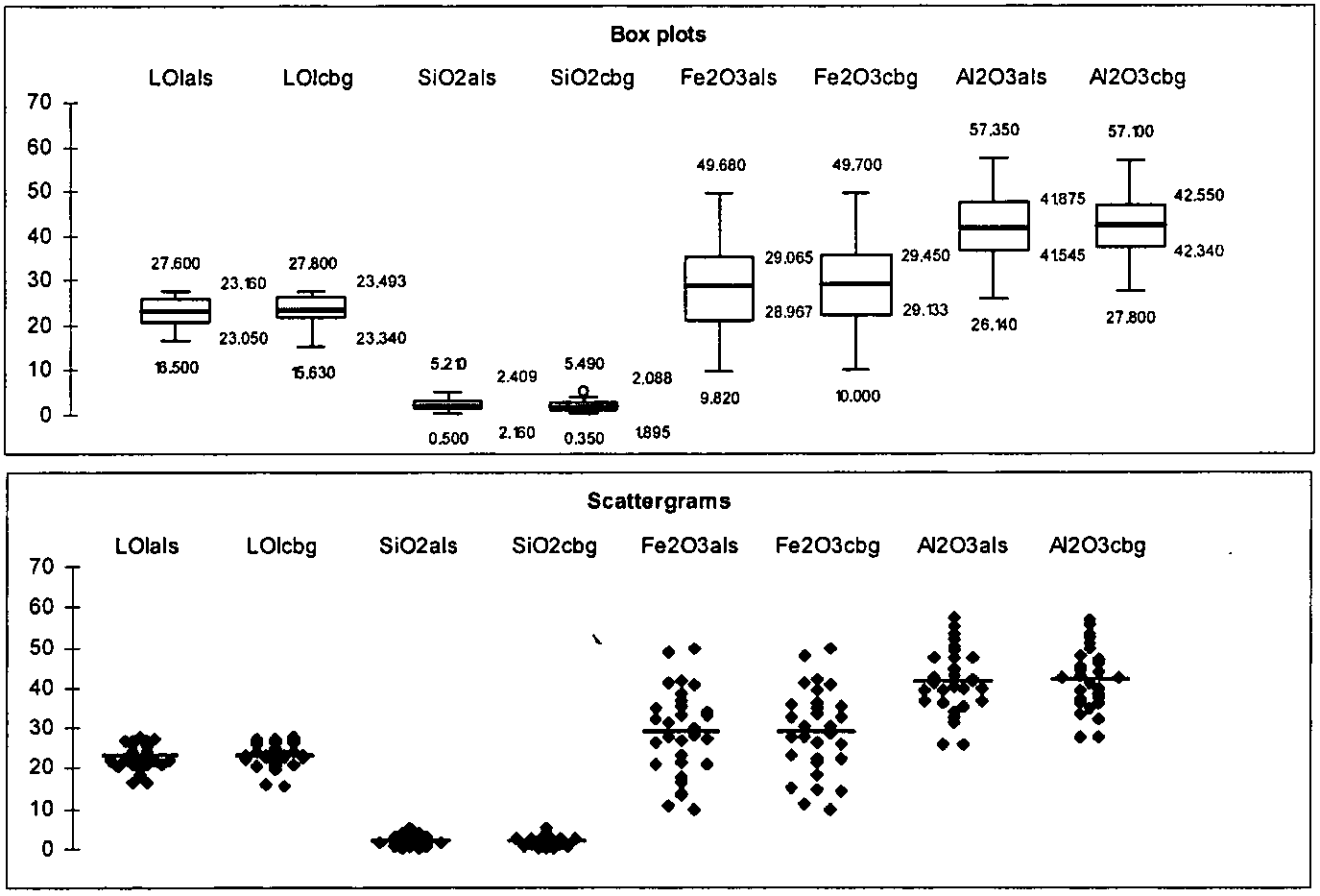


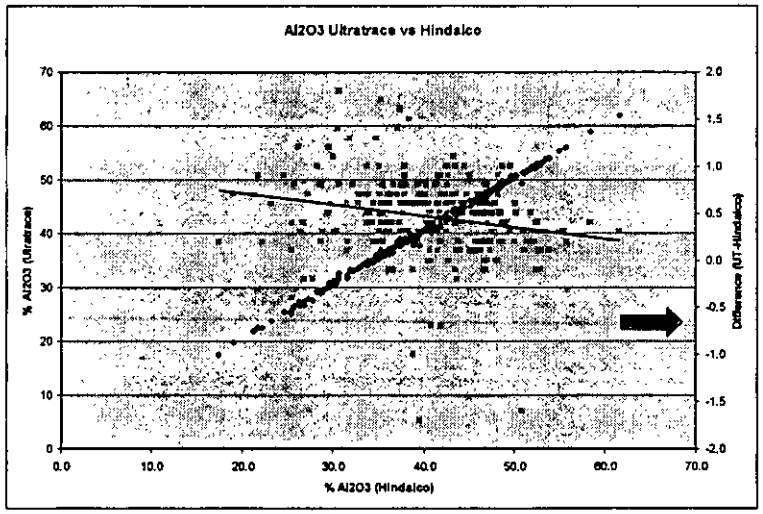
**Table 16.2g External Check Assays – CBG vs. ALS (Vancouver)**

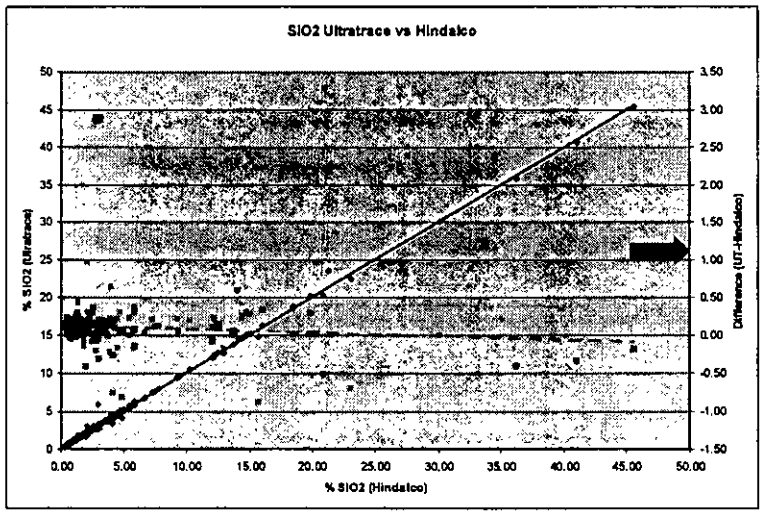
| Descriptive statistics | LOIals | LOIcbg | $SiO_2$als | $SiO_2$cbg | $Fe_2O_3$als | $Fe_2O_3$cbg | $Al_2O_3$als | $Al_2O_3$cbg |
|---|---|---|---|---|---|---|---|---|
| No. of values used | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| % of min. val. | 3.333 | 3.333 | 3.333 | 3.333 | 3.333 | 3.333 | 3.333 | 3.333 |
| Minimum | 16.500 | 15.630 | 0.500 | 0.350 | 9.820 | 10.000 | 26.140 | 27.800 |
| 1st quartile | 20.900 | 21.940 | 1.630 | 1.270 | 21.290 | 22.300 | 36.580 | 37.300 |
| Median | 23.050 | 23.340 | 2.160 | 1.895 | 29.065 | 29.450 | 41.545 | 42.550 |
| 3rd quartile | 25.900 | 26.380 | 3.070 | 2.840 | 35.600 | 35.700 | 47.670 | 46.900 |
| Maximum | 27.600 | 27.800 | 5.210 | 5.490 | 49.680 | 49.700 | 57.350 | 57.100 |
| Range | 11.100 | 12.170 | 4.710 | 5.140 | 39.860 | 39.700 | 31.210 | 29.300 |
| Sum | 694.800 | 704.800 | 72.260 | 62.650 | 869.010 | 874.000 | 1256.240 | 1270.200 |
| **Mean** | **23.160** | **23.493** | **2.409** | **2.088** | **28.967** | **29.133** | **41.875** | **42.340** |
| Geometric mean | 22.961 | 23.277 | 2.068 | 1.769 | 26.793 | 27.028 | 41.127 | 41.675 |
| Harmonic mean | 22.751 | 23.037 | 1.701 | 1.432 | 24.323 | 24.637 | 40.342 | 40.991 |
| Kurtosis (Pearson) | -0.481 | 0.177 | -0.630 | 0.530 | -0.797 | -0.829 | -0.584 | -0.661 |
| Skewness (Pearson) | -0.438 | -0.725 | 0.439 | 0.862 | -0.010 | -0.025 | -0.036 | 0.045 |
| Kurtosis | -0.132 | 0.706 | -0.321 | 1.155 | -0.534 | -0.575 | -0.263 | -0.360 |
| Skewness | -0.486 | -0.803 | 0.487 | 0.955 | -0.011 | -0.027 | -0.040 | 0.050 |
| CV (standard deviation/mean) | 0.129 | 0.132 | 0.514 | 0.558 | 0.367 | 0.360 | 0.188 | 0.178 |
| Sample variance | 8.676 | 9.281 | 1.483 | 1.315 | 109.038 | 106.408 | 59.952 | 54.778 |
| Estimated variance | 8.975 | 9.601 | 1.534 | 1.360 | 112.798 | 110.077 | 62.019 | 56.667 |
| Sample standard deviation | 2.945 | 3.046 | 1.218 | 1.147 | 10.442 | 10.315 | 7.743 | 7.401 |
| Estimated standard deviation | 2.996 | 3.099 | 1.239 | 1.166 | 10.621 | 10.492 | 7.875 | 7.528 |
| Mean absolute deviation | 2.360 | 2.352 | 0.995 | 0.913 | 8.526 | 8.467 | 6.126 | 5.951 |
| Median absolute deviation | 2.150 | 2.200 | 0.865 | 0.800 | 7.590 | 6.950 | 5.535 | 5.150 |
| Standard-error | 0.547 | 0.566 | 0.226 | 0.213 | 1.939 | 1.916 | 1.438 | 1.374 |
| Lower bound Mean CI | 22.041 | 22.336 | 1.946 | 1.653 | 25.001 | 25.216 | 38.934 | 39.529 |
| Upper bound Mean CI | 24.279 | 24.650 | 2.871 | 2.524 | 32.933 | 33.051 | 44.815 | 45.151 |

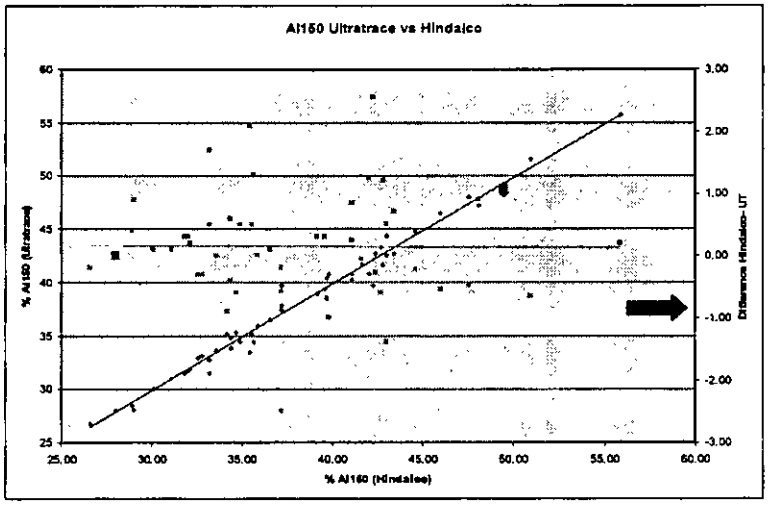
**Fig. 16.2g External Check Assays – CBG vs.ALS (Vancouver)**




Over the above grade ranges, covering the range of ore grades, CBG and ALS show consistent assay results



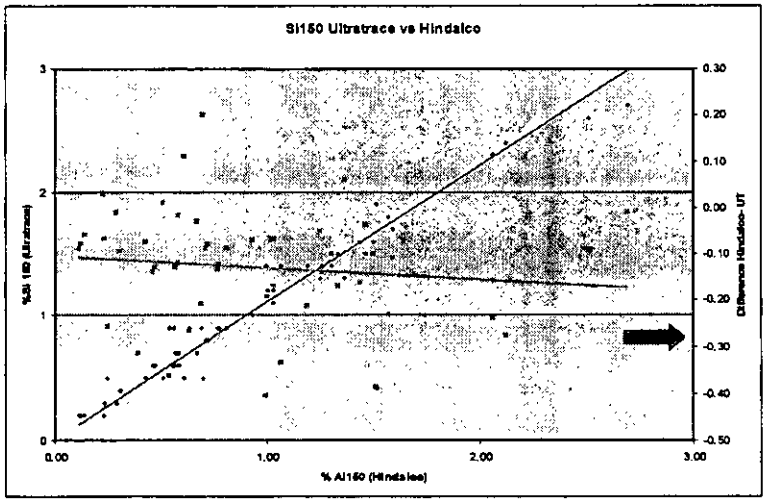




**Fig. 16.2h External Check Assays - UT vs. Hindalco**

**SRK Special Samples**
Dr. Neil Bliss, on behalf of SRK appointed as Independent Engineers by the banking syndicate, visited the drilling site in June 2005 and reviewed the procedures, facilities and project data. He also requested ten samples for validation purposes covering a wide range of bauxite grades as determined from by Ultra Trace from the March confirmatory drilling programme.

Using the same pulp as that assayed by Ultra Trace, Hindalco, Windalco (West Indies Alumina Company, Kirkvine, Jamaica) and Ultra Trace laboratories reported consistent assay results, as shown in table 16.2h.

While Ultra Trace used microwave digestion, both Hindalco and Windalco used conventional autoclave digestion and Alcan assay methods. Thus, results from the latter laboratories were expected to match closely, and they did except for two lower grade samples (# 1178 and 1182), where boehmite attack was possible. If grades are less than 41 % $AA_{150}$ in the form of gibbsite and boehmite, then laboratory digestion will start to dissolve boehmite, while plant conditions under higher charging ratios will not attack boehmite. Therefore, when available alumina (as determined by Alcan Method 1243) is less than 41%, the procedure instructs using Method 1253, which applies a higher charging ratio for accurate determinations.

Windalco used Method 1243 only, whereas Hindalco increased the bauxite sample weight to avoid the problem and therefore obtained more realistic values. At the time of the analyses, Hindalco were well in control of their analytical methods.

BH&P have used only the Hindalco bomb digest results to estimate Available Alumina for resource estimation, i.e. results derived from conventional autoclave digestion with the adjustment to correct for any possible bias due to boehmite attack.

**Table 16.2h External Check Assays - SRK Special Samples**

| Sample # | $AA_{150}$% | | | $RSiO_{2\text{-}150}$% | | |
|---|---|---|---|---|---|---|
| | Ultra Trace | Windalco | Hindalco | Ultra Trace | Windalco | Hindalco |
| **1053** | 34.8 | 35.9 | 36.2 | 0.80 | 0.77 | 0.61 |
| **1001** | 38.0 | 38.1 | 38.3 | 0.50 | 0.10 | 0.26 |
| **1031** | 38.2 | 39.2 | 39.3 | 1.00 | 0.94 | 0.77 |
| **1178** | 38.7 | 38.0 | 36.6 | 0.70 | 0.68 | 0.43 |
| **1404** | 42.7 | 42.3 | 42.4 | 0.40 | 0.39 | 0.21 |
| **1459** | 42.7 | 42.0 | 42.4 | 0.50 | 0.53 | 0.32 |
| **1533** | 37.2 | 39.1 | 38.9 | 4.20 | 3.86 | 4.14 |
| **1512** | 44.4 | 44.1 | 44.5 | 1.00 | 1.05 | 0.98 |
| **1563** | 48.7 | 48.0 | 48.6 | 0.50 | 0.52 | 0.52 |
| **1182** | 31.9 | 34.0 | 33.0 | 0.80 | 0.31 | 0.59 |
| **Average** | **39.7** | **40.1** | **40.0** | **1.04** | **0.92** | **0.88** |

The above test finalizes the extensive validation of assay results from the laboratories contracted for the project.

## 16.3 Adequacy of Data Verification

Verification included duplicate field samples to rule out the presence of sampling bias and/or significant random errors, twin holes to confirm the drilling method applied, and extensive

laboratory checks to eliminate the possibility of biased or inaccurate assays. BH&P believe that data verification by Global Alumina was thorough and complied with accepted standards for bauxite exploration. BH&P has carried out statistical checks on assay results of duplicate samples and reference material to verify the reliability of laboratories used in this project.

Global Alumina elected to supply CRMs (certified reference material) to the laboratories for insertion in the sample flow for QA purposes. Hence laboratories were aware of the presence of CRMs. However, assay accuracy was confirmed by external checks, while assay precision and instrument calibration over time was checked using reference material prepared by Global Alumina. This material served its purposes as shown in Figs. 16.2c and Fig 16.2e. Global Alumina is now inserting CRMs and duplicates at random.

BH&P conclude that the assay database offers a sound and reliable support for resource estimates. For further details on verification, the reader is referred to Section 23 (References).

## 17. ADJACENT PROPERTY

Bauxite mining operations are conducted to the east of the Mining Concession by CBG. The mineralisation on the adjacent property of CBG is of a similar style but of higher grade than that on the Mining Concession. As such, CBG exports its bauxite as feedstock to overseas refineries; Global Alumina intends to transform its bauxite in an integrated Refinery in close proximity to its own deposits.

## 18. MINERAL PROCESSING AND METALLURGICAL TESTING

### 18.1 Initial Bauxite Process Test Work

During June and July, 2004 the Belgaum Research & Development Centre (BRDC) of Indal carried out laboratory test work on the three atypical samples from Global Alumina collected from four plateaux (Nos. 2,7,12 and 15).
The overall research goals of this laboratory test work were to determine:

- The elemental and calculated phase composition of the bauxite.
- The crystallite size of the boehmite fraction.
- The available alumina and reactive silica under typical digest conditions.
- The extent to which grind size, predesilication, caustic strength, temperature, digester charging ratio, digestion holding time and lime charge influence the digestion of the bauxite.
- The extent of liquor desilication.
- The likely flocculation and rheological behaviour of digester residue slurries and the rheology of bauxite slurry.

Based on the results of this test work completed in July 2004, an appropriate process was developed by Global Alumina. At the same time, large bauxite samples were collected by the company on material considered representative of the plant feed in the initial years of production. In order to verify the process conditions and assumptions, the BRDC were requested to carry out process simulation tests on these larger samples.

### 18.1.1 Elemental and Mineralogical Characterisation

The attached Table 18.1.1 shows the elemental composition and phase analysis of the samples tested during the two phases of work carried out at the BRDC.

### 18.1.2 Preliminary Tests

"Average grade" bauxite from Plateau 12 was used for this phase of the test work.

Initially, preliminary "sighter" digestions were done in synthetic liquor to determine extraction efficiency of available alumina vs. the approach to gibbsite solubility.

The liquor used for these tests was 240 g/l caustic, as $Na_2CO_3$, and the digestion was done at 150 °C. One percent (w/w) of lime (CaO) was added to the bauxite. Each test was done in duplicate to ensure good reproducibility.

**Table 18.1.1 – Hindalco Analyses of Bauxite Samples for Process Test work**

| | Atypical Samples | | | Representative Samples | |
|---|---|---|---|---|---|
| **Sample #** | **P-8525** | **Pl. 12** | **P-8526** | **P-9285** | **P-9267** |
| Description | Low | Average Grade | High Grade | Typical Grade | Low Grade |
| % LOI | 2 | 25.1 | 26.1 | 25.3 | 23.6 |
| % $SiO_2$ | 1 | 1.68 | 1.93 | 1.64 | 1.87 |
| % $TiO_2$ | 2 | 2.88 | 2.29 | 2.57 | 2.36 |
| % $Fe_2O_3$ | 2 | 23.8 | 22.3 | 24.2 | 29.3 |
| % $Al_2O_3$ | 4 | 45.6 | 46.5 | 45.3 | 41.9 |
| %$RSiO_{2-150}$ | 1 | 0.84 | 1.15 | 1.05 | 0.91 |
| % $AA_{150}$ | 3 | 40.6 | 41.7 | 39.2 | 36.4 |
| Boehmite Crystal Size, A | 6 | 322 | 534 | 1199 | 546 |
| % TOC | 0. | 0.08 | 0.09 | | |
| %$RSiO_{2-225}$ | 1 | 1.43 | 1.91 | 1.69 | 1.81 |
| %$AA_{225}$ | 3 | 43.0 | 44.93 | 42.1 | 38.4 |

Elemental Composition by XRF, Phase Analysis by Bomb Digest

Based on the results from the initial phase the preferred digestion conditions for additional tests were elaborated as follows:

- To assess the impact of bauxite grind size on the extraction efficiency a duplicate test at an alternate PSD was done.
- This bauxite was not predesilicated.
- To assess the impact of predesilication on the extraction efficiency, a duplicate test was done with predesilicated bauxite.
- To assess the impact of lime charge on the extraction efficiency a duplicate test was done with predesilicated bauxite and at a different lime charge.

The results of the "sighter" tests were made available in June, 2004 and allowed for the final details of the main extraction study to be established by Global Alumina in consultation with the BRDC.

### 18.1.3 Main Extraction Study

The following variables selected:

- Caustic concentration in the feed liquor 230, 260 and 295 g/l (as $Na_2CO_3$)
- Charging Ratio from 0.645 to 0.775
- Digest temperature 135 and 150°C Digestion time 15, 30 and 0 minutes
- Two margins from gibbsite equilibrium, based on the "sighter" test work

All tests were done with "average grade" bauxite and with fixed conditions for the grind size, pre-desilication and lime addition. The following parameters were measured:

The following parameters were measured:

- Extraction of alumina
- Desilication (exit $SiO_2$)
- Liquor concentrations (alumina, caustic)

Based on the above results, the laboratory and Global Alumina agreed on the conditions for testing the high and low grade bauxite samples with two digestion tests for each. This work was completed in July, 2004.

### 18.1.4 Flocculation, Mud Settling and Mud Filtration

This test work established typical conditions for mud separation and washing and also evaluated if the mud residues were suitable for vacuum filtration.

The "average grade" bauxite was digested under agreed conditions so that tests could be conducted on the flocculation and settling of the residue. Digestion was performed in Parr autoclaves to produce sufficient residue for these tests.

Settling tests on the high caustic slurry were conducted at 95-100 °C to assess the best flocculant. Two flocculants were examined at various dosages. For a given solids concentration at several dosages of each flocculant, data was collected on the settling rate, residual turbidity and sediment volume achieved.

The settled mud residues were water washed (to ~25 g/l soda), reslurried and vacuum filtered to measure the filtration rate.

Subsequently, the high and low anomalous grade bauxites were tested at specific conditions agreed between Global Alumina and the laboratory.

### 18.1.5 Bauxite and Residue Rheological Properties

Shear stress and viscosity were measured as a function of applied shear rate using a rheometer fitted with an appropriate concentric cylinder sensor.

Bauxite of an agreed particle size was suspended in "synthetic" liquor at a nominated solids concentration, and the rheology of the resultant suspension determined at 60°C. This was repeated for the three bauxite samples. The rheology of the mud residue from the three bauxites under mud settler (decanter) conditions (after flocculation) was determined.

After settling, the slurry was collected, washed and resuspended to a soda level of <5 g/l to simulate a final slurry. This slurry was then vacuum-filtered to its "natural" moisture level and the solids concentration determined.

### 18.1.6 Process Simulation Tests

The objectives of this test work were to confirm the process conditions and assumptions made on the basis of the preliminary test work outlined above using samples collected from the potential initial mining areas to be developed by Global Alumina. Process simulation test work included pre-desilication, digestion, settling and mud filtration. Two different bauxite particle grind sizes were assessed. The results of this confirmatory work are presented in a report dated February, 2005 (BRDC Report No. 2005/02).

## 18.2 The Process Flow Sheet

Following the above test work, as well as separate bauxite grinding tests, a basic flow sheet design was established.

The Refinery will process run-of-mine bauxite with a moisture content of approximately 12%. Roll Crushers have been selected for the preliminary size reduction to accommodate this moist bauxite, followed by well proven Rod-Ball Mills for the final size reduction. Tests on bauxite samples derived rod and ball Bond Work Indices, which were in line with expectations from previous experience, and which were used by the equipment manufacturers to size the equipment. Initial plans were to grind to 80% passing 300 microns. A coarser grind (80% passing 600 microns) was also tested in an effort to reduce mill power consumption, but found that the extraction fell off, and the quantity of residual sand became excessive. The initial grind was included in the specification sent to the mill manufacturers. It was chosen to grind in open circuit, at the expense of mill power, to simplify the process and to secure the maximum percent solids for the next stages of the process.

### 18.2.1 Predesilication

Low temperature digestion of this bauxite introduces a conflict between the requirements for desilication and those imposed by the presence of boehmite. A compromise solution is necessary. A series of scoping tests were run, with and without pre-desilication, on representative samples of bauxite, at a range of digestion caustic concentrations, a range of digestion temperatures, and a range of digestion times. Twelve hours at 100°C was selected as the optimum condition for the combined desilication and alumina extraction of this bauxite. Slurry solids will be around 55%, which, with this bauxite and this grind results in a fluid slurry which can be pumped and agitated relatively easily. The production rate of the Refinery dictates that the slurry tanks will be very large, though within bounds established in the mineral process industries.

### 18.2.2 Digestion

The scoping tests mentioned above led to digest conditions of 20 minutes at 145°C or less at a caustic concentration of 240gpl, charging for a conservative alumina to caustic ratio of 0.695. Lime charge was 0.5% on bauxite, added to the digester feed.

### 18.2.3 Decantation

Using the conditions established in the scoping tests above, larger scale processability tests were carried out on representative samples in two laboratories to obtain sufficient liquor

and mud for further downstream work. The blow off slurry was settled at 105°C, using a range of flocculants and flocculent doses. There proved, as expected, to be no problem in achieving the settling rates needed for the application of high rate decanters, and the supernatant clarity was within the expected range.

### 18.2.4 Mud Washing and Filtration

Mud from the decantation tests was repulped and diluted, simulating the operation of a mud washing circuit. There were no flocculation problems, and nothing to prevent the application of high rate washers in the mud circuit was found.

It is proposed to filter the mud, and truck it to the disposal area, to minimize the soda leaving the plant. This is the BATNEEC solution to the perennial problem of alumina plant waste disposal. The rotary drum filters are vulnerable to sand build-up, and so the test material was de-sanded on a 100 Mesh screen, and the quantity measured. The remaining mud was subjected to filtration tests in two locations, and filtration rates exceeding 300kg/m2hr were obtained. These rates were used to specify the number of filters needed. Samples of mud were subjected to 'slump testing' to establish parameters which can be used in the design of the mud disposal area.

### 18.2.5 Sand Separation

Quantities of mud and sand derived from these experiments were used to specify the hydrocyclone system selected to desand the mud before the last washer.

### 18.2.6 Plant Efficiencies

The work described above is sufficient to predict the plant efficiency parameters. We expect the plant to operate 365 days/year, with 92.5% overall availability. Digestion productivity will be 84gpl, precipitator productivity will be 72gpl, and overall alumina recovery will be 92 – 94%, depending on the precise grade of bauxite processed.

### 18.2.7 Polishing Filtration

For the final separation of traces of mud a bag filter operation was selected, using a lime based filter aid. Examination of the available systems confirmed that the GAUDFRIN filter represents the current state of the art in this field.

### 18.2.8 Heat Interchange

Global Alumina has elected to use plate heat exchangers between pregnant liquor and spent liquor, to avoid the concentration resulting from a vacuum flash system, and accept the loss of evaporation in this section.

### 18.2.9 Precipitation

The basic circuit is drawn from experience, and is proven in three locations. It is a conventional agglomeration – growth system, with measures to maintain high ratios in the agglomeration section, and to cool the growth section. We have chosen to replace the primary and secondary settling systems with hydrocyclones, to make operation easier and reduce costs. The tertiary separation system remains as conventional tray settling, aided by hydrate flocculants. Global Alumina elected not to install seed filtration in the first instance, in the interest of simple operation, and to run the circuit solid oxalate free.

### 18.2.10 Hydrate Filtration

Primary cyclone underflow is filtered immediately on disc filters. The intent is to minimize retention of hydrate in dilute liquor, bearing in mind the likely high silica content of that liquor. The hydrate will be re-slurried in wash liquor, and immediately filtered and washed on pan filters. The moist hydrate will be routed to one of four calciners, or put to a covered moist hydrate storage area for later calcination to reduction grade alumina.

### 18.2.11 Calcination

Global Alumina has chosen to use proven stationary calciners.

### 18.2.12 Evaporation

Evaporation is required to close the mass balance. Conventional multistage flashing units will be used, with a capacity sufficient to handle water ingress during the long wet season. Three units will be installed.

### 18.2.13 Impurity Removal

The organic content of the bauxite, coupled with its low silica level, means that it will be necessary to install control systems for oxalate, carbonate and organic carbon. A proven salting-out system has been chosen, and bearing in mind the size of the plant, two units will be installed. The end product will be placed in large impervious bags, and trucked to disposal in a dedicated area of the mud stack area.

# 19. MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

The terms of Resources and Reserves used in this section conform with Sections 1.3 and 1.4 of NI 43-101, by having their meanings compliant with the CIM Definition Standards.

## 19.1 Modelling

Modelling was underpinned by detailed statistical analysis submitted in Section 20 (Other Relevant Data and Information), which provided the compositing parameters to achieve grade specifications (in Table 19.1.1a) as well as the resource modelling parameters by ordinary kriging (in Table 19.1.1b).

While the various plateaux displayed sufficient differences in terms of grades, thickness and variability to require modelling with specific variograms, grade distribution did not show significant anisotropy within the search range applied (Table 19.1.1b).

A probabilistic model was developed (fully described in Section 20.1.1) to forecast mine loss and dilution and account for the combined effects of mining practices and bauxite floor characteristics. By design, the pit floor was set 0.5m above the bauxite floor if underlying laterite was 2 m thick or above, and 1m otherwise. This resulted in 10% mine loss with minimal dilution, taking into account a random error of +/-1m due to ore lifting practices and the estimated position of the bauxite floor.

### 19.1.1 Methods and Parameters

**Compositing**

Compositing, reviewed in section 20.1.1 (Univariate Description), was designed to produce bauxite meeting plant specification using the parameters shown below:

**Table 19.1.1a Compositing Parameters**

| Parameters | Resources | Reserves |
|---|---|---|
| **Sample cutoffs** | | |
| $\%SiO_2$ | 10 | 10 |
| $\%Al_2O_3$ | 38 | 38 |
| **Composite cutoffs** | | |
| $\%SiO_2$ | 10 | 10 |
| $\%Al_2O_3$ | 38 | 40 |
| **Top soil** | Excluded | Excluded |
| **Overburden** | Excluded | Included |
| **Internal waste** | Included | Included |
| **Loss** | Not applicable | Algorithm 20.1.1 |
| **Dilution** | Not applicable | Algorithm 20.1.1 |
| **Min. mineable thickness** | Not applicable | 2m |

**Block Modelling**
For all deposits, the in situ dry density of bauxite was estimated at 2.0 $t/m^3$. The parameters used for building the respective resource models stand as follows:

**Table 19.1.1b Modelling Parameters**

| Parameters | Resource & Reserve Models |
|---|---|
| **Grid Size** | o 300 x 300 m and 150 x 150 m<br>o Closed spaced drilling of minor extent , down to 12.5 on plateau 2 and to 37.5 m on plateau 7 |
| **Search** | o Grades & Thickness<br>▪ 500m<br>▪ No anisotropy<br>▪ Minimum composites 3<br>▪ Maximum composite 12<br>o Topography<br>▪ 70 m<br>▪ No anisotropy<br>▪ Minimum composites 4<br>▪ Maximum composite 5 |
| **Interpolation** | o Grades & Thickness<br>▪ OK<br>▪ Block size 50 x 50 m<br>▪ Variograms of table 20.1.4.3<br>o Topography<br>▪ ID-Power 1<br>▪ Using the DTM supplied by MAPS with elevation points at 50m intervals<br>▪ Block size 50 x 50 m |
| **Limit of Mineralisation** | o Perimeter drilled<br>o Safe distance from permanent infrastructure (5.5 Mt of Resources are sterilized by the railway line)<br>o Resource Model<br>▪ 1 m minimum ore thickness<br>▪ 1:1 m/m stripping ratio<br>o Reserve Model<br>▪ Grade and mining constraint |

### 19.1.2 Model Validation

The following checks were made:

- Absence of local bias checked by cross validation of composites. With cross validation, each composite is removed from the data set and re-estimated from surrounding data. Statistics in Figure 19.1.2 indicate minor differences of the means (in red), but narrower distributions of the estimates (refer to maximum and minimum values shown in the graph) resulting from the smoothing effect of interpolation.

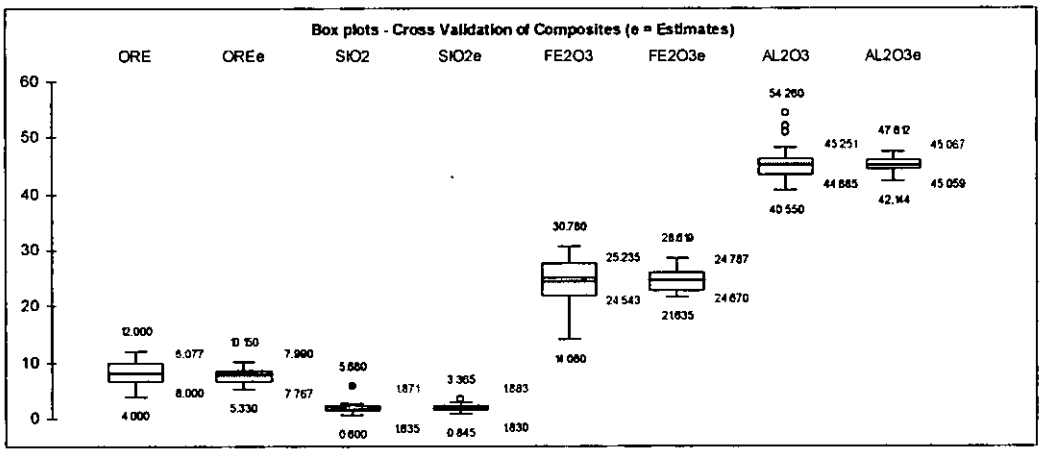



**Fig. 19.1.2 Cross Validation of Composite – Plateau 2**

- Preservation of the linear dependence of grades shown in table 19.1.2a and of the sum of oxides (Totox) shown in Table 19.1.2b. The relationship of $Al_2O_3$ with $Fe_2O_3$ and $SiO_2$ is preserved as $Al_2O_3 = 63.03 - 0.618*SiO_2 - 0.6668*Fe_2O_3$ with an $R^2$ of 0.97.

**Table 19.1.2a Linear Dependence of Grades**

Pearson correlation coefficient

| Resource Composites | ORE | LOI | $SiO_2$ | $TiO_2$ | $Fe_2O_3$ | $Al_2O_3$ |
|---|---|---|---|---|---|---|
| ORE | 1.000 | **0.307** | **0.104** | -0.031 | **-0.348** | **0.352** |
| LOI | **0.307** | 1.000 | **-0.114** | **0.161** | **-0.914** | **0.916** |
| $SiO_2$ | **0.104** | **-0.114** | 1.000 | -0.052 | **-0.187** | 0.015 |
| $TiO_2$ | -0.031 | **0.161** | -0.052 | 1.000 | **-0.260** | **0.196** |
| $Fe_2O_3$ | **-0.348** | **-0.914** | **-0.187** | **-0.260** | 1.000 | **-0.974** |
| $Al_2O_3$ | **0.352** | **0.916** | 0.015 | **0.196** | **-0.974** | 1.000 |

| Resource Ore Blocks | ORE | LOI | $SiO_2$ | $TiO_2$ | $Fe_2O_3$ | $Al_2O_3$ |
|---|---|---|---|---|---|---|
| ORE | 1.000 | **0.244** | **0.114** | **-0.160** | **-0.285** | **0.312** |
| LOI | **0.244** | 1.000 | 0.000 | **0.129** | **-0.923** | **0.928** |
| $SiO_2$ | **0.114** | 0.000 | 1.000 | **0.100** | **-0.292** | **0.095** |
| $TiO_2$ | **-0.160** | **0.129** | **0.100** | 1.000 | **-0.249** | **0.136** |
| $Fe_2O_3$ | **-0.285** | **-0.923** | **-0.292** | **-0.249** | 1.000 | **-0.967** |
| $Al_2O_3$ | **0.312** | **0.928** | **0.095** | **0.136** | **-0.967** | 1.000 |

- Compliance with grades of composites checked by comparing block estimates to polygonal estimates within the ore envelope.

**Table 19.1.2b Polygonal Estimates vs. Kriging**

Cutoff 38% $Al_2O_3$ and 10% $SiO_2$, Minimum 1 m ore thickness

| Evaluation m | Overburd m | Ore m | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % | Totox % | Ore Mt |
|---|---|---|---|---|---|---|---|---|---|
| **Kriging** | 0.95 | 7.18 | 24.65 | 2.08 | 2.47 | 25.09 | 45.04 | 99.33 | 239 |
| **Polygonal** | 0.98 | 7.36 | 24.63 | 2.08 | 2.48 | 25.15 | 44.99 | 99.33 | 239 |

## 19.2 Resource Categorization

### 19.2.1 Relative Standard Errors

The main error of concern is that affecting the available alumina contained in the reported Resources. Let the tonnage of alumina contained (TAC) in the deposits be defined as

TAC = Surface x Ore Thickness x Density x AA

Or

TAC = Volume x Density x AA

The standard relative error of each term is now examined in the light of relevant data.

**Surface of Deposit**
Standard relative errors on the surface were obtained from the relative estimation variances, based on the number of edges of mineralised blocks defined by respective grids. Plateaux 2 and 15 were used to estimate the error for the 300 x 300m grid, with boreholes on the nominal grid only, and plateau 7 for the 150 x 150m grid, as follows:

- 1.5% for the 150 x 150m grid
- 3.1% for the 300 x 300m grid

**Ore Thickness**
Relative standard errors on ore thickness were derived from the standard errors on the means of ore intercepts, including composites <1m and stripping ratio >1, as follows:

- 2.3% for the 150 x 150m grid
- 5.1% for the 300 x 300m grid

**Volume of Deposit**
The error due to the potential occurrence within the current resource limits of a higher or lesser proportion material below cutoff (composites <1m and stripping ratio >1) was considered. The standard errors were derived from the proportion of such material calculated as "surface of influence (polygonal) of holes below cutoff x thickness", as follows:

- 2.5% for the 150 x 150m grid
- 5.5% for the 300 x 300m grid

To the above volumetric error was added the sum of the relative variances of the ore thickness and surface, giving the total relative errors on the volume:

- 3.7% for the 150 x 150m grid
- 8.1% for the 300 x 300m grid

**In situ Density**
The potential error is derived from the standard error on the mean of available density measurements (0.023 or 1.1% relative only), adjusted upwards to account for the few measurements available. This adjustment is arbitrary and based on experience of the bauxite in the district:

- 2.5% relative standard deviation, meaning that within the 95% confidence interval the density could vary from 1.9 to 2.1 $t/m^3$. This may appear a narrow range, but it is well justified based on experience.

**Available Alumina**
The standard relative error on AA is generally small in spite of the addition of sampling, assaying and estimation errors. The following estimates are founded on the composite statistics and largely on experience:

- 1.3% for the 150 x 150m grid, i.e. a range of 38% to 40%AA within the 95% confidence interval
- 1.8% for the 300 x 300m grid, i.e. a range of 37.6% to 40.4%AA within the 95% confidence interval

**Global Error on TAC**
The global error on TAC was then computed by simulation, using normal distributions for all variables and 1,000,000 iterations, with the following results within the 95% confidence interval:

- TAC could range from 44Mt to 51Mt, i.e. an error of +/-3.5 Mt or 7.5% relative for the 150 x 150m grid
- TAC could range from 37Mt to 49Mt, i.e. an error of +/-6 Mt or 14.3% relative for the 300 x 300m grid

- **In all deposits, the mineralisation remains largely open, therefore the upside potential is considerable.**

### 19.2.2 Resource Categories

Based on the results of variography, submitted in Section 20.1 (Exploratory Data Analysis) and summarized in Table 20.1.4.3 (Common Variograms per Plateau), and the errors associated with the respective exploration grids, Resources are categorized by as follows:

**Table 19.2.2 Resource Categorization Based on Grid Sizes**

| Resource Category | Drill Grid Size m x m |
|---|---|
| **Measured** | 150 x 150 |
| **Indicated** | 300 x 300 |
| **Inferred** | More than 300 x 300 up to 600 x 600 |

## 19.3 Mineral Reserve Estimate

**Key Assumptions**
The Mineral Reserve estimate is specifically prepared as part of Global Alumina's plans for the Refinery in the Concession Area. The mine plan presented in Section 20 demonstrates the feasibility and practicality of supplying bauxite to the Refinery and the specified levels of available alumina and reactive silica at a modest and predictable cost. The economic and financial analysis of the Refinery examined by BH&P demonstrated that the mineral reserves are economical.

The Mineral Reserve estimate is furthermore based on

- the geological data, resource model and mineral resource estimates as described;
- mining loss and dilution algorithms appropriate to the type of deposits and mineralisation, taking account of dilution at the top of the orebody with off-grade ferruginous hard cap material, intermediate off-grade material inside the bauxite profile and at the floor of the deposit and with ore losses at the mining floor;
- an additional ore recovery factor of 95%; and
- all Mineral Reserve material is inside the Mineral Resource.

## 19.4 Resource and Reserve Statements

BH&P have prepared the Resource and Reserve Statements in accordance with the CIM Standard Definitions using data generated by Global Alumina in conformance with the procedures established between BH&P and Global Alumina.

**Relevant Issues affecting Mineral Resources and Mineral Reserves**
The reported Mineral Resource and Mineral Reserve are not materially affected by other known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant issues, other than those discussed in this technical report. Environmental issues associated with the bauxite mining activities are discussed in the mine plan of Section 20 and further detailed in Global Alumina's Project EIA.

**Relevant Factors affecting Mineral Resource and Mineral Reserve Estimate**
Estimates of Mineral Resources and Mineral Reserves are not considered to be affected materially by mining, metallurgical, infrastructure and other relevant factors other than those described in this technical report. Account has been taken of bauxite zones sterilized by permanent roads and railway, with an area of 50 m either side of the projected railway and areas within or close to the Refinery perimeter. The bauxite resource thus sterilized has been excluded from the reserve base.

**Mineral Resource Statement**
Based on current exploration data and due consideration to the estimation errors described in the previous Sections, the reportable Mineral Resource detailed in Table 19.4a overleaf is estimated as:

- 122 Mt, with 38.9% $AA_{150}$ and 1.0% $RSiO_2$ reporting to Measured Resources.
- 108 Mt, with 39.1% $AA_{150}$ and 1.1% $RSiO_2$ reporting to Indicated Resources.
- 3 Mt, with 38.8% $AA_{150}$ and 0.9% $RSiO_2$ reporting to Inferred Resources.

**Mineral Reserve Statement**
Based on the Mineral Resource and due consideration to technical and economical factors and the mine plan presented in the Sections hereafter, the reportable Mineral Reserve detailed in Table 19.4b overleaf is estimated as:

- 101 Mt, with 38.8% $AA_{150}$ and 1.0% $RSiO_2$ reporting to Proven Reserve.
- 87 Mt, with 39.6% $AA_{150}$ and 1.0% $RSiO_2$ reporting to Probable Reserve.

Mineral Resources and Mineral Reserves are not reported in terms of metal content but in terms of bauxite grades.

**Table 19.4a Global Alumina Refinery Project – Reportable Mineral Resource as of November 25th, 2005**
**Dry Density 2.0 t/m³, Block Size 50 x 50m, Cutoff Grades 38% $Al_2O_3$ and 10% $SiO_2$**

### Measured Resource

| PLATEAU | Dry Mt | O/BURDEN m | BAUXITE m | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % | AA % | $RSiO_2$ % | MONO % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 5 | 0.89 | 7.37 | 22.0 | 2.59 | 2.61 | 22.78 | 46.2 | 39.7 | 1.27 | 2.57 |
| 7 | 109 | 0.82 | 8.96 | 24.6 | 2.01 | 2.38 | 25.37 | 45.0 | 38.8 | 0.99 | 2.74 |
| 15 | 8 | 1.27 | 6.15 | 25.0 | 2.10 | 2.51 | 23.58 | 46.2 | 40.0 | 1.03 | 2.63 |
| **Total** | **122** | **0.87** | **8.61** | **24.6** | **2.04** | **2.40** | **25.14** | **45.2** | **38.9** | **1.00** | **2.72** |

### Indicated Resource

| PLATEAU | Dry Mt | O/BURDEN m | BAUXITE m | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % | AA % | $RSiO_2$ % | MONO % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 79 | 0.80 | 6.24 | 24.7 | 2.18 | 2.57 | 24.83 | 44.9 | 39.2 | 1.07 | 2.18 |
| 7 | 13 | 1.36 | 7.91 | 24.4 | 2.19 | 2.35 | 25.90 | 44.5 | 38.3 | 1.07 | 2.61 |
| 15 | 17 | 1.58 | 4.80 | 24.7 | 1.92 | 2.66 | 25.05 | 45.0 | 39.2 | 0.94 | 2.38 |
| **Total** | **109** | **1.00** | **6.10** | **24.7** | **2.14** | **2.55** | **24.99** | **44.9** | **39.1** | **1.05** | **2.26** |

### Inferred Resource

| PLATEAU | Dry Mt | O/BURDEN m | BAUXITE m | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % | AA % | $RSiO_2$ % | MONO % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 2.3 | 1.28 | 4.83 | 24.54 | 1.82 | 2.53 | 26.01 | 44.4 | 38.7 | 0.89 | 2.31 |
| 7 | 0.4 | 2.48 | 6.17 | 25.40 | 2.56 | 2.45 | 22.70 | 46.4 | 40.8 | 1.25 | 1.73 |
| 15 | 0.2 | 1.77 | 4.37 | 24.17 | 1.87 | 2.51 | 27.26 | 43.5 | 37.8 | 0.92 | 2.35 |
| **Total** | **2.9** | **1.45** | **4.93** | **24.62** | **1.92** | **2.52** | **25.69** | **44.6** | **38.9** | **0.94** | **2.24** |

Minimum ore thickness 1m, maximum stripping ratio 1:1 (overburden m / bauxite m), overburden excludes top soil

The Measured and Indicated Mineral Resources (Table 19.4a) are inclusive of those Mineral Resources modified to produce the Mineral Reserves (Table 19.4b).

**Table 19.4b Global Alumina Refinery Project – Reportable Mineral Reserve as of November 25th, 2005**
**Dry Density 2.0 t/m³, Block Size 50 x 50m, Cutoff Grades 38% $Al_2O_3$ and 10% $SiO_2$**

**Proven Reserve – all from Measured Resource**

| PLATEAU | Dry Mt | Topsoil m | BAUXITE m | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % | AA % | $RSiO_2$ % |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 6 | 0.2 | 6.6 | 24.4 | 2.4 | 2.7 | 24.9 | 44.8 | 38.3 | 1.2 |
| 7 | 81 | 0.2 | 9.3 | 24.6 | 2.0 | 2.4 | 25.2 | 45.1 | 39.0 | 1.0 |
| 15 | 14 | 0.2 | 9.4 | 24.3 | 1.9 | 2.4 | 26.1 | 44.5 | 38.2 | 1.0 |
| **Total*)** | **101** | **0.2** | **9.13** | **24.6** | **2.0** | **2.4** | **25.3** | **45.0** | **38.8** | **1.0** |

*) NB: This excludes Proven ore sterilised by the railway on Plateaux 7 and 15 amounting to 6.7 m dmt @ 37.3% Avail. Alumina

**Probable Reserve – all from Indicated Resource**

| PLATEAU | Dry MT | Topsoil m | BAUXITE m | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % | AA % | $RSiO_2$ % |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 59 | 0.2 | 6.6 | 24.6 | 2.2 | 2.6 | 25.2 | 44.7 | 38.8 | 1.1 |
| 7 | 10 | 0.3 | 9.1 | 24.4 | 1.9 | 2.4 | 26.0 | 44.6 | 38.4 | 0.9 |
| 15 | 8 | 0.2 | 6.2 | 24.6 | 1.7 | 2.7 | 25.6 | 44.7 | 38.8 | 0.8 |
| **Total*)** | **87** | **0.2** | **6.7** | **24.5** | **2.1** | **2.6** | **25.7** | **44.4** | **38.6** | **1.0** |

*) NB: This excludes Probable ore sterilised by the railway on Plateaux 7 and 15 amounting to 0.8 m dmt @ 39.8% Av. Alumina

# 20. OTHER RELEVANT DATA AND INFORMATION

## 20.1 Exploratory Data Analysis

Univariate data analysis of exploration samples and composites provides information on the grade populations present in the data sets, their grade characteristics and distributions, which are essential for a sound geological knowledge of the deposits and the modelling thereof. Bivariate and multivariate analysis focuses on the relationships between grades and thickness, which frequently have genetic implications. Finally, spatial analysis deals with ore continuity, grade stationarity and anisotropy, which provides the necessary parameters for robust modelling.

The following datasets will be examined:

a) Full dataset provided including plateaux 2, 3, 7, 15, 17 and 33.
b) Plateaux 2, 7 and 15 combined, which supports the resource estimates.
c) Plateaux 2, 7 and 15 separately.

### 20.1.1 Univariate Description

Two dimensional modelling requires that the following grade supports be examined:

a. Exploration samples, which include several populations such as bauxite and off-grades above (top waste), within (internal waste) and below bauxite (bottom waste or floor material).
b. Composites that include a reduced set of populations referring to various bauxite facies/qualities.
c. Grade accumulations, i.e. grades x ore thickness used for block modelling - which display populations relatively similar to composite grades, but transformed by the additional attribute of thickness. The accumulation process has various effects depending on the degree of correlation, negative or positive, between grades and thickness. A positive correlation would tend to strengthen the characteristics of the grade population, whereas a negative correlation could reduce the contrast between high and low grade values.

**Table 20.1.1a Bauxite and Off-Grade Material – Full Data Set**
COG 10% $SiO_2$ and 38% $Al_2O_3$

| Material | Samples N° | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % | TOC % |
|---|---|---|---|---|---|---|---|
| **Overburden** | 294 | 19.83 | 2.60 | 2.05 | 40.92 | 33.74 | 0.20 |
| **Bauxite** | 789 | 24.70 | 1.98 | 2.48 | 24.94 | 45.25 | 0.09 |
| **Bauxite Above Floor** | 546 | 24.10 | 2.47 | 2.31 | 26.43 | 44.00 | 0.08 |
| **Internal Waste** | 243 | 20.40 | 3.11 | 2.11 | 38.65 | 34.92 | 0.14 |
| **Floor Material** | 546 | 19.49 | 5.03 | 1.90 | 38.59 | 34.05 | 0.11 |

Bauxite above floor = first bauxite sample above floor material

The above table provides average grades of the various types of material and grade populations present in the lateritic profile.

## SAMPLES

**Box Plots and Scattergrams**

a) Box plots show great similarity of grade distributions between plateaux, except for plateau 15 which tends to be higher in $Fe_2O_3$ and lower in $Al_2O_3$.
b) Scattergrams confirm the above. A larger spread of $SiO_2$ grades is noted in plateau 7.

**Histograms**

a) Histograms cover the full spectrum of the grade populations and material shown in Table 20.1.1a. However, the separation between the populations is not obvious, indicating gradational transitions.
b) $SiO_2$ is positively skewed to a high degree and shows basal clays as a long tailing end above 10% $SiO_2$.
c) $TiO_2$ displays a narrow, moderately skewed and peaked distribution. High values, above 3%, indicate the presence of a separate population probably related to basic source rocks (dolerite sills).
d) $Al_2O_3$ is negatively skewed and offers a remarkably smooth gradation from basal clays to high grade bauxite.
e) $Fe_2O_3$ is moderately skewed and shows a highly ferruginous population above 50% $Fe_2O_3$.
f) No marked difference is observed between plateaux.

**Ternary Diagrams of $Al_2O_3$, $SiO_2$ and $Fe_2O_3$**

Samples are concentrated between the $Al_2O_3$ and $Fe_2O_3$ poles, indicating a strong desilication of the lateritic profile. The spread of samples is more pronounced in plateaux 2 and mainly in plateau 15.

**Box plots displayed hereafter make use of the following format:**

- the lower edge of the box represents the first quartile Q1;
- a black line represents the median Q2;
- a red line represents the average; and
- the upper edge of the box represents the third quartile Q3.

Two intervals are defined on either side of the first and third quartiles:

- IQ1 = [Q1 - 1.5 × (Q3 – Q1) , Q1];
- IQ3 = [Q3 , Q3 + 1.5 × (Q3 – Q1)];
- the lower part of the box plot reaches from Q1 to the value nearest to the lower bound of IQ1, while remaining within IQ1;
- the upper part of the box plot reaches from Q3 to the value nearest to the upper bound of IQ3, while remaining within IQ3;
- the values underneath the lower part and above the upper part are represented individually by circles. These circles are filled in when the values are more than 3 times the distance between the quartiles (Q3 – Q1), and are empty if they are within that interval; and
- the minimum and maximum values are shown in the box plot.

**Table 20.1.1b Sample Statistics – Full Data Set**

| Descriptive statistics | LOI | $SiO_2$ | $TiO_2$ | $Fe_2O_3$ | $Al_2O_3$ |
|---|---|---|---|---|---|
| No. of values used | 6465 | 6465 | 6465 | 6465 | 6465 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 1 | 1 | 1 |
| % of min. val. | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| Minimum | 5.110 | 0.280 | 0.710 | 2.630 | 12.900 |
| 1st quartile | 20.300 | 1.165 | 1.905 | 22.950 | 35.600 |
| Median | 22.900 | 1.880 | 2.240 | 29.600 | 41.300 |
| 3rd quartile | 25.200 | 3.300 | 2.580 | 37.000 | 46.200 |
| Maximum | 32.200 | 74.000 | 8.140 | 65.700 | 62.100 |
| Range | 27.090 | 73.720 | 7.430 | 63.070 | 49.200 |
| Sum | 145688.900 | 22081.580 | 14719.365 | 195538.890 | 263363.950 |
| Mean | 22.535 | 3.416 | 2.277 | 30.246 | 40.737 |
| Geometric mean | 22.185 | 2.120 | 2.212 | 28.310 | 39.971 |
| Harmonic mean | 21.781 | 1.568 | 2.149 | 26.066 | 39.136 |
| Kurtosis (Pearson) | 0.377 | 32.027 | 7.331 | -0.166 | -0.318 |
| Skewness (Pearson) | -0.569 | 4.866 | 1.390 | 0.283 | -0.270 |
| Kurtosis | 0.379 | 32.064 | 7.341 | -0.164 | -0.316 |
| Skewness | -0.569 | 4.868 | 1.391 | 0.283 | -0.270 |
| CV (standard deviation/mean) | 0.166 | 1.515 | 0.248 | 0.342 | 0.186 |
| Sample variance | 14.057 | 26.773 | 0.319 | 107.269 | 57.701 |
| Estimated variance | 14.059 | 26.777 | 0.319 | 107.286 | 57.710 |
| Sample standard deviation | 3.749 | 5.174 | 0.565 | 10.357 | 7.596 |
| Estimated standard deviation | 3.750 | 5.175 | 0.565 | 10.358 | 7.597 |
| Mean absolute deviation | 2.957 | 2.714 | 0.419 | 8.304 | 6.153 |
| Median absolute deviation | 2.400 | 0.870 | 0.340 | 6.900 | 5.300 |
| Standard-error | 0.047 | 0.064 | 0.007 | 0.129 | 0.094 |
| Lower bound Mean CI | 22.444 | 3.289 | 2.263 | 29.993 | 40.552 |
| Upper bound Mean CI | 22.626 | 3.542 | 2.291 | 30.498 | 40.922 |

**Table 20.1.1c Sample Statistics of all Lithologies – Per Plateau (2, 7 & 15)**

In spite of different parent rocks – plateau 15 is underlain by basic intrusives - no marked differences are noted between plateaux.

| Descriptive statistics | $TiO_2$-15 | $TiO_2$-2 | $TiO_2$-7 | LOI-15 | LOI-2 | LOI-7 | $SiO_2$-15 | $SiO_2$-2 | $SiO_2$-7 | $Fe_2O_3$-15 | $Fe_2O_3$ -2 | $Fe_2O_3$-7 | $Al_2O_3$ -15 | $Al_2O_3$ -2 | $Al_2O_3$ -7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of values used | 542 | 1396 | 4058 | 542 | 1396 | 4058 | 542 | 1396 | 4058 | 542 | 1396 | 4058 | 542 | 1396 | 4058 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| % of min. val. | 0.185 | 0.072 | 0.025 | 0.185 | 0.072 | 0.025 | 0.185 | 0.072 | 0.025 | 0.185 | 0.072 | 0.025 | 0.369 | 0.072 | 0.025 |
| Minimum | 1.180 | 0.820 | 0.710 | 7.930 | 7.440 | 5.110 | 0.300 | 0.310 | 0.280 | 3.420 | 2.630 | 2.980 | 19.400 | 15.800 | 12.900 |
| 1st quartile | 1.910 | 1.940 | 1.880 | 18.700 | 20.050 | 20.600 | 1.310 | 1.175 | 1.160 | 24.800 | 22.300 | 23.100 | 32.000 | 34.700 | 36.400 |
| Median | 2.290 | 2.340 | 2.190 | 21.545 | 23.020 | 23.000 | 2.035 | 1.970 | 1.850 | 33.200 | 29.650 | 29.100 | 38.550 | 41.000 | 41.700 |
| 3rd quartile | 2.640 | 2.680 | 2.500 | 24.600 | 25.400 | 25.200 | 3.500 | 3.465 | 3.270 | 41.900 | 37.050 | 36.000 | 44.700 | 46.400 | 46.300 |
| Maximum | 6.290 | 5.240 | 7.710 | 32.200 | 31.580 | 31.300 | 55.700 | 63.300 | 74.000 | 63.600 | 65.700 | 63.800 | 61.000 | 62.100 | 59.000 |
| Range | 5.110 | 4.420 | 7.000 | 24.270 | 24.140 | 26.190 | 55.400 | 62.990 | 73.720 | 60.180 | 63.070 | 60.820 | 41.600 | 46.300 | 46.100 |
| Mean | 2.318 | 2.337 | 2.213 | 21.678 | 22.568 | 22.629 | 3.346 | 3.588 | 3.477 | 33.211 | 30.128 | 29.767 | 38.640 | 40.515 | 41.143 |
| Geometric mean | 2.251 | 2.268 | 2.158 | 21.281 | 22.188 | 22.292 | 2.233 | 2.190 | 2.127 | 30.550 | 27.920 | 28.063 | 37.664 | 39.638 | 40.469 |
| Harmonic mean | 2.186 | 2.196 | 2.104 | 20.859 | 21.759 | 21.893 | 1.707 | 1.558 | 1.582 | 27.110 | 25.342 | 26.105 | 36.663 | 38.692 | 39.728 |
| Kurtosis (Pearson) | 4.541 | 1.022 | 6.236 | -0.368 | -0.015 | 0.838 | 41.240 | 26.664 | 30.789 | -0.589 | -0.289 | -0.058 | -0.662 | -0.455 | -0.154 |
| Skewness (Pearson) | 1.177 | 0.431 | 1.092 | -0.004 | -0.495 | -0.706 | 5.519 | 4.425 | 4.800 | -0.051 | 0.292 | 0.276 | 0.142 | -0.168 | -0.349 |
| Kurtosis | 4.622 | 1.036 | 6.249 | -0.350 | -0.006 | 0.843 | 41.800 | 26.807 | 30.845 | -0.574 | -0.282 | -0.055 | -0.648 | -0.449 | -0.152 |
| Skewness | 1.184 | 0.431 | 1.093 | -0.004 | -0.496 | -0.707 | 5.550 | 4.435 | 4.803 | -0.051 | 0.293 | 0.276 | 0.143 | -0.168 | -0.350 |
| CV | 0.251 | 0.242 | 0.227 | 0.187 | 0.174 | 0.161 | 1.432 | 1.461 | 1.552 | 0.364 | 0.365 | 0.325 | 0.222 | 0.201 | 0.174 |
| Sample variance | 0.337 | 0.319 | 0.252 | 16.454 | 15.440 | 13.326 | 22.895 | 27.450 | 29.105 | 146.070 | 121.123 | 93.404 | 73.462 | 66.233 | 51.108 |
| Estimated variance | 0.337 | 0.319 | 0.252 | 16.484 | 15.451 | 13.329 | 22.937 | 27.469 | 29.113 | 146.340 | 121.210 | 93.427 | 73.598 | 66.281 | 51.120 |
| Samp standard deviation | 0.580 | 0.564 | 0.502 | 4.056 | 3.929 | 3.651 | 4.785 | 5.239 | 5.395 | 12.086 | 11.006 | 9.665 | 8.571 | 8.138 | 7.149 |
| Estimated standard dev | 0.581 | 0.565 | 0.502 | 4.060 | 3.931 | 3.651 | 4.789 | 5.241 | 5.396 | 12.097 | 11.010 | 9.666 | 8.579 | 8.141 | 7.150 |
| Mean absolute deviation | 0.438 | 0.443 | 0.378 | 3.308 | 3.142 | 2.828 | 2.409 | 2.875 | 2.831 | 9.899 | 8.881 | 7.719 | 7.076 | 6.636 | 5.756 |
| Median absolute deviation | 0.355 | 0.380 | 0.310 | 2.955 | 2.580 | 2.300 | 0.915 | 0.960 | 0.840 | 8.600 | 7.350 | 6.400 | 6.350 | 5.700 | 4.900 |
| Standard-error | 0.025 | 0.015 | 0.008 | 0.174 | 0.105 | 0.057 | 0.206 | 0.140 | 0.085 | 0.520 | 0.295 | 0.152 | 0.368 | 0.218 | 0.112 |
| Lower bound Mean CI | 2.269 | 2.308 | 2.197 | 21.335 | 22.361 | 22.517 | 2.941 | 3.313 | 3.311 | 32.190 | 29.550 | 29.469 | 37.916 | 40.087 | 40.923 |
| Upper bound Mean CI | 2.367 | 2.367 | 2.228 | 22.020 | 22.774 | 22.741 | 3.750 | 3.863 | 3.643 | 34.232 | 30.706 | 30.064 | 39.363 | 40.942 | 41.363 |

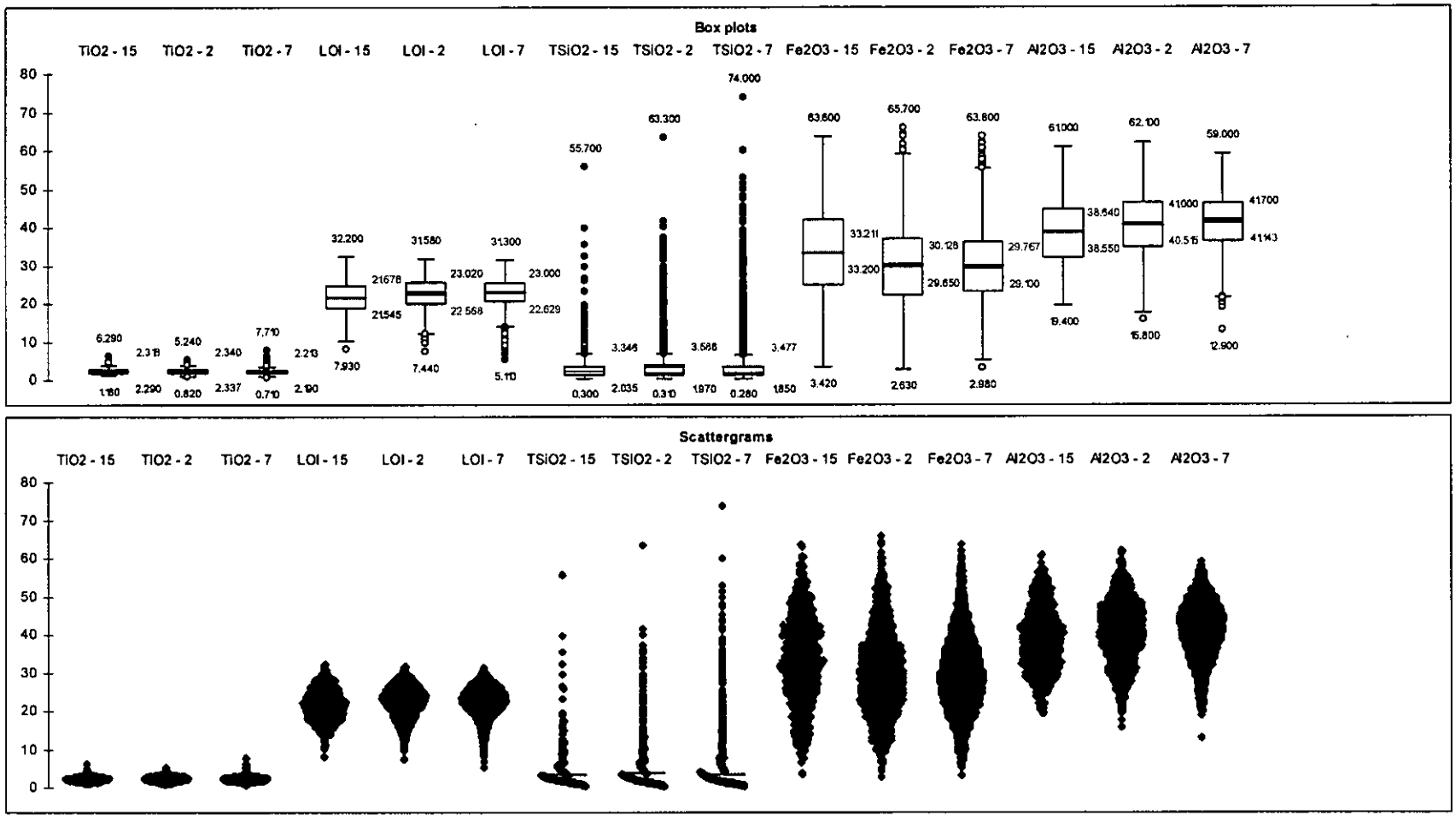



**Fig. 20.1.1a-b Sample Grades – Per Plateau**

The above graphics indicate minimum differences between plateaux- such as somewhat more $Fe_2O_3$ and less $Al_2O_3$ in Plateau 15

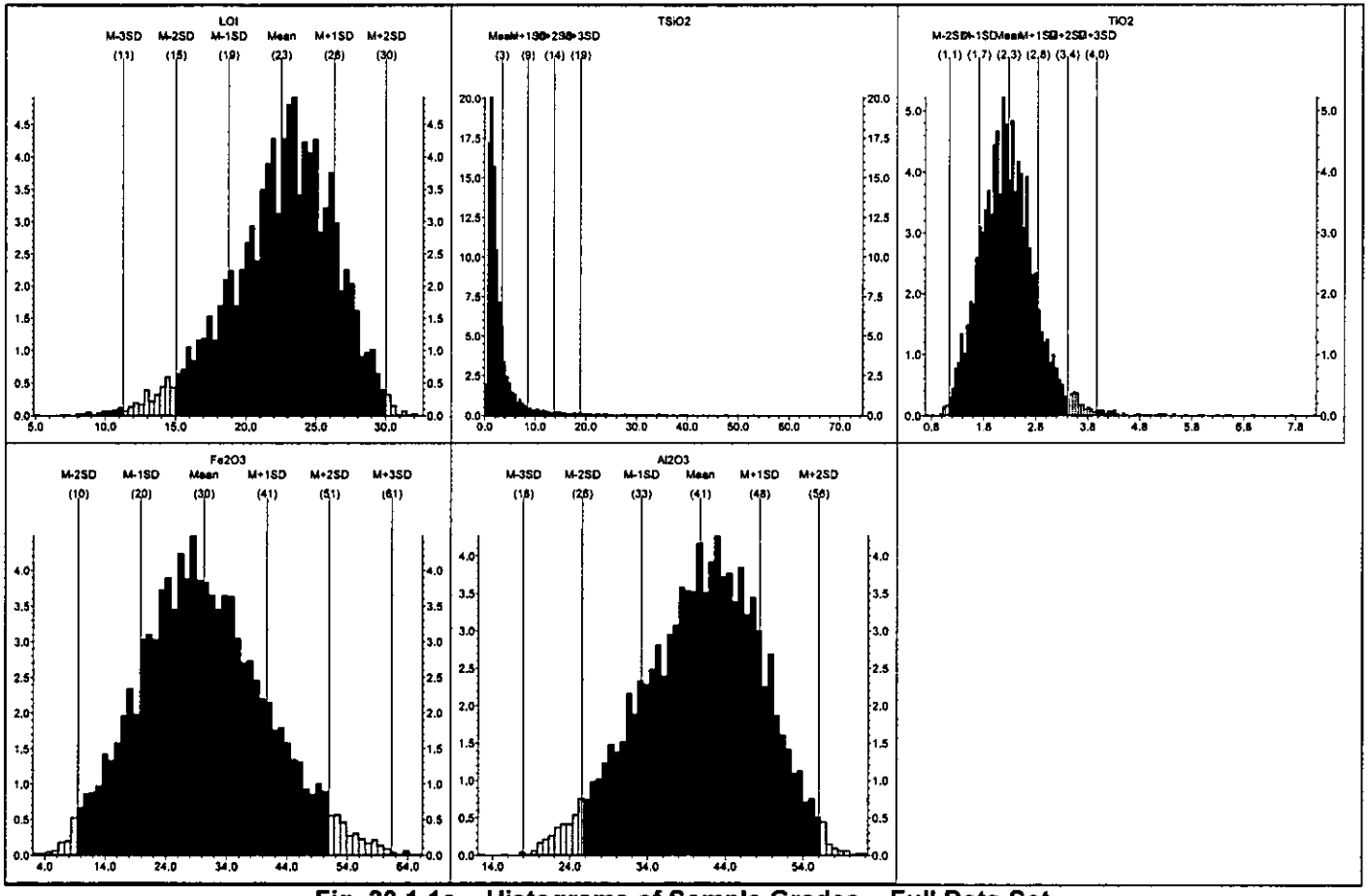



**Fig. 20.1.1c Histograms of Sample Grades – Full Data Set**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**

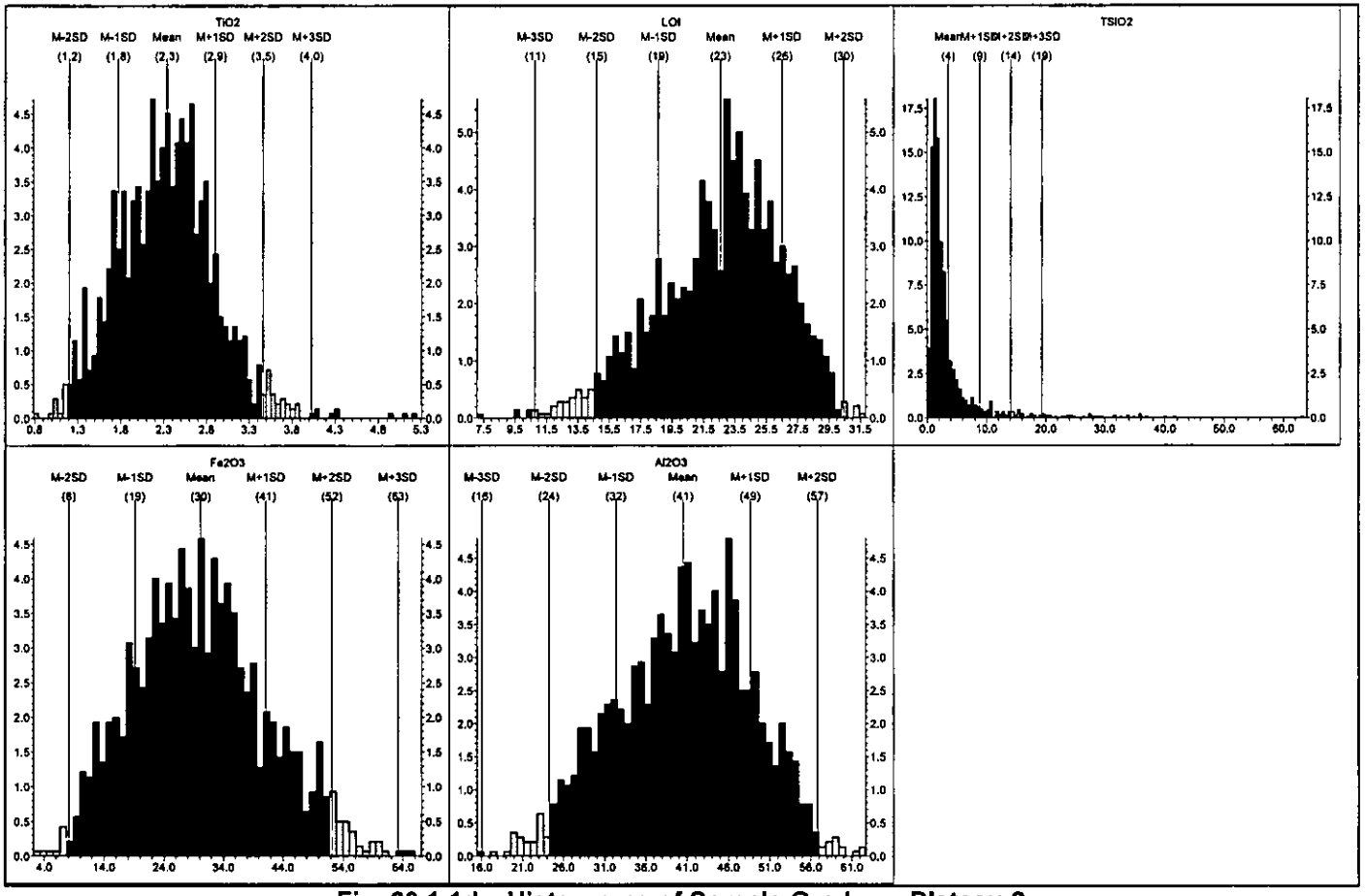



**Fig. 20.1.1d Histograms of Sample Grades – Plateau 2**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**

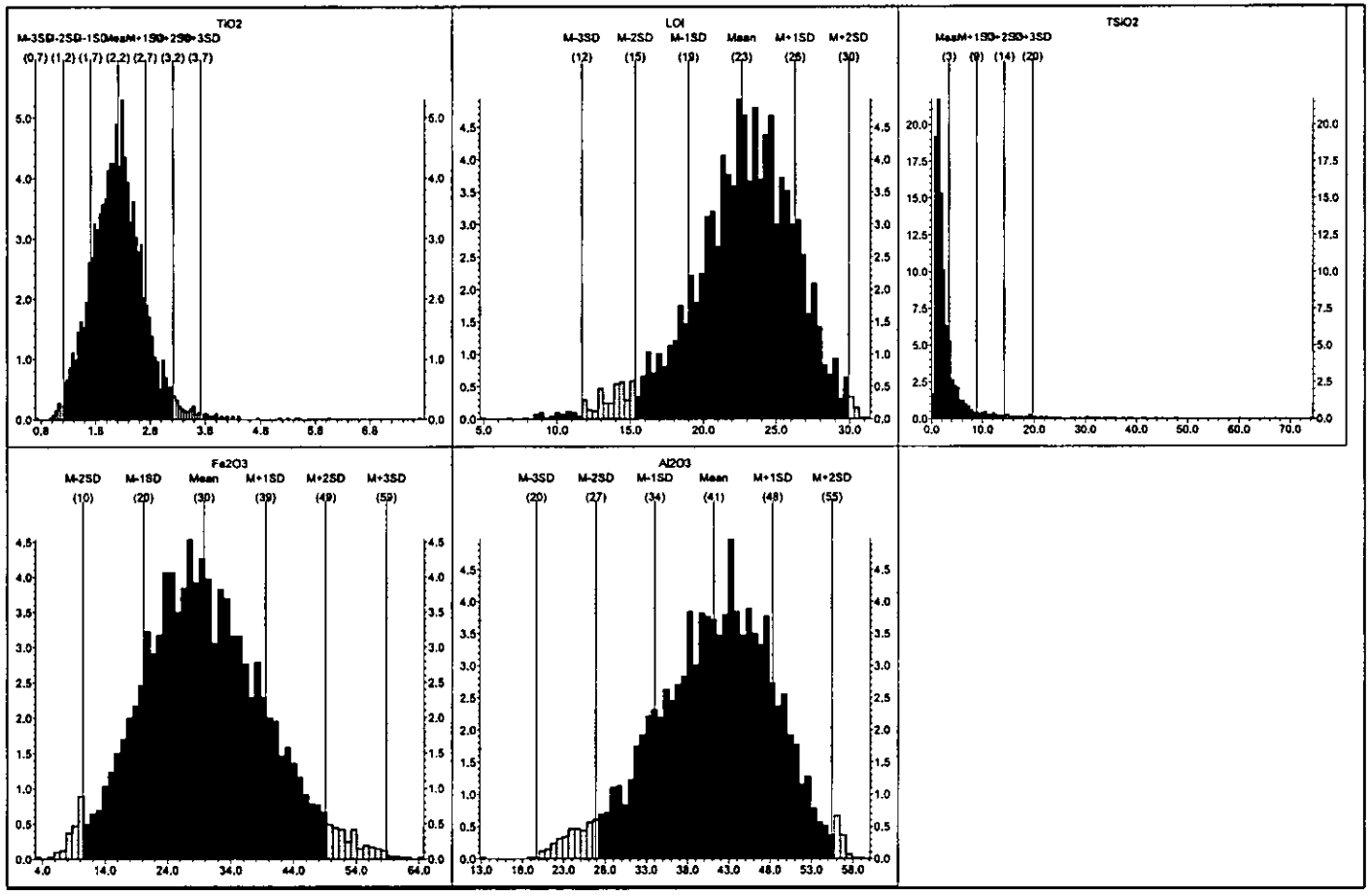



**Fig. 20.1.1e Histograms of Sample Grades – Plateau 7**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**

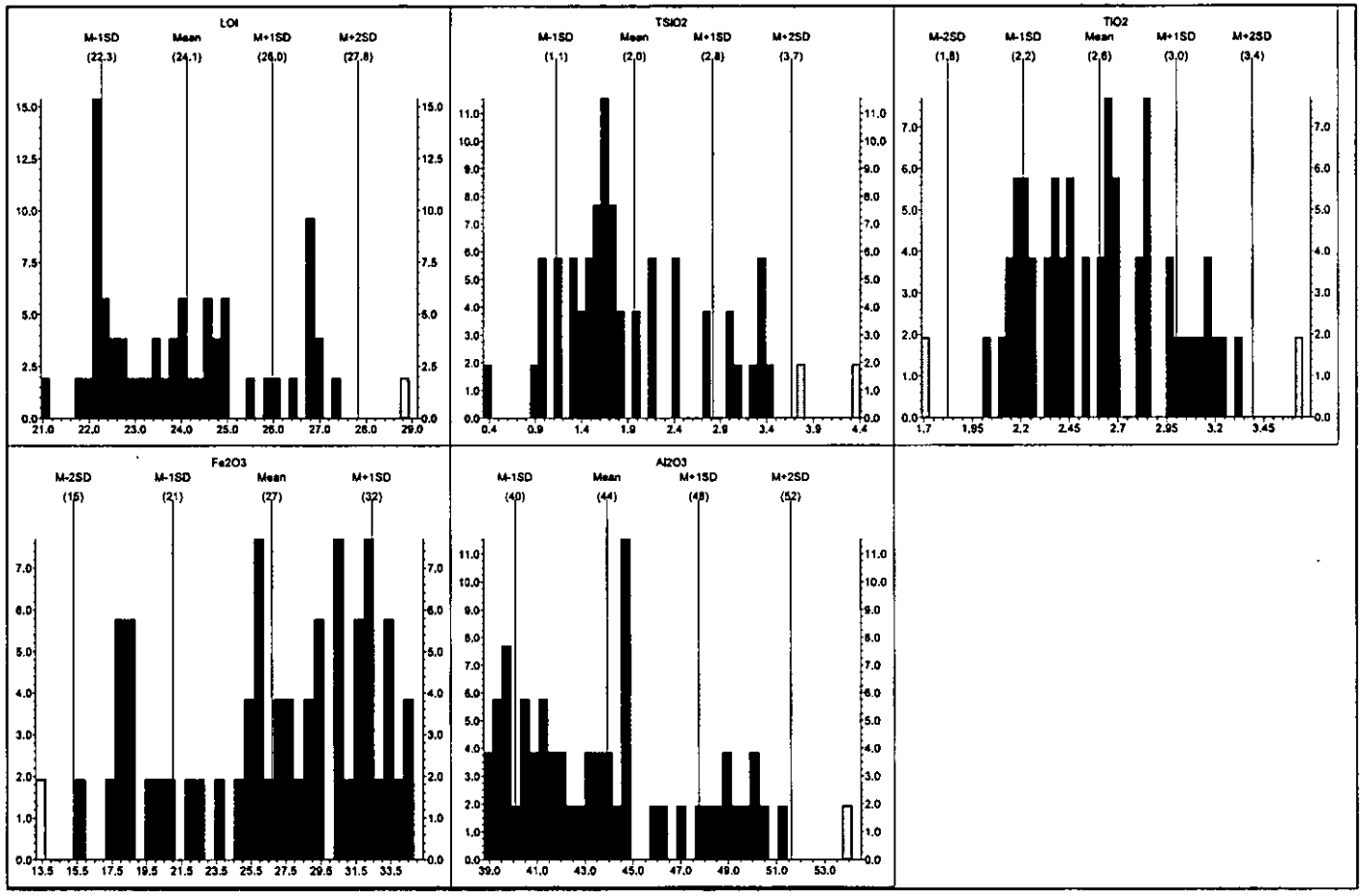
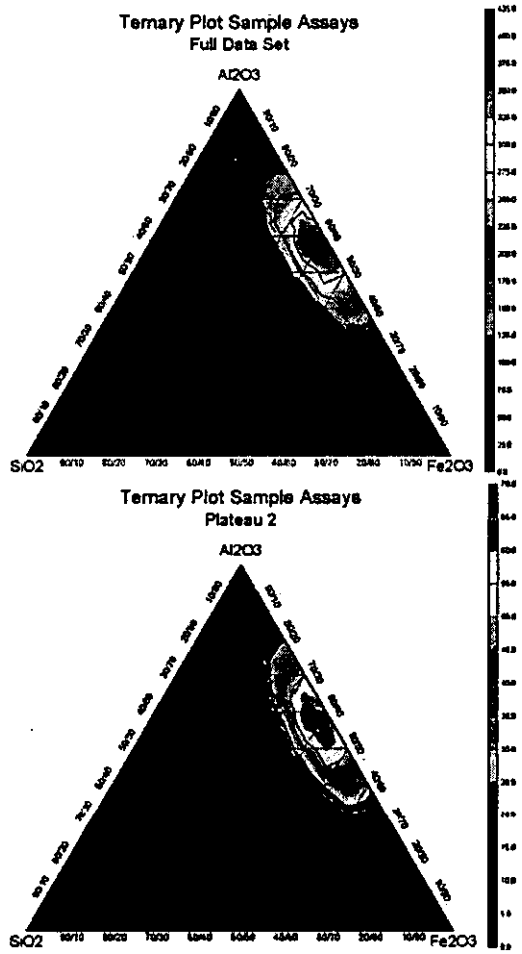



**Fig. 20.1.1f Histograms of Sample Grades – Plateau 15**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**



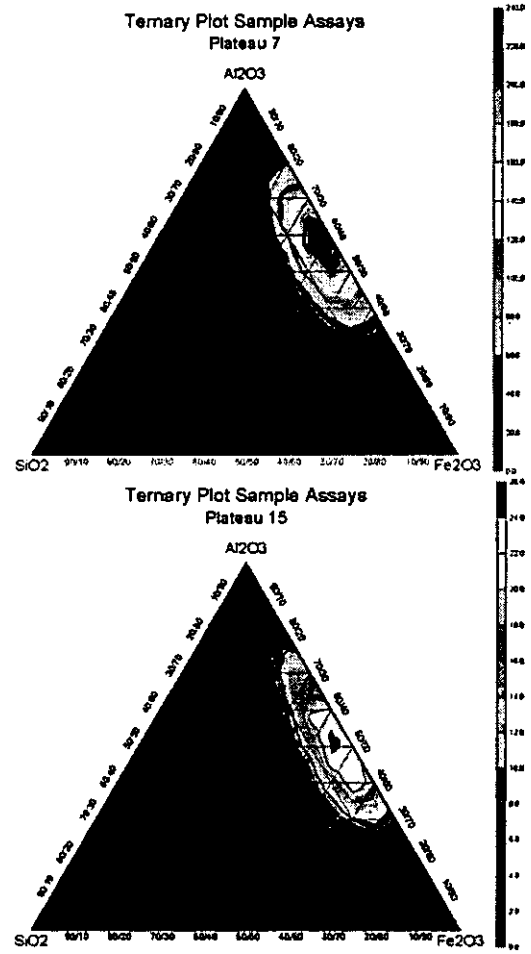




**Fig. 20.1.1g Ternary Plots of Samples**
These graphs confirm the subordinate role of $SiO_2$.

## COMPOSITING

Compositing is driven by plant feed specifications, of which available alumina of 39% at low temperature digest ($AA_{150}$) is the most important requirement. Meeting this objective was achieved by applying $Al_2O_3$ cutoff grades (COG) from 35% up to 40%, as shown below in Fig. 20.1.1h. A constant 10% $SiO_2$ was also applied to avoid inclusion of basal clays.

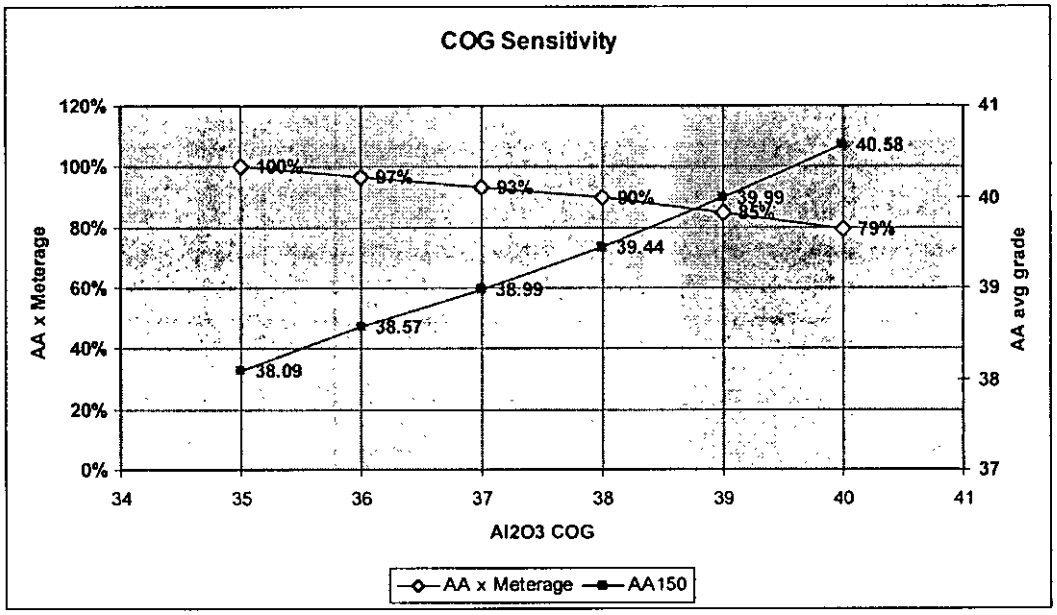



**Fig. 20.1.1h Cutoff Grade Sensitivity**

The impact on alumina recovery was approximated by using the index AA x Meterage, using arbitrarily the lowest $Al_2O_3$ COG as the maximum recovery possible (100%). Results shows that the target grade of 39 $AA_{150}$ is reached with a 38% $Al_2O_3$ COG, which is henceforth applied for resource evaluation.

The selected compositing algorithm optimises grades of intercepts by successive iterations, following the logic shown below:

**Table 20.1.1d Example of Optimisation of $Al_2O_3$ Grades**
Cutoff (COG) = 38% $Al_2O_3$

| Depth m | Grade $Al_2O_3$% | Grade-COG $Al_2O_3$-38 | Grade-COG Accumulation | Remark |
|---|---|---|---|---|
| 1-2 | 35.4 | | | **<- Overburden** |
| 2-3 | 39.6 | 1.6 | 1.6 | **<-Top of Intercept** |
| 3-4 | 40.4 | 2.4 | 4.0 | |
| 4-5 | 43.5 | 5.5 | 9.5 | |
| 5-6 | 35.7 | -2.3 | 7.2 | |
| 6-7 | 40.5 | 2.5 | 9.7 | |
| 7-8 | 43.9 | 5.9 | **15.6** | **<- Optimum – Base of Intercept** |
| 8-9 | 27.9 | -10.1 | 5.5 | |
| 9-10 | 36.1 | -1.9 | 3.6 | |

Minimizing contaminant, e.g. $SiO_2$, follows the same approach. With the COGs selected, i.e. 10% $SiO_2$ and 38% $Al_2O_3$, 20% of the holes did not reach the base of bauxite. This is however not considered as an upside potential, as BH&P assume that in most instances holes were terminated close to basal clays or laterite.

As shown in Fig. 20.1.1i, $Al_2O_3$ above COG is maximized and $SiO_2$ below COG is minimized. The lower limit of intercepts is set to the maximum $Al_2O_3$ or the minimum $SiO_2$, whichever is reached first.

Overburden stands for off-grade duricrust and excludes top soil, which is removed prior to mining.

For resource definition, bauxite intercepts exclude overburden (example B in figure overleaf) but include internal waste given the impracticality of separating this material while mining.

For reserve definition, bauxite intercepts include overburden (example C in figure overleaf) on account of the erratic distribution of this material and its moderate thickness, which makes difficult – but not impossible - the selective removal of such material prior to mining. Compensating the dilution introduced by overburden and maintaining the grade target of 39 $AA_{150}$, necessitated that bauxite intercepts averaged at least 40% $Al_2O_3$. Intercepts failing this condition were treated as off-grade material.

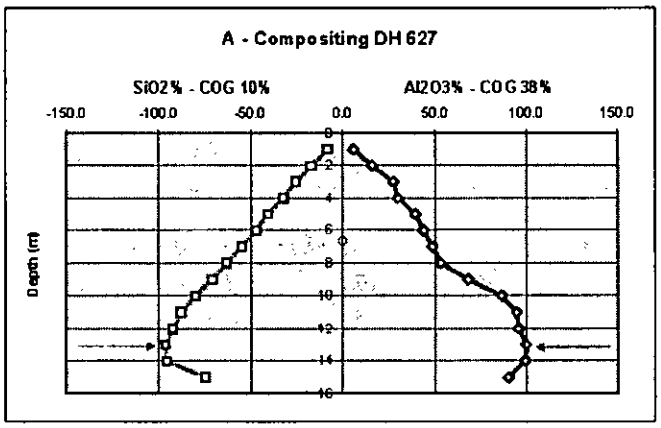
For reserve definition, the minimum mineable thickness was set to 2 m. Thinner intercepts were extended into off-grade material to make up for the difference (example D in figure overleaf). Finally, pit floor dilution and mine loss were considered by applying a mining algorithm, fully described in fig 20.1.1k.

Because of the minimum mineable thickness of 2m imposed and the mining loss/dilution algorithm applied, a number of reserve composites consist of off-grade material, which contributed to the dilution of the reserve model.

In the following statistics, two sets of composites are considered:

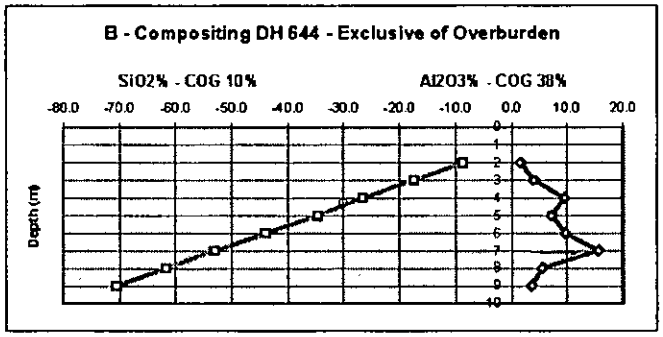
a) The resource composites; and
b) The reserve composites.

| Objective | |
|---|---|
| Minimum SiO2 | |
| Grade-COG | SiO2 |
| -8.2 | 1.82 |
| -17.1 | 1.06 |
| -25.6 | 1.51 |
| -32.1 | 3.50 |
| -40.4 | 1.74 |
| -47.1 | 3.25 |
| -55.1 | 2.07 |
| -62.8 | 2.21 |
| -70.9 | 1.96 |
| -80.0 | 0.90 |
| -88.0 | 2.00 |
| -92.1 | 5.83 |
| [illegible] | [illegible] |
| -95.7 | [illegible] |
| -74.7 | [illegible] |



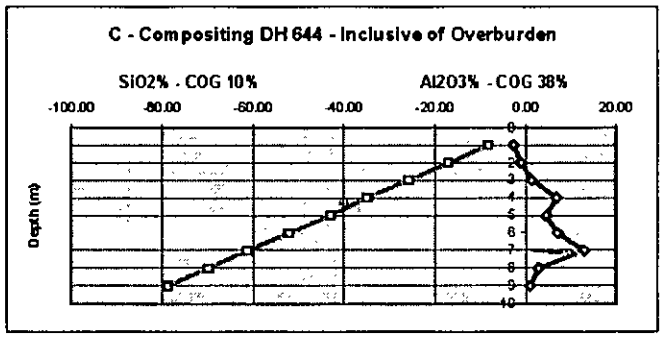

| Objective | |
|---|---|
| Maximum Al2O3 | |
| Al2O3 | Grade-COG |
| 44.00 | 6.0 |
| 48.00 | 16.0 |
| 49.60 | 27.6 |
| 40.50 | 30.1 |
| 47.50 | 39.6 |
| 42.50 | 44.1 |
| 42.80 | 48.9 |
| 42.20 | 53.1 |
| 53.20 | 68.3 |
| 56.30 | 86.6 |
| 46.00 | 94.6 |
| 39.20 | 95.8 |
| 42.10 | [illegible] |
| [illegible] | 99.5 |
| [illegible] | 90.3 |

| Objective | |
|---|---|
| Grade-COG | SiO2 |
| | 1.73 |
| -8.74 | 1.26 |
| -17.48 | 1.26 |
| -26.65 | 0.83 |
| -34.71 | 1.94 |
| -43.92 | 0.79 |
| -53.09 | 0.83 |
| -61.66 | 1.43 |
| -70.56 | 1.10 |



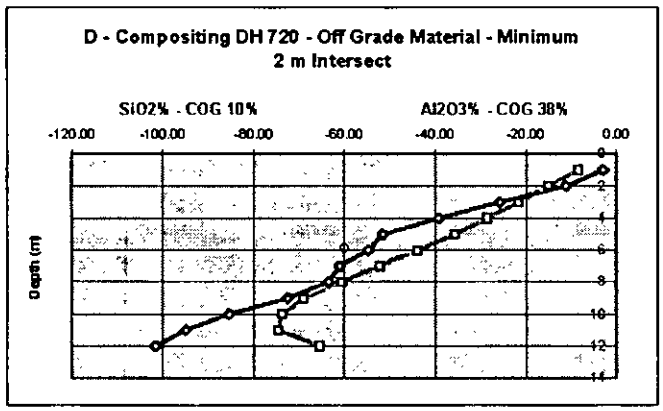

| Objective | |
|---|---|
| Al2O3 | Grade-COG |
| 35.4 | |
| 39.6 | 1.6 |
| 40.4 | 4.0 |
| 43.5 | 9.5 |
| 35.7 | 7.2 |
| 40.5 | 9.7 |
| 43.9 | [illegible] |
| [illegible] | 5.5 |
| [illegible] | 3.6 |

| Objective | |
|---|---|
| Grade-COG | SiO2 |
| -8.27 | 1.73 |
| -17.01 | 1.26 |
| -25.75 | 1.26 |
| -34.92 | 0.83 |
| -42.98 | 1.94 |
| -52.19 | 0.79 |
| -61.36 | 0.83 |
| -69.93 | 1.43 |
| -78.83 | 1.10 |




| Objective | |
|---|---|
| Al2O3 | Grade-COG |
| 35.40 | -2.60 |
| 39.60 | -1.00 |
| 40.40 | 1.40 |
| 43.50 | 6.90 |
| 35.70 | 4.60 |
| 40.50 | 7.10 |
| 43.90 | [illegible] |
| [illegible] | 2.90 |
| [illegible] | 1.00 |

| Objective | |
|---|---|
| Grade-COG | SiO2 |
| -8.40 | 1.60 |
| -14.98 | 3.42 |
| -21.57 | 3.41 |
| -28.53 | 3.04 |
| -35.70 | 2.83 |
| -43.94 | 1.76 |
| -52.30 | 1.64 |
| -60.68 | 1.62 |
| -69.00 | 1.68 |
| -73.74 | 5.26 |
| -74.61 | 9.13 |
| -65.51 | 19.10 |




| Objective | |
|---|---|
| Al2O3 | Grade-COG |
| 35.10 | -2.90 |
| 29.80 | -11.10 |
| 23.40 | -25.70 |
| 24.50 | -39.20 |
| 25.60 | -51.60 |
| 34.90 | -54.70 |
| 31.60 | -61.10 |
| 35.60 | -63.50 |
| 29.00 | -72.50 |
| 25.10 | -85.40 |
| 28.50 | -94.90 |
| 31.30 | -101.60 |

**Fig. 20.1.1i Compositing Algorithm**
**Intercepts are shown in blue**

## RESOURCE COMPOSITES

***Box Plots and Scattergrams***

c) Box plots show thicker overburden and thinner ore in plateau 15, while plateau 7 offers the most impressive bauxite thickness. In terms of grades, plateau 15 is lower in $Al_2O_3$ and higher in $Fe_2O_3$.
d) Scattergrams show similar grade ranges across all plateaux.
e) Box plots and Scattergrams of grade accumulations reflect the combination of higher grades and thicker ore, which increases the contrasts between the deposits.

***Histograms of composite grades***

g) $SiO_2$ is positively skewed to a moderate extent and displays a few odd values above 5%.
h) $Fe_2O_3$ and $Al_2O_3$ show wide ranges, with a minor proportion of higher grade material with less than 17% $Fe_2O_3$ and more than 50% $Al_2O_3$. Low grade material is characterized by $Fe_2O_3$ above 30% and $Al_2O_3$ below 40%.
i) Histograms of the various plateaux do not indicate marked differences.

***Ternary Diagrams***

Ternary diagrams of the various plateaux are remarkably similar, except for a larger spread of composite grades in plateau 15.

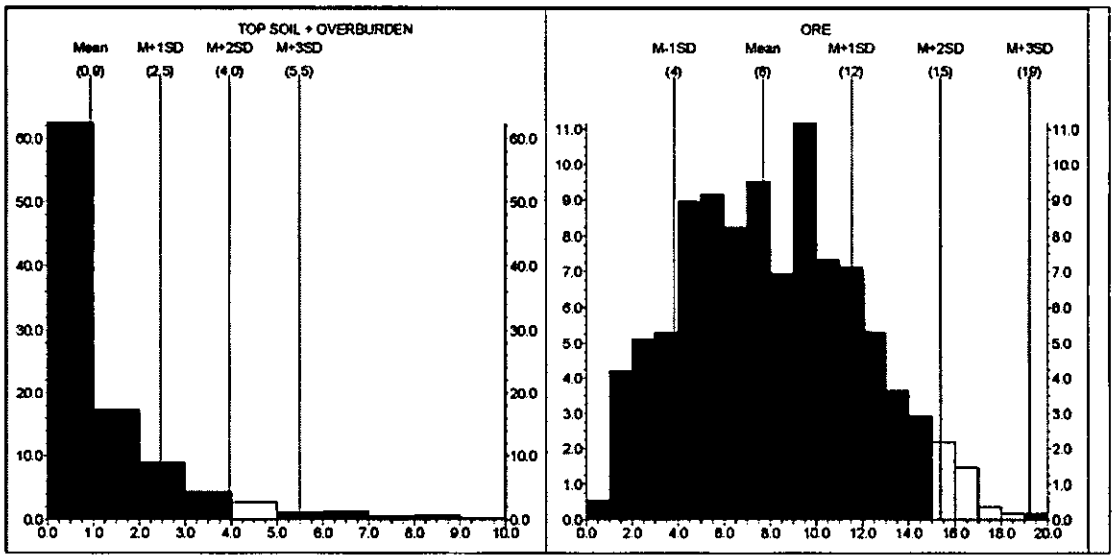
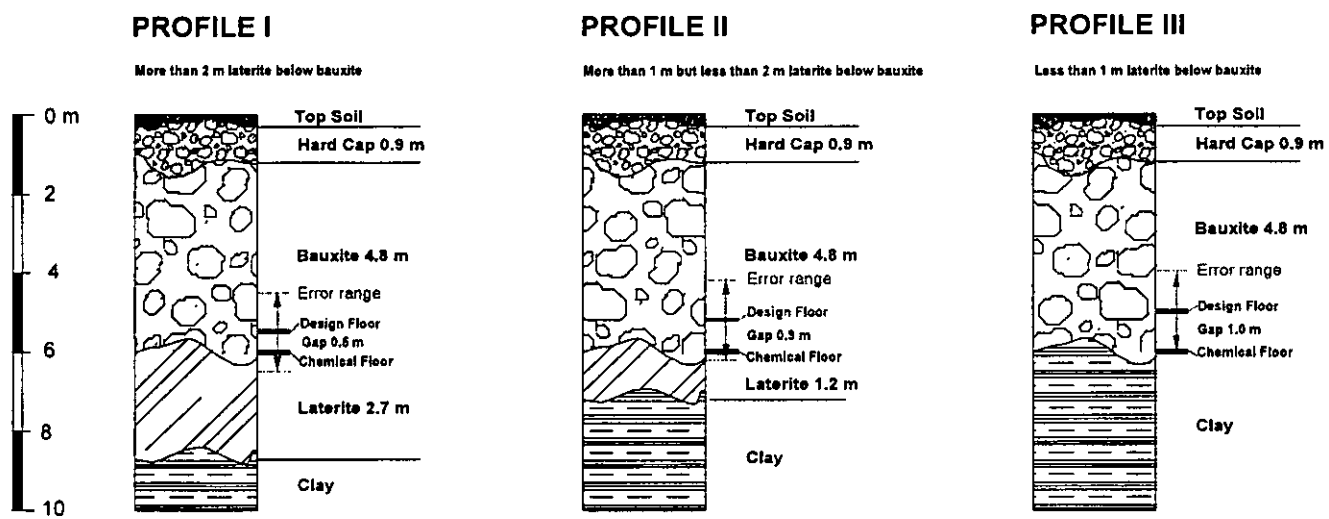



**Fig. 20.1.1j Resource Composites - Histogram of Thickness**

# Design Pit Floor and Mine Losses / Dilution




Gap = Design Floor - Chemical Floor  Actual Pit Floor = Design Floor +/- Ore Lifting Error and Estimation Error on Chemical Floor Position

**Explanation:** Laterite is defined as material < 38% Al2O3 and < 10% SiO2The more laterite below bauxite, the less risk for mining into clays.
The strategy is to minimize dilution and take account of pit floor variability.
Hence, the design pit floor is placed above the cutoff grade pit floor, by 1 m if laterite is <= 1 m thick and 0.5 m if laterite is >= 2 m.
Between this range, the design floor position is a linear function of laterite thickness. Holes not terminated are treated as if underlain by clays.
The pit floor is not adjusted for holes with a minimum mineable thickness of 2 m.
The design pit floor will be affected by ore lifting errors and estimation errors on the floor position. The total error is estimated at +/- 1 m and is applied to each hole using a random number generator. The above logic is deemed consistent with achievable mining practices.
The above procedure, only applied to bauxite bearing boreholes, results in 10% mine loss with a minor impact on grades.
An additional mine loss will result from off-grade blocks within mining perimeters. The potential grade improvement is not taken into account.

**Fig. 20.1.1k Mining Loss and Dilution Algorithm**

**Table 20.1.1e Resource Composite Statistics – Full Data Set**

| Descriptive statistics | OVERBURD | ORE | LOI | $SiO_2$ | $TiO_2$ | $Fe_2O_3$ | $Al_2O_3$ |
|---|---|---|---|---|---|---|---|
| No. of values used | 546 | 546 | 546 | 546 | 546 | 546 | 546 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 238 | 1 | 1 | 1 | 1 | 1 | 1 |
| % of min. val. | 43.590 | 0.183 | 0.183 | 0.183 | 0.183 | 0.183 | 0.183 |
| Minimum | 0.000 | 0.400 | 20.660 | 0.380 | 1.380 | 12.012 | 38.300 |
| 1st quartile | 0.000 | 5.000 | 23.218 | 1.248 | 2.217 | 22.933 | 42.000 |
| Median | 0.350 | 7.700 | 24.277 | 1.695 | 2.424 | 26.412 | 44.281 |
| 3rd quartile | 1.000 | 10.500 | 25.364 | 2.440 | 2.675 | 29.469 | 46.431 |
| Maximum | 9.000 | 19.000 | 28.890 | 8.473 | 6.875 | 36.250 | 54.256 |
| Range | 9.000 | 18.600 | 8.230 | 8.093 | 5.495 | 24.238 | 15.956 |
| Sum | 513.950 | 4196.050 | 13314.150 | 1073.963 | 1352.115 | 14204.516 | 24289.608 |
| Mean | 0.941 | 7.685 | 24.385 | 1.967 | 2.476 | 26.016 | 44.486 |
| Geometric mean | | 6.464 | 24.336 | 1.742 | 2.441 | 25.503 | 44.367 |
| Harmonic mean | | 4.838 | 24.287 | 1.546 | 2.408 | 24.933 | 44.250 |
| Kurtosis (Pearson) | 7.612 | -0.607 | -0.230 | 4.669 | 18.507 | -0.280 | -0.209 |
| Skewness (Pearson) | 2.580 | 0.225 | 0.211 | 1.661 | 2.549 | -0.409 | 0.458 |
| Kurtosis | 7.732 | -0.593 | -0.211 | 4.751 | 18.768 | -0.262 | -0.190 |
| Skewness | 2.594 | 0.226 | 0.212 | 1.670 | 2.563 | -0.411 | 0.461 |
| CV (standard deviation/mean) | 1.611 | 0.500 | 0.063 | 0.528 | 0.183 | 0.189 | 0.074 |
| Sample variance | 2.295 | 14.753 | 2.393 | 1.075 | 0.206 | 24.146 | 10.767 |
| Estimated variance | 2.299 | 14.780 | 2.397 | 1.077 | 0.206 | 24.190 | 10.787 |
| Sample standard deviation | 1.515 | 3.841 | 1.547 | 1.037 | 0.454 | 4.914 | 3.281 |
| Estimated standard deviation | 1.516 | 3.844 | 1.548 | 1.038 | 0.454 | 4.918 | 3.284 |
| Mean absolute deviation | 1.007 | 3.192 | 1.239 | 0.778 | 0.312 | 3.922 | 2.627 |
| Median absolute deviation | 0.350 | 2.700 | 1.068 | 0.541 | 0.219 | 3.306 | 2.200 |
| Standard-error | 0.065 | 0.165 | 0.066 | 0.044 | 0.019 | 0.210 | 0.141 |
| Lower bound Mean CI | 0.814 | 7.362 | 24.255 | 1.880 | 2.438 | 25.602 | 44.210 |
| Upper bound Mean CI | 1.069 | 8.008 | 24.515 | 2.054 | 2.515 | 26.429 | 44.763 |

**Table 20.1.1f Resource Grade Accumulation Statistics – Full Data Set**

| Descriptive statistics | LOIac | $SiO_2$ac | $TiO_2$ac | $Fe_2O_3$ac | $Al_2O_3$ac |
|---|---|---|---|---|---|
| No. of values used | 546 | 546 | 546 | 546 | 546 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 1 | 1 | 1 |
| % of min. val. | 0.183 | 0.183 | 0.183 | 0.183 | 0.183 |
| Minimum | 9.320 | 0.266 | 0.996 | 10.920 | 16.680 |
| 1st quartile | 114.900 | 6.945 | 11.340 | 116.850 | 206.600 |
| Median | 186.450 | 11.994 | 18.941 | 186.530 | 343.025 |
| 3rd quartile | 259.000 | 20.518 | 25.690 | 266.100 | 475.000 |
| Maximum | 513.799 | 80.030 | 68.870 | 456.000 | 957.400 |
| Range | 504.479 | 79.764 | 67.874 | 445.080 | 940.720 |
| Sum | 103258.454 | 8491.041 | 10356.906 | 105789.943 | 188942.298 |
| Mean | 189.118 | 15.551 | 18.969 | 193.754 | 346.048 |
| Geometric mean | 157.318 | 11.258 | 15.778 | 164.864 | 286.809 |
| Harmonic mean | 114.894 | 7.195 | 11.486 | 128.856 | 208.449 |
| Kurtosis (Pearson) | -0.359 | 3.872 | 0.354 | -0.557 | -0.338 |
| Skewness (Pearson) | 0.306 | 1.692 | 0.435 | 0.346 | 0.333 |
| Kurtosis | -0.341 | 3.944 | 0.380 | -0.542 | -0.320 |
| Skewness | 0.307 | 1.701 | 0.437 | 0.348 | 0.335 |
| CV (standard deviation/mean) | 0.515 | 0.803 | 0.520 | 0.501 | 0.521 |
| Sample variance | 9468.534 | 155.676 | 96.968 | 9417.069 | 32503.308 |
| Estimated variance | 9485.907 | 155.962 | 97.146 | 9434.348 | 32562.947 |
| Sample standard deviation | 97.306 | 12.477 | 9.847 | 97.042 | 180.287 |
| Estimated standard deviation | 97.396 | 12.488 | 9.856 | 97.131 | 180.452 |
| Mean absolute deviation | 80.288 | 9.301 | 8.055 | 80.360 | 148.797 |
| Median absolute deviation | 72.050 | 5.989 | 7.282 | 72.730 | 133.750 |
| Standard-error | 4.168 | 0.534 | 0.422 | 4.157 | 7.723 |
| Lower bound Mean CI | 180.930 | 14.502 | 18.140 | 185.589 | 330.878 |
| Upper bound Mean CI | 197.306 | 16.601 | 19.797 | 201.920 | 361.218 |

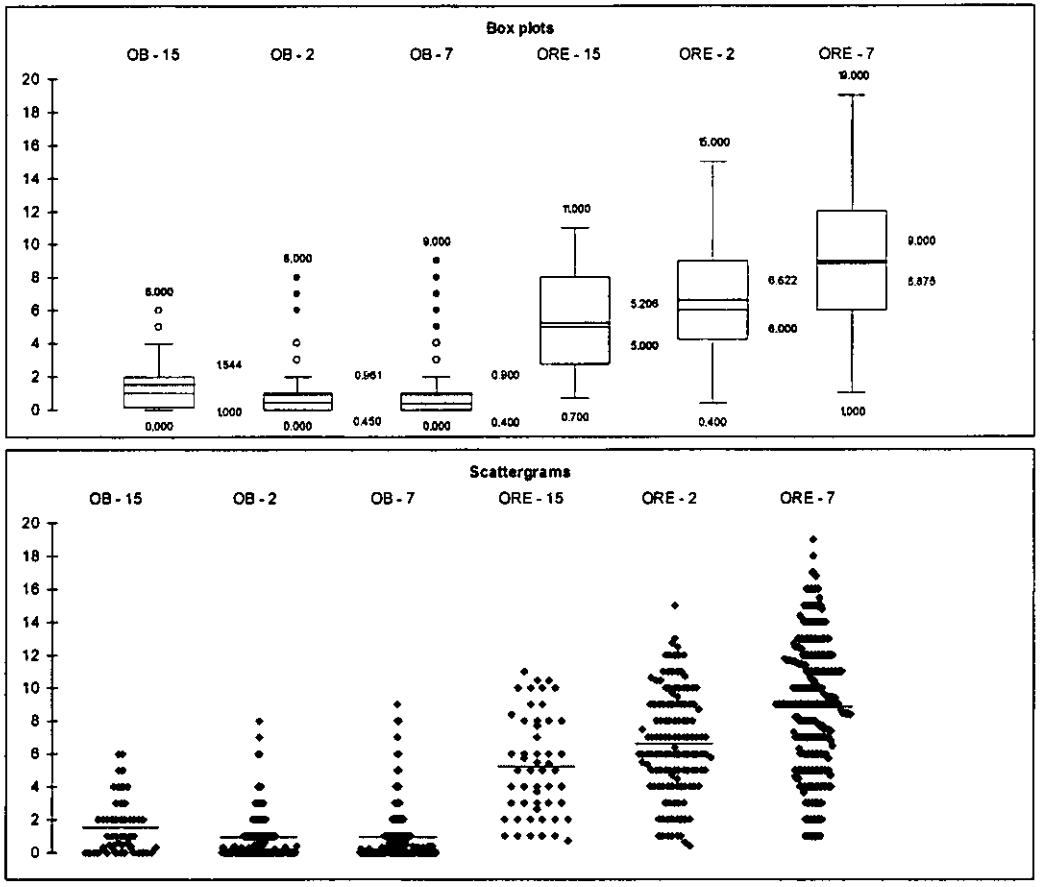



**Fig. 20.1.1I-1 Overburden and Ore Thickness per Plateau**
Note the relatively thick overburden in plateau 15. Ore is markedly thicker in plateau 7 and thinner in plateau 15.

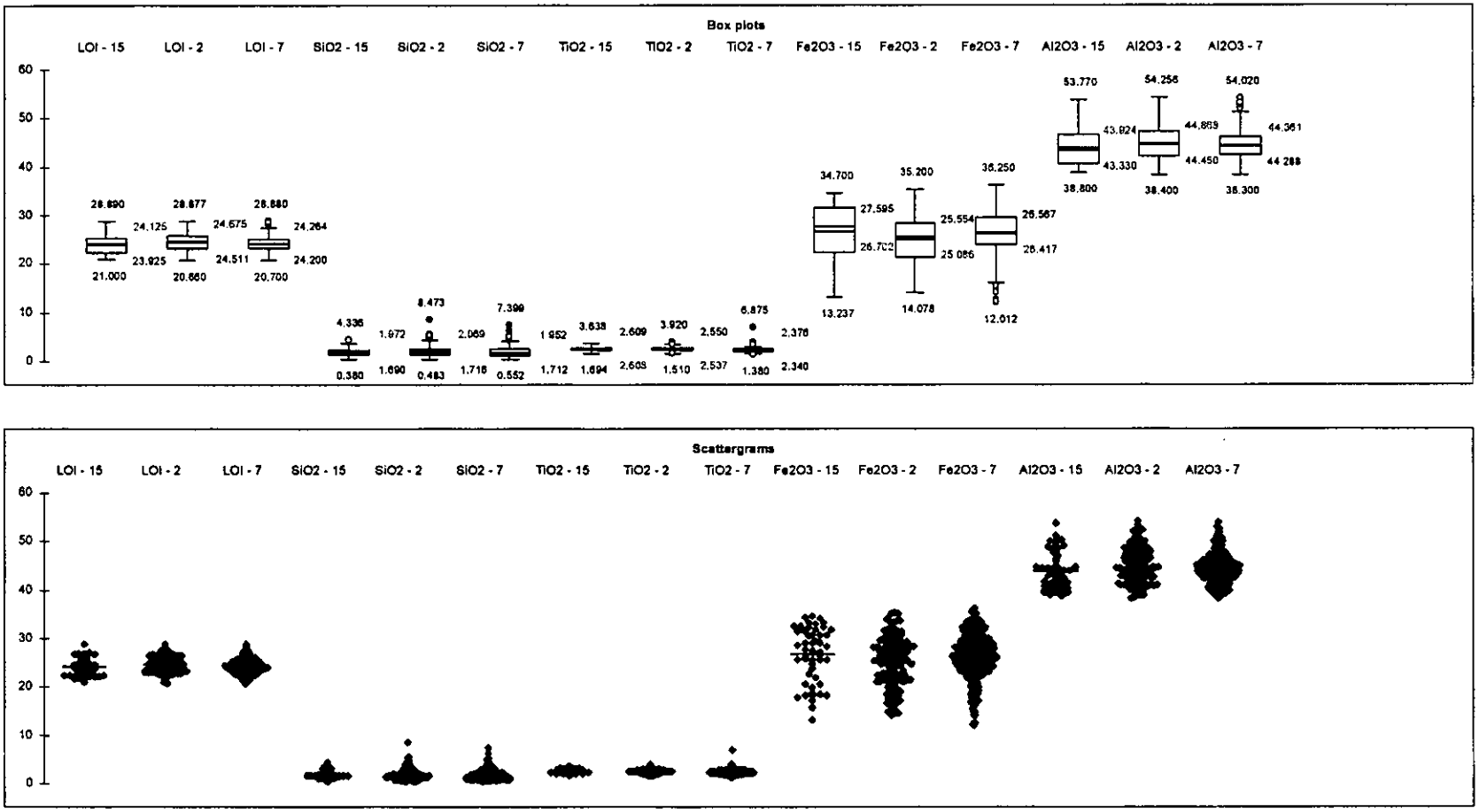



**Fig. 20.1.1I-2 Grades of Resource Composites per Plateau**

The presence of higher $Fe_2O_3$ level in plateau 15 is confirmed, other than that grade differences are minor.

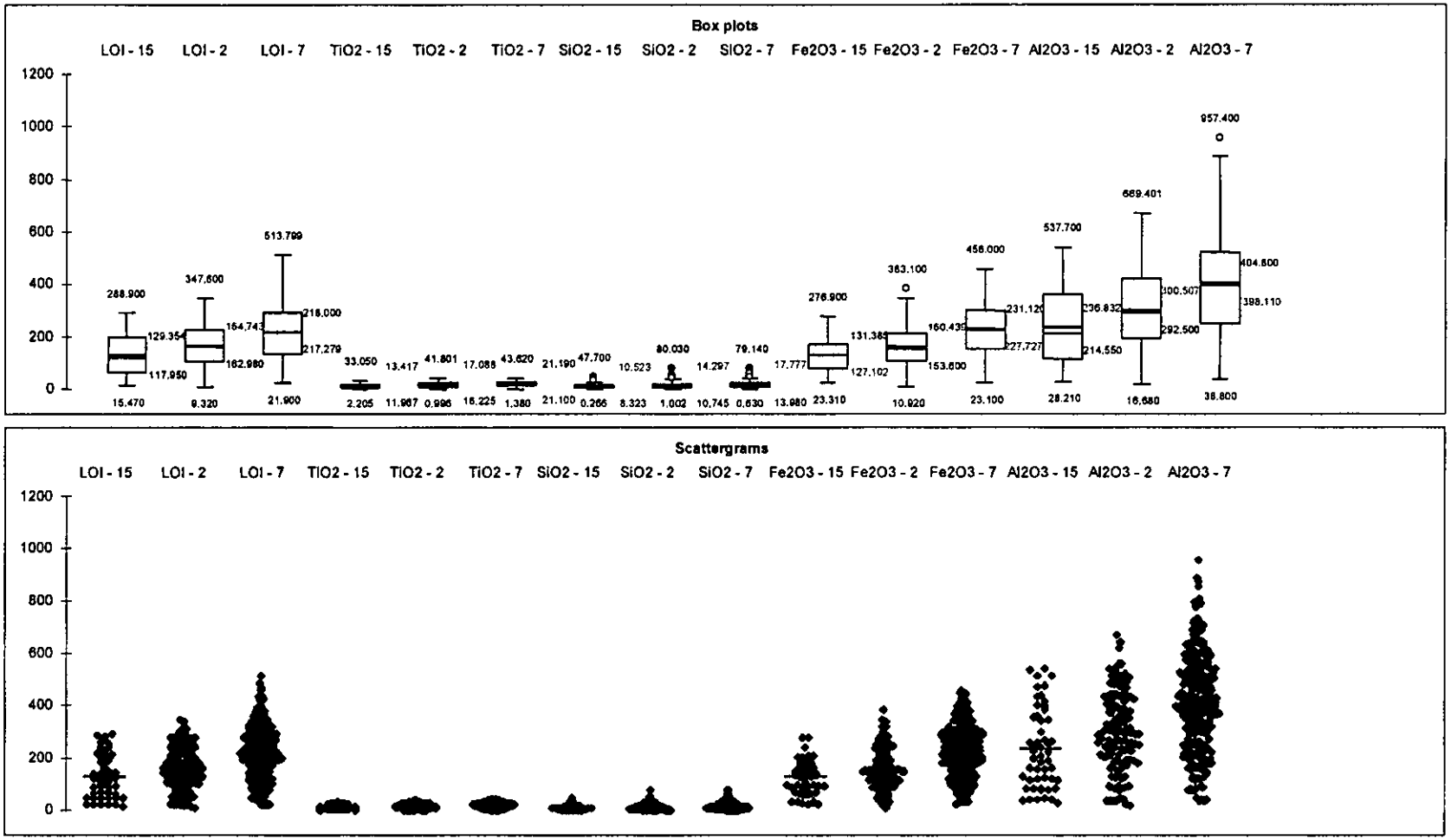



**Fig. 20.1.1I-3 Grade Accumulations of Resource Composites per Plateau**
Contrasted ore thickness in plateau 7 and 15 strongly influences the population distribution of grade accumulations.

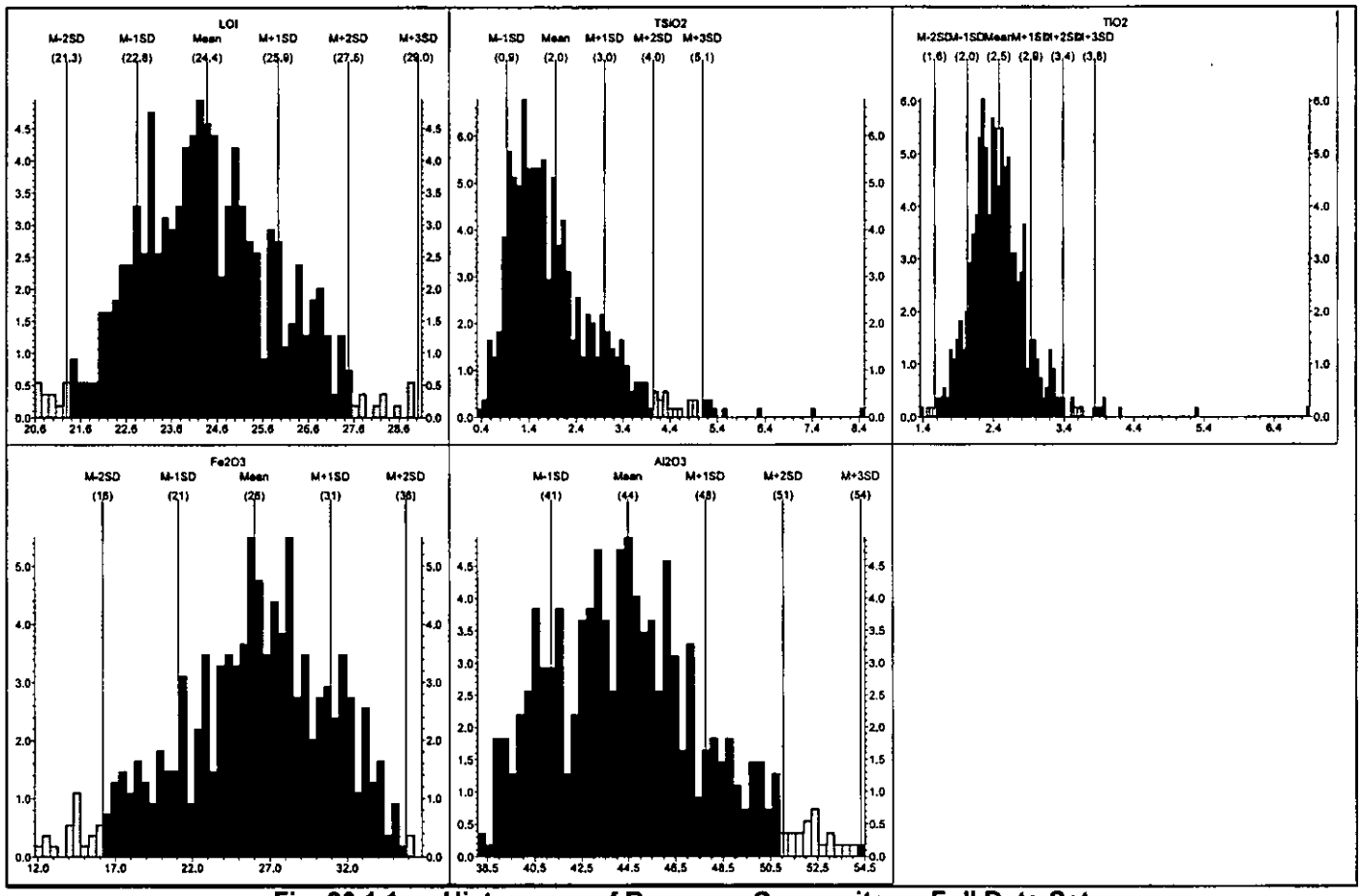



**Fig. 20.1.1m Histograms of Resource Composites – Full Data Set**

**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**

Note how the shape of the $SiO_2$ distribution – highly skewed – was transformed by the accumulation with ore thickness.

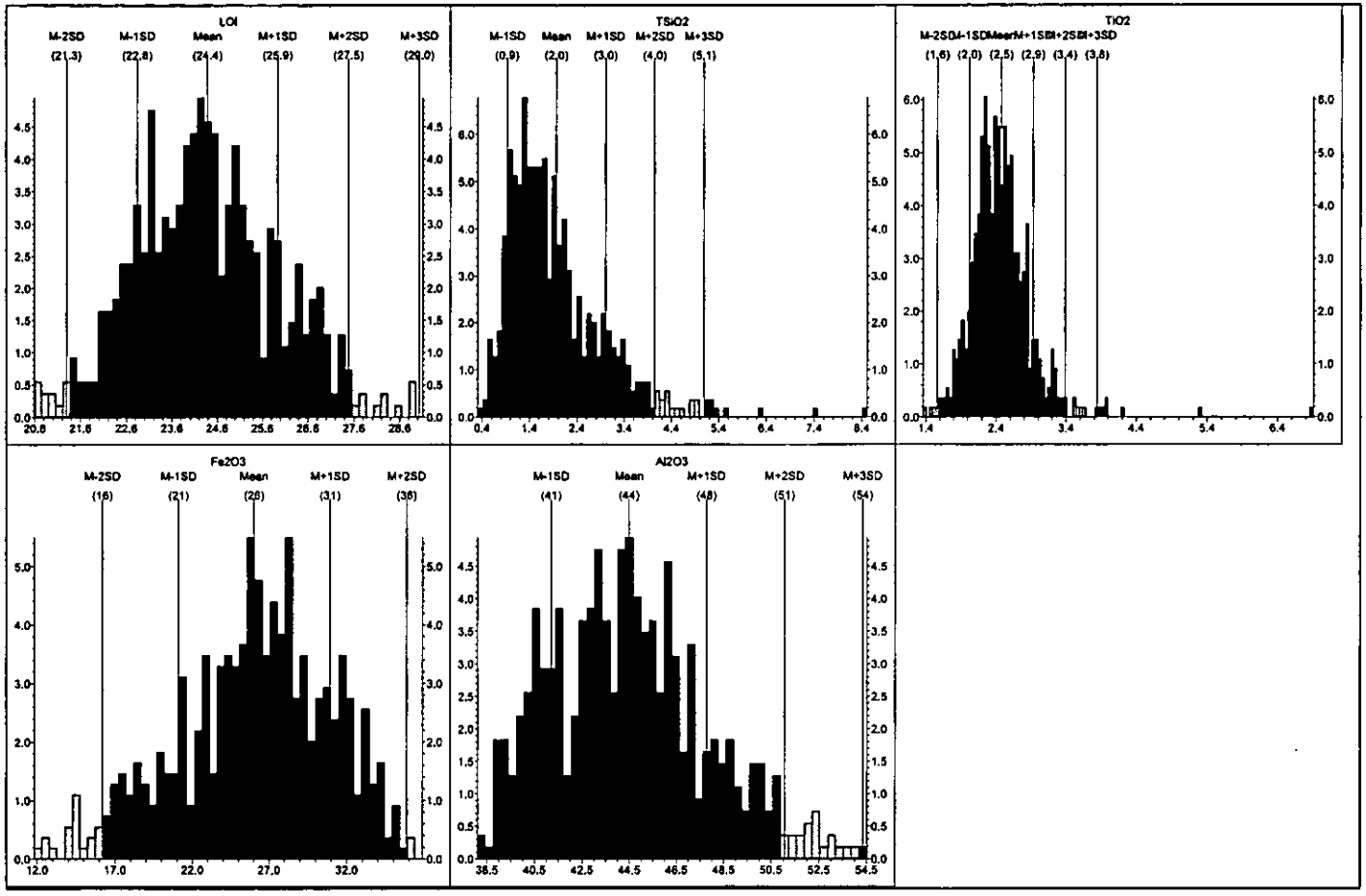



**Fig. 20.1.1o Histograms of Resource Composites – Plateau 2**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**

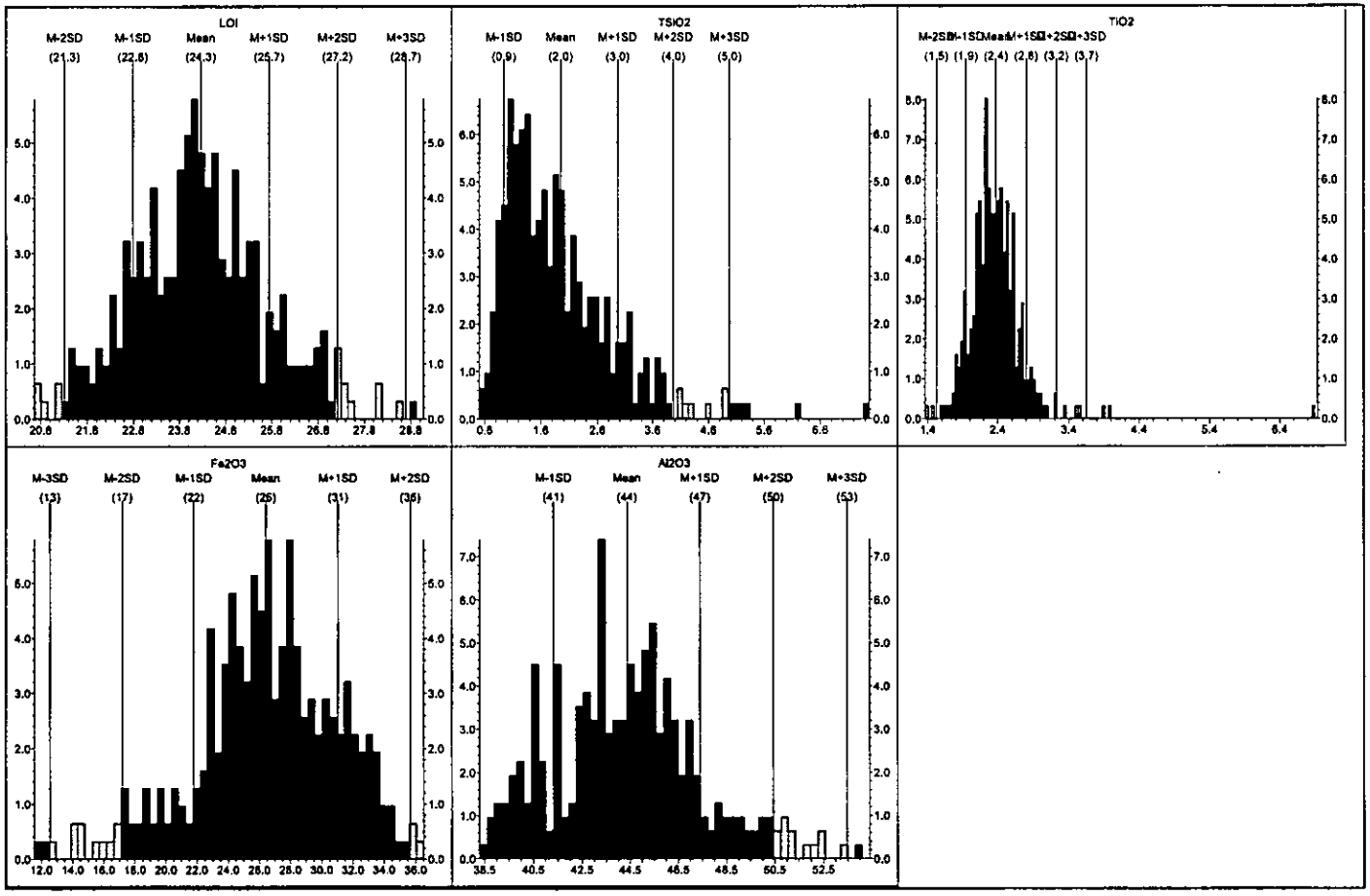



**Fig. 20.1.1p Histograms of Resource Composites – Plateau 7**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**

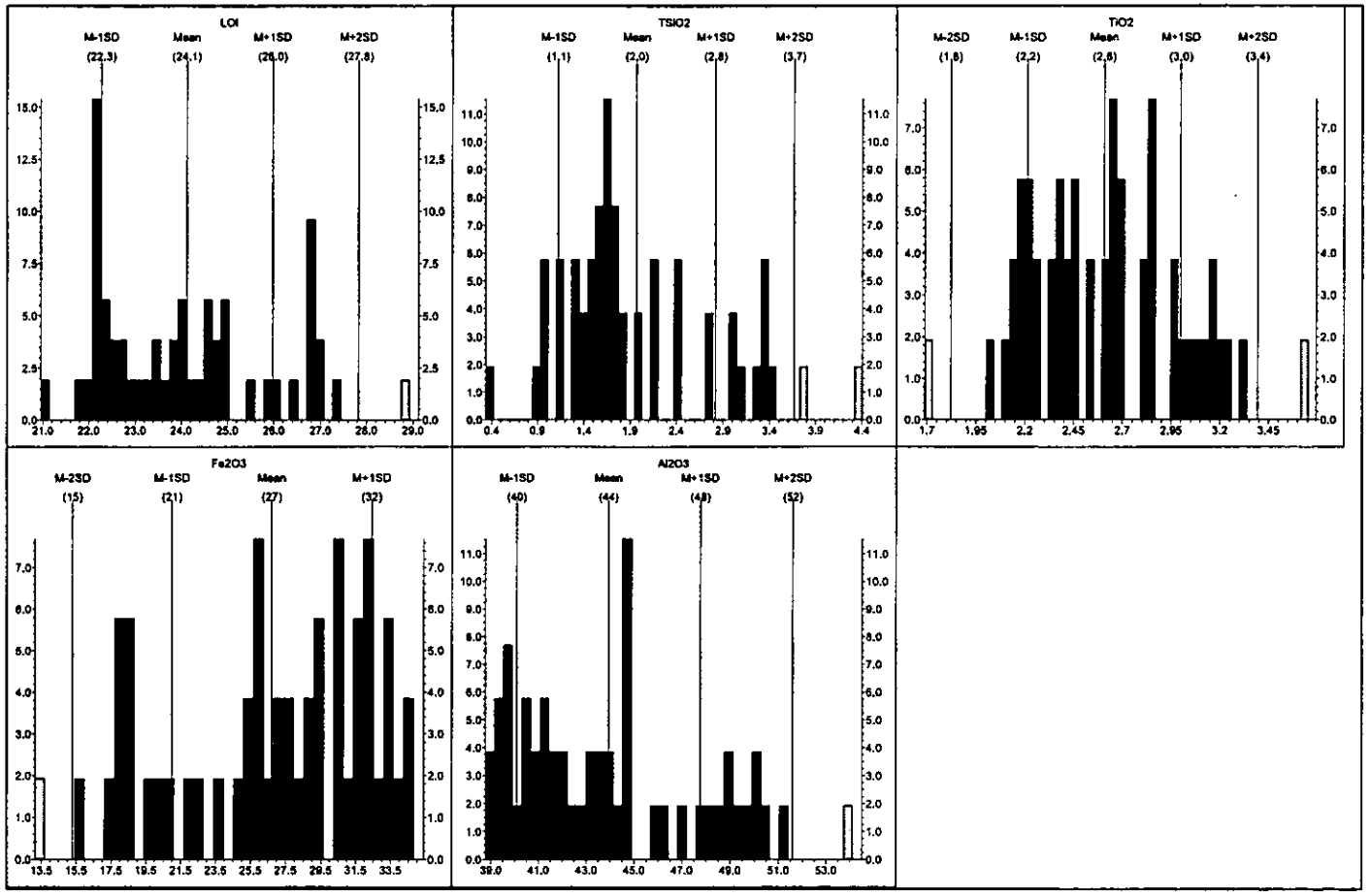
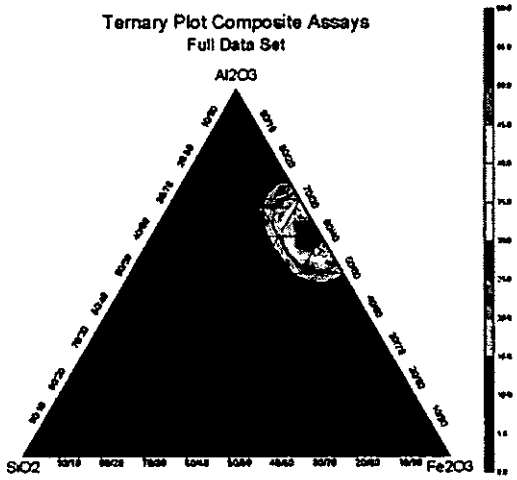
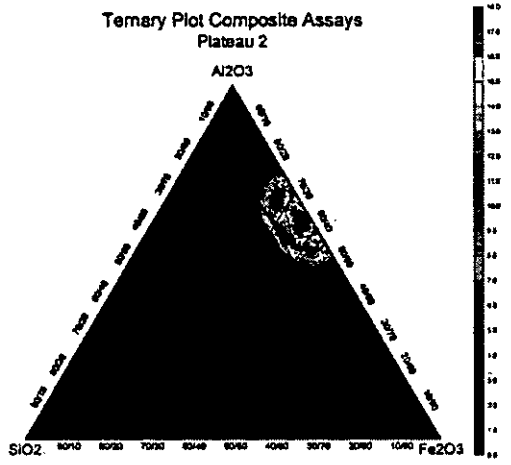
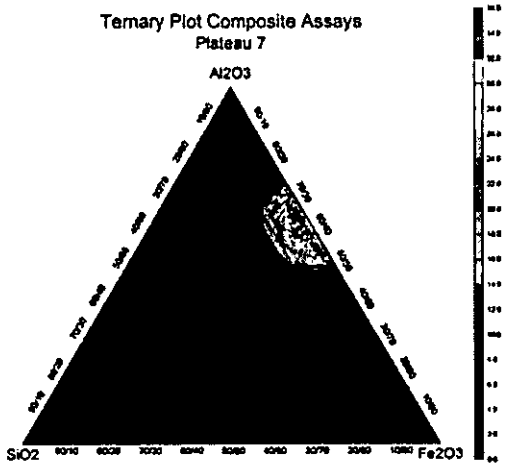



**Fig. 20.1.1q Histograms of Resource Composites – Plateau 15**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**



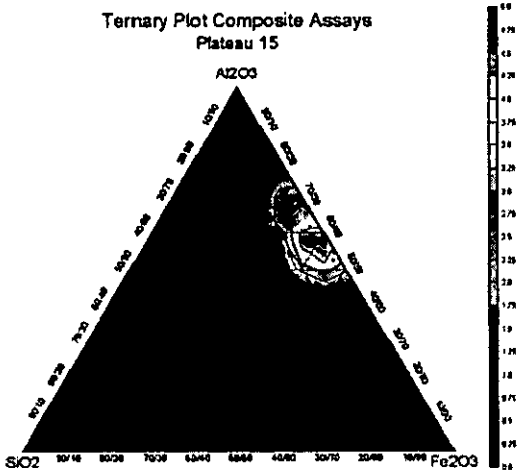




**Fig. 20.1.1r Ternary Plots of Resource Composites**
The above graphs confirm the extent of bauxite desilication.

## RESERVE COMPOSITES

***Box Plots and Scattergrams***

f) Box plots show similar top soil across the deposits. Ore thickness is now more contrasted, with thinner ore in plateau 15 and thicker ore in plateau 7. As for grades, it is confirmed that plateau 15 contains less $Al_2O_3$ and more $Fe_2O_3$.

g) Scattergrams show minor grade range variations across all plateaux, mainly in terms of $Fe_2O_3$ and $Al_2O_3$.

h) Box plots and Scattergrams of grade accumulations reflect the combination of higher grades and thicker ore, which increases the contrasts between the deposits.

***Histograms***

j) The histogram of ore thickness clearly shows the effect of the minimum mineable thickness (2 m) and of the mining algorithm allowing for 0.5 – 1.0 m ore losses.

k) $SiO_2$ is positively skewed to a moderate extent and displays a few odd values above 5%. The $SiO_2$ histograms indicate that the mining algorithm has induced a minor $SiO_2$ dilution only.

l) $Fe_2O_3$ and $Al_2O_3$ show distributions similar to those of the resource composites, but for an increased proportion of low grade material with $Fe_2O_3$ above 30% and $Al_2O_3$ below 40%. This results from the inclusion of overburden – low in $SiO_2$ but high in $Fe_2O_3$ – and, occasionally, of laterite at the pit floor.

m) Histograms of the various plateaux do not indicate marked differences.

***Ternary Diagrams***

The larger spread of composite grades in plateau 15 is confirmed.

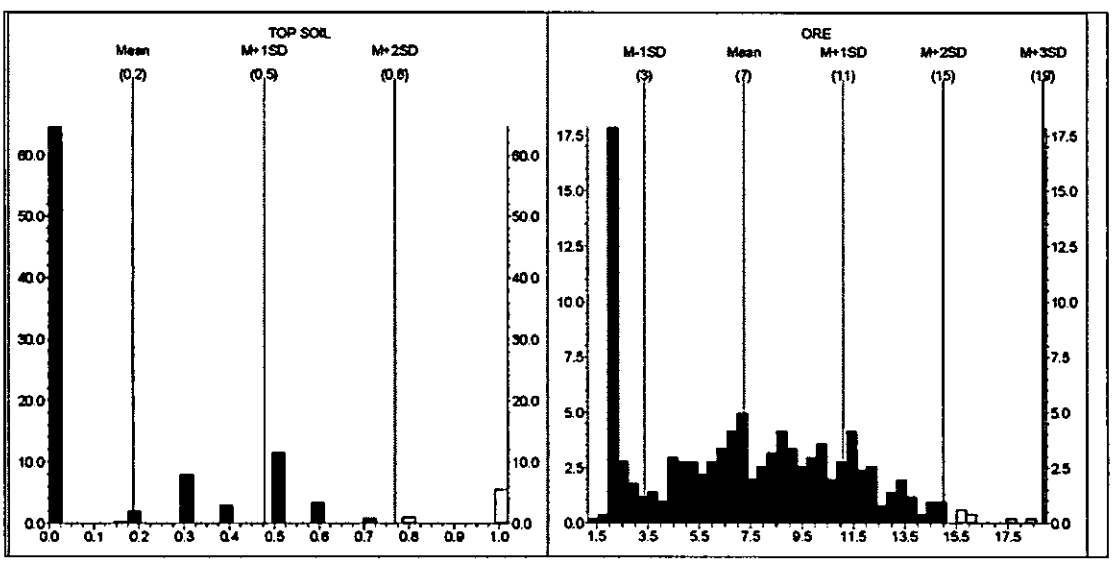



**Fig. 20.1.1s Reserve Composites - Histogram of Thickness**

**Table 20.1.1g Reserve Composite Statistics – Plateau 2, 7 & 15**

| Descriptive statistics | OVERBURD | ORE | LOI | $SiO_2$ | $TiO_2$ | $Fe_2O_3$ | $Al_2O_3$ |
|---|---|---|---|---|---|---|---|
| No. of values used | 504 | 504 | 504 | 504 | 504 | 504 | 504 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 326 | 1 | 1 | 1 | 1 | 1 | 1 |
| % of min. val. | 64.683 | 0.198 | 0.198 | 0.198 | 0.198 | 0.198 | 0.198 |
| Minimum | 0.000 | 1.280 | 14.250 | 0.517 | 1.140 | 10.438 | 18.200 |
| 1st quartile | 0.000 | 3.650 | 22.534 | 1.325 | 2.157 | 24.044 | 40.575 |
| Median | 0.000 | 7.170 | 23.946 | 1.780 | 2.388 | 27.546 | 43.404 |
| 3rd quartile | 0.400 | 10.330 | 25.152 | 2.459 | 2.619 | 31.820 | 45.855 |
| Maximum | 1.000 | 18.370 | 29.381 | 7.870 | 3.584 | 61.600 | 55.122 |
| Range | 1.000 | 17.090 | 15.131 | 7.354 | 2.444 | 51.162 | 36.922 |
| Sum | 94.150 | 3652.970 | 11922.356 | 1013.007 | 1206.969 | 14314.263 | 21591.710 |
| Mean | 0.187 | 7.248 | 23.655 | 2.010 | 2.395 | 28.401 | 42.841 |
| Geometric mean | | 6.015 | 23.531 | 1.800 | 2.364 | 27.432 | 42.481 |
| Harmonic mean | | 4.750 | 23.397 | 1.621 | 2.333 | 26.446 | 42.068 |
| Kurtosis (Pearson) | 1.068 | -0.906 | 1.056 | 4.843 | 0.610 | 1.421 | 1.874 |
| Skewness (Pearson) | 1.433 | 0.189 | -0.737 | 1.748 | 0.199 | 0.768 | -0.889 |
| Kurtosis | 1.107 | -0.895 | 1.095 | 4.935 | 0.643 | 1.465 | 1.924 |
| Skewness | 1.442 | 0.190 | -0.742 | 1.758 | 0.200 | 0.773 | -0.894 |
| CV (standard deviation/mean) | 1.558 | 0.535 | 0.099 | 0.509 | 0.158 | 0.265 | 0.123 |
| Sample variance | 0.085 | 14.983 | 5.492 | 1.043 | 0.143 | 56.467 | 27.525 |
| Estimated variance | 0.085 | 15.013 | 5.503 | 1.045 | 0.143 | 56.580 | 27.580 |
| Sample standard deviation | 0.291 | 3.871 | 2.344 | 1.021 | 0.378 | 7.514 | 5.246 |
| Estimated standard deviation | 0.291 | 3.875 | 2.346 | 1.022 | 0.378 | 7.522 | 5.252 |
| Mean absolute deviation | 0.242 | 3.269 | 1.767 | 0.750 | 0.292 | 5.583 | 3.845 |
| Median absolute deviation | 0.000 | 3.210 | 1.273 | 0.530 | 0.231 | 3.844 | 2.622 |
| Standard-error | 0.013 | 0.173 | 0.104 | 0.046 | 0.017 | 0.335 | 0.234 |
| Lower bound Mean CI | 0.161 | 6.909 | 23.450 | 1.920 | 2.362 | 27.743 | 42.381 |
| Upper bound Mean CI | 0.212 | 7.587 | 23.861 | 2.099 | 2.428 | 29.060 | 43.300 |

**Table 20.1.1h Reserve Grade Accumulation Statistics – Plateau 2, 7 & 15**

| Descriptive statistics | LOIac | $SiO_2$ac | $TiO_2$ac | $Fe_2O_3$ac | $Al_2O_3$ac |
|---|---|---|---|---|---|
| No. of values used | 504 | 504 | 504 | 504 | 504 |
| No. of values ignored | 0 | 0 | 0 | 0 | 0 |
| No. of min. val. | 1 | 1 | 1 | 1 | 1 |
| % of min. val. | 0.198 | 0.198 | 0.198 | 0.198 | 0.198 |
| Minimum | 28.500 | 1.640 | 2.280 | 28.324 | 36.400 |
| 1st quartile | 88.470 | 6.202 | 9.180 | 97.505 | 161.133 |
| Median | 179.746 | 11.504 | 17.654 | 180.512 | 322.794 |
| 3rd quartile | 256.229 | 19.172 | 25.511 | 259.520 | 467.807 |
| Maximum | 500.080 | 76.892 | 42.272 | 440.726 | 932.536 |
| Range | 471.580 | 75.252 | 39.992 | 412.402 | 896.136 |
| Sum | 88966.374 | 7305.122 | 8889.848 | 95351.201 | 162342.778 |
| Mean | 176.521 | 14.494 | 17.639 | 189.189 | 322.109 |
| Geometric mean | 141.539 | 10.829 | 14.222 | 165.002 | 255.521 |
| Harmonic mean | 104.953 | 7.885 | 10.587 | 141.891 | 185.254 |
| Kurtosis (Pearson) | -0.696 | 3.426 | -0.915 | -0.750 | -0.661 |
| Skewness (Pearson) | 0.225 | 1.589 | 0.176 | 0.444 | 0.240 |
| Kurtosis | -0.681 | 3.498 | -0.904 | -0.737 | -0.646 |
| Skewness | 0.227 | 1.599 | 0.177 | 0.447 | 0.241 |
| CV (standard deviation/mean) | 0.565 | 0.776 | 0.557 | 0.497 | 0.574 |
| Sample variance | 9926.476 | 126.336 | 96.462 | 8808.513 | 34093.425 |
| Estimated variance | 9946.211 | 126.587 | 96.654 | 8826.025 | 34161.205 |
| Sample standard deviation | 99.632 | 11.240 | 9.822 | 93.854 | 184.644 |
| Estimated standard deviation | 99.731 | 11.251 | 9.831 | 93.947 | 184.828 |
| Mean absolute deviation | 83.691 | 8.523 | 8.284 | 78.998 | 154.804 |
| Median absolute deviation | 79.260 | 5.990 | 7.960 | 81.141 | 148.772 |
| Standard-error | 4.442 | 0.501 | 0.438 | 4.185 | 8.233 |
| Lower bound Mean CI | 167.793 | 13.510 | 16.778 | 180.967 | 305.934 |
| Upper bound Mean CI | 185.248 | 15.479 | 18.499 | 197.411 | 338.284 |

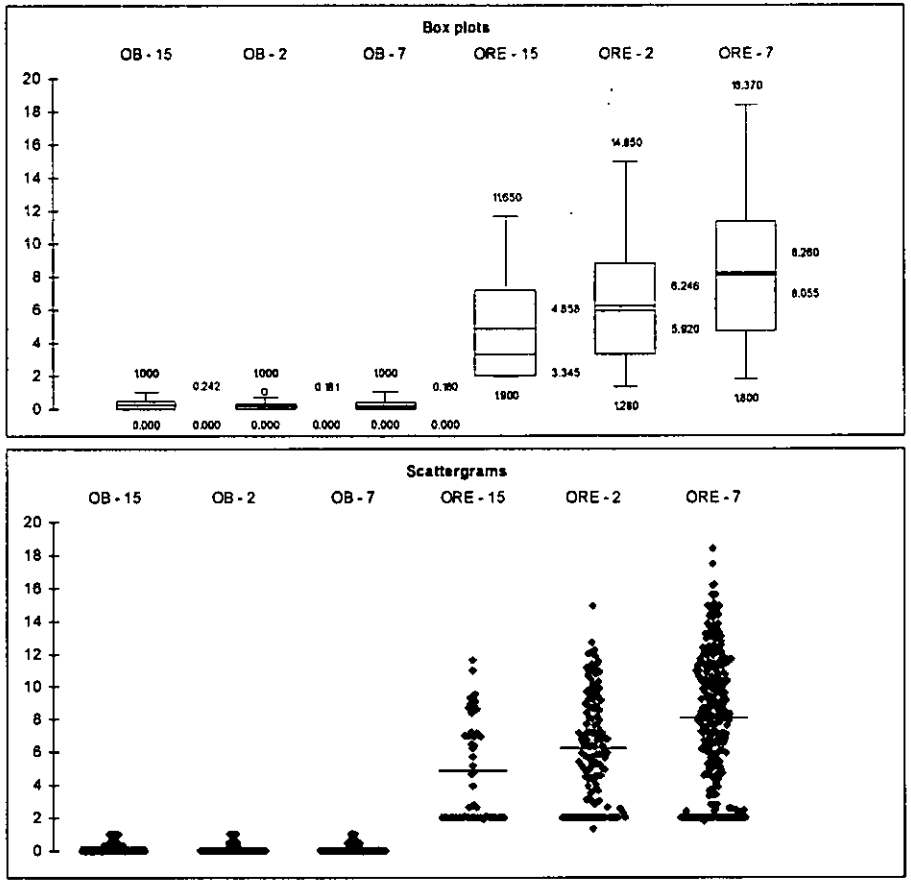



**Fig. 20.1.1t-1 Overburden and Ore Thickness of Reserve Composites per Plateau**

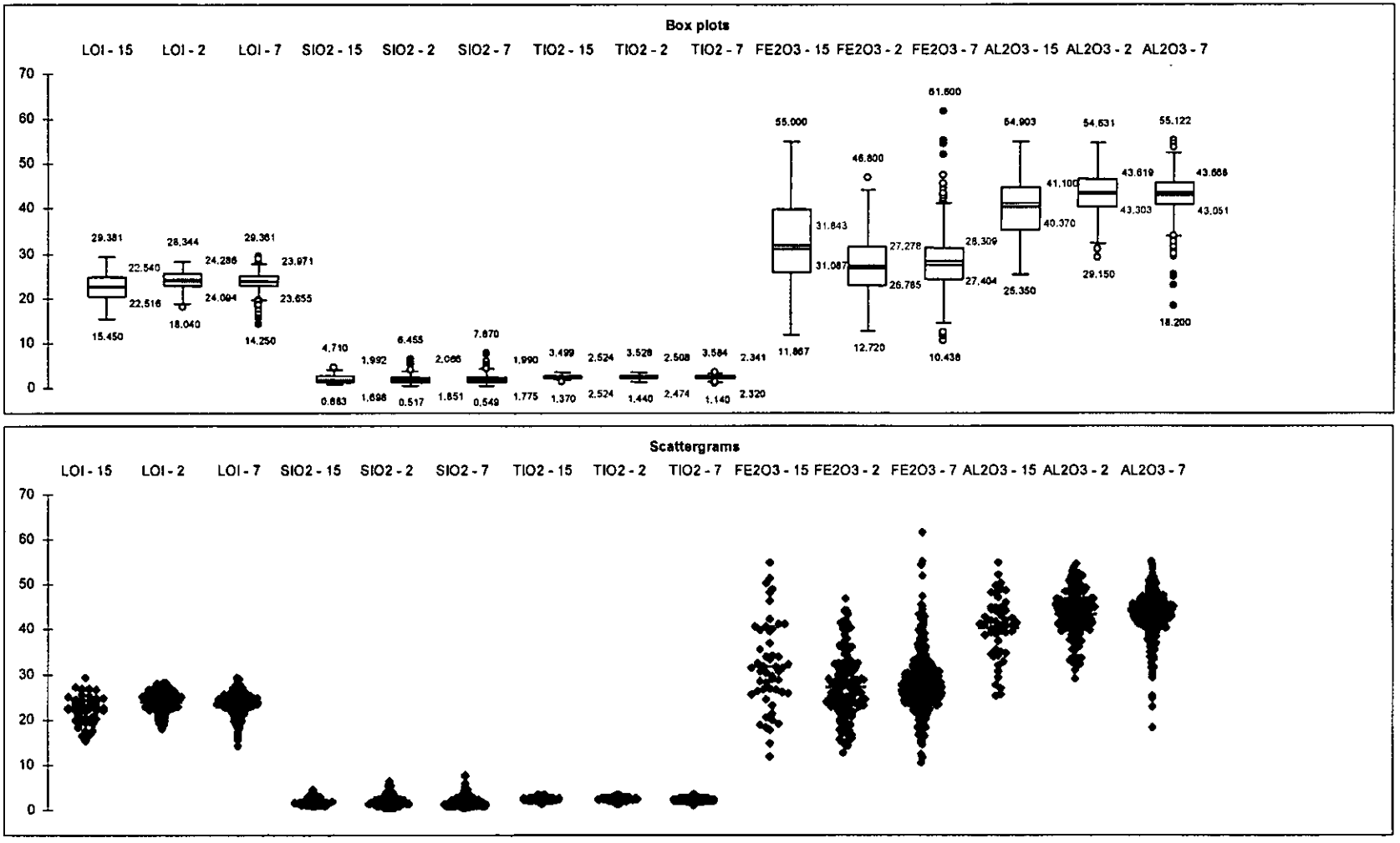



**Fig. 20.1.1t-2 Grades of Reserve Composites per Plateau**

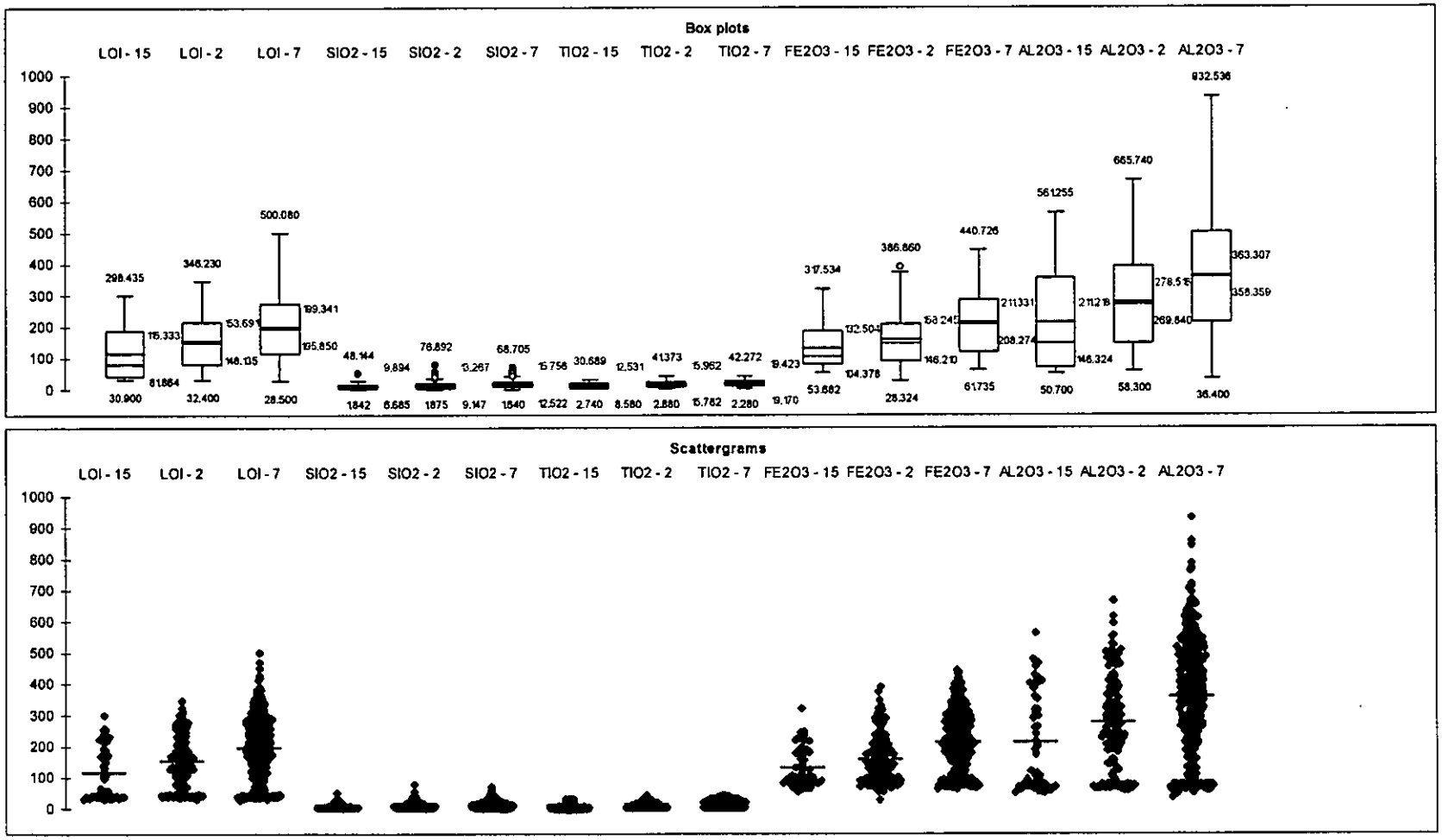



**Fig. 20.1.1t-3 Grade Accumulations of Reserve Composites per Plateau**

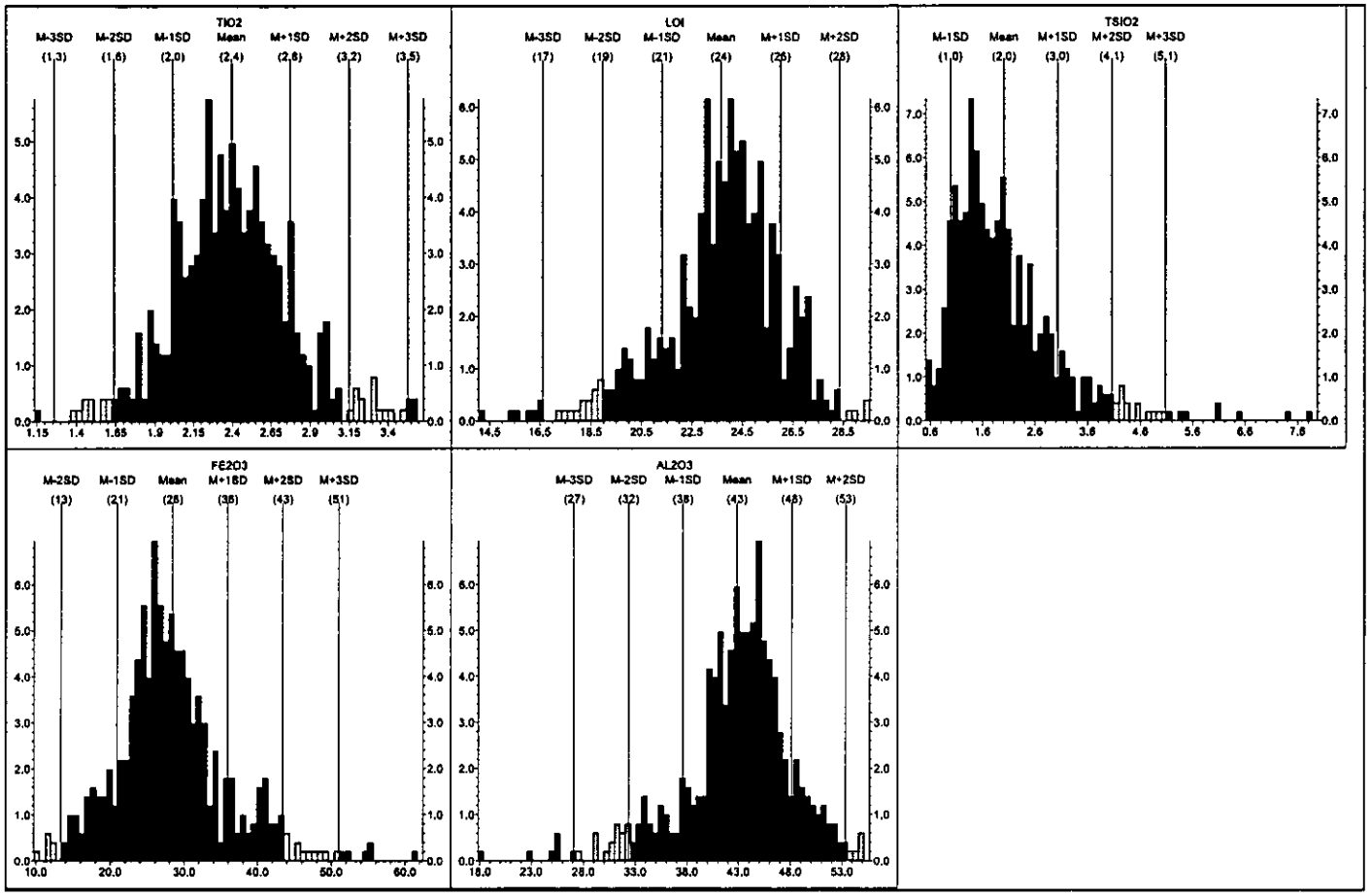



**Fig. 20.1.1u Histograms of Reserve Composites**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**

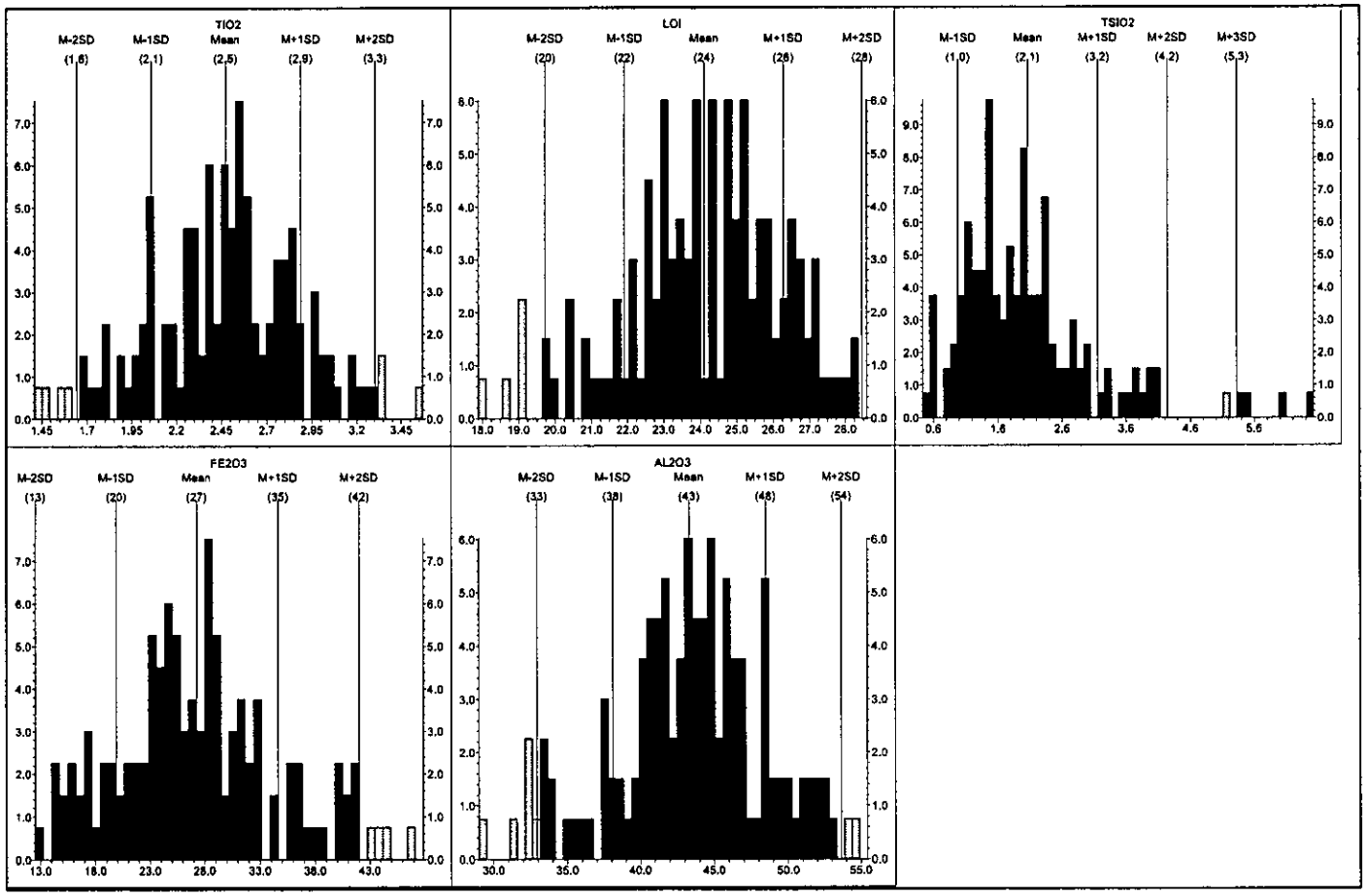



**Fig. 20.1.1v Histograms of Reserve Composites – Plateau 2**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**

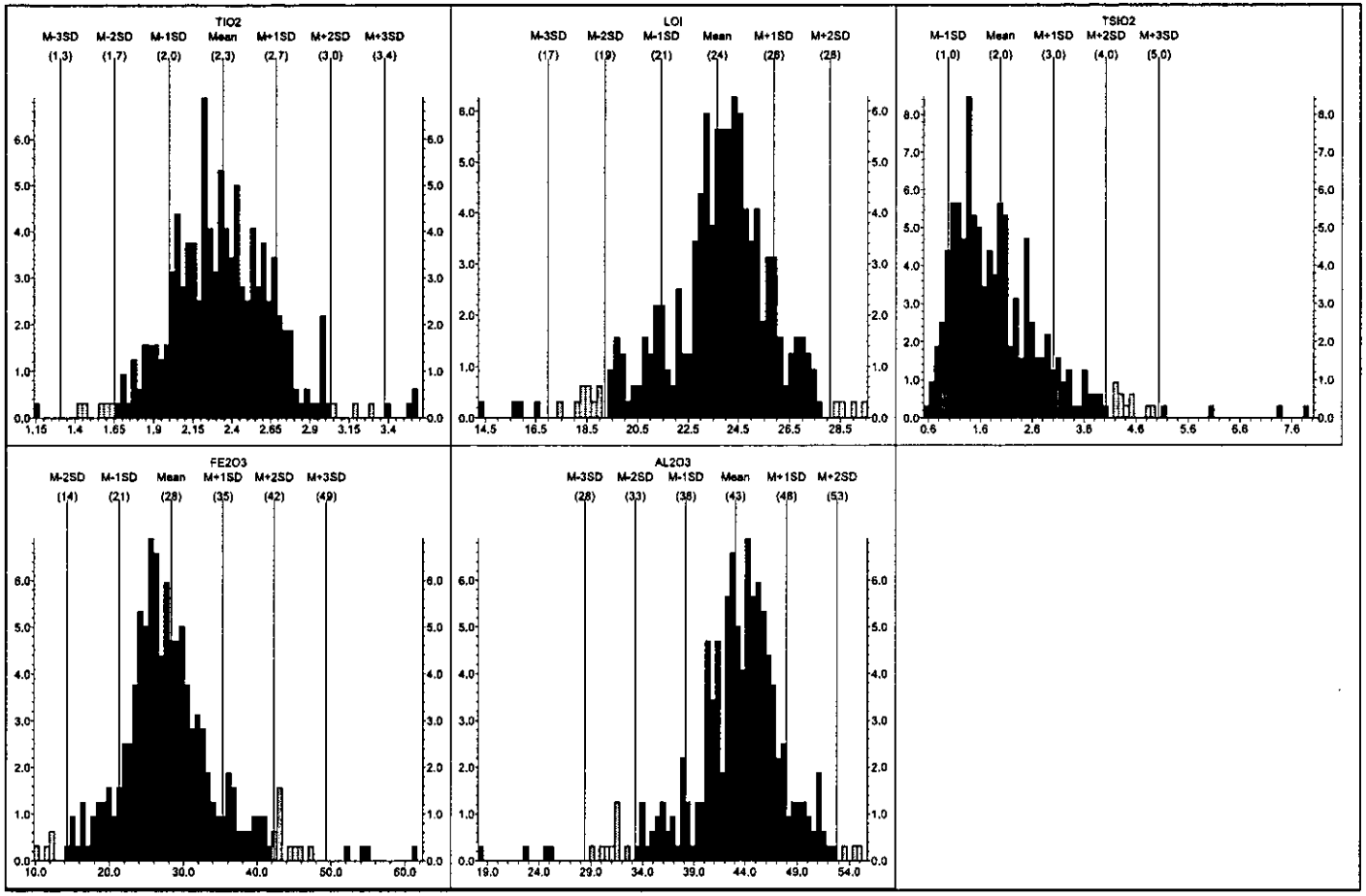



**Fig. 20.1.1w Histograms of Reserve Composites – Plateau 7**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**

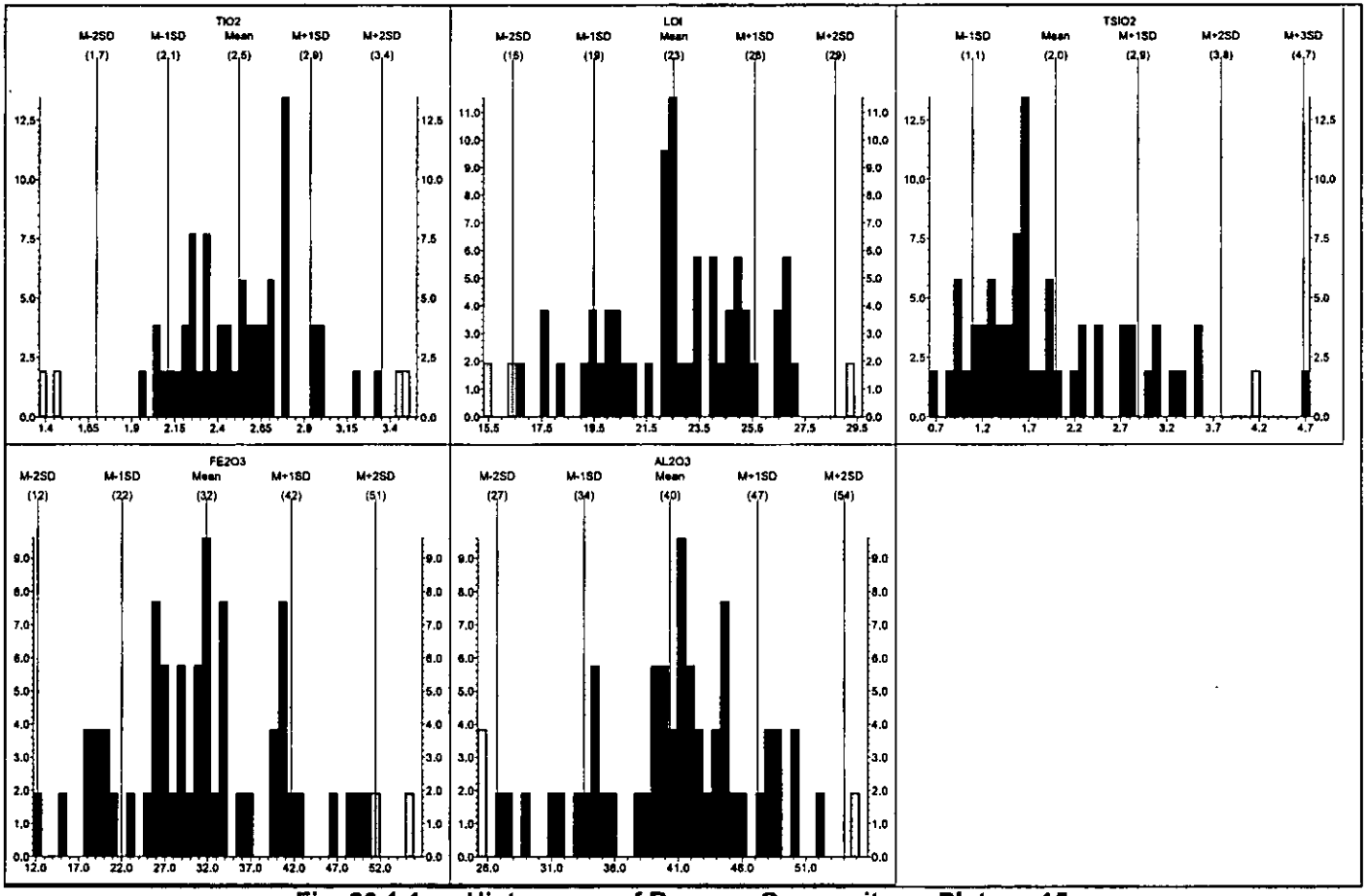
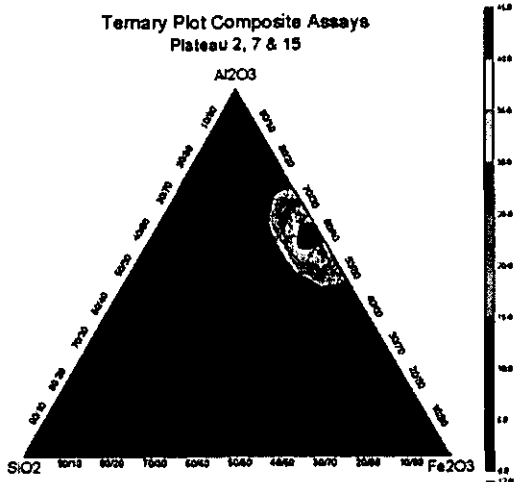
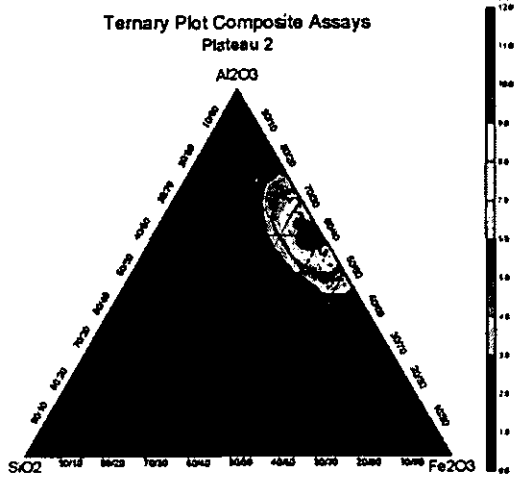
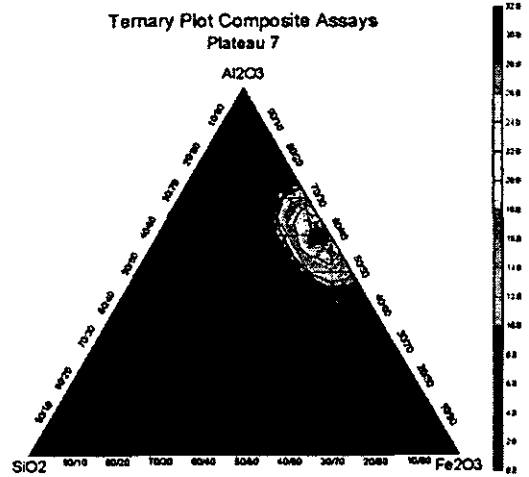



**Fig. 20.1.1x Histograms of Reserve Composites – Plateau 15**
**Colour coding: blue +/- 1 STD, green +/- 1 to 2 STD, yellow +/- 2 to 3 STD, red > 3 STD**



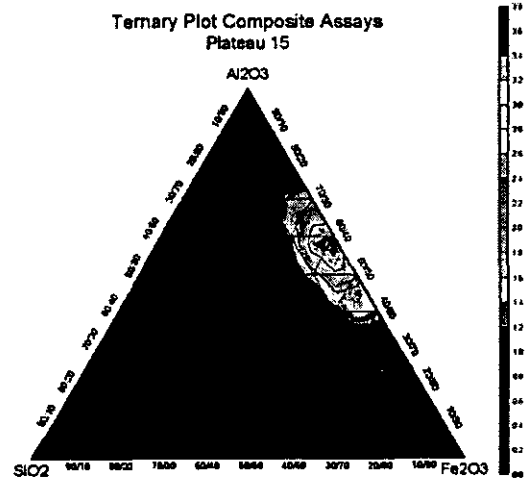




**Fig. 20.1.1y Ternary Plots of Reserve Composites**

### 20.1.2 Population Fitting

The most important populations relevant for modelling include that of the $SiO_2$, $Fe_2O_3$ and $Al_2O_3$ accumulations, and of ore thickness.

In the main, grade accumulations do not strictly comply with normal or log-normal distributions, but $SiO_2$ accumulation tends to log-normality while other accumulations tend to normality, as shown below.

The Q-Q plots (or normal probability plot, or "quantile-quantile" chart) shown hereafter provide a graphical view to help you determine if the data appears to follow a normal distribution, by comparing the cumulative frequency distribution for the data with the cumulative distribution function of the normal distribution for identical mean and variance. The Q-Q plot compares values and if the points are aligned along the chart's first bisector, then the normal distribution is compatible with the data.

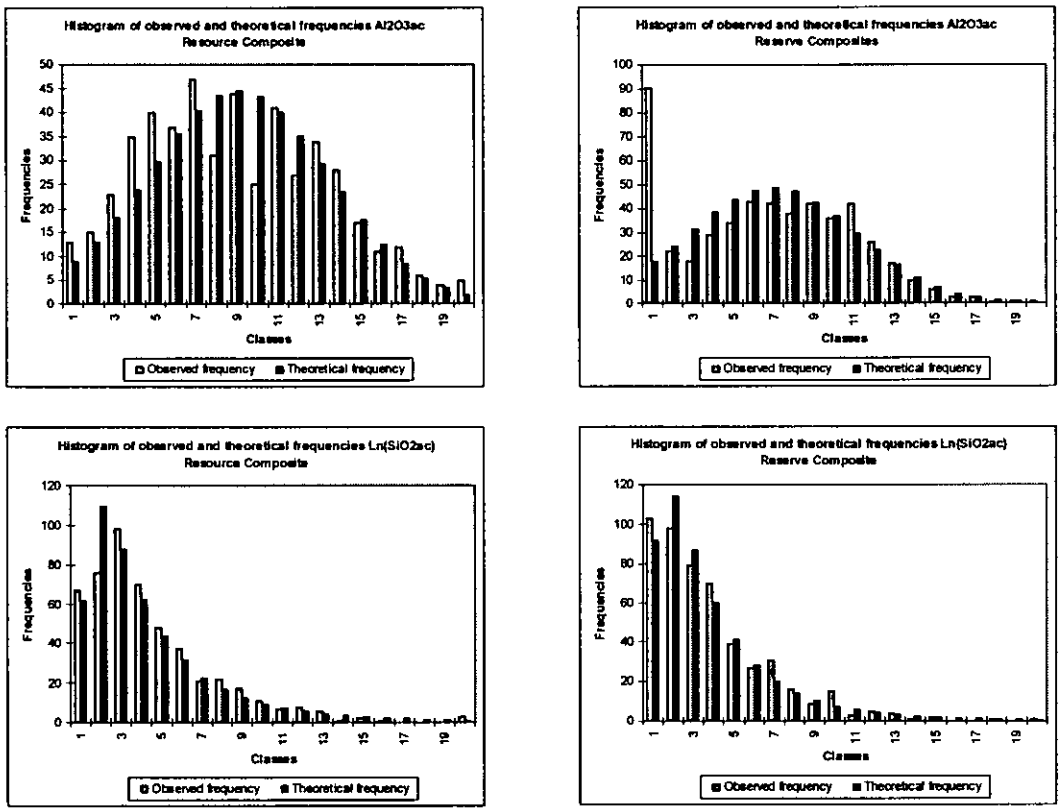



**Fig. 20.1.2a Distribution Fitting**

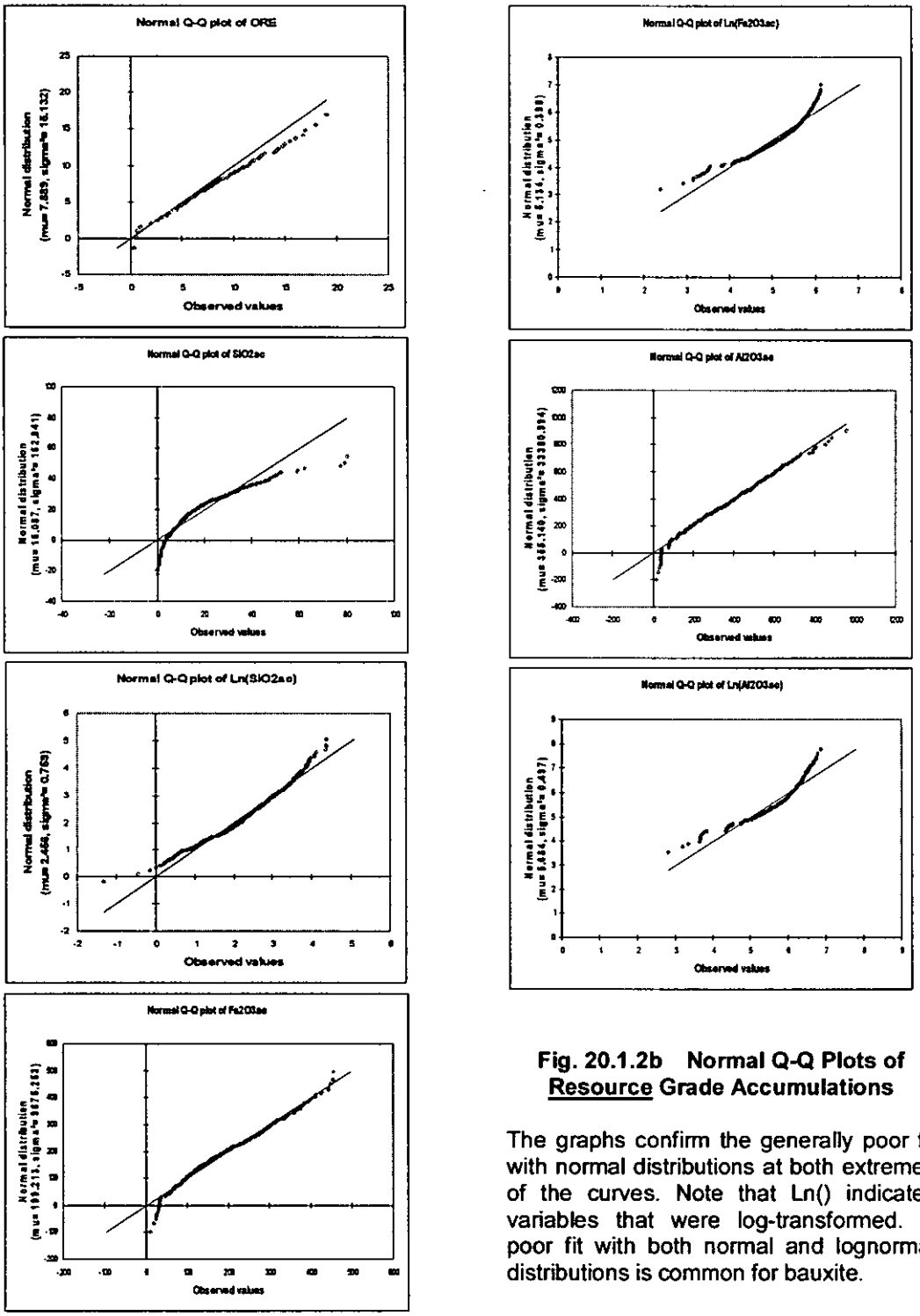
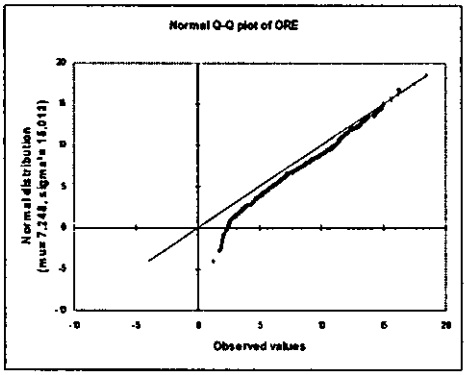
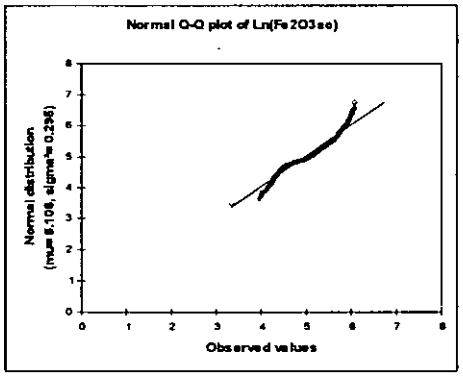
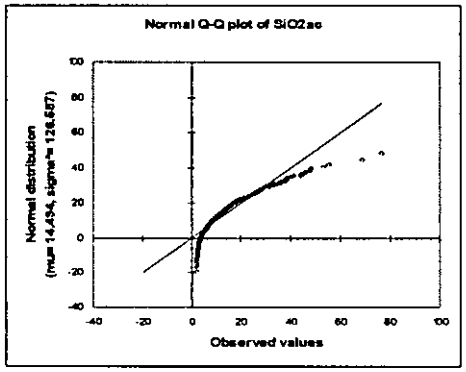


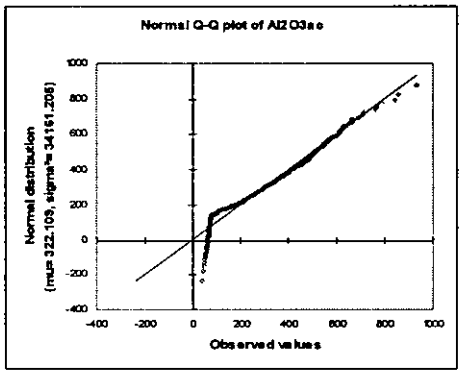

**Fig. 20.1.2b Normal Q-Q Plots of <u>Resource</u> Grade Accumulations**

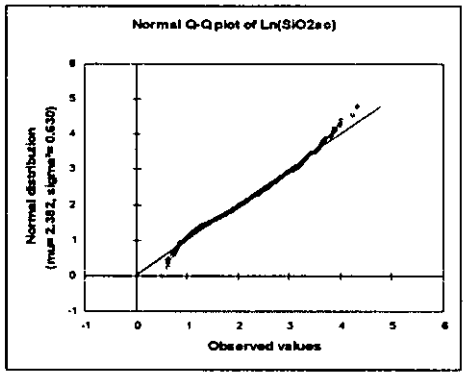
The graphs confirm the generally poor fit with normal distributions at both extremes of the curves. Note that Ln() indicates variables that were log-transformed. A poor fit with both normal and lognormal distributions is common for bauxite.

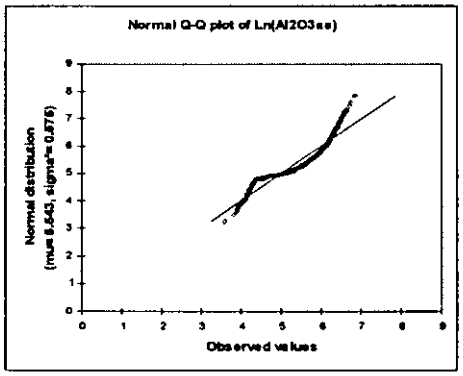


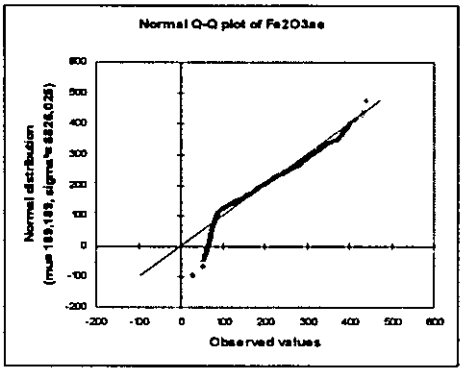




**Fig. 20.1.2c Normal Q-Q Plots of <u>Reserve</u> Grade Accumulations**

Dilution and the minimum mineable thickness of 2m generate additional scattering at the low end of the distributions

### 20.1.3 Bivariate & Multivariate Description

$Al_2O_3$ is positively correlated with LOI and inversely correlated with $Fe_2O_3$ and $SiO_2$, while LOI is negatively correlated with $Fe_2O_3$ and $SiO_2$. A strong multi-linear relationship exists between $Al_2O_3$, $Fe_2O_3$ and $SiO_2$. While $Al_2O_3$ is the primary grade in the sense that alumina is produced and marketed, it is fully controlled by $SiO_2$ and $Fe_2O_3$ grades. This relationship is of daily use in production grade control.

The above observations are valid for samples and composites. However, the percentage of $SiO_2$ is depressed in composites and its correlation with LOI and major oxides decreases proportionally. Ore thickness shows a moderate positive correlation with $Al_2O_3$ and negative correlation with $Fe_2O_3$, confirming that high grade bauxite tends to occur in thick layers and that thin ore tends to have low grades.

Correlations between grade accumulations reflect the preponderance of ore thickness, which becomes highly correlated with all oxide accumulations, which in turn become strongly correlated between each other.

## SAMPLES

**Table 20.1.3a Matrix of Pearson Correlation Coefficients - Sample Grades**

| Pearson correlation coefficient | LOI | $SiO_2$ | $TiO_2$ | $Fe_2O_3$ | $Al_2O_3$ |
|---|---|---|---|---|---|
| LOI | 1.000 | **-0.573** | **0.527** | **-0.766** | **0.935** |
| $SiO_2$ | **-0.573** | 1.000 | **-0.237** | **-0.058** | **-0.343** |
| $TiO_2$ | **0.527** | **-0.237** | 1.000 | **-0.530** | **0.564** |
| $Fe_2O_3$ | **-0.766** | **-0.058** | **-0.530** | 1.000 | **-0.914** |
| $Al_2O_3$ | **0.935** | **-0.343** | **0.564** | **-0.914** | 1.000 |

*In bold, significant values (except diagonal) at the level of significance alpha=0.050 (two-tailed test)*

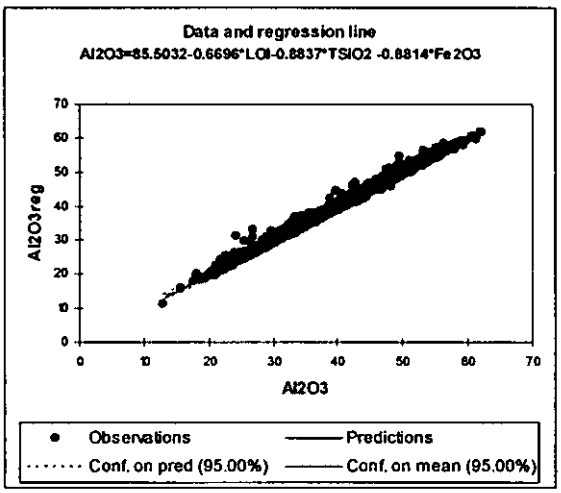



**Fig 20.1.3a $Al_2O_3$ Regression – Samples – $R^2$ 0.995**

## RESOURCE COMPOSITES

**Table 20.1.3b Matrix of Pearson Correlation Coefficients - Resource Composite**

| Pearson correlation coefficient | ORE | LOI | $SiO_2$ | $TiO_2$ | $Fe_2O_3$ | $Al_2O_3$ |
|---|---|---|---|---|---|---|
| ORE | 1.000 | **0.307** | **0.104** | -0.031 | **-0.348** | **0.352** |
| LOI | **0.307** | 1.000 | **-0.114** | **0.161** | **-0.914** | **0.916** |
| $SiO_2$ | **0.104** | **-0.114** | 1.000 | -0.052 | **-0.187** | 0.015 |
| $TiO_2$ | -0.031 | **0.161** | -0.052 | 1.000 | **-0.260** | **0.196** |
| $Fe_2O_3$ | **-0.348** | **-0.914** | **-0.187** | **-0.260** | 1.000 | **-0.974** |
| $Al_2O_3$ | **0.352** | **0.916** | 0.015 | **0.196** | **-0.974** | 1.000 |

*In bold, significant values (except diagonal) at the level of significance alpha=0.050 (two-tailed test)*

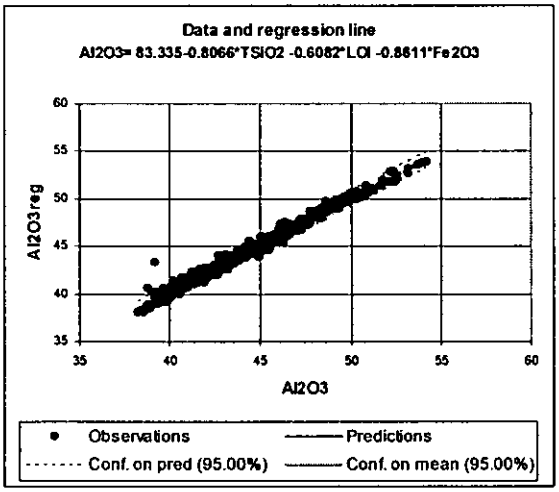



**Fig 20.1.3b $Al_2O_3$ Regression – Resource Composites – $R^2$ 0.984**

**Table 20.1.3c Matrix of Pearson Correlation Coef. - Resource Grade Accumulations**

| Pearson correlation coefficient | ORE | LOI | $SiO_2$ | $TiO_2$ | $Fe_2O_3$ | $Al_2O_3$ |
|---|---|---|---|---|---|---|
| ORE | 1.000 | **0.991** | **0.695** | **0.962** | **0.914** | **0.989** |
| LOI | **0.991** | 1.000 | **0.671** | **0.959** | **0.858** | **0.998** |
| $SiO_2$ | **0.695** | **0.671** | 1.000 | **0.678** | **0.588** | **0.685** |
| $TiO_2$ | **0.962** | **0.959** | **0.678** | 1.000 | **0.846** | **0.961** |
| $Fe_2O_3$ | **0.914** | **0.858** | **0.588** | **0.846** | 1.000 | **0.845** |
| $Al_2O_3$ | **0.989** | **0.998** | **0.685** | **0.961** | **0.845** | 1.000 |

*In bold, significant values (except diagonal) at the level of significance alpha=0.050 (two-tailed test)*

## RESERVE COMPOSITES

**Table 20.1.3d Matrix of Pearson Correlation Coefficients - Reserve Composites**

| Pearson correlation coefficient | ORE | LOI | $SiO_2$ | $TiO_2$ | $Fe_2O_3$ | $Al_2O_3$ |
|---|---|---|---|---|---|---|
| ORE | 1.000 | **0.559** | -0.019 | **0.192** | **-0.573** | **0.571** |
| LOI | **0.559** | 1.000 | **-0.208** | **0.396** | **-0.959** | **0.954** |
| $SiO_2$ | -0.019 | **-0.208** | 1.000 | **-0.103** | 0.019 | **-0.127** |
| $TiO_2$ | **0.192** | **0.396** | **-0.103** | 1.000 | **-0.452** | **0.421** |
| $Fe_2O_3$ | **-0.573** | **-0.959** | 0.019 | **-0.452** | 1.000 | **-0.989** |
| $Al_2O_3$ | **0.571** | **0.954** | **-0.127** | **0.421** | **-0.989** | 1.000 |

*In bold, significant values (except diagonal) at the level of significance alpha=0.050 (two-tailed test)*

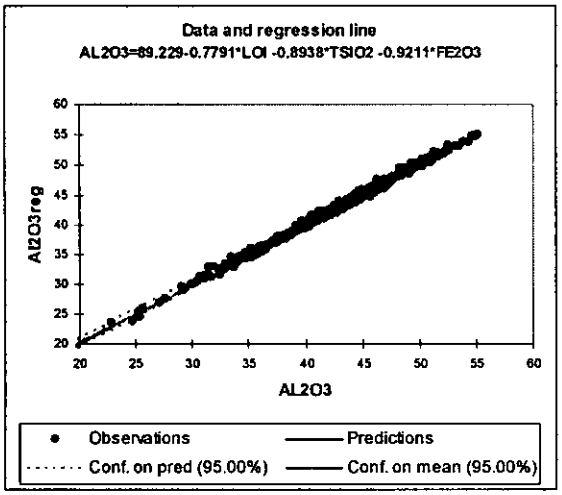



**Fig 20.1.3c $Al_2O_3$ Regression – Reserve Composites – $R^2$ 0.995**

**Table 20.1.3e Matrix of Pearson Correlation Coef. - Reserve Grade Accumulations**

| Pearson correlation coefficient | ORE | LOI | $SiO_2$ | $TiO_2$ | $Fe_2O_3$ | $Al_2O_3$ |
|---|---|---|---|---|---|---|
| ORE | 1.000 | **0.992** | **0.703** | **0.967** | **0.913** | **0.990** |
| LOI | **0.992** | 1.000 | **0.681** | **0.966** | **0.860** | **0.999** |
| $SiO_2$ | **0.703** | **0.681** | 1.000 | **0.683** | **0.605** | **0.691** |
| $TiO_2$ | **0.967** | **0.966** | **0.683** | 1.000 | **0.852** | **0.966** |
| $Fe_2O_3$ | **0.913** | **0.860** | **0.605** | **0.852** | 1.000 | **0.847** |
| $Al_2O_3$ | **0.990** | **0.999** | **0.691** | **0.966** | **0.847** | 1.000 |

*In bold, significant values (except diagonal) at the level of significance alpha=0.050 (two-tailed test)*

### 20.1.4 Spatial Description

Spatial analysis is initiated with the mapping of relevant grades. It then proceeds with the checking of proportional effects - i.e. the proportionality of local variances and means, and is concluded with variography to investigate and quantify spatial variability.

#### 20.1.4.1 Data Posting

***Resource Composites***

a) The thickness of top soil + overburden is generally thin (< 0.5 m soil) and rarely exceeds 1m, except on edges. Thin overburden cannot be blasted separately and must be included with ore.
b) Thin ore occurs along edges, notably in plateaux 7S and 15. Thick bauxite occurs in plateau 7N and 7S. In the main, the edge of bauxite remains open for all plateaux.
c) $SiO_2$ is remarkably low, except for a few odd values above 6%.
d) High $Fe_2O_3$ > 30% predominates along edges, but also occurs within plateaux.
e) Compositing ensures $Al_2O_3$ > 40%. High grade zones are noticeable on plateaux 7N and 7S.

***Reserve Composites***

f) Ore thickness shows the same distribution as that of resource composites.
g) $SiO_2$ reflects the grade distribution of resource composites, indicating marginal dilution with floor material.
h) $Fe_2O_3$ shows locally marked increases due to the inclusion of overburden, especially along edges.
i) The inclusion of overburden and minor dilution with floor material depresses $Al_2O_3$ on the ore body edges.

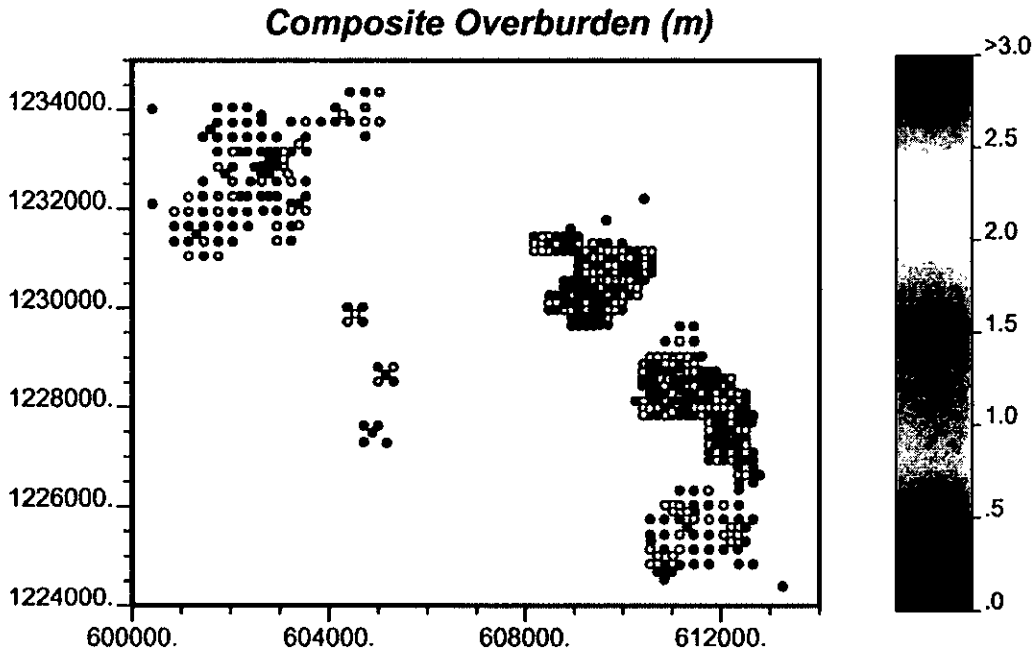



**Fig 20.1.4.1a Resource Composite – Top Soil + Overburden Thickness**

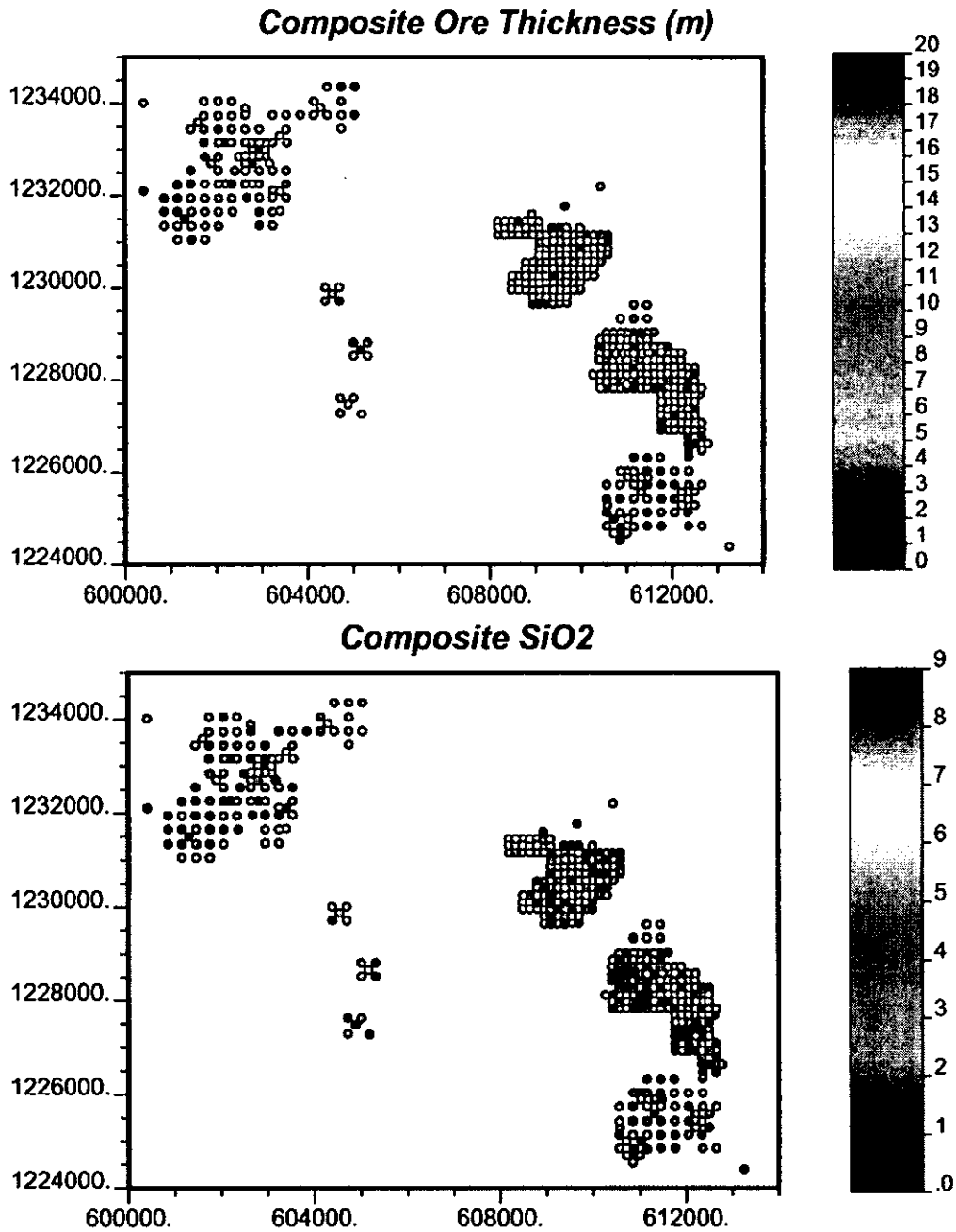



**Fig 20.1.4.1b Resource Composite – Ore Thickness and $SiO_2$**

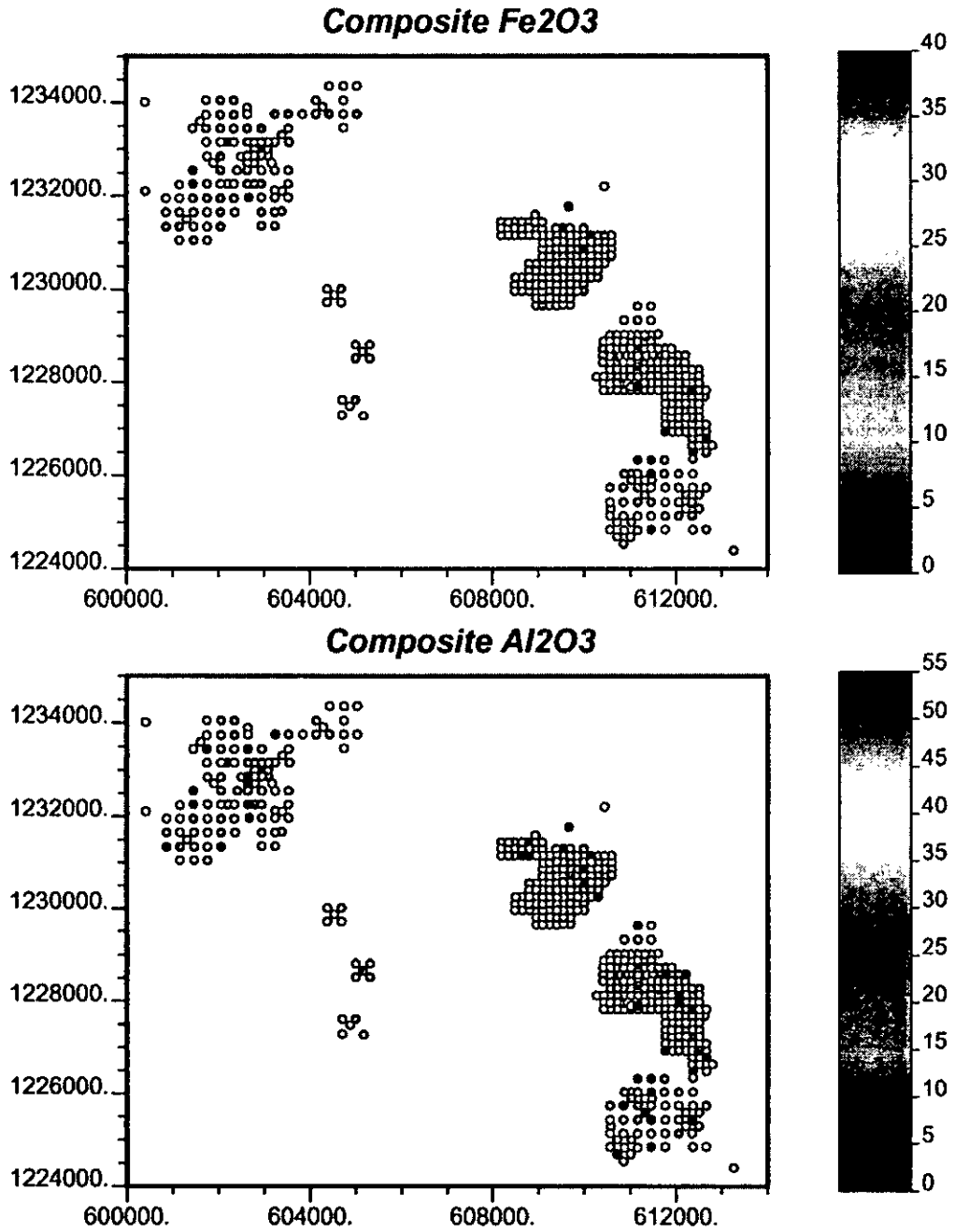



**Fig 20.1.4.1c Resource Composite – $Fe_2O_3$ and $Al_2O_3$**

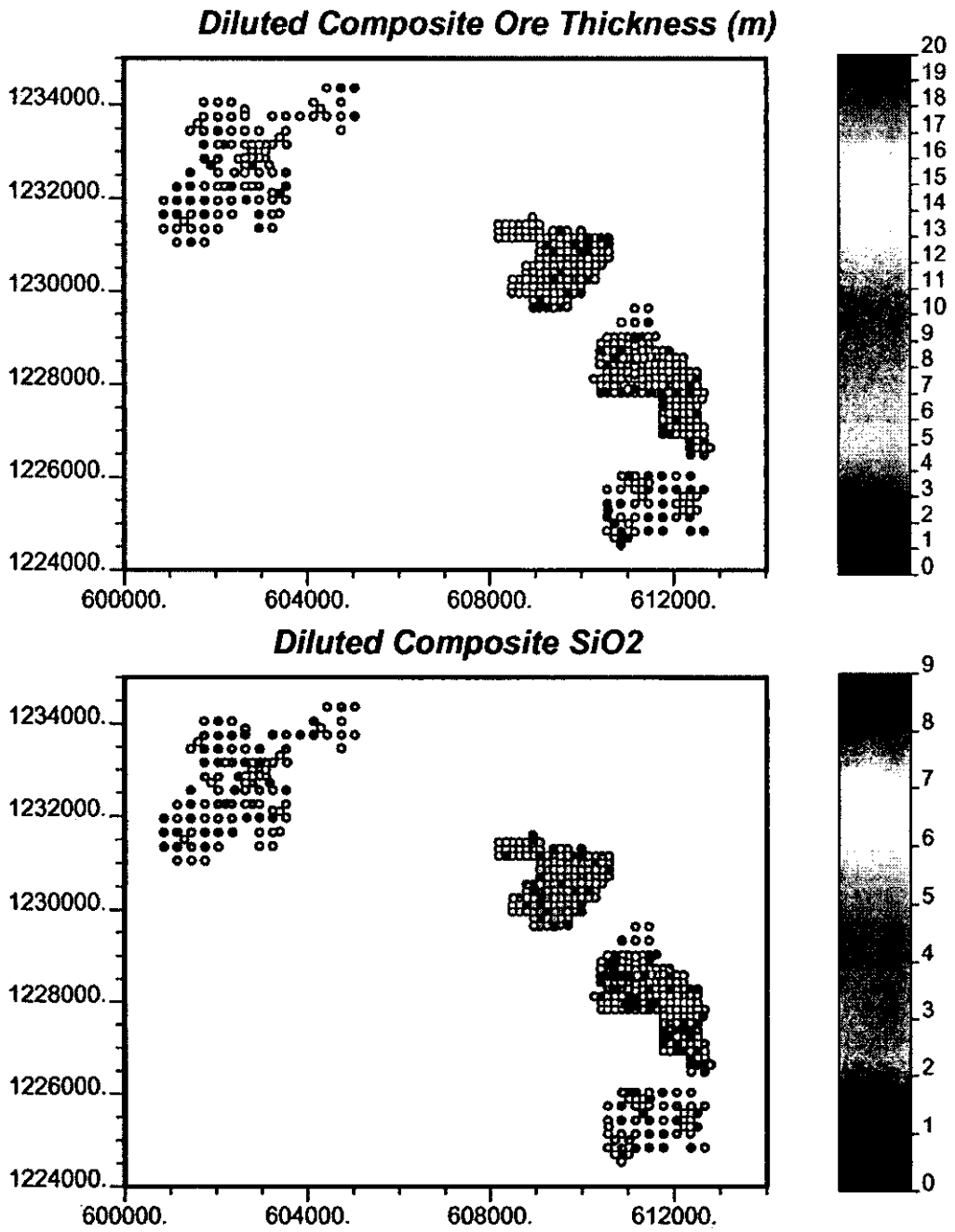



**Fig 20.1.4.1d Reserve Composite – Ore Thickness and $SiO_2$**

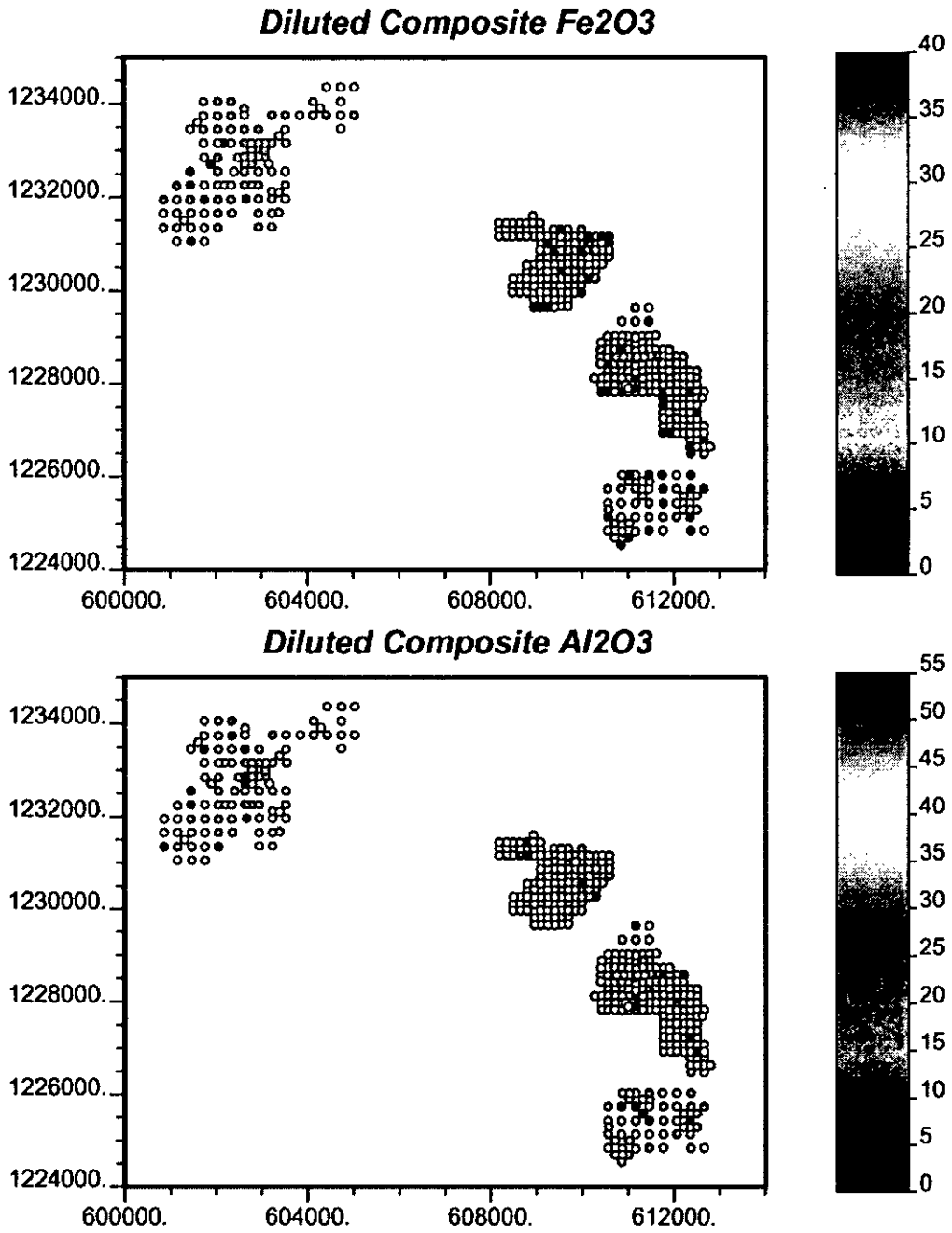



**Fig 20.1.4.1e Reserve Composite – $Fe_2O_3$ and $Al_2O_3$**

### 20.1.4.2 Proportional Effects

Proportional effects reflect local variability of grades and ore thickness, which may cause difficulties in the interpretation of variograms and necessitate the use of relative variograms more robust to such changes.

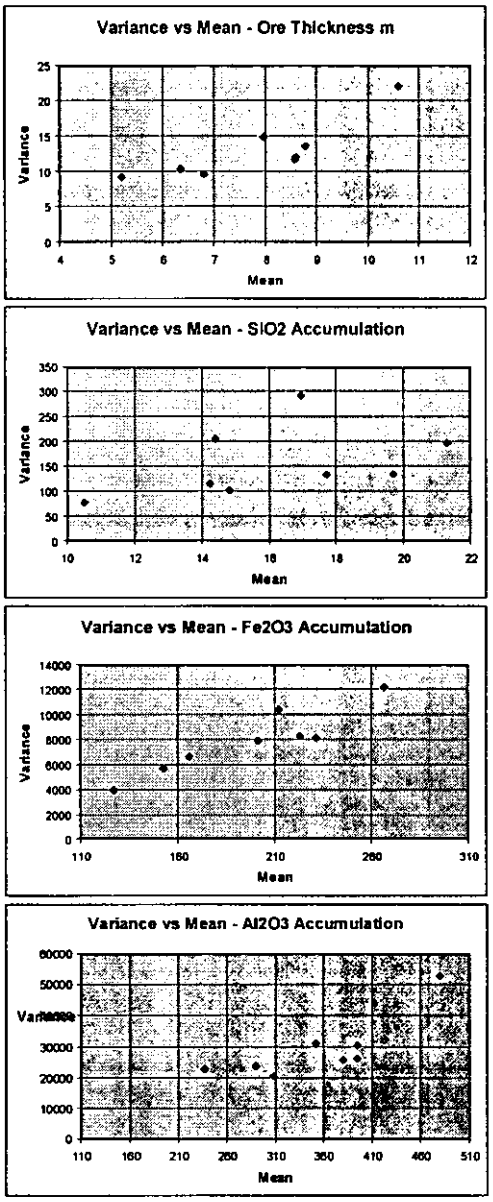



**Fig 20.1.4.2a Proportional Effect Resource Composites**

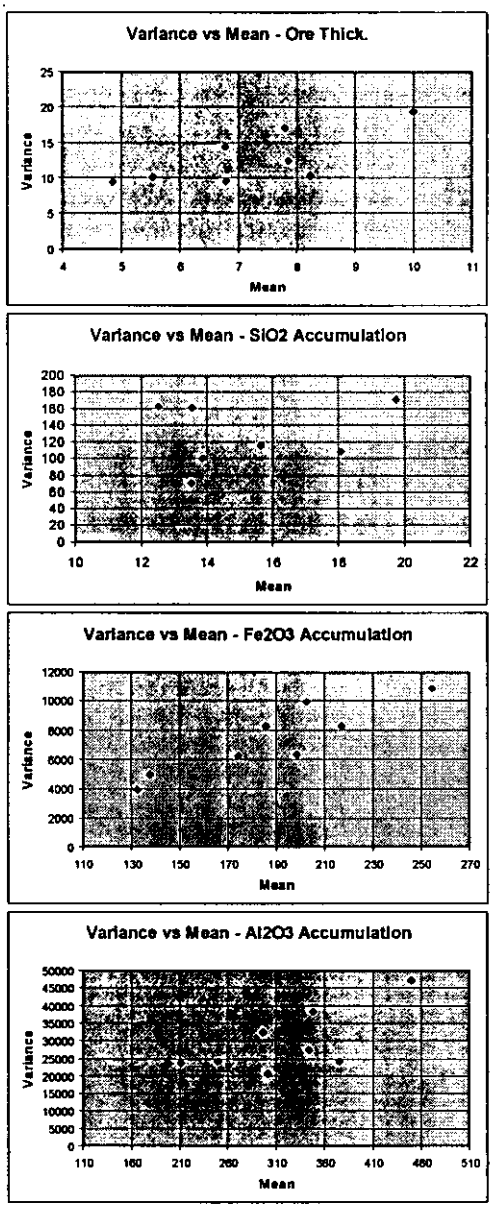



**Fig 20.1.4.2b Proportional Effect Reserve Composites**

Proportional effects were measured on grade accumulations obtained from windows containing 46 to 78 data points in plateaux 2, 7 and 15.

Noticeable, but moderate proportional effects are observed for ore thickness and the accumulations of $SiO_2$, $Fe_2O_3$ and $Al_2O_3$. This indicates that the variability of grade accumulations tends to increase with local averages, in other words thick and/or high grade ore panels tend to show higher variability. However, variography did not show the need for applying relative variograms and ordinary kriging used for modelling assumes local grade stationarity within the search range (500 m), which is deemed to be the case. It is concluded that the minor proportional effects observed will not influence significantly local grade estimates.

## 20.2 Variography

**Resource Composites**
All directional variograms across the full dataset and plateaux 2, 7 and 15, are regular - with ranges of the order of 600 m and relatively low nugget effects - and comparable for ore thickness and all grade accumulations except for $SiO_2$, which shows a shorter range of the order of 400 m.

Per plateau, variograms reveal significant differences reflecting the drill grid density, the absence or presence of close spaced drill holes, and the specificity of each deposit depicted earlier in this section. In the main, the variograms are still regular, with ranges and nugget effects of the same order as noted above.

No significant anisotropy was found over the ranges of variograms. For larger distances, the predominance of drill hole in a NNW-SSE direction impacts on the variogram maps.

K independent samples comparisons (Kruskal-Wallis) on resource composites showed significant differences between the plateaux, for all grades and thickness except $SiO_2$ and $Al_2O_3$.

**Overburden and Bauxite Floor**
Of interest are the variograms of overburden displaying a pure nugget effect and that of the bauxite floor level, which shows a range of approximately 50 meters.

**Reserve Composites**
Across plateaux 2, 7 and 15, variograms remain regular with ranges similar to the resource composites, although the nugget effects tend to be higher.

The inclusion of overburden in the intercept, the constraint of a minimum intercept thickness and the random loss and dilution at the footwall induce a higher spatial variability, revealed in deposits consisting of a thinner bauxite layer – more susceptible to dilution - and covered by the 300 m drill grid. The more affected is plateau 15, for which variograms become erratic, and the least affected is plateau 7, which is the thickest and most densely drilled.

K independent samples comparisons (Kruskal-Wallis) on reserve composites showed significant differences between the plateaux, for all grades and thickness except $SiO_2$.

Summing up, deposits show sufficient differences in terms of grades, thickness and variability to require modelling with specific parameters and variograms.

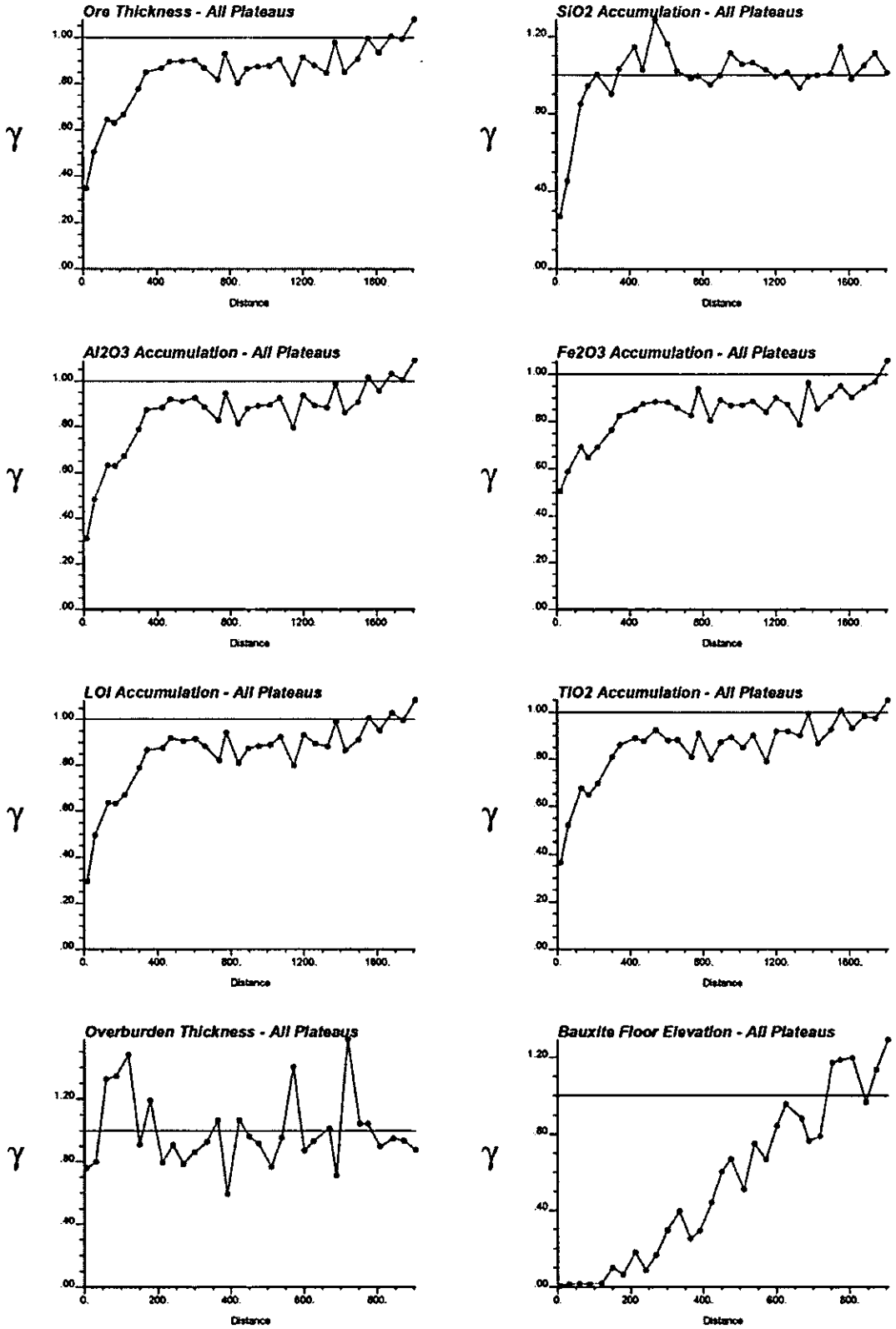



**Fig 20.1.4.3a All Direction Variogram - Resource Composites – Full Dataset**

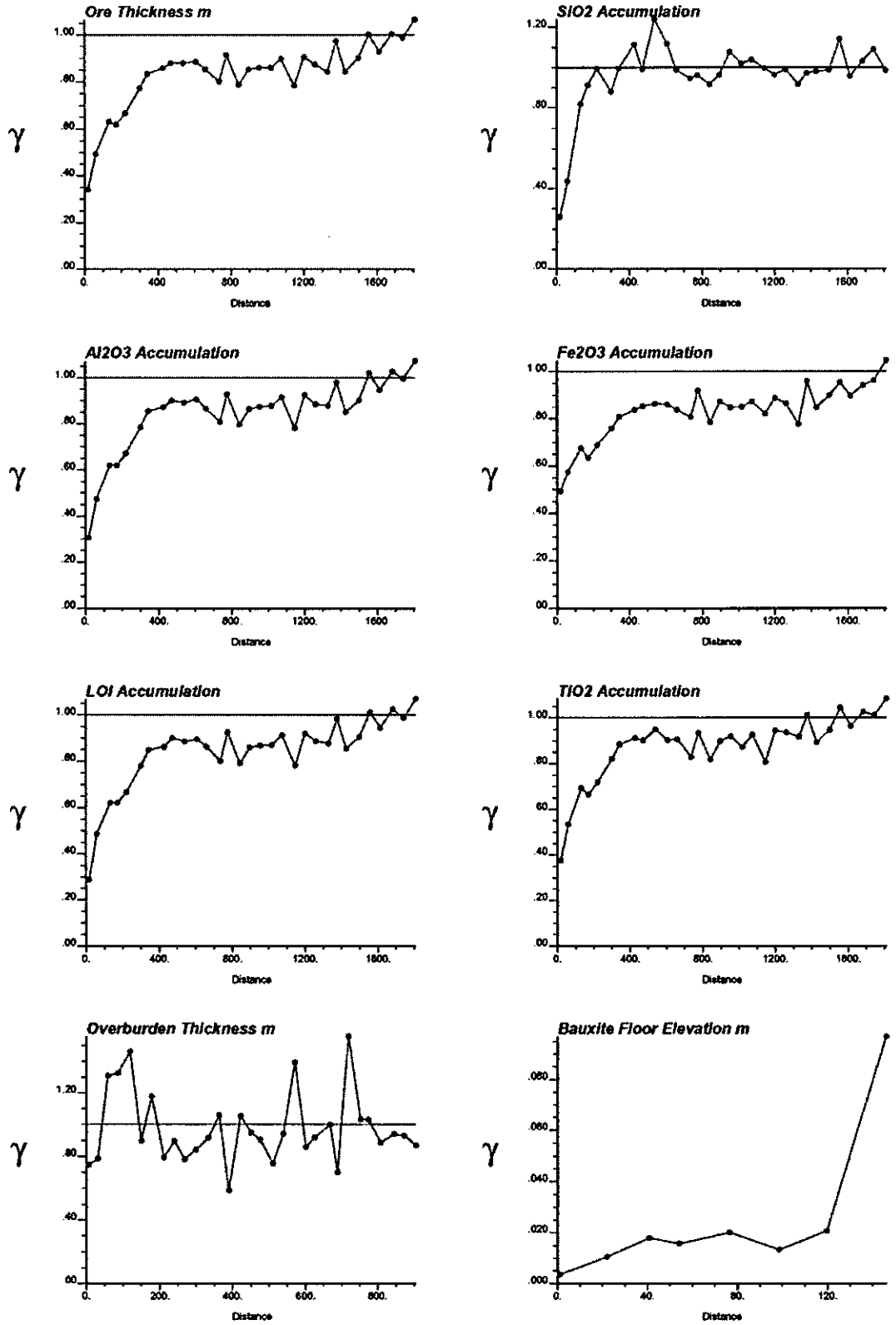



**Fig 20.1.4.3b All Direction Variogram - Resource Composites–Plateaux 2, 7 and 15**

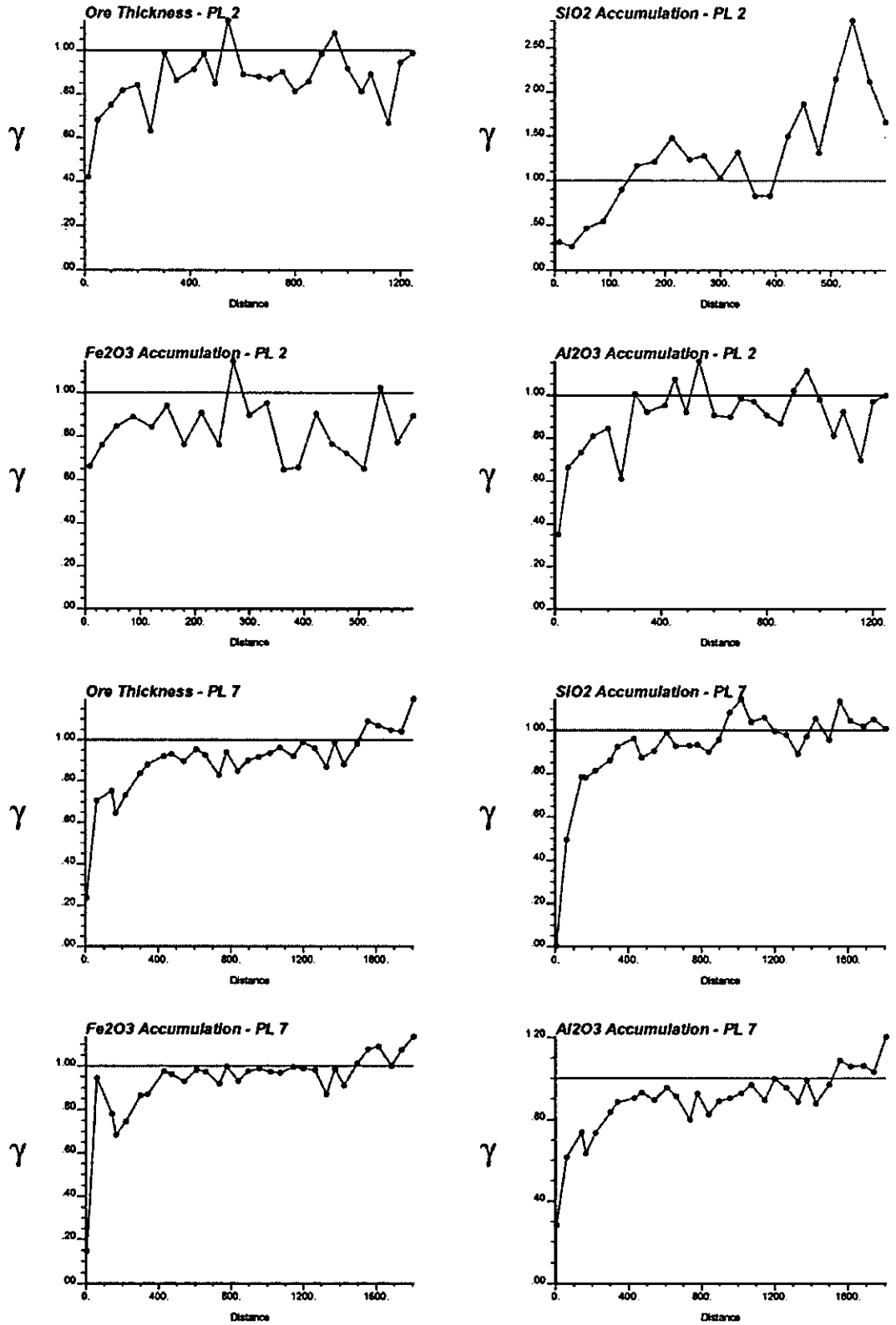



**Fig 20.1.4.3c All Direction Variogram - Resource Composites – Plateaux 2 and 7**

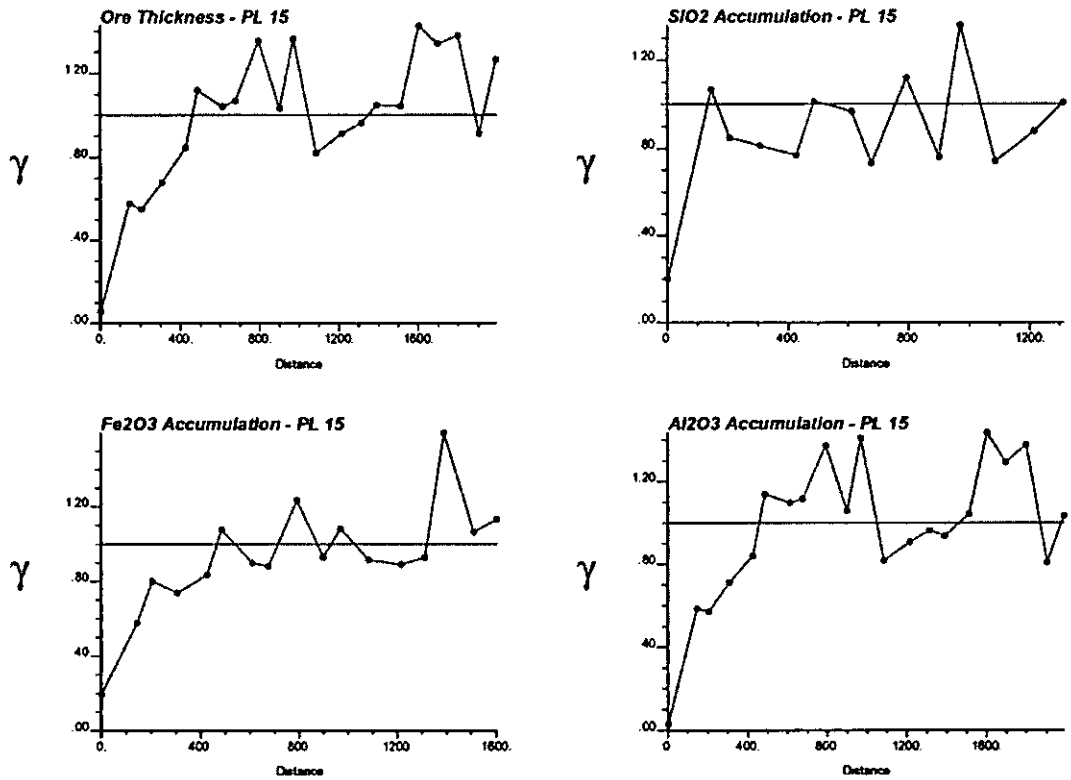
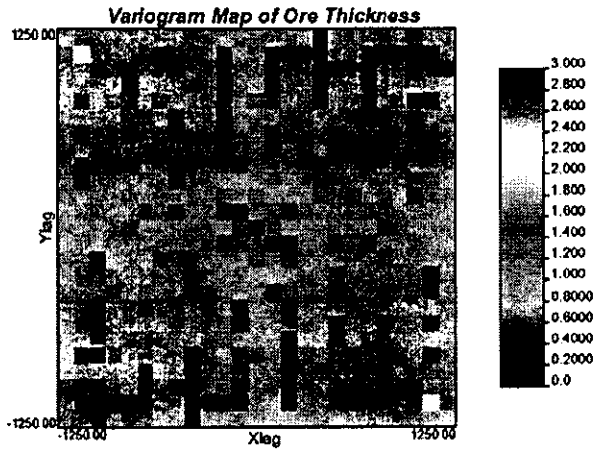


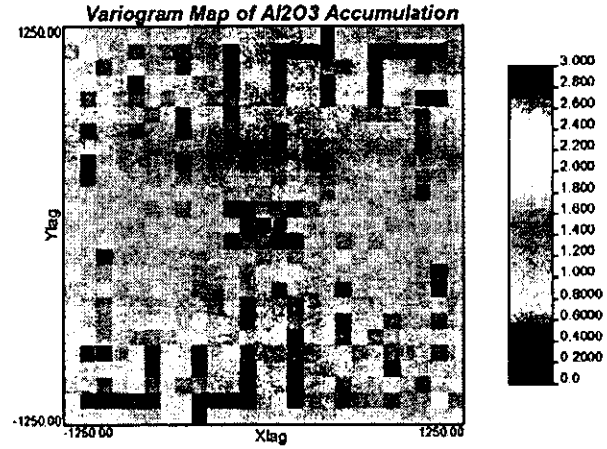

**Fig 20.1.4.3d All Direction Variogram - Resource Composites – Plateau 15**

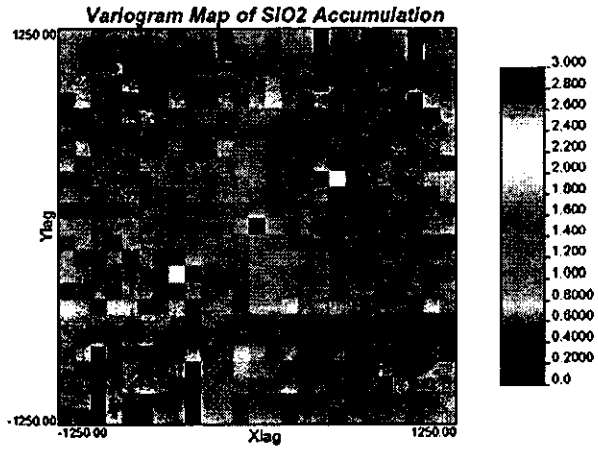
Variograms are traditionally presented as 1-D curves as a function of distance along a particular direction (as shown above). The variogram maps, shown overleaf, are 2-D plots of the sample semivariogram for all experimentally available separation vectors and provide a global view of the variogram values in all directions. Directions of anisotropy are usually evident from a variogram map.

Within the range covered - 1250m from the central position - there is no obvious anisotropy in the variogram maps of all plateaux.

For specific plateau, the grid density is usually insufficient to show conclusive evidence of anisotropy, except for plateau 7 which over the available variogram ranges (maximum 700m) does not show clear signs of anisotropy.



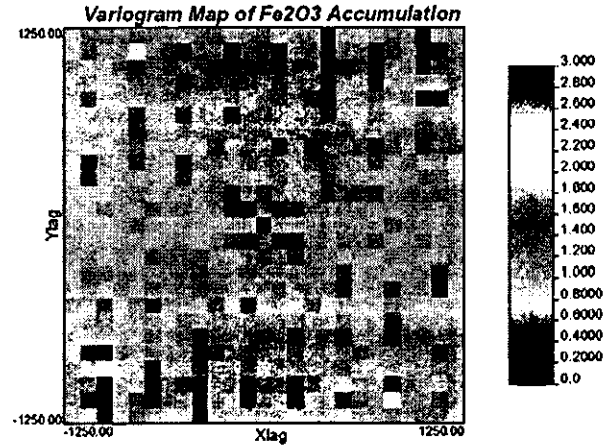
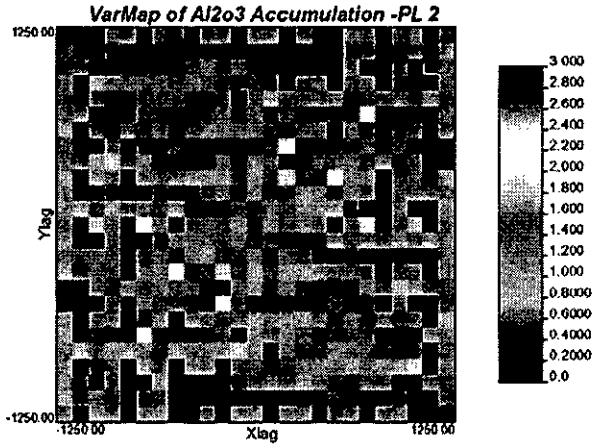
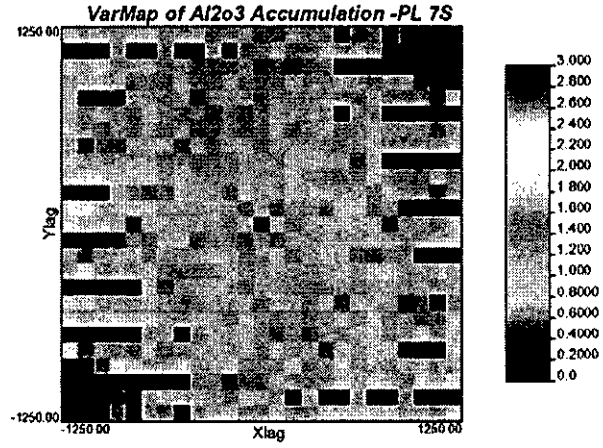
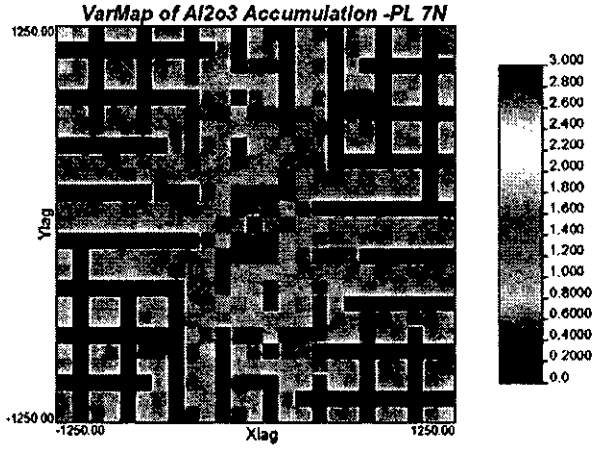




**Fig 20.1.4.3e Variogram Map– All Plateaux Resource Composites**



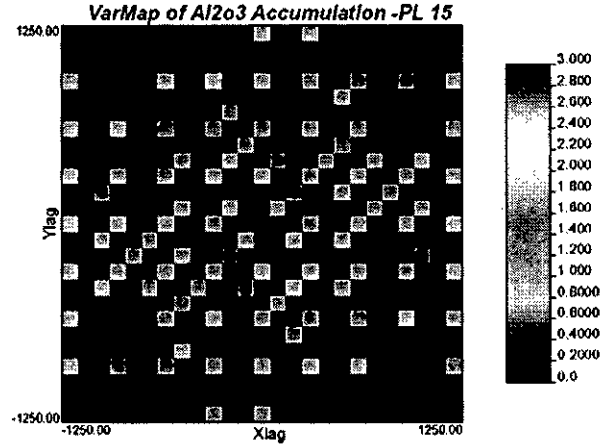




**Fig 20.1.4.3f Variogram Map– Per Plateau Resource Composites**

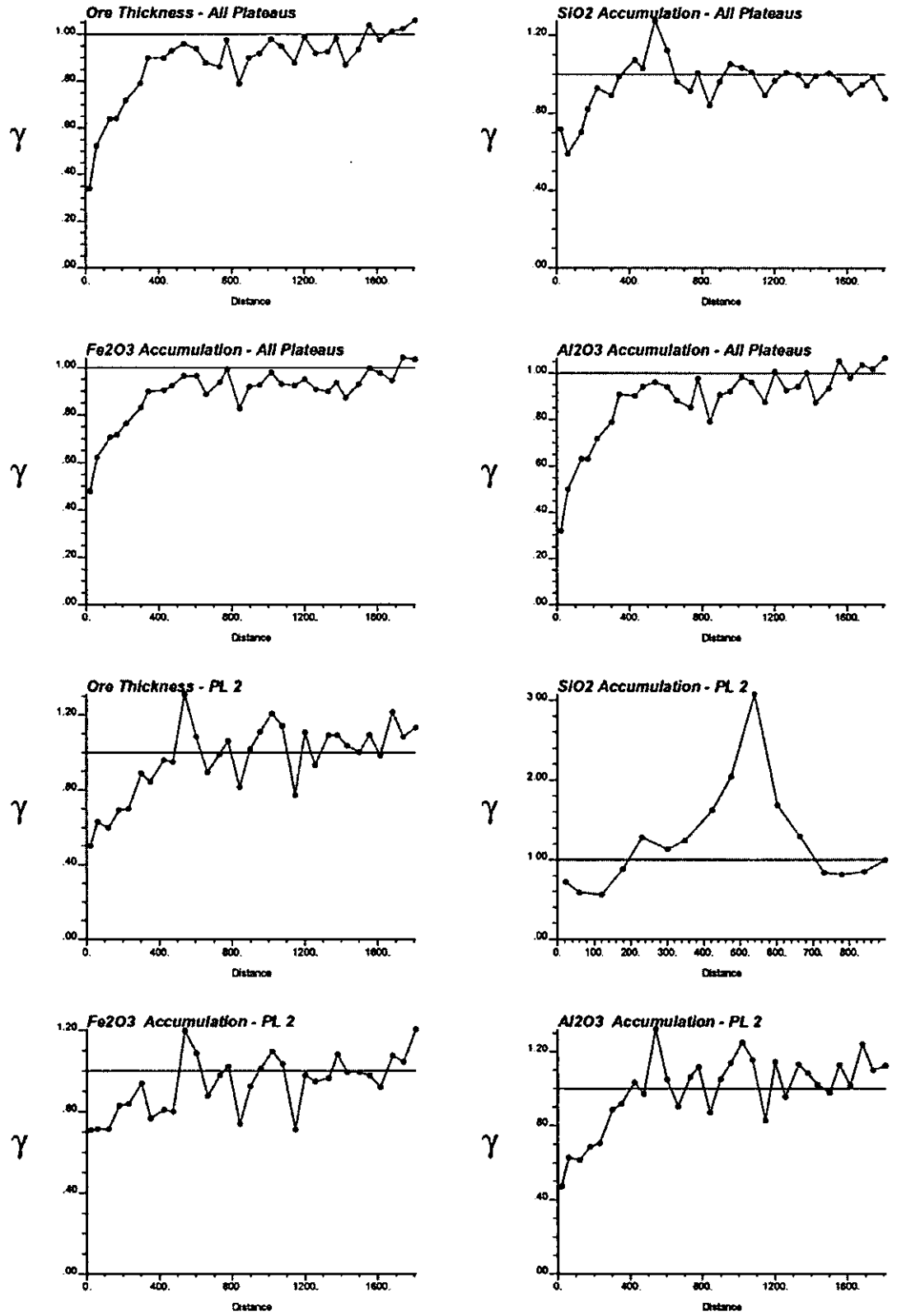



**Fig 20.1.4.3g All Direction Variogram - Reserve Composites – All Plateaux & PL 2**

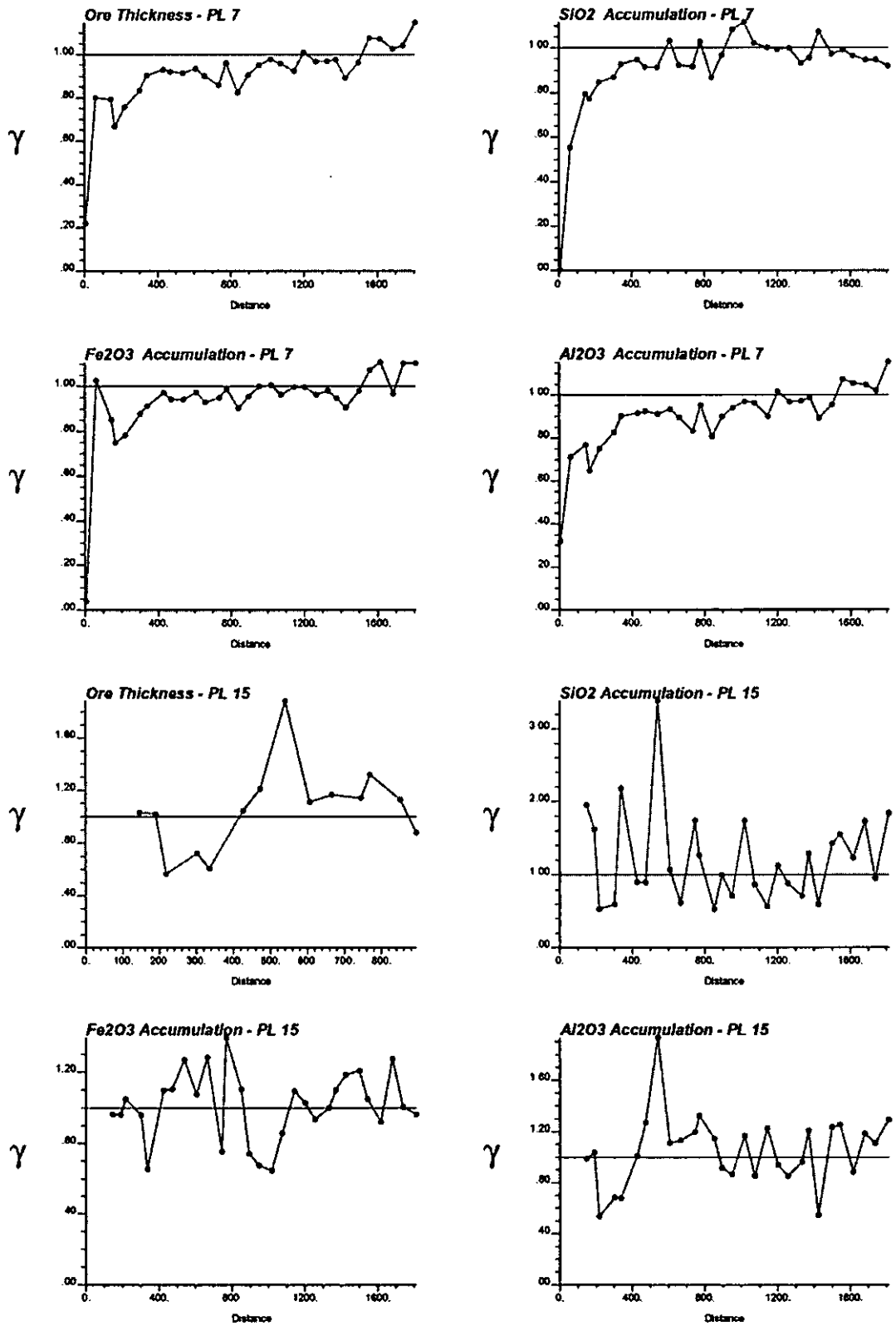



**Fig 20.1.4.3h All Direction Variogram- Reserve Composites –Plateaux 7 & 15**

**Linear Dependence of Grades**

Full assays are adding to approximately 100% and, in addition, major oxides and LOI are correlated to a significant degree. Interpolation of grades or grade accumulations must not change this linear dependence.

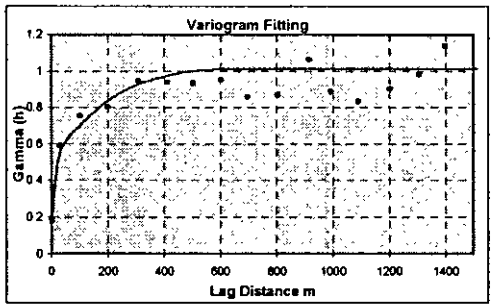
Inverse distance interpolation satisfies the linear dependence of grades. With Ordinary Kriging (OK), the standard approach to satisfy the linear dependence of grades is to use a single variogram for all relevant grades and ore thickness. A common variogram is selected to fit the most important variables, primarily $Al_2O_3$ and ore thickness.

**Variogram Models**

Based on the above considerations, single variograms, specific for each deposit and fitting the main grade accumulations and ore thickness, will be used for modelling.

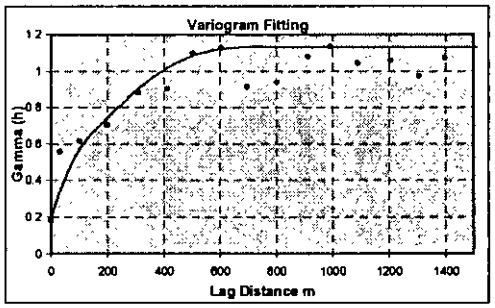
Main variograms are shown for each plateau in Figs 20.1.4.3i to k, while fitting a variogram common to the main grade accumulations and thickness selection is shown in Figs 20.1.4.3la and b.

I



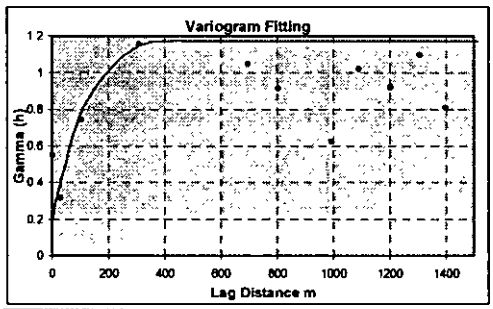

| Ore Thickness m | | | Plateau 2 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.35 | A1 | 42 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.20 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.28 | A3 | 600 | Nugget | 0.18 | | |

V



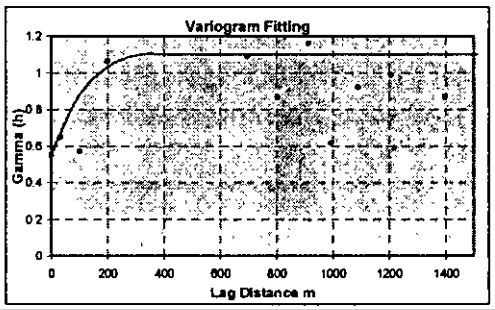

| Ore Thickness m | | | Plateau 2 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.20 | A1 | 100 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.30 | A2 | 500 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.45 | A3 | 700 | Nugget | 0.18 | | |

II



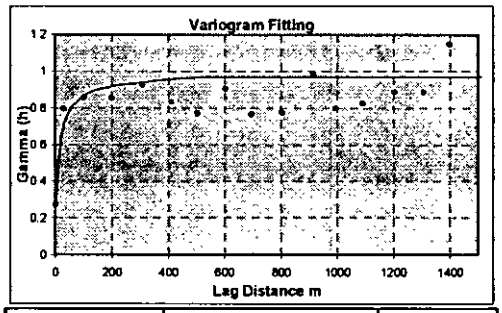

| SiO2 Accumulation | | | Plateau 2 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.30 | A1 | 120 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.30 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.37 | A3 | 400 | Nugget | 0.20 | | |

VI



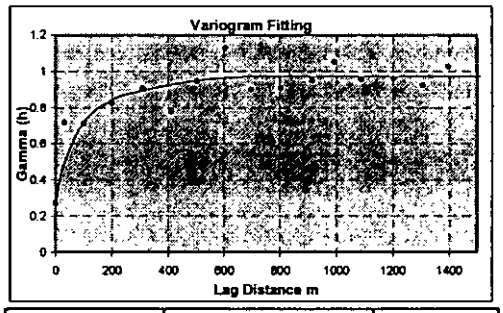

| SiO2 Accumulation | | | Plateau 2 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.20 | A1 | 150 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.15 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.20 | A3 | 350 | Nugget | 0.55 | | |

III



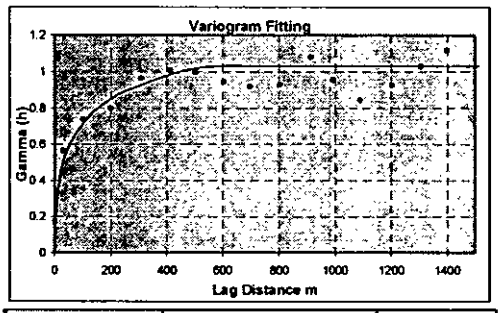

| Fe2O3 Accumulation | | | Plateau 2 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.40 | A1 | 40 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.20 | A2 | 150 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.10 | A3 | 600 | Nugget | 0.27 | | |

VII



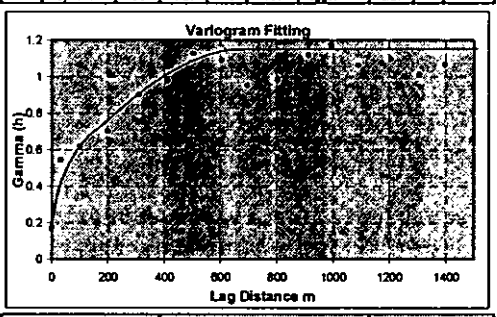

| Fe2O3 Accumulation | | | Plateau 2 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.28 | A1 | 80 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.22 | A2 | 250 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.20 | A3 | 700 | Nugget | 0.27 | | |

IV




| Al2O3 Accumulation | | | Plateau 2 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.33 | A1 | 50 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.18 | A2 | 200 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.35 | A3 | 600 | Nugget | 0.17 | | |

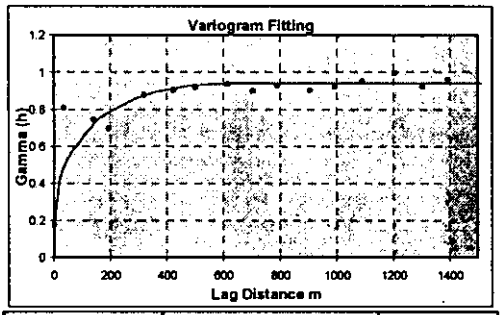
VIII




| Al2O3 Accumulation | | | Plateau 2 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.30 | A1 | 70 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.30 | A2 | 850 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.38 | A3 | 700 | Nugget | 0.17 | | |

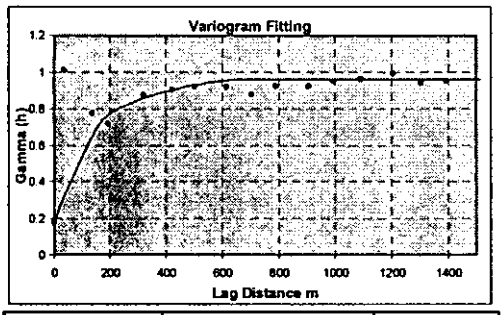
**Fig 20.1.4.3i All Direction Variogram Models - Plateau 2**

I



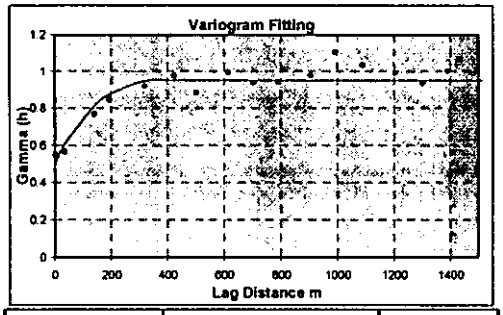

| Ore Thickness m | | | Plateau 7 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.33 | A1 | 60 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.20 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.23 | A3 | 600 | Nugget | 0.18 | | |

V



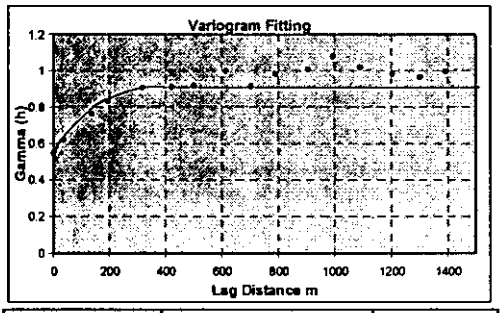

| Ore Thickness m | | | Plateau 7 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.15 | A1 | 200 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.35 | A2 | 250 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.28 | A3 | 700 | Nugget | 0.18 | | |

II



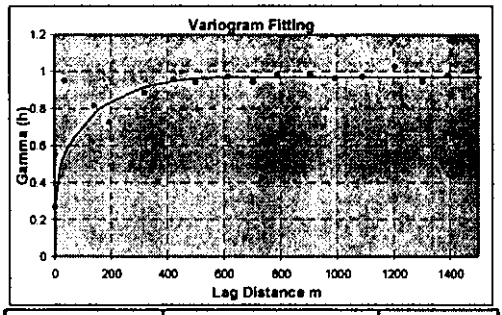

| SiO2 Accumulation | | | Plateau 7 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.10 | A1 | 100 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.15 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.20 | A3 | 350 | Nugget | 0.50 | | |

VI



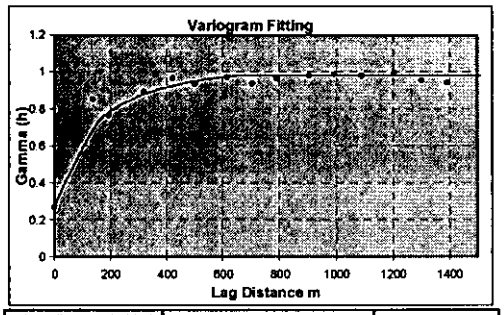

| SiO2 Accumulation | | | Plateau 7 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.08 | A1 | 100 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.09 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.19 | A3 | 350 | Nugget | 0.55 | | |

III



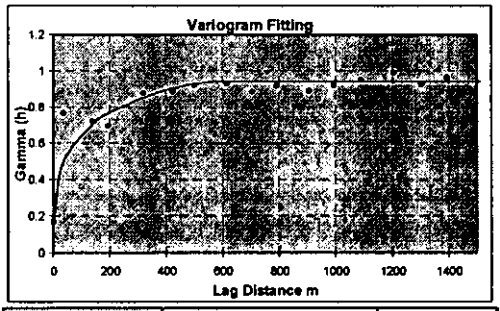

| Fe2O3 Accumulation | | | Plateau 7 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.30 | A1 | 60 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.20 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.20 | A3 | 600 | Nugget | 0.27 | | |

VII



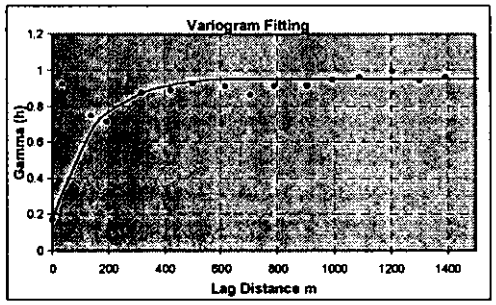

| Fe2O3 Accumulation | | | Plateau 7 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.25 | A1 | 200 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.18 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.28 | A3 | 700 | Nugget | 0.27 | | |

IV




| Al2O3 Accumulation | | | Plateau 7 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.30 | A1 | 50 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.15 | A2 | 220 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.32 | A3 | 800 | Nugget | 0.17 | | |

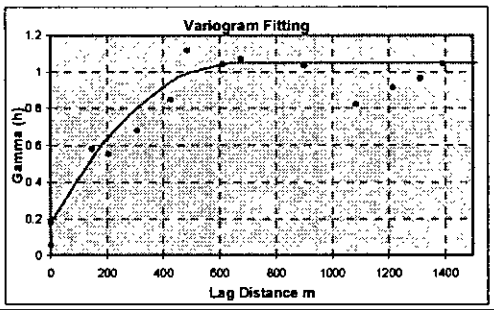
VIII




| Al2O3 Accumulation | | | Plateau 7 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.25 | A1 | 180 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.25 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.28 | A3 | 800 | Nugget | 0.17 | | |

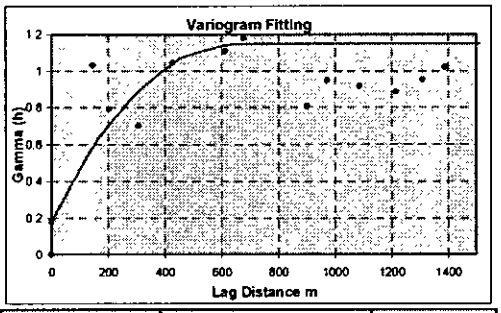
**Fig 20.1.4.3j All Direction Variogram Models - Plateau 7**

I



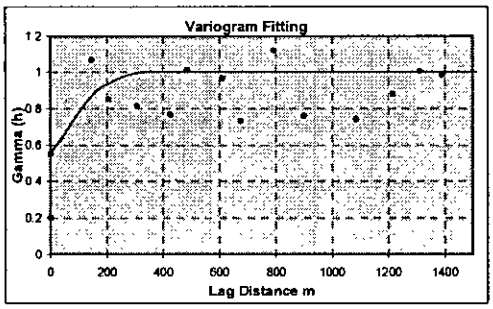

| Ore Thickness m | | | Plateau 15 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.10 | A1 | 250 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.35 | A2 | 550 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.42 | A3 | 700 | Nugget | 0.18 | | |

V



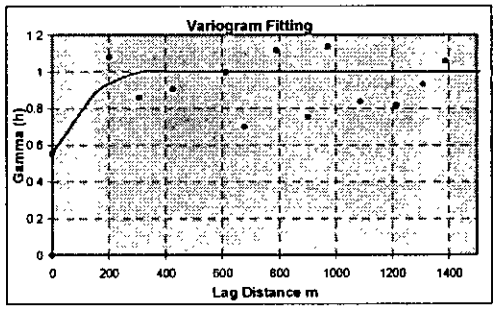

| Ore Thickness m | | | Plateau 15 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.10 | A1 | 200 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.37 | A2 | 500 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.50 | A3 | 700 | Nugget | 0.18 | | |

II



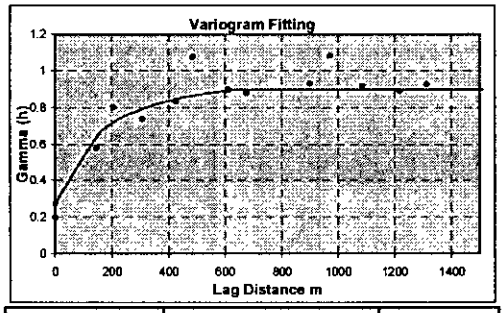

| SiO2 Accumulation | | | Plateau 15 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.10 | A1 | 100 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.15 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.20 | A3 | 350 | Nugget | 0.55 | | |

VI



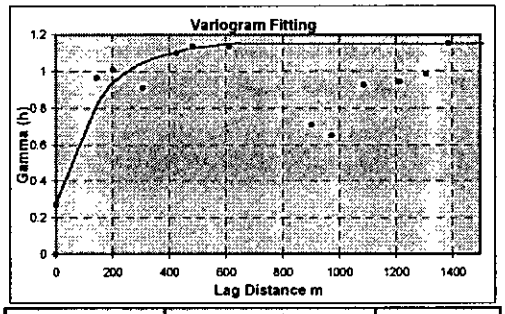

| SiO2 Accumulation | | | Plateau 15 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.10 | A1 | 100 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.15 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.20 | A3 | 350 | Nugget | 0.55 | | |

III



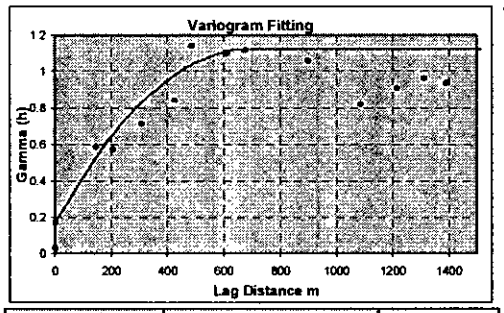

| Fe2O3 Accumulation | | | Plateau 15 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.20 | A1 | 200 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.15 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.25 | A3 | 700 | Nugget | 0.27 | | |

VII



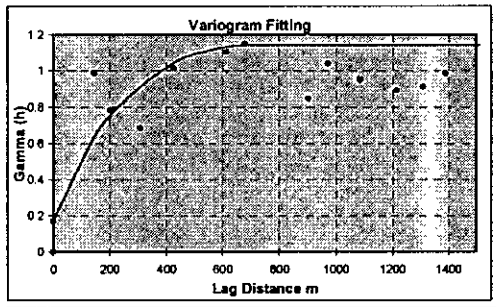

| Fe2O3 Accumulation | | | Plateau 15 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.23 | A1 | 200 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.35 | A2 | 300 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.30 | A3 | 650 | Nugget | 0.27 | | |

IV



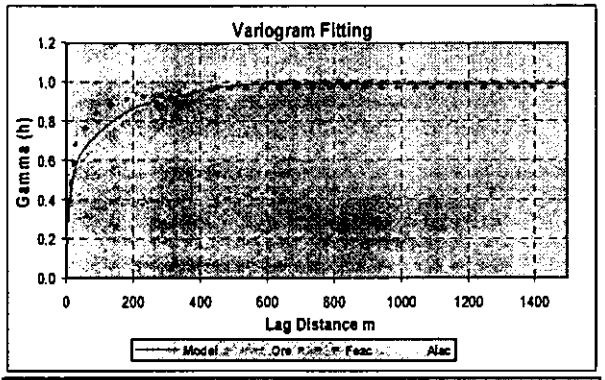

| Al2O3 Accumulation | | | Plateau 15 | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.15 | A1 | 300 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.40 | A2 | 650 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.40 | A3 | 700 | Nugget | 0.17 | | |

VIII

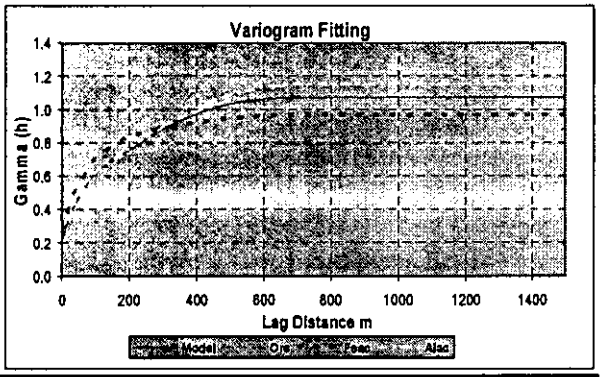



| Al2O3 Accumulation | | | Plateau 15 Diluted Model | | | | All Directions | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | C1 | 0.22 | A1 | 200 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | C2 | 0.30 | A2 | 500 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | C3 | 0.45 | A3 | 700 | Nugget | 0.17 | | |

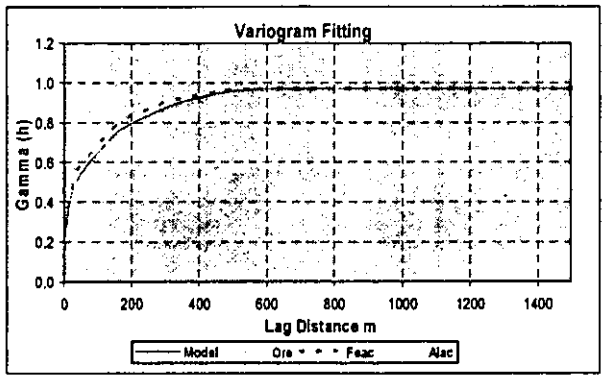
**Fig 20.1.4.3k All Direction Variogram Models - Plateau 15**



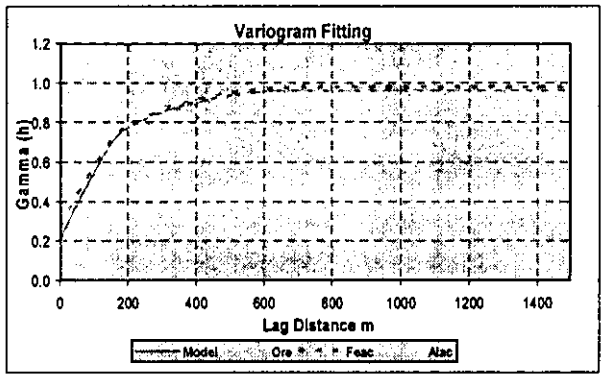

| Main Variograms | | | | Plateau 2 | | | Direction I | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | $C_1$ | 0.36 | $A_1$ | 44 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | $C_2$ | 0.19 | $A_2$ | 220 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | $C_3$ | 0.24 | $A_3$ | 600 | Nugget | 0.20 | | |




| Main Variograms | | | | Plateau 2 Diluted Model | | | Direction I | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | $C_1$ | 0.26 | $A_1$ | 60 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | $C_2$ | 0.27 | $A_2$ | 500 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | $C_3$ | 0.34 | $A_3$ | 700 | Nugget | 0.20 | | |

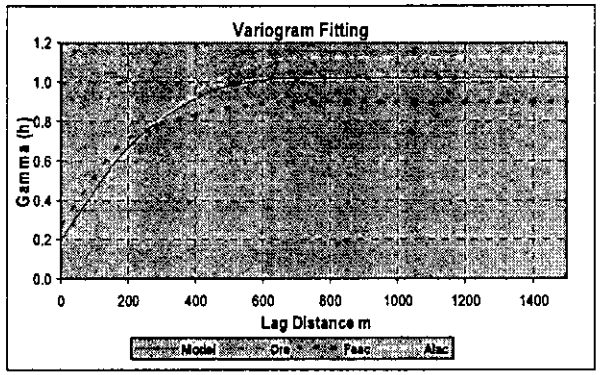



| Main Variograms | | | | Plateau 7 | | | Direction I | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | $C_1$ | 0.29 | $A_1$ | 57 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | $C_2$ | 0.18 | $A_2$ | 273 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | $C_3$ | 0.30 | $A_3$ | 600 | Nugget | 0.20 | | |

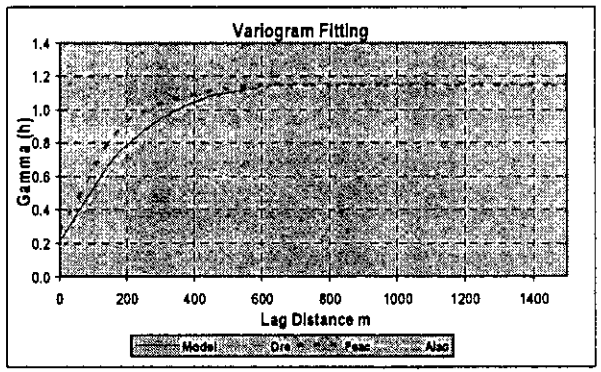



| Main Variograms | | | | Plateau 7 Diluted Model | | | Direction I | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | $C_1$ | 0.22 | $A_1$ | 190 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | $C_2$ | 0.26 | $A_2$ | 280 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | $C_3$ | 0.28 | $A_3$ | 660 | Nugget | 0.20 | | |

**Fig 20.1.4.3la Fitting Common Variograms**




| Main Variograms | | | | Plateau 16 | | | Direction I | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | $C_1$ | 0.15 | $A_1$ | 250 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | $C_2$ | 0.30 | $A_2$ | 500 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | $C_3$ | 0.37 | $A_3$ | 700 | Nugget | 0.20 | | |




| Main Variograms | | | | Plateau 16 Diluted Model | | | Direction I | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Spherical | $C_1$ | 0.18 | $A_1$ | 200 | Azimuth (°) | 0 | +/- | 90.00 |
| 1 | Spherical | $C_2$ | 0.34 | $A_2$ | 430 | Dip (°) | 0 | +/- | 0.00 |
| 1 | Spherical | $C_3$ | 0.41 | $A_3$ | 680 | Nugget | 0.21 | | |

**Fig 20.1.4.3lb Fitting Common Variograms**

**Table 20.1.4.3Fitting Common Variograms**

Standardized Variograms, ranges $A_1$ to $A_3$ are in meter

| Plateau | $C_o$ | $C_1$ | $C_2$ | $C_3$ | $A_1$ | $A_2$ | $A_3$ |
|---|---|---|---|---|---|---|---|
| 2 | 0.20 | 0.36 | 0.19 | 0.24 | 44 | 220 | 600 |
| 2-diluted | 0.20 | 0.26 | 0.27 | 0.34 | 80 | 500 | 700 |
| 7 | 0.20 | 0.29 | 0.18 | 0.30 | 57 | 273 | 600 |
| 7-diluted | 0.20 | 0.22 | 0.26 | 0.28 | 190 | 280 | 660 |
| 15 | 0.20 | 0.15 | 0.30 | 0.37 | 250 | 500 | 700 |
| 15-diluted | 0.21 | 0.18 | 0.34 | 0.41 | 200 | 430 | 680 |

## 20.3 The Mine Plan

The availability of the bauxite reserves is an essential component of the Refinery project and accordingly, the objective of the mine plan is to secure a reliable supply of bauxite of the necessary quality and quantity, at the lowest cost, while ensuring responsible resource utilisation.

The mine plan details the mining approach, mining methods, equipment selection and the costs of mining. The costs are projected as for a Global Alumina owned-and-operated mining operation even though the mining operation may be contracted-out. This presentation provides a basis for comparison and evaluation of contractors' bids. Manpower requirements are estimated for an operation owned and operated by Global Alumina. In view of the mining operations being directly adjacent to Global Alumina's Refinery, the Mines Department is considered as falling under the general management, staff departments, social, training and health services of Global Alumina's local head office and facilities for the Refinery. Housing, power and water supply are for the same reason excluded from the mining estimates.

Mining methods are based on the nature of the bauxite deposits with its thin or often, absent, topsoil cover, the relatively flat topography of the plateaux and the bauxite which occurs as a blanket draped over the flat highs and higher parts of the flanks.

Environmental measures are given due priority and are fully incorporated in the mine plan. The mining areas are mostly un-populated and less suited to agriculture or similar uses. Rehabilitation of mined-out areas is carried out as an integral part of the mining operations. The mined-out footwall will be landscaped as it is exposed, to form a stable and durable drainage pattern. The work of rehabilitation of mined-out areas – including surface finish, plowing, harrowing and re-vegetation/re-forestation will be carried out concurrently or soon after completion of mining in the concerning area, as an ongoing activity over the duration of the project.

Other issues of environmental significance are silt contaminated run off from the mining area and the dumps, noise and dust. All these are to be substantially controlled by appropriate measures such as cut off drains above the mining areas, sediment traps along the watercourses and the use of watering trucks on mine roads to suppress dust. The necessary work involved will be carried out by the mine's Roads and Rehabilitation Unit which will also be responsible for the construction and maintenance of access roads, mine haul roads and haulage surfaces inside the mine.

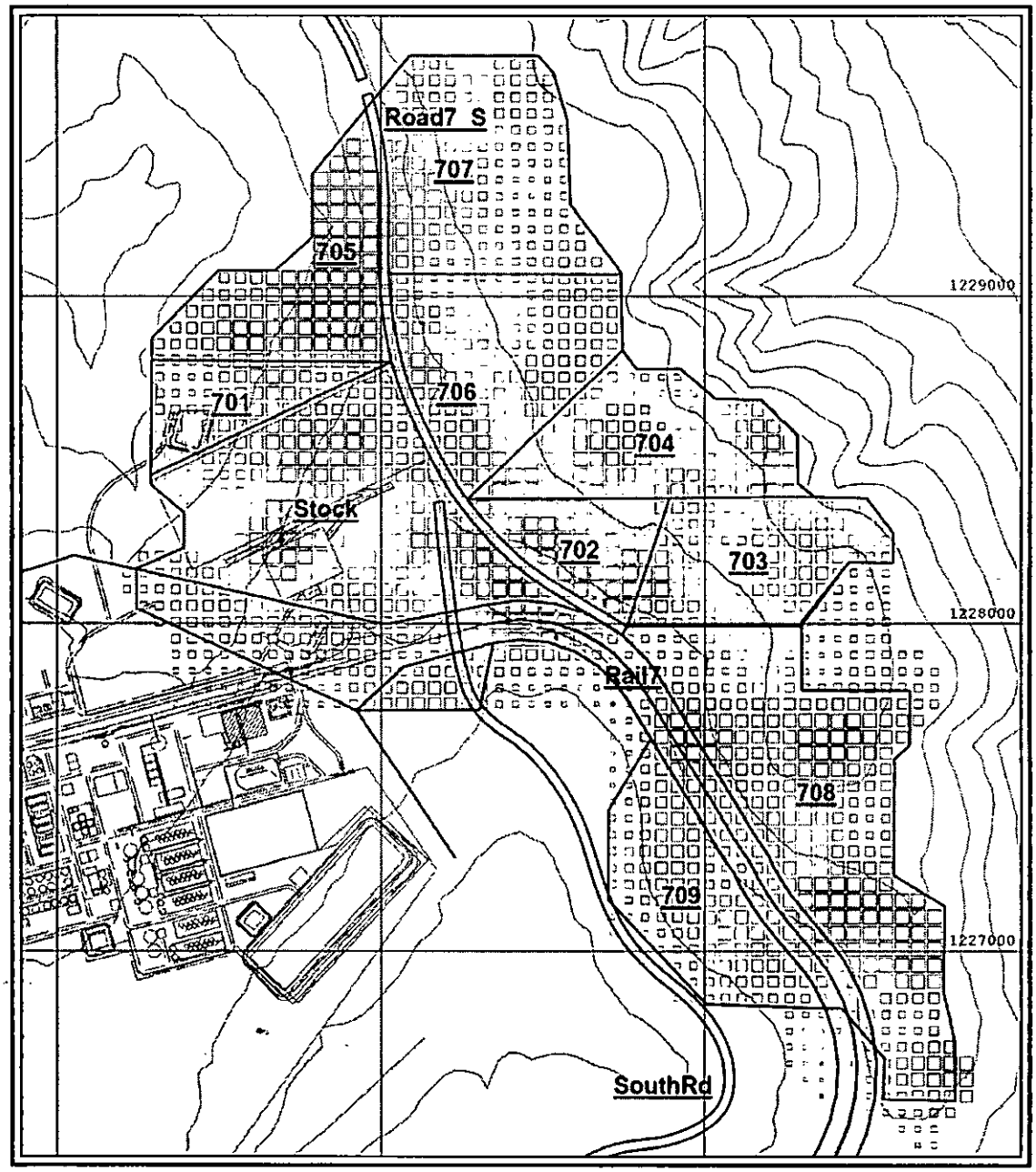
## 20.4 Mineral Reserve in Mining Panels

The reserves have been blocked out in mining panels of practical layout and dimensions from an operational point of view. For the purposes of grade control, panel boundaries are drawn to create higher grade and lower grade panels. Grade control is achieved by balancing the production rate between the panels to produce the required grade at any moment in time be it daily, weekly, monthly or yearly.

Mining panels for the first mining area, Plateau 7-Sud, are shown in Fig 20.4.1 and a full set of drawings for the other areas, used in the 25-Year ore production schedule, is presented in Section 26.2.2 Drawings, pages 2 to 7. The total Mineral Reserves, subdivided in panels for the purposes of production scheduling and grade control are detailed in Tables 20.4.1. Also

shown in this table are the average haul distances from the individual panels to the projected stockpile area.

**Fig. 20.4.1. Mining Panels Plateau 7-Sud, Panels 701 – 709**




Note: 50 x 50 m model ore blocks are shown with a colour coding for AA grade and a size relative to bauxite thickness.

## Table 20.4.1a Proven and Probable Mineral Reserve

| PLATEAU 7 SUD PROVEN RESERVE | | | | | | | | | | | PROBABLE RESERVE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Panel | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO2L1 |
| Road7_S | 900 | 37.6 | 0.2 | 9.8 | 24.2 | 2.2 | 2.3 | 26.5 | 44.2 | 1.1 | 300 | 38.0 | 0.3 | 9.6 | 24.3 | 1.9 | 2.2 | 26.8 | 44.3 | 0.9 |
| 701 | 1,800 | 37.2 | 0.1 | 7.7 | 23.9 | 1.4 | 2.3 | 27.4 | 44.4 | 0.7 | - | - | - | - | - | - | - | - | - | - |
| 702 | 2,700 | 41.1 | 0.2 | 11.3 | 25.5 | 2.1 | 2.5 | 22.4 | 46.9 | 1.0 | - | - | - | - | - | - | - | - | - | - |
| 703 | 3,700 | 39.5 | 0.4 | 7.9 | 24.8 | 2.2 | 2.7 | 23.7 | 45.9 | 1.1 | 100 | 38.7 | 0.1 | 6.4 | 24.5 | 1.7 | 2.7 | 25.3 | 45.2 | 0.8 |
| 704 | 4,400 | 41.2 | 0.3 | 8.6 | 25.6 | 2.3 | 2.4 | 22.6 | 46.6 | 1.1 | 100 | 41.5 | 0.5 | 8.8 | 25.7 | 2.2 | 2.3 | 22.3 | 46.9 | 1.1 |
| 705 | 3,100 | 35.9 | 0.3 | 9.8 | 23.4 | 1.9 | 2.2 | 28.4 | 43.4 | 1.0 | 1,600 | 37.7 | 0.2 | 10.8 | 24.1 | 1.7 | 2.2 | 27.3 | 44.1 | 0.8 |
| 706 | 3,900 | 38.2 | 0.3 | 7.5 | 24.4 | 2.5 | 2.3 | 25.9 | 44.3 | 1.2 | 500 | 37.3 | 0.1 | 7.0 | 24.0 | 2.1 | 2.4 | 28.4 | 42.6 | 1.0 |
| 707 | - | - | - | - | - | - | - | - | - | - | 4,400 | 39.0 | 0.2 | 6.7 | 24.7 | 2.0 | 2.4 | 25.8 | 44.7 | 1.0 |
| 708 | 8,700 | 37.8 | 0.2 | 8.4 | 24.1 | 2.1 | 2.6 | 26.1 | 44.5 | 1.1 | 500 | 38.8 | 0.2 | 8.9 | 23.8 | 2.2 | 2.4 | 27.8 | 43.3 | 1.1 |
| 709 *) | 3,700 | 37.6 | 0.1 | 7.3 | 24.1 | 1.4 | 2.2 | 28.0 | 43.7 | 0.7 | 400 | 37.2 | 0.0 | 7.4 | 23.9 | 1.6 | 2.5 | 27.7 | 43.7 | 0.8 |
| | 32,900 | 38.5 | 0.2 | 8.5 | 24.4 | 2.1 | 2.4 | 25.5 | 44.9 | 1.0 | 7,900 | 38.4 | 0.2 | 7.9 | 24.4 | 1.9 | 2.4 | 26.5 | 44.3 | 0.9 |

| PLATEAU 7 NORD PROVEN RESERVE | | | | | | | | | | | PROBABLE RESERVE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Panel | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO2L1 |
| 711 | 10,100 | 41.7 | 0.3 | 13.2 | 25.7 | 2.1 | 2.3 | 21.9 | 47.3 | 1.1 | 1,200 | 38.3 | 0.4 | 11.2 | 24.4 | 2.2 | 2.3 | 25.6 | 44.9 | 1.1 |
| 712 | 13,400 | 38.5 | 0.3 | 9.0 | 24.5 | 1.9 | 2.4 | 26.0 | 44.7 | 0.9 | 800 | 38.9 | 0.2 | 7.5 | 24.6 | 1.5 | 2.6 | 25.9 | 44.8 | 0.8 |
| 713 | 6,400 | 38.7 | 0.2 | 8.7 | 24.5 | 1.9 | 2.3 | 25.8 | 44.9 | 0.9 | - | - | - | - | - | - | - | - | - | - |
| 714 | 9,400 | 38.4 | 0.2 | 8.9 | 24.4 | 2.1 | 2.4 | 25.8 | 44.6 | 1.0 | - | - | - | - | - | - | - | - | - | - |
| 715 | 8,700 | 37.1 | 0.2 | 10.6 | 23.9 | 1.9 | 2.4 | 27.7 | 43.5 | 0.9 | 800 | 37.0 | 0.2 | 10.1 | 23.9 | 2.3 | 2.4 | 27.0 | 43.8 | 1.1 |
| | 48,000 | 38.9 | 0.2 | 10.1 | 24.6 | 2.0 | 2.4 | 25.4 | 45.0 | 1.0 | 2,600 | 38.0 | 0.3 | 10.0 | 24.3 | 2.1 | 2.4 | 26.1 | 44.5 | 1.0 |

| PLATEAU 15 PROVEN RESERVE | | | | | | | | | | | PROBABLE RESERVE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Panel | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO2L1 |
| 1501 | 2,100 | 41.1 | 0.1 | 6.4 | 25.4 | 1.6 | 2.5 | 23.0 | 46.9 | 0.8 | 2,400 | 42.7 | 0.0 | 6.5 | 26.1 | 1.5 | 2.8 | 21.3 | 47.8 | 0.7 |
| 1502 | 3,400 | 39.2 | 0.5 | 7.9 | 24.6 | 2.4 | 2.5 | 24.1 | 45.7 | 1.2 | 4,900 | 37.2 | 0.2 | 5.4 | 23.9 | 1.8 | 2.7 | 27.5 | 43.4 | 0.9 |
| 1503 | 1,600 | 34.6 | 0.3 | 4.6 | 22.9 | 2.2 | 2.8 | 29.9 | 41.6 | 1.1 | 4,200 | 37.1 | 0.2 | 5.3 | 23.9 | 2.3 | 2.7 | 27.3 | 43.1 | 1.1 |
| | 7,100 | 38.7 | 0.4 | 6.7 | 24.5 | 2.1 | 2.5 | 25.1 | 45.1 | 1.0 | 11,500 | 38.3 | 0.2 | 5.6 | 24.4 | 1.9 | 2.7 | 26.2 | 44.2 | 0.9 |

| PLATEAU 2 PROVEN RESERVE | | | | | | | | | | | PROBABLE RESERVE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Panel | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO2L1 |
| 201 | 200 | 39.4 | 0.2 | 8.7 | 24.9 | 2.8 | 2.3 | 24.4 | 44.7 | 1.4 | 14,700 | 38.5 | 0.2 | 7.7 | 24.5 | 2.3 | 2.7 | 25.7 | 43.9 | 1.1 |
| 202 | - | - | - | - | - | - | - | - | - | - | 13,400 | 39.9 | 0.1 | 7.2 | 25.0 | 2.4 | 2.6 | 23.9 | 45.4 | 1.2 |
| 203 | 4,300 | 39.6 | 0.2 | 7.2 | 24.9 | 2.5 | 2.6 | 23.1 | 46.1 | 1.2 | 7,000 | 39.5 | 0.2 | 7.2 | 24.9 | 2.7 | 2.6 | 23.0 | 46.1 | 1.3 |
| 204 | - | - | - | - | - | - | - | - | - | - | 11,100 | 39.0 | 0.2 | 6.0 | 24.7 | 2.1 | 2.6 | 24.6 | 45.4 | 1.0 |
| 205 | - | - | - | - | - | - | - | - | - | - | 8,600 | 37.4 | 0.2 | 4.6 | 24.0 | 1.8 | 2.3 | 27.9 | 43.4 | 0.9 |
| 206 | - | - | - | - | - | - | - | - | - | - | 10,100 | 37.6 | 0.3 | 6.7 | 24.1 | 1.8 | 2.5 | 27.8 | 43.0 | 0.9 |
| | 4,500 | 39.6 | 0.2 | 7.3 | 24.9 | 2.5 | 2.6 | 23.2 | 46.0 | 1.2 | 65,100 | 38.7 | 0.2 | 6.7 | 24.6 | 2.2 | 2.6 | 25.5 | 44.5 | 1.1 |

| STOCKPILING AREA ON PLATEAU 7-SUD | | | | | | | | | | | PROBABLE RESERVE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Panel | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO2L1 |
| StockAre | 8,700 | 39.1 | 0.1 | 8.9 | 24.7 | 1.5 | 2.4 | 25.9 | 45.0 | 0.7 | - | - | - | - | - | - | - | - | - | - |

| TOTAL RESERVE - PROVEN CATEGORY exclusive sterilised zones | | | | | | | | | | | PROBABLE RESERVE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO | Kt | AA | Topsc | Bxt th | LOI | SiO2 | TiO2 | Fe2O | AL2O | RSiO2L1 |
| | 101,200 | 38.8 | 0.2 | 9.1 | 24.6 | 2.0 | 2.4 | 25.4 | 45.0 | 1.0 | 87,100 | 38.6 | 0.2 | 8.7 | 24.5 | 2.1 | 2.6 | 25.7 | 44.4 | 1.0 |

Note: Totals may not add up due to rounding

Note: Totals may not add up due to rounding

The above reserves are included within the resource tonnage table in Section 19. Resources sterilised by the railway line and plant zones are not included.

**Table 20.4.1b Total Mineral Reserve**
Consolidated Proven and Probable Reserves used for production scheduling

| PLATEAU 7 SUD | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Panel | Kt | AA | Topsoil | Bauxite n | LOI | SiO2 | TiO2 | Fe2O3 | AL2O3 | RSiO2LT | Haul Distance |
| Road7_S | 1,200 | 37.8 | 0.2 | 9.8 | 24.2 | 2.1 | 2.3 | 26.6 | 44.2 | 1.0 | 1.0 |
| 701 | 1,800 | 37.2 | 0.1 | 7.7 | 23.9 | 1.4 | 2.3 | 27.4 | 44.4 | 0.7 | 0.6 |
| 702 | 2,700 | 41.1 | 0.2 | 11.3 | 25.5 | 2.1 | 2.5 | 22.4 | 46.9 | 1.0 | 1.2 |
| 703 | 3,800 | 39.5 | 0.4 | 7.9 | 24.8 | 2.2 | 2.7 | 23.7 | 45.9 | 1.1 | 1.8 |
| 704 | 4,600 | 41.2 | 0.3 | 8.6 | 25.6 | 2.3 | 2.4 | 22.6 | 46.6 | 1.1 | 1.6 |
| 705 | 4,800 | 36.5 | 0.3 | 10.2 | 23.7 | 1.8 | 2.2 | 28.1 | 43.7 | 0.9 | 1.0 |
| 706 | 4,500 | 38.1 | 0.3 | 7.4 | 24.3 | 2.4 | 2.3 | 26.2 | 44.1 | 1.2 | 1.2 |
| 707 | 4,400 | 39.0 | 0.2 | 6.7 | 24.7 | 2.0 | 2.4 | 25.8 | 44.7 | 1.0 | 1.5 |
| 708 | 9,200 | 37.6 | 0.2 | 8.5 | 24.1 | 2.1 | 2.5 | 26.2 | 44.4 | 1.1 | 2.8 |
| 709 *) | 4,100 | 37.6 | 0.0 | 7.3 | 24.0 | 1.4 | 2.3 | 27.9 | 43.7 | 0.7 | 2.4 |
| | 41,100 | 38.5 | 0.2 | 8.4 | 24.4 | 2.0 | 2.4 | 25.7 | 44.8 | 1.0 | 1.8 |
| **PLATEAU 7 NORD** | | | | | | | | | | | |
| Panel | Kt | AA | Topsoil | Bauxite n | LOI | SiO2 | TiO2 | Fe2O3 | AL2O3 | RSiO2LT | Haul Distance |
| 711 | 11,400 | 41.3 | 0.3 | 13.0 | 25.6 | 2.1 | 2.3 | 22.3 | 47.0 | 1.1 | 4.0 |
| 712 | 14,000 | 38.6 | 0.3 | 8.9 | 24.5 | 1.9 | 2.4 | 26.0 | 44.7 | 0.9 | 3.6 |
| 713 | 6,400 | 38.7 | 0.2 | 8.7 | 24.5 | 1.9 | 2.3 | 25.8 | 44.9 | 0.9 | 2.6 |
| 714 | 9,400 | 38.4 | 0.2 | 8.9 | 24.4 | 2.1 | 2.4 | 25.8 | 44.6 | 1.0 | 3.2 |
| 715 | 9,400 | 37.1 | 0.2 | 10.6 | 23.9 | 1.9 | 2.4 | 27.6 | 43.5 | 0.9 | 3.6 |
| | 50,600 | 38.9 | 0.2 | 10.1 | 24.6 | 2.0 | 2.4 | 25.4 | 45.0 | 1.0 | 3.5 |
| **PLATEAU 15** | | | | | | | | | | | |
| Panel | Kt | AA | Topsoil | Bauxite n | LOI | SiO2 | TiO2 | Fe2O3 | AL2O3 | RSiO2LT | Haul Distance |
| 1501 | 4,500 | 42.0 | 0.1 | 6.5 | 25.8 | 1.5 | 2.6 | 22.1 | 47.4 | 0.7 | 4.4 |
| 1502 | 8,200 | 38.0 | 0.3 | 6.4 | 24.3 | 2.0 | 2.6 | 26.1 | 44.3 | 1.0 | 5.0 |
| 1503 | 5,900 | 36.4 | 0.2 | 5.1 | 23.7 | 2.3 | 2.7 | 28.0 | 42.7 | 1.1 | 5.2 |
| | 18,600 | 38.5 | 0.2 | 6.0 | 24.4 | 2.0 | 2.6 | 25.8 | 44.5 | 1.0 | 4.9 |
| **PLATEAU 2** | | | | | | | | | | | |
| Panel | Kt | AA | Topsoil | Bauxite n | LOI | SiO2 | TiO2 | Fe2O3 | AL2O3 | RSiO2LT | Haul Distance |
| 201 | 14,900 | 38.5 | 0.2 | 7.7 | 24.5 | 2.3 | 2.7 | 25.7 | 44.0 | 1.1 | 12.0 |
| 202 | 13,400 | 39.9 | 0.1 | 7.2 | 25.0 | 2.4 | 2.6 | 23.9 | 45.4 | 1.2 | 13.2 |
| 203 | 11,300 | 39.5 | 0.2 | 7.2 | 24.9 | 2.6 | 2.6 | 23.0 | 46.1 | 1.3 | 11.2 |
| 204 | 11,100 | 39.0 | 0.2 | 6.0 | 24.7 | 2.1 | 2.6 | 24.6 | 45.4 | 1.0 | 12.2 |
| 205 | 6,800 | 37.4 | 0.2 | 4.6 | 24.0 | 1.8 | 2.3 | 27.9 | 43.4 | 0.9 | 13.4 |
| 206 | 10,100 | 37.6 | 0.3 | 6.7 | 24.1 | 1.8 | 2.5 | 27.8 | 43.0 | 0.9 | 10.6 |
| | 69,600 | 38.8 | 0.2 | 6.7 | 24.6 | 2.2 | 2.6 | 25.3 | 44.6 | 1.1 | 12.1 |
| **STOCKPILING AREA ON PLATEAU 7-SUD** | | | | | | | | | | | |
| Panel | Kt | AA | Topsoil | Bauxite n | LOI | SiO2 | TiO2 | Fe2O3 | AL2O3 | RSiO2LT | Haul Distance |
| StockArea | 8,700 | 39.1 | 0.1 | 8.9 | 24.7 | 1.5 | 2.4 | 25.9 | 45.0 | 0.7 | 0.6 |
| **TOTAL RESERVE - PROVEN + PROBABLE CATEGORY exclusive sterilised zones** | | | | | | | | | | | |
| | Kt | AA | Topsoil | Bauxite n | LOI | SiO2 | TiO2 | Fe2O3 | AL2O3 | RSiO2LT | Haul Distance |
| | 188,600 | 38.7 | 0.2 | 8.0 | 24.5 | 2.0 | 2.5 | 25.5 | 44.8 | 1.0 | 6.3 |

Note: Totals may not add up due to rounding

The above reserves are included within the resource tonnage table in Section 19. Resources sterilised by the railway line and plant zones are not included.

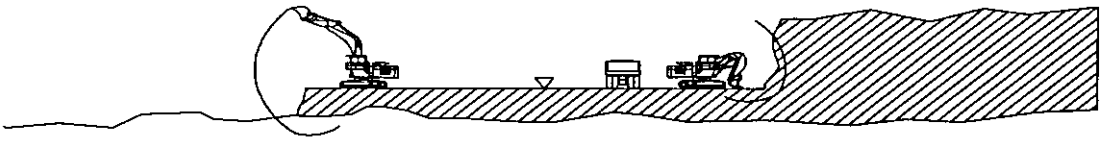
## 20.5 Mining Methods

In the following paragraphs, the methods for the removal and disposal of overburden and internal waste (stripping), ore lifting and ore haulage to the stockpile are described. Grade control is envisaged by all run-of-mine bauxite going on to ore blending stockpiles from where it will be recovered and transferred to the crusher. The same equipment will be used for stockpiling and blending and this will be interchangeable with the principal mining equipment. Mine rehabilitation work as an integrated part of the mining operations is described.

### 20.5.1 Ore Lifting

Conventional shovel-and-truck mining is selected as the preferred mining method. Bauxite thickness varies typically between 4 meters and 10 meters with a rare maximum over 12 m and sporadically 15 m. Because the bauxite itself is an excellent road surface material – provided it is properly shaped, graded, compacted and maintained - it is envisaged to place the main working surface for both trucks and shovels within the bauxite profile. This way, a smooth and flat working surface can be maintained at all times, allowing for a cost efficient operation with the equipment selected. A 2% cross fall will allow for proper drainage

**Fig. 20.5.1 Illustration of Two-Pass Mining Method**



This two-pass mining system works as follows: A large front shovel heads the mine face. With a digging envelope reaching 12 m high, this shovel can handle any occurring face height in one single lift and the face shovel would take the first cut from the work floor to the surface of the stripped bauxite. This is labelled the first pass. The mine floor will be wide, providing ample room for the trucks and other equipment to manoeuvre. At some distance behind the front shovel, the bauxite underneath the work floor would be lifted by a backhoe fitted excavator. This mass excavator, with a reach of 9 m below the working floor, will clean down to the footwall of the orebody. This is the second pass or floor recovery pass of the two-pass system.

The excavator does not necessarily follow the front shovel closely as shown in the simplified illustration, but rather, a relatively large exposed work floor is maintained between the two machines. With regard to grade control this is important because the method doubles the exposed face length and facilitates 'access' to a wide variety of bauxites of different qualities in the top and bottom slices.

A ratio of volumes above and below work floor of one-third to two-third is targeted for a variety of reasons. Consequently, the level of the work floor would be at about 2/3 down the average bauxite thickness. With this, the excavator can 'assist' the front shovel when needed, by standing on top of the bauxite in case the front shovel (with 2/3 gross capacity allotted) would fall short.

On the flanks of the orebody, the same method would be followed but with a benching system where necessary. The benches would in principle be level and parallel to the contours of the orebody. If less steep, the one-bench system illustrated above can be followed as the working floor would allow for safe and efficient operation with slopes up to an 8% gradient.

The work floor surface, principally a level surface (with 2% cross fall for surface water run off) is to be maintained in the very best condition for efficient operation of dump trucks. Ferruginous but on-grade bauxite has excellent road surfacing properties and will be used for this purpose as required. The principal loading equipment, front shovel and excavator, will be assisted by bulldozers to clear and maintain loading bays and occasionally, force-feed the shovels and putting aside oversize boulders for secondary blasting. In-pit haul roads to and from shovels and roads to the stockpile will be continuously maintained by the Roads and Rehabilitation Unit using dozers, grader and water bowsers for suppressing dust.

### 20.5.2 Development and Stripping

The main haul road will be developed running North from the stockpile area right at the start of the project. The road will be constructed at a level approximately 1/3 of bauxite thickness above the footwall (i.e. 2/3 of bauxite thickness below the surface) giving direct access to all mining panels it passes. Initial road excavation will be using the mining equipment in Year 0. Approximately half the total volume for the initial 1 million ton stockpile will derive from haul road development. Initial haul road construction is also foreseen by the Mine Department's Roads and Rehabilitation Unit. A description of the methods and equipment used by this unit is given in Section 20.7.5.

Topsoil and loose overburden overlying the bauxite averages some 20 cm but with sharp local pockets. Also, in many places, there is no topsoil cover at all. Top soil is to be removed by a smaller size bulldozer working in tandem with a small (1 $m^3$ bucket/20 ton class) hydraulic backhoe of the Roads and Rehabilitation Unit. The topsoil is to be used for the rehabilitation of mined-out areas. It must not be stored for long as this destroys both structure and seeds contained. It must be deployed preferably without delay during the annual campaigns for bush clearing and topsoil removal/replacement.

Considering the need to lower TOC content of the bauxite by timely stripping of topsoil and vegetable matter and furthermore considering seasonal working conditions, clearing and stripping is envisaged in annual campaigns ahead of the wet season, starting in January each year and to complete by the end of April before the onset of the rainy season. This involves:

- Bush clearing of the isolated patches of tree and brush by hand (chain saws) and small (190 HP) bulldozer. The Roads and Rehabilitation crew will use 100 HP four wheel drive agricultural-type tractors with flat trailers and as required, a wheeled front end loader. Trees of commercial value are not expected to be there and logging is not foreseen. Timber of small commercial value and firewood deriving from this operation will be made available to the villages in the surrounding. Finer vegetable matter, mostly dry grasses at this time of the year, will be collected together with the top soil and used in the rehabilitation of mined-out areas as a fertile top layer containing fresh natural seeds.

- Top soil removal.. Topsoil and the remaining vegetable matter will be heaped by bulldozer and pockets will be cleaned out of the same by small 20-t hydraulic

excavators. It will be loaded onto tractor drawn 10-ton dump trailers to be used in the rehabilitation works as described below.

### 20.5.3 Drilling and Blasting

For the purposes of this mine plan it is assumed that all ore will need to be drilled and blasted, as is standard practice in all Guinean bauxite mining operations. Due to the latter circumstance, problems with the surrounding communities are not expected and neither are problems in the supply of explosives and accessories expected. As set out in the EIA addendum dated December 2005, Global Alumina will adopt a comprehensive Blasting Policy which, among other things, will be designed to discuss the blasting program with the local communities, to keep appropriate distance from occupied buildings and to blast only at agreed times during the day.

**Drilling**

In view of bench height and the general texture of the deposit which is characterised by the occurrence of many, larger, natural voids as is detrimental to good fragmentation, it will be necessary to drill to relatively limited burden and spacing. It is expected that as for neighbouring (Silidara, Bidi-Koum, N'Dangara) which are very similar deposits, blasthole patterns of 4 x 6 to 5 x 7.5 m will need to be used. Taking 4 x 6 as a 'worst case', somewhat under 20,000 blastholes would have to be drilled annually. For the purpose, two crawler mounted, large capacity rotary air-blast drill units have been scheduled in and a DrillTech D45KS with a maximum pulldown of 20 tons, mounted with a 900 cfm/100 psi compressor and 450 HP diesel has been used as the reference type for costing.

**Blasting**

As regards blasting, there are experienced explosives manufacturing companies/blasting contractors active and present very close by in the region, working for other mines. They have explosives mixing plants at their disposal and it is envisaged to have the blasting done by contractor as the recommended option. The mine would still have to provide both high explosives and bulk explosives storage facilities but there would be no need for blasting licences with mine personnel and all explosives handling, charging and blasting proper would be under the contract. The explosive storage facilities could be built under the directives of the blasting contractor.

### 20.5.4 Rehabilitation of Mined-out Areas

The objective of rehabilitation is to return the land as much as is practically possible to its original state of grass land with isolated bushes. Rehabilitation with added measures to stimulate natural regeneration, is to be undertaken as early as possible upon the completion of mining and dumping operations. The work is to be carried out by the Roads and Rehabilitation Unit. Rehabilitation work is required at a rate of up to 60 hectares per annum in the second half of the dry season.

The actual procedure of rehabilitation is the reverse of the sequence of bush clearing, topsoil removal and earthmoving operations. The activities of clearing & stripping must be well synchronised, requiring careful planning; this in particular because topsoil must not be stored for long. Preferably, topsoil should be spread immediately upon removal. Surface erosion of exposed slopes and bared footwall must be avoided. The rehabilitation work involves:

- Mined-out areas: upon completion of ore lifting and the abandoning of the area, the exposed footwall is to be raked with a large bulldozer ripper (from the mining department) to form furrows parallel to the contours. This work will require an

estimated average of 2 hours per hectare and at (say) 60 hectares per year, some 120 hours per year of the large bulldozer/ripper. The coarse work by these heavy bulldozers will, as required, be finished of by the much smaller D6 size bulldozers of the Roads and Rehabilitation Unit and/or the agricultural tractors using Kilver blades and farming implements.

- Overburden material and other off-grade material from the mining operation can and will be used similarly in the landscaping as part of the actual mining operation. Surfaces are to be smoothed, avoiding and/or filling puddles Small ditches are to be formed to direct surface run-off water towards the drain system and silt traps. Once the area is prepared this way, it may remain so until the time that topsoil is available.

- Topsoil and vegetable matter cleaned and collected from the surface of the cleared area is to be spread over the mined-out areas thus prepared. Particular care is to be taken towards obtaining complete coverage. It is to be spread with an agricultural type harrow mounted on the back of the agricultural tractor(s).

- To stimulate growth, additional grass seeds as well as mulched chippings from brush clearing can be used to mix with the topsoil thus spread, in accordance with the agreed re-vegetation program.

## 20.6 25-Year Long Term Mine Plan

### 20.6.1 Planning Basis

The ore production rate is based on a Refinery production rate of 2.8 million tons of alumina per annum and a 95% plant recovery factor with a start-up schedule as in the following table.

**Table 20.6.1 Bauxite Production Start Up Schedule**
Nb.: based on average 39% AA

| | | | Alumina produced | BXT dmt produced | | total BXT dmt |
|---|---|---|---|---|---|---|
| 2007 | Year 00 | Q1 | - | | | |
| | | Q2 | - | | | |
| | | Q3 | - | | | |
| | | Q4 | - | | | |
| | | | - | | | |
| 2008 | Year 0 | Q1 | - | | | |
| | | Q2 | - | | | |
| | | Q3 | - | | | |
| | | Q4 | - | 1 mt to stockpile | | |
| | | | - | 1,000,000 | | 1,000,000 |
| 2009 | Year 1 | Q1 | 262,500 | 708,750 | | |
| | | Q2 | 500,000 | 1,350,000 | | |
| | | Q3 | 500,000 | 1,350,000 | | |
| | | Q4 | 600,000 | 1,620,000 | | |
| | | | 1,862,500 | 5,028,750 | | 5,028,750 |
| | | | | - | | |
| 2010 | Year 2 | Q1 | 700,000 | 1,890,000 | | |
| | | Q2 | 700,000 | 1,890,000 | | |
| | | Q3 | 700,000 | 1,890,000 | | |
| | | Q4 | 700,000 | 1,890,000 | | |
| | | | 2,800,000 | 7,560,000 | x 23 = | 173,880,000 |
| | | | Total BXT for 25 years at 39% AA = | | | 179,908,750 *) |
| | | | | | | * excludes 1 mt left on stockpile |

Note: annual tonnages may vary with AA grade.

### 20.6.2 Mining Sequence

**General**

As can be seen from the Mineral Reserves Table 20.4.1a, ore grades between the 3 plateaux differ little. Thus, considering grade, there is no clear preference for any of them to start the mining operation. Since Plateau 7-Sud is directly adjacent to the plant site, it will be the first area to be developed and mined, requiring the minimum number of trucks.

**Plateau 7-Sud / Years 0 - 6**

Plateau 7-Sud will provide the bulk of the bauxite from the commencement of the project up to and including Year 5 when 7-Nord is opened up. The plateau is accessed with Road 7-S. The initial development of this main haul road (see Fig 20.4.1) will open up both panels 702 and 703 and create an exposed mine face with a length of some 800 m by the end of Year 0. The road will be extended to both the northern limit of Plateau 7-Sud and southward to panel 708 in Year 1. Simultaneously during Year 0, Panel 701 which is directly adjacent to the designated stockpile area is opened up by a declining (-6%) box cut/haul road from the

surface of the stockpile area down to working floor level at about 3 m above the footwall. This box cut must be completed during the dry season end of Year 0 and cut through to the lower area to the West of 701 before the next rainy season.

Plateau 7-Sud will thereafter be mined in the sequence as presented in the 25-Year production schedule (see Table 20.6.3a).

**Plateau 7-Nord / Years 5 - 13**
Mining on this Plateau, at just under 4 kms by haul road from the stockpile dump area, is envisaged to commence in Year 5. Mining faces on this plateau will, like on Plateau 7-Sud, be accessed with a spinal haul road running through the centre of the deposit. This road will be mostly level or with gentle gradients (< 4%). It will be in use for a long period of time, namely, right up to the end of the current 25-year mine life and should be constructed to the highest standard.

Initially, the somewhat above-grade panels 711 and 712 will be mined, to provide higher grade ore to be mixed with the somewhat lower grade material deriving from panels 706 and 708 on Plateau 7-Sud. (See drawing 5, Section 26.2.)

As discussed below, the number of trucks required for the longer distance involved will gradually rise from the equivalent of 5 trucks during the first 4 years of operation (Plateau 7-Sud) to about 8 when all production comes from Plateau 7-Nord, in Years 8 to 12.

**Plateau 15 / Years 12 - 16**
Plateau 15 is of more variable grade with centrally located, thicker ore with higher grades and thinner mineralization of lower grades towards the periphery of the orebody. The plateau is to be accessed by "South Road" as shown, crossing the rail line twice.

**Plateau 2 / Years 14 – 24**
Plateau 2 is gradually brought into production commencing Year 14 to provide somewhat higher grade material to be mixed in with the then lower grade ore from Plateau 15.

Access to the plateau is provided by a 12 km long haul road consisting of the long existing Road7-Sud and Road7–Nord, 5 kms in length, and a new 7 km road section from the West of Plateau 7, going west past Lope village and crossing the Lope and Kewewol rivers. Both rivers have relatively small catchment areas of only a few square kilometers each and it is envisaged to cross each one with ford-type crossings constructed in re-inforced concrete.

Once Plateau 2 would be in full production a total number of close to 20 65-ton trucks equivalents would be required and it is recommended that regular 8-year truck replacements commencing Year 14, the year of commencement of ore production from Plateau 2, would be with 100 t trucks rather than 65 tonners.

### 20.6.3 Ore Production Schedule and Ore Grades

The 25-year ore production schedule and the associated grades resulting from the above mining sequence are presented in Tables 20.6.3a and 3b (overleaf) and in Figs. 20.6.3.

**Fig. 20.6.3a 25-Year Available Alumina Grade Run-of-Mine Bauxite**

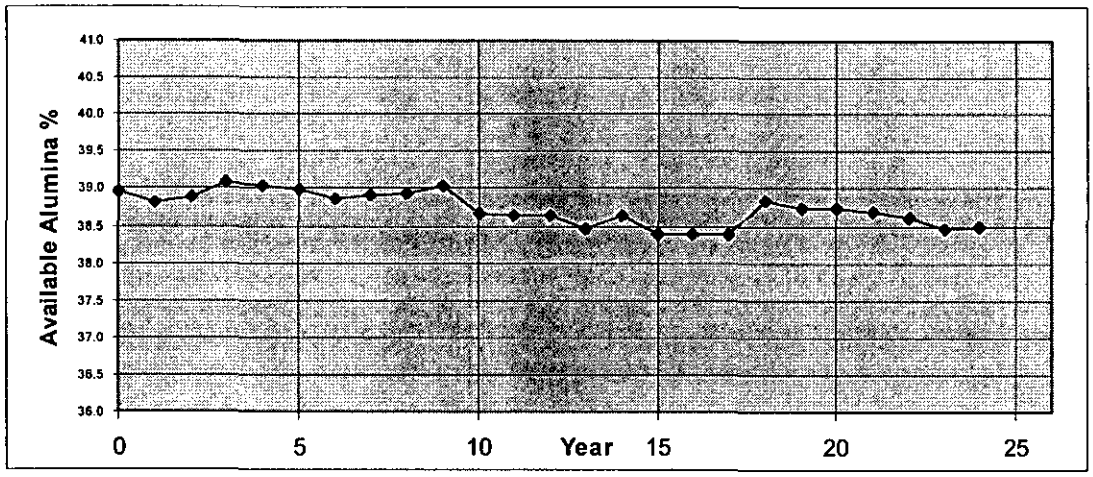



**Fig. 20.6.3b 25-Year Silica and Reactive Silica**

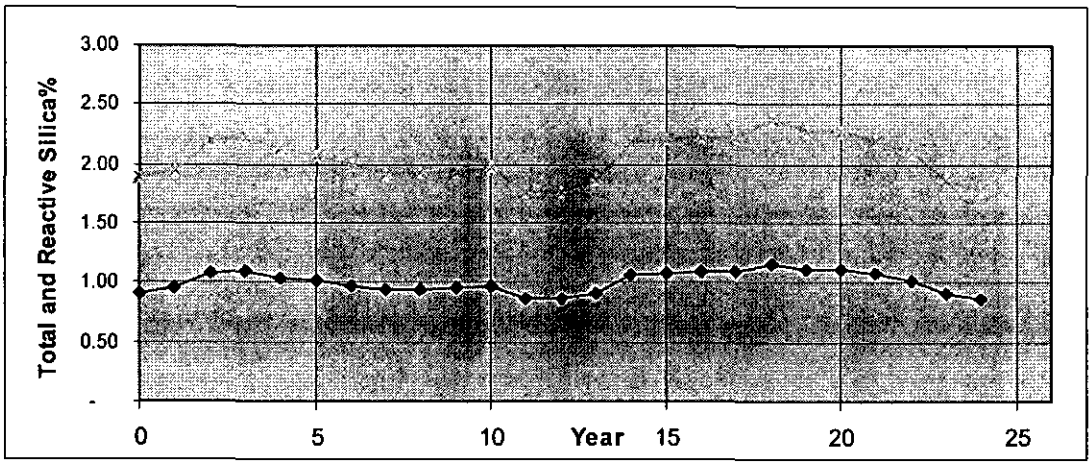
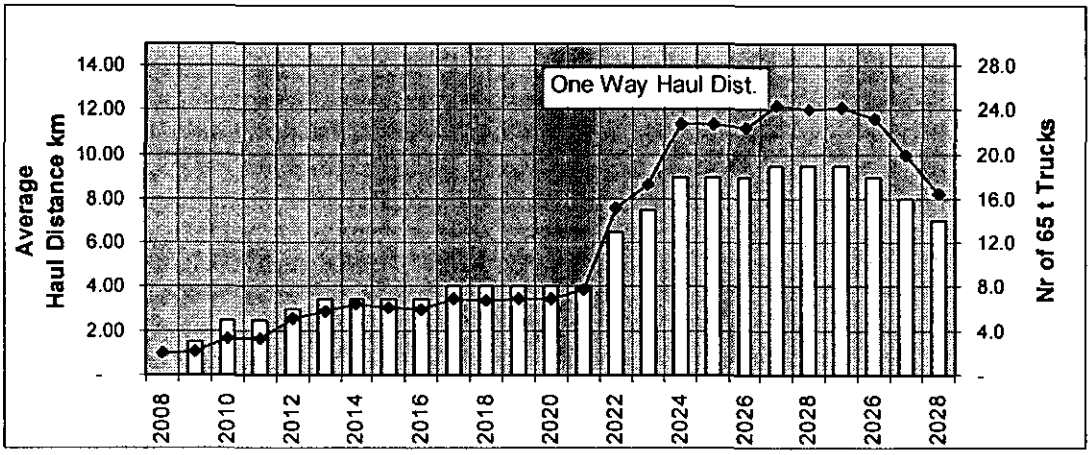



**Fig. 20.6.3c 25-Year Haul Distance and Number of 65-t Trucks**




Nb: In addition to the number of trucks shown, four are to be added to transport ore from the blending stockpiles to the crusher.

## Table 20.6.3a 25-Year Production Schedule by Reserve Panels

| Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project Year | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| MINERAL RESERVE PLATEAU 7 SUD | | | | | | | | | | | | | | | | | | | | | | | | | |
| Panel | | | | | | | | | | | | | | | | | | | | | | | | | |
| Road7_S | 300 | 875 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 701 | 300 | 1,471 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 702 | 400 | 1,405 | 933 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 703 | - | 700 | 1,565 | 1,530 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 704 | - | - | - | 1,300 | 2,400 | 867 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 705 | - | - | - | - | - | 1,000 | 1,000 | 1,500 | 1,278 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 706 | - | 600 | 2,000 | 1,858 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 707 | - | - | 2,000 | 2,000 | 403 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 708 | - | - | 1,080 | 855 | 3,000 | 2,500 | 1,746 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 709 *) | - | - | - | - | - | - | - | - | - | - | - | 1,500 | 1,500 | 1,103 | - | - | - | - | - | - | - | - | - | - | - |
| *) to be hauled via South Road | | | | | | | | | | | | | | | | | | | | | | | | | |
| MINERAL RESERVE PLATEAU 7 NORD | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perimeter | | | | | | | | | | | | | | | | | | | | | | | | | |
| 711 | - | - | - | - | - | 2,000 | 2,200 | 2,000 | 2,000 | 2,000 | 1,175 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 712 | - | - | - | - | 1,748 | 1,195 | 2,640 | 3,000 | 2,000 | 2,000 | 1,460 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 713 | - | - | - | - | - | - | - | 1,078 | 2,000 | 2,000 | 1,293 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 714 | - | - | - | - | - | - | - | - | - | - | 2,000 | 2,000 | 2,000 | 2,000 | 1,442 | - | - | - | - | - | - | - | - | - | - |
| 715 | - | - | - | - | - | - | - | - | 294 | 1,550 | 1,699 | 2,400 | 2,400 | 1,087 | - | - | - | - | - | - | - | - | - | - | - |
| MINERAL RESERVE PLATEAU 15 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perimeter | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1501 *) | - | - | - | - | - | - | - | - | - | - | - | 1,728 | 1,728 | 1,041 | - | - | - | - | - | - | - | - | - | - | - |
| 1502 *) | - | - | - | - | - | - | - | - | - | - | - | - | - | 2,432 | 3000 | 2,780 | - | - | - | - | - | - | - | - | - |
| 1503 *) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 500 | 1,400 | 1,400 | 1,400 | 1,151 | - | - | - | - | - | - |
| *) to be hauled via South Road | | | | | | | | | | | | | | | | | | | | | | | | | |
| MINERAL RESERVE PLATEAU 2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perimeter | | | | | | | | | | | | | | | | | | | | | | | | | |
| 201 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1,000 | 2,500 | 2,500 | 2,500 | 2,500 | 2,000 | 1,338 | - | - | - |
| 202 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2,685 | 2,498 | 2,500 | 2,500 | 2,500 | 760 | - | - | - | - | - |
| 203 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1,438 | 2,500 | 2,600 | 2,600 | 2,202 | - | - |
| 204 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1,000 | 1,600 | 2,500 | 3,600 | 2,433 |
| 205 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1,278 | 1,276 | - | 1,850 | 1,408 | 2,085 | 877 | - | - |
| 206 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 2,055 | 3,000 | 3,000 |
| MINERAL RESERVE STOCKPILING AREA | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perimeter | | | | | | | | | | | | | | | | | | | | | | | | | |
| StockArea | | | | | | | | | | | | | | | | | | | | | | | | 1,062 | 2,226 |
| bauxite | 1,000 | 5,051 | 7,578 | 7,544 | 7,551 | 7,562 | 7,586 | 7,578 | 7,572 | 7,550 | 7,627 | 7,628 | 7,628 | 7,662 | 7,627 | 7,676 | 7,678 | 7,676 | 7,589 | 7,610 | 7,608 | 7,621 | 7,635 | 7,662 | 7,659 |

**Table20.6.3b 25-YearBauxiteProductionSchedulewithGrades**

| Year | Project Yr | Alumina Kt | Ore Kt(dry) | AA % | Top soil | Bxt m | LOI % | $SiO_2$ % | $TiO_2$ % | $Fe_2O_3$ % | $Al_2O_3$ % | $RSiO_2$ % | Haul Dist. km | No of 65t trucks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2008 | 1 | 370* | 1,000 | 39.0 | 0.2 | 9.8 | 24.6 | 1.9 | 2.4 | 25.1 | 45.4 | 0.9 | 1.0 | 3 |
| 2009 | 2 | 1,863 | 5,051 | 38.8 | 0.2 | 9.1 | 24.6 | 1.9 | 2.4 | 25.2 | 45.3 | 1.0 | 1.1 | 3 |
| 2010 | 3 | 2,800 | 7,578 | 38.9 | 0.2 | 8.0 | 24.6 | 2.2 | 2.5 | 25.1 | 45.0 | 1.1 | 1.6 | 5 |
| 2011 | 4 | 2,800 | 7,544 | 39.1 | 0.3 | 7.7 | 24.7 | 2.2 | 2.5 | 24.9 | 45.1 | 1.1 | 1.7 | 5 |
| 2012 | 5 | 2,800 | 7,551 | 39.0 | 0.2 | 8.5 | 24.7 | 2.1 | 2.5 | 25.0 | 45.2 | 1.0 | 2.5 | 6 |
| 2013 | 6 | 2,800 | 7,562 | 39.0 | 0.2 | 10.0 | 24.6 | 2.1 | 2.4 | 25.0 | 45.3 | 1.0 | 2.9 | 7 |
| 2014 | 7 | 2,800 | 7,586 | 38.8 | 0.2 | 10.2 | 24.6 | 2.0 | 2.4 | 25.2 | 45.2 | 1.0 | 3.2 | 7 |
| 2015 | 8 | 2,800 | 7,578 | 38.9 | 0.3 | 10.2 | 24.6 | 1.9 | 2.3 | 25.4 | 45.1 | 0.9 | 3.0 | 7 |
| 2016 | 9 | 2,800 | 7,572 | 38.9 | 0.2 | 10.2 | 24.6 | 1.9 | 2.3 | 25.4 | 45.1 | 0.9 | 3.0 | 7 |
| 2017 | 10 | 2,800 | 7,550 | 39.0 | 0.2 | 10.3 | 24.7 | 1.9 | 2.4 | 25.3 | 45.1 | 1.0 | 3.4 | 8 |
| 2018 | 11 | 2,800 | 7,627 | 38.7 | 0.2 | 9.9 | 24.5 | 2.0 | 2.4 | 25.7 | 44.8 | 1.0 | 3.4 | 8 |
| 2019 | 12 | 2,800 | 7,628 | 38.6 | 0.1 | 8.6 | 24.5 | 1.8 | 2.4 | 26.0 | 44.7 | 0.9 | 3.4 | 8 |
| 2020 | 13 | 2,800 | 7,628 | 38.6 | 0.1 | 8.6 | 24.5 | 1.8 | 2.4 | 26.0 | 44.7 | 0.9 | 3.4 | 8 |
| 2021 | 14 | 2,800 | 7,662 | 38.5 | 0.2 | 7.8 | 24.4 | 1.9 | 2.5 | 26.0 | 44.6 | 0.9 | 3.9 | 8 |
| 2022 | 15 | 2,800 | 7,627 | 38.6 | 0.2 | 7.1 | 24.5 | 2.2 | 2.6 | 25.4 | 44.6 | 1.1 | 7.6 | 13 |
| 2023 | 16 | 2,800 | 7,676 | 38.4 | 0.2 | 6.6 | 24.4 | 2.2 | 2.6 | 25.7 | 44.3 | 1.1 | 8.6 | 15 |
| 2024 | 17 | 2,800 | 7,676 | 38.4 | 0.2 | 6.5 | 24.4 | 2.2 | 2.6 | 25.9 | 44.1 | 1.1 | 11.4 | 18 |
| 2025 | 18 | 2,800 | 7,676 | 38.4 | 0.2 | 6.5 | 24.4 | 2.2 | 2.6 | 25.9 | 44.1 | 1.1 | 11.4 | 18 |
| 2026 | 19 | 2,800 | 7,589 | 38.8 | 0.2 | 7.0 | 24.6 | 2.4 | 2.6 | 24.9 | 44.6 | 1.2 | 11.2 | 18 |
| 2027 | 20 | 2,800 | 7,610 | 38.7 | 0.2 | 6.7 | 24.6 | 2.3 | 2.6 | 25.2 | 44.7 | 1.1 | 12.2 | 19 |
| 2028 | 21 | 2,800 | 7,608 | 38.7 | 0.2 | 6.7 | 24.6 | 2.3 | 2.6 | 25.0 | 44.8 | 1.1 | 12.0 | 19 |
| 2029 | 22 | 2,800 | 7,621 | 38.7 | 0.2 | 6.3 | 24.5 | 2.2 | 2.5 | 25.1 | 44.8 | 1.1 | 12.2 | 19 |
| 2030 | 23 | 2,800 | 7,635 | 38.6 | 0.2 | 6.4 | 24.5 | 2.1 | 2.5 | 25.4 | 44.7 | 1.0 | 11.6 | 18 |
| 2031 | 24 | 2,800 | 7,662 | 38.5 | 0.2 | 6.7 | 24.4 | 1.9 | 2.5 | 26.0 | 44.4 | 0.9 | 10.0 | 16 |
| 2032 | 25 | 2,800 | 7,659 | 38.5 | 0.2 | 7.1 | 24.4 | 1.8 | 2.5 | 26.2 | 44.3 | 0.9 | 8.2 | 14 |
| **Total** | | **66,636** | **181,156** | **38.7** | **0.2** | **8.0** | **24.5** | **2.1** | **2.5** | **25.5** | **44.8** | **1.0** | **6.4** | |

* Kt contained recoverable alumina in ROM stockpile

### 20.6.4 Grade Control, Stockpiling and Blending

An effective ore quality control procedure primarily concerns grade control but also addresses contamination and moisture content. The system foreseen is intended to meet the objective to supply bauxite grades within +/- 2% variation in available alumina on a daily, +/- 1% weekly and +/- 0.5% monthly basis on the predicted grade respectively.

Ore quality control is envisaged by a simple and straight forward, but well coordinated, procedure starting from the exploration stage to yearly, quarterly, weekly and daily mine planning and control. Key elements are:

- Exploration drilling at 300 x 300 m followed by 150 x 150 m drilling with the latter serving to identify Proven Reserve.
- In-fill drilling at 75 x 75 and subsequently, 25 x 25 m grids.
- Pre-production blasthole sampling with composite samples from cuttings.
- Occasional (check-) face sampling at the shovel during production.
- Complete on-site bauxite analysis facilities.
- All bauxite to be placed on large raw ore blending stockpiles.
- Stockpile recovery by wheel loaders in a controlled pattern.
- Mine planning procedures including annually revised long term mine plans: yearly, 5-quarter rolling forecasts, monthly and daily mine planning.
- Production recording and regular grade reconciliations.

'Double handling' of all bauxite is inherent to the system envisaged whereby all bauxite excavated from the face will be hauled and dumped onto the stockpiles first and reclaimed again before going into the crusher. Such double handling, at cash costs of some 30 cents per tonne, can possibly be avoided eventually to reduce costs but at this stage this approach is considered prudent and so the costs are included.

The stockpiles are of 300 000 ton capacity each, to contain approximately 2 weeks production (each). The mine planning department is to develop daily mine plans describing planned tonnages and grades for each shovel or primary loader. The aim is to ensure that the average grade on each stockpile is on target upon completion of the stockpile. There will be four stockpiles at any moment in time, one being constructed from run-of-mine bauxite, one producing to crusher and two prepared and ready. Each stockpile is to be constructed in a controlled manner in two layers, with trucks backing up to dispose their load close to the previous one. The total height of the two layer stockpile would be 6 m.

Blending is achieved with stockpile recovery in a direction perpendicular to the direction in which the truck loads were dumped.

## 20.7 Mining Equipment Selection

The largest single cost item in the mining operation are the haulage trucks. The following section on equipment selection therefore focuses firstly on the selection of truck type and size and subsequently, on primary loaders and ancillary equipment to facilitate the most efficient truck usage.

### 20.7.1 Working Hours

An 8 hour 3 shift system is assumed with 7 day and afternoon shifts but only 6 night shifts per week using 4 crews in all, each working 5 days per week on average. With 50 working weeks per year to allow for the various festive days, the system allows for 8,000 gross working hours per year. Of the 8 hours per shift, 45 minutes are allowed for meal breaks and a 50 minute hour is used in the equipment capacity calculations.

- Similarly, an allowance is made for poor weather conditions during the rainy season. During rain, all traffic by heavy rubber tired vehicles is to be stopped, for reasons of safety and to avoid rutting and damages to the road and work floor surfaces. Historical records from similar operations are available and stoppages during hours of actual rainfall are estimated at 1 hr lost for each 4 mm of rain.

- In addition, after heavier rain showers, a number of hours is allowed for the roads to dry out. From the available climatic data, it is estimated that there are 40 days per annum with rain > 15 mm. During these days, an estimated 8 hours are lost on average, while roads are allowed to dry.

- Mechanical availability is estimated as 90% for the trucks and shovels and includes allowance for a half shift shutdown per week for preventive maintenance. Utilisation for equipment calculations, unless indicated otherwise, has been assumed at 90%.

Accordingly, working hours per year for this mine plan are established as follows:

| | |
|---|---|
| 50 working weeks /year x 20 shifts x 8 hrs = | 8,000 hrs |
| less 45 minute meal breaks x 1,000 shifts | 7,250 hrs |
| less allowance for poor weather conditions<br>2200 mm/4 mm = (550x7250/8000)+(40 days x 8 x 7250/8000) = 790 hrs | 6,460 hrs |
| multiply for mechanical availability and utilisation 90% x 90%<br>and the total effective working hours/piece of equipment/year = | 5,200 hrs |

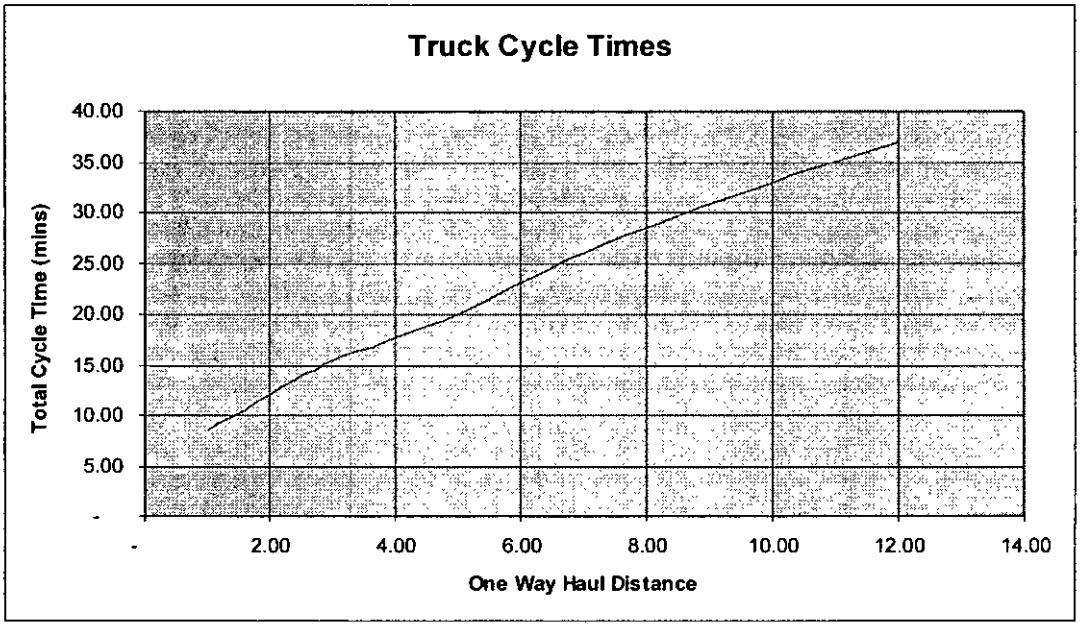
### 20.7.2 Ore Trucks

Haul distances are relatively short and the number of load-haul-dump cycles per hour is estimated as high as 6 cycles per hour per truck in the first years on Plateau 7-Sud. Considering this, and the fact that there are no steep climbs at any time during the mine life, the choice of truck type is clearly for the rugged rigid frame rear dump truck designed for mining conditions, but with a larger dump body such as sold by Caterpillar and Komatsu. As regards truck size, the choice is similarly clear, a 65 metric t truck is the preferred one and the Komatsu H605 is used for reference purposes. As it is, the next smaller size, a 40 t truck, is less cost efficient and the next one in size, a 100 t truck, is simply too large – only 3 trucks

would be required to provide the entire haulage capacity and this number is too small for flexibility of operation and grade control purposes.

The number of trucks required (see Fig. 20.6.3b) over the mine life has been established on the basis of detailed haul profiles for the various mining panels and the relationship between haul distance and cycle time as follows:

**Fig. 20.7.2 Truck Cycle Time as a function of Haul Distance**




### 20.7.3 Primary Loaders

Loader selection must primarily aim to keep the "trucks moving" with short cycle times. The primary loaders at the prevailing short haul distances must be capable to load a truck with 4 dippers of the bucket, or at the most, 5 dippers. The ideal shovel truck match is known to be between 70 and 80% shovel utilisation, thus avoiding waiting times for the trucks. This shovel truck match is achieved with primary loaders as follows:

The complete operation at about 8.5 m tonnes per annum wet crude metric tonnes of bauxite, can be served by two shovels of the 180 ton class such as e.g. the Komatsu 1800 which is used for reference purposes. As discussed under mining methods, it is recommended to use one shovel in front loading configuration and the other as backhoe. This combination could handle almost any circumstance efficiently while at the same time, the shovels are still interchangeable to a large extent.

While the small number of only two primary loaders is sufficient to provide the required total loading capacity, additional capacity is needed for reasons of back up security in case one of the shovels would be broken down and also, for flexibility and quality control purposes.
To provide this back-up capacity it has been chosen to consider wheel loaders of the type and size used for blending stockpile recovery. These have 9 $m^3$ buckets with a machine operating weight of about 70 tonnes. These wheel loaders are on the small side for cost efficient loading of the trucks if used as primary loaders, requiring a longer loading time as compared to the above shovels, however, they are quite capable and suited to load 65t

trucks when called upon. They can be used for a variety of other duties around the mine such as in the annual bush clearing and topsoil removal campaigns.
NB: In the equipment schedules, both wheel loaders are listed under the mines department but they would in reality spendapproximately 25% of their time on Roads & Rehabilitation Unit duties.

### 20.7.4 Stockpile Recovery and Feed to Crusher

Stockpile recovery is envisaged with wheel loaders of 9 $m^3$ capacity, capable of loading a 65t truck in five passes followed by transport from the stockpile to the crusher with the same trucks as used for the mine.

The cycle time for trucks from stockpile-to-crusher is estimated at an average 6 minutes for an average travel distance of 500 m only and accordingly, four trucks would be needed in all, in addition to trucks for the mining operation proper.

With this it is noted that stand-by trucks may be made available from the mining operation. On the other hand, when that part of a stockpile which is being reclaimed is at closer distance to the crusher, the wheel loaders can work in 'load and carry' mode, loading directly into the crusher and these trucks may then in turn be made available to the mine. Likewise, when the crusher is not working, the trucks are available to the mine. The number of four trucks may therefore be viewed as a 'worst case' scenario but is nevertheless used as the basis for the current cost estimates.

A total number of two wheel loaders is required to provide the capacity needed at the full production level reached in Year 2 of mining operations. These two wheel loaders are interchangeable (backed up) by a third wheel loader of the same capacity.

### 20.7.5 Roads and Rehabilitation Unit

The mine's roads and rehabilitation unit must be equipped for a variety of duties:

**Road construction**

The quality of mine roads must primarily allow for fast and efficient truck haulage and for the maximum number of workable hours possible. Local ground conditions do allow for excellent quality unsealed roads and mine work floors. First quality road construction material in the form of more ferruginous bauxite is available in each of the mining panels, this material is bauxite grade and can be used without diluting the ore. The topography is favourable, allowing for all haul roads to be constructed with gradients not exceeding 6% (and more often, 4% or less). Road alignments have been designed considering the natural topography with comfortably wide and smooth roads without sacrifice in large quantities of earthmoving (unless in the form of bauxite mining).

Main haul roads are designed to a standard minimum width of 21 m in accordance with international best practice and where in cut, with a 1:3 batter. A constructed pavement thickness of 600 mm is envisaged, but in view of the fact that good sub-base material (California Bearing Ratio - CBR > 30%) is in abundant supply, is not sensitive to dimensions. For the pavement, it is anticipated that the ferruginous upper layers of bauxite has CBR values in excess of 50% and can be freely used for paving purposes.

Roads will be built in the following sequence:

- Bush clearing and top soil stripping as described in the section on mining methods.

- As and where required, drilling and blasting followed by mass excavation of a wide (30 – 50 m wide cut) with shovels of the ore production unit, on a campaign basis (dry season).
- Construction of a sub-base of 0.50 m maximum thickness layer(s) watered to optimum Proctor moisture content and compacted in 10 passes by vibrating compactor. Alternatively where not in bauxite, preparation of the natural sub-base (usually ferruginous laterite) in the same manner, after scarifying by bulldozer and/or road grader.
- Construction of the pavement in one layer of 0.30 m thickness, watered to optimum moisture content and compacted in 10 passes by vibrating compactor. Final compaction of the ready road surface is to be achieved by the controlled (supervised) passages of dump trucks, covering the total road width with at least 10 passes from ordinary production traffic, using the dump trucks (during their normal work). With the traffic intensity envisaged, this would normally take about one week and during this week, the moisture content of the pavement is to be maintained at optimum Proctor moisture. With the expected CBR values in excess of 50%, 0.30 m pavement thickness will be amply sufficient.

**Road Maintenance**

The roads are to be maintained by regular grading and watering as required. It will be of foremost importance to maintain lateral gradients and avoid standing water on the road surface. Road construction equipment scheduled for the operation is sufficient to re-apply a pavement layer, once per year, on top of the (scarified) old pavement. This is foreseen in the equipment requirements.

**Drainage**

Mine drainage is of the utmost importance for a variety of reasons, to protect the road system and mine faces from the effects of uncontrolled surface run-off as well as for environmental reasons. Ground water is not expected due to the general impervious nature of the footwall. A proper and well maintained drainage system comprises the following elements:

- Shallow surface cut-off drains above the pits, cut by bulldozer- or grader blade.
- A main drainage system along the main haul- and trunk roads, on the uphill side of the roads. These drains are to maintained with the grader blade; when washed out they should be filled and compacted.
- Culverts should be constructed as required.
- Cut off drains on the inside of working benches, draining towards the trunk road.
- Main drains are provided around the bottom of the mining area, to double serve as cut-off drains for environmental purposes.
- Desliming traps are envisaged at suitable locations along the main cut off drain course.

The 'Roads and Rehabilitation Unit' is also to perform:

- Development, bush clearing and top soil removal (Section 20.5.2 refers); and
- rehabilitation of mined-out areas (Section 20.5.4 refers).

### 20.7.6 Major Equipment List

A complete list of major equipment items required for the mining operation and for reclamation of ore from the stockpiles for delivery to the crusher is as follows.

**Table 20.7.6 Major Equipment List, Technical Specifications and Hourly Cost**

| | initial nr of units | reference type | horse power | capacity | Capital Cost USD on site *) | Direct Op. cost USD **) |
|---|---|---|---|---|---|---|
| **PRINCIPAL MINING EQUIPMENT** | | | | | | |
| Dump Truck 65 mt (incl s/pile recovery) | 9 | Komatsu H605-7 | 715 | 65 mt/ 40 | 575 | $ 55.00 |
| Mining shovel in front shovel config | 1 | Komatsu PC1800-4 | 910 | 11 | 1,800 | $ 90.00 |
| Mining shovel in backhoe config | 1 | Komatsu PC1800-4 | 910 | 10 | 1,800 | $ 90.00 |
| Wheelloader 9 | 3 | Komatsu WA700-3 | 670 | 9 | 780 | $ 65.00 |
| Bulldozer Ripper 410HP | 3 | Komatsu D275A-5 | 410 | 55 t/14 U Blade | 565 | $ 45.00 |
| Blast hole drill | 2 | Drilltech D45 | 450 hp 900 cfm | 20 t pul down | 750 | $ 65.00 |
| **ROADS AND REHABILITATION UNIT** | | | | | | |
| Compactor | - | | | | | |
| Towed Vibrating Roller | 1 | | 85 | 12 t weight | 100 | $ 8.00 |
| Road Grader 16H Cat 280 HP | 1 | Komatsu GD825A-2 | 280 | 28 t op. weight | 400 | $ 40.00 |
| Cat D6 size 190 HP B/dozer multishank ripper | 1 | Caterpillar D6H | 190 | 20 t | 220 | $ 40.00 |
| Water Bowser 20 : highway type truck adapted for off-highway heavy duty | 2 | Mercedes Actros or similar | 280 | 10 t | 120 | $ 30.00 |
| Backhoe excavator | 2 | Cat/Komatsu | 180 | 1.5 yd3 | 180 | $ 40.00 |
| 4x4 Agricultural Type Tractor + 10 t Dumper | 2 | Case | 100 | | 70 | $ 20.00 |
| 4x4 Agricultural Type Tractor + Flat Bed | 1 | Case | 100 | | 60 | $ 20.00 |
| Assorted agricultural implements: | 1 | ... | | | 50 | n/a |

*) shipped, delivered, commissioned and erected on site, but no taxes or import duties included
**) inclusive of fuel, lubricants, tyres, spares and consumables but excluding all operating wages, maintenance labour and depreciation, insurance, interest, financial costs and overheads.

## 20.8 Manpower Requirements

Manpower requirements are estimated as for a Global Alumina-owned mine operation. In view of the mining area being directly adjacent to Global Alumina's refinery, the Mines Department is considered as falling under the general management, staff departments, social and health services of Global Alumina's local head office and facilities for the Refinery. The requirements in manpower numbers are therefore detailed, but only a total annual cost figure is given. Housing, power and water supply are for the similar reasons excluded from the mining estimates.

### 20.8.1 Mine Management and Staff

A process oriented type of organisation is envisaged combing logically related activities into working units such as the Roads and Rehabilitation Unit with an otherwise flat organigram. Required human resource numbers and how they develop in time are estimated in Tables 20.8a and b.

### 20.8.2 Operating Personnel

The operating personnel estimate has been prepared on the basis of mining equipment schedules and including maintenance personnel, staff departments, geology, mine planning, and mine administration. The requirement is furthermore based on a shift system with 4 crews to work an effective 20 shifts per week system (7 day and afternoon, 6 x night shift) or an average of 5 working 'days' per week for each of the equipment crews.

The manning level (276) does not take account of annual leave, sickness and other absenteeism. Provisionally estimated at 20%, this has to be added giving a total of 340 personnel excluding senior staff and management. This number will gradually increase to some 380 after Year 10 due to the increase in truck numbers.

**Table 20.8.1a Manning Estimate and Phasing – Mine Management – Employees only**

| Function | Year 0 | Year 1 | Year 2 | Total Req. |
|---|---|---|---|---|
| General Manager | - | - | - | - |
| Mine Manager | 1 | 1 | 1 | 1 |
| Controller | - | - | - | - |
| Administration Manager | - | - | - | - |
| HSE Manager | - | - | - | - |
| Chief security Officer | - | - | - | - |
| Transport Manager | - | - | - | - |
| Chief Geologist | 1 | 1 | 1 | 1 |
| Ore Production Manager | 1 | 1 | 1 | 1 |
| Manager Planning/QC | 1 | 1 | 1 | 1 |
| Manager Maintenance Services | 1 | 1 | 1 | 1 |
| **Total Management** | **5** | **5** | **5** | **5** |

- indicates that this function is shared with Global Alumina's general management

**Table 20.8.1b Mine Manning Estimate and Phasing – Staff Employees**

| Function | Year 0 | Year 1 | Year 2 | Total Req. |
|---|---|---|---|---|
| Exploration Geologist | 2 | 2 | 1 | 2 |
| Mine Geologist | 1 | 1 | 2 | 2 |
| Mine Planning Engineer | 1 | 2 | 2 | 2 |
| Quality Control Engineer | 1 | 1 | 1 | 1 |
| General Production Foreman | 1 | 2 | 2 | 2 |
| Roads and Rehabilitation F/man | 1 | 1 | 1 | 1 |
| Mining Maintenance Foreman | 1 | 2 | 2 | 2 |
| Materials Controller | - | - | - | - |
| Senior Security Officer | - | - | - | - |
| Safety Officer | 1 | 1 | 1 | 1 |
| Health Officer | 1 | 1 | 1 | 1 |
| Storekeeper | 1 | 1 | 1 | 1 |
| Personnel Officer | - | - | - | - |
| **Total Staff** | **11** | **14** | **14** | **15** |

- indicates that this function is shared with Global Alumina's main office staff.

**Table 20.8.2. Mine Manning Estimate – Workers in Mine and Blending Stockpile**

| Equipment | Total Nrs. | Nrs./shift | Manning/unit/shift | Total |
|---|---|---|---|---|
| **Ore Production** | | | | |
| Shovels/Excavators | 2 | 2 | 1.5 | 12 |
| Trucks **) | 10 | 10 | 1 | 40*) |
| Bulldozer/rippers **) | 3 | 3 | 1 | 12 |
| Wheelloader **) | 4 | 4 | 1 | 16 |
| Blasthole Drill | 2 | 2 | 2 | 16 |
| Supervision | | 3 | 3 | 12 |
| **Roads and Rehab Unit** | | | | |
| Bulldozers D8 | 1 | 1 | 1 | 4 |
| Graders | 1 | 1 | 1 | 4 |
| Water Bowser | 1 | 1 | 1 | 4 |
| Shift supervision | | 2 | 2 | 8 |
| Agric. tractor | 2 | 2 | - | 8 |
| Hydr. Backhoe | 1 | 1.5 | - | 3 |
| Supervision | | 2 | - | 4 |
| Labour crew | | 4 | - | 8 |
| **Maintenance** | | | | |
| Cranes and forklifts | 3 | 3 | 1 | 3 |
| Fuel/service truck | 1 | 2 | 2 | 8 |
| Supervision | | 4 | - | 12 |
| Day Mechanics | | 12 | - | 12 |
| Shift mechanics | | 3 | 3 | 12 |
| Electricians | | 3 | - | 6 |
| Tradesman | | 4 | - | 8 |
| **Mine Planning and Quality Control** | | | | |
| Control centre | 1 | 2 | 2 | 8 |
| Technicians | | 8 | - | 8 |
| Helpers | | 2 | 2 | 8 |
| **Geology Department** | | | | |
| Drillers | 2 | 4 | - | 8 |
| Helpers | | 4 | - | 8 |
| Samplers | | 4 | - | 8 |
| Supervision | | 2 | - | 4 |
| **Administration and Logistics** | | | | |
| Clerical staff | | 6 | - | 6 |
| Storekeepers | | 6 | - | 6 |
| | | | | ---------- + |
| **Total manning exclusive sick leave/annual leave and Sr Staff** | | | | **276** |

*) The number of truck drivers will gradually increase with increasing haul distances

**) Inclusive of 4 trucks and 2 large wheel loaders for stockpile recovery/feed to crusher

### 20.9 Cost Estimates

Costs are estimated with equipment owned and operated by Global Alumina. The battery limit for the mining operation is for the ore delivered into the crusher by truck or wheel loader.

Apart from general technical and administration costs, nearly all mining costs can be related to the use of mobile equipment but for the general facilities such as the maintenance- and repair- buildings, stores, explosives stores, change room, mine office, sampling shed and laboratory. The cost model is accordingly based on hourly unit cost estimates for the mobile equipment with for each single piece of equipment the costs for:

- purchase price;
- costs of shipping and insurance, delivery to site, erection and commissioning;
- operating cost items fuel, lubricants, tires, spare parts and consumables;
- cost of maintenance and repair contracts (MARC contracts); but
- excluding all taxes, levies and import duties.

Housing, power and water supply are excluded from the estimates under this mine plan.

Cost estimates are to a level of accuracy of +/- 20% and for major cost items they are based on quotations. All costs are in constant 2005 (IIIrd quarter) US dollars.

#### 20.9.1 Initial Investment and Replacement Capital Cost Estimate

Initial investment and replacement capital schedules are presented in Schedules 20.9.1a and 1b, comprising:

- equipment for the mining operation and for stockpile reclamation;
- equipment for the Roads and Rehabilitation Unit;
- ancillary equipment, buildings and facilities such as workshops; but
- excluding any earthmoving or haulage equipment for solid red mud disposal.

**Buildings and Facilities**

Capital expenditure for general facilities is required at the start of the project, for:

- Construction of an equipment service area. In this fenced area, equipment delivery and commissioning/erection is to take place. The cost involved is mostly in earthworks, which are expected to be done with the newly arriving owner's equipment. The cost for such use is accounted for in the cost model by the equipment arriving early/pre-production operating costs.
- Access roads and mine roads and complete development of the stockpiling area is similarly foreseen with the mining equipment arriving early and accounted for in the operating costs of the mine schedule with the exception of special items such as fencing.
- Workshops, stores, office, sample shed and laboratory buildings: are estimated as cash costs payable to third parties/contractors.
- High explosives magazine and bulk explosives storage buildings: earthworks (3 m bund) foreseen by own earthmoving equipment with buildings as cash cost to contractor(s).
- Mine closure costs: mine rehabilitation is an ongoing process throughout the life of the mine and accounted for under the capital and operating cost estimates for the Mining Department (in particular, Year 0) and the Roads and Rehabilitation Unit (throughout project life) respectively. However, at the very end of the mine life, buildings will need to be removed and the land restored to its future use. Mine closure costs related to the clearing of land for permanent facilities at the end of the project are accounted for as a lump sum.

The initial capital investment according to this preliminary estimate amounts to just under twenty million US$ inclusive of a 15% contingency. The total initial capital investment and replacement capital over the 25-year period inclusive of mine closure costs, amounts to an undiscounted US$ 86 million or US$ 0.48 per dmt of bauxite.

### 20.9.2 Operating Cost Estimate

Direct operating costs have been estimated on the basis of the detailed equipment unit cost estimates (hourly rates are given in Table 20.7.6) and a 25-Year undiscounted operating cost schedule, presented in Table 20.9.2b. The costs for explosives and blasting ancillaries are estimated on a per ton blasted-basis. Personnel costs are excluded from the equipment unit costs but instead, are detailed as an annual total for the entire mining operation in the schedule. They have been estimated as part of the labour requirements for the entire Global Alumina Refinery project but based on the detailed mine personnel requirements established in Section 20.8 on Personnel Requirements.

A breakdown of the operating cost of US$2.58 per dmt of bauxite delivered to the crusher, averaged over the 25-year period but in constant 2005 United States dollars, is given in Table 20.9.2 overleaf.

## Table 20.9.1a Equipment Investment and Replacement Schedule

| | | Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Project Year | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | |
| | Initial Nr. of Units | Depr. Period | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **CONSTRUCTION/MINE CLOSURE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Service Area | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Access Roads | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Office, sampleshed, laboratory facilities | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Maintenance workshops, store bldg | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Miscellaneous, Mine Closure | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2 |
| **Sub-total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **PRINCIPAL MINING EQUIPMENT** | total tr req | -> | 1 | 6 | 9 | 9 | 10 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 17 | 19 | 22 | 22 | 22 | 23 | 23 | 23 | 22 | 20 | 18 | 369 |
| Dump Truck 65 t *) | 9 | 8 | 3 | 3 | 3 | | | 2 | | | 3 | 4 | 3 | | | 3 | 3 | 3 | 6 | 3 | 3 | 2 | | 2 | 2 | 2 | 4 | 54 |
| Front shovel 11 m3 | 1 | 8 | 1 | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | 1 | 4 |
| Mass Excavator 10 m3 | 1 | 8 | 1 | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | 1 | 4 |
| Wheelloader 9 m3 *) | 3 | 8 | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | | | | | | 1 | 1 | 1 | | | | | | 1 | 10 |
| Bulldozer Ripper 410HP | 3 | 8 | 2 | 1 | | | | | | | 2 | 1 | | | | | | | 2 | 1 | | | | | | | 1 | 10 |
| Blast hole drill | 2 | 8 | 2 | | | | | | | | 2 | | | | | | | | 2 | | | | | | | | 2 | 8 |
| *) incl4 trucks + 2 wheelloader for S/pile | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sub-total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **ROADS AND REHABILITATION UNIT** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Compactor | | | | | | | | | | | | | | | | | | | | | | | | | | | | 0 |
| Vibrating Roller | 1 | 8 | 1 | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | 1 | 4 |
| Road Grader 280hp | 1 | 8 | 1 | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | 1 | 4 |
| D6 size 190 HP B/dozer multishank ripp. | 1 | 8 | 1 | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | 1 | 4 |
| Water Bowser 20 m3 | 2 | 5 | 2 | | | | | 2 | | | | | 2 | | | | | 2 | | | | | 2 | | | | | 10 |
| Backhoe excavator 1.5 yd | 2 | 8 | 2 | | | | | | | | 2 | | | | | | | | 2 | | | | | | | | 2 | 8 |
| 100 hp Agricultural Tractor + Dumper | 2 | 8 | 2 | | | | | | | | 2 | | | | | | | | 2 | | | | | | | | 2 | 8 |
| 100 hp AgriculturalTractor + Flat Bed | 1 | 8 | 1 | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | 1 | 4 |
| Assorted agricultural implements | 1 | 8 | 1 | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | 1 | 4 |
| **Sub-total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **ANCILLARY EQUIPMENT** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Workshop equipment | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Forklift | 1 | 8 | 1 | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | 1 | 4 |
| Fuelservice truck | 1 | 8 | 1 | | | | | | | | 1 | | | | | | | | 1 | | | | | | | | 1 | 4 |
| Radio system | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Office, survey and laboratory equipment | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Assorted Personnel Trucks 4x2 | 12 | 5 | 12 | | | | | 12 | | | | | 12 | | | | | 12 | | | | | 12 | | | | | 60 |
| Assorted Personnel Trucks 4x4 | 12 | 5 | 12 | | | | | 12 | | | | | 12 | | | | | 12 | | | | | 12 | | | | | 60 |

## Table 20.9.1b Investment and Replacement Capital Schedule

| US$ 2005 x '000 | Initial No of Units | Unit Cost | Year 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project Year | | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| **CONSTRUCTION/MINE CLOSURE** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Service Area | 1 | 50.000 | 50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Access Roads | 1 | 100.000 | 100 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Office, sampleshed, laboratory facilities | 1 | 100.000 | 100 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Maintenance workshops, store bldg | 1 | 200.000 | 200 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Miscellaneous, Mine Closure | 1 | 200.000 | 200 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 200 |
| Sub-total | | 650.000 | 650 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 200 |
| **PRINCIPAL MINING EQUIPMENT** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dump Truck 65 t *) | 9 | 575.000 | 1,725 | 1,725 | 1,725 | - | - | 1,150 | - | - | 1,725 | 2,300 | 1,725 | - | - | 1,725 | 1,725 | 1,725 | 3,450 | 1,725 | 1,725 | 1,150 | - | 1,150 | 1,150 | 1,150 | 2,300 |
| Front shovel 11 m3 | 1 | 1,800.000 | 1,800 | - | - | - | - | - | - | - | 1,800 | - | - | - | - | - | - | - | 1,800 | - | - | - | - | - | - | - | 1,800 |
| Mass Excavator 10 m3 | 1 | 1,800.000 | 1,800 | - | - | - | - | - | - | - | 1,800 | - | - | - | - | - | - | - | 1,800 | - | - | - | - | - | - | - | 1,800 |
| Wheelloader 9 m3 *) | 3 | 700.000 | 700 | 700 | 700 | - | - | - | - | - | 700 | 700 | 700 | - | - | - | - | - | 700 | 700 | 700 | - | - | - | - | - | 700 |
| Bulldozer Ripper 410HP | 3 | 565.000 | 1,130 | 565 | - | - | - | - | - | - | 1,130 | 565 | - | - | - | - | - | - | 1,130 | 565 | - | - | - | - | - | - | 565 |
| Blast hole drill | 2 | 735.000 | 1,470 | - | - | - | - | - | - | - | 1,470 | - | - | - | - | - | - | - | 1,470 | - | - | - | - | - | - | - | 1,470 |
| *) incl 4 trucks + 2 wheelloader for S/pile | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sub-total | | 14,040.000 | 8,625 | 2,990 | 2,425 | - | - | 1,150 | - | - | 8,625 | 3,565 | 2,425 | - | - | 1,725 | 1,725 | 1,725 | 10,350 | 2,990 | 2,425 | 1,150 | - | 1,150 | 1,150 | 1,150 | 8,635 |
| **ROADS AND REHABILITATION UNIT** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Compactor | - | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Vibrating Roller | 1 | 100.000 | 100 | - | - | - | - | - | - | - | 100 | - | - | - | - | - | - | - | 100 | - | - | - | - | - | - | - | 100 |
| Road Grader 280hp | 1 | 400.000 | 400 | - | - | - | - | - | - | - | 400 | - | - | - | - | - | - | - | 400 | - | - | - | - | - | - | - | 400 |
| D8 size 190 HP B/dozer multishank ripper | 1 | 240.000 | 240 | - | - | - | - | - | - | - | 240 | - | - | - | - | - | - | - | 240 | - | - | - | - | - | - | - | 240 |
| Water Bowser 20 m3 | 2 | 120.000 | 240 | - | - | - | - | 240 | - | - | - | - | 240 | - | - | - | - | 240 | - | - | - | - | 240 | - | - | - | - |
| Backhoe excavator 1.5 yd | 2 | 180.000 | 360 | - | - | - | - | - | - | - | 360 | - | - | - | - | - | - | - | 360 | - | - | - | - | - | - | - | 360 |
| 100 hp Agricultural Tractor + Dumper | 2 | 70.000 | 140 | - | - | - | - | - | - | - | 140 | - | - | - | - | - | - | - | 140 | - | - | - | - | - | - | - | 140 |
| 100 hp Agricultural Tractor + Flat Bed | 1 | 60.000 | 60 | - | - | - | - | - | - | - | 60 | - | - | - | - | - | - | - | 60 | - | - | - | - | - | - | - | 60 |
| Assorted agricultural implements | 1 | 50.000 | 50 | - | - | - | - | - | - | - | 50 | - | - | - | - | - | - | - | 50 | - | - | - | - | - | - | - | 50 |
| Sub-total | | 1,590.000 | 1,590 | - | - | - | - | 240 | - | - | 1,350 | - | 240 | - | - | - | - | 240 | 1,350 | - | - | - | 240 | - | - | - | 1,350 |
| **ANCILLARY EQUIPMENT** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Workshop equipment | 1 | 100.000 | 100 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Forklift | 1 | 40.000 | 40 | - | - | - | - | - | - | - | 40 | - | - | - | - | - | - | - | 40 | - | - | - | - | - | - | - | 40 |
| Fuelservice truck | 1 | 60.000 | 60 | - | - | - | - | - | - | - | 60 | - | - | - | - | - | - | - | 60 | - | - | - | - | - | - | - | 60 |
| Radio system | 1 | 50.000 | 50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Office, survey and laboratory equipment | 1 | 50.000 | 50 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Assorted Personnel Trucks 4x2 | 12 | 20.000 | 240 | - | - | - | - | 240 | - | - | - | - | 240 | - | - | - | - | 240 | - | - | - | - | 240 | - | - | - | - |
| Assorted Personnel Trucks 4x4 | 12 | 30.000 | 360 | - | - | - | - | 360 | - | - | - | - | 360 | - | - | - | - | 360 | - | - | - | - | 360 | - | - | - | - |
| Sub-total | | 800.000 | 900 | - | - | - | - | 600 | - | - | 100 | - | 600 | - | - | - | - | 600 | 100 | - | - | - | 600 | - | - | - | 100 |
| | | Initial Capex | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Capital Expenditure | | 17,080.000 | 11,765 | 2,990 | 2,425 | - | - | 1,990 | - | - | 10,075 | 3,565 | 3,265 | - | - | 1,725 | 1,725 | 2,565 | 11,800 | 2,990 | 2,425 | 1,150 | 840 | 1,150 | 1,150 | 1,150 | 10,285 |
| Contingency on Capex | | 15% | 1,765 | 449 | 364 | - | - | 299 | - | - | 1,511 | 535 | 490 | - | - | 259 | 259 | 385 | 1,770 | 449 | 364 | 173 | 126 | 173 | 173 | 173 | 1,543 |
| Total Capital Expenditure | | 19,642 | 13,530 | 3,439 | 2,789 | - | - | 2,289 | - | - | 11,586 | 4,100 | 3,755 | - | - | 1,984 | 1,984 | 2,950 | 13,570 | 3,439 | 2,789 | 1,323 | 966 | 1,323 | 1,323 | 1,323 | 11,828 |
| Cumulative | | | 13,530 | 16,968 | 19,757 | 19,757 | 19,757 | 22,046 | 22,046 | 22,046 | 33,632 | 37,732 | 41,486 | 41,486 | 41,486 | 43,470 | 45,454 | 48,404 | 61,974 | 65,412 | 68,201 | 69,523 | 70,489 | 71,812 | 73,134 | 74,457 | 86,285 |

## Table 20.9.2a Operating Cost Schedule

| | | Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Project Year | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| | UNIT | Cost/ Unit opex/yr | | | | | | | | | | | | | | | | | | | | | | | | | |
| **CONSTRUCTION/MINE CLOSURE** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Service Area | LS | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Access Roads | LS | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Office, sampleshed, laboratory facilities | /year | 20,000 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Maintenance workshops, store bldg | /year | 20,000 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Miscellaneous | /year | 20,000 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **PRINCIPAL MINING EQUIPMENT** | hrs/yr | opex/yr | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dump Truck 65 t *) | 5200 | 65.00 | 3 | 8 | 9 | 9 | 10 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 17 | 19 | 22 | 22 | 22 | 23 | 23 | 23 | 22 | 20 | 18 |
| Front shovel 11 m3 | 5200 | 90.00 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Mass Excavator 10 m3 | 5200 | 90.00 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Wheelloader 9 m3 *) | 4000 | 65.00 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Bulldozer Ripper 410HP | 5200 | 45.00 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Blast hole drill | 5200 | 65.00 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| *) incl4 trucks + 2 wheelloader for S/pile | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **ROADS AND REHABILITATION UNIT** | hrs/yr | opex/hr | | | | | | | | | | | | | | | | | | | | | | | | | |
| Compactor | | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vibrating Roller | 2,000 | 8.00 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Road Grader 280hp | 2,000 | 40.00 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| D8 size 190 HP B/dozer multishank ripp | 2,000 | 40.00 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Water Bowser 20 m3 | 2,000 | 30.00 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Backhoe excavator 1.5 yd | 2,000 | 40.00 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 100 hp Agricultural Tractor + Dumper | 2,000 | 20.00 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 100 hp AgriculturalTractor + Flat Bed | 2,000 | 20.00 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Assorted agricultural implements | 2,000 | 2.00 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **ANCILLARY EQUIPMENT** | | opex/yr | | | | | | | | | | | | | | | | | | | | | | | | | |
| Workshop equipment | /YR | 50,000 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Forklift | /YR | 5,000 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Fuelservice truck | /YR | 5,000 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Radio system | /YR | 5,000 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Office, survey and laboratory equipment | /YR | 20,000 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Assorted Personnel Trucks 4x2 | /YR | 4,000 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Assorted Personnel Trucks 4x4 | /YR | 6,000 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |

## Table 20.9.2b Operating Cost Schedule

| US$ 2005 x '000 | | Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Project Year | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| | Inital Nr. of Units | Unit Cost | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | opex/yr | | | | | | | | | | | | | | | | | | | | | | | | | |
| **CONSTRUCTION/MINE CLOSURE** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Equipment Service Area | *) | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Access Roads | *) | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Office, sempleaned, laboratory facilities | /year | 20.000 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Maintenance workshops, store bldg | /year | 20.000 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Miscelaneous | /year | 20.000 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Subtotal | | | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| **PRINCIPAL MINING EQUIPMENT** | hrs/yr | opex/yr | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dump Truck 65t *) | 5.200 | 55.00 | 858 | 1,716 | 2,574 | 2,574 | 2,860 | 3,146 | 3,146 | 3,146 | 3,146 | 3,432 | 3,432 | 3,432 | 3,432 | 3,432 | 4,862 | 5,434 | 6,292 | 6,292 | 6,292 | 6,578 | 6,578 | 6,578 | 6,292 | 5,720 | 5,146 |
| Front shovel 11 m3 | 5.200 | 90.00 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 |
| Mass Excavator 10 m3 | 5.200 | 90.00 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 | 468 |
| Wheelloader 9 m3 *) | 4.000 | 65.00 | 260 | 520 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 | 780 |
| Bulldozer Ripper 410HP | 5.200 | 45.00 | 468 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 | 702 |
| Blast hole drill | 5.200 | 65.00 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 | 676 |
| *) incl4 trucks + 2 wheelloader for S/pile | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtotal | | | 3,198 | 4,550 | 5,648 | 5,648 | 5,954 | 6,240 | 6,240 | 6,240 | 6,240 | 6,528 | 6,528 | 6,528 | 6,528 | 6,528 | 7,958 | 8,528 | 9,386 | 9,386 | 9,386 | 9,672 | 9,672 | 9,672 | 9,386 | 8,814 | 8,242 |
| **ROADS AND REHABILITATION UNIT** | hrs/yr | opex/hr | | | | | | | | | | | | | | | | | | | | | | | | | |
| Compactor | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vibrating Roller | 2.000 | 8.00 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Road Grader 280hp | 2.000 | 40.00 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| D6 size 150 HP Bldozer multishank ripp | 2.000 | 40.00 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Water Bowser 20 m3 | 2.000 | 30.00 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| Backhoe excavator 1.5 yd | 2.000 | 40.00 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |
| 100 hp Agricultural Tractor + Dumper | 2.000 | 20.00 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| 100 hp AgriculturalTractor + Flat Bed | 2.000 | 20.00 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Assorted agricultural implements | 2.000 | 2.00 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Subtotal | | | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 | 580 |
| **ANCILLARY EQUIPMENT** | | opex/yr | | | | | | | | | | | | | | | | | | | | | | | | | |
| Workshop equipment | /YR | 50.000 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Forklift | /YR | 5.000 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Fuelservice truck | /YR | 5.000 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Radio system | /YR | 5.000 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Office, survey and laboratory equipment | /YR | 20.000 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Assorted Personnel Trucks 4x2 | /YR | 4.000 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| Assorted Personnel Trucks 4x4 | /YR | 6.000 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 |
| Subtotal | | | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 |
| Explosives under contract | /qmt | 0.40 | 670 | 2,050 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 |
| Contingency | | 15% | 707 | 1,117 | 1,447 | 1,447 | 1,486 | 1,523 | 1,523 | 1,523 | 1,523 | 1,571 | 1,571 | 1,571 | 1,571 | 1,571 | 1,783 | 1,871 | 2,000 | 2,000 | 2,000 | 2,043 | 2,043 | 2,043 | 2,000 | 1,914 | 1,828 |
| Total Opex excl. personnel, royalties | | | 5,420 | 8,582 | 11,055 | 11,055 | 11,384 | 11,713 | 11,713 | 11,713 | 11,713 | 12,042 | 12,042 | 12,042 | 12,042 | 12,042 | 13,696 | 14,346 | 15,331 | 15,331 | 15,331 | 15,660 | 15,660 | 15,660 | 15,331 | 14,679 | 14,013 |
| Cumulative | | | 5,420 | 13,982 | 25,037 | 36,092 | 47,475 | 59,188 | 70,901 | 82,614 | 94,326 | 106,368 | 118,410 | 130,451 | 142,493 | 154,535 | 168,231 | 182,577 | 197,908 | 213,239 | 228,570 | 244,230 | 259,890 | 275,550 | 290,881 | 305,560 | 319,574 |
| Personnel costs | /YR | 6.000 | 4,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 |
| Total Opex incl. personnel, but excl. taxes, royalties and overheads INDICATIVE | | | 9,420 | 13,582 | 17,055 | 17,055 | 17,384 | 17,713 | 17,713 | 17,713 | 17,713 | 18,042 | 18,042 | 18,042 | 18,042 | 18,042 | 19,696 | 20,346 | 21,331 | 21,331 | 21,331 | 21,660 | 21,660 | 21,660 | 21,331 | 20,679 | 20,013 |
| | | | 9,420 | 22,982 | 40,037 | 57,092 | 74,475 | 92,188 | 109,901 | 127,614 | 145,326 | 163,368 | 181,410 | 199,451 | 217,493 | 235,535 | 255,231 | 275,577 | 296,908 | 318,239 | 339,570 | 361,230 | 382,890 | 404,550 | 425,881 | 446,560 | 466,574 |

**Table 20.9.3 Average Operating Cost of Bauxite over mine life**

| OPERATING EXPENDITURE PER TONNE OF BAUXITE<br>BAUXITE DELIVERED TO CRUSHER<br>average over 25 years, in constant 2005 US$ x '000 | | Opex/ dmt BXT |
|---|---|---|
| **CONSTRUCTION/MINE CLOSURE** | | |
| Equipment Service Area | $ | - |
| Access Roads | $ | - |
| Office, sampleshed, laboratory facilities | $ | 0.00 |
| Maintenance workshops, store bldg | $ | 0.00 |
| Miscellaneous | $ | 0.00 |
| **Subtotal** | **$** | **0.01** |
| **PRINCIPAL MINING EQUIPMENT** | | |
| Dump Truck 65 t *) | $ | 0.59 |
| Front shovel 11 m3 | $ | 0.06 |
| Mass Excavator 10 m3 | $ | 0.06 |
| Wheelloader 9 m3 *) | $ | 0.10 |
| Bulldozer Ripper 410HP | $ | 0.10 |
| Blast hole drill | $ | 0.09 |
| **Subtotal** | **$** | **1.01** |
| **ROADS AND REHABILITATION UNIT** | | |
| Compactor | | |
| Vibrating Roller | $ | 0.00 |
| Road Grader 280hp | $ | 0.01 |
| D6 size 190 HP B/dozer multishank ripper | $ | 0.01 |
| Water Bowser 20 m3 | $ | 0.02 |
| Backhoe excavator 1.5 yd | $ | 0.02 |
| 100 hp Agricultural Tractor + Dumper | $ | 0.01 |
| 100 hp AgriculturalTractor + Flat Bed | $ | 0.01 |
| Assorted agricultural implements | $ | 0.00 |
| **Subtotal** | **$** | **0.08** |
| **ANCILLARY EQUIPMENT** | | |
| Workshop equipment | $ | 0.01 |
| Forklift | $ | 0.00 |
| Fuelservice truck | $ | 0.00 |
| Radio system | $ | 0.00 |
| Office, survey and laboratory equipment | $ | 0.00 |
| Assorted Personnel Trucks 4x2 | $ | 0.01 |
| Assorted Personnel Trucks 4x4 | $ | 0.01 |
| **Subtotal** | **$** | **0.03** |
| **Explosives under contract** | $ | 0.41 |
| **Total Opex excl. personnel, royalties and Overheads** | **$** | **1.53** |
| **Contingency 15%** | $ | 0.23 |
| **Total Opex excl. personnel, royalties** | **$** | **1.76** |
| **Personnel costs** | $ | 0.81 |
| **Total Opex incl. personnel,but excl. of royalties and overheads** | **$** | **2.58** |

## 20.10 Summary

The mine plan has demonstrated that a constant supply of bauxite at specified, predictable grades can be achieved for a period of 24 years at full production capacity. Only three of the nineteen bauxite plateaus within the Mining Concession have been drilled and evaluated for resource estimation and mine planning.

The direct mine operating costs at US$2.58 equate to some US$7 per ton of dry bauxite, or less than 10% of the Refinery operating costs. The initial capital cost of the mine development and mining equipment at 19.8 million US$ is very minor compared to the overall Refinery cost. The total sum of initial capital cost, equipment replacement capital costs over the twenty-five year period and mine closure costs, amounts to 86 million US$ or US$ 0.47 per ton of dry bauxite. Thus the impact of a small change in grade or costs is very slight in terms of the overall project viability.

## 20.11 Forward Work Programme

The on-going programme has the objective of firming up the long-term plan. The limits to the mineralization on Plateaux 2, 7 and 15 will be explored. Plateaus 3 and 17 have also been included to offer longer term development options. Additional excavation of seven pits is also on-going to provide more in-situ density data.

Global Alumina has planned the following drilling programme to expand the resource base and support medium- and short-term mine plans. The cost estimate for the completion of this programme is 1.3 million $US for drilling and analytical services.

**Table 20.1 Exploration Programme**
All Assays by Ultra Trace

| Plateau No. | Grid (m) | Access | Survey | Auger Drilling | | | Core Drilling | | | Pit | Sample Prep. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | km | Points | Av. Depth (m) | No. Holes | Qty | Av. Depth (m) | No. Holes | Qty | No. /Depth | |
| **2** | 300x300 | **29** | **88** | 12 | **88** | **1056** | | | | 2/20 | |
| **3** | 300x300 | **41** | **123** | 12 | **123** | **1476** | | | | 1/10 | |
| **7** | 300x300 | 13 | 37 | 13 | 37 | 481 | | | | | |
| | 150x150 | 31 | 184 | 13 | 184 | 2392 | | | | | |
| | 106x106 | 55 | 167 | 13 | 167 | 2171 | | | | | |
| | 75x75 | 33 | 400 | 13 | 400 | 5200 | | | | | |
| **Tot №7** | | **132** | **788** | | **788** | **10244** | | | | 2/20 | |
| **15** | 150x150 | **33** | **98** | 12 | **98** | **1176** | | | | 1/10 | |
| **17** | 300x300 | **14** | **42** | 12 | **42** | **504** | | | | 1/10 | |
| **Total** | 300x300 | | | | 290 | 3517 | | | | | |
| | 150x150 | | | | 282 | 3568 | | | | | |
| | 106x106 | | | | 167 | 2171 | | | | | |
| | 75x75 | | | | 400 | 5200 | | | | | |
| **Grand Total** | | **249** | **1139** | | **1139** | **14456** | **15** | **30** | **450** | **7/70** | **15116** |

Grid Sizes:

- 300 x 300 m Indicated Resources
- 212 x 212 m Indicated Resources
- 150 x 150 m Measured Resources
- 75 x 75 m 10 year mine plan

Global Alumina will also implement a drill programme to prepare the initial mining area for development. Using a 25 x 25 m drilling grid, this will require approximately 9000m to in-fill the current 75m grid and cover the requirement of the short-term mine plan (one year). The cost of this would be approximately $US 630 000, including analytical services.

## 21. INTERPRETATION and CONCLUSIONS

**Interpretation of Exploration Data**
Bauxite occurs as a regular layer locally interrupted by islands of off-grade material and capped with thin top soil and/or a ferruginous hardcap. Sensitivity analysis indicated that cutoff grades of 38% $Al_2O_3$ and 10% $SiO_2$.were required to obtain borehole composites consistent with the refinery specification of 39% AA. The representation of the lateral distribution of grades and thickness was then built with 2D modelling of borehole composites; a method best suited for thin layer mineralisation. Resource categorization was based on results of spatial statistics (refer to adequacy of data density). Resources were subsequently transferred to Reserves by applying a set of mining and grade scheduling constraints summarized below.

**Data Reliability**
Based on available QA/QC, BH&P are confident that the exploration data provide a sound basis for resource and reserve estimates. Samples were taken and prepared following accepted practices and standards, and were assayed by laboratories with proven track records for bauxite analysis. Security of sample and chain of custody are considered appropriate. Assay accuracy was confirmed by external checks, while assay precision and instrument calibration over time was checked using reference material prepared by Global Alumina. It is concluded that the exploration database offers a sound and reliable support for resource estimates.

**Adequacy of Data Density**
Spatial statistics concluded to the adequacy of drill grids of 300 x 300 m and 150 x 150 m for the definition of Indicated and Measured Resources respectively. Data on ore characterisation is deemed sufficient to provide the required parameter for resource/reserve evaluation and process design.

**Results**
Resources were estimated using the following constraints:

- cutoff grades 38% $Al_2O_3$ and 10% $SiO_2$ on drill hole composites;
- minimum ore thickness 1 m; and
- stripping ratio 1:1, overburden m/ bauxite m,

**Table 21.a** **Reportable Mineral Resource as of November 25th 2005**
Dry Density 2.0 t/m$^3$, Block Size 50 x 50m,

| Resources | Dry Mt | Overburd m | Bauxite Depth m | $Fe_2O_3$ % | $Al_2O_3$ % | $AA_{150}$ % | $SiO_2$ % | $RSiO_2$ % | Grid Size m x m |
|---|---|---|---|---|---|---|---|---|---|
| Measured | 122 | 0.9 | 8.6 | 25.1 | 45.2 | 38.9 | 2.0 | 1.0 | 150 x 150 |
| Indicated | 108 | 1.0 | 6.1 | 25.0 | 44.9 | 39.1 | 2.1 | 1.1 | 300 x 300 |
| Inferred | 2.9 | 1.5 | 4.9 | 25.7 | 44.6 | 38.8 | 1.9 | 0.9 | up to 600 x 600 |

The above Reserves are included within the Resource tonnage table in Section 19.
Resources sterilised by the railway line and Refinery zones are not included.

Resources were then transferred to Reserves by applying mining and grade scheduling constraints, including the following:

- Cutoff of 40% $Al_2O_3$ on drill hole composite averages;
- Minimum mineable thickness of 2m;
- Grade dilution with footwall and overburden (exclusive of top soil); and

- Mine recovery factor of 95%.

**Table 21.b** **Reportable Mineral Reserve as of November 25th, 2005**
Dry Density 2.0 t/m$^3$, Block Size 50 x 50m.

| Reserves | Dry Mt | Top Soil m | Bauxite Depth m | $Fe_2O_3$ % | $Al_2O_3$ % | $AA_{150}$ % | $SiO_2$ % | $RSiO_2$ % | Grid Size m x m |
|---|---|---|---|---|---|---|---|---|---|
| Proven | 101 | 0.2 | 9.1 | 25.3 | 45.0 | 38.8 | 2.0 | 1.0 | 150 x 150 |
| Probable | 87 | 0.2 | 6.7 | 25.7 | 44.4 | 38.6 | 2.1 | 1.0 | 300 x 300 |
| Reportable Mineral Reserve | 188 | 0.2 | 8.0 | 25.5 | 44.8 | 38.7 | 2.0 | 1.0 | |

Measured and Indicated Mineral Resources shown in Table 21.a are inclusive of those Mineral Resources modified to produce the Mineral Reserves as shown in Table 21.b. Resources sterilised by the railway line and Refinery zones are not included.

**Areas of Uncertainty**
Ore density is at this stage based on two pits only. Nevertheless, the density used in the project (2.0 t/m$^3$) is consistent with that used in the mining district and in Friguia. Hence, the uncertainty associated with density is low, i.e. +/- 0.1 t/m$^3$ only, within the 95% confidence interval. Additional pits are currently being excavated to firm up density estimates. The analysis of standard errors on the resource estimation parameters concluded that, within the 95% confidence interval, the alumina contained within the Resources could range from:

- 44Mt to 51Mt, i.e. an error of 7.5% relative for the 150 x 150m grid
- 37Mt to 49Mt, i.e. an error of 14.3% relative for the 300 x 300m grid

In all deposits, the mineralisation remains largely open and therefore the upside potential is considerable.

**Compliance with Objectives**
The exploration programme has fulfilled the objectives to:
- characterise bauxite in sufficient details and the required accuracy to support process design and resource evaluation; and
- establish a reserve base within easy distance from the refinery, covering 25 years of alumina production at design capacity.

## 22. RECOMMENDATIONS

**Survey**
Elevation differences between field survey and the DTM provided by MAPS should be resolved rapidly with a view to normalising the GIS database. The concession limits should be legally surveyed.

**Further Exploration**
The proposed exploration program (Section 20) will cover the need for detailed planning for 10 years mine plan as well as extending the overall mine plan to allow for long term planning. The programme will also explore the full extent of Plateaus 2, 7 and 15. BH & P support this on-going programme.

It is also recommended that when the results of above programme are completed, Global Alumina conduct pre-mining drilling (development drilling) for the year plan, at a grid deemed sufficient to plan ore lifting and blast-holes depths (i.e. 25 m x 25 m).

Finally, it is advised that blasting tests be carried out and blast holes sampled to validate development drilling and grade control procedures for ore lifting. Such tests should be planned in two different ore panels, within surface area of approximately 18,000 $m^2$ each, i.e. based on 30 development drill holes, which should correspond to some 250 kt each.

**Bauxite Characterization**
The proposed exploration program (Section 20) will cover the requirements to firm up physical bauxite characteristics and no further work is deemed necessary.

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## 24. DATE AND SIGNATURE PAGE

The report titled "Bauxite Resources, Reserves and Mine Plan prepared for Global Alumina" dated 23rd February, 2006 was prepared by and signed by the following authors:

Dominique L. Butty

(signed by)

Dated at Puidoux, Switzerland
23rd February, 2006

Dominique L. Butty
MSc, MA, EuroGeol, CH Geolcert

Robert F. Herinckx

(signed by)

Dated at Klundert, The Netherlands
23rd February, 2006

Robert F. Herinckx, Mining Engineer
MSc, EurIng, CEng (UK), MIMMM

## Certificates of Qualifications

To: Global Alumina Corporation
And To: Guinea Alumina Corporation S.A.

**Dominique L. Butty**

As an author of this report titled "Bauxite Resources, Reserves and Mine Plan" prepared for Guinea Alumina Corporation S.A., an indirect wholly owned subsidiary of Global Alumina Corporation, dated 23rd February, 2006 (The Technical Report), I hereby make the following statements:

1. My name is Dominique L. Butty and I am a consulting geologist providing professional geological consulting services. I am a partner in Butty Herinckx and Partners BV, Geological and Mining Consultants, The Netherlands. I reside at Route de Chardonne, 1604 Puidoux, Switzerland.
2. I am a Qualified Person for the purposes of National Instrument 43-101 of the Canadian Securities Administrators. I hold a "Diplôme de Géologie" from the University of Lausanne, Switzerland (1970) and an MA degree in Computer Management from Leiden University (1985). I am a member of the Swiss Association of Geologists and of the European Federation of Geologists.
3. I have practiced my profession as an independent consulting geologist since 1986 and have had extensive experience interpreting geology in particular of bauxite and other lateritic mineralization, auditing and validating geological databases and estimating resources for feasibility studies and as an independent technical auditor.
4. I visited the project site for one week in February 2002 and November 2004. I have previously visited adjacent bauxite properties in the country of Guinea on many occasions since 1985.
5. I have carried out the estimation of mineral resources reported herein and I have prepared the reserve model for mine planning. I am responsible for the following sections of the Technical Report: Summary, Accessibility, Climate, History, Geological Setting, Deposit Type, Exploration, Drilling, Sampling Method and Approach, Sample Preparation, Data verification, Adjacent properties, Metallurgical Testing, Mineral Resource Estimate, Interpretation, Conclusions and Recommendations.
6. 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.
7. I am independent of the Issuer applying the tests set out in section 1.4 of National Instrument 43-101.
8. I have not had any prior involvement with the property which is the subject of the Technical report.
9. I have read National Instrument 43-101 and Form 43-101F1, and have prepared the Technical Report in compliance with these and in conformity with generally accepted international mining industry practice.

Dominique L. Butty

(signed by)

Dated at Puidoux, Switzerland,
23rd February, 2006

Dominique L. Butty
MSc, MA, EuroGeol, CH Geolcert

## Certificates of Qualifications

To: Global Alumina Corporation
And To: Guinea Alumina Corporation S.A.

**Robert F. Herinckx**.
As an author of this report titled "Bauxite Resources, Reserves and Mine Plan" prepared for Guinea Alumina Corporation S.A., an indirect wholly owned subsidiary of Global Alumina Corporation, dated 23rd February, 2006 (The Technical Report), I hereby make the following statements:

1. My name is Robert F. Herinckx and I am a consulting mining engineer providing professional engineering consulting services. I am a partner in Butty Herinckx and Partners BV, Geological and Mining Consultants, The Netherlands. I reside at Noordschans 59, 4791RE Klundert, The Netherlands.
2. I am a Qualified Person for the purposes of National Instrument 43-101 of the Canadian Securities Administrators. I hold a BSc and a Masters Degree from the University of Delft (1968 resp. 1971). I am a member of the Royal Dutch Institute of Engineers KiVI and a professional member of the British MIMMM.
3. I have practiced my profession as an independent consulting engineer since 1985 and have had extensive experience in orebody modelling including bauxite and lateritic nickels deposits, technical studies, mine design and mine planning, cost estimating and economic evaluation of mineral properties for feasibility studies and as an independent technical auditor.
4. I have not visited the project site recently but I have previously visited adjacent bauxite properties in the country of Guinea as a consulting mining engineer on many occasions since 1985.
5. I have carried out the estimation of Mineral Reserves reported herein and I have prepared the complete mine plan. I am responsible for the following sections of the Technical Report: Summary, Accessibility, Deposit Type, Data verification; Mineral Reserve Estimate and the Mine Plan under Other Relevant Data, Interpretation, Conclusions and Recommendations.
6. 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.
7. I am independent of the Issuer applying the tests set out in section 1.4 of National Instrument 43-101.
8. I have not had any prior involvement with the property which is the subject of the Technical report.
9. I have read National Instrument 43-101 and Form 43-101F1, and have prepared the Technical Report in compliance with these and in conformity with generally accepted international mining industry practice.

Robert F. Herinckx

(signed by)

Dated at Klundert, The Netherlands,
23rd February, 2006

Robert F. Herinckx
MSc, EurIng, CEng (UK), MIMMM

## 25. ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES

The project does not qualify as a development property or a production property and therefore this Section does not apply.

## 26. ILLUSTRATIONS

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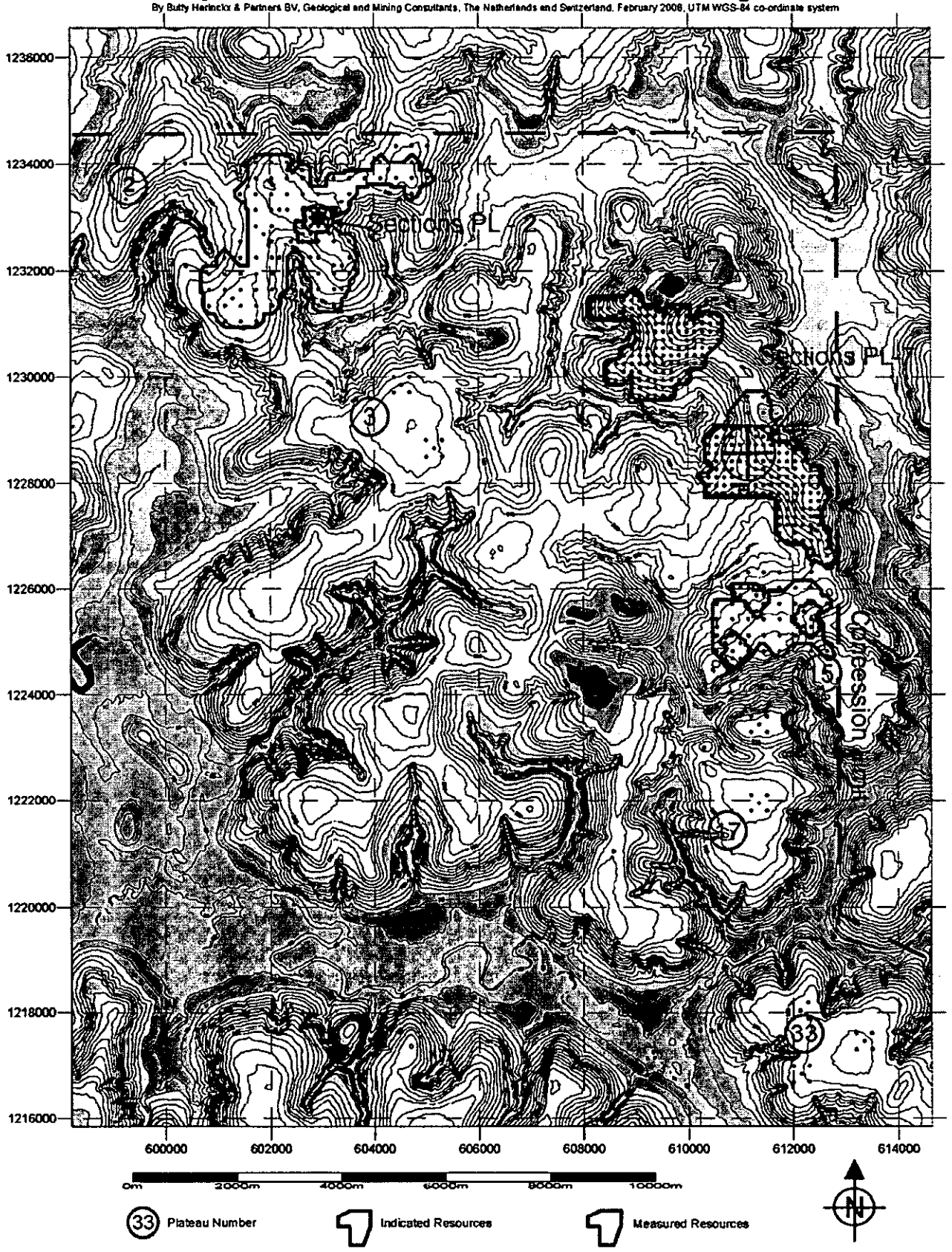
SECTION 26.1.1 EXPLORATION HOLES 2004 - 2005

# Exploration Drill Holes & Resource Categories

By Butty Heinckx & Partners BV, Geological and Mining Consultants, The Netherlands and Switzerland. February 2006, UTM WGS-84 co-ordinate system



## SECTION 26.1.2 SAMPLE LIST - Reserve Composites - Global Alumina Refinery Project – Bauxite Resources, Reserves Mine Plan

| INDEX | HOLE NO | X | Y | Z | TOP SOIL | ORE | LOI | TSiO2 | TiO2 | Fe2O3 | Al2O3 | TOC | TOTOX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 497 | 2GP0001 | 599253.7 | 1233339.4 | 229.5 | 0.30 | 2.72 | 26.96 | 3.07 | 1.77 | 16.84 | 50.62 | 0.00 | 99.27 |
| 498 | 2GP0002 | 600394.7 | 1234018.4 | 230.9 | 0.30 | 7.20 | 22.87 | 1.92 | 1.87 | 30.78 | 41.88 | 0.00 | 99.33 |
| 499 | 2GP0003 | 601584.5 | 1233591.5 | 234.5 | 0.30 | 10.19 | 25.68 | 1.90 | 2.58 | 23.02 | 46.03 | 0.00 | 99.20 |
| 500 | 2GP0004 | 603382.4 | 1233296.5 | 230.5 | 0.30 | 12.18 | 25.59 | 1.99 | 2.48 | 23.55 | 45.61 | 0.00 | 99.21 |
| 501 | 2GP0005 | 604279.2 | 1233900.5 | 241.7 | 0.30 | 7.67 | 24.38 | 2.42 | 2.40 | 27.64 | 42.38 | 0.00 | 99.20 |
| 502 | 2GP0006 | 600400.1 | 1232091.6 | 215.0 | 0.30 | 2.13 | 22.82 | 1.38 | 1.81 | 33.28 | 39.99 | 0.00 | 99.29 |
| 503 | 2GP0007 | 601888.6 | 1232690.9 | 238.2 | 0.30 | 2.00 | 19.78 | 2.36 | 1.88 | 44.13 | 31.10 | 0.00 | 99.24 |
| 504 | 2GP0008 | 602788.2 | 1232694.4 | 242.2 | 0.30 | 2.00 | 21.62 | 1.46 | 2.54 | 36.12 | 37.42 | 0.00 | 99.16 |
| 505 | 2GP0009 | 603390.0 | 1232097.8 | 232.4 | 0.30 | 2.00 | 22.04 | 1.78 | 2.23 | 34.26 | 38.79 | 0.00 | 99.10 |
| 506 | 2GP0010 | 601294.3 | 1231487.6 | 248.1 | 0.30 | 5.67 | 22.49 | 1.85 | 2.72 | 31.83 | 40.37 | 0.00 | 99.26 |
| 507 | 15GP0018 | 612503.5 | 1226629.8 | 222.1 | 0.30 | 4.65 | 25.95 | 0.64 | 2.24 | 24.13 | 46.35 | 0.00 | 99.31 |
| 508 | 7GP0011 | 610415.7 | 1232193.9 | 277.7 | 0.30 | 2.00 | 20.95 | 1.44 | 2.16 | 38.15 | 36.63 | 0.00 | 99.33 |
| 509 | 7GP0012 | 609641.1 | 1231770.6 | 292.2 | 0.30 | 2.00 | 20.34 | 1.53 | 1.79 | 40.35 | 35.29 | 0.00 | 99.29 |
| 510 | 7GP0013 | 608926.9 | 1231295.3 | 241.8 | 0.30 | 10.16 | 26.58 | 1.33 | 2.01 | 21.86 | 47.47 | 0.00 | 99.25 |
| 511 | 7GP0014 | 608825.8 | 1230399.1 | 269.1 | 0.30 | 7.16 | 25.24 | 1.20 | 2.01 | 25.83 | 45.06 | 0.00 | 99.34 |
| 512 | 7GP0015 | 610994.1 | 1228574.7 | 233.7 | 0.30 | 6.68 | 22.78 | 1.33 | 2.27 | 31.24 | 41.60 | 0.00 | 99.22 |
| 513 | 7GP0016 | 611896.9 | 1228276.0 | 263.6 | 0.30 | 5.65 | 24.04 | 1.08 | 2.03 | 29.83 | 42.27 | 0.00 | 99.25 |
| 514 | 7GP0017 | 612199.5 | 1227378.5 | 242.3 | 0.30 | 9.68 | 24.81 | 1.02 | 2.45 | 26.33 | 44.64 | 0.00 | 99.25 |
| 515 | 15GP0019 | 611002.7 | 1226026.3 | 208.3 | 0.30 | 2.00 | 20.51 | 0.98 | 2.16 | 39.93 | 35.58 | 0.00 | 99.16 |
| 516 | 15GP0020 | 611453.0 | 1225884.6 | 222.4 | 0.30 | 5.15 | 22.54 | 1.36 | 2.51 | 30.79 | 42.11 | 0.00 | 99.31 |
| 517 | 15GP0024 | 613252.1 | 1224379.9 | 224.7 | 0.30 | 2.00 | 24.46 | 0.58 | 2.94 | 30.88 | 40.32 | 0.00 | 99.17 |
| 518 | 15GP0025 | 612877.5 | 1223628.9 | 216.9 | 0.30 | 4.64 | 23.73 | 0.66 | 1.99 | 32.05 | 40.86 | 0.00 | 99.29 |
| 519 | 15GP0021 | 610553.0 | 1225278.7 | 215.4 | 0.30 | 2.64 | 25.20 | 1.70 | 2.77 | 24.55 | 44.97 | 0.00 | 99.18 |
| 520 | 15GP0022 | 612348.3 | 1225279.1 | 217.2 | 0.30 | 11.65 | 25.62 | 4.13 | 2.35 | 18.93 | 48.16 | 0.00 | 99.20 |
| 521 | 15GP0023 | 610851.5 | 1224683.1 | 245.4 | 0.30 | 2.00 | 20.96 | 1.01 | 3.01 | 36.83 | 37.51 | 0.00 | 99.30 |
| 526 | 2GPA0026 | 602846.8 | 1233081.6 | 246.0 | 0.50 | 5.69 | 23.14 | 2.80 | 2.28 | 23.48 | 47.46 | 0.00 | 99.17 |
| 527 | 2GPA0027 | 602846.9 | 1233031.2 | 246.5 | 0.00 | 4.44 | 24.85 | 1.58 | 2.41 | 25.13 | 45.26 | 0.00 | 99.23 |
| 528 | 2GPA0028 | 602847.1 | 1232956.3 | 246.6 | 0.00 | 2.00 | 20.00 | 2.45 | 1.88 | 41.55 | 33.25 | 0.00 | 99.12 |
| 529 | 2GPA0029 | 602847.0 | 1232906.6 | 247.0 | 0.00 | 2.00 | 20.48 | 1.16 | 1.91 | 41.80 | 33.55 | 0.00 | 98.89 |
| 530 | 2GPA0030 | 602896.6 | 1233081.4 | 245.8 | 0.00 | 6.69 | 24.67 | 1.28 | 2.55 | 24.47 | 46.35 | 0.00 | 99.32 |
| 531 | 2GPA0034 | 602897.3 | 1232956.1 | 246.4 | 0.00 | 2.00 | 21.02 | 1.17 | 3.09 | 38.75 | 35.20 | 0.00 | 99.23 |
| 532 | 2GPA0035 | 602897.3 | 1232906.4 | 246.5 | 1.00 | 9.69 | 22.86 | 2.70 | 2.05 | 28.20 | 43.29 | 0.00 | 99.10 |
| 533 | 2GPA0049 | 602971.5 | 1233081.8 | 245.9 | 0.00 | 6.29 | 25.20 | 1.75 | 2.18 | 28.43 | 41.71 | 0.00 | 99.26 |
| 534 | 2GPA0053 | 602972.4 | 1232956.6 | 245.5 | 0.00 | 5.79 | 25.23 | 1.48 | 2.87 | 24.82 | 44.73 | 0.00 | 99.10 |
| 535 | 2GPA0054 | 602972.3 | 1232906.8 | 245.6 | 0.40 | 8.76 | 23.64 | 1.25 | 2.63 | 29.90 | 41.53 | 0.00 | 99.14 |
| 536 | 2GPA0055 | 603021.9 | 1233081.5 | 245.0 | 0.60 | 4.94 | 27.10 | 1.75 | 2.40 | 19.50 | 48.57 | 0.00 | 99.32 |
| 537 | 2GPA0056 | 603021.7 | 1233032.0 | 244.2 | 0.20 | 7.22 | 24.36 | 1.63 | 2.14 | 28.31 | 42.84 | 0.00 | 99.28 |
| 538 | 2GPA0057 | 603022.1 | 1232957.0 | 244.3 | 0.00 | 9.79 | 27.61 | 2.81 | 2.65 | 15.15 | 50.83 | 0.00 | 99.26 |
| 539 | 2GPA0058 | 603022.0 | 1232906.7 | 244.5 | 0.00 | 9.17 | 27.21 | 0.95 | 2.78 | 14.52 | 53.88 | 0.00 | 99.34 |
| 541 | 2GPA0031 | 602897.2 | 1233031.3 | 246.1 | 0.00 | 3.93 | 26.07 | 1.10 | 2.37 | 22.96 | 48.69 | 0.00 | 99.19 |
| 542 | 2GPA0033 | 602897.0 | 1232981.5 | 246.1 | 0.00 | 10.94 | 24.24 | 1.63 | 2.39 | 27.82 | 43.10 | 0.00 | 99.18 |
| 543 | 2GPA0036 | 602921.9 | 1233031.5 | 245.8 | 0.00 | 10.43 | 25.01 | 2.54 | 2.27 | 25.74 | 43.62 | 0.00 | 99.18 |
| 544 | 2GPA0037 | 602921.8 | 1233006.6 | 245.8 | 0.00 | 11.18 | 23.91 | 2.06 | 2.75 | 25.82 | 44.66 | 0.00 | 99.21 |
| 545 | 2GPA0038 | 602921.9 | 1232994.1 | 245.8 | 0.00 | 6.43 | 25.98 | 6.04 | 2.56 | 20.03 | 44.46 | 0.00 | 99.07 |
| 546 | 2GPA0039 | 602921.9 | 1232981.6 | 245.7 | 0.00 | 7.68 | 26.98 | 0.93 | 2.81 | 15.50 | 53.11 | 0.00 | 99.32 |
| 547 | 2GPA0044 | 602946.7 | 1233031.7 | 245.7 | 0.00 | 5.92 | 22.63 | 2.35 | 2.81 | 30.76 | 40.56 | 0.00 | 99.11 |
| 548 | 2GPA0045 | 602946.8 | 1233006.7 | 245.5 | 0.00 | 6.80 | 25.07 | 0.59 | 2.64 | 26.76 | 44.10 | 0.00 | 99.17 |
| 549 | 2GPA0046 | 602947.0 | 1232994.2 | 245.4 | 0.00 | 7.17 | 25.74 | 1.52 | 2.58 | 24.59 | 44.75 | 0.00 | 99.18 |
| 550 | 2GPA0047 | 602947.0 | 1232981.7 | 245.4 | 0.00 | 8.05 | 25.39 | 0.98 | 2.39 | 25.64 | 44.77 | 0.00 | 99.17 |
| 551 | 2GPA0050 | 602972.2 | 1233031.6 | 245.4 | 0.00 | 7.17 | 25.30 | 0.95 | 2.30 | 24.81 | 45.94 | 0.00 | 99.30 |
| 552 | 2GPA0051 | 602971.9 | 1233006.8 | 245.5 | 0.00 | 3.04 | 25.83 | 1.74 | 2.52 | 22.16 | 46.87 | 0.00 | 99.12 |
| 553 | 2GPA0052 | 602972.0 | 1232981.8 | 245.4 | 0.00 | 8.41 | 28.12 | 1.02 | 2.77 | 17.68 | 49.69 | 0.00 | 99.27 |
| 555 | 2GPA0032 | 602896.9 | 1233006.5 | 246.0 | 0.00 | 5.18 | 22.21 | 2.69 | 2.39 | 32.24 | 39.61 | 0.00 | 99.14 |
| 556 | 2GPA0040 | 602922.1 | 1232956.6 | 245.9 | 0.00 | 6.92 | 23.57 | 2.31 | 2.95 | 29.06 | 41.31 | 0.00 | 99.19 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 557 | 2GPA0041 | 602934.3 | 1233006.7 | 245.5 | 0.00 | 6.67 | 25.26 | 1.18 | 2.52 | 25.83 | 44.41 | 0.00 | 99.20 |
| 558 | 2GPA0042 | 602934.4 | 1232994.5 | 245.4 | 0.00 | 8.93 | 25.67 | 1.45 | 2.54 | 23.94 | 45.56 | 0.00 | 99.16 |
| 559 | 2GPA0043 | 602934.4 | 1232981.6 | 245.6 | 0.00 | 10.68 | 24.30 | 1.54 | 2.57 | 25.77 | 44.94 | 0.00 | 99.11 |
| 560 | 2GPA0048 | 602947.1 | 1232956.6 | 245.7 | 0.00 | 5.42 | 23.42 | 1.45 | 2.81 | 29.92 | 41.65 | 0.00 | 99.25 |
| 561 | 2GPA0059 | 602185.8 | 1233141.6 | 247.4 | 1.00 | 2.00 | 18.04 | 3.20 | 2.07 | 43.30 | 32.35 | 0.00 | 98.96 |
| 562 | 2GPA0060 | 602188.0 | 1232243.3 | 220.4 | 0.00 | 11.04 | 25.00 | 0.61 | 2.48 | 27.27 | 43.74 | 0.00 | 99.09 |
| 563 | 2GPA0061 | 602633.1 | 1232694.4 | 235.6 | 0.00 | 11.41 | 26.41 | 2.72 | 2.53 | 15.47 | 52.07 | 0.00 | 99.20 |
| 564 | 2GPA0062 | 602784.2 | 1232245.8 | 214.5 | 0.30 | 11.99 | 27.09 | 1.41 | 2.02 | 17.57 | 51.17 | 0.00 | 99.27 |
| 565 | 2GPA0063 | 603234.2 | 1232104.1 | 226.4 | 0.00 | 9.66 | 24.90 | 1.65 | 2.61 | 25.53 | 44.52 | 0.00 | 99.21 |
| 566 | 2GPA0064 | 603385.1 | 1231654.7 | 210.8 | 0.00 | 12.04 | 25.15 | 2.02 | 2.45 | 23.99 | 45.65 | 0.00 | 99.26 |
| 568 | 2GPA0065 | 603156.2 | 1232698.3 | 239.8 | 1.00 | 4.41 | 23.90 | 1.31 | 2.41 | 28.62 | 42.90 | 0.00 | 99.14 |
| 571 | 7GPA0066 | 610691.1 | 1228421.9 | 219.3 | 0.00 | 12.28 | 25.69 | 1.42 | 2.21 | 23.09 | 48.89 | 0.00 | 99.30 |
| 572 | 7GPA0067 | 610997.5 | 1227974.5 | 226.7 | 0.00 | 8.16 | 22.55 | 1.40 | 2.16 | 31.90 | 41.28 | 0.00 | 99.27 |
| 573 | 7GPA0068 | 611292.9 | 1228425.8 | 250.4 | 1.00 | 8.03 | 23.99 | 2.13 | 2.26 | 27.94 | 42.95 | 0.00 | 99.27 |
| 574 | 7GPA0069 | 612346.4 | 1227980.4 | 273.6 | 0.00 | 2.00 | 21.49 | 1.88 | 1.79 | 36.40 | 37.10 | 0.00 | 98.65 |
| 575 | 7GPA0070 | 612044.8 | 1228426.8 | 268.6 | 0.50 | 6.90 | 24.89 | 1.64 | 2.38 | 24.85 | 45.62 | 0.00 | 99.37 |
| 576 | 7GPA0071 | 611746.3 | 1227977.7 | 234.9 | 1.00 | 5.78 | 23.52 | 2.17 | 2.68 | 27.82 | 43.05 | 0.00 | 99.24 |
| 582 | 373268 | 604704.4 | 1227280.3 | 170.8 | 0.00 | 5.15 | 24.29 | 1.39 | 2.11 | 28.45 | 43.14 | 0.00 | 99.38 |
| 583 | 373286 | 605170.8 | 1227275.1 | 168.7 | 0.00 | 5.41 | 24.22 | 1.41 | 2.21 | 27.35 | 44.18 | 0.00 | 99.38 |
| 584 | 380276 | 604882.2 | 1227479.9 | 191.6 | 0.00 | 6.16 | 24.84 | 1.09 | 2.35 | 27.02 | 44.00 | 0.00 | 99.31 |
| 585 | 421280 | 605001.7 | 1228509.5 | 247.0 | 0.60 | 3.93 | 25.66 | 2.48 | 3.16 | 22.51 | 45.79 | 0.00 | 99.58 |
| 586 | 385268 | 604699.8 | 1227609.5 | 210.7 | 0.00 | 10.78 | 24.52 | 1.05 | 2.58 | 26.89 | 44.39 | 0.00 | 99.43 |
| 587 | 385280 | 604999.8 | 1227611.8 | 198.4 | 0.00 | 6.40 | 26.60 | 4.04 | 2.71 | 16.68 | 49.47 | 0.00 | 99.49 |
| 588 | 421292 | 605303.5 | 1228511.4 | 242.8 | 0.00 | 5.03 | 25.96 | 0.56 | 2.36 | 23.82 | 46.66 | 0.00 | 99.35 |
| 589 | 427286 | 605150.0 | 1228661.0 | 191.9 | 0.30 | 2.91 | 24.42 | 2.46 | 2.94 | 25.30 | 44.28 | 0.00 | 99.40 |
| 590 | 433280 | 604996.8 | 1228810.5 | 246.4 | 0.00 | 2.84 | 24.27 | 1.66 | 2.83 | 26.56 | 43.92 | 0.00 | 99.25 |
| 591 | 433292 | 605298.4 | 1228812.7 | 237.2 | 0.00 | 3.78 | 24.10 | 1.23 | 2.16 | 28.39 | 43.40 | 0.00 | 99.29 |
| 592 | 469256 | 604379.2 | 1229705.0 | 243.9 | 1.00 | 7.71 | 24.59 | 1.01 | 2.75 | 27.05 | 44.07 | 0.00 | 99.47 |
| 593 | 469268 | 604680.9 | 1229708.3 | 247.3 | 0.00 | 2.65 | 23.75 | 2.65 | 2.74 | 28.33 | 41.81 | 0.00 | 99.29 |
| 594 | 475262 | 604529.1 | 1229857.7 | 244.7 | 0.00 | 2.00 | 22.20 | 2.22 | 2.30 | 34.30 | 38.00 | 0.00 | 99.01 |
| 595 | 481256 | 604380.1 | 1230004.2 | 229.1 | 0.00 | 2.00 | 21.15 | 2.33 | 2.57 | 36.50 | 36.80 | 0.00 | 99.35 |
| 596 | 481268 | 604677.1 | 1230008.4 | 237.8 | 0.40 | 6.19 | 25.93 | 3.44 | 3.17 | 19.87 | 47.20 | 0.00 | 99.61 |
| 597 | 303532 | 611303.3 | 1225583.6 | 229.0 | 0.00 | 8.70 | 29.38 | 0.68 | 2.78 | 11.87 | 54.90 | 0.00 | 99.61 |
| 599 | 315520 | 611002.3 | 1225884.0 | 211.5 | 0.20 | 8.37 | 26.58 | 1.71 | 2.40 | 20.56 | 48.19 | 0.00 | 99.45 |
| 600 | 315532 | 611302.4 | 1225885.1 | 220.5 | 0.00 | 7.02 | 22.39 | 1.91 | 2.20 | 31.60 | 41.28 | 0.00 | 99.37 |
| 601 | 267508 | 610703.5 | 1224680.9 | 248.0 | 0.60 | 8.93 | 24.06 | 2.71 | 3.44 | 26.29 | 42.89 | 0.00 | 99.38 |
| 602 | 267520 | 611000.8 | 1224681.5 | 217.2 | 0.30 | 2.00 | 16.34 | 2.72 | 2.12 | 50.48 | 27.65 | 0.00 | 99.30 |
| 604 | 279508 | 610703.4 | 1224982.1 | 229.0 | 0.30 | 2.00 | 20.64 | 1.70 | 2.57 | 35.49 | 38.80 | 0.00 | 99.19 |
| 605 | 279520 | 611003.3 | 1224983.2 | 235.7 | 0.00 | 6.90 | 23.86 | 1.61 | 2.56 | 28.32 | 43.03 | 0.00 | 99.48 |
| 606 | 291568 | 612202.8 | 1225280.4 | 228.7 | 0.60 | 7.24 | 23.43 | 1.70 | 2.11 | 30.49 | 41.77 | 0.00 | 99.49 |
| 607 | 291580 | 612500.3 | 1225278.1 | 206.7 | 0.30 | 6.97 | 24.27 | 1.12 | 2.25 | 26.70 | 45.05 | 0.00 | 99.39 |
| 609 | 303568 | 612203.2 | 1225583.0 | 226.5 | 1.00 | 8.65 | 25.27 | 3.04 | 2.69 | 21.38 | 47.09 | 0.00 | 99.47 |
| 610 | 303580 | 612502.8 | 1225579.7 | 213.6 | 0.50 | 9.08 | 24.51 | 1.45 | 2.05 | 26.87 | 44.51 | 0.00 | 99.39 |
| 611 | 188492 | 610300.2 | 1222699.9 | 237.3 | 0.00 | 7.14 | 23.27 | 2.13 | 2.31 | 30.36 | 41.32 | 0.00 | 99.39 |
| 612 | 188504 | 610600.2 | 1222700.6 | 230.9 | 0.00 | 5.58 | 22.55 | 1.15 | 3.35 | 31.35 | 41.15 | 0.00 | 99.54 |
| 613 | 200492 | 610300.3 | 1222999.6 | 239.3 | 0.00 | 4.02 | 23.50 | 1.26 | 2.41 | 30.16 | 42.24 | 0.00 | 99.56 |
| 614 | 200504 | 610598.4 | 1222999.6 | 210.1 | 0.20 | 2.00 | 19.77 | 3.30 | 2.02 | 40.85 | 33.33 | 0.00 | 99.26 |
| 615 | 152528 | 611199.7 | 1221800.1 | 246.1 | 0.00 | 4.46 | 24.77 | 1.21 | 3.46 | 25.07 | 44.74 | 0.00 | 99.25 |
| 616 | 152540 | 611499.7 | 1221800.0 | 245.2 | 0.00 | 2.89 | 24.04 | 2.05 | 3.39 | 26.67 | 43.33 | 0.00 | 99.48 |
| 617 | 158534 | 611349.4 | 1221951.8 | 250.0 | 0.00 | 4.33 | 24.89 | 0.93 | 2.90 | 25.76 | 45.00 | 0.00 | 99.48 |
| 618 | 164528 | 611199.8 | 1222102.8 | 249.5 | 0.30 | 1.47 | 24.37 | 4.08 | 3.00 | 24.35 | 43.39 | 0.00 | 99.19 |
| 619 | 164540 | 611499.5 | 1222103.8 | 248.3 | 0.00 | 1.71 | 26.13 | 0.76 | 3.62 | 21.14 | 47.98 | 0.00 | 99.63 |
| 620 | 194498 | 610450.0 | 1222850.4 | 224.9 | 0.00 | 2.00 | 19.60 | 1.98 | 2.18 | 39.20 | 36.10 | 0.00 | 99.06 |
| 621 | 212528 | 611200.3 | 1223298.9 | 247.6 | 0.00 | 3.46 | 23.70 | 1.25 | 3.21 | 29.80 | 41.48 | 0.00 | 99.44 |
| 622 | 212540 | 611500.2 | 1223298.9 | 247.3 | 0.00 | 4.40 | 23.48 | 1.58 | 2.74 | 29.67 | 41.85 | 0.00 | 99.32 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 623 | 218534 | 611350.3 | 1223448.9 | 247.5 | 0.00 | 4.34 | 22.66 | 1.28 | 2.80 | 32.63 | 39.79 | 0.00 | 99.17 |
| 624 | 224528 | 611200.3 | 1223598.9 | 238.6 | 0.00 | 8.27 | 25.98 | 2.96 | 2.78 | 20.41 | 47.09 | 0.00 | 99.23 |
| 625 | 224540 | 611500.3 | 1223598.9 | 246.4 | 0.00 | 5.21 | 22.93 | 1.31 | 2.69 | 31.47 | 41.05 | 0.00 | 99.46 |
| 626 | 1565 | 612125.6 | 1218034.2 | 219.0 | 0.00 | 7.65 | 25.73 | 1.32 | 3.83 | 20.00 | 48.28 | 0.00 | 99.16 |
| 627 | 7571 | 612274.3 | 1218188.8 | 220.2 | 0.00 | 12.52 | 25.07 | 2.47 | 5.34 | 20.48 | 45.82 | 0.00 | 99.18 |
| 628 | 7559 | 611975.6 | 1218179.2 | 214.2 | 0.70 | 3.38 | 26.25 | 1.57 | 3.38 | 15.58 | 52.49 | 0.00 | 99.26 |
| 629 | 945559 | 612001.3 | 1216674.8 | 214.3 | 0.30 | 7.66 | 25.19 | 1.77 | 2.50 | 23.83 | 45.99 | 0.00 | 99.28 |
| 630 | 945571 | 612297.8 | 1216682.4 | 222.5 | 0.00 | 7.89 | 24.24 | 1.25 | 2.65 | 27.14 | 44.11 | 0.00 | 99.39 |
| 631 | 951565 | 612148.9 | 1216828.4 | 222.8 | 0.50 | 8.83 | 26.20 | 1.57 | 3.01 | 20.35 | 48.22 | 0.00 | 99.35 |
| 632 | 957559 | 611996.6 | 1216977.8 | 215.7 | 0.60 | 9.67 | 28.06 | 1.46 | 3.02 | 13.66 | 53.17 | 0.00 | 99.38 |
| 633 | 957571 | 612296.8 | 1216982.3 | 225.0 | 0.00 | 8.71 | 25.00 | 1.55 | 3.00 | 23.88 | 45.78 | 0.00 | 99.21 |
| 634 | 969607 | 613198.0 | 1217295.7 | 236.6 | 0.00 | 4.64 | 26.44 | 1.10 | 2.60 | 20.73 | 48.40 | 0.00 | 99.27 |
| 635 | 969619 | 613497.0 | 1217301.9 | 233.7 | 0.00 | 4.58 | 23.60 | 2.42 | 2.32 | 28.50 | 42.41 | 0.00 | 99.25 |
| 636 | 975613 | 613345.2 | 1217450.5 | 236.3 | 0.00 | 3.52 | 24.62 | 1.53 | 2.34 | 25.89 | 44.87 | 0.00 | 99.25 |
| 637 | 981607 | 613191.8 | 1217600.7 | 235.1 | 0.30 | 8.65 | 25.28 | 3.62 | 2.52 | 19.92 | 47.86 | 0.00 | 99.20 |
| 638 | 981619 | 613491.7 | 1217604.6 | 232.2 | 0.00 | 3.39 | 26.26 | 1.90 | 2.81 | 18.86 | 49.52 | 0.00 | 99.35 |
| 639 | 993559 | 611976.4 | 1217879.2 | 215.2 | 0.00 | 6.33 | 25.32 | 0.97 | 4.35 | 19.46 | 49.26 | 0.00 | 99.36 |
| 640 | 993571 | 612277.6 | 1217887.4 | 222.1 | 0.50 | 8.26 | 26.84 | 1.12 | 3.99 | 16.35 | 51.19 | 0.00 | 99.50 |
| 643 | 393508 | 610699.7 | 1227811.8 | 200.7 | 0.00 | 4.45 | 22.29 | 2.14 | 2.37 | 32.48 | 39.90 | 0.00 | 99.18 |
| 644 | 393514 | 610849.3 | 1227814.9 | 197.0 | 0.20 | 2.00 | 19.70 | 1.45 | 2.31 | 37.90 | 38.00 | 0.00 | 99.36 |
| 645 | 399508 | 610699.1 | 1227962.2 | 204.7 | 0.00 | 6.57 | 23.65 | 2.04 | 1.94 | 30.31 | 41.30 | 0.00 | 99.24 |
| 646 | 399514 | 610848.4 | 1227964.6 | 204.2 | 0.50 | 9.83 | 23.63 | 2.77 | 2.18 | 27.58 | 43.19 | 0.00 | 99.36 |
| 647 | 405490 | 610247.2 | 1228112.3 | 188.7 | 0.00 | 4.63 | 22.96 | 2.02 | 2.05 | 31.58 | 40.57 | 0.00 | 99.19 |
| 648 | 405496 | 610398.6 | 1228112.5 | 194.9 | 0.00 | 6.51 | 22.45 | 1.01 | 2.08 | 32.26 | 41.33 | 0.00 | 99.13 |
| 649 | 405502 | 610548.2 | 1228113.7 | 199.9 | 0.00 | 7.82 | 25.21 | 1.64 | 2.21 | 24.37 | 46.07 | 0.00 | 99.51 |
| 650 | 405508 | 610697.0 | 1228112.0 | 204.7 | 0.00 | 9.95 | 25.86 | 2.06 | 2.73 | 20.92 | 47.78 | 0.00 | 99.35 |
| 651 | 405514 | 610847.0 | 1228115.5 | 208.0 | 0.70 | 6.31 | 24.01 | 2.57 | 2.45 | 25.65 | 44.78 | 0.00 | 99.46 |
| 652 | 411502 | 610547.5 | 1228264.1 | 196.0 | 0.00 | 8.26 | 26.10 | 1.31 | 2.37 | 20.72 | 49.20 | 0.00 | 99.70 |
| 653 | 411508 | 610696.8 | 1228263.2 | 201.8 | 0.00 | 13.20 | 26.88 | 1.11 | 2.35 | 19.60 | 49.42 | 0.00 | 99.36 |
| 654 | 411514 | 610847.0 | 1228260.9 | 208.6 | 0.00 | 8.88 | 26.01 | 1.41 | 2.42 | 22.35 | 47.45 | 0.00 | 99.64 |
| 655 | 393496 | 610399.5 | 1227811.8 | 202.0 | 0.00 | 2.00 | 18.40 | 1.85 | 1.89 | 45.25 | 31.65 | 0.00 | 99.03 |
| 656 | 393502 | 610552.0 | 1227810.7 | 203.2 | 0.00 | 2.00 | 18.55 | 2.46 | 1.90 | 45.60 | 30.50 | 0.00 | 99.01 |
| 657 | 393520 | 610998.9 | 1227814.1 | 194.8 | 0.00 | 8.39 | 24.77 | 1.00 | 2.60 | 26.79 | 44.19 | 0.00 | 99.36 |
| 658 | 393526 | 611149.0 | 1227816.9 | 193.5 | 0.00 | 11.35 | 23.36 | 2.27 | 2.67 | 26.88 | 44.09 | 0.00 | 99.26 |
| 659 | 393532 | 611303.3 | 1227807.4 | 186.2 | 0.00 | 5.26 | 23.89 | 1.96 | 2.71 | 27.64 | 42.96 | 0.00 | 99.17 |
| 660 | 393538 | 611448.3 | 1227819.6 | 184.8 | 0.00 | 2.00 | 20.80 | 1.05 | 2.04 | 35.85 | 39.40 | 0.00 | 99.14 |
| 661 | 399496 | 610398.2 | 1227962.2 | 200.6 | 0.00 | 7.01 | 23.01 | 1.65 | 2.24 | 30.98 | 41.50 | 0.00 | 99.38 |
| 662 | 399526 | 611148.2 | 1227968.3 | 201.3 | 0.00 | 7.38 | 24.62 | 1.41 | 2.62 | 25.57 | 45.05 | 0.00 | 99.27 |
| 663 | 399532 | 611297.8 | 1227969.1 | 194.9 | 0.00 | 11.16 | 25.90 | 1.60 | 2.82 | 20.05 | 49.14 | 0.00 | 99.49 |
| 664 | 405520 | 610998.2 | 1228115.2 | 210.4 | 0.00 | 8.57 | 25.22 | 1.07 | 2.58 | 24.93 | 45.69 | 0.00 | 99.50 |
| 665 | 405532 | 611297.4 | 1228114.1 | 207.5 | 0.00 | 7.95 | 24.32 | 1.75 | 2.86 | 26.43 | 44.01 | 0.00 | 99.36 |
| 666 | 411526 | 611147.1 | 1228266.7 | 218.7 | 0.00 | 13.70 | 25.16 | 0.55 | 2.62 | 25.48 | 45.56 | 0.00 | 99.36 |
| 667 | 411532 | 611297.1 | 1228268.8 | 221.9 | 0.00 | 9.63 | 23.44 | 3.11 | 2.42 | 28.15 | 42.14 | 0.00 | 99.26 |
| 668 | 411538 | 611446.8 | 1228271.9 | 225.4 | 0.00 | 15.64 | 27.21 | 1.29 | 2.70 | 18.00 | 50.26 | 0.00 | 99.46 |
| 669 | 393544 | 611597.2 | 1227821.9 | 185.0 | 0.00 | 2.51 | 21.18 | 1.40 | 2.01 | 34.38 | 40.36 | 0.00 | 99.33 |
| 670 | 399538 | 611447.0 | 1227970.6 | 199.1 | 0.00 | 12.20 | 24.93 | 0.62 | 2.35 | 26.92 | 44.58 | 0.00 | 99.40 |
| 671 | 399544 | 611596.0 | 1227971.7 | 203.1 | 0.00 | 11.63 | 24.51 | 0.86 | 2.44 | 27.38 | 44.17 | 0.00 | 99.36 |
| 672 | 405538 | 611445.7 | 1228119.0 | 211.5 | 0.00 | 13.32 | 23.19 | 1.78 | 2.51 | 29.70 | 42.26 | 0.00 | 99.43 |
| 673 | 405544 | 611595.9 | 1228122.6 | 219.7 | 0.00 | 10.88 | 26.99 | 2.63 | 2.59 | 16.37 | 50.94 | 0.00 | 99.52 |
| 674 | 423508 | 610692.6 | 1228567.6 | 192.6 | 0.00 | 12.29 | 23.74 | 1.94 | 2.40 | 27.38 | 44.03 | 0.08 | 99.48 |
| 675 | 423514 | 610847.3 | 1228568.8 | 202.8 | 0.00 | 6.22 | 23.69 | 2.55 | 2.37 | 28.47 | 42.31 | 0.09 | 99.39 |
| 676 | 0091GS | 611146.1 | 1228387.4 | 242.3 | 0.00 | 11.03 | 25.96 | 1.36 | 2.38 | 23.03 | 46.80 | 0.00 | 99.55 |
| 677 | 0092GS | 611146.2 | 1228349.2 | 241.6 | 0.00 | 4.57 | 22.02 | 1.27 | 2.09 | 33.90 | 40.21 | 0.00 | 99.48 |
| 678 | 0094GS | 611146.7 | 1228236.9 | 239.6 | 0.00 | 9.26 | 23.46 | 1.45 | 2.20 | 30.05 | 42.23 | 0.00 | 99.40 |
| 679 | 0095GS | 611146.8 | 1228199.3 | 237.8 | 0.00 | 8.10 | 24.29 | 1.27 | 2.43 | 27.53 | 44.03 | 0.00 | 99.54 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 680 | 0098GS | 610732.7 | 1228572.9 | 217.3 | 0.00 | 2.00 | 20.95 | 0.82 | 2.06 | 36.75 | 38.70 | 0.00 | 99.28 |
| 681 | 0099GS | 610770.6 | 1228573.1 | 220.1 | 0.00 | 14.94 | 23.74 | 0.77 | 2.58 | 29.50 | 42.78 | 0.00 | 99.36 |
| 682 | 417526 | 611143.8 | 1228421.6 | 220.9 | 0.00 | 7.16 | 23.29 | 1.35 | 2.14 | 31.39 | 41.24 | 0.00 | 99.40 |
| 683 | 423526 | 611146.9 | 1228570.3 | 222.0 | 0.00 | 8.44 | 23.56 | 2.26 | 2.09 | 28.37 | 42.97 | 0.00 | 99.24 |
| 684 | 423532 | 611293.8 | 1228571.8 | 233.3 | 0.50 | 11.29 | 24.06 | 1.80 | 2.40 | 27.81 | 43.37 | 0.11 | 99.44 |
| 685 | 429528 | 611146.0 | 1228718.4 | 220.1 | 0.00 | 10.98 | 23.26 | 2.34 | 2.17 | 30.01 | 41.59 | 0.00 | 99.37 |
| 686 | 0083GS | 611145.0 | 1228799.7 | 242.5 | 0.00 | 11.50 | 23.99 | 2.83 | 2.31 | 26.20 | 43.86 | 0.00 | 99.19 |
| 687 | 0085GS | 611144.9 | 1228687.2 | 243.6 | 0.00 | 3.32 | 21.76 | 2.73 | 2.24 | 33.49 | 39.19 | 0.00 | 99.41 |
| 688 | 0086GS | 611145.0 | 1228649.4 | 243.6 | 0.00 | 7.23 | 23.61 | 3.29 | 2.22 | 26.62 | 43.72 | 0.00 | 99.46 |
| 689 | 0088GS | 611145.5 | 1228537.1 | 244.0 | 0.00 | 5.25 | 23.02 | 2.02 | 2.11 | 32.00 | 40.14 | 0.00 | 99.28 |
| 690 | 0089GS | 611145.6 | 1228499.9 | 243.6 | 0.00 | 10.54 | 22.93 | 1.12 | 2.23 | 31.42 | 41.59 | 0.00 | 99.29 |
| 691 | 0101GS | 610882.7 | 1228573.5 | 226.2 | 0.00 | 13.85 | 24.58 | 0.89 | 2.22 | 27.40 | 44.44 | 0.00 | 99.54 |
| 692 | 0102GS | 610920.2 | 1228573.7 | 228.4 | 0.00 | 11.69 | 23.27 | 0.92 | 2.44 | 30.54 | 42.13 | 0.06 | 99.30 |
| 693 | 0104GS | 611032.7 | 1228574.1 | 235.5 | 0.00 | 10.60 | 22.27 | 1.46 | 2.26 | 31.81 | 41.50 | 0.10 | 99.29 |
| 694 | 0105GS | 611070.4 | 1228574.2 | 238.0 | 0.30 | 2.00 | 21.82 | 1.10 | 2.24 | 35.88 | 38.21 | 0.00 | 99.24 |
| 695 | 0106GS | 611182.0 | 1228574.7 | 246.0 | 0.50 | 7.92 | 23.20 | 3.60 | 2.13 | 27.72 | 42.70 | 0.23 | 99.36 |
| 696 | 0107GS | 611219.4 | 1228574.9 | 248.2 | 0.50 | 6.56 | 23.22 | 2.94 | 2.26 | 28.34 | 42.64 | 0.00 | 99.40 |
| 697 | 399502 | 610548.4 | 1227962.8 | 201.1 | 0.50 | 7.25 | 23.59 | 1.98 | 2.06 | 29.19 | 42.46 | 0.00 | 99.28 |
| 698 | 423538 | 611445.6 | 1228571.6 | 240.3 | 0.00 | 7.31 | 25.51 | 3.44 | 2.49 | 22.07 | 45.88 | 0.15 | 98.39 |
| 699 | 423544 | 611595.8 | 1228572.3 | 245.3 | 0.00 | 9.79 | 26.57 | 2.77 | 2.91 | 18.48 | 48.75 | 0.12 | 99.47 |
| 700 | 435526 | 611147.9 | 1228867.7 | 222.3 | 0.00 | 3.62 | 24.12 | 2.17 | 2.23 | 25.92 | 45.00 | 0.00 | 99.44 |
| 701 | 441526 | 611148.4 | 1229018.9 | 227.6 | 0.00 | 2.00 | 22.00 | 1.62 | 2.32 | 35.25 | 38.10 | 0.00 | 99.29 |
| 702 | 0079GS | 611145.6 | 1228987.3 | 248.4 | 0.00 | 2.35 | 24.38 | 2.28 | 2.33 | 26.27 | 44.14 | 0.00 | 99.39 |
| 703 | 0080GS | 611145.0 | 1228949.6 | 247.0 | 0.50 | 11.97 | 22.71 | 3.04 | 2.21 | 30.00 | 41.32 | 0.00 | 99.29 |
| 704 | 0082GS | 611145.5 | 1228836.9 | 243.1 | 0.00 | 12.37 | 26.40 | 3.13 | 2.34 | 16.63 | 50.88 | 0.00 | 99.39 |
| 705 | 0109GS | 611332.3 | 1228575.3 | 257.0 | 0.30 | 10.92 | 24.02 | 1.17 | 2.09 | 29.41 | 42.76 | 0.00 | 99.45 |
| 706 | 0110GS | 611369.7 | 1228575.5 | 258.4 | 0.80 | 8.11 | 27.02 | 2.06 | 2.34 | 18.40 | 49.61 | 0.00 | 99.44 |
| 707 | 0112GS | 611482.3 | 1228575.8 | 263.7 | 0.00 | 8.16 | 25.83 | 2.13 | 2.42 | 22.17 | 46.90 | 0.00 | 99.45 |
| 708 | 0113GS | 611519.8 | 1228576.0 | 264.6 | 0.00 | 8.19 | 23.73 | 3.56 | 2.32 | 26.97 | 42.80 | 0.00 | 99.37 |
| 709 | 513442 | 609083.7 | 1230642.0 | 199.9 | 0.00 | 3.47 | 23.04 | 1.65 | 3.29 | 30.66 | 40.59 | 0.00 | 99.23 |
| 710 | 513448 | 609231.7 | 1230844.4 | 221.6 | 0.00 | 10.56 | 23.15 | 1.80 | 2.54 | 31.23 | 40.58 | 0.00 | 99.29 |
| 711 | 513454 | 609381.0 | 1230842.6 | 234.8 | 0.50 | 2.00 | 18.10 | 2.23 | 1.47 | 51.96 | 25.25 | 0.00 | 99.03 |
| 712 | 513472 | 609828.8 | 1230844.2 | 211.2 | 0.00 | 10.03 | 23.88 | 3.34 | 2.62 | 23.84 | 45.46 | 0.00 | 99.14 |
| 713 | 519442 | 609085.3 | 1230992.9 | 208.4 | 0.00 | 3.38 | 21.38 | 1.39 | 2.17 | 32.97 | 41.19 | 0.00 | 99.10 |
| 714 | 519448 | 609231.4 | 1230992.3 | 227.9 | 0.00 | 2.00 | 19.85 | 1.62 | 2.24 | 44.30 | 31.15 | 0.00 | 99.18 |
| 715 | 519472 | 609829.2 | 1230992.9 | 209.8 | 0.15 | 2.35 | 20.94 | 1.35 | 2.39 | 34.13 | 40.40 | 0.00 | 99.19 |
| 716 | 525448 | 609228.8 | 1231142.7 | 235.8 | 0.00 | 7.65 | 22.16 | 2.07 | 2.79 | 31.77 | 40.34 | 0.10 | 99.12 |
| 717 | 525472 | 609831.2 | 1231143.0 | 215.2 | 0.80 | 9.11 | 24.30 | 1.04 | 3.00 | 26.49 | 44.54 | 0.00 | 99.38 |
| 718 | 525478 | 609978.7 | 1231141.9 | 203.8 | 0.00 | 7.60 | 23.05 | 0.91 | 1.98 | 32.46 | 40.97 | 0.00 | 99.37 |
| 719 | 525484 | 610124.7 | 1231141.2 | 189.4 | 0.30 | 2.00 | 15.67 | 7.87 | 2.13 | 43.30 | 30.00 | 0.00 | 98.96 |
| 720 | 531460 | 609531.4 | 1231294.5 | 253.5 | 0.00 | 2.00 | 18.55 | 2.51 | 2.49 | 43.35 | 32.45 | 0.15 | 99.35 |
| 721 | 531466 | 609680.9 | 1231292.8 | 247.7 | 0.00 | 5.44 | 23.51 | 1.58 | 2.52 | 29.72 | 42.05 | 0.15 | 99.38 |
| 722 | 525406 | 608182.7 | 1231147.1 | 142.2 | 0.80 | 8.39 | 22.21 | 2.11 | 1.87 | 33.00 | 40.06 | 0.00 | 99.26 |
| 723 | 525412 | 608331.0 | 1231147.9 | 158.7 | 1.00 | 14.34 | 26.73 | 1.24 | 2.05 | 20.35 | 49.20 | 0.00 | 99.57 |
| 724 | 525418 | 608480.6 | 1231147.1 | 168.9 | 1.00 | 13.75 | 24.70 | 2.41 | 2.28 | 24.40 | 45.45 | 0.00 | 99.24 |
| 725 | 525454 | 609380.4 | 1231143.4 | 248.1 | 0.00 | 7.22 | 27.17 | 1.28 | 2.20 | 19.76 | 48.86 | 0.00 | 99.27 |
| 726 | 525460 | 609531.2 | 1231141.8 | 245.7 | 0.50 | 9.34 | 23.56 | 2.12 | 2.05 | 29.42 | 42.17 | 0.00 | 99.33 |
| 727 | 531406 | 608184.3 | 1231295.2 | 140.7 | 0.00 | 12.56 | 22.08 | 2.93 | 1.84 | 32.02 | 40.23 | 0.12 | 99.10 |
| 728 | 531454 | 609380.8 | 1231294.2 | 253.4 | 0.40 | 4.92 | 23.59 | 1.05 | 2.22 | 30.73 | 41.75 | 0.11 | 99.33 |
| 729 | 531478 | 609979.8 | 1231292.7 | 216.4 | 0.00 | 10.78 | 26.47 | 1.22 | 2.66 | 20.27 | 48.76 | 0.08 | 99.37 |
| 730 | 525424 | 608630.6 | 1231145.6 | 178.6 | 0.00 | 16.25 | 27.77 | 2.38 | 2.39 | 15.03 | 51.78 | 0.12 | 99.35 |
| 731 | 525430 | 608781.4 | 1231149.1 | 184.1 | 0.00 | 17.44 | 28.67 | 3.25 | 2.11 | 11.94 | 53.47 | 0.00 | 99.45 |
| 732 | 531412 | 608329.4 | 1231296.9 | 165.2 | 0.00 | 11.46 | 23.62 | 2.11 | 2.31 | 27.87 | 43.40 | 0.14 | 99.32 |
| 733 | 531418 | 608481.2 | 1231298.6 | 183.2 | 0.00 | 14.40 | 26.94 | 1.77 | 2.31 | 18.50 | 49.85 | 0.06 | 99.38 |
| 734 | 537406 | 608109.8 | 1231446.4 | 134.1 | 0.30 | 4.83 | 23.97 | 2.04 | 2.36 | 24.55 | 46.24 | 0.00 | 99.16 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 735 | 537412 | 608332.7 | 1231444.1 | 163.0 | 1.00 | 14.28 | 23.94 | 2.44 | 2.62 | 25.27 | 45.16 | 0.00 | 99.44 |
| 736 | 537418 | 608482.1 | 1231443.4 | 182.8 | 0.80 | 13.70 | 24.07 | 2.48 | 2.22 | 26.21 | 44.25 | 0.00 | 99.23 |
| 737 | 537424 | 608629.9 | 1231443.7 | 211.3 | 0.00 | 18.37 | 25.45 | 2.47 | 2.23 | 22.61 | 46.60 | 0.00 | 99.36 |
| 738 | 537430 | 608781.1 | 1231442.6 | 229.3 | 0.00 | 13.53 | 28.24 | 1.69 | 2.53 | 14.43 | 52.53 | 0.00 | 99.42 |
| 739 | 543436 | 608929.7 | 1231591.5 | 227.8 | 0.00 | 6.09 | 24.24 | 1.06 | 2.44 | 28.23 | 43.29 | 0.00 | 99.25 |
| 741 | 513460 | 609530.6 | 1230844.6 | 237.9 | 0.40 | 8.16 | 24.33 | 2.74 | 2.31 | 25.53 | 44.47 | 0.00 | 99.37 |
| 742 | 513466 | 609679.3 | 1230843.0 | 225.6 | 1.00 | 11.12 | 25.77 | 1.82 | 2.64 | 22.59 | 46.54 | 0.00 | 99.35 |
| 743 | 513478 | 609978.0 | 1230843.1 | 206.2 | 0.00 | 2.00 | 16.00 | 4.39 | 2.10 | 40.45 | 36.10 | 0.00 | 99.03 |
| 744 | 519460 | 609529.3 | 1230993.4 | 240.1 | 0.80 | 8.67 | 25.63 | 1.76 | 1.90 | 23.66 | 46.37 | 0.00 | 99.33 |
| 745 | 519466 | 609680.5 | 1230992.9 | 225.7 | 0.00 | 11.00 | 27.45 | 1.42 | 2.52 | 16.71 | 51.32 | 0.00 | 99.42 |
| 746 | 519478 | 609978.8 | 1230991.5 | 197.9 | 0.50 | 6.71 | 20.87 | 4.02 | 2.51 | 26.40 | 45.38 | 0.00 | 99.17 |
| 747 | 525436 | 608933.2 | 1231144.0 | 203.8 | 0.00 | 11.52 | 24.13 | 2.41 | 1.85 | 27.56 | 43.40 | 0.00 | 99.36 |
| 748 | 525442 | 609086.0 | 1231145.7 | 225.9 | 0.00 | 7.15 | 22.97 | 0.92 | 2.65 | 30.93 | 41.77 | 0.00 | 99.23 |
| 749 | 531430 | 608781.4 | 1231293.3 | 212.5 | 0.00 | 15.09 | 27.15 | 2.50 | 2.55 | 16.66 | 50.55 | 0.04 | 99.41 |
| 750 | 531442 | 609080.7 | 1231299.1 | 232.3 | 0.60 | 4.71 | 24.66 | 1.41 | 3.58 | 25.18 | 44.64 | 0.00 | 99.48 |
| 751 | 537436 | 608932.0 | 1231442.7 | 231.2 | 0.00 | 13.19 | 25.87 | 1.17 | 2.03 | 24.06 | 46.29 | 0.07 | 99.42 |
| 752 | 537442 | 609079.8 | 1231442.8 | 240.1 | 0.30 | 12.13 | 23.61 | 1.79 | 2.68 | 28.37 | 42.91 | 0.10 | 99.36 |
| 754 | 507478 | 609978.1 | 1230694.0 | 220.7 | 0.40 | 10.19 | 23.38 | 1.17 | 2.23 | 31.89 | 40.73 | 0.00 | 99.39 |
| 755 | 507484 | 610128.5 | 1230692.8 | 230.4 | 0.30 | 14.25 | 24.34 | 1.52 | 2.45 | 26.98 | 43.97 | 0.00 | 99.26 |
| 756 | 507490 | 610274.5 | 1230693.7 | 235.6 | 0.40 | 13.22 | 23.85 | 1.45 | 2.37 | 28.96 | 42.95 | 0.00 | 99.57 |
| 757 | 507502 | 610574.8 | 1230695.2 | 233.8 | 0.50 | 8.37 | 24.84 | 1.49 | 2.32 | 25.89 | 44.80 | 0.00 | 99.34 |
| 758 | 513484 | 610128.3 | 1230844.4 | 209.8 | 0.50 | 2.00 | 21.28 | 1.53 | 2.24 | 37.68 | 36.25 | 0.00 | 98.97 |
| 759 | 513490 | 610277.3 | 1230842.3 | 217.8 | 0.00 | 15.65 | 24.40 | 2.29 | 2.49 | 24.81 | 45.45 | 0.00 | 99.43 |
| 760 | 513496 | 610426.9 | 1230842.3 | 213.9 | 0.00 | 5.24 | 21.71 | 2.48 | 2.49 | 32.76 | 39.91 | 0.00 | 99.34 |
| 761 | 513502 | 610575.8 | 1230841.8 | 213.9 | 0.40 | 11.51 | 24.48 | 1.20 | 2.60 | 27.09 | 44.03 | 0.00 | 99.39 |
| 762 | 519454 | 609384.0 | 1230993.9 | 238.5 | 0.50 | 9.28 | 23.97 | 1.73 | 2.39 | 27.66 | 43.67 | 0.00 | 99.43 |
| 763 | 519490 | 610277.5 | 1230990.9 | 206.0 | 0.00 | 13.31 | 24.57 | 1.13 | 2.52 | 25.68 | 45.49 | 0.00 | 99.40 |
| 764 | 519496 | 610427.0 | 1230983.7 | 200.3 | 0.40 | 9.94 | 22.77 | 3.14 | 2.26 | 29.02 | 42.14 | 0.00 | 99.34 |
| 765 | 519502 | 610576.1 | 1230989.4 | 193.3 | 0.00 | 2.00 | 21.60 | 1.41 | 2.16 | 36.95 | 37.05 | 0.00 | 99.16 |
| 766 | 525466 | 609679.3 | 1231142.1 | 231.6 | 0.60 | 13.08 | 25.57 | 2.10 | 2.61 | 21.53 | 47.66 | 0.00 | 99.47 |
| 767 | 525490 | 610279.3 | 1231136.3 | 195.3 | 0.00 | 13.22 | 24.96 | 1.90 | 2.23 | 24.00 | 46.36 | 0.00 | 99.46 |
| 768 | 525496 | 610426.4 | 1231135.6 | 192.0 | 0.00 | 2.00 | 20.75 | 1.44 | 1.71 | 39.30 | 36.15 | 0.00 | 99.35 |
| 769 | 525502 | 610577.7 | 1231139.0 | 185.3 | 0.30 | 2.00 | 19.65 | 1.74 | 2.04 | 42.23 | 33.83 | 0.00 | 99.48 |
| 771 | 489484 | 610116.7 | 1230255.4 | 217.5 | 0.70 | 2.00 | 18.89 | 1.88 | 1.59 | 47.48 | 29.22 | 0.00 | 99.05 |
| 772 | 489490 | 610270.5 | 1230245.2 | 216.1 | 0.70 | 4.98 | 26.82 | 1.83 | 2.64 | 17.24 | 51.08 | 0.00 | 99.60 |
| 773 | 495478 | 609978.2 | 1230395.0 | 246.2 | 0.00 | 5.43 | 27.55 | 3.19 | 1.90 | 15.81 | 50.97 | 0.00 | 99.42 |
| 774 | 495484 | 610128.5 | 1230389.3 | 247.8 | 0.50 | 3.49 | 26.11 | 0.75 | 1.79 | 23.93 | 46.90 | 0.00 | 99.49 |
| 775 | 495490 | 610277.8 | 1230395.7 | 249.8 | 0.00 | 4.81 | 26.02 | 1.56 | 2.38 | 23.13 | 46.60 | 0.00 | 99.70 |
| 776 | 501430 | 608788.9 | 1230548.0 | 177.1 | 0.00 | 4.71 | 24.20 | 1.39 | 2.51 | 25.31 | 46.08 | 0.00 | 99.49 |
| 777 | 501436 | 608931.0 | 1230544.8 | 189.9 | 0.00 | 12.37 | 22.79 | 0.99 | 2.27 | 32.43 | 40.76 | 0.00 | 99.23 |
| 778 | 501442 | 609082.9 | 1230545.6 | 208.2 | 0.00 | 13.53 | 22.82 | 1.68 | 2.01 | 31.84 | 40.88 | 0.00 | 99.22 |
| 779 | 501448 | 609230.9 | 1230544.0 | 223.7 | 0.00 | 10.46 | 24.24 | 1.57 | 2.46 | 27.04 | 44.10 | 0.00 | 99.41 |
| 780 | 501478 | 609977.3 | 1230544.3 | 238.4 | 0.50 | 10.15 | 27.17 | 2.91 | 2.81 | 14.90 | 51.84 | 0.00 | 99.63 |
| 781 | 501484 | 610127.1 | 1230543.9 | 245.4 | 0.50 | 14.52 | 25.45 | 1.98 | 2.01 | 24.35 | 45.74 | 0.00 | 99.53 |
| 782 | 501490 | 610275.1 | 1230542.2 | 250.7 | 0.00 | 12.09 | 25.13 | 2.38 | 2.53 | 23.44 | 46.19 | 0.00 | 99.65 |
| 783 | 501496 | 610426.1 | 1230542.5 | 248.6 | 0.00 | 3.84 | 23.19 | 1.61 | 2.55 | 30.69 | 41.41 | 0.00 | 99.45 |
| 784 | 507442 | 609085.4 | 1230696.5 | 201.4 | 0.00 | 13.05 | 25.67 | 0.75 | 2.77 | 23.43 | 46.83 | 0.00 | 99.45 |
| 785 | 507454 | 609380.0 | 1230694.8 | 236.2 | 1.00 | 10.40 | 25.20 | 1.87 | 2.49 | 24.77 | 44.96 | 0.00 | 99.28 |
| 786 | 507460 | 609529.8 | 1230694.7 | 240.7 | 0.50 | 8.74 | 25.72 | 1.51 | 2.93 | 22.28 | 47.05 | 0.00 | 99.49 |
| 787 | 507466 | 609678.9 | 1230693.8 | 232.3 | 0.00 | 10.28 | 24.59 | 1.57 | 2.74 | 26.48 | 43.99 | 0.00 | 99.37 |
| 788 | 519484 | 610128.3 | 1230992.1 | 199.0 | 0.00 | 1.80 | 19.56 | 1.47 | 2.04 | 37.90 | 37.91 | 0.00 | 98.88 |
| 790 | 417538 | 611441.5 | 1228422.1 | 237.1 | 1.00 | 12.93 | 24.80 | 2.77 | 2.34 | 23.14 | 46.30 | 0.00 | 99.36 |
| 791 | 417544 | 611592.4 | 1228423.3 | 243.3 | 0.40 | 10.74 | 25.17 | 1.86 | 2.28 | 24.64 | 45.54 | 0.00 | 99.49 |
| 792 | 417550 | 611743.9 | 1228422.7 | 246.9 | 0.00 | 8.99 | 25.98 | 1.56 | 2.61 | 22.18 | 47.14 | 0.00 | 99.47 |
| 793 | 417556 | 611895.9 | 1228422.2 | 248.0 | 0.00 | 11.43 | 24.19 | 3.95 | 2.15 | 25.46 | 43.58 | 0.00 | 99.34 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 794 | 417568 | 612188.5 | 1228422.8 | 242.3 | 0.40 | 11.72 | 24.92 | 1.94 | 2.05 | 25.94 | 44.67 | 0.00 | 99.51 |
| 795 | 423556 | 611895.4 | 1228572.0 | 246.8 | 0.00 | 4.31 | 26.56 | 0.82 | 2.73 | 21.29 | 48.17 | 0.01 | 99.57 |
| 796 | 423562 | 612045.8 | 1228571.6 | 242.3 | 0.00 | 6.89 | 24.82 | 2.26 | 2.29 | 25.98 | 43.72 | 0.08 | 99.18 |
| 797 | 423568 | 612193.8 | 1228572.2 | 235.8 | 1.00 | 10.37 | 27.55 | 2.51 | 2.20 | 15.37 | 51.71 | 0.11 | 99.35 |
| 798 | 429532 | 611297.4 | 1228721.2 | 232.4 | 0.50 | 5.00 | 25.25 | 1.97 | 2.07 | 24.22 | 46.05 | 0.00 | 99.56 |
| 799 | 429538 | 611447.6 | 1228720.9 | 241.7 | 0.60 | 10.95 | 24.71 | 4.20 | 2.39 | 22.38 | 45.69 | 0.00 | 99.37 |
| 800 | 429544 | 611596.9 | 1228721.2 | 246.2 | 0.00 | 6.52 | 22.17 | 3.95 | 1.97 | 32.68 | 38.50 | 0.00 | 99.26 |
| 801 | 429550 | 611747.3 | 1228722.4 | 247.5 | 0.00 | 7.08 | 25.32 | 1.61 | 2.33 | 25.50 | 44.73 | 0.00 | 99.49 |
| 802 | 429556 | 611895.9 | 1228719.0 | 241.1 | 0.50 | 2.00 | 20.95 | 4.29 | 1.91 | 35.28 | 38.65 | 0.00 | 99.08 |
| 803 | 435532 | 611299.2 | 1228869.6 | 237.3 | 0.50 | 6.77 | 27.05 | 2.03 | 2.20 | 18.02 | 50.27 | 0.00 | 99.57 |
| 804 | 435538 | 611447.2 | 1228871.1 | 248.3 | 0.00 | 4.21 | 24.44 | 1.26 | 3.20 | 26.93 | 43.68 | 0.00 | 99.51 |
| 805 | 441532 | 611289.4 | 1229019.9 | 239.5 | 0.50 | 2.45 | 24.40 | 2.94 | 1.80 | 25.91 | 44.29 | 0.00 | 99.34 |
| 806 | 441538 | 611448.5 | 1229020.5 | 248.7 | 0.00 | 5.37 | 24.91 | 1.32 | 2.66 | 25.69 | 45.02 | 0.00 | 99.60 |
| 807 | 441544 | 611596.9 | 1229020.8 | 248.7 | 0.00 | 9.18 | 23.16 | 1.39 | 2.41 | 32.15 | 40.33 | 0.00 | 99.44 |
| 808 | 453514 | 610849.8 | 1229314.3 | 192.6 | 0.00 | 13.83 | 24.54 | 1.19 | 2.15 | 27.21 | 44.29 | 0.00 | 99.39 |
| 809 | 453526 | 611148.3 | 1229317.1 | 230.7 | 0.50 | 10.40 | 24.70 | 1.85 | 2.47 | 25.30 | 45.15 | 0.00 | 99.47 |
| 810 | 465526 | 611148.7 | 1229615.0 | 247.3 | 0.00 | 5.96 | 29.07 | 2.31 | 2.28 | 11.67 | 54.41 | 0.00 | 99.73 |
| 811 | 465538 | 611444.0 | 1229619.6 | 246.1 | 0.50 | 6.74 | 23.11 | 2.20 | 2.77 | 30.81 | 40.51 | 0.00 | 99.40 |
| 813 | 405526 | 611148.8 | 1228113.6 | 209.7 | 0.00 | 7.20 | 25.75 | 1.17 | 2.69 | 21.41 | 48.38 | 0.00 | 99.38 |
| 814 | 417496 | 610397.8 | 1228419.9 | 178.0 | 0.00 | 7.58 | 25.01 | 1.12 | 2.44 | 23.71 | 47.27 | 0.00 | 99.56 |
| 815 | 417502 | 610546.8 | 1228419.9 | 188.5 | 0.00 | 2.00 | 20.70 | 2.29 | 1.69 | 39.95 | 34.50 | 0.00 | 99.12 |
| 816 | 417514 | 610846.1 | 1228420.7 | 207.2 | 0.60 | 7.73 | 23.32 | 2.00 | 2.27 | 31.01 | 40.79 | 0.00 | 99.38 |
| 817 | 417520 | 610994.8 | 1228420.8 | 214.7 | 0.00 | 9.72 | 26.40 | 1.24 | 2.32 | 23.51 | 46.16 | 0.00 | 99.62 |
| 818 | 423496 | 610399.8 | 1228566.9 | 172.5 | 0.00 | 11.16 | 24.60 | 0.89 | 2.32 | 24.25 | 47.14 | 0.00 | 99.30 |
| 819 | 423502 | 610549.3 | 1228567.1 | 181.3 | 0.00 | 8.69 | 23.91 | 0.98 | 2.12 | 29.55 | 42.79 | 0.00 | 99.35 |
| 820 | 423550 | 611747.5 | 1228571.3 | 248.7 | 0.00 | 8.85 | 29.36 | 2.00 | 2.57 | 10.44 | 55.12 | 0.06 | 99.49 |
| 821 | 429496 | 610421.9 | 1228715.2 | 172.3 | 0.00 | 2.00 | 20.35 | 2.32 | 2.03 | 36.80 | 37.70 | 0.00 | 99.20 |
| 822 | 429502 | 610547.1 | 1228716.2 | 177.9 | 0.30 | 6.79 | 24.45 | 1.22 | 2.43 | 27.14 | 44.19 | 0.00 | 99.42 |
| 823 | 429508 | 610690.3 | 1228719.1 | 187.3 | 0.00 | 10.24 | 24.31 | 1.01 | 2.55 | 25.74 | 45.77 | 0.00 | 99.38 |
| 824 | 429514 | 610846.8 | 1228718.5 | 197.9 | 0.00 | 2.00 | 18.30 | 3.26 | 2.02 | 39.30 | 36.10 | 0.00 | 98.98 |
| 825 | 429520 | 610997.4 | 1228718.7 | 207.6 | 0.00 | 8.11 | 23.20 | 2.95 | 2.08 | 28.46 | 42.70 | 0.00 | 99.39 |
| 826 | 435496 | 610403.9 | 1228867.2 | 168.7 | 0.50 | 6.27 | 22.79 | 2.61 | 1.87 | 29.37 | 42.75 | 0.00 | 99.40 |
| 827 | 435502 | 610552.3 | 1228867.1 | 175.9 | 0.00 | 13.13 | 23.72 | 0.89 | 2.09 | 29.09 | 43.48 | 0.00 | 99.27 |
| 828 | 435508 | 610701.3 | 1228867.4 | 183.1 | 0.00 | 8.68 | 24.00 | 1.36 | 2.33 | 26.95 | 44.64 | 0.00 | 99.28 |
| 829 | 435514 | 610850.2 | 1228868.5 | 195.9 | 1.00 | 13.14 | 23.85 | 3.10 | 2.23 | 25.89 | 44.36 | 0.00 | 99.44 |
| 830 | 441502 | 610553.2 | 1229015.8 | 170.4 | 0.00 | 5.28 | 21.12 | 2.11 | 2.07 | 32.89 | 41.08 | 0.00 | 99.27 |
| 831 | 441508 | 610703.2 | 1229017.2 | 177.1 | 0.40 | 10.36 | 23.55 | 1.26 | 2.17 | 29.18 | 43.11 | 0.00 | 99.28 |
| 832 | 441514 | 610852.4 | 1229017.4 | 189.1 | 0.50 | 12.80 | 22.81 | 1.99 | 2.16 | 29.65 | 42.73 | 0.00 | 99.34 |
| 833 | 441520 | 610999.8 | 1229017.1 | 208.4 | 0.50 | 10.32 | 23.22 | 2.46 | 1.86 | 29.65 | 42.17 | 0.00 | 99.36 |
| 834 | 453538 | 611445.0 | 1229318.6 | 257.0 | 0.00 | 2.00 | 21.20 | 2.90 | 2.33 | 36.15 | 36.95 | 0.00 | 99.52 |
| 837 | 465436 | 608928.8 | 1229647.2 | 156.2 | 0.00 | 2.00 | 19.75 | 2.00 | 1.86 | 39.90 | 35.95 | 0.00 | 99.46 |
| 838 | 465442 | 609077.4 | 1229646.2 | 161.2 | 0.20 | 2.00 | 19.77 | 1.50 | 2.05 | 41.85 | 34.02 | 0.00 | 99.19 |
| 839 | 465448 | 609228.3 | 1229646.1 | 167.9 | 0.00 | 2.00 | 20.90 | 3.01 | 2.19 | 37.65 | 35.50 | 0.00 | 99.25 |
| 840 | 465454 | 609375.0 | 1229649.0 | 173.5 | 0.00 | 8.97 | 23.00 | 1.23 | 2.58 | 30.75 | 41.87 | 0.00 | 99.43 |
| 841 | 465460 | 609524.1 | 1229648.0 | 174.7 | 0.40 | 2.50 | 23.26 | 1.70 | 2.43 | 30.56 | 41.52 | 0.00 | 99.46 |
| 842 | 465466 | 609678.6 | 1229649.4 | 178.9 | 0.00 | 7.99 | 24.03 | 0.65 | 2.20 | 29.92 | 42.53 | 0.00 | 99.33 |
| 843 | 471436 | 608927.7 | 1229794.7 | 170.1 | 0.00 | 6.03 | 24.04 | 1.92 | 2.21 | 27.63 | 43.84 | 0.00 | 99.65 |
| 844 | 471442 | 609077.1 | 1229795.6 | 177.0 | 0.00 | 2.51 | 23.06 | 1.18 | 2.26 | 30.81 | 42.17 | 0.00 | 99.47 |
| 845 | 471448 | 609228.4 | 1229795.4 | 181.6 | 0.00 | 10.30 | 24.87 | 1.85 | 2.62 | 23.37 | 46.74 | 0.00 | 99.45 |
| 846 | 471454 | 609374.0 | 1229795.6 | 185.0 | 0.00 | 9.36 | 22.97 | 1.47 | 2.49 | 30.11 | 42.30 | 0.00 | 99.34 |
| 847 | 471460 | 609524.4 | 1229797.2 | 187.9 | 0.00 | 11.34 | 26.94 | 2.24 | 2.65 | 17.75 | 49.83 | 0.00 | 99.42 |
| 848 | 471466 | 609678.2 | 1229799.0 | 189.4 | 0.00 | 12.96 | 23.04 | 2.11 | 2.17 | 30.73 | 41.35 | 0.00 | 99.39 |
| 849 | 477448 | 609229.1 | 1229945.2 | 195.8 | 0.00 | 11.57 | 24.89 | 1.06 | 2.32 | 26.38 | 44.89 | 0.00 | 99.54 |
| 850 | 477460 | 609524.3 | 1229945.7 | 204.2 | 0.00 | 14.83 | 25.11 | 1.25 | 2.29 | 24.14 | 46.59 | 0.00 | 99.37 |
| 851 | 477466 | 609679.3 | 1229947.4 | 200.5 | 0.00 | 2.00 | 20.65 | 2.00 | 2.27 | 36.05 | 38.30 | 0.00 | 99.26 |

## Reserve Composites - Global Alumina Refinery Project – Bauxite Resources, Reserves Mine Plan

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 852 | 477472 | 609827.8 | 1229946.8 | 195.3 | 0.00 | 9.40 | 22.89 | 1.47 | 2.14 | 31.83 | 40.97 | 0.00 | 99.31 |
| 853 | 477478 | 609977.4 | 1229947.2 | 185.4 | 0.30 | 2.00 | 21.27 | 1.10 | 2.17 | 36.98 | 37.66 | 0.00 | 99.17 |
| 854 | 483454 | 609377.0 | 1230093.6 | 212.8 | 0.00 | 13.32 | 24.04 | 1.80 | 2.19 | 28.11 | 43.15 | 0.00 | 99.29 |
| 855 | 483460 | 609526.4 | 1230095.3 | 215.5 | 0.00 | 9.92 | 24.06 | 1.93 | 1.97 | 28.41 | 43.20. | 0.00 | 99.58 |
| 856 | 483466 | 609679.7 | 1230095.3 | 215.9 | 0.20 | 16.18 | 26.02 | 1.78 | 2.37 | 21.66 | 47.57 | 0.00 | 99.42 |
| 857 | 483478 | 609978.1 | 1230098.2 | 196.9 | 0.50 | 6.05 | 24.94 | 1.07 | 2.67 | 24.03 | 46.69 | 0.00 | 99.40 |
| 858 | 489466 | 609678.5 | 1230243.1 | 233.5 | 0.60 | 11.40 | 23.17 | 4.23 | 2.14 | 26.42 | 43.54 | 0.00 | 99.48 |
| 859 | 489478 | 609978.5 | 1230244.0 | 220.2 | 0.60 | 4.34 | 23.33 | 3.72 | 1.92 | 26.05 | 44.44 | 0.00 | 99.48 |
| 861 | 477430 | 608778.0 | 1229943.9 | 183.2 | 0.60 | 11.96 | 23.98 | 3.67 | 2.40 | 24.78 | 44.66 | 0.00 | 99.49 |
| 862 | 477442 | 609078.1 | 1229945.4 | 191.4 | 0.40 | 4.29 | 23.70 | 1.33 | 2.28 | 28.68 | 43.55 | 0.00 | 99.54 |
| 863 | 483430 | 608777.4 | 1230095.3 | 200.2 | 0.00 | 12.53 | 26.82 | 0.77 | 2.66 | 20.28 | 49.11 | 0.00 | 99.64 |
| 864 | 483436 | 608926.2 | 1230097.1 | 195.0 | 0.30 | 5.84 | 23.53 | 1.69 | 2.41 | 28.91 | 42.80 | 0.00 | 99.32 |
| 865 | 483442 | 609078.0 | 1230094.4 | 204.3 | 0.00 | 11.59 | 25.96 | 0.99 | 2.68 | 22.46 | 47.49 | 0.00 | 99.59 |
| 866 | 489424 | 608626.8 | 1230245.2 | 198.6 | 0.20 | 6.05 | 22.78 | 1.16 | 2.78 | 29.20 | 43.43 | 0.00 | 99.34 |
| 867 | 489430 | 608776.5 | 1230244.4 | 201.2 | 0.00 | 15.52 | 23.74 | 2.47 | 2.47 | 27.93 | 42.97 | 0.00 | 99.57 |
| 868 | 489436 | 608927.9 | 1230244.6 | 201.6 | 0.50 | 11.27 | 23.09 | 2.56 | 2.12 | 29.10 | 42.53 | 0.00 | 99.39 |
| 869 | 489442 | 609077.7 | 1230245.4 | 209.0 | 0.00 | 8.23 | 24.32 | 1.01 | 2.29 | 27.67 | 44.14 | 0.00 | 99.44 |
| 870 | 489448 | 609226.9 | 1230245.9 | 216.6 | 0.40 | 8.71 | 24.81 | 1.49 | 2.35 | 25.72 | 45.21 | 0.00 | 99.58 |
| 871 | 489460 | 609526.0 | 1230243.3 | 240.0 | 0.00 | 9.21 | 24.33 | 2.02 | 2.11 | 26.32 | 44.83 | 0.00 | 99.61 |
| 872 | 489472 | 609825.5 | 1230254.7 | 233.6 | 0.00 | 2.78 | 24.57 | 2.13 | 2.22 | 24.87 | 45.66 | 0.00 | 99.44 |
| 873 | 495430 | 608777.7 | 1230395.2 | 190.8 | 0.00 | 12.15 | 24.29 | 2.53 | 2.54 | 24.89 | 45.10 | 0.00 | 99.35 |
| 874 | 495436 | 608929.1 | 1230395.4 | 203.3 | 0.00 | 12.13 | 22.53 | 0.74 | 1.93 | 34.26 | 39.97 | 0.00 | 99.43 |
| 875 | 495442 | 609077.8 | 1230396.0 | 212.4 | 0.00 | 14.67 | 24.36 | 1.26 | 2.43 | 26.89 | 44.46 | 0.00 | 99.41 |
| 876 | 495448 | 609227.6 | 1230394.5 | 222.7 | 0.50 | 10.04 | 22.59 | 3.80 | 2.25 | 29.39 | 41.37 | 0.00 | 99.40 |
| 877 | 495460 | 609526.9 | 1230393.2 | 249.2 | 0.00 | 2.00 | 20.10 | 2.12 | 2.25 | 43.30 | 31.50 | 0.00 | 99.26 |
| 878 | 495466 | 609678.6 | 1230392.9 | 249.1 | 0.00 | 3.72 | 24.48 | 2.58 | 2.01 | 26.10 | 44.15 | 0.00 | 99.32 |
| 880 | 393550 | 611747.2 | 1227821.8 | 198.5 | 0.00 | 2.00 | 19.85 | 1.43 | 2.99 | 41.15 | 33.50 | 0.00 | 99.02 |
| 881 | 393556 | 611898.1 | 1227821.7 | 209.0 | 0.00 | 7.73 | 23.67 | 1.85 | 1.74 | 26.54 | 45.62 | 0.00 | 99.42 |
| 882 | 393562 | 612049.1 | 1227824.5 | 227.6 | 0.00 | 2.00 | 21.15 | 4.93 | 2.25 | 33.15 | 37.70 | 0.00 | 99.18 |
| 883 | 399556 | 611895.4 | 1227973.0 | 219.2 | 0.50 | 2.75 | 22.12 | 3.82 | 2.69 | 29.97 | 40.55 | 0.00 | 99.14 |
| 884 | 399562 | 612047.8 | 1227975.2 | 227.9 | 0.60 | 7.21 | 25.57 | 7.41 | 2.74 | 12.44 | 51.16 | 0.00 | 99.32 |
| 885 | 399568 | 612198.0 | 1227977.6 | 241.2 | 0.50 | 11.42 | 25.91 | 3.15 | 2.99 | 18.93 | 48.30 | 0.00 | 99.29 |
| 886 | 405550 | 611744.3 | 1228121.9 | 225.9 | 0.00 | 14.39 | 24.53 | 2.88 | 2.59 | 23.14 | 46.07 | 0.00 | 99.21 |
| 887 | 405562 | 612048.5 | 1228126.0 | 240.6 | 0.50 | 8.28 | 25.79 | 2.73 | 2.99 | 19.29 | 48.54 | 0.00 | 99.35 |
| 888 | 405568 | 612195.1 | 1228124.0 | 245.6 | 0.00 | 6.85 | 24.51 | 1.34 | 2.71 | 28.28 | 42.49 | 0.00 | 99.33 |
| 889 | 405574 | 612348.1 | 1228124.8 | 251.9 | 0.50 | 10.44 | 24.85 | 1.34 | 2.97 | 24.60 | 45.57 | 0.00 | 99.32 |
| 890 | 477418 | 608475.7 | 1229947.2 | 178.2 | 0.00 | 10.37 | 23.23 | 2.83 | 1.86 | 28.36 | 42.94 | 0.00 | 99.22 |
| 891 | 477424 | 608624.7 | 1229946.2 | 181.0 | 0.00 | 14.91 | 24.13 | 2.60 | 2.62 | 25.10 | 44.75 | 0.00 | 99.20 |
| 892 | 477454 | 609376.0 | 1229948.4 | 199.7 | 0.30 | 12.47 | 25.54 | 1.45 | 2.54 | 22.71 | 47.08 | 0.00 | 99.32 |
| 893 | 483418 | 608473.8 | 1230092.9 | 190.3 | 1.00 | 4.58 | 23.66 | 6.04 | 1.97 | 22.34 | 45.40 | 0.00 | 99.40 |
| 894 | 489418 | 608474.6 | 1230245.0 | 193.9 | 0.20 | 13.59 | 24.10 | 2.12 | 2.47 | 27.33 | 43.31 | 0.00 | 99.34 |
| 895 | 489454 | 609377.0 | 1230242.6 | 229.6 | 0.00 | 2.45 | 24.18 | 3.17 | 2.05 | 25.75 | 44.30 | 0.00 | 99.45 |
| 896 | 495454 | 609381.0 | 1230394.5 | 240.8 | 0.30 | 6.56 | 24.57 | 2.72 | 2.56 | 24.36 | 45.12 | 0.00 | 99.33 |
| 897 | 501454 | 609377.1 | 1230544.0 | 246.5 | 0.00 | 10.48 | 23.77 | 4.57 | 2.42 | 24.40 | 43.99 | 0.00 | 99.15 |
| 898 | 501460 | 609529.4 | 1230545.4 | 249.4 | 0.50 | 7.83 | 23.42 | 1.13 | 2.88 | 29.47 | 42.55 | 0.00 | 99.44 |
| 899 | 501466 | 609679.3 | 1230544.0 | 240.8 | 1.00 | 9.00 | 24.29 | 4.20 | 2.40 | 23.03 | 45.24 | 0.00 | 99.16 |
| 900 | 501472 | 609827.7 | 1230544.9 | 236.7 | 0.50 | 9.97 | 25.70 | 3.51 | 2.69 | 19.60 | 47.70 | 0.00 | 99.20 |
| 903 | 369550 | 611752.8 | 1227225.1 | 177.4 | 0.00 | 5.97 | 25.31 | 1.21 | 1.86 | 25.62 | 45.46 | 0.00 | 99.45 |
| 904 | 375550 | 611751.2 | 1227373.8 | 177.6 | 0.00 | 3.67 | 23.95 | 0.96 | 2.41 | 28.59 | 43.43 | 0.00 | 99.34 |
| 905 | 375580 | 612498.6 | 1227377.5 | 231.3 | 0.60 | 2.00 | 18.94 | 4.52 | 1.77 | 40.22 | 33.78 | 0.00 | 99.23 |
| 906 | 381550 | 611749.8 | 1227523.1 | 178.7 | 0.00 | 2.00 | 19.95 | 1.60 | 1.71 | 41.05 | 34.80 | 0.00 | 99.10 |
| 907 | 381556 | 611896.0 | 1227523.6 | 195.6 | 0.00 | 9.62 | 23.22 | 1.35 | 2.66 | 30.68 | 41.39 | 0.00 | 99.29 |
| 908 | 381562 | 612050.6 | 1227526.1 | 218.6 | 0.00 | 8.14 | 22.20 | 1.56 | 2.55 | 32.47 | 40.38 | 0.00 | 99.16 |
| 909 | 381568 | 612200.2 | 1227526.0 | 235.8 | 0.00 | 5.04 | 23.02 | 1.19 | 3.00 | 30.17 | 42.10 | 0.00 | 99.48 |
| 910 | 381574 | 612340.0 | 1227526.7 | 242.4 | 0.50 | 10.60 | 23.70 | 1.72 | 2.48 | 29.29 | 42.23 | 0.00 | 99.42 |

## Reserve Composites - Global Alumina Refinery Project – Bauxite Resources, Reserves Mine Plan

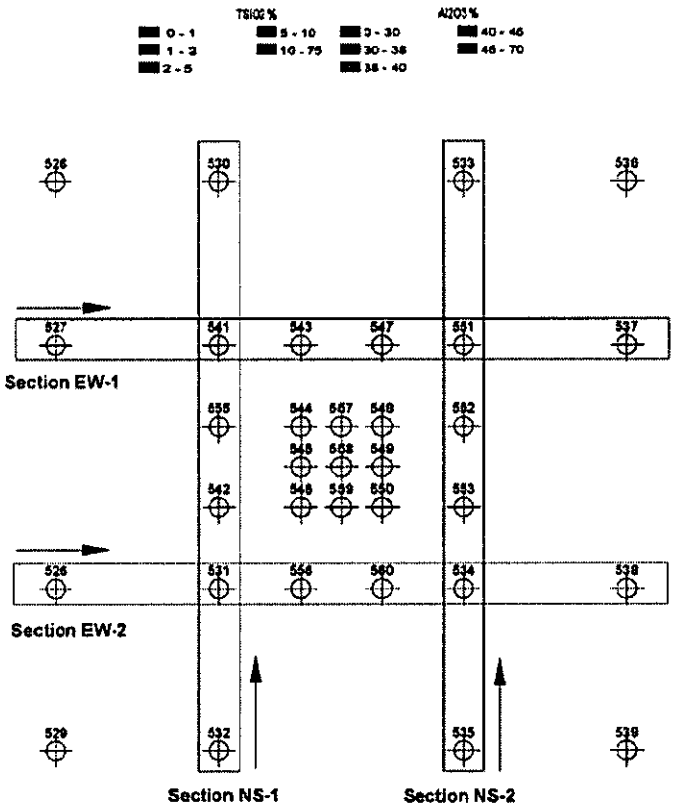
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 911 | 381580 | 612486.8 | 1227528.6 | 242.2 | 0.60 | 6.85 | 24.42 | 1.18 | 2.74 | 27.25 | 43.78 | 0.00 | 99.38 |
| 912 | 387550 | 611749.5 | 1227669.7 | 182.9 | 0.50 | 2.00 | 19.80 | 3.64 | 1.63 | 38.95 | 35.38 | 0.00 | 99.40 |
| 913 | 387556 | 611900.5 | 1227671.1 | 203.4 | 0.00 | 13.49 | 21.52 | 5.09 | 2.64 | 27.42 | 42.64 | 0.00 | 99.31 |
| 914 | 387562 | 612049.7 | 1227672.0 | 225.7 | 0.00 | 11.49 | 24.61 | 2.03 | 2.52 | 24.76 | 45.45 | 0.00 | 99.37 |
| 915 | 387574 | 612345.7 | 1227679.0 | 249.1 | 0.00 | 12.20 | 24.45 | 2.47 | 3.00 | 23.60 | 45.90 | 0.00 | 99.43 |
| 916 | 387580 | 612496.8 | 1227677.6 | 244.1 | 0.20 | 11.39 | 23.32 | 3.11 | 2.57 | 27.53 | 42.95 | 0.00 | 99.47 |
| 917 | 387585 | 612618.4 | 1227678.7 | 236.9 | 0.00 | 8.66 | 22.55 | 1.10 | 2.28 | 32.59 | 40.89 | 0.00 | 99.42 |
| 918 | 393568 | 612200.7 | 1227823.1 | 241.8 | 0.00 | 7.18 | 25.73 | 2.22 | 2.69 | 21.38 | 47.29 | 0.00 | 99.31 |
| 919 | 393574 | 612354.8 | 1227825.4 | 248.2 | 0.20 | 2.00 | 19.47 | 2.73 | 2.09 | 40.86 | 33.92 | 0.00 | 99.07 |
| 920 | 393580 | 612495.2 | 1227825.1 | 246.7 | 0.00 | 6.56 | 21.54 | 1.73 | 2.36 | 34.47 | 39.23 | 0.00 | 99.32 |
| 921 | 393586 | 612642.0 | 1227828.8 | 238.7 | 0.00 | 4.01 | 22.40 | 2.51 | 2.74 | 30.88 | 41.05 | 0.00 | 99.58 |
| 922 | 399580 | 612494.5 | 1227977.4 | 254.9 | 0.00 | 5.72 | 21.26 | 4.84 | 2.61 | 30.03 | 40.53 | 0.00 | 99.27 |
| 923 | 405556 | 611889.8 | 1228121.1 | 231.8 | 1.00 | 11.92 | 25.04 | 2.30 | 2.11 | 24.18 | 45.75 | 0.00 | 99.38 |
| 924 | 405580 | 612494.1 | 1228129.6 | 249.2 | 0.00 | 2.00 | 21.45 | 1.67 | 1.94 | 36.05 | 38.35 | 0.00 | 99.45 |
| 925 | 411550 | 611748.5 | 1228272.9 | 240.5 | 0.00 | 7.93 | 25.14 | 1.79 | 2.34 | 24.76 | 45.47 | 0.00 | 99.50 |
| 926 | 411562 | 612042.7 | 1228274.0 | 244.7 | 0.00 | 3.39 | 24.88 | 2.03 | 3.54 | 24.00 | 44.94 | 0.00 | 99.39 |
| 927 | 411574 | 612338.8 | 1228272.4 | 236.4 | 0.50 | 8.53 | 24.03 | 1.39 | 3.07 | 23.24 | 47.58 | 0.00 | 99.32 |
| 928 | 411580 | 612491.6 | 1228271.2 | 234.7 | 0.00 | 8.58 | 25.34 | 1.37 | 2.97 | 22.76 | 47.11 | 0.00 | 99.55 |
| 931 | 339574 | 612351.5 | 1226473.2 | 189.2 | 0.00 | 2.00 | 14.25 | 1.91 | 2.78 | 61.60 | 18.20 | 0.00 | 98.74 |
| 932 | 339586 | 612655.5 | 1226473.2 | 200.8 | 0.00 | 2.68 | 20.68 | 1.35 | 2.23 | 34.34 | 40.78 | 0.00 | 99.38 |
| 933 | 345574 | 612350.6 | 1226628.6 | 186.7 | 0.00 | 2.00 | 19.10 | 0.95 | 1.86 | 42.35 | 34.90 | 0.00 | 99.16 |
| 934 | 345580 | 612500.7 | 1226628.4 | 199.8 | 0.00 | 2.00 | 19.40 | 2.03 | 3.58 | 42.80 | 31.45 | 0.00 | 99.26 |
| 935 | 345586 | 612652.2 | 1226629.0 | 209.0 | 0.00 | 11.41 | 24.95 | 1.33 | 2.71 | 24.20 | 46.18 | 0.00 | 99.37 |
| 936 | 345592 | 612798.1 | 1226630.0 | 205.0 | 0.00 | 11.24 | 21.38 | 4.33 | 3.38 | 29.46 | 40.73 | 0.00 | 99.28 |
| 937 | 351574 | 612349.8 | 1226779.6 | 188.5 | 0.00 | 2.00 | 22.20 | 1.33 | 2.21 | 34.20 | 39.25 | 0.00 | 99.19 |
| 938 | 351586 | 612649.2 | 1226778.2 | 216.2 | 0.00 | 2.00 | 19.60 | 3.65 | 1.58 | 42.90 | 31.70 | 0.00 | 99.43 |
| 939 | 357550 | 611752.2 | 1226925.5 | 167.1 | 0.00 | 2.00 | 16.50 | 2.63 | 1.14 | 54.40 | 24.75 | 0.00 | 99.42 |
| 940 | 357556 | 611906.3 | 1226926.9 | 174.9 | 0.50 | 2.00 | 20.65 | 2.48 | 1.42 | 39.03 | 35.65 | 0.00 | 99.22 |
| 941 | 357562 | 612053.1 | 1226928.4 | 181.9 | 0.00 | 7.11 | 25.12 | 0.91 | 1.79 | 25.59 | 45.77 | 0.00 | 99.17 |
| 942 | 357568 | 612203.3 | 1226927.8 | 185.9 | 0.00 | 8.32 | 23.50 | 0.96 | 2.44 | 30.88 | 41.45 | 0.00 | 99.23 |
| 943 | 357574 | 612349.1 | 1226928.3 | 192.6 | 0.00 | 8.67 | 24.45 | 1.90 | 2.64 | 23.70 | 46.61 | 0.00 | 99.31 |
| 944 | 357580 | 612499.1 | 1226929.0 | 203.9 | 0.00 | 9.65 | 26.85 | 1.46 | 2.55 | 18.24 | 50.32 | 0.00 | 99.42 |
| 945 | 357586 | 612647.8 | 1226928.4 | 215.4 | 0.00 | 11.30 | 23.96 | 2.90 | 2.89 | 25.39 | 44.27 | 0.00 | 99.41 |
| 946 | 363550 | 611754.3 | 1227075.2 | 172.7 | 0.00 | 2.34 | 22.88 | 0.98 | 1.66 | 33.40 | 40.35 | 0.00 | 99.27 |
| 947 | 363562 | 612050.2 | 1227077.7 | 189.2 | 0.00 | 11.72 | 25.39 | 1.02 | 2.17 | 24.77 | 45.99 | 0.00 | 99.33 |
| 948 | 363574 | 612350.1 | 1227078.4 | 203.6 | 0.00 | 11.81 | 24.48 | 1.54 | 2.05 | 25.72 | 45.61 | 0.00 | 99.40 |
| 949 | 363586 | 612645.2 | 1227080.7 | 220.2 | 0.00 | 11.78 | 24.41 | 1.57 | 2.06 | 28.19 | 43.27 | 0.00 | 99.50 |
| 950 | 369556 | 611901.1 | 1227224.8 | 186.8 | 0.00 | 10.37 | 23.95 | 1.06 | 1.95 | 29.03 | 43.34 | 0.00 | 99.32 |
| 951 | 369562 | 612050.3 | 1227225.8 | 197.3 | 0.30 | 2.74 | 20.44 | 3.00 | 2.56 | 35.40 | 37.83 | 0.00 | 99.24 |
| 952 | 369568 | 612199.4 | 1227226.6 | 207.6 | 0.00 | 7.12 | 23.81 | 1.62 | 2.44 | 26.42 | 44.89 | 0.00 | 99.28 |
| 953 | 369574 | 612347.5 | 1227227.1 | 216.3 | 0.30 | 10.83 | 25.27 | 0.87 | 2.77 | 19.71 | 50.67 | 0.00 | 99.28 |
| 954 | 369580 | 612497.7 | 1227228.3 | 221.2 | 0.50 | 9.20 | 23.31 | 2.47 | 1.99 | 28.97 | 42.56 | 0.00 | 99.29 |
| 955 | 375556 | 611899.9 | 1227374.7 | 190.7 | 0.00 | 9.86 | 24.53 | 1.27 | 2.12 | 26.85 | 44.68 | 0.00 | 99.45 |
| 956 | 375562 | 612046.0 | 1227374.2 | 208.3 | 0.00 | 6.73 | 24.12 | 1.21 | 2.68 | 26.42 | 44.85 | 0.00 | 99.29 |
| 957 | 375574 | 612348.3 | 1227377.3 | 230.2 | 0.00 | 9.26 | 25.47 | 1.08 | 2.57 | 24.94 | 45.34 | 0.00 | 99.40 |
| 960 | 309574 | 612350.0 | 1225728.3 | 227.2 | 1.00 | 2.00 | 17.60 | 2.43 | 2.05 | 51.45 | 25.65 | 0.00 | 99.18 |
| 965 | 273538 | 611448.5 | 1224825.7 | 245.0 | 0.00 | 2.00 | 18.20 | 1.31 | 2.77 | 46.20 | 30.70 | 0.00 | 99.18 |
| 966 | 273550 | 611748.4 | 1224826.9 | 247.2 | 0.00 | 2.07 | 23.18 | 0.89 | 2.96 | 31.39 | 40.81 | 0.00 | 99.23 |
| 967 | 273574 | 612350.2 | 1224828.7 | 222.9 | 0.50 | 2.00 | 20.05 | 1.46 | 2.45 | 40.68 | 34.55 | 0.00 | 99.18 |
| 968 | 273586 | 612649.8 | 1224829.9 | 232.4 | 0.00 | 1.90 | 22.16 | 1.89 | 2.60 | 31.64 | 40.97 | 0.00 | 99.26 |
| 969 | 285526 | 611155.6 | 1225123.6 | 239.5 | 0.50 | 6.42 | 23.32 | 3.52 | 1.96 | 29.59 | 40.95 | 0.00 | 99.33 |
| 970 | 285538 | 611447.2 | 1225125.6 | 245.6 | 0.00 | 2.00 | 22.45 | 1.22 | 2.35 | 34.20 | 39.20 | 0.00 | 99.42 |
| 971 | 285550 | 611747.2 | 1225126.6 | 245.4 | 0.00 | 2.59 | 22.49 | 0.91 | 2.25 | 33.86 | 39.59 | 0.00 | 99.11 |
| 972 | 285562 | 612049.9 | 1225127.5 | 241.2 | 0.50 | 9.53 | 26.65 | 1.67 | 3.19 | 19.10 | 48.66 | 0.00 | 99.26 |
| 973 | 285574 | 612349.1 | 1225128.6 | 217.6 | 0.00 | 2.00 | 19.50 | 1.70 | 2.28 | 41.20 | 34.15 | 0.00 | 98.83 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 974 | 297514 | 610845.3 | 1225423.2 | 222.3 | 0.00 | 2.00 | 22.60 | 1.55 | 3.00 | 32.30 | 39.65 | 0.00 | 99.10 |
| 975 | 297526 | 611145.1 | 1225424.4 | 231.0 | 0.00 | 9.50 | 24.88 | 1.70 | 2.69 | 25.90 | 44.04 | 0.00 | 99.20 |
| 976 | 297538 | 611445.4 | 1225425.5 | 238.1 | 0.00 | 6.94 | 26.94 | 0.96 | 3.32 | 17.85 | 50.25 | 0.00 | 99.32 |
| 977 | 297550 | 611746.0 | 1225426.7 | 236.2 | 0.00 | 2.00 | 19.00 | 3.09 | 2.78 | 39.55 | 34.65 | 0.00 | 99.07 |
| 978 | 297562 | 612047.6 | 1225427.9 | 232.9 | 0.00 | 10.98 | 23.54 | 1.34 | 2.79 | 28.92 | 42.63 | 0.00 | 99.22 |
| 979 | 297574 | 612347.9 | 1225429.0 | 215.7 | 1.00 | 8.71 | 27.21 | 2.78 | 2.52 | 14.86 | 52.17 | 0.00 | 99.55 |
| 980 | 309514 | 610844.3 | 1225725.5 | 215.3 | 0.00 | 6.44 | 26.59 | 1.22 | 2.81 | 19.84 | 48.88 | 0.00 | 99.33 |
| 981 | 309538 | 611444.9 | 1225725.5 | 227.9 | 0.30 | 2.74 | 21.68 | 3.09 | 2.39 | 31.73 | 40.20 | 0.00 | 99.09 |
| 982 | 309550 | 611744.8 | 1225726.7 | 230.4 | 0.00 | 2.00 | 19.30 | 3.34 | 2.25 | 41.10 | 32.95 | 0.00 | 98.93 |
| 983 | 309562 | 612046.4 | 1225727.9 | 229.3 | 0.00 | 2.01 | 22.06 | 1.63 | 2.64 | 34.02 | 39.02 | 0.00 | 99.36 |
| 984 | 309586 | 612649.0 | 1225728.0 | 226.6 | 0.00 | 2.00 | 17.55 | 4.71 | 1.48 | 48.30 | 27.05 | 0.00 | 99.09 |
| 985 | 321514 | 610854.1 | 1226023.7 | 204.6 | 0.00 | 8.96 | 25.04 | 1.61 | 2.53 | 25.63 | 44.52 | 0.00 | 99.33 |
| 986 | 321526 | 611155.6 | 1226024.2 | 212.6 | 0.60 | 3.95 | 24.61 | 1.36 | 2.46 | 26.71 | 44.04 | 0.00 | 99.17 |
| 987 | 321538 | 611443.7 | 1226025.3 | 217.3 | 0.00 | 2.00 | 15.45 | 2.15 | 1.37 | 55.00 | 25.35 | 0.00 | 99.31 |
| 988 | 321550 | 611743.7 | 1226026.5 | 220.9 | 0.00 | 2.00 | 20.05 | 1.08 | 2.34 | 40.70 | 35.05 | 0.00 | 99.21 |
| 989 | 321574 | 612349.8 | 1226027.7 | 225.4 | 0.00 | 2.00 | 16.65 | 1.89 | 2.21 | 49.10 | 29.30 | 0.00 | 99.14 |
| 990 | 333526 | 611155.6 | 1226324.6 | 191.5 | 0.00 | 2.00 | 17.20 | 0.98 | 1.88 | 49.30 | 29.70 | 0.00 | 99.06 |
| 991 | 333538 | 611442.5 | 1226324.9 | 200.3 | 0.00 | 2.00 | 17.00 | 0.98 | 2.30 | 49.95 | 29.00 | 0.00 | 99.22 |
| 992 | 333550 | 611742.5 | 1226326.1 | 203.3 | 1.00 | 5.37 | 24.43 | 1.82 | 2.51 | 26.76 | 43.68 | 0.00 | 99.22 |
| 993 | 333574 | 612350.5 | 1226328.6 | 216.0 | 0.00 | 2.00 | 19.90 | 2.64 | 2.46 | 40.50 | 33.85 | 0.00 | 99.35 |
| 994 | 523127 | 601146.1 | 1231038.9 | 241.4 | 1.00 | 5.86 | 23.20 | 2.20 | 2.03 | 30.40 | 41.63 | 0.00 | 99.47 |
| 995 | 523139 | 601446.2 | 1231038.1 | 246.7 | 1.00 | 2.00 | 21.30 | 2.31 | 1.80 | 37.35 | 36.60 | 0.00 | 99.35 |
| 996 | 523151 | 601746.2 | 1231039.3 | 242.3 | 0.00 | 6.99 | 23.80 | 2.30 | 2.26 | 27.21 | 43.77 | 0.00 | 99.35 |
| 997 | 535115 | 600845.3 | 1231336.1 | 237.2 | 0.00 | 4.34 | 27.83 | 0.99 | 2.83 | 15.98 | 51.79 | 0.00 | 99.42 |
| 998 | 535127 | 601144.8 | 1231337.1 | 246.1 | 0.00 | 4.54 | 26.36 | 1.26 | 2.34 | 21.23 | 48.22 | 0.00 | 99.40 |
| 999 | 535139 | 601445.0 | 1231338.3 | 248.3 | 0.00 | 6.67 | 24.00 | 1.65 | 2.04 | 28.51 | 43.22 | 0.00 | 99.41 |
| 1000 | 535151 | 601745.0 | 1231339.4 | 242.6 | 0.00 | 5.26 | 24.36 | 1.47 | 2.32 | 28.04 | 43.08 | 0.00 | 99.27 |
| 1001 | 535163 | 602044.9 | 1231340.6 | 232.3 | 0.00 | 9.12 | 25.78 | 2.02 | 2.84 | 16.83 | 52.02 | 0.00 | 99.49 |
| 1002 | 547115 | 600844.1 | 1231636.1 | 234.1 | 0.00 | 2.75 | 23.36 | 1.05 | 2.03 | 31.48 | 41.35 | 0.00 | 99.27 |
| 1003 | 547127 | 601143.7 | 1231636.2 | 240.3 | 0.00 | 2.60 | 22.78 | 1.18 | 2.15 | 32.91 | 40.42 | 0.00 | 99.44 |
| 1004 | 547139 | 601443.8 | 1231638.3 | 245.1 | 0.00 | 7.19 | 24.77 | 2.94 | 2.32 | 24.50 | 44.91 | 0.00 | 99.44 |
| 1005 | 547151 | 601743.8 | 1231639.4 | 241.2 | 0.00 | 3.02 | 24.23 | 1.11 | 2.57 | 29.01 | 42.52 | 0.00 | 99.45 |
| 1006 | 547163 | 602043.7 | 1231640.6 | 229.5 | 0.00 | 5.32 | 26.41 | 1.37 | 2.97 | 18.73 | 50.08 | 0.00 | 99.55 |
| 1007 | 547175 | 602342.8 | 1231641.8 | 205.9 | 0.00 | 6.38 | 24.29 | 1.49 | 2.77 | 24.05 | 46.71 | 0.00 | 99.30 |
| 1008 | 559115 | 600843.0 | 1231935.6 | 216.6 | 0.00 | 3.63 | 21.69 | 0.52 | 2.47 | 35.62 | 39.05 | 0.00 | 99.35 |
| 1009 | 559127 | 601142.8 | 1231936.8 | 228.2 | 0.00 | 2.27 | 22.52 | 2.49 | 1.79 | 32.63 | 39.92 | 0.00 | 99.34 |
| 1010 | 559139 | 601442.6 | 1231938.3 | 241.0 | 0.00 | 2.57 | 26.24 | 0.85 | 2.70 | 21.69 | 47.89 | 0.00 | 99.37 |
| 1015 | 261514 | 610844.2 | 1224529.1 | 246.0 | 1.00 | 2.00 | 19.85 | 2.31 | 2.97 | 42.15 | 32.00 | 0.00 | 99.28 |
| 1016 | 273502 | 610544.9 | 1224825.0 | 238.5 | 1.00 | 6.21 | 22.49 | 3.56 | 3.50 | 28.52 | 41.23 | 0.00 | 99.30 |
| 1017 | 273514 | 610846.9 | 1224823.7 | 238.1 | 0.40 | 2.06 | 24.12 | 1.57 | 2.72 | 26.06 | 44.91 | 0.00 | 99.38 |
| 1018 | 273526 | 611148.9 | 1224822.3 | 242.1 | 0.50 | 4.65 | 22.17 | 1.34 | 2.29 | 33.36 | 40.34 | 0.00 | 99.50 |
| 1019 | 285502 | 610544.0 | 1225123.5 | 220.2 | 0.00 | 2.00 | 20.25 | 2.28 | 2.35 | 40.25 | 33.80 | 0.00 | 99.03 |
| 1020 | 285514 | 610843.7 | 1225128.4 | 229.0 | 0.00 | 4.79 | 22.29 | 3.28 | 2.66 | 29.02 | 41.96 | 0.00 | 99.21 |
| 1021 | 297502 | 610544.9 | 1225422.0 | 212.5 | 0.00 | 2.68 | 22.12 | 2.50 | 2.77 | 32.53 | 39.20 | 0.00 | 99.13 |
| 1022 | 309502 | 610544.9 | 1225725.5 | 205.7 | 0.00 | 9.31 | 24.84 | 2.84 | 2.68 | 23.07 | 45.95 | 0.00 | 99.38 |
| 1023 | 309526 | 611155.6 | 1225724.4 | 223.0 | 0.00 | 7.14 | 26.80 | 1.81 | 2.42 | 18.41 | 49.85 | 0.00 | 99.30 |
| 1024 | 321562 | 612049.6 | 1226027.7 | 219.5 | 0.00 | 5.73 | 22.79 | 2.05 | 2.52 | 30.57 | 41.42 | 0.00 | 99.36 |
| 1025 | 559151 | 601742.6 | 1231939.5 | 241.2 | 0.00 | 2.00 | 20.35 | 2.76 | 1.97 | 40.40 | 33.55 | 0.00 | 99.03 |
| 1026 | 559163 | 602042.2 | 1231940.6 | 226.3 | 0.00 | 10.89 | 25.27 | 3.33 | 2.61 | 21.59 | 46.57 | 0.00 | 99.37 |
| 1027 | 559175 | 602341.6 | 1231941.8 | 206.5 | 0.00 | 2.00 | 22.55 | 1.49 | 1.96 | 34.55 | 38.60 | 0.00 | 99.35 |
| 1028 | 571127 | 601141.0 | 1232239.4 | 214.5 | 0.60 | 2.00 | 21.59 | 2.02 | 1.70 | 36.40 | 37.39 | 0.00 | 99.10 |
| 1029 | 571139 | 601440.3 | 1232240.6 | 236.1 | 0.00 | 2.00 | 20.30 | 2.32 | 1.79 | 41.90 | 32.95 | 0.00 | 99.26 |
| 1030 | 571151 | 601740.3 | 1232241.8 | 238.1 | 0.50 | 4.95 | 23.88 | 1.77 | 2.27 | 28.92 | 42.36 | 0.00 | 99.20 |
| 1031 | 571163 | 602040.2 | 1232242.9 | 228.6 | 1.00 | 5.41 | 24.77 | 1.38 | 2.52 | 26.78 | 43.81 | 0.00 | 99.27 |
| 1032 | 571175 | 602339.3 | 1232244.1 | 206.3 | 0.40 | 2.00 | 22.17 | 1.27 | 1.59 | 36.40 | 37.57 | 0.00 | 99.01 |

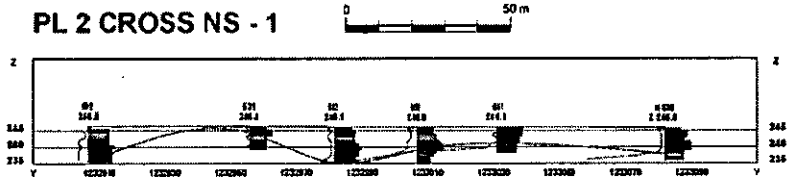
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1033 | 583139 | 601439.2 | 1232540.0 | 231.9 | 0.50 | 2.00 | 19.00 | 2.09 | 1.57 | 44.25 | 32.50 | 0.00 | 99.41 |
| 1034 | 583163 | 602039.0 | 1232542.3 | 228.9 | 0.50 | 4.98 | 25.47 | 2.12 | 3.07 | 21.68 | 46.86 | 0.00 | 99.20 |
| 1035 | 595151 | 601738.0 | 1232840.4 | 238.4 | 0.00 | 2.00 | 21.85 | 3.99 | 2.05 | 33.15 | 38.30 | 0.00 | 99.34 |
| 1036 | 595163 | 602037.9 | 1232841.6 | 238.8 | 0.50 | 9.81 | 24.93 | 3.79 | 2.89 | 20.82 | 46.96 | 0.00 | 99.39 |
| 1037 | 607163 | 602034.8 | 1233143.4 | 244.6 | 0.00 | 2.00 | 19.80 | 2.13 | 2.06 | 41.20 | 33.70 | 0.00 | 98.89 |
| 1038 | 607175 | 602337.6 | 1233141.0 | 252.2 | 0.00 | 7.32 | 23.47 | 3.27 | 2.66 | 28.17 | 41.67 | 0.00 | 99.25 |
| 1039 | 607187 | 602633.5 | 1233143.8 | 245.5 | 0.00 | 6.29 | 26.40 | 0.57 | 3.33 | 20.58 | 48.57 | 0.00 | 99.45 |
| 1040 | 607211 | 603233.1 | 1233146.1 | 236.6 | 0.00 | 9.46 | 24.85 | 2.95 | 2.24 | 24.53 | 44.78 | 0.00 | 99.38 |
| 1041 | 619139 | 601435.6 | 1233441.0 | 233.1 | 0.00 | 8.18 | 22.49 | 5.38 | 2.19 | 27.98 | 40.97 | 0.00 | 99.01 |
| 1042 | 619175 | 602333.6 | 1233442.0 | 250.0 | 0.00 | 6.77 | 23.87 | 3.64 | 2.59 | 26.08 | 43.13 | 0.00 | 99.30 |
| 1043 | 619187 | 602633.1 | 1233443.4 | 241.3 | 0.00 | 5.83 | 27.40 | 2.36 | 2.35 | 16.80 | 50.33 | 0.00 | 99.23 |
| 1044 | 631151 | 601734.6 | 1233739.5 | 241.3 | 0.00 | 11.56 | 23.82 | 1.90 | 2.65 | 28.27 | 42.65 | 0.00 | 99.30 |
| 1045 | 631163 | 602033.7 | 1233739.4 | 252.0 | 0.00 | 5.58 | 24.63 | 3.58 | 2.51 | 24.45 | 44.32 | 0.00 | 99.48 |
| 1046 | 631175 | 602332.8 | 1233739.4 | 244.4 | 0.00 | 4.00 | 28.30 | 1.53 | 2.96 | 14.18 | 52.60 | 0.00 | 99.56 |
| 1047 | 631187 | 602631.9 | 1233743.3 | 234.7 | 0.00 | 5.26 | 23.12 | 1.48 | 2.56 | 31.33 | 40.85 | 0.00 | 99.35 |
| 1048 | 637187 | 602631.4 | 1233892.9 | 222.3 | 0.00 | 4.40 | 24.41 | 4.10 | 2.40 | 24.98 | 43.45 | 0.00 | 99.34 |
| 1049 | 643151 | 601735.2 | 1234042.6 | 229.6 | 0.50 | 11.87 | 23.71 | 2.03 | 2.70 | 26.98 | 43.93 | 0.00 | 99.36 |
| 1050 | 643163 | 602034.3 | 1234042.5 | 248.0 | 0.00 | 6.35 | 25.80 | 1.44 | 2.56 | 23.03 | 46.36 | 0.00 | 99.18 |
| 1051 | 643175 | 602333.4 | 1234042.4 | 245.2 | 0.00 | 7.93 | 26.94 | 2.18 | 2.49 | 19.09 | 48.75 | 0.00 | 99.45 |
| 1058 | 535199 | 602936.9 | 1231349.6 | 180.6 | 1.00 | 2.00 | 19.20 | 3.77 | 1.44 | 41.10 | 33.70 | 0.00 | 99.20 |
| 1059 | 535211 | 603236.8 | 1231350.7 | 188.1 | 0.00 | 2.00 | 20.85 | 1.31 | 1.82 | 39.80 | 35.65 | 0.00 | 99.43 |
| 1060 | 547199 | 602935.7 | 1231648.9 | 201.2 | 1.00 | 2.00 | 22.15 | 2.02 | 1.68 | 36.10 | 37.35 | 0.00 | 99.29 |
| 1061 | 547211 | 603235.8 | 1231650.1 | 207.6 | 0.30 | 8.82 | 25.69 | 1.66 | 2.63 | 23.94 | 45.35 | 0.00 | 99.27 |
| 1062 | 559188 | 602659.8 | 1231947.8 | 194.2 | 0.60 | 2.00 | 19.08 | 5.51 | 1.48 | 40.19 | 32.41 | 0.00 | 98.67 |
| 1063 | 559199 | 602934.5 | 1231948.9 | 207.3 | 0.20 | 4.51 | 23.59 | 1.25 | 2.76 | 28.87 | 42.61 | 0.00 | 99.08 |
| 1064 | 559211 | 603234.4 | 1231950.0 | 222.4 | 0.50 | 4.91 | 22.53 | 1.50 | 2.45 | 32.70 | 40.05 | 0.00 | 99.23 |
| 1065 | 559223 | 603533.9 | 1231951.2 | 224.3 | 0.30 | 9.21 | 23.11 | 1.90 | 2.44 | 30.37 | 41.19 | 0.00 | 99.01 |
| 1066 | 571187 | 602634.0 | 1232244.2 | 203.6 | 0.30 | 7.17 | 26.58 | 2.22 | 3.16 | 15.67 | 51.32 | 0.00 | 98.98 |
| 1067 | 571199 | 602933.8 | 1232245.4 | 218.8 | 0.50 | 9.96 | 25.88 | 2.13 | 2.06 | 23.01 | 46.00 | 0.00 | 99.08 |
| 1068 | 571223 | 603532.7 | 1232250.3 | 236.7 | 0.00 | 2.00 | 18.75 | 2.08 | 2.04 | 46.80 | 29.15 | 0.00 | 98.82 |
| 1069 | 583178 | 602407.7 | 1232544.9 | 216.9 | 0.00 | 5.90 | 23.51 | 0.57 | 3.03 | 26.19 | 45.74 | 0.00 | 99.04 |
| 1070 | 583187 | 602632.6 | 1232545.8 | 221.4 | 0.50 | 14.95 | 23.16 | 5.14 | 2.77 | 23.24 | 44.53 | 0.00 | 98.84 |
| 1071 | 583199 | 602931.8 | 1232546.9 | 240.7 | 0.00 | 3.58 | 22.47 | 2.00 | 2.79 | 32.51 | 39.48 | 0.00 | 99.25 |
| 1072 | 583211 | 603231.7 | 1232548.1 | 239.6 | 0.70 | 2.94 | 23.11 | 1.99 | 2.29 | 31.06 | 40.53 | 0.00 | 98.98 |
| 1073 | 583223 | 603530.8 | 1232549.3 | 215.2 | 0.00 | 12.24 | 22.88 | 1.38 | 2.99 | 31.61 | 40.43 | 0.00 | 99.26 |
| 1074 | 595181 | 602485.3 | 1232844.0 | 239.1 | 0.00 | 5.20 | 24.05 | 1.09 | 2.13 | 28.78 | 43.04 | 0.00 | 99.10 |
| 1075 | 595193 | 602785.2 | 1232845.1 | 244.6 | 0.00 | 7.99 | 24.66 | 1.78 | 2.52 | 26.79 | 43.06 | 0.00 | 98.82 |
| 1076 | 595199 | 602934.8 | 1232845.7 | 245.6 | 0.00 | 8.60 | 25.21 | 2.84 | 2.25 | 23.96 | 44.80 | 0.00 | 99.07 |
| 1077 | 595205 | 603084.8 | 1232846.3 | 242.2 | 0.50 | 7.63 | 26.52 | 3.87 | 3.35 | 17.10 | 48.33 | 0.00 | 99.16 |
| 1078 | 601193 | 602784.4 | 1232994.8 | 245.7 | 0.00 | 8.72 | 23.69 | 3.03 | 2.98 | 28.12 | 41.46 | 0.00 | 99.28 |
| 1079 | 601205 | 603084.2 | 1232996.1 | 240.2 | 1.00 | 5.55 | 26.69 | 2.26 | 2.19 | 19.65 | 48.53 | 0.00 | 99.32 |
| 1080 | 607193 | 602783.8 | 1233144.3 | 243.5 | 0.00 | 3.16 | 26.51 | 1.45 | 2.85 | 19.55 | 48.88 | 0.00 | 99.23 |
| 1081 | 607223 | 603535.3 | 1233146.4 | 224.4 | 0.00 | 3.43 | 24.79 | 2.34 | 2.59 | 23.74 | 45.83 | 0.00 | 99.29 |
| 1082 | 619199 | 602932.0 | 1233444.5 | 233.8 | 0.50 | 8.57 | 22.98 | 6.46 | 2.51 | 25.78 | 41.50 | 0.00 | 99.22 |
| 1083 | 619223 | 603533.3 | 1233446.1 | 227.9 | 0.00 | 4.52 | 23.22 | 1.54 | 2.49 | 31.77 | 40.05 | 0.00 | 99.06 |
| 1084 | 631211 | 603232.1 | 1233743.9 | 221.4 | 0.00 | 6.82 | 26.62 | 1.40 | 2.73 | 18.74 | 49.76 | 0.00 | 99.25 |
| 1085 | 631223 | 603532.1 | 1233745.1 | 220.5 | 1.00 | 3.03 | 25.90 | 3.93 | 3.17 | 17.85 | 48.34 | 0.00 | 99.19 |
| 1088 | 595187 | 602634.9 | 1232844.5 | 244.1 | 0.00 | 7.17 | 26.82 | 1.99 | 3.05 | 12.72 | 54.63 | 0.00 | 99.21 |
| 1089 | 607151 | 601736.1 | 1233143.6 | 237.6 | 0.00 | 2.00 | 21.70 | 1.09 | 2.26 | 38.00 | 36.00 | 0.00 | 99.05 |
| 1090 | 607199 | 602933.6 | 1233144.9 | 244.0 | 0.00 | 4.76 | 26.68 | 0.61 | 2.38 | 21.33 | 48.26 | 0.00 | 99.27 |
| 1091 | 607205 | 603083.3 | 1233145.5 | 241.5 | 0.00 | 9.80 | 22.95 | 4.08 | 2.46 | 29.29 | 40.34 | 0.00 | 99.10 |
| 1092 | 619151 | 601735.0 | 1233442.4 | 238.2 | 0.00 | 9.36 | 28.34 | 0.85 | 3.25 | 14.25 | 52.48 | 0.00 | 99.17 |
| 1093 | 619163 | 602034.7 | 1233442.1 | 250.0 | 0.00 | 1.28 | 25.31 | 1.78 | 3.53 | 22.13 | 46.33 | 0.00 | 99.07 |
| 1094 | 619271 | 604731.4 | 1233450.5 | 231.9 | 0.00 | 12.71 | 23.10 | 2.60 | 2.59 | 29.46 | 41.41 | 0.00 | 99.15 |
| 1095 | 631235 | 603831.0 | 1233746.3 | 229.9 | 0.00 | 5.85 | 23.03 | 1.04 | 2.89 | 31.56 | 40.61 | 0.00 | 99.12 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1096 | 631247 | 604131.0 | 1233747.5 | 237.2 | 0.00 | 11.38 | 24.77 | 1.85 | 2.86 | 25.51 | 44.03 | 0.00 | 99.01 |
| 1097 | 631259 | 604430.6 | 1233748.9 | 244.0 | 0.00 | 6.74 | 27.13 | 2.04 | 3.30 | 17.43 | 49.31 | 0.00 | 99.21 |
| 1098 | 631271 | 604730.2 | 1233750.1 | 244.9 | 0.60 | 6.12 | 23.80 | 2.38 | 2.32 | 28.50 | 42.17 | 0.00 | 99.17 |
| 1099 | 631283 | 605028.9 | 1233751.3 | 219.4 | 0.50 | 2.00 | 20.80 | 2.83 | 1.71 | 35.90 | 37.88 | 0.00 | 99.12 |
| 1100 | 643247 | 604129.8 | 1234047.5 | 234.4 | 0.00 | 10.77 | 25.45 | 1.42 | 3.23 | 22.57 | 46.61 | 0.00 | 99.27 |
| 1101 | 643271 | 604729.0 | 1234050.1 | 246.6 | 0.50 | 10.34 | 22.99 | 2.23 | 2.56 | 30.39 | 40.95 | 0.00 | 99.13 |
| 1102 | 655259 | 604427.8 | 1234348.8 | 239.5 | 0.00 | 2.00 | 19.65 | 2.17 | 1.50 | 46.25 | 29.55 | 0.00 | 99.12 |
| 1103 | 655271 | 604727.8 | 1234350.0 | 242.2 | 0.00 | 2.00 | 15.90 | 2.65 | 2.13 | 54.75 | 23.45 | 0.00 | 98.88 |
| 1104 | 655283 | 605027.8 | 1234351.2 | 235.2 | 0.60 | 2.00 | 19.76 | 2.91 | 2.34 | 41.32 | 32.70 | 0.00 | 99.03 |
| 1105 | 396520 | 610999.3 | 1227887.8 | 198.7 | 0.00 | 6.15 | 22.77 | 0.79 | 2.31 | 33.10 | 40.10 | 0.00 | 99.07 |
| 1106 | 396523 | 611072.1 | 1227890.0 | 199.3 | 0.00 | 2.00 | 21.45 | 1.11 | 2.14 | 36.70 | 37.60 | 0.00 | 98.99 |
| 1107 | 396526 | 611148.5 | 1227892.5 | 197.6 | 0.00 | 2.00 | 17.35 | 1.37 | 1.82 | 55.15 | 22.90 | 0.00 | 98.58 |
| 1108 | 399517 | 610924.3 | 1227964.0 | 203.1 | 0.00 | 8.69 | 23.85 | 1.06 | 2.41 | 28.61 | 43.32 | 0.00 | 99.26 |
| 1109 | 399523 | 611078.1 | 1227966.9 | 202.5 | 0.00 | 7.66 | 24.08 | 1.26 | 2.60 | 26.17 | 45.05 | 0.00 | 99.15 |

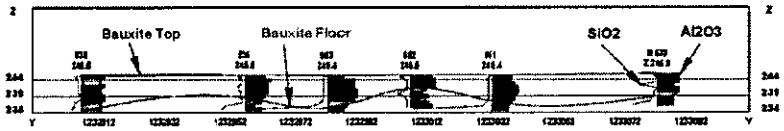
# SECTION 26.1.3 SECTIONS PLATEAU 2



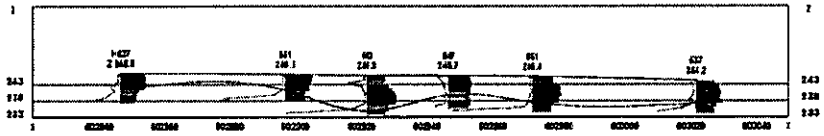

## PL 2 CROSS NS - 1



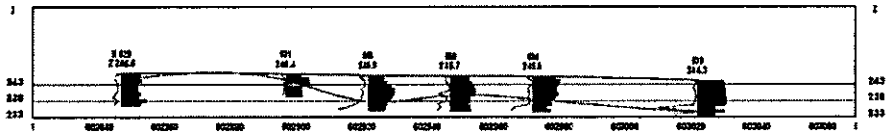
## PL 2 CROSS NS - 2




## PL 2 CROSS EW - 1



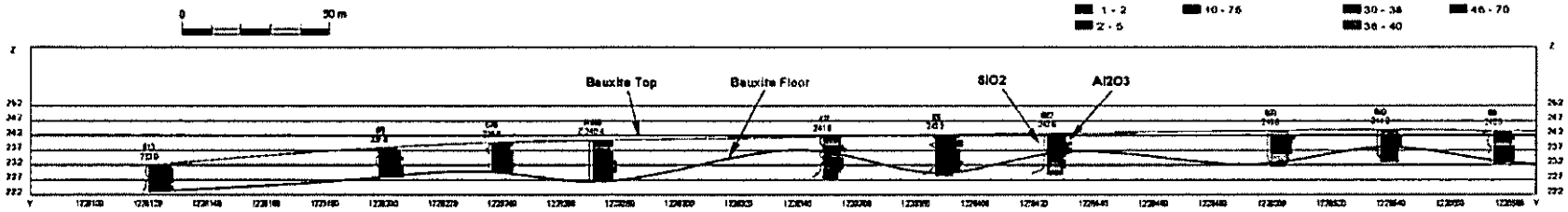
## PL 2 CROSS EW - 2



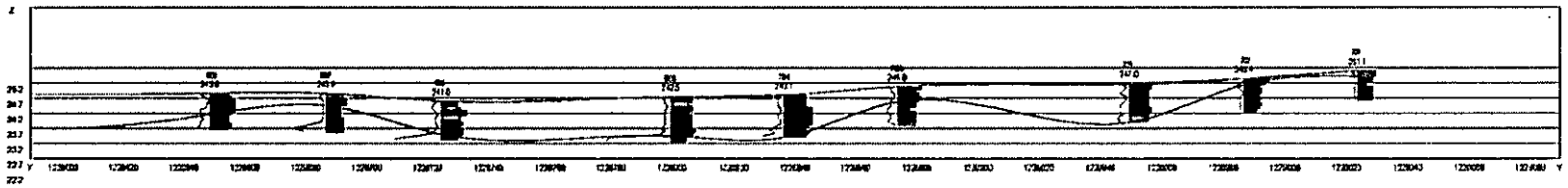
By Butty Herinckx & Partners BV, Geological and Mining Consultants, The Netherlands and Switzerland, February 2006

SECTION 26.1.4 SECTIONS PLATEAU 7

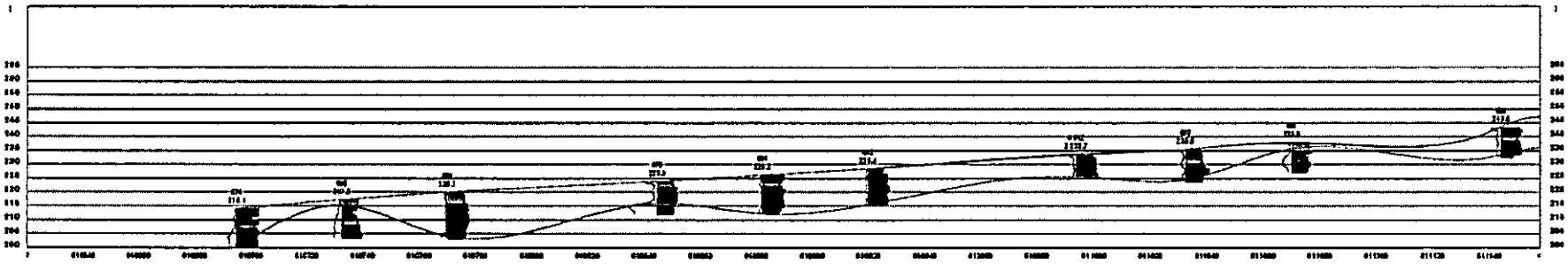
## PL 7 CROSS NS - SOUTHERN SECTION



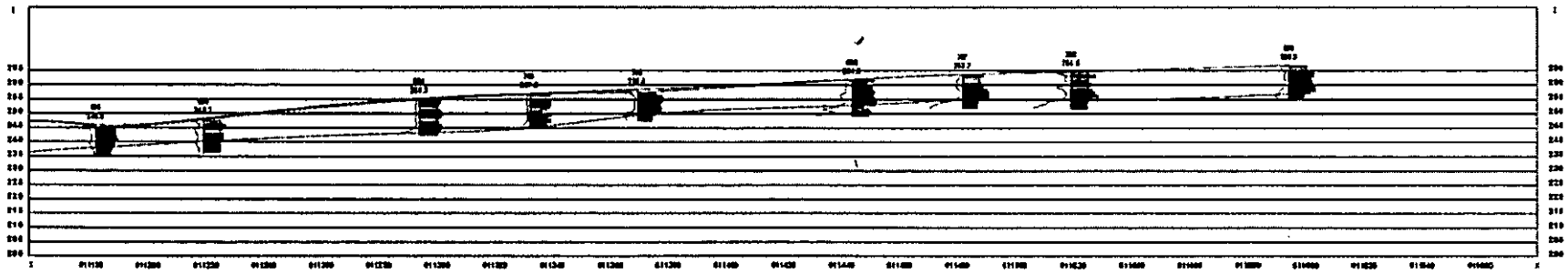

## PL 7 CROSS NS - NORTHERN SECTION



## PL 7 CROSS EW - WESTERN SECTION



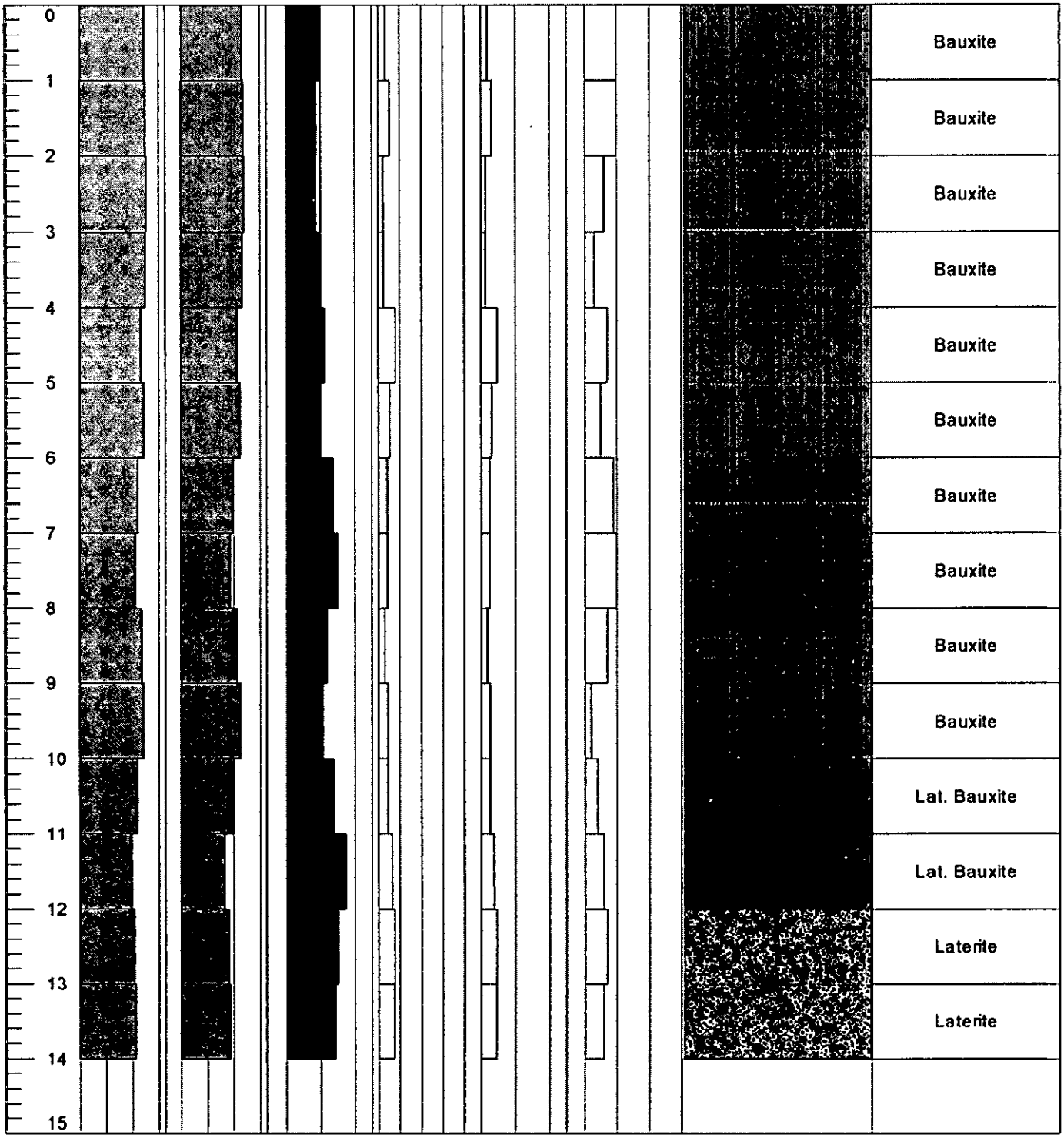
## PL 7 CROSS EW - EASTERN SECTION



By Butty Herinckx & Partners BV, Geological and Mining Consultants, The Netherlands and Switzerland, February 20C

# SECTION 26.1.5 TYPICAL LOGS

| Global Alumina | Easting | 608932 | Drill Hole ID | 537436 |
|---|---|---|---|---|
| | Northing | 1.23144e+006 | | |
| | Elevation | 231.163 | Deposit | Bow 07 (Lope) |

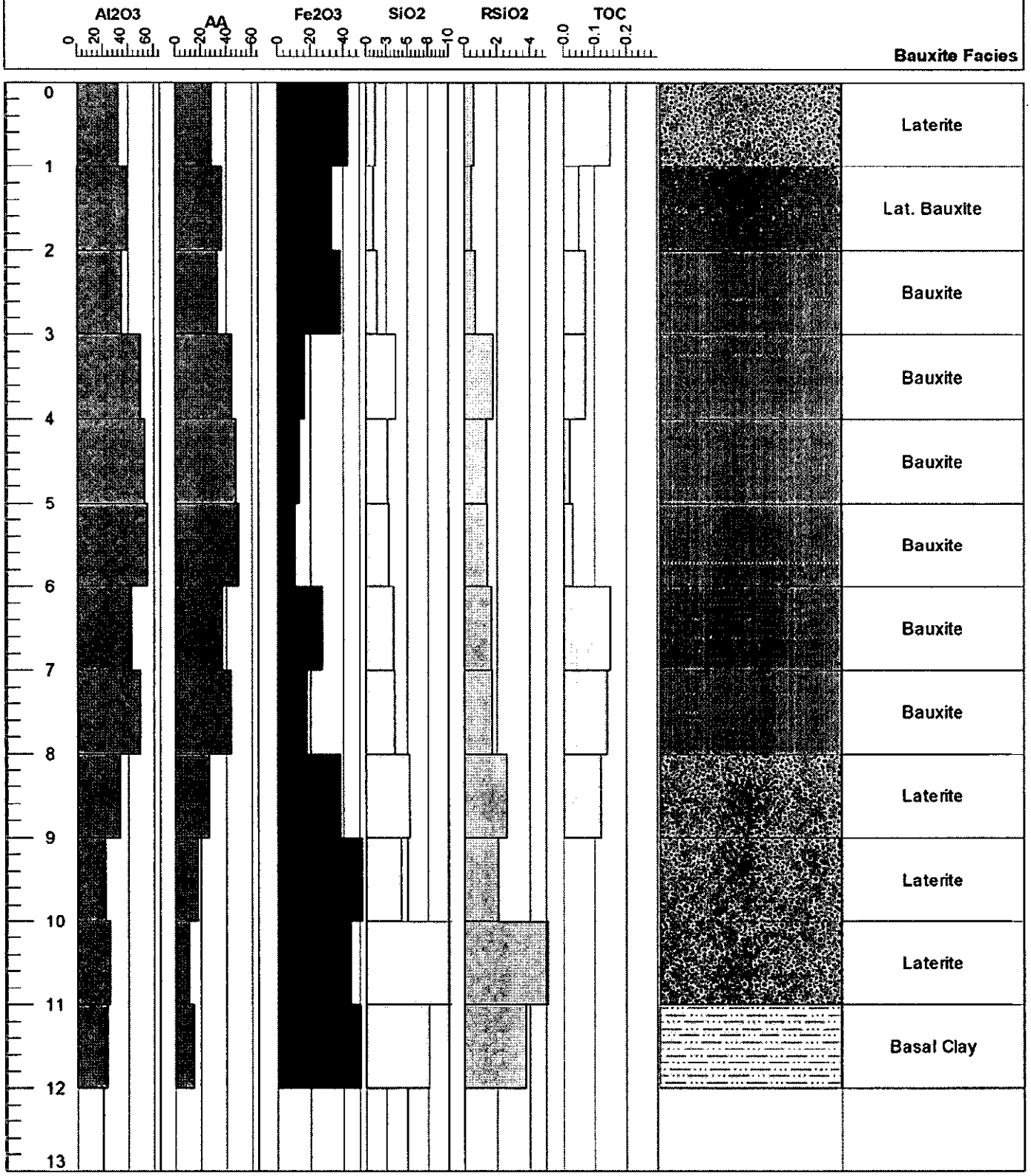



**Global Alumina Refinery** — **Res 150**

**Guinea - Sangaredi - Boke Bauxite Belt** — **ADH**

# Global Alumina

| | | | |
|---|---|---|---|
| **Easting** | 612046 | **Drill Hole ID** | 423562 |
| **Northing** | 1.22857e+006 | | |
| **Elevation** | 242.294 | **Deposit** | Bow 07 (Lope) |

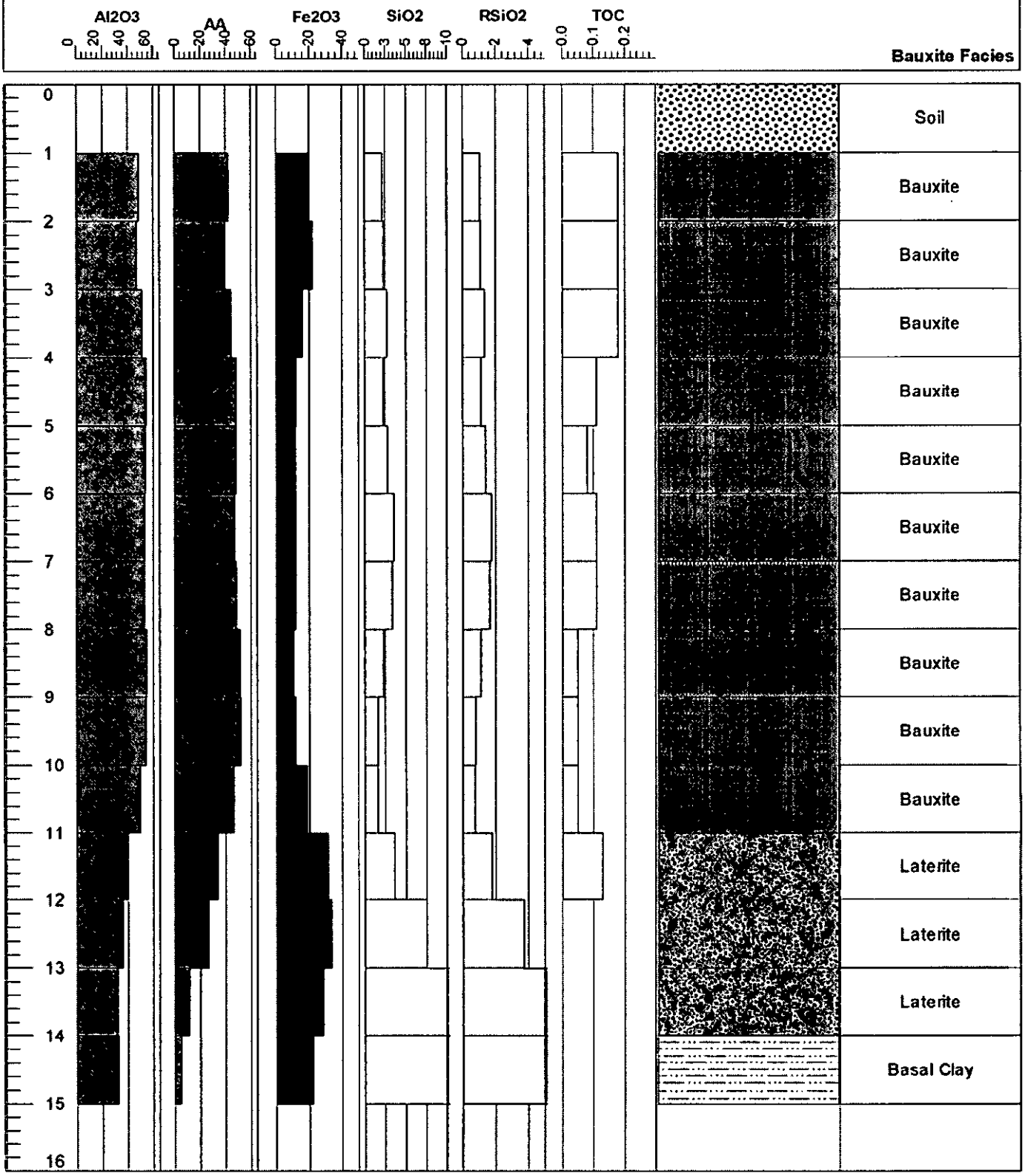



**Global Alumina Refinery** — **Res 150**

**Guinea - Sangaredi - Boke Bauxite Belt** — **ADH**

# Global Alumina

| | | | |
|---|---|---|---|
| **Easting** | 612194 | **Drill Hole ID** | 423568 |
| **Northing** | 1.22857e+006 | | |
| **Elevation** | 235.842 | **Deposit** | Bow 07 (Lope) |

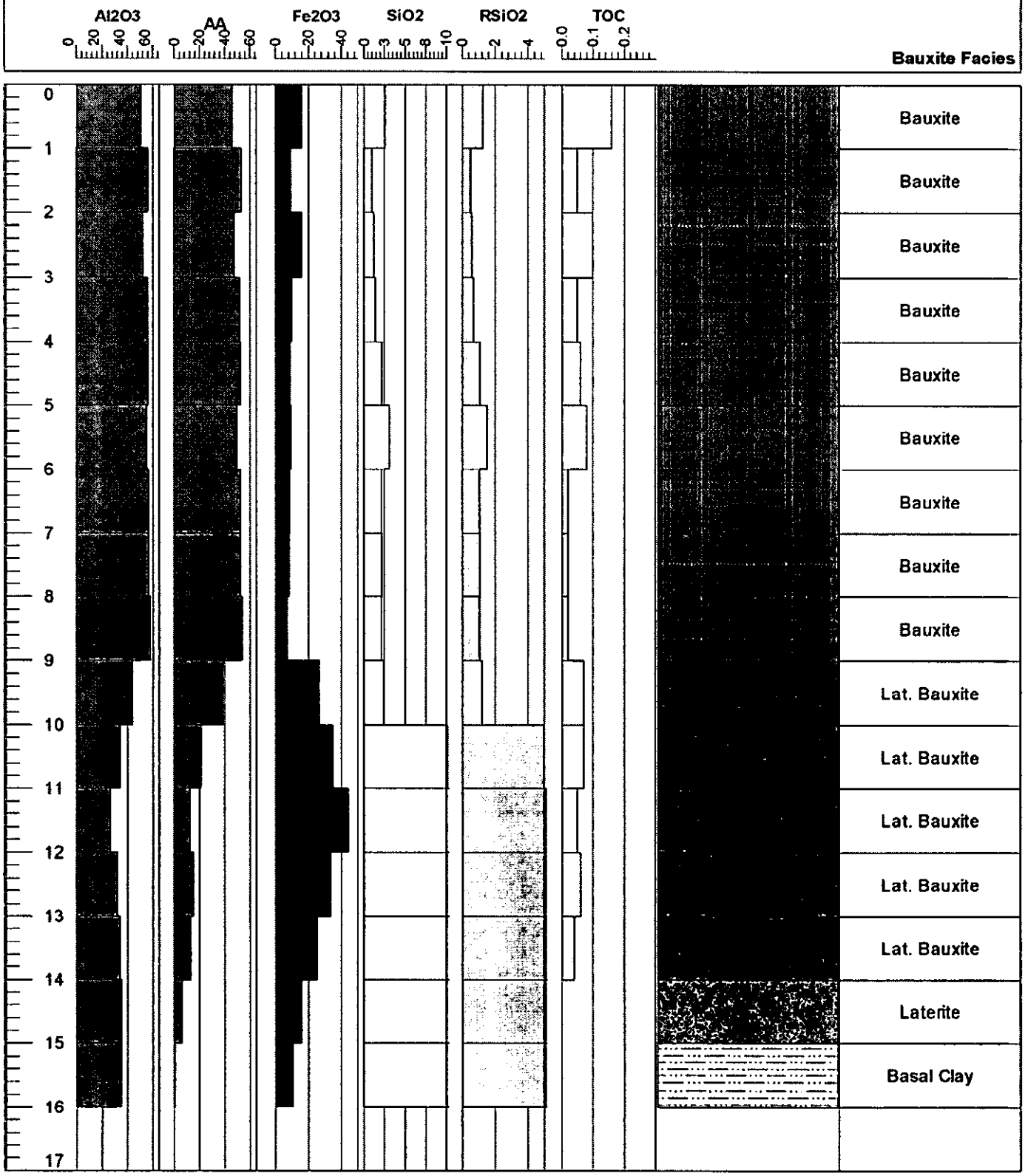



**Global Alumina Refinery** — **Res 150**

**Guinea - Sangaredi - Boke Bauxite Belt** — **ADH**

# Global Alumina

| | | | |
|---|---|---|---|
| Easting | 611748 | Drill Hole ID | 423550 |
| Northing | 1.22857e+006 | | |
| Elevation | 248.677 | Deposit | Bow 07 (Lope) |

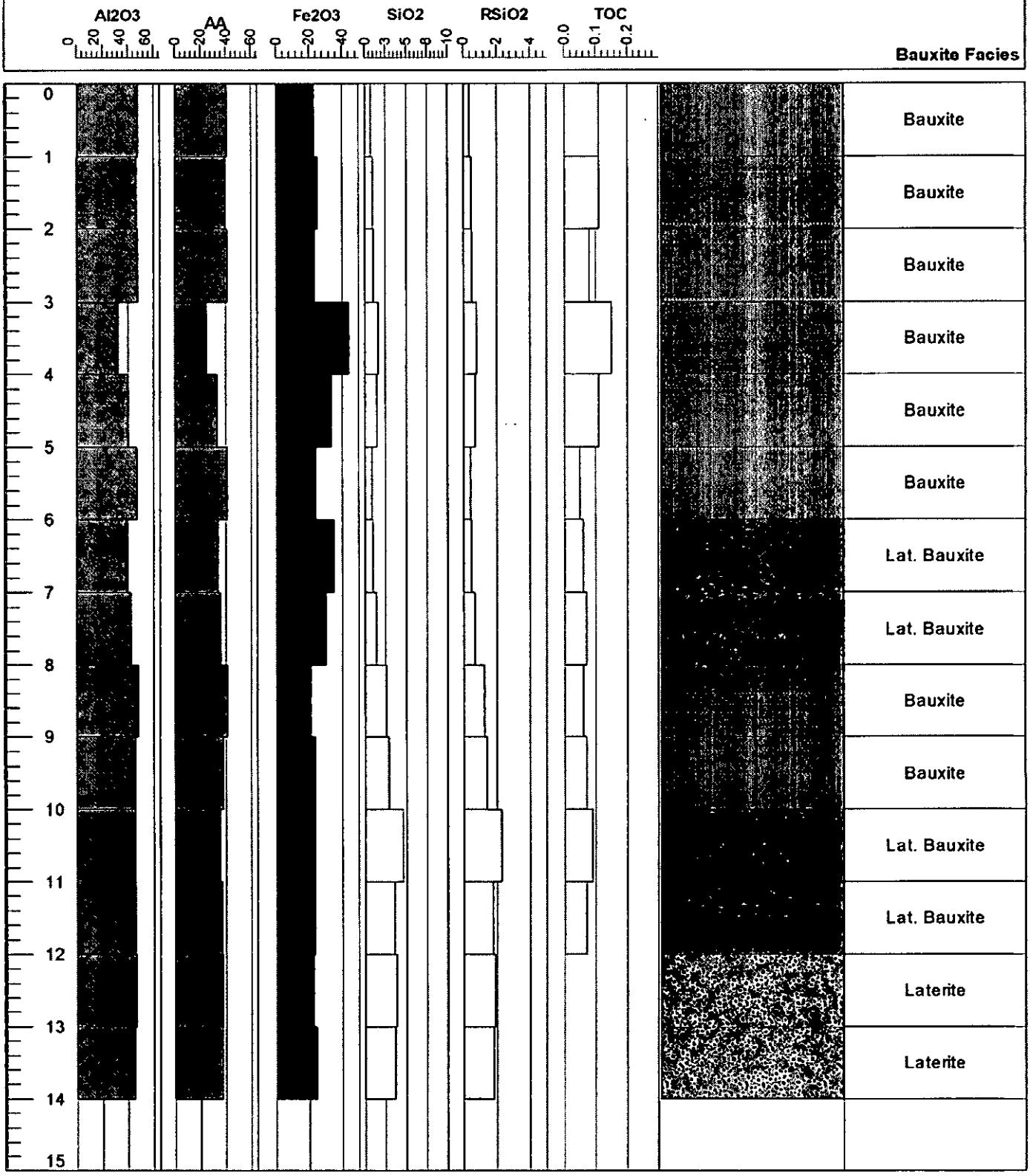



**Global Alumina Refinery** — **Res 150**

**Guinea - Sangaredi - Boke Bauxite Belt** — **ADH**

# Global Alumina

| | | | |
|---|---|---|---|
| Easting | 610693 | Drill Hole ID | 423508 |
| Northing | 1.22857e+006 | | |
| Elevation | 192.622 | Deposit | Bow 07 (Lope) |

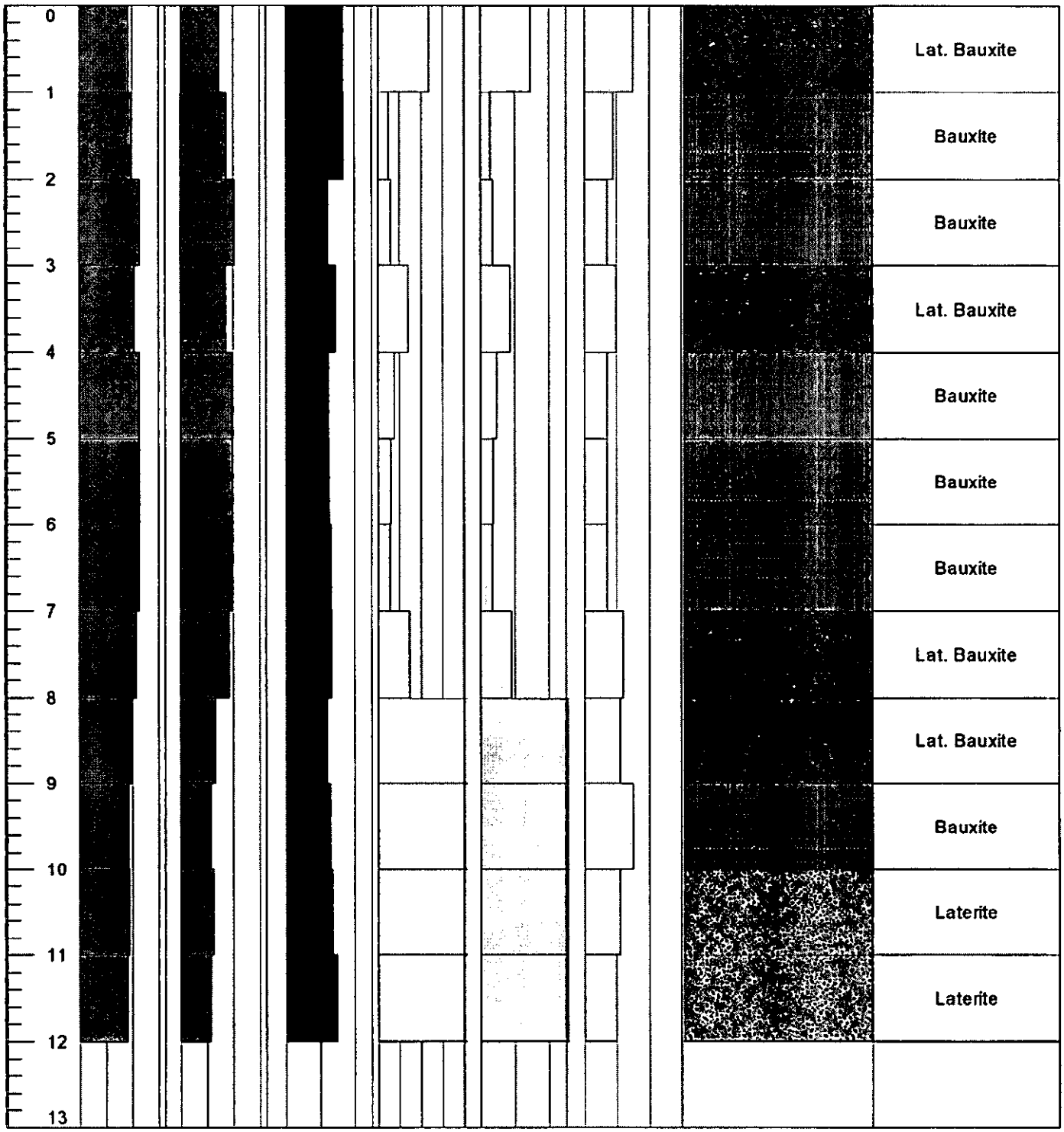



**Global Alumina Refinery** — **Res 150, GeoStat**

**Guinea - Sangaredi - Boke Bauxite Belt** — **ADH**

# Global Alumina

| | | | |
|---|---|---|---|
| Easting | 610847 | Drill Hole ID | 423514 |
| Northing | 1.22857e+006 | | |
| Elevation | 202.762 | Deposit | Bow 07 (Lope) |

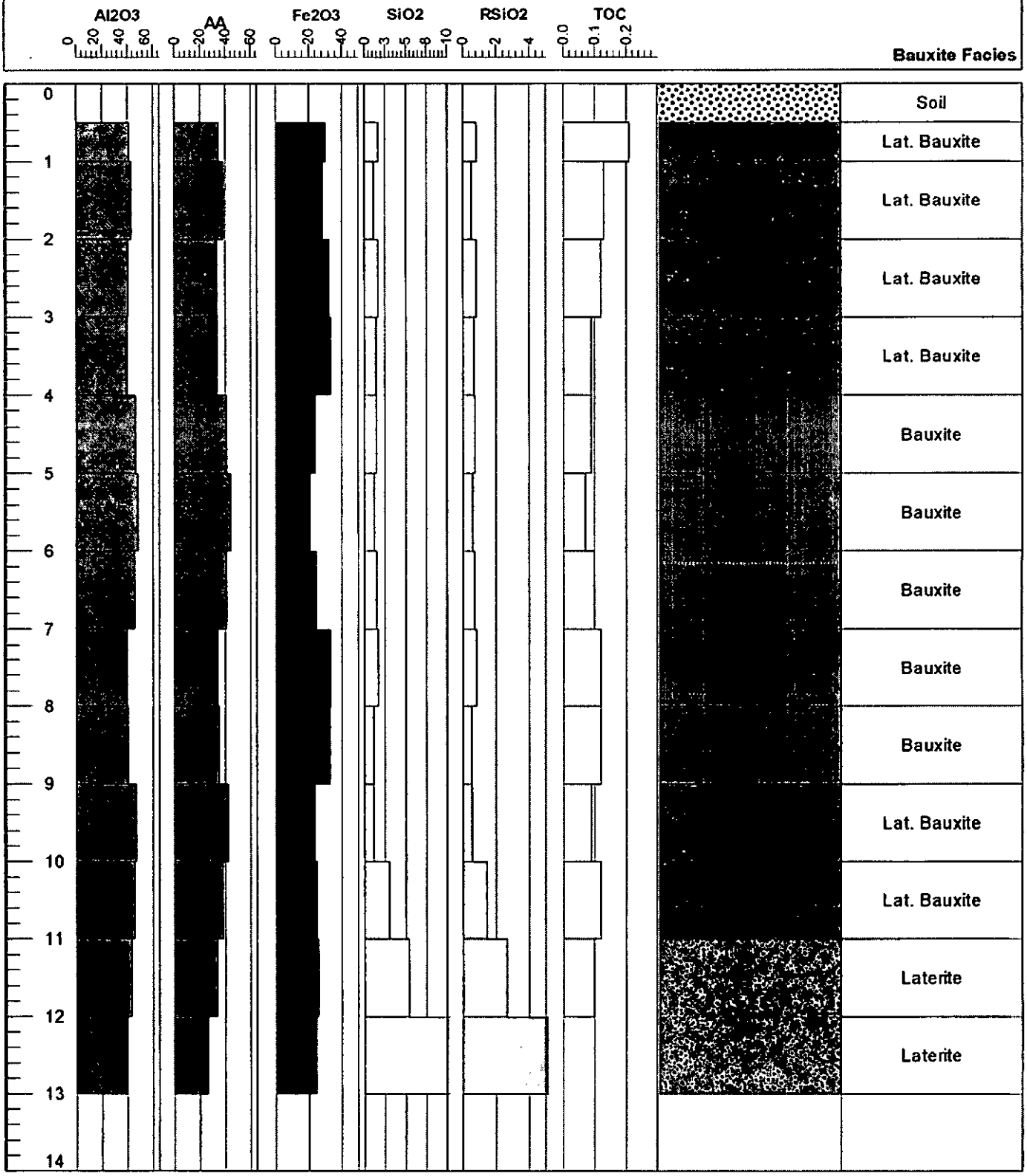



**Global Alumina Refinery** — **Res 150, GeoStat**

**Guinea - Sangaredi - Boke Bauxite Belt** — **ADH**

# Global Alumina

| | | | |
|---|---|---|---|
| Easting | 611294 | Drill Hole ID | 423532 |
| Northing | 1.22857e+006 | | |
| Elevation | 233.263 | Deposit | Bow 07 (Lope) |

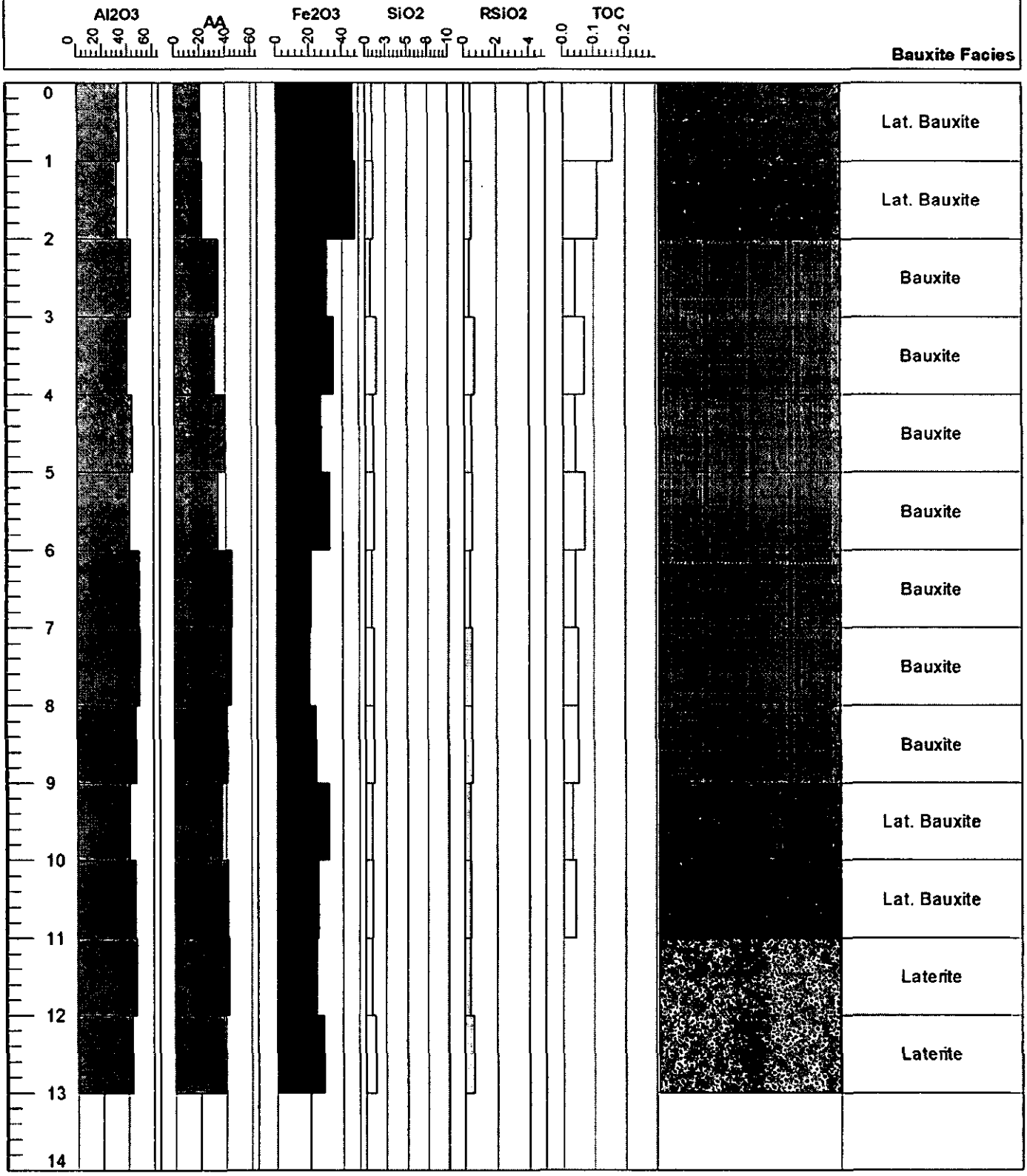



**Global Alumina Refinery** — **Res 150, GeoStat**

**Guinea - Sangaredi - Boke Bauxite Belt** — **ADH**

# Global Alumina

| | | | |
|---|---|---|---|
| **Easting** | 610920 | **Drill Hole ID** | 0102GS |
| **Northing** | 1.22857e+006 | | |
| **Elevation** | 228.445 | **Deposit** | Bow 07 (Lope) |

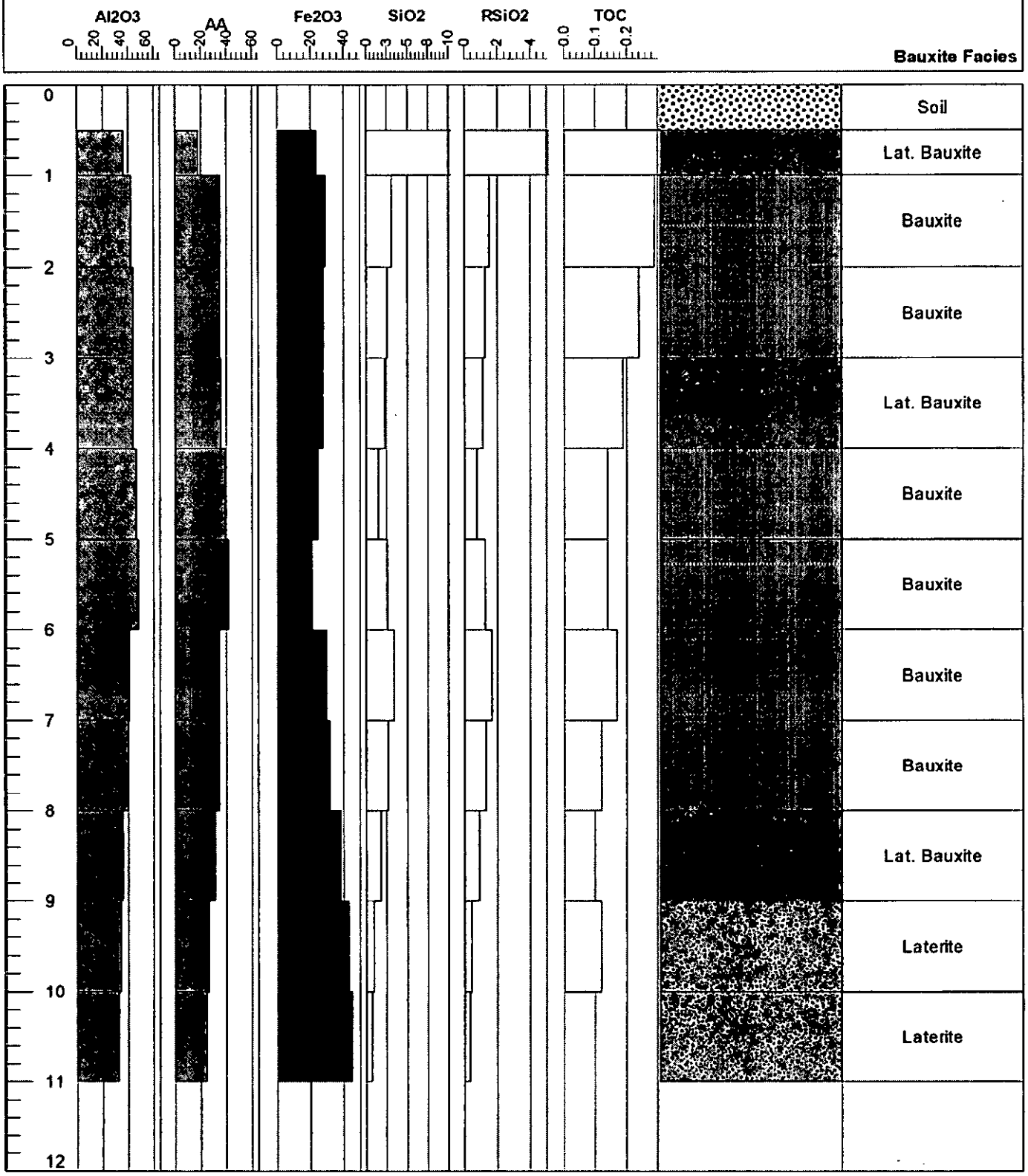



**Global Alumina Refinery** — **GeoStat**

**Guinea - Sangaredi - Boke Bauxite Belt** — **ADH**

# Global Alumina

| | | | |
|---|---|---|---|
| **Easting** | 611182 | **Drill Hole ID** | 0106GS |
| **Northing** | 1.22857e+006 | | |
| **Elevation** | 246.012 | **Deposit** | Bow 07 (Lope) |

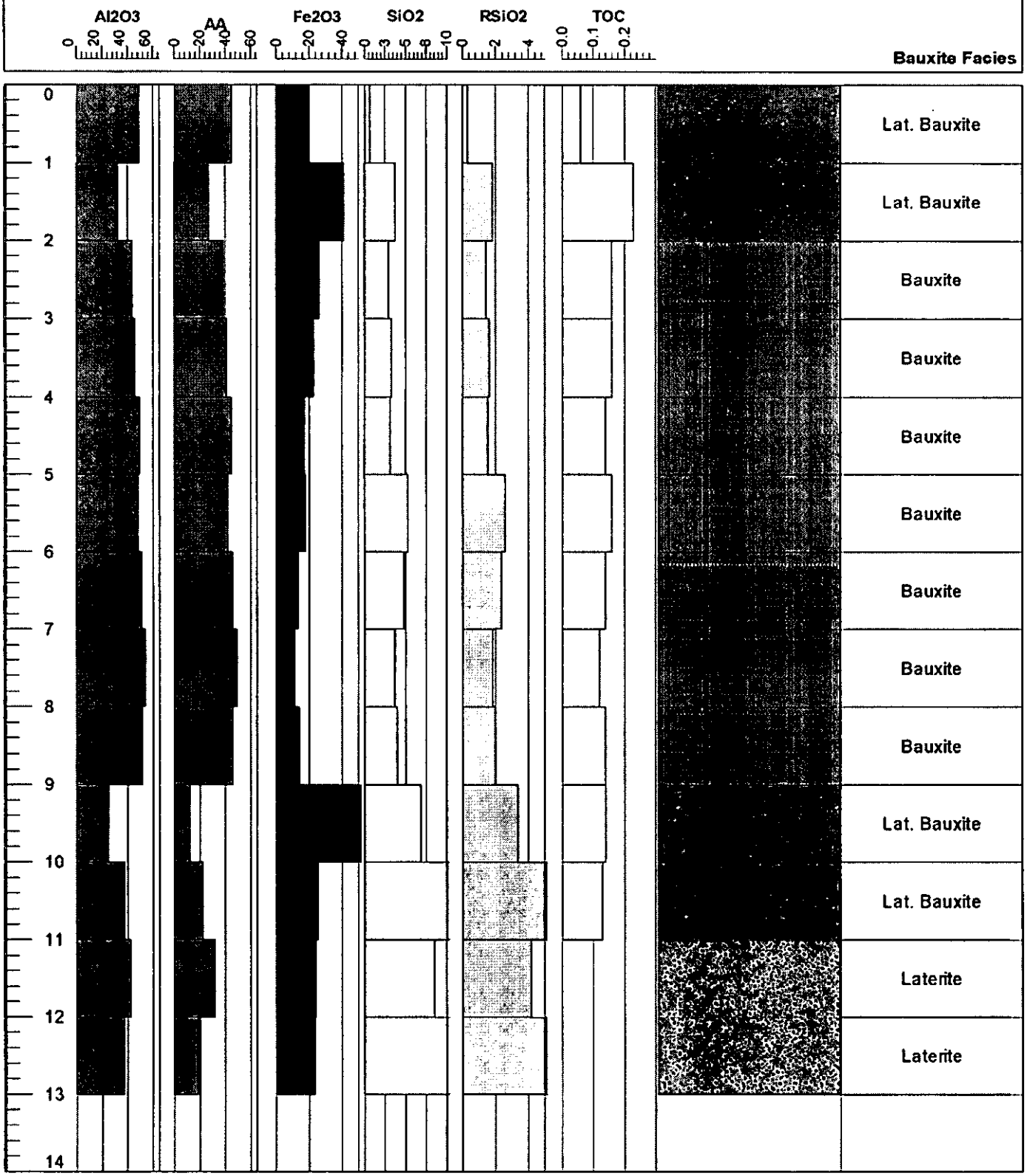



**Global Alumina Refinery** — **GeoStat**

**Guinea - Sangaredi - Boke Bauxite Belt** — **ADH**

# Global Alumina

| | | | |
|---|---|---|---|
| Easting | 611446 | Drill Hole ID | 423538 |
| Northing | 1.22857e+006 | | |
| Elevation | 240.314 | Deposit | Bow 07 (Lope) |



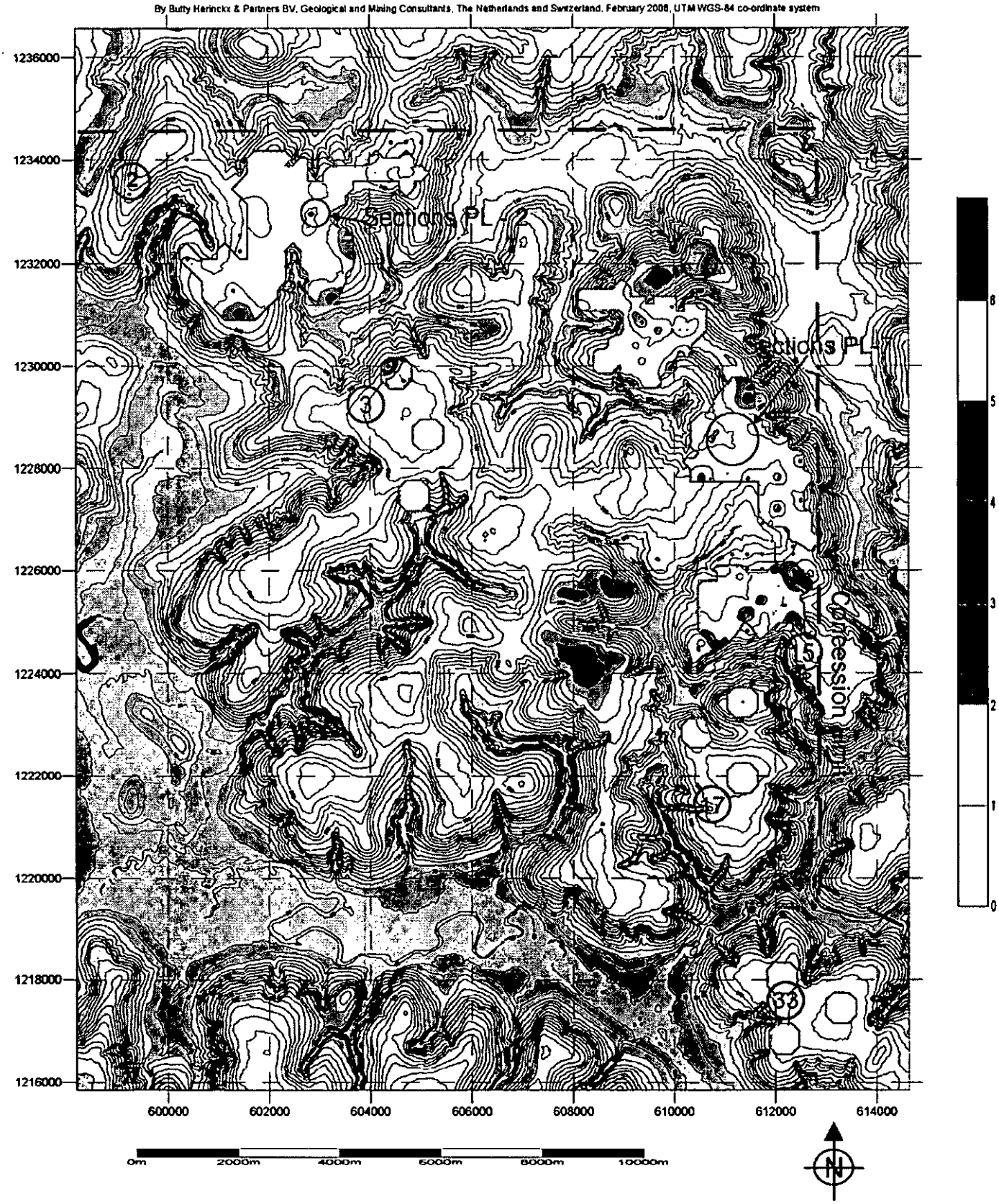

**Global Alumina Refinery** — **Res 150, GeoStat**

**Guinea - Sangaredi - Boke Bauxite Belt** — **ADH**

26.1.6 RESOURCE MODEL TOP SOIL + OVERBURDEN THICKNESS

# Top Soil + Overburden Thickness (m) Resource Model

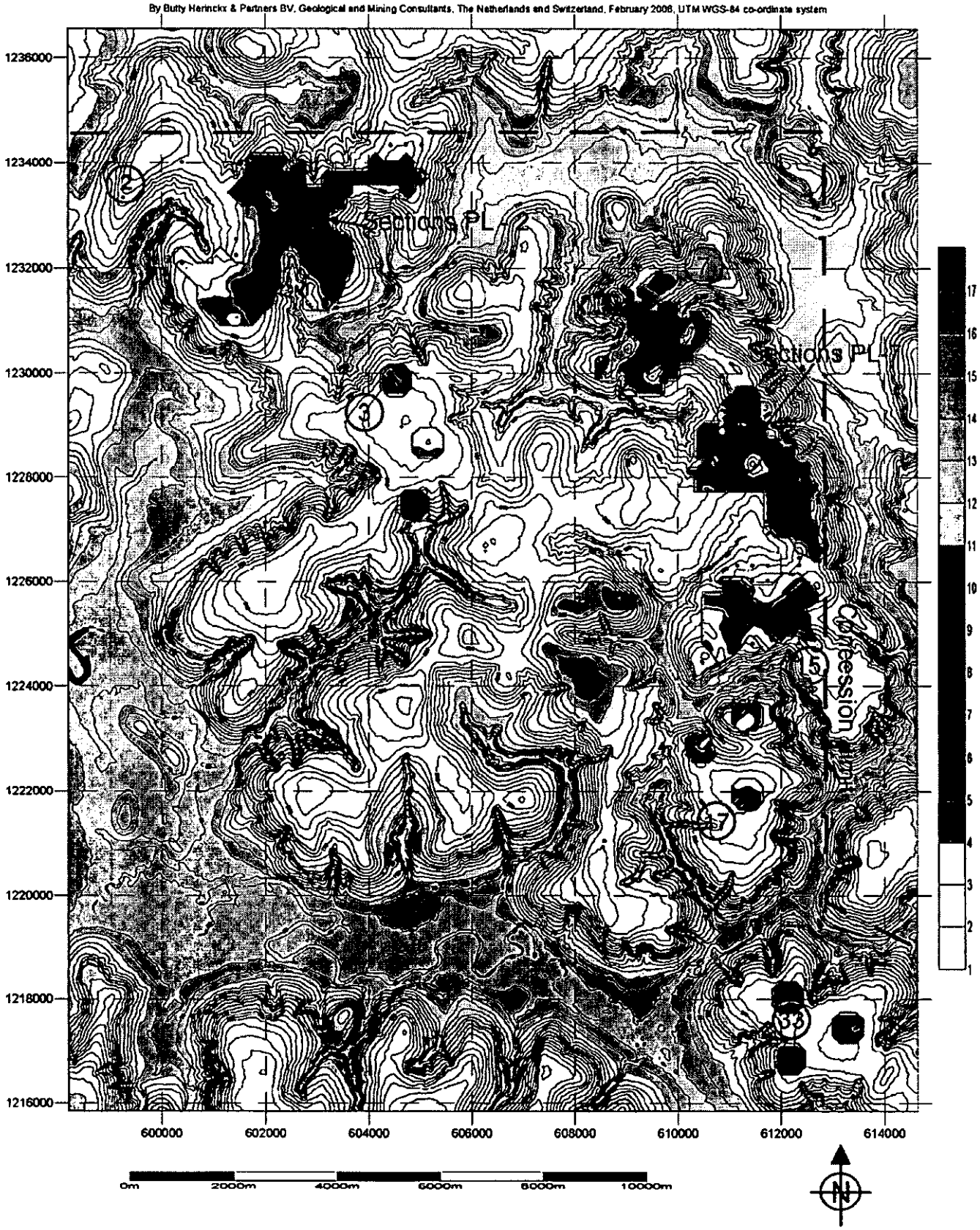
By Butty Herinckx & Partners BV, Geological and Mining Consultants, The Netherlands and Switzerland, February 2008, UTM WGS-84 co-ordinate system



## 26.1.7 RESOURCE MODEL – ORE THICKNESS

# Bauxite Thickness (m) Resource Model

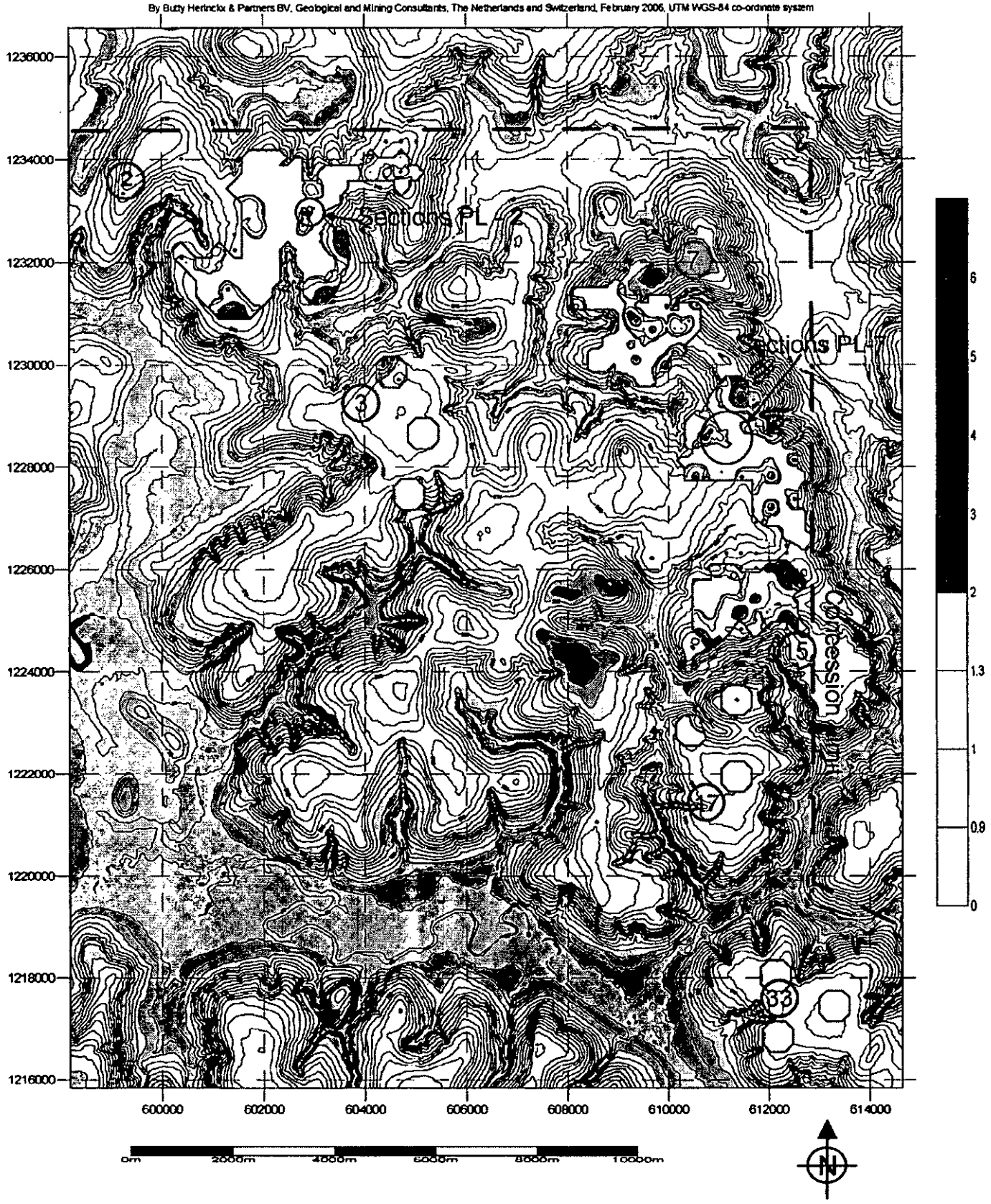
By Butty Herinckx & Partners BV, Geological and Mining Consultants, The Netherlands and Switzerland, February 2008, UTM WGS-84 co-ordinate system



26.1.8 RESOURCE MODEL - % RSIO2

# % RSiO2 Resource Model

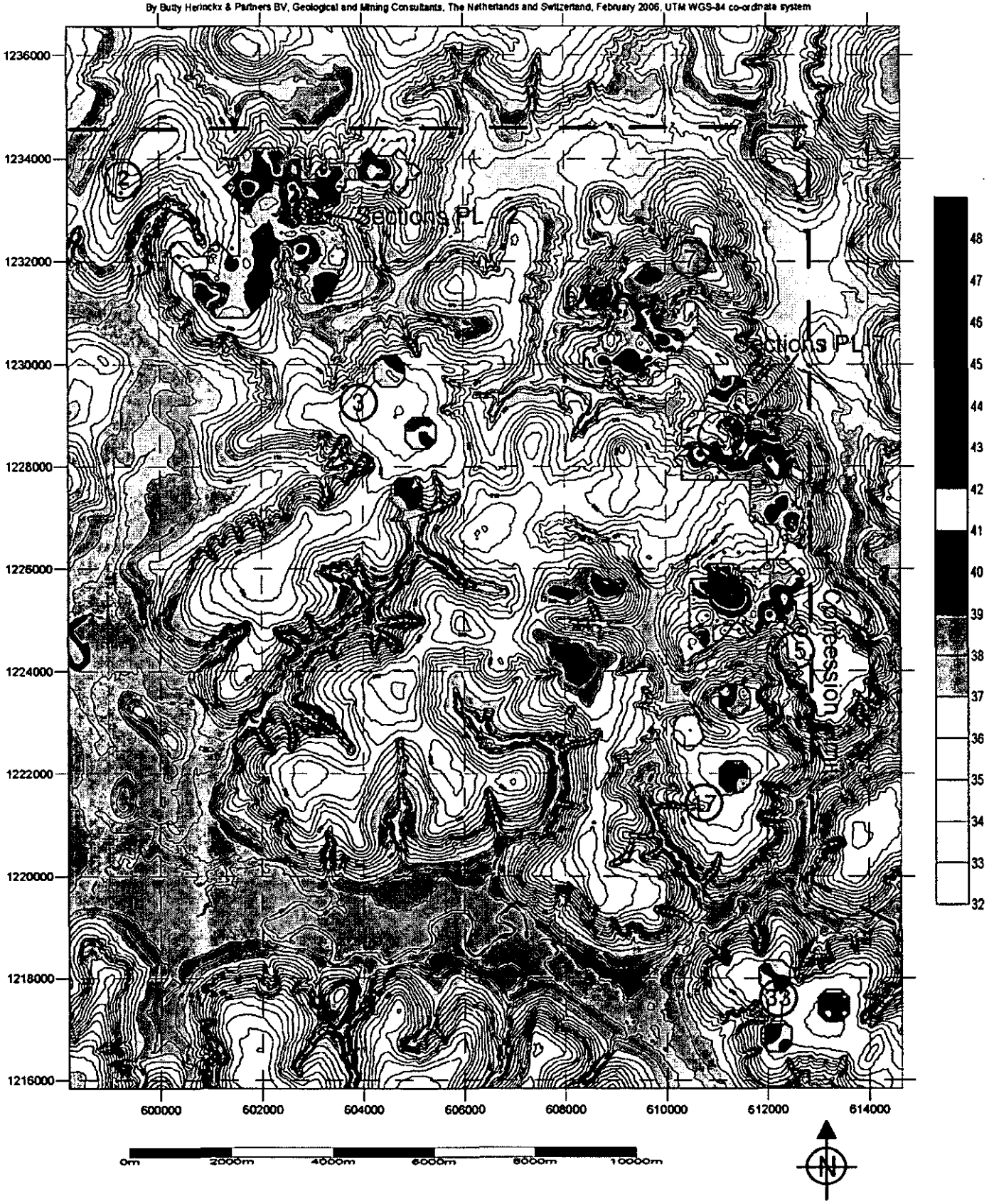
By Butty Herinclix & Partners BV, Geological and Mining Consultants, The Netherlands and Switzerland, February 2006, UTM WGS-84 co-ordinate system



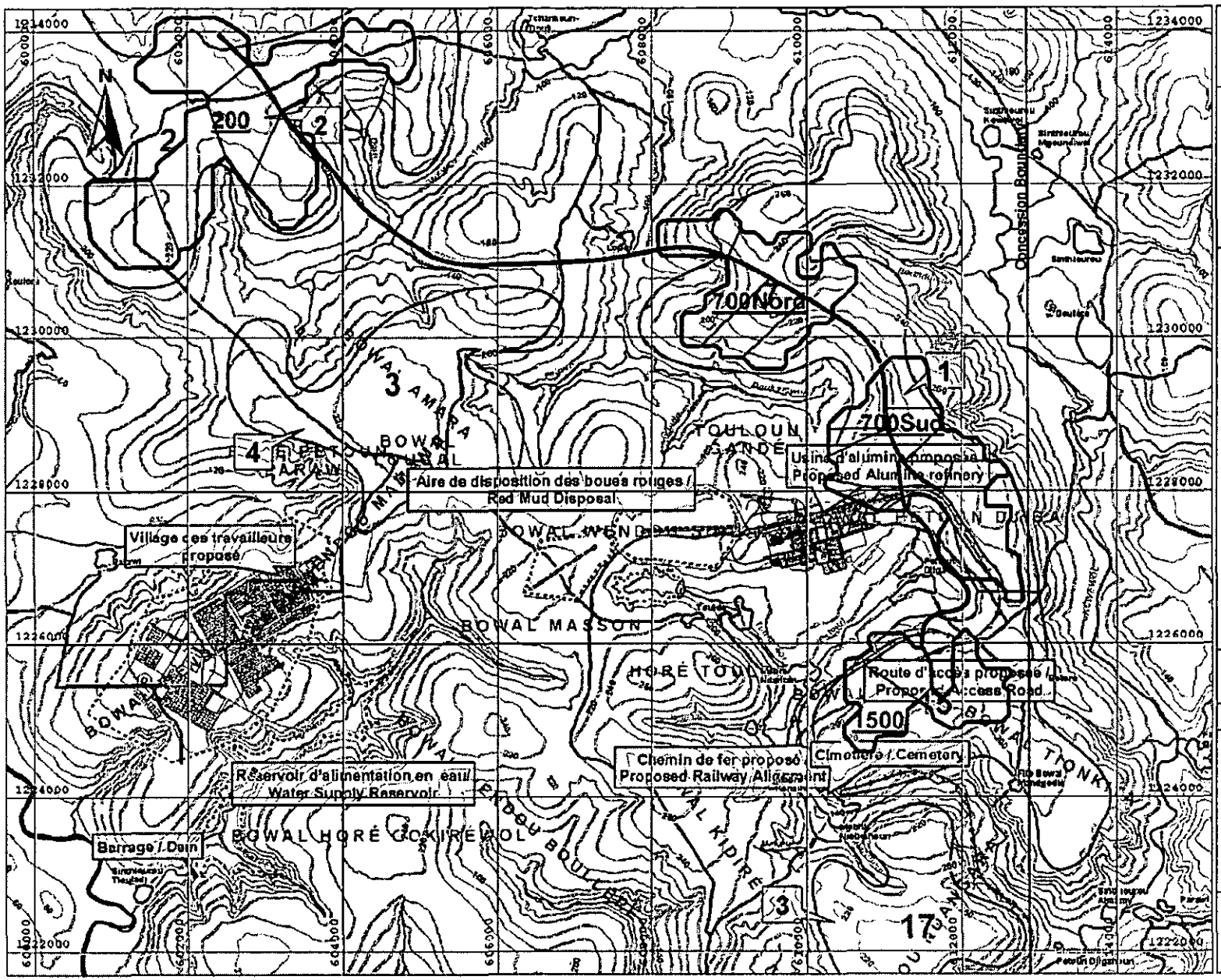
26.1.9 RESOURCE MODEL – %AA150

# % AA Resource Model

By Butty Herinckx & Partners BV, Geological and Mining Consultants, The Netherlands and Switzerland, February 2006, UTM WGS-84 co-ordinate system



| | |
|---|---|
| **26.2** | **Drawings Mine Plan** |
| 26.2.1 | General Location Plan with Reserve Plateaux |
| 26.2.2 | General Plan with Mining Panels, Main Haul Roads |
| 26.2.3 | Mining Panels Plateau 7-Sud |
| 26.2.4 | Mining Panels Plateau 7-Nord |
| 26.2.5 | Mining Panels Plateau 15 |
| 26.2.6 | Mining Panels Plateau 2 |
| 26.2.7 | Progress-of-Mine after Initial Development (Yr 1) |
| 26.2.8 | Progress-of-Mine End-of -Year 5 |
| 26.2.9 | Progress-of-Mine End-of -Year 15 Plateau 7 & 15 |
| 26.2.10 | Progress-of-Mine End-of -Year 15, Plateau 2 |
| 26.2.11 | Progress-of-Mine End-of-Mine Life |




by

Butty Herinckx & Partners BV

Geological and Mining Consultants

The Netherlands / Switzerland

| Scale | DATE | check |
|---|---|---|
| 1:70000 | Nov 2005 | vs |
| | drawn | FILE |
| | ifh | Wblocks |

0 2500m

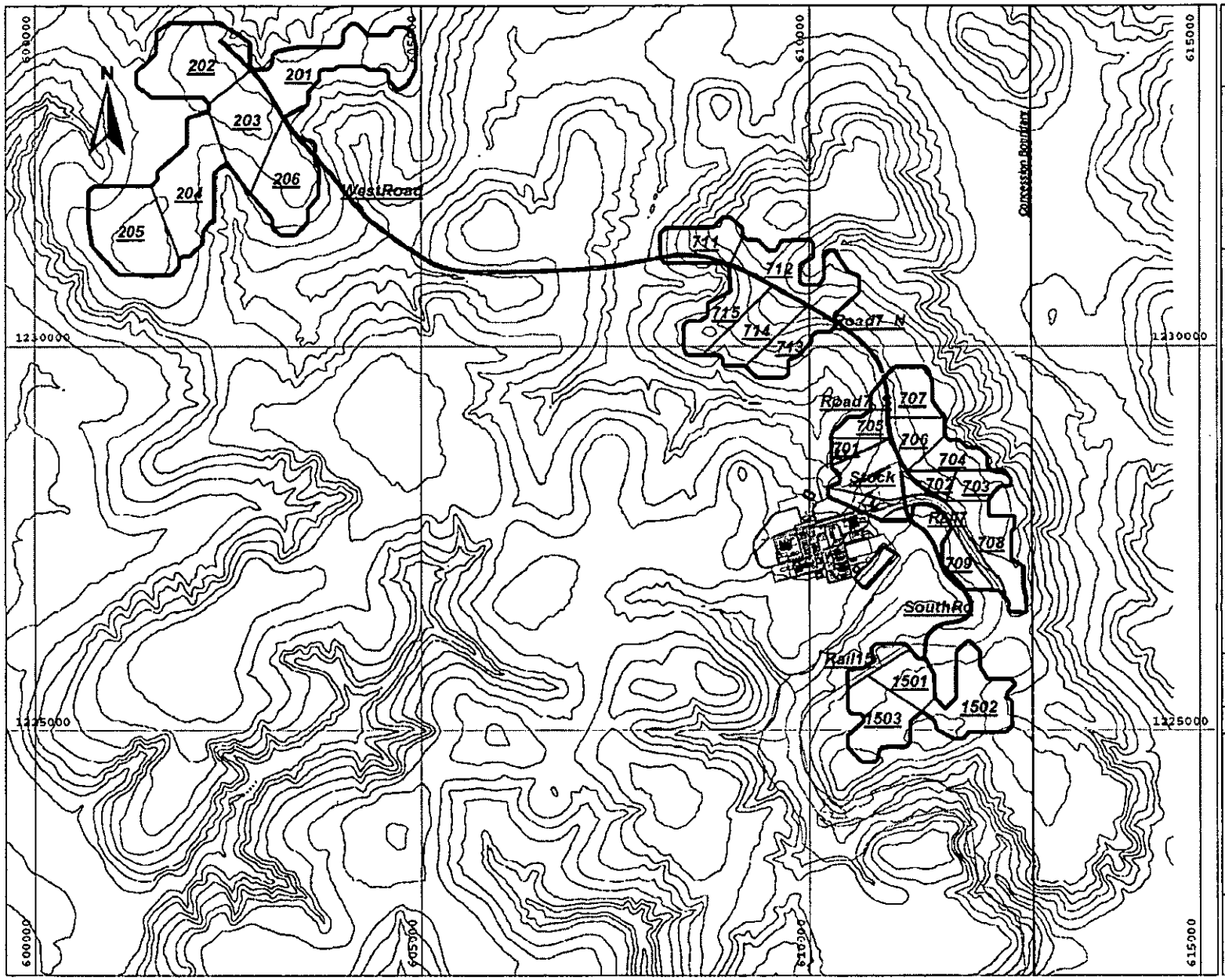
PLATEAUX 7, 15 AND 2

showing

RESERVE LIMITS

GLOBAL ALUMINA
MINERAL RESERVE
& MINE PLAN

26.2.1




by

Butty Reinecke & Partners BV

Geological and Mining Consultants

The Netherlands / Switzerland

| Scale | DATE | check |
|---|---|---|
| 1:75000 | Nov 2005 | vs |
| | drawn | FILE |
| | ifh | Wpanels |

0 2100m

PLATEAUX 7, 15 AND 2

showing

MINING PANEL

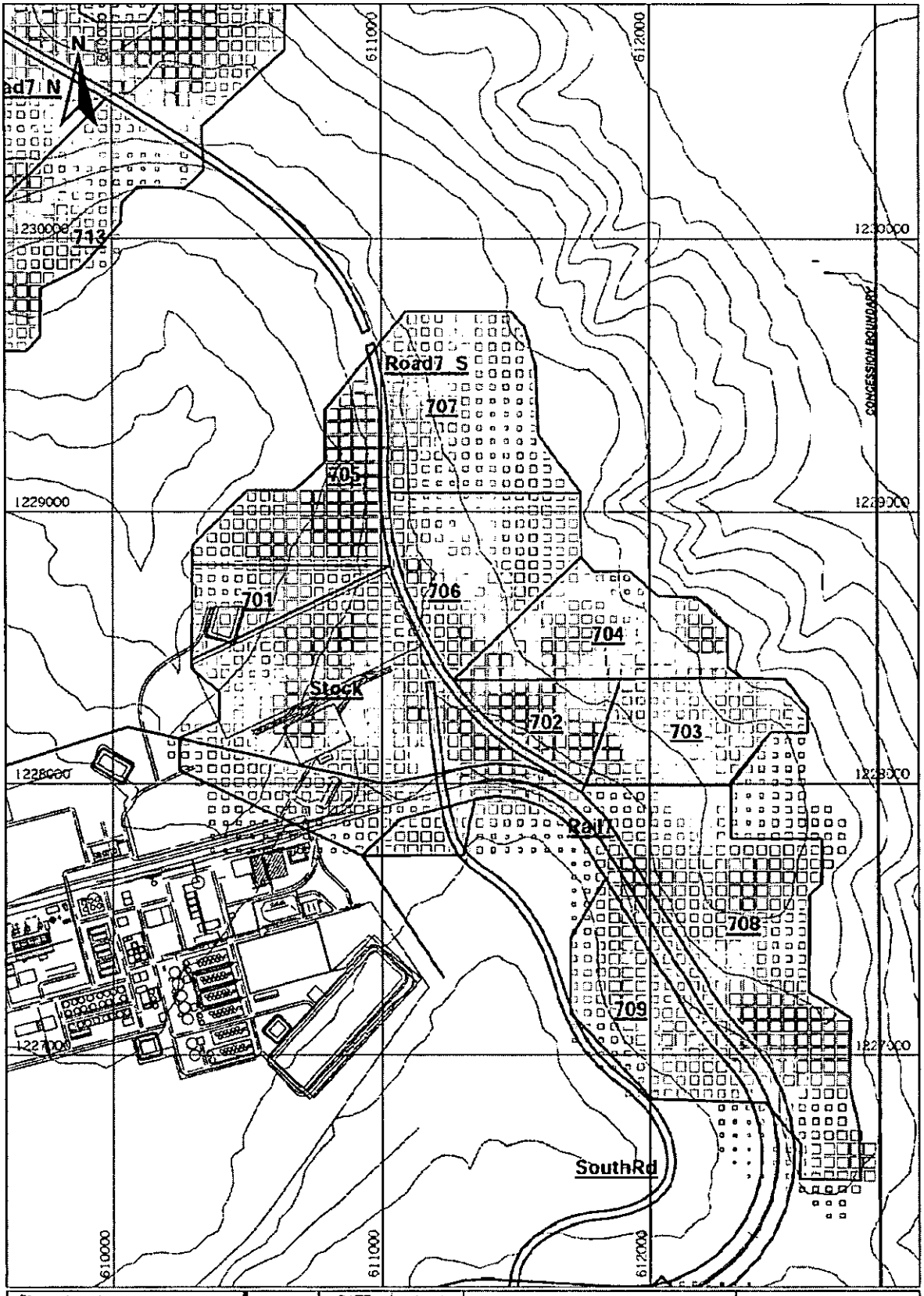
LOCATIONS

GLOBAL ALUMINA

MINERAL RESERVE

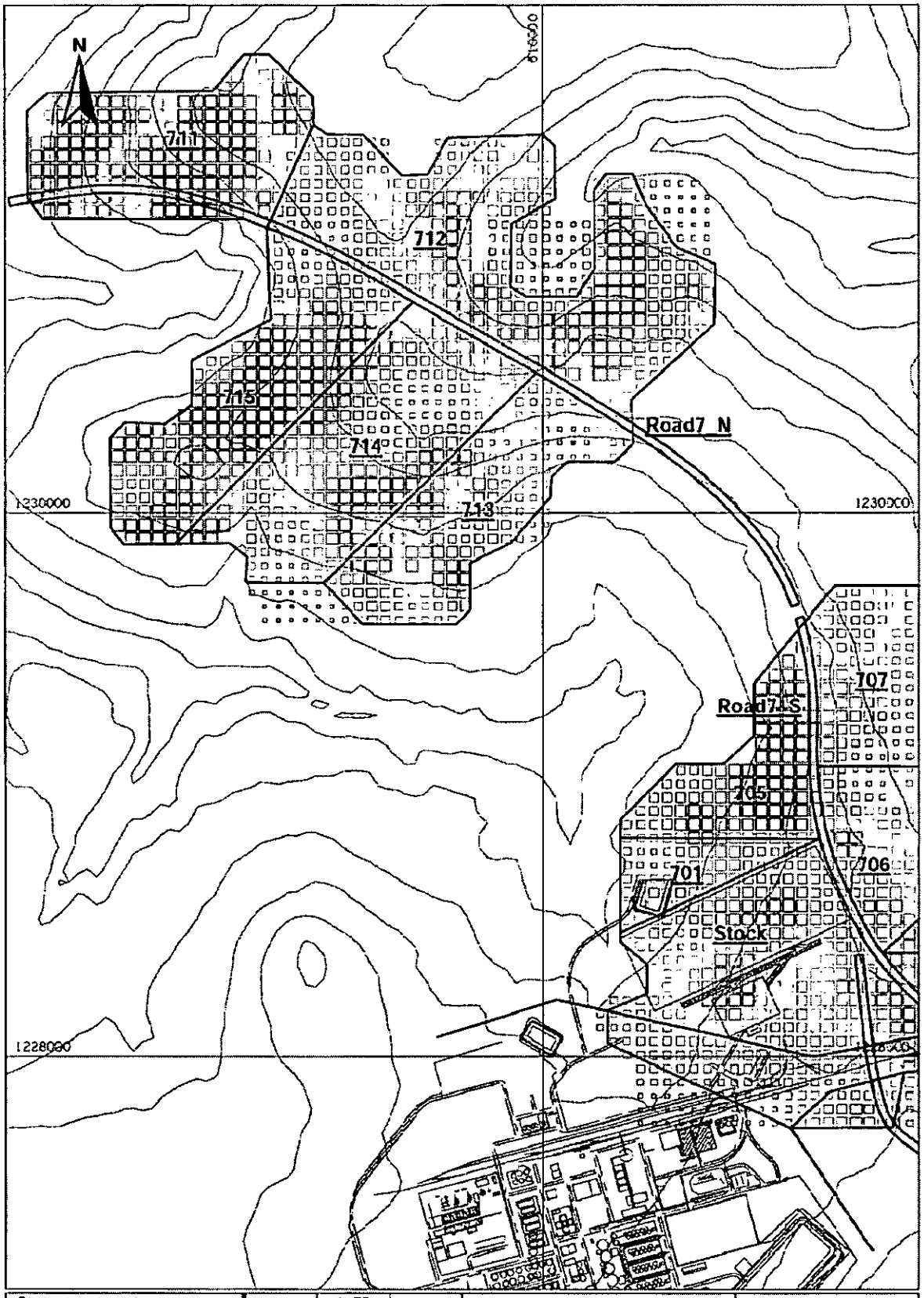
& MINE PLAN

26.2.2



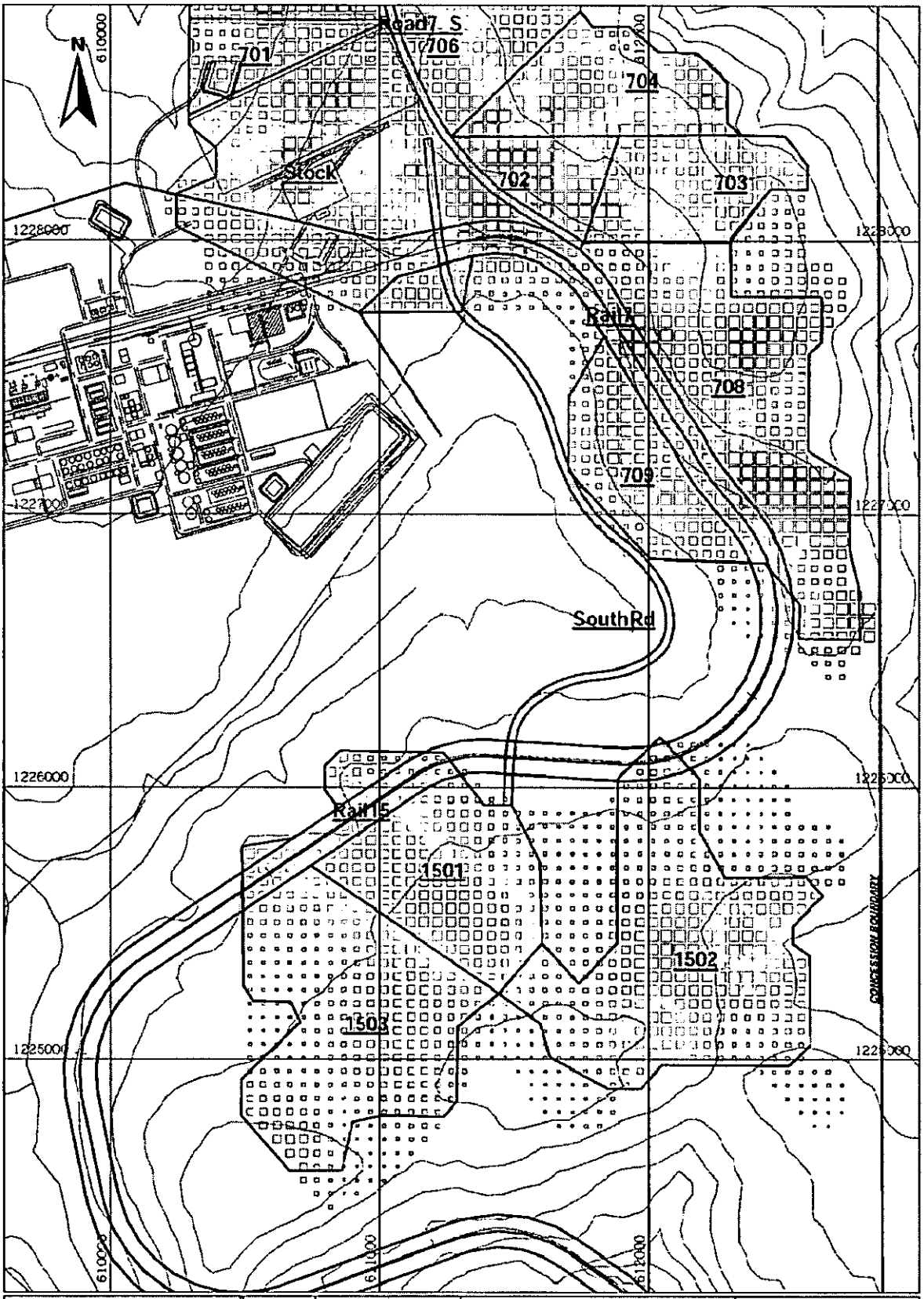

| | | | | | |
|---|---|---|---|---|---|
| Plotted with MICROMINE by BHP The Netherlands/ Switzerland | Scale 1:20000 | DATE Nov 2005 | check vz | MINING PANELS PLATEAU 7-SUD | GLOBAL ALUMINA MINERAL RESERVE & MINE PLAN |
| | | drawn rfh | FILE w20_7S | | |
| | 0 500m | | | | |

26.2.3



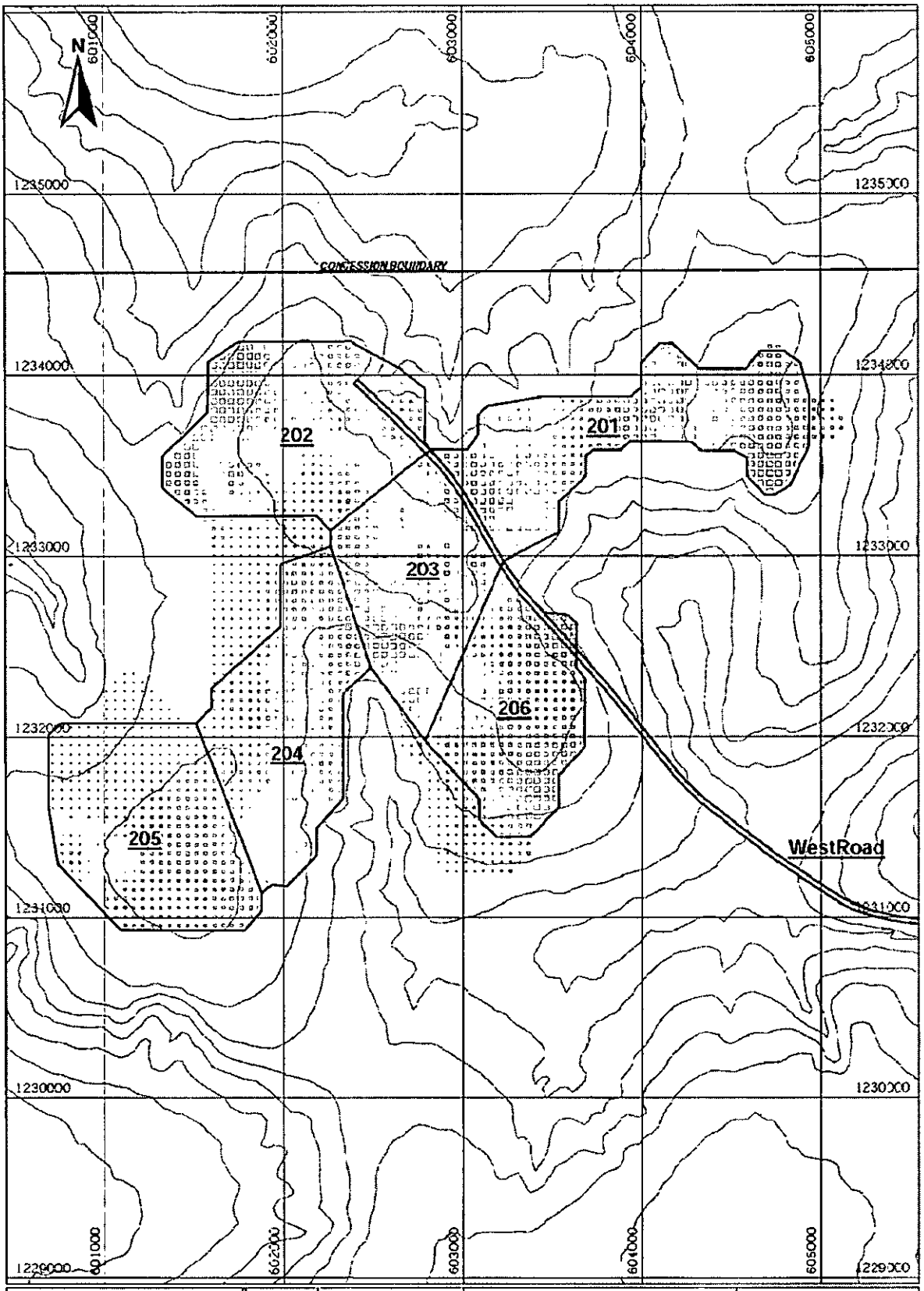

| | | | | |
|---|---|---|---|---|
| Plotted with MICROMINE by BH&P The Netherlands/ Switzerland | Scale 1:20000 | DATE Nov 2005 | check vz | MINING PANELS PLATEAU 7-NORD | GLOBAL ALUMINA MINERAL RESERVE & MINE PLAN |
| | | drawn rfh | FILE N20_7N | | |
| | 0 500m | | | | |

26.2.4



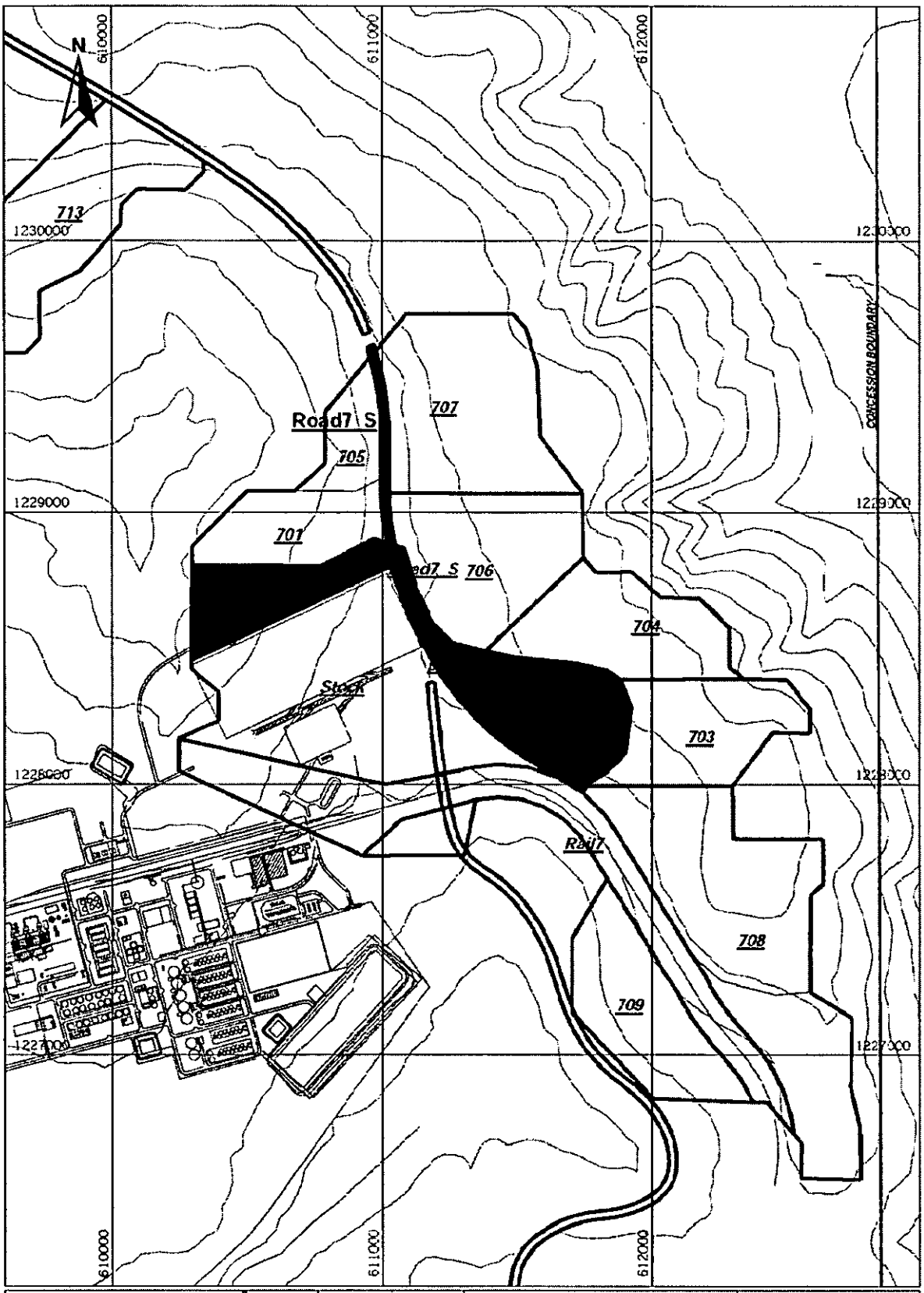

| | | | | |
|---|---|---|---|---|
| Plotted with MICROMINE by BH&P The Netherlands/ Switzerland | Scale 1:20000 | DATE Nov 20C5 | check vz | MINING PANELS PLATEAU 15 | GLOBAL ALUMINA MINERAL RESERVE & MINE PLAN |
| | | drawn rfh | FILE w20_15 | | |
| | 0 500m | | | | |

26.2.5



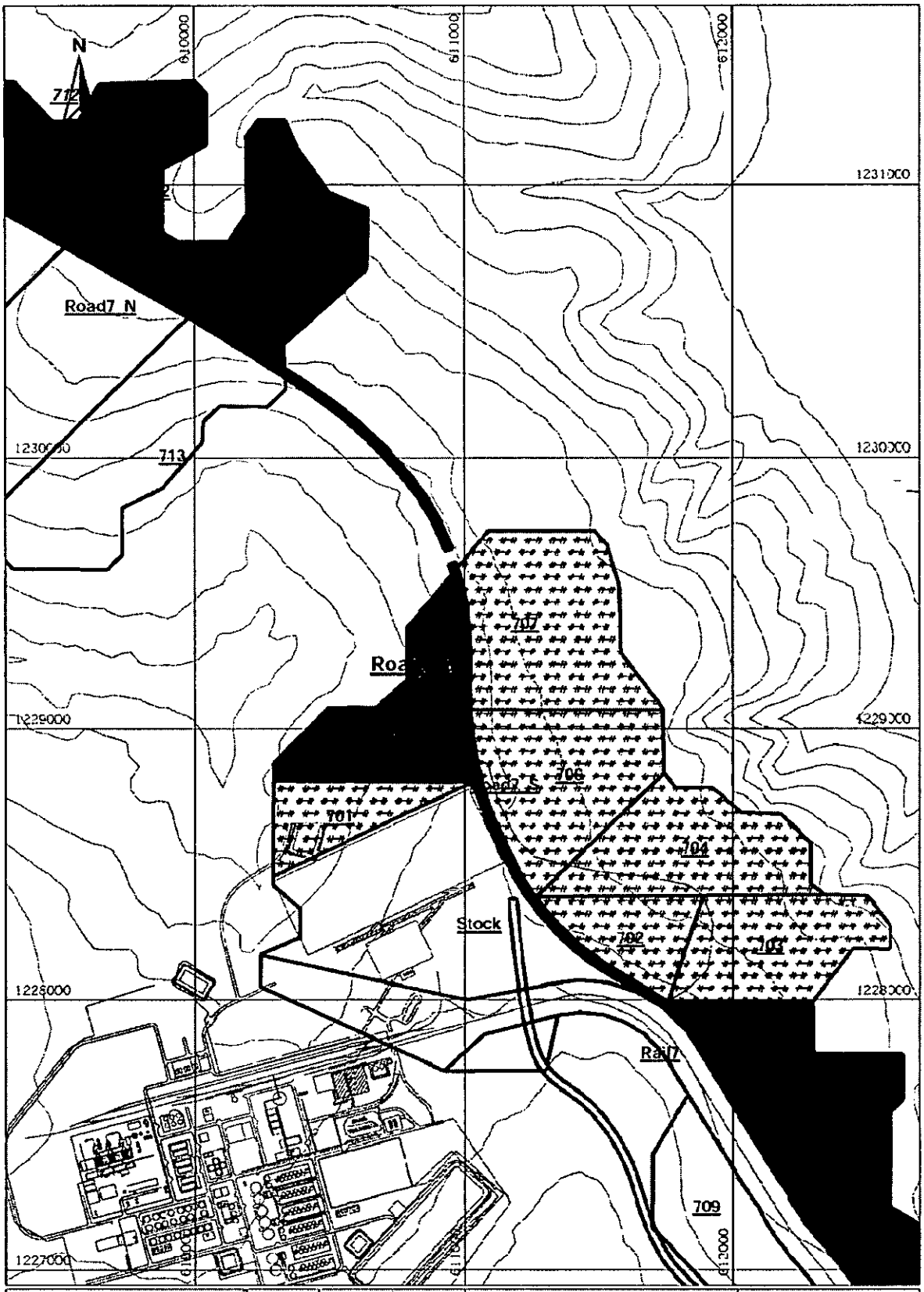

| | | | | | |
|---|---|---|---|---|---|
| Plotted with MICROMINE by EH&P The Netherlands/ Switzerland | Scale 1:30000 | DATE Nov 2005 | check vz | MINING PANELS PLATEAU 2 | GLOBAL ALUMINA MINERAL RESERVE & MINE PLAN |
| | | drawn rfh | FILE w20_02 | | |
| | 0 1000m | | | | |

26.2.6




| | | | | |
|---|---|---|---|---|
| Plotted with MICROMINE by EH&P The Netherlands/ Switzerland | Scale 1:20000 | DATE Nov 2005 | check vz | Active Mining Areas Initial Development (End of Year 1) | GLOBAL ALUMINA MINERAL RESERVE & MINE PLAN |
| | | drawn rfh | FILE wrinC1 | | |
| | 0 500m | | | | |

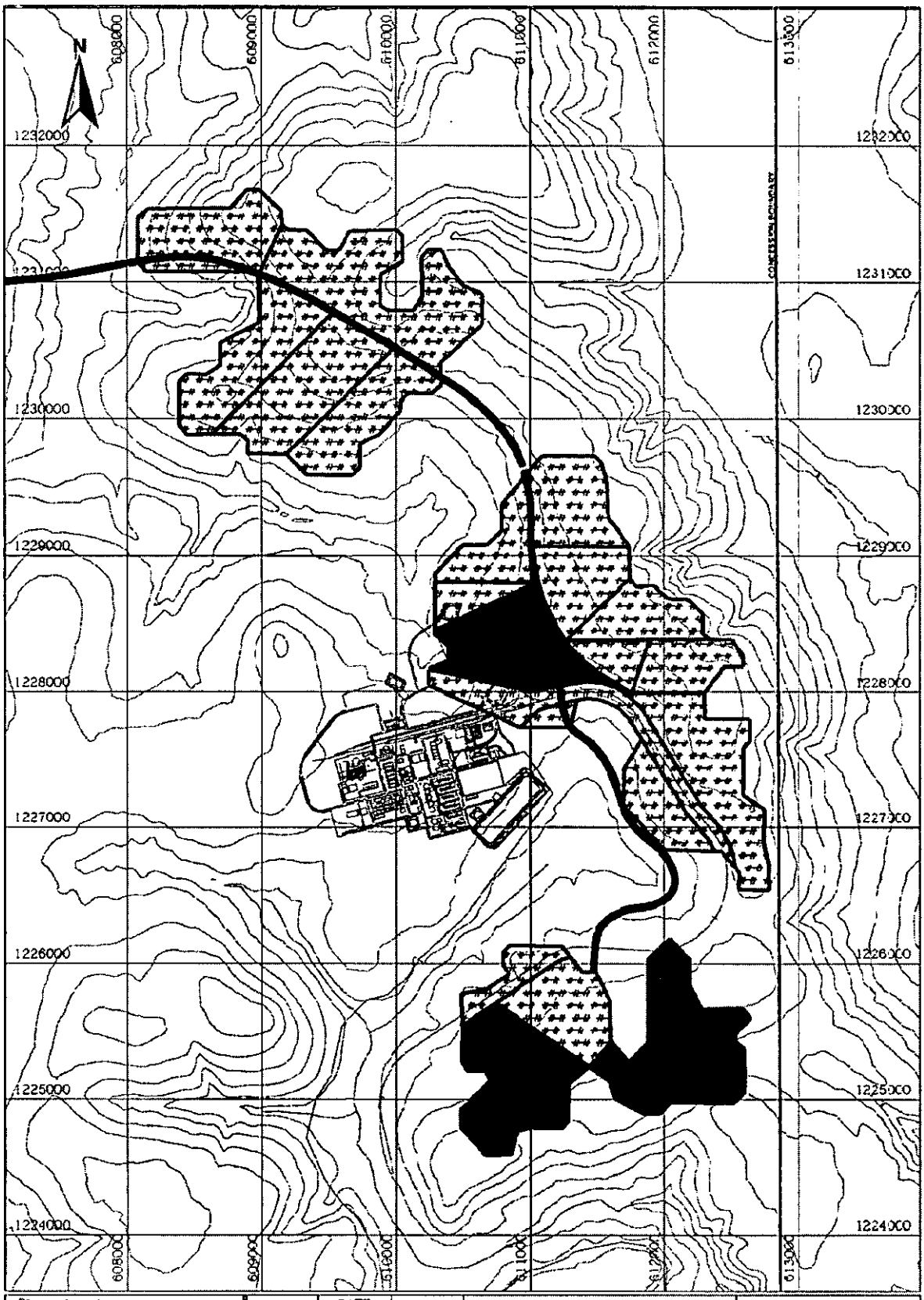
26.2.7




| | | | | |
|---|---|---|---|---|
| Plotted with MICROMINE by BHP The Netherlands/ Switzerland | Scale 1:20000 | DATE Nov 2005 | check vz | Active Mining Areas / Rehabilitated Land End-of-Year 5 | GLOBAL ALUMINA MINERAL RESERVE & MINE PLAN |
| | | drawn rfh | FILE Wainc5 | | |

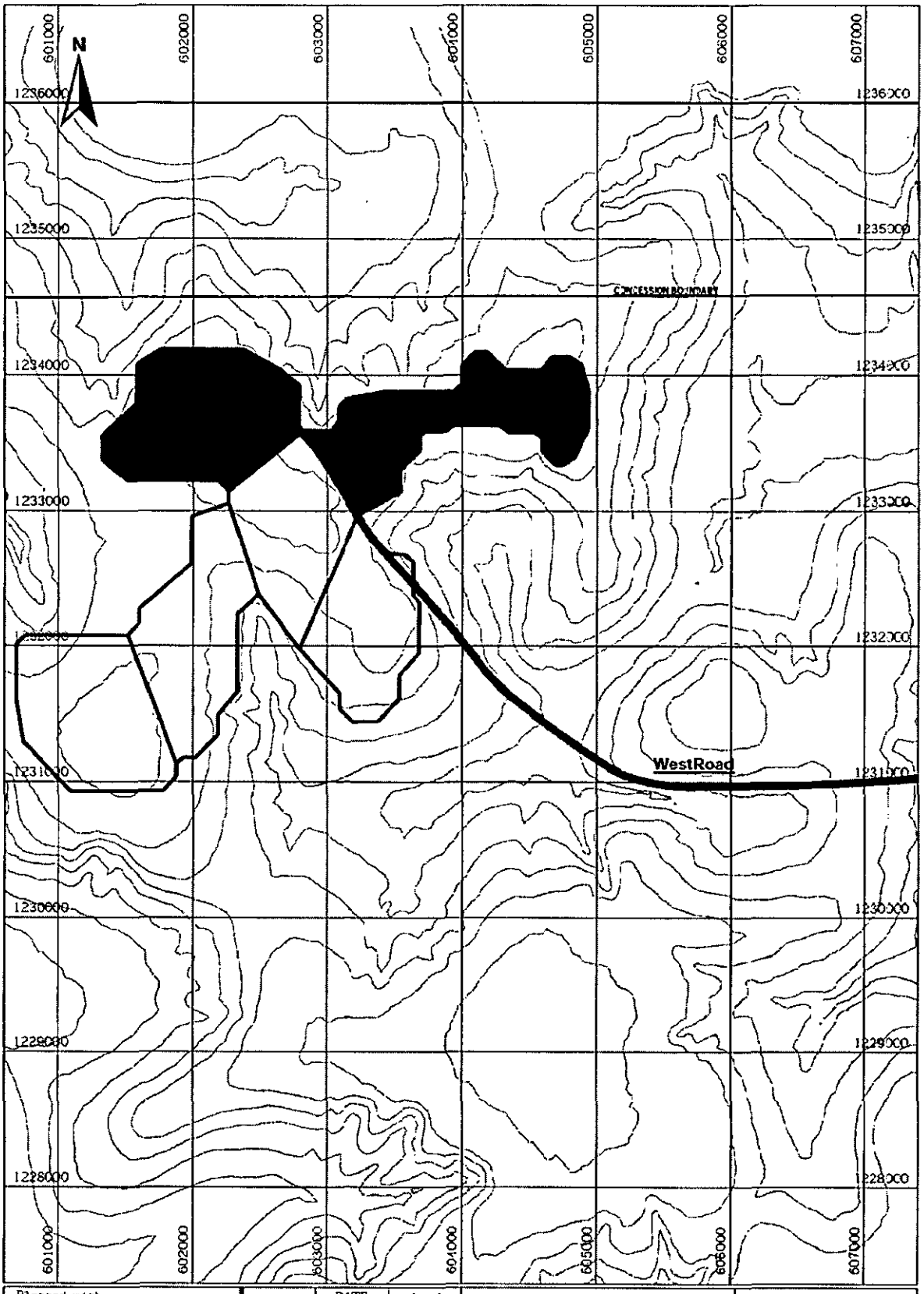
0 500m

26.2.8



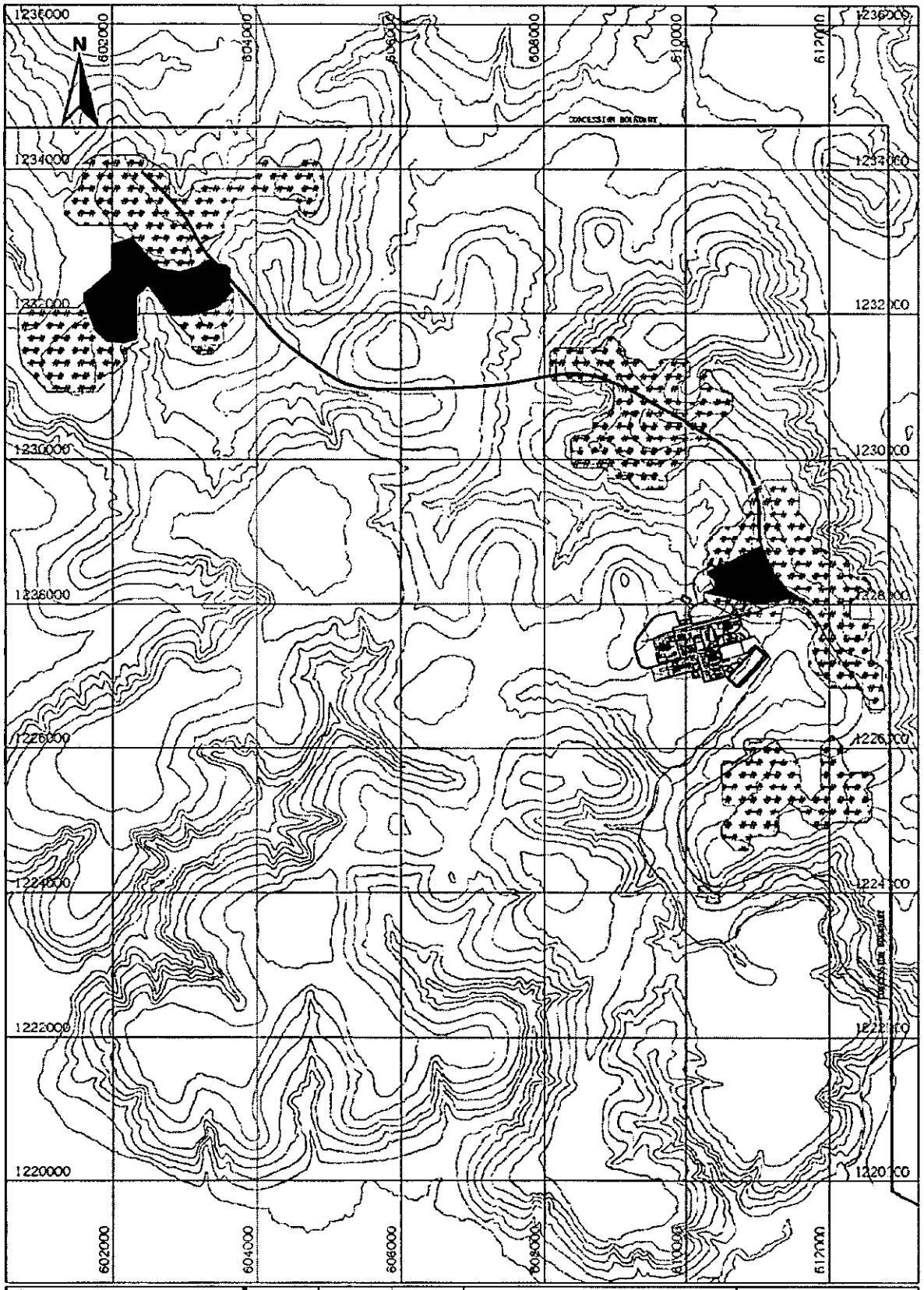

| | | | | |
|---|---|---|---|---|
| Plotted with MICROMINE by EH&P The Netherlands/ Switzerland | Scale 1:40000 | DATE Nov 2005 | check vz | Active Mining Areas / Rehabilitated Land End-of-Year 15 | GLOBAL ALUMINA MINERAL RESERVE & MINE PLAN |
| | | drawn rfh | FILE wmir151 | | |
| | 0 — 1000m | | | | |

26.2.9




| | | | | |
|---|---|---|---|---|
| Plotted with MICROMINE by EH&P The Netherlands/ Switzerland | Scale 1:40000 | DATE Nov 2005 | check vz | Active Mining Areas / Rehabilitated Land End-of-Year 15 | GLOBAL ALUMINA MINERAL RESERVE & MINE PLAN |
| | | drawn rfh | FILE wmir152 | | |
| | 0 — 1000m | | | | |

26.2.10




| | | | | |
|---|---|---|---|---|
| Plotted with MICROMINE by EH&P The Netherlands/ Switzerland | Scale 1:75000 | DATE Nov 2005 | check vz | Active Mining Areas / Rehabilitated Land End-of-Year 24 | GLOBAL ALUMINA MINERAL RESERVE & MINE PLAN |
| | 0 2500m | drawn rfh | FILE wrin24 | | |

26.2.11

Global Alumina

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OFFICE OF INTERNATIONAL CORPORATE FINANCE

## Global Alumina Releases 2007 Year-End Results

TORONTO, ON – March 25, 2008 – Global Alumina Corporation (TSX: GLA.U) (the "Company" or "Global Alumina"), a corporation participating in a joint venture to develop an alumina refinery, mine and associated infrastructure located in the bauxite-rich region of the Republic of Guinea (the "Project"), announced that the Company's board of directors has approved its financial and operating results for the year ended December 31, 2007. The text of the annual audited financial statements and management's discussion and analysis can be viewed or printed from the Company's SEDAR reference page at www.sedar.com. All dollar amounts are in U.S. dollars.

### 2007 Financial Highlights

The Company's results for the year-ended December 31, 2007 reflect both a dilution gain from the sale of interests in the Project and, from May 17, 2007, its one-third proportional interest in the Project resulting from the completion of the joint venture transaction.

- Through December 31, 2007, the Company has contributed capital to the Project joint venture totalling $45.24 million to fund its one-third share of construction and development costs.

- For the year-ended December 31, 2007, the Company realized net income of $76.13 million or $0.37 per share (including a dilution gain of $88.05 million). Interest income for the year ended December 31, 2007 was $3.51 million. The Company's share of the net income in Guinea Alumina was $1.00 million.

- As at December 31, 2007 and March 21, 2008 respectively, the Company had unrestricted cash of $20.20 million and $22.12 million, restricted cash totalling $86.05 million and $72.61 million in its escrow account to fund future Project capital calls and a $108.89 million subscription payments receivable.

The Company expects that funds on hand as of March 21, 2008 will be sufficient to enable it to meet its corporate operating expense requirements through 2012 and to fund its one-third share of Project development cash calls at least through to finalization of debt financing for the Project.

### Significant Corporate Events in 2007

Most significantly in 2007, Global Alumina completed on May 17, 2007 a joint venture transaction under which it effectively sold for aggregate proceeds of $260 million two-thirds of its interest in Guinea Alumina Corporation, Ltd. ("Guinea Alumina") which together with its wholly-owned Guinean subsidiary, Guinea Alumina Corporation, S.A., is the owner and developer of the Project. The transaction resulted in a dilution gain of $151.49 million, $88.05 million of which was recognized at completion upon receipt of the initial subscription payment.

As a result of this transaction, on May 17, 2007 Global Alumina received net proceeds of $120,066,121, recorded a subscription payment receivable of $108.89 million, retained a one-third equity interest in Guinea Alumina and brought the significant experience and resources of each of BHP Billiton (one-third), Dubai Aluminium Company Limited (one-fourth) and Mubadala Development Company PJSC (one-twelfth) as strong development partners in Guinea Alumina. Additionally, Guinea Alumina fully repaid the $59.7 million then outstanding under its existing loan facility and increased its cash balances by $24.7 million by means of a concurrent, pro rata capital contribution. The Company's investment in Guinea Alumina at December 31, 2007 amounted to $207,617,787 and is comprised of proceeds receivable in future installments amounting to $108,888,887 and net investment of $98,728,900.

As of the May 17, 2007 transaction completion, the Company's remaining one-third interest was proportionately consolidated according to Canadian GAAP. As of October 1, 2007 the Company changed its accounting of its interest in the Project to the equity method. Historical financial statements presented reflect 100% ownership of Guinea Alumina up to May 17, 2007.

On April 25, 2007 the Company's board of directors appointed Mr. Graham Morrey President of Global Alumina effective May 1, 2007. Mr. Morrey joined the Company in September 2004 as Senior Vice President Strategy and Planning, and was promoted in May 2006 to Executive Vice President and Chief Development Officer. He has 40 years' experience in engineering and engineering management, mostly related to the preparation and implementation of major industrial, energy and infrastructure projects in Emerging Markets. Prior to his employment by Global Alumina, for over eighteen years, he was the Managing Director Europe for the Hatch Group and Director responsible for Hatch Kaiser Light Metal Projects in the Region.

**Update on Status of the Project**

On March 13, 2008 Guinea Alumina's board of directors accepted as final the recently completed bankable feasibility study of the Project ("Feasibility Study"), and directed the joint venture's management to complete a Project development plan (the "Development Plan") which essentially will add a financing plan and implementation schedule to the Feasibility Study for the board's consideration by the beginning of June 2008. The joint venture retained Bechtel and other specialized consultants to assist in completing the Feasibility Study. The Feasibility Study has confirmed the economic viability of the Project and recommends completion of the Project. The key conclusions of the Feasibility Study and the draft Development Plan are:

- The estimated cost to complete the Project from an assumed contract notice to proceed date of June 1, 2008, is $4.78 billion (including approximately $750 million contingency covering schedule risk, cost escalation and direct contingency).

- Though the refinery's initial production capacity at start up is expected to be 3.3 million metric tons, its annual production capacity is expected to reach its nominal capacity of 3.6 million metric tons within five years as a steady state and gradually increase to a capacity of 3.95 million metric tons through its life as the operating staff gain experience. The refinery is laid out to accommodate a third processing line which would increase total nominal production capacity to over 5.4 million metric tons of alumina per year.

- Current benchmarking against existing global refining capacity shows the refinery's projected cash operating costs to be among the world's lowest 10%.

- The current draft financing plan contemplates raising up to $2.55 billion of long-term, senior secured project debt financing from a consortium of export credit agencies, official development agencies and commercial bank lenders.

- The current draft schedule contemplates lender financing commitments and notice to proceed under an engineering, procurement and construction management contract in the third quarter of 2008 with preliminary works continuing and ramping up substantially in June 2008 in order to preserve the Project's construction schedule, financial closing following in the fourth quarter of 2008, the startup process transitioning from construction phase into operating phase commencing in late 2011 with bauxite first fed into the first refinery line around yearend 2011, first alumina shipments there from and bauxite first fed into the second refinery line following three months thereafter and shipments from the second refinery line beginning three months after that.

There is no assurance that the joint venture will secure sufficient financing on terms and conditions acceptable to it or at all.

The joint venture board of directors also approved an interim budget of $110.8 million for the period January through May 2008. The interim budget includes $40.6 million towards continued site works and development, including work on the container quay at the port in Kamsar, $27.0 million in engineering, procurement and construction management services provided by Bechtel and its subcontractors, $22.9 million in corporate and staffing costs through the period and $14.5 million contingency.

**About Global Alumina**

Global Alumina and its joint venture partners are developing a 3.6 million metric tons per annum nominal capacity alumina refinery located in the bauxite-rich region of the Republic of Guinea. The joint venture partners in the Project are Global Alumina International, Ltd., a wholly owned subsidiary of the Company, BHP Billiton, Dubai Aluminium Company Limited and Mubadala Development Company PJSC. The Project is one of the most advanced new projects in Guinea with the refinery already in feasibility stage and critical path infrastructure and site work already underway. Global Alumina is positioned to be one of the only companies focused solely on alumina production and sales. The Company offers a first mover advantage over other projects in the region and an opportunity for socially responsible investing in a country that holds over one-third of the world's bauxite resources. Global Alumina is headquartered in Saint John, New Brunswick with operations in Boké, Guinea and has administrative offices in New York, London, Montreal and Conakry, Guinea. For further information visit the company's website at www.globalalumina.com.

***Forward Looking Information***

*Certain information in this release is "forward looking information", which reflects management's expectations regarding the Company's future growth, results of operations, performance and business prospects and opportunities. In this release, the words "may", "would", "could", "should", "will", "intend", "plan", "anticipate", "believe", "seek", "propose", "estimate" and "expect" and similar expressions, as they relate to the Company and the Project, are often, but not always, used to identify forward looking information. Such forward looking information reflects management's current beliefs and is based on information currently available to management. Forward looking information involves significant risks and uncertainties, should not be read as a guarantee of future performance or results, and will not necessarily be accurate indications of whether or not or the times at, or by which, such performance or results will be achieved. In particular, this release contains forward*

*looking information pertaining to the following: the achievement by the joint venture company, Guinea Alumina, of certain milestones set out in the subscription agreement among Guinea Alumina and its shareholders, the joint venture partners, (the "Subscription Agreement"); the decisions of the joint venture with respect to the conduct of the Project; the making of a decision to proceed with the development of the Project by the joint venture partners; expectations regarding the debt financing of the Project, the terms, timing and amount of such financing and the sources of financing; the amount, nature and timing of capital expenditures to complete the Project; the timing of refinery construction and mine start up; future production levels; expectations regarding the negotiation of contractual rights; prices for alumina and aluminium; operating and other costs; treatment of Guinea Alumina under the fiscal terms of the "tax exhibit" to the Basic Agreement with the Government of Guinea (as described in the Company's Annual Information Form, the "AIF") and the negotiation and terms of agreements relating to the access of Guinea Alumina to and use of certain infrastructure required for the development and operation of the Project and business strategies and plans of management with respect to the Project. A number of factors could cause actual results to differ materially from the results discussed in the forward looking information, including, but not limited to: the failure or delay of Guinea Alumina to fulfill the conditions precedent necessary for the subsequent subscription payments under the Subscription Agreement to become available to the Company; the limited control by the Company of the assets and operations of the Project and its inability to make major decisions with respect to the Project without agreement from the other joint venture partners; the requirement that the Company hold 85% of subscription proceeds received pursuant to the Subscription Agreement in escrow and the possibility the Company may need to seek additional financing to fund corporate expenses and its share of Project costs; a delay in finalizing debt financing for the Project; the amount of such financing being insufficient to fund the Project to complete development; the inability of the Company to raise sufficient financing to fund its share of development costs; the possibility that the Company's interest will be diluted if it is unable to meet a capital call with respect to the Project; the current political and economic risks of investing in a developing country; material inaccuracies in the cost estimates and time estimates for development of the Project in the bankable feasibility study; a decision of the joint venture partners not to proceed with the development of the Project after the development plan is finalized; construction risks such as cost overruns, delays and shortages of labour, materials or equipment; the Company's dependence on an interest in a single asset; the possible forfeiture of the Mining Concession (as defined in the Company's AIF) in certain circumstances; operational risks such as access to infrastructure and skilled labour; currency fluctuations; price volatility of alumina, aluminium or raw materials; and certain other factors related to the Project discussed under the heading "Risk Factors" in the Company's AIF.*

*The forward looking information contained in this discussion is based on the following principal assumptions: that the estimates and projections in the bankable feasibility study of the Project are within the range of accuracy suggested therein; that the joint venture partners will agree on a final schedule for development of the Project and will make a decision to proceed with the Project upon delivery of a final development plan; that issues relating to the Mining Concession title will be resolved to the satisfaction of the joint venture partners and Project lenders; that general economic conditions will not become adverse to the completion of financing for the Project and will have no material adverse impact on the Project; that the negotiations with prospective Project lenders and between the prospective Project lenders and the Guinean government will be successfully concluded by the end of 2008; that the bidding process for contracted work in connection with the Project will be completed in a competitive manner and that actual costs to complete work will be within the range of quotes provided by contractors to date; that the joint venture will be able to acquire necessary labour at currently assumed labour costs and productivity rates; that the Development Plan for the Project is conducted according to schedule; that general economic factors and trends relating to construction costs remain constant; and that the future political and economic climate in Guinea has no material adverse effect on the Project. Although the forward looking information contained in this discussion*

*is based upon what management of the Company believes are reasonable assumptions, Global Alumina cannot assure investors that actual results will be consistent with this forward looking information. If the assumptions underlying forward looking information prove incorrect or if other risks or uncertainties materialize, actual results may vary materially from those anticipated in this release. This forward looking information is made as of the date of this release, and the Company assumes no obligation to update or revise it to reflect new events or circumstances, except as required by law.*

For further information, please contact:

Michael Cella
Global Alumina
212 351 0010
cella@globalalumina.com

Barbara Cano
Breakstone Group
646 452 2334
bcano@breakstone-group.com

**FORM 13-502F1**
**CLASS 1 REPORTING ISSUERS - PARTICIPATION FEE**

**Reporting Issuer Name:** GLOBAL ALUMINA CORPORATION

**Fiscal year end date used to calculate capitalization:** December 31, 2007

Market value of listed or quoted securities:

| | | |
|---|---|---|
| Total number of securities of a class or series outstanding as at the issuer's most recent fiscal year end | (i)203,857,644 | |
| Simple average of the closing price of that class or series as of the last trading day of each month of the fiscal year (See clauses 2.11(a)(ii)(A) and (B) of the Rule) | (ii) US$1.79 | |
| Market value of class or series | (i) x (ii) = | US$364,905,183 |
| US dollars converted to Canadian dollars at an exchange rate of US$1.00 = Cdn$0.9881 (Bank of Canada noon rate on December 31, 2006) | | = Cdn$360,562,811(A) |
| (Repeat the above calculation for each class or series of securities of the reporting issuer that was listed or quoted on a marketplace in Canada or the United States of America at the end of the fiscal year) | | (B) |

Market value of other securities;

| | |
|---|---|
| (See paragraph 2.11(b) of the Rule)<br>(Provide details of how value was determined) | (C) |
| (Repeat for each class or series of securities) | (D) |

**Capitalization**

| | |
|---|---|
| (Add market value of all classes and series of securities) (A) + (B) + (C) + (D) = | Cdn$360,562,811 |

**Participation Fee**

| | |
|---|---|
| (From Appendix A of the Rule, select the participation fee beside the capitalization calculated above | $14,700 |

**New reporting issuer's reduced participation fee**, if applicable

(See section 2.6 of the Rule)

$$\frac{\text{Participation fee} \times \text{Number of entire months remaining in the issuer's fiscal year}}{12} =$$

**Late Fee**, if applicable

(As determined under section 2.5 of the Rule)

## APPENDIX A – CORPORATE FINANCE PARTICIPATION FEES

| Capitalization | Participation Fee |
|---|---|
| under $25 million | $600 |
| $25 million to under $50 million | $1,300 |
| $50 million to under $100 million | $3,200 |
| $100 million to under $250 million | $6,700 |
| $250 million to under $500 million | $14,700 |
| $500 million to under $1 billion | $20,500 |
| $1 billion to under $5 billion | $29,700 |
| $5 billion to under $10 billion | $38,300 |
| $10 billion to under $25 billion | $44,700 |
| $25 billion and over | $50,300 |

END