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Technical Guide on Internal Audit in Aluminium Industry

The Institute of Chartered Accountants of India
(Established by an Act of Parliament)

The basic draft of the Technical Guide was prepared by CA. Rajendra K Kasliwal, Mumbai. The views expressed in this Technical Guide are those of the author and may not necessarily be the views of the organisation he represents.

Technical Guide
on
Internal Audit in Aluminium Industry

Preface

Value for money and accountability is what drives a management's decisions and actions today and rightly so having regard to the growing competition in all aspects of businesses, be it accessing capital, human and other resources and be it the ultimate markets and consumers for their products and services. At every step the management needs to be able to justify every rupee spent by it to the fund providers, every natural resource employed by it to the various stakeholders and ensure provision of right quality of products/ services at right time and at most economical prices to the consumer and also ensure after sales services to maintain consumer loyalty.

Internal audit has emerged as a significant tool in the hands of the management to help it successfully tide over cut-throat competition and also grow. From the shadows of being a sibling of financial audit, internal audit today is in the light thanks to its growing scope and penetration. A present day internal audit is more of an operational or a management audit, more or less a value for money audit. With that in mind, the Committee on Internal Audit, with the help of industry experts, is working on bringing out more and more industry specific internal audit guidelines for helping members working as internal auditors to better understand the intricacies of the specific industries and discharge their onerous responsibilities with utmost efficiency. The Technical Guide on Internal in Aluminium Industry is one such publication.

The Technical Guide is spread out in seven chapters, *viz.*, the introduction, technical aspects of aluminium industry, general guidelines on internal audit, internal audit of the bauxite mining and procurement function, internal audit of the production function, internal audit of the marketing function, and internal audit of finance function. The relevant chapters also contain the detailed procedures to be undertaken by the internal auditor in respect of each of the main aspects as well as the sub components thereof of an aluminium company.

I must also mention that the Technical Guide would not have seen the light of the day had it not been the efforts of CA. R K Kasliwal, Chief Financial Officer, Hindalco, ably assisted by other industry experts, *viz.*, CA. D C Kabra, CA. Gopal Purohit, CA. Vineet Maloo and Shri R J Singh, who prepared the draft of the Technical Guide. I owe gratitude to these learned people who, despite their demanding professional lives, undertook pains to share their experiences and knowledge with the members in the form of the Technical Guide. I also thankful to my colleagues at the Committee on Internal

Audit for their considered and uninhibited views so necessary to make the Technical Guide more comprehensive and user friendly. I also owe my gratitude to CA. T N Manoharan, President as well as CA. Sunil H Talati, Vice President for their constant motivation and support in the endeavours of the Committee. I also need to express my thanks to Shri Vijay Kapur, Director, ICAI and CA. Puja Wadhera, Secretary, Committee on Internal Audit for their inputs in giving final shape to the publication.

At the end, I wish to mention that though an attempt has been made to touch upon all the significant aspects of the aluminium industry, it is obviously not above the restrictions of extent of details vis a vis readability and space, fast pace changes in the subject area as also assumptions as to the basic knowledge of the readers about the industry. I may, therefore, venture to suggest that the readers should also, from time to time, refer to other relevant literature as well to keep themselves abreast of the significant developments affecting the industry.

January 24, 2007
New Delhi

CA. Amarjit Chopra,
Chairman,
Committee on Internal Audit

Foreword

With bracing the members for global competitiveness and ability to explore new areas where they can provide value added services as its vision, the Institute of Chartered Accountants of India has been bringing out a vast variety of technical literature, in the form of standards, guidance notes, technical guides etc., not to mention the various seminars and conferences on topics of relevance, to help members forge ahead towards these goals.

I commend the Committee on Internal Audit for working not only on developing Standards on Internal Audit but also framing guidelines – industry specific as well as generic, to help the members understand what is expected of them in their professional assignments and how best they can fulfill those expectations and provide value addition. Further, it is heartening to note is the increasing involvement of industry experts, including our members as also their zest in sharing their knowledge and experience of the various industries to the benefit of the other members as well, this Technical Guide on Internal Audit in Aluminium Industry, being one such publication.

I congratulate CA. Amarjit Chopra, Chairman, Committee on Internal Audit and his Committee members for the excellent work done. Co-opted members deserve special mention for their invaluable support and contribution.

I am sure the readers would find the Technical Guide extremely useful. I also look forward to more of such active involvement of members and other experts in the Institute's efforts to bring out more and more technical literature for the members.

January 25, 2007
New Delhi

CA. T N Manoharan
President

1

Introduction

Aluminium Industry - An Introduction

1.01 Aluminum as a metal has evolved as the second most used metal after steel. It is a non-ferrous metal and is used to make alloys, castings, forgings, flat rolled products, extrusions, wires, cables, pipes, etc. Applications of this metal are found in vital infrastructure facilities like electrical power, automobiles, railways, aviation, telecommunications, building and construction, agricultural, engineering, chemicals and packaging industry.

1.02 Aluminium products can be distinctly divided into two categories, primary metal and semi fabricated products. For production of primary metal, Aluminium is extracted from Bauxite in a two-stage process. In the first stage, Bauxite (Aluminium ore) is refined into Alumina (i.e., Al_2O_3 or Aluminium Oxide). In the second stage, Alumina is smelted through electrolysis process to produce Aluminium metal (Al).

1.03 The Aluminium metal is either converted into pig ingots, wire rods or is cast into billets or slabs for its further processing into semi-finished products like sheets, foils, rods, extrusions, etc. Pig ingots are used for the purpose of castings or further processing into redraw rods or other

feedstock for semi fabricated products. Redraw rods are further drawn into cables and are used as conductors. Redraw rods are also used as feed stock for extrusions. Flat rolled products such as sheets, plates and coils are used in transportation, packaging and construction. Extrusion products in the form of sections, bars, etc., are used in transportation, construction as well as in the defense and other sectors.

1.04 Secondary or recycled Aluminium also forms significant part of total Aluminium consumption. It is produced from recycling Aluminium scrap which is a relatively less energy intensive process. However, use of secondary Aluminium is restricted to applications that do no have stringent quality requirement.

Historical Perspective of the Aluminium Industry in India

1.05 In India, the first Aluminium Company was floated by a Canadian multinational company named Alcon. Indal, Alcon's Indian subsidiary, was originally incorporated as Aluminium Production Company of India Ltd. in 1938 in Kolkata. It was India's first Aluminium manufacturing company. It started production in 1941 with a capacity of 2500 tones per annum (TPA) of Aluminium sheets, near Kolkata, using imported ingots. In 1943, to reduce the dependence on imported inputs, the company set up a 2500 TPA capacity Aluminium smelter, at Kerela. In the year 1944, the company's name was changed to Indian Aluminium Company Ltd. (Indal). In 1948, Indal acquired Bauxite mines in Muri (Bihar) for converting Bauxite ore into Alumina. Indal commissioned its first extrusion plant at Alupuram in 1955. To gain better advantages, Indal setup its second smelter plant at Hirakud in Orissa in 1959.

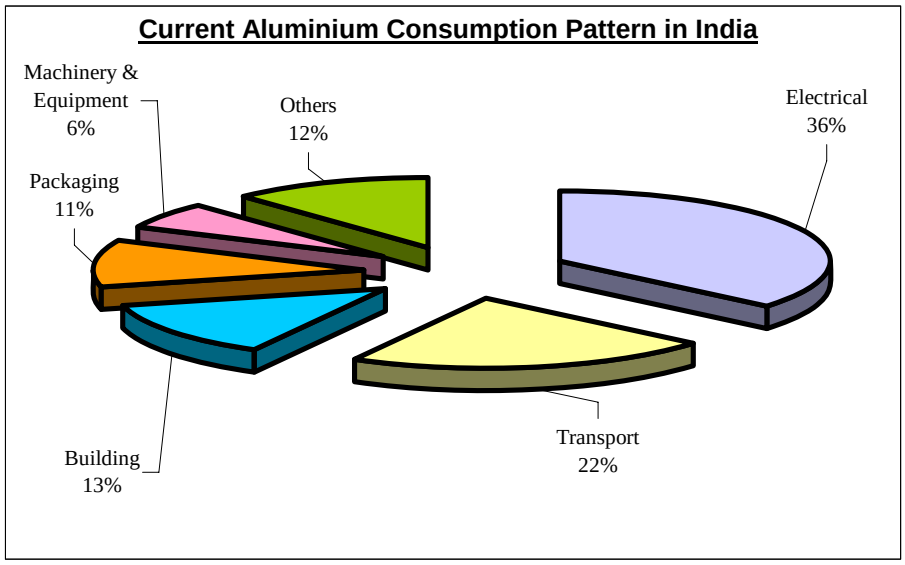
1.06 Meanwhile, in 1962, Hindustan Aluminium Company Ltd. (Hindalco) commenced its operation with an Aluminium facility at Renukoot in eastern Uttar Pradesh. Over the years, it grew into the largest integrated Aluminium manufacturer in the country. Hindalco, in

the year 2000, acquired a majority stake in Indal, having a major presence in downstream Aluminium products and a leader in special Alumina. In the year 1965, Bharat Aluminium Company Ltd. (Balco) and Madras Aluminium Company Ltd. (Malco) were established. Balco was incorporated as a public sector undertaking and it was the first PSU in the country, which started producing Aluminium in 1974. In the year 2001, Government of India divested 51 percent equity and management control in favour of Sterlite Industries (India) Ltd. Malco was established in 1965 at the Mettur Dam, near the city of Salem, Tamil Nadu in collaboration with Montecatine of Italy. Malco is the only integrated primary Aluminium metal complex in the entire South India with its own captive mining, refining, smelting and power generation operations.

1.07 Further, National Aluminium Company Ltd. (Nalco) is considered to be a turning point in the history of Indian Aluminium Industry. Nalco has not only addressed the need for self-sufficiency in Aluminium, but also gave the country a technological edge. Nalco was incorporated in 1981 in the public sector, to exploit a part of the large deposits of Bauxite discovered on the East Coast. Its captive power plant and smelter plant are situated near Angul (Orissa). The capacity of Aluminium smelter at Angul was 230000 TPA. Presently, the capacity is being expanded to 345000 TPA.

1.08 In the 1970s, the Government of India promulgated the Aluminium (Control) Order and regulated the Aluminum industry through price and distribution controls and barriers to entry. The Order compelled the Indian companies to sell 50 per cent of the Aluminum produced for electrical purposes. The control was lifted in 1989 and real growth of the industry started thereafter. The Aluminum industry in India can be distinctly divided into two categories - primary metal producers and downstream metal producers. For primary metal production, Aluminium is extracted from Bauxite in a two-stage process.

1.09 All the five Indian primary metal producers, i.e., Hindalco, Nalco, Balco, Indal and Malco, are integrated aluminum manufacturers, having the manufacturing facilities for extracting Alumina from Bauxite, smelting



Alumina into Aluminium and further processing Aluminium into downstream products. The downstream capacity in the Aluminum industry spurted due to sufficient duty differential between aluminum ingots or primary metal and value added downstream products. In March 1993, while the import duty on aluminum ingots was 25 percent, the duty on downstream products was 70 percent. However, with liberalization the import tariff on Aluminium and its semi-fabricated products has gradually been brought down to 10 percent.

Objective of the Technical Guide

1.10 The objective of the Technical Guide is to provide an insight into the functioning of the primary Aluminium industry, the technical aspects peculiar to the Industry and its unique characteristics, which would be helpful to the members in conducting internal audit of an Aluminium company.

1.11 The Technical Guide covers both Alumina and Aluminium production processes and also throws light on aspects relating to Bauxite mining operations. As the size, functioning, technology and nature of manufacturing facility may vary materially from one producer to another, the Technical Guide cannot cover all the intricacies that might be involved in different practical situations. Therefore, the principles enunciated in this Guide should be applied *mutatis mutandis*, exercising professional judgment.

1.12 This Guide is also not intended to dwell on the basic internal audit procedures, which are common to all industries. It purports to provide insight into special aspects of the Aluminium Industry for management and operational audit. The Guide also discusses special areas of compliance peculiar to this Industry that call for internal auditor's scrutiny, which have been mentioned in the subsequent chapters.

Key Drivers of the Aluminium Industry

Production Technology

1.13 Technology for production of Alumina depends primarily on the type of Bauxite used. While the basic process of Alumina refining has remained unchanged over the time, the technology for production of Alumina has improved to increase the efficiency and reduce consumption of various inputs and energy thereby reducing the cost of production. Similarly, for production of Aluminium, although the basic technology has remained the same over the years, it has been continuously upgraded to increase the productivity, volume of production per pot and reduce the capital and operating costs.

Cost of Production

1.14 Like any other commodity, continuous reduction in the cost of production of Alumina and Aluminium is vital to survive in today's competitive markets. To achieve this, either the technology has been

upgraded or inefficient high cost smelters have been closed down. Further, large sized smelters are being installed to reap the benefits of economies of scale. Major cost components for Alumina are Bauxite, Caustic Soda, labour and energy. Major cost elements for Aluminium production are Alumina, power, anode Carbon, Aluminium Fluoride and labour. A close monitoring of the cost of these inputs can help producers in reducing the cost of production.

Bauxite

1.15 Availability of good quality Bauxite at economical rates is important for low cost production of Alumina. Bauxite is the basic raw material for Alumina production and consequently Aluminium metal. About three tons of Bauxite is required to produce one ton of Alumina. It is bulky in nature and its transportation costs constitute significant part of the total cost of production.

Power

1.16 Production of Aluminum is energy intensive. On an average, smelters consume 14000-15000 Kilo Watt Hours (KWh) of electricity for producing one metric tonne of Aluminum. Both Alumina refining and Aluminium smelting are continuous process operations and, therefore, need a steady supply of quality power. Fluctuations in power can make other operating parameters unstable. Further, discontinuity in the power availability can result into closure of the smelter operations.

Captive Power

1.17 In order to reduce overall costs and ensure steady supply of desired quality of power, Aluminium producers in India prefer use of captive power.

Pricing and Realisations

1.18 Aluminium is a globally traded commodity. Prices of Aluminium are determined at global exchanges, most notable amongst them being the London Metal Exchange (LME), COMEX (Commodities division of the New York Mercantile Exchange or NYMEX) and Shanghai Futures Exchange (SHFE). LME prices are the most widely followed benchmark worldwide. In India, the domestic prices closely follow the LME price movements.

1.19 Domestic price realizations depend on LME Prices, import tariffs, Rupee/Dollar exchange rate and demand - supply position of Aluminium in India. Similarly, export price realizations are dependent on LME Prices and Rupee/Dollar exchange rate.

INR/USD Rate

1.20 The exchange rate of the Rupee *vis-à-vis* the US Dollar is an important element affecting the realization in the domestic Aluminium industry. This has an important impact on the profitability of Aluminium producers in India, since almost all the inputs are priced in rupees whereas, revenues are either priced in dollars or are dollar linked.

Import Tariffs

1.21 Import tariffs on Aluminium metal are another deciding factor in domestic selling price of Aluminium. Over the past few years, import tariffs in India have been reduced in a phased manner.

Domestic Aluminium Consumption

1.22 The demand for aluminum metal is dependent upon growth in the end use segments like power, consumer durables, automobiles, packaging,

etc. To a large extent, the demand for aluminum is linked to the overall growth in the economy.

Exports

1.23 Presently, the Alumina and Aluminium production capacity of India is higher than the domestic requirement. Therefore, earning from exports is an important value driver for the Indian Aluminium industry.

2

Technical Aspects of Aluminium Industry

2.01 In nature, Aluminum is never found in its metallic state but is a common constituent of many minerals where it is normally combined with silicon and oxygen. Bauxite is the only ore from which Aluminium can be economically retrieved. Aluminium is produced from Bauxite in following three stages:

A. Bauxite Mining;

B. Alumina Refining Process; and

C. Aluminum Smelting Process.

Since, all the primary producers of Aluminium in India have integrated operations, they are producing Aluminium from Aluminium ore by following all the above three stages. Readers are requested to refer to the Glossary of terms given in Appendix I to properly understand the technical aspects of the Aluminium industry.

Bauxite Mining

2.02 This is the first stage in the Aluminium production chain. Generally, every Alumina refinery owner obtains mining leases for Bauxite mining. Bauxite is also purchased from other miners, who own mining leases. In India, all the Bauxite mines are open cast mines with varying quantities of overburdens. Bauxite is transported to the refinery through road or rail transport. In some cases where the refinery is situated at the pithead, it is transported through conveyor belt. Approximately, three tons of Bauxite yields one ton of Alumina. Plant design is influenced by the Bauxite composition. The key variables of Bauxite quality are Alumina content, silica content and mineralogical form of occurrence.

Alumina Refining Process

2.03 Alumina is extracted from Bauxite through the Bayer Process i.e., treating Bauxite with Caustic Soda. Other technological variants of this process are in use at some refineries outside India. These include Sintering process, Hybrid Bayer-Sintering method, etc., where raw material characteristics warrant such treatment.

2.04 Bauxite is crushed to required sizes normally in two stages of crushing and then wet grinding is done with process liquor to make slurry of desired size fraction and solid percentage. Before conveying Bauxite slurry to slurry heaters and/or digesters (autoclaves), it is de-silicated and pre-heated at a certain temperature and held for specified time to remove silica content of the liquor by converting it to solid phase. De-silicated slurry is then treated with caustic soda solution in the form of process liquor at certain defined temperature suitable to the Bauxite quality. Reactions are completed in autoclaves/digestors. Digested flashed slurry is pumped to clarification area for removal of solid impurities from sodium Aluminate liquor.

2.05 The Aluminate liquor is filtered to remove fine suspended particles. The clear Alumina enriched pregnant liquor is seeded with coarse and fine

Alumina tri-hydrate seeds in two stages to have better yield (recovery). The liquor separated from the last hydrate thickener is re-cycled as spent liquor in the digestion circuit after increasing its concentration in the evaporation unit.

2.06 The Alumina Hydrate is washed and filtered and then fed to calciners/ rotary kilns where it is calcined to obtain the final product i.e., Alumina powder. The Alumina (Smelter Grade Alumina or SGA) thus produced is transported to smelting unit for metal production. Appendix II contains a diagrammatic representation of the Alumina refining process.

Aluminium Smelting Process

2.07 World over, there are two predominant technologies for Aluminium smelting – Soderberg and Pre-bake, the latter being more advanced and environment friendly is increasingly replacing the Soderberg technology.

2.08 Primary Aluminium is produced by electrolytic reduction of Alumina. Alumina is dissolved in molten cryolite bath and electrolysis is carried out in specially designed Aluminium electrolysis cells commonly known as 'pots' and metal is tapped periodically from pots. A number of electrolytic cells are connected in series along with certain bus bar configuration for passages of current constitute a potline.

2.09 A typical modern Aluminum reduction cell consists of a rectangular steel shell, lined with refractory thermal insulation that surrounds an inner lining of carbon to contain the highly corrosive fluoride electrolyte and molten Aluminum. Electric current enters the cell through 18 to 26 pre-baked carbon anodes or through a single continuous self-baking Soderberg anode. A crust of frozen electrolyte and Alumina covers the top of the cell around the anodes.

2.10 Anode manufacturing, which is generally in-house, includes the following processes:

(i) Paste production - Dry aggregate preparation by crushing, milling and sieving of anode butts and petroleum coke. Preheating the dry aggregate and mixing it with pitch.

(ii) Anode compaction - Forming the green paste to anodes by pressing or vibro-compacting.

(iii) Anode Baking - Baking the green anodes in closed or open-type baking furnaces.

(iv) Anode Rodding - Fixing the steel stub into the anode hole using cast iron.

The principal goal of all the processing stages is to finally produce homogeneous anodes with properties that will meet the requirement concerning the performance in the electrolytic cell.

2.11 The metal is cast into various shapes, sizes and compositions for a number of uses. The molten Aluminum is treated to ensure cleanliness and purity before casting it into ingots, billets or slabs, which are in turn, used to make semi-fabricated products. Alloying ingredients are also added at the casting stage to provide special properties.

2.12 In an alternative technique of continuous casting, molten metal is cast directly into semi-finished form, bypassing the ingot stage. Wire rod is also generally directly drawn from molten metal, which is subsequently re-drawn into many forms of electrical and mechanical wire. Appendix III contains a diagrammatic representation of the Aluminium smelting process.

Semi Fabricated Products

2.13 In the audit of downstream products in rolling and extrusion, the internal auditor should focus on the following aspects:

- Production planning and scheduling
- Melting losses
- Recovery monitoring
- Inventory control and Work in process inventory
- Production control and production reporting
- Quality assurance and control
- If the process is outsourced, timely metal reconciliation with the job contractors.

2.14 The working conditions in the Aluminium industry are extreme because of high temperature and involvement of chemical processes that release potentially toxic fumes comprising of hydrogen fluoride and fluorine gas besides Alumina dust, carbon dioxide and carbon monoxide, which pose environmental problems. The internal auditor should also undertake a periodical review of the environmental, health and safety management system.

3

General Guidelines on Internal Audit

3.01 Internal audit is an independent management function, which involves a continuous and critical appraisal of the functioning of an entity with a view to suggest improvements thereto and add value to and strengthen the overall governance mechanism of the entity, including the entity's strategic risk management and internal control system. Identification of areas to be covered under internal audit should be driven by a proper business process risk assessment jointly by the internal auditor and the management. For an effective internal audit, the internal auditor needs to have an in-depth understanding of the Industry under audit. In the modern day context, internal audit normally includes operational audit. Thus, it is essential that the internal auditor is conversant with the technical aspects of production, marketing, and purchase functions apart from finance and accounting aspects of the Industry.

Importance of Accounting Manual in Internal Auditing

3.02 The accounting information, which is an important part of the overall information system, is generated and presented by the management generally in accordance with an accounting manual. In the

accounting manual, every significant aspect relating to accounting is dealt with, namely, different books of account to be maintained, description of account heads, account codes, prescribed documentation procedures, approvals form appropriate authorities for each individual voucher, preparation of periodical accounts, maintenance of various statutory registers, etc. Accounting manual can, therefore, be of immense use to the internal auditor in the conduct of his audit, particularly, in the finance and accounting area.

Internal Audit *vis-a-vis* Cost Accounting

3.03 Apart from the financial accounts, companies manufacturing Aluminium are also required to maintain Cost Records as per the directions issued by the Central Government under section 209(1) (d) of the Companies Act, 1956. In the context of the internal audit of the cost records, the internal auditor should possess knowledge about the Cost Accounting Records (Aluminium) Rules, 1972, as amended from time to time and the Cost Audit (Report) Rules, 2001. The internal auditor should satisfy himself that necessary cost records are maintained and that they serve the purpose of cost audit as well as give valuable information for cost control by bringing to the notice of the management unfavorable trends well in advance.

4

Internal Audit of the Bauxite Mining and Procurement Function

4.01 The main function of the Procurement Department is to ensure that right quantities of materials of the proper quality are available in the factories at the right price and time. This makes the job of Procurement Department in the Aluminium industry no different than that in other industries.

4.02 Bauxite is the basic raw material for production of Alumina and consequently, for production of Aluminium metal. Therefore, availability of sufficient quantity of good quality Bauxite at economical rates is imperative for low production cost of Alumina. Most of the Aluminium producers have their own captive mines and power plants. Companies sometimes also purchase Bauxite from other parties to supplement the quality and/ or quantity available from their own mines.

4.03 The overall procurement function can be categorised into:

A. Bauxite Mining Lease and Operations

B. Purchase of Bauxite

C. Purchase of other Raw Materials/ Engineering Items

D. Imports

Bauxite Mining Lease and Operations

Mines and Minerals (Regulation and Development) Act, 1957 and Mineral Concession Rules, 1960

4.04 The Mines and Minerals (Development and Regulation) Act, 1957, (MMDR Act, 1957) and the Mines Act, 1952, together with the rules and regulations framed under them, constitute the basic laws governing the mining sector in India. The relevant rules in force under the MMDR Act, 1957 are the Mineral Concession Rules, 1960, and the Mineral Conservation and Development Rules, 1988. The health and safety of the workers is governed by the Mines Rules, 1955 created under the jurisdiction of the Mines Act, 1952.

4.05 The Mineral Concession Rules, 1960 outline the procedures and conditions for obtaining a Prospecting Licence or Mining Lease. The Mineral Conservation and Development Rules, 1988 lay down guidelines for ensuring mining on a scientific basis, while at the same time, conserving the environment. The provisions of Mineral Concession Rules and Mineral Conservation and Development Rules are, however, not applicable to coal, atomic minerals and minor minerals. Readers may refer to the website of the Ministry of Mines (www.mines.nic.in) for more information on the mining sector in India.

4.06 In respect of bauxite mining and lease operations, the internal auditor would need to verify the following:

(i) The period of validity of the various mining leases obtained by the company.

(ii) Steps taken to renew the existing leases. Where the expiry dates are near and in case deposits/ reserves of the existing mines are near exhaustion, whether application has been made for new leases.

(iii) Whether the terms and conditions subject to which the mining leases have been granted by the Government are being complied with. Mining operations have to be are carried out in accordance

with the mining plan duly approved by the Government and subject to such conditions as may be prescribed by the Controller General of Indian Bureau of Mines, for example, rehabilitation of flora, protection of third party's rights where such party is prejudicially affected by reason of any prospecting/ mining operations.

(iv) Whether payment of dead rent and surface rent has been made as per the provisions of the Mines and Minerals (Regulation and Development) Act, 1957.

(v) Where backfilling of waste rocks in the area excavated during mining operations is not feasible, whether a separate site has been created for dumping the waste and whether such waste dumps have been suitably created, terraced and stabilised through vegetation or otherwise.

(vi) The supervision system for sorting and sizing of Bauxite. This system acts as quality control mechanism for Bauxite. Silica is an impurity in Bauxite and is very costly to remove. Any alien material like sand or mud etc., are likely to contain high amount of silica. Effective supervision helps in checking loading of unwanted materials to fill up truckload. It also helps in ensuring that good material is not discarded or goes waste but is loaded for onward transportation to plant.

(vii) Whether the worked out area is being backfilled with waste rocks, overburden etc., and afforestation in compliance with environmental regulations has been done.

(viii) The records in respect of each earth moving equipment, showing the hours worked, idle hours, consumption of fuel and lubricant and output of the machine during such working hours.

(ix) Whether the provisions of the Explosives Act, 1884 and Rules, 1983 in regard to transportation, storage, handling and use of explosives for blasting hard rock in the mining area are being complied with.

(x) The written contracts and compliance with the terms and conditions thereof where the mining activities of leasehold mines have been outsourced.

(xi) Whether the provisions of the Mines Act, 1952, which regulates the working conditions in mines, measures to be taken for the safety of the workers employed therein, are being complied with.

Royalty

4.07 Royalty has to be paid to the government at the specified rate in respect of the Bauxite removed from the leased area. After commencement of the lease, if mining is not carried out, then 'dead rent' has to be paid at the specified rate to the Government. Once the company becomes liable to pay royalty then dead rent is not required to be paid. Calculation of royalty is done by applying the specified rate on the Aluminium metal content in the Bauxite ore produced valued at the Aluminium metal price prevailing in London Metal Exchange. In respect of internal audit of royalty, the internal auditor needs to:

(i) Ensure that proper monitoring system exists for payment of royalty on the quantity of Bauxite as per the dispatch records from the mines

(ii) Check the source of LME prices considered for payment of royalty

(iii) Ensure that there exists a system for timely payment of royalty

(iv) Check whether proper return with mining department has been filed for excavation and dispatch of Bauxite ore.

Purchase of Bauxite

4.08 Although most of the Aluminium manufacturers have leasehold mines, at times Bauxite is also purchased from outside parties, primarily to conserve life of the captive mine. Bauxite is available in various grades depending upon the percentage of total available Alumina (TAA%), total Alumina (TA%), silica content (SiO_2%) and Iron content (Fe_2O_3%). Thus, grading of Bauxite is an important criterion for pricing and consequently an important matter for internal auditor's review. In case of purchase of Bauxite, the bonus amount, if any, paid towards supply of good quality

Bauxite and penal provisions for adverse quality/quality variations need attention of the internal auditor.

4.09 The internal auditor's procedures with respect to the following specific areas of bauxite purchasing would include:

Purchase

(i) Checking the orders booked to ensure that prices were at or below prevailing market price.

(ii) Checking the parties' bills to ensure that they are in line with the grades of Bauxite supplied.

(iii) Checking that parties' bills are paid as per terms of payment.

(iv) Checking whether supplies have been made within the ordered period and evaluate loss/ gain in respect of delayed supplies.

(v) Receipt of Materials at Factory/ Raw material handling shop

(vi) Checking the effectiveness of the system of estimation of number of racks that will be required for transportation?

(vii) Examining whether there is system of payment of indent money to the Railway authorities for racks for transportation. Whether proper adjustment of indent money is made?

(viii) Checking whether there is a proper system to avoid demurrage charges?

(ix) Checking whether there is a system to ensure avoidance of overload of racks leading to punitive charges by the Government?

(x) Checking whether there is a monitoring mechanism to ensure that all trucks loaded at mines are delivered at the railway siding or at plant within a reasonable period of time?

(xi) Checking whether goods inward dockets raised are as per the corresponding challans and lorry weightment cards.

(xii) Checking that the materials have been subjected to the inspection procedure laid down and have been passed.

(xiii) Ensuring that the goods inward dockets series is maintained. In case of missing links, investigating into the same.

(xiv) Ensuring that after excavation of raw material from mining area, there is a proper system of weightment, that the same passes through the weigh bridge and proper entries of quantities are made.

Receipts

Checking that receipts are timely.

Inspection

Checking the inspection records to ensure that inspection is being done as per the laid down guidelines.

Stock

(i) Physically verifying the stock at material handling shop, railway sidings, at port at a particular date and verifying the same with the stock records.

(ii) Checking whether there is delay in supply of Bauxite from captive mines as well as in cases where the Bauxite is purchased from a third party.

Tax Obligations

The internal auditor must ensure whether any tax liability on excavation or dispatch of Bauxite ore is there under Central or State law and must also ensure that such dues are paid on due dates.

Purchase of other Raw Materials/ Engineering Items

4.10 Various types of raw materials and engineering items are purchased in the Aluminium industry. Though the internal auditor's procedures with respect of audit of purchases would be same as in any other industry, the diversity of the materials used and their volume would necessitate building up of several profiles, which are discussed below.

Materials Profile

4.11 The materials profile covers such aspects as annual/monthly requirements, inventory levels, nature and use of the material, range of suppliers available in the country and possibility of substitution by alternative materials, particularly, import substitution. The building up of this audit profile for each material and the assessment of the efficacy of the decision making at every step *vis-à-vis* the profile would lead to substantive internal audit findings.

Suppliers' Profile

4.12 The suppliers' profile would deal with the legal constitution of each supplier (i.e., whether a limited company, partnership or proprietorship), the names of the directors/ partners/ proprietor, the availability of manufacturing facility, nature of other businesses and whether the supplier is supplying more than one material to the company under the same banner or under a different banner. An important criterion to assess a supplier's credibility would be his manufacturing capacity, adherence to delivery schedule, price quoted, reliability of materials supplied and after-sales services. Another important criterion would be the supplier's financial strength to supply large volumes. The internal auditor should ensure that there is a proper system for vendor registration and periodical performance evaluation of the vendors.

Managers' Profile

4.13 In Aluminium industry, need for a large variety of the materials necessitates involvement of a number of managers in the procurement activity, each specializing in the given field. This in turn, necessitates building up of the profiles of individual managers. Review of the material and the supplier profile along with the manager profile would throw light on the decision-making capability of the manager concerned. This would cover such areas as optimum efficiency in buying, ability to develop alternative sources at short notices, and the market knowledge in procuring new and rare materials. The information for the above three profiles can be easily obtained by the internal auditor from the company's database and reviewed.

Materials Sent to Fabricators

4.14 A number of materials, especially engineering items, are sent to outside fabricators for conversion and repairs. Internal auditor would need to verify whether adequate steps have been taken to ensure that the conversion loss is kept at a minimum. The internal auditor would also need to examine whether the fabricators' accounts are continuously monitored and reconciled with the company's records.

Transportation

4.15 Raw materials/ engineering items are purchased from all over the country and transported at considerable cost to the plants. The internal auditor therefore needs to examine whether there is a proper system for enlistment of transporters, tendering, negotiation of prices and also whether there is a periodical performance evaluation of transporters so as to ensure that the transport costs incurred for the movement of materials to the factory are kept at the minimum.

4.16 Before starting the audit of other raw materials, the internal auditor should discuss with the manager concerned, the value and quantity of

purchase of each item and the sources of supply. With this information he should prepare a list of items, in order of priority, for the purpose of his evaluation, keeping in view the target time for completion of his audit. The internal auditor should also make a general review of the items not listed. The following aspects should be checked for each item:

Price

(i) In case price offered is higher than previously accepted price, the internal auditor should

   a. Examine whether the revised quotations have been obtained;

   b. Check supplier's requests for price revision;

   c. Study the percentage of increase from the previous price and try to assess justification for allowing such increase; and

   d. Check whether the increased price has been offered to a fresh supplier and reasons therefore.

(ii) Check the alteration of orders for price revisions and reasons therefore. Examine whether the alterations of orders are signed by the competent authorities.

(iii) If different prices are offered to different suppliers for the same material during the same period, the reasons for discrimination.

Quantity of Material Purchased

(i) Check the purchase orders with the requisitions and check that the ordered quantities are in agreement with that in the requisitions.

(ii) Indicate cases of over-stocking and reasons therefore.

(iii) Check whether orders have been placed in accordance with the prescribed stock level limits. Analyze constraints/ lapses, if any, for not ordering before hand.

Sources of Supply

(i) Assess efforts to develop alternative sources of supply, particularly, in areas where dependence is practically on one supplier.

(ii) In case of imports, compare the price/ cost of imported materials *vis-à-vis* that of the indigenous counterparts, if available. In this perspective, the internal auditor should try to assess the economic feasibility of imports against local procurements.

(iii) Examine cases of new supplier enlistment. The internal auditor should check whether approval of the technical authorities has been obtained before such enlistment. In case enlistment is made before obtaining such approval, reasons therefor should be ascertained.

Reconciliation of Suppliers' Accounts

(i) Ensure that suppliers' accounts are being reconciled. The internal auditor should comment on cases where *ad hoc* payments are being made without reconciling the old balances.

Transport

(i) Assess propriety of choice of mode of transport, having regard to urgency of requirement, nature of materials, etc. In case of air consignments, the internal auditor needs to check if there have been clearing delays, defeating the purpose of airfreight.

(ii) Check the contracts with transport contractors, particularly, with reference to rates, charges, etc. Check whether the rates offered are uniform. In case of revision of rates, justification of such revision needs to be ascertained.

4.17 For audit of purchase of engineering items, the internal auditor should decide the quantum of purchase orders to be scrutinized depending upon the value and number of orders. Having decided on the quantum, the following aspects need to be covered by the internal audit:

Purchase Requisitions

The internal auditor should:

(i) Ensure that purchase requisitions are properly authorised.

(ii) Check the sequential order of the requisitions.

(iii) Check whether the requisitions are complete in all respects, *viz.*,

a. Whether a requisition is raised and promptly dispatched by the indenter.

b. Whether the requisition is raised in advance so as to give sufficient time to the purchase manager concerned.

c. Whether cost estimation is provided for and, if so, whether it is realistic or whether wide differences exist in comparison with actual cost as per the purchase order.

Purchase Orders

The internal auditor should:

(i) Check whether the orders are properly raised in accordance with the purchasing procedures, and in particular whether:

a. Quotations are invited wherever necessary from different suppliers.

b. The tenders and the quotations are in line with the requisition.

c. The last date of opening the tender is duly given and maintained when the quotations are received.

d. The lowest price quoted is accepted or else reasons noted for any deviation.

e. The order is issued without delay and in accordance with the requisition and the accepted quotation.

f. The order is complete in itself giving all the necessary details including the price fixed and the delivery target.

g. Alteration to Order (A.T.O.) is raised wherever any amendment to original order is required to be made.

h. The ATO has been signed by the purchase manager concerned, in compliance with his authority.

(ii) Whether copies of requisitions, tenders, and quotations received, orders placed, A.T.Os are raised and all the correspondence regarding a purchase is properly filed for reference.

(iii) Whether the price in the order is comparable with the past orders for the same material whenever quotations are not called for various reasons.

(iv) Examine sequence of orders and point out the missing numbers.

(v) Check whether there is proper control over outstanding orders and analyse reasons for pending deliveries.

Supply

The internal auditor would need to:

(i) Examine whether the delivery schedule as per the purchase order is complied with by the supplier concerned.

(ii) Examine, whenever there is delay, whether it is on account of acceptable reasons and whether frequent deferment of the delivery is noticed.

Payments

The internal auditor should verify:

(i) Whether payments are in accordance with the terms of the orders and whether any complaints are there from the suppliers regarding delays in payments.

(ii) Whether payments are in accordance with the procedure laid down.

(iii) Whether advance payments to suppliers are under control and made only where absolutely necessary and properly authorized. The internal auditor would also need to evaluate advance payments in terms of number of orders and value thereof.

(iv) Whether there is uniformity and consistency in respect of terms of payments. The internal auditor would also need to evaluate old outstanding liabilities as well as realization of claims against defective/ short supply.

(v) Whether long outstanding advances or debit balances are regularly reviewed, reconciled and variations resolved.

Factory Stores

The internal auditor should:

(i) Visit the factory and obtain a list of outstanding indents. These should be crosschecked with the Purchasing Department.

(ii) Obtain a list of outstanding deliveries and cross-match with the Purchasing Department's records.

In addition to the above mentioned aspects, the internal auditor should also:

(i) Check whether there is any backlog in issue of sales tax declaration forms.

(ii) Check whether import substitution is effectively carried out, wherever possible.

(iii) Check a few orders relating to import substitution with reference to a local supplier.

(iv) Examine any high cost of purchasing wherever found and suggest cost saving measures, if possible.

Imports

4.18 A major criteria for the internal auditor's review would be the availability of licenses, where required, and timeliness of import decision *vis-à-vis* fund availability. The timeliness of import decisions is of paramount importance because of the lead time required for obtaining supplies. Whereas a decision taken a bit too early may lead to unfruitful lock-in of capital, a delayed decision might result in a stock-out situation or air-freighting consignments at substantial cost. This is particularly true for capital projects where different components of machineries may have to be imported and installed in the factory. Proper timelines would ensure that the right components are available in accordance with the planned time schedule to optimise cost through smooth installation. The formalities of clearing, the documentation involved, the bonding and de-bonding of materials etc., provide scope for further internal audit.

4.19 In respect of imports, the internal auditor should:-

(i) Check whether import orders are properly authorised and in-house authority limits are being followed.

(ii) Check whether requisitions are received in time within the validity period of the import license.

(iii) Examine the prices fixed in import orders.

(iv) Check ordering date in relation to the import license validity.

(v) Examine the license utilization.

(vi) Analyse refund claims of penalty and duty.

(vii) Check whether any claim has been rejected.

(viii) Check whether there is a proper system for checking of demurrage, wharfage, clearing expenses on imports.

(ix) Check whether purchases made through agents are properly approved with reasons/ benefit for such purchases.

Clearance

The internal auditor should:

(i) Analyze the demurrages paid. Check the monthly demurrage statement prepared by the Clearance Department:

  (a) As to the exactness of the amount of demurrage with reference to the monthly statement of Port Trust Deposit account;

  (b) As to the reasons for delay in clearance, with reference to the shipping files maintained in respect of date-wise arrival.

(ii) Ascertain capital tie-up in Customs Deposit Account/ Port Trust Deposit Account and also ascertain avoidable/ unavoidable factors.

(iii) Check whether accounting of customs duty, port fee and octroi payment has been made to correct material account.

(iv) Check the number of overdue consignments during the period under audit (e.g., consignments cleared after 15 days from the date when all documents and licenses are handed over to the Clearance Department for a particular consignment).

(v) Reasons for delay after the specified period.

  (a) Comment on the efficiency of the Clearance Department.

(vi) Check advances made to different clearing agents and the reasons for which the advances were made; comment whether advances were reasonable or in excess of needs; find out average balance of advances lying with each clearing agent during the period under audit; and check whether reconciliations are made and balances are confirmed from time to time.

Claims for Damaged/ Short Receipts

4.20 In respect of claims for damaged/ short receipts, the internal auditor would need to:-

(i) Check the goods cleared with the receipted challans from factory and also check whether claims have been raised against short/ damaged receipts and make list of missing claims and highlight reasons.

(ii) Check the claims with special attention to the following:

a. In case of short landing, whether a short landing certificate has been obtained from the Port authorities and customs duty refund claim has been submitted.

b. In the case of short receipt due to leakage, evaporation etc.,

i. Whether marine surveys were held, and customs duty refund claim was submitted.

ii. When marine survey could not be held within the stipulated period, whether insurance survey was held at docks.

iii. If the loss of goods as per the factory is more than that as per the marine/ insurance survey and the discrepancy is substantial, whether an insurance survey at factory premises was held.

c. Where goods were short-landed or where a marine survey was held, whether claims have been preferred with the carriers within the stipulated period. If not, whether application to the carrier for extension of the stipulated period has been made.

d. In other cases of short receipt where the carrier has repudiated the claim either in full or in part, whether related documents have been promptly forwarded for insurance claim. The internal auditor would also need to analyze the reasons for repudiation by the carrier.

e. For the claims not preferred within the stipulated period or which are still being processed, check whether application to the carrier has been made for extension of time limit.

Claims for Air Consignments

4.21 In this area, the internal auditor would need to check whether items imported by air were received in full. If not, check whether damage/ short-landed certificate has been procured from the airport authorities and check whether claims for such short-landed/ damaged items have been made with the carriers and papers sent for preferring claims with the insurers.

Transport Contractor

In case of transport contractors, the internal auditor would need to check the rates of the transport contractor(s) employed by the Clearance Department with the competitive quotations.

Plant Requirement *vis-à-vis* Inventory

4.22 An important criterion for evaluating the efficacy of the purchase function is its co-ordination with production. This would cover such aspects as stock requisitions, operating with minimum stock, technical approval for development materials, technical approval for new suppliers and handling emergency stock-out positions. The internal auditor would need to review all these aspects to form an opinion on the efficacy of the coordination between the plant and the purchase department.

5

Internal Audit of Production Function

5.01 Aluminium industry is basically a process industry where raw material, i.e., Bauxite, Caustic Soda, are used in the production process so as to arrive at Alumina. Further, alumina-refining process also needs to be undertaken so that desired quality of Alumina can be arrived at for the use in manufacture of Aluminium. Under Aluminium smelting, Alumina is converted into Aluminium metal by the use of electrolysis principle. Mostly, all aluminium producers have integrated process whereby they can also manufacture down the line/ value-added products from Aluminium metal.

5.02 Material handling is a very important support function to the production process and can be critically appraised by the internal auditor. The production process in the Aluminium industry can be classified under the following broad categories:

a. Alumina production process

b. Aluminium production process

Alumina Production Process

Consumption Norms of Major Inputs

5.03 Consumption of major inputs like Bauxite, Caustic Soda and Energy etc., depend on factors like quality of Bauxite and the technology employed. The internal auditor should acquaint himself with these factors before reviewing the production function. Historical averages serve as important guides in this regard.

Bauxite Consumption

5.04 The following are some of variables of the quality of Bauxite which, in addition to the digestion temperature, determine the per ton consumption of Bauxite in the Alumina production process:- Total Available Alumina % (TAA%) – Higher TAA% will reduce Bauxite consumption.

- Moisture content - Higher moisture content will increase Bauxite consumption.
- Alumina Extraction Efficiency and or Alumina Recovery percentage - Higher extraction efficiency will reduce Bauxite consumption.

5.05 Bauxite quality is the most important factor in dictating the cost of Alumina production. Bauxite costs account for 30-35 percent of the operating costs. It also plays a key role in determining caustic and energy costs and thus Bauxite influences nearly 70 percent of the cash costs.

Caustic Soda [Sodium Hydroxide, NaOH]

5.06 Caustic Soda consumption is measured in Kg/ Ton of Alumina production. Specific per ton consumption of Caustic Soda varies due to following reasons:

- Silica (SiO_2) content in Bauxite: More the SiO_2 contents, higher will be caustic soda consumption.

- Digestion temperature: Higher temperature results in greater reactive silica dissolution causing more caustic losses

5.07 Since Caustic Soda consumption forms a major component of cost of Alumina, the internal auditor should ensure that adequate controls exist for controlling Alumina to Caustic Soda ratio (A/C ratio) and caustic concentration at the digestion stage to get high liquor yield and recovery efficiency across the digestion circuit.

Lime Consumption

5.08 Lime is used to recover higher quantities of Caustic Soda from the process thereby reducing the latter's consumption. For this purpose, some refineries treat mud with lime to recover caustic soda depending upon overall economy and effectiveness of the operation. Lime is also used for other purposes like:

- Making filter aid by treating with sodium carbonate/ making Tri Calcium Aluminate (TCA)
- Adding lime slurry to Bauxite slurry to meet process requirements
- Liquor causticisation to improve liquor causticity.

Energy Consumption

5.09 Electrical power, steam and fuel oil are the three types of sources of energy in the Alumina production process. Specific energy consumption depends largely upon:

- Digestion technology and temperature (w.r.t. mode of heating facility i.e., whether direct or indirect heating system is being used, single stream or double stream impacting on digestion productivity)
- Production recovery level (Impact of reversion losses in the process)
- Precipitation technology and liquor productivity

- Calcination technology (whether stationary or rotary kilns are being used, process efficiency and capacity utilisation)
- Efficiency of major equipment
- Heat recovery system across the circuit and re-utilisation.

Liquor Productivity or Yield

5.10 The liquor productivity is the key factor of Bayer plants' efficiencies and significantly impacts specific energy consumption and production cost. The area of major concern for the Alumina plants is to maximize the precipitation yield and to improve product quality. Liquor productivity (yield) is Alumina recovered from each cycle of Alumina-enriched liquor (liquor to precipitation) and is generally expressed as grams per litre (GPL).

Measurement of Production

5.11 Alumina production measurement has both calculation basis and weighing basis. Generally, Alumina dissolved rate is calculated to know the dissolved production in the digestion area. The parameters used are liquor flow, increase in Alumina to Caustic ratio across the digestion circuit, liquor caustic concentration and de-silication factor. Alumina production is also calculated as Alumina hydrate production and the required elements are the flow of Aluminate liquor, its caustic concentration and difference of Alumina to Caustic ratio between aluminate liquor and process-spent liquor. For calcined Alumina, production measurement is done by weight-o-meter directly and that confirms the calculated production of Alumina hydrate (as Alumina).

Valuation of Work in Progress

Caustic Soda

5.12 Caustic Soda's inventory in process is measured on the basis of caustic concentration of various streams and vessels and volume occupied

by process liquor and Caustic Soda. The Caustic losses under different heads (de-silication losses, losses with red mud, sand, calcined Alumina and physical losses) are calculated. Fresh Caustic Soda is added to the system to compensate for these losses.

Relations between Hydrate Alumina Production and Calcined Alumina Production

5.13 Alumina Hydrate inventory-in-processes is measured on the basis of Alumina concentration and volume of various process streams and vessels/ tanks. The stored hydrate (for use in process) is also taken into account. Under normal operating conditions, hydrate Alumina production (as Alumina) should equal calcined Alumina production plus other uses or sale of hydrate. A gap between the two will influence the inventory changes in the process in case of no other uses of hydrate.

Inventory Valuation

Bauxite

5.14 Bauxite inventory can be estimated by calculating the Bauxite stock on stockpile through geometrical shapes and by making adjustment for the amount lying in various day bins and slurry holding tanks (in the form of slurry). Bauxite receipt and consumption figures are generally confirmed by weighing system (weigh bridge facility in case of consignment and weigh feeders facility in case of consumption). Bauxite consumption can also be calculated on the basis of production, digestion efficiency and quality of Bauxite.

Lime

5.15 Generally, lime slaking is done in Alumina refineries to make lime slurry of desired grams per liter (gpl) solids for its use in different processes. To keep the stock at comfortable level, facility of Lime Silo is provided. Lime slackers' feed amounts are measured by means of weigh feeders' rate totalisers. Lime consumption can also be calculated on the

basis of lime slurry flow (at consumption points), its solids gpl and available lime content.

Aluminium Production Process

Metal Production

5.16 Production in pot line depends upon line current, number of cells in operation and current efficiency. The internal auditor should bear in mind that current efficiency is one of the critical parameters to be monitored in the Pot room. It depends largely on process control, technology and power fluctuations and can vary from 88 percent to 95 percent.

Specific Consumption Norms

Power Consumption

5.17 Aluminium production is a power intensive process. It requires lot of electrical energy to convert refined Alumina into Aluminium through the electrolysis process. Power cost accounts for 30 to 40 percent of the operating cost. AC power received from power generation source is converted into DC through rectifiers to feed the pot rooms. Power consumption depends largely upon Volts per pot and current efficiency. Volts per pot vary on account of technology, cell and busbar design, bath composition, and power fluctuations. Power consumption is measured in DC Kilo Watt hours per Metric Ton (KWh/MT) of Aluminium. Rectification losses and transmission losses are added to the DC power consumption to calculate AC power consumption at source.

5.18 Since a continuous and uninterrupted power supply is critical for the industry, almost all the Aluminium manufacturers in India have established their own captive power generation units. While reviewing the power plant operations, the internal auditor must undertake a thorough review of coal procurement process, transportation, quality control and consumption of coal for power generation.

Alumina

5.19 Alumina is the basic raw material for Aluminium production. Alumina costs account nearly 30-35 per cent of the operating cost. Consumption per ton of the Alumina depends upon its purity and dusting losses during handling. Normally, consumption varies from 1.92 MT per one MT of Aluminium to 2.00 MT per one MT of Aluminium.

Anode

5.20 Anode is measured in term of Gross and Net carbon consumption per ton of metal. Gross carbon consumption is the total number of anodes supplied to the pot room multiplied by the average weight of anode. This depends mainly upon the anode changing schedule, anode weight and unscheduled replacement in pots. Increase in the gross carbon consumption increases metal production cost, as price of gross carbon supplied to pot room is higher than spent anodes returned to the paste plant. Net carbon consumption is calculated by subtracting the weight of spent anodes returned to the paste plant from gross carbon consumption in the pot rooms. Normally, carbon consumption varies from 400 Kg/Ton to 450 Kg/Ton. Net carbon consumption depends largely upon following factors:

- Type of technology: Pre-baked technology or Soderberg
- Anode Quality: Oxygen and Carbon di-oxide reactivity, anode permeability, baking temperature, etc.
- Pot room operation: Carbon consumption depends upon Pot room current efficiency, exposure of anodes to air. Net carbon consumption reduces with increase in current efficiency.

Aluminium Fluoride

5.21 Aluminium Fluoride (AlF_3) is added in the pots to maintain the bath the ratio. Bath Ratio is the weight ratio of Sodium Fluoride and AlF_3 in electrolyte. Its consumption depends mainly upon following factors:

- System for Fluoride recovery from exhausts gases: Dry scrubbers or Wet scrubbers and their scrubbing efficiency
- Hooding efficiency: Good hooding reduces Fluorine losses to environment.
- Percentage of Sodium di-Oxide (Na_2O) in Alumina: In pot rooms with good fume treatment plant AlF_3 is added mainly to neutralize Na_2O introduced through Alumina. Higher the percentage of Na_2O in Alumina more will be AlF_3 consumption.
- External addition of Na_2O during power interruption or normalising abnormal pots.
- Purity of AlF_3 - Higher the purity lesser the AlF_3 consumption.

Relining Materials

5.22 Relining is condition-based maintenance of closed/ shunted pots. Normally, three types of maintenance are performed on pots:

- Full lining.
- Side lining.
- Dressing.

5.23 Cathode Carbon blocks, collector bars, refractory bricks, insulations and ramming paste are main relining materials and their consumption depends upon number of pots re-lined. For similar type of pots, per pot consumption of cathode blocks, refractory materials and insulation remains almost same. Power disruptions result in disturbed pot operations and early pot failures, thereby increase cost of pot relining and decrease productivity considerably.

5.24 While conducting internal audit of smelter operations, in addition to keeping in mind the above specified norms about process, the internal auditor must pay due attention to compliance with production planning,

quality assurance, optimum capacity utilisation, Alumina inventory holding norms and process efficiency.

5.25 The internal auditor's procedures in respect of the production function would include:

Recording of Receipts at Material Handling Shop/ Stores and Physical Control

(i) Checking the entries into the bin cards with Goods Inward Dockets (GIDs).

(ii) Checking whether physical inspections are undertaken on a regular basis. Verifying from the physical inspection programme whether all items are covered at least once during the year.

(iii) In case of discrepancies, checking that the records are properly adjusted and investigating into the major discrepancies, if any.

Rejections

(i) In case of rejections as per the inspection report, verifying that the GIDs are accordingly qualified.

(ii) Ensuring that debit notes have been raised for every rejection.

(iii) In case of materials returned for replacement, verifying that the same have been received subsequently and checking into the cases where they have not been replaced.

Issue of Materials to Manufacturing Process/ Production Shop

5.26 In this respect, the internal auditor's procedures would include:

(i) Checking that the requisitions from the production shops are duly authorised.

(ii) Ensuring that deliveries from material handling shop/ stores are the exact quantities as per the requisitions.

(iii) Checking whether shop is over-indenting leading to store build-up at shop-floor level.

(iv) Checking whether spares requisitioned by engineering department are duly supported by authorised signatures and capital items are not being requisitioned for maintenance.

Material Usage

5.27 While conducting internal audit of material usage, the internal auditor would need to carry out the following reconciliations in selective important production shops:

(i) Test checking the 'Issues' as per the stores bin cards with the requisition slips of the shops as well as with the actual quantity received with production logbook.

(ii) Calculating the standard quantity of materials required for the purpose of actual production and comparing this with the actual quantity of materials used and determining the material difference.

(iii) Analyzing the material difference as per (ii) above into the following heads:

Material difference = Wastage (as a standard percentage of actual usage) + Material booked to salvage + Material in stock + Unexplained loss.

In case of any of the above heads being unexceptionally high, enquire into the same for justification.

Labour Cost *vis-à-vis* Wages

5.28 The internal auditor's procedures with regard to labour cost *vis-à-vis* wages would include:

(i) Comparing the time booked in the booking sheets with clock cards on a sample basis.

(ii) For a Piece rated wage job:

a. In case of an in-process job, checking that the output booked in the booking sheet is in line with the standard output possible in the stated time. In case of a major variance, enquiring into its justification and authenticity.

b. In case of a finished job, checking the output booked in the booking sheet with the actual output generated for the period as per the production sheet.

c. In case of variances, enquiring into the same.

(iii) In case of a person doing more than one piece - rated job during the period, checking that:

Total Time Booked – Overtime Hours = Normal Hours Available in the Period

(iv) Test checking the following with the master lists:

a. Grade booked

b. Operator code

c. Job code.

(v) Average Earning Job

a. Verifying on a sample basis that the job categorised as "average earning" job does not have any piece rate as per the master file.

b. Comparing the standard time required for output booked as per the master file with the actual time booked. In case of a major variance, enquiring into its justification and authenticity.

c. Test checking the calculation of wages as per the laid down formula for arithmetical accuracy.

6

Internal Audit of Marketing Function

6.01 An important feature of the marketing aspects in the Aluminium industry in the country is that sales are made through dealers authorised by the company. These authorised dealers, normally, also undertake activities for growth of the customer base of the company. The company pays them a commission based on the amount of sales affected by the dealers. In addition to the commission, the dealers are, normally, also given incentives in the form of additional trade discounts for achieving the sales targets set by the company for the particular dealer. Companies in this Industry also, generally, have the provision for disincentive to such dealers in case where they fail to achieve the sales targets set by the company.

6.02 The usual functions of the marketing department in the aluminium Industry can be summarized as follows:

(i) Assessment of demand potential.

(ii) Evaluation of product range and development of new product ranges, if considered necessary.

(iii) Planning marketing strategy *vis-à-vis* competition.

(iv) Assessing profitability per product range.

(v) Co-ordination with production.

(vi) Placement of adequate supplies in the right place at the right time.

(vii) Negotiating prices with 'original equipment' manufacturers and with Government/ Institutional customers.

(viii) Fixation of product prices.

(ix) Selling of Aluminium and down the line products to customers through dealers.

(x) Providing after sales services as well as replacements for manufacturing defects.

(xi) Providing operating support to selling function such as transportation of finished goods, storing of products at selling points, raising of invoices on customers and arranging delivery, collection of sale proceeds and banking of collections.

(xii) Advertising and sales promotion support.

(xiii) Fixation of sales policy such as discounts, credit limits, targets, etc.

(xiv) Administration and management of the entire selling function.

(xv) Organising a convenient marketing set-up so that each sales officer or marketing representative is assigned a specific number of dealers in certain district for close liaison with dealers and customers.

Sales

6.03 For conducting the internal audit of marketing function, the first step is to assess the local market situation. The following guidelines may be followed by the internal auditor in this regard:

(i) Assess demand potential for the company's product in the local market. For this, extensive discussion with the sales manager and study of trade magazines pertaining to Aluminium industry are the basic pre-requisites.

(ii) Find out profit/ loss for various sizes and categories of Aluminium and down the line products.

(iii) Study market share of the company and demand preference in the market.

(iv) Familiarise with competitor's marketing policies *vis-à-vis* that of the company's.

(v) Study dealer statistics (including terms and conditions of dealers' appointment) to familiarize with the company's network and dealer characteristics. The agreements entered into with the dealers should be scrutinized to protect the interests of the company.

(vi) Assess achievements against targets with emphasis on turnover of non-profitable brands. Evaluate whether sufficient efforts have been made to push non-profitable brands and collections have been prompt therefrom.

(vii) Examine whether there is a tendency to achieve turnover without requisite effort for collection.

(viii) Check whether sales tax declaration forms collected promptly.

(ix) Check whether any favour has been given by way of allocation of more popular brands to a few selected dealers.

(x) Check whether the advertisement campaign is adequate and commensurate with the need.

(xi) Study the pricing policy of Aluminium and Alumina. Check whether LME prices are used as benchmarks for trading.

(xii) Examine whether the company endeavors to take maximum advantage of the product mix.

After Sales Service

6.04 In respect of the after-sales service, the internal auditor should:

(i) Assess replacement trends, nature of failures and replacement policies.

(ii) Examine the percentage of replacements of manufacturing defects *vis-à-vis* off-take.

(iii) Review whether there is any particular reason for the percentage to vary from location to location.

(iv) Examine which type of Aluminium and its down the line product has a higher failure record and why.

(v) Check whether any particular dealer's failure percentage *vis-à-vis* his turnover higher than the norm. If so, why.

(vi) Check whether there adequate technical audit on awards of replacement.

(vii) Evaluate the effectiveness of after-sales service with regard to its scope and consumer satisfaction. Is this service prompt and timely?

Market Related Operations

6.05 The internal auditor's procedures with respect to market related operations include:

(i) Checking whether the stock of Bauxite, Alumina, and Aluminium and it's down the line products is being properly maintained.

(ii) Evaluating the effectiveness of the perpetual inventory system and the authenticity of the stock records.

(iii) Examine the frequency of stock availability information provided to the sales personnel for high priority and low priority stock items. Also examining how accurate is the stock information and whether any improvement is possible.

(iv) Checking whether the collection of outstanding prompt and lodgments of cheques with banks immediate and where necessary, suggesting improvements the company's banking operation system in order to facilitate faster credit of cheques lodged with them.

(v) Evaluating the efficiency of the delivery system to the dealers and the reasons for delay between sale and actual delivery.

(vi) Evaluating the effectiveness of the transportation system. Whether the dealers arrange for transportation.

(vii) Checking whether adequate amount of security deposit is taken from the transporter in case roadways are used as transportation means.

(viii) Checking whether proper system of price fixation for transportation is used and proper provisions are made for escalation in rate and increase of diesel prices.

(ix) Checking whether all transport contracts clearly specify the responsibility for loading and unloading of goods.

(x) Evaluating the effectiveness of the follow-up for collections. Checking whether further invoicing is made even when old outstanding remain uncollected.

(xi) Checking adherence to company policy regarding rebates and discounts adequate. Whether the credit policy of the company need based.

(xii) Checking the promptness and accuracy of the billing system with particular reference to the rate contract suppliers.

(xiii) Checking the accuracy and frequency of the availability of the printouts of accounts receivable statements. Whether the concerned department gives better service to marketing personnel in this regard.

(xiv) Checking the effectiveness of the feedback from operating to marketing department about the information about slow-moving, non-moving, and obsolete items.

(xv) Evaluating the effectiveness of the system of resolving customer complaints and consideration of their feedback.

(xvi) Evaluating the effectiveness of the customer relationship management in the context of handling of complaints from customers.

Supplies

6.06 The function of the Supplies Department, generally based at head office, is to ensure that right quantities of the right product-mix is placed at the right selling point at the right time at the minimum cost. This is an extremely tricky operation since demand fluctuations are frequent and often belie logic. Planning supplies and distribution is hence an extremely difficult and demanding job. Considerable efforts are made to balance production and demand so that the deviations from the annual plan are minimal otherwise; the entire company's profitability and performance may go haywire *vis-à-vis* the plan. The scope for internal audit is hence considerable under this function.

6.07 The areas of examination for the internal auditor would include:

(i) How efficient is the information network with the selling points regarding monthly requirements.

(ii) How do such requirements compare with the plan?

(iii) How quick is the marketing department to respond to changing needs.

(iv) How effective is the re-allocation system to satisfy local needs without deviating from the overall company plan.

(v) Are production orders placed timely and in conformity with outstanding requirements position? Since flexibility in products is limited, are marking office' requests by-passed.

(vi) Is the distribution system efficient *vis-à-vis* operating costs and capital tie-up? Is there overstocking in the sales locations or factories.

(vii) Is there excessive cost of freight in transportation of finished products from one sales point to another in search of an outlet?

(viii) Did the company make the best bargain in fixation of transport rate? Is the mix between rail and road transport economical.

(ix) Is underloading loss high?

(x) How effective is the system of claims on carriers.

(xi) Is distance in Kilometer proper based on some authenticated data?

(xii) Is there any provision for penalty/ termination of business with Transporter who are regular defaulter in not delivering the material in time?

Advertising

6.08 Aluminium industry spends heavy amounts on advertising. Due to cut-throat competition between public sector and private sector companies, the advertisement campaigns are regular. Since each company tries to maintain or increase its share of market, the new innovation and technological advantages are spread over the large customer base mainly through the mode of advertisement. Although, it is impossible to objectively evaluate the effectiveness of an advertising campaign, yet some scope exists for conducting internal audit. The first focus of the internal auditor would be to evaluate, in subjective terms, whether the advertisement campaign is in line with the company's overall objective and whether it is directed at the right kind of audience. A number of agencies are working in the country today who measure the success or failure of a campaign. A perusal of their reports may give a lead. In quantitative terms, the placement of right quantum and type of literature at various points, the extent of the coverage, the rates charged by the advertising agencies etc., come in for review.

6.09 The other procedures of the internal auditor in this regard would include:

(i) Check product-wise-media-wise budget *vs.* actual expenditure and reasons for variances.

(ii) Conduct in-depth vouching of:

a. Media expenditure (Press/ Print/ Radio/ TV/ Film/ Misc.).

b. Miscellaneous expenditure (Surveys, Reports, etc.).

c. Sales promotion expenditure (Special campaigns).

(iii) Conduct vouching of agency charges for:

a. Agency personnel traveling expenses.

b. Agency supervision charges on print jobs.

c. Agency charges for blocks, designs, and other services.

(iv) Examine contract/ casual rates offered and in force with various newspapers and periodicals. Check utilization of contracted space during contract period.

(v) Examine contract rates for radio and TV and vouch for receipts of advertisers' discount due to the company.

(vi) Vouch hoarding rentals, if any, paid/ payable.

(vii) Check utilization of free paintings for hoardings, if any.

(viii) Evaluate reasons for escalation of hoarding rentals, if any.

(ix) (ix)Vouch casual expenditure on advertisements made on casual basis including authorisations for the same.

(x) Evaluate the asset control/ stock control for advertising materials and equipment.

Rebates and Discounts

6.10 Rebates and discounts are an inherent sales tool for achieving turnover. From the internal auditor's point of view, the following areas need to be considered:

(i) Whether there is a budget for rebates and discounts approved by the top management.

(ii) Whether there is a codified scheme for rebates and discounts or whether the scheme allows undue discretion to field level decision making.

(iii) Whether the rebate and discounts scheme is uniform in its application.

(iv) How the rebates and discounts affect contribution per ton of finished goods sold.

(v) Whether there is a proper control system for implementation of rebates and discounts. Is it being given by way of credit notes authorised by the appropriate authority.

(vi) Whether the provision is made in accounts for rebates and discounts correctly drawn up.

Price Amendments

6.11 Fixing of product price and decision on price amendments are matters of concern for the finance manager. The internal auditor should examine the following in this regard:

(i) Whether pricing of Alumina, Aluminium, and other down the line products are based on a scientific evaluation of cost and a reasonable gross contribution so that even after charging of overheads, margins per product are positive.

(ii) As and when price amendments take place, whether these have been authorised by the appropriate authority with concurrence of the finance manager?

(iii) Whether price amendments are implemented on the due date? How does the finance manager ensure that billing does not continue at the pre-price increase rates by antedating the invoices?

(iv) As and when the Government approves rate contract prices, whether supplementary bills are promptly raised and collected?

Compliance with Laws

6.12 Compliance audit in marketing area mainly deals with excise; value added tax, central sales tax laws and laws relating to Octroi duties, wherever leviable.

Other Aspects

6.13 Following are some other aspects which need to be looked into by the internal auditor and his procedures therefore.

Cash

(i) Physically verify petty cash with the cashier, with the postal clerk, with the delivery clerk and any other imprest. Does the petty cash contain IOU's pending for a long period?

(ii) Is petty cash held more than required?

(iii) Physically check cash/ cheques lying with the delivery clerk against receipts from customers.

(iv) Check whether customers' cash is receipted properly and deposited in the bank with minimum delay.

(v) Whether the accounts manager/ officer is exercising his powers within the limits of powers delegated to him.

Expenses

(i) Are the expenses relating to sales within control?

(ii) Check traveling expenses of sales personnel to ensure that the same are in line with the levels lay down by the company.

(iii) Check expenses on cars provided for touring purposes.

(iv) Check mileage statements and trip sheets for company's delivery vans.

(v) Check expenses relating to exports. Are they in line with the quantity and amount of goods exported?

(vi) Check whether any expenses incurred at railway sidings are appropriate.

(vii) Check payment made to Port Trust towards loading and unloading of wagons.

Accounts

(i) Examine whether the commission paid to the sales dealers are in accordance with the policy of the company in that regard as also whether the calculations are accurate.

(ii) Examine whether, while calculating the above commission, appropriate adjustments have been made for incentives and/ or disincentives to the dealers and whether the same are in accordance with the policy of the company therefore.

(iii) Examine whether sales and returns are correctly accounted for in debtor's ledger.

(iv) Check calculations of commission paid to various sales agents

(v) Check calculations for rebates and discounts for accuracy and conformance with the company's policy.

(vi) Examine whether collections are as per the sales norms laid down by the company for local and outstation sales. Analyse and evaluate reasons for overdue debts.

(vii) Check whether credit is being allowed beyond levels approved under the company's marketing policy.

(viii) Check that supplementary bills are raised for rate contract transactions wherever a rate revision has been approved.

(ix) In case of short payments from commercial houses, state transport corporations, etc., analyze reasons therefor. Evaluate inefficiencies, if any, leading to liquidated damages.

(x) Check whether unaccounted credits are lying against any party's account.

(xi) Whether the accounts receivable information is sent to head office on a timely basis.

(xii) Analyze all bad and doubtful debts and reasons therefor.

(xiii) Whether adjustments in debtors' accounts by Credit Notes or otherwise have been appropriately authorized.

(xiv) Whether interest has been charged on late payments.

Banking

(i) Check whether lodgments of cheques into bank are prompt.

(ii) Check dishonor of cheques and identify customers/dealers whose cheques are dishonored frequently.

(iii) Check the bank reconciliation statement(s) and analyse causes of delayed credits.

(iv) Ascertain whether the remittance of funds is prompt.

(v) Ascertain whether telegraphic transfers (TTs) are promptly credited in the Head Office Bank Account.

Sales Tax/ Value Added Tax

(i) Whether the statutory registers have been properly maintained as required by the relevant statute.

(ii) Whether the collection of declaration forms is prompt?

(iii) Whether sales/ VAT tax returns submitted and payments have been made during the stipulated time period?

(iv) Analyze reasons for add-backs to turnover by the Sales Tax Assessing Officer.

(v) Analyze reasons for penalty charged by Sales Tax Assessing Officer.

(vi) Obtain the status of sales tax cases pending before the Assessing Officer and the list of completed cases.

Octroi

(i) Whether octroi certificates are being received for goods entering the octroi zone.

(ii) Whether refunds being claimed for exports are as per the rules.

(iii) The octroi refunds outstanding and how effective are the follow-ups.

Warehouse

(i) Verify physical stock in comparison with the bin cards.

(ii) Ascertain whether the physical inspection is regular.

(iii) Whether stock keeping neat and scientific.

(iv) Whether there are any damaged, slow-moving and obsolete items in stock.

(v) Whether claims have been raised on carriers for short/ damaged deliveries and whether the recovery is prompt.

(vi) Whether dispatch of goods is timely.

(vii) Whether documents have been properly recorded for each dispatch.

(viii) Whether outstation bookings are prompt and regular. Whether the security of lorry waybills is satisfactory.

(ix) Ascertain, by making random check of stock at transporters' godowns, whether goods are removed by the dealers from there.

(x) Whether the goods received under complaint from customers are properly documented and recorded.

(xi) Whether the items under complaint, regularly inspected and awards given.

(xii) Whether the replacement figure is within the norms of the company.

(xiii) Whether the replaced Aluminium is scrapped in the presence of a responsible official.

(xiv) Ascertain the company's policy on defective goods? Are they immediately inspected by service engineers and, if downgraded, is the downgrading done by an authorised person.

Office Services

(i) Whether signed copies of invoices are sequentially filed and whether the evidence of receipt by the customers well established.

(ii) Who fixes the rates for carting contractors/ outstation transporters? Whether the rates are comparable with market rates and whether the bill payment system is satisfactory.

(iii) Physically verify all assets and tally with the Assets Register.

(iv) Check leave, attendance and service record cards of all employees.

Supplies Function (Generally a Head Office Function)

(i) Check marketing office requirements and status of supplies.

(ii) Compare production plan and outstanding requirement position from the marketing offices.

(iii) Check amendments to production orders and reasons therefore.

(iv) Allocation/Distribution:

a. Check the basis of allocation/distribution of Alumina, Aluminium and other downstream products to various regions in the period of audit.

b. How do the actual dispatches compare with planned allocation?

c. If there are common sizes in production in more than one factory, evaluate whether economies of local distribution have been achieved.

Transit Time

(i) Review the laid down transit time.

(ii) Review actual transit time.

(iii) How adequate is the follow-up of delayed transit.

(iv) Is there any scope for despatch by rail at greater economy to the company?

(v) Review detention charges - examine detention slips for their authenticity and accuracy of billing.

Fixation of Rates

(i) Compare the rates fixed with the data available in the company about prevailing market rates for road transport from destination to destination.

(ii) Check contracts with transporters and find out whether appropriate authority has signed the contracts.

Appraisal of performance of transport contractors

(i) Check transit time of each transporter and compare it with the norms established as per the contracts.

(ii) Is the placement of trucks by transport contractors satisfactory? Are ordinary and extra-long chassis trucks placed as per the company's requirements?

(iii) Conduct a review of transit damages and claims on carriers. Is the transit damage of any contractor higher than the usual trend?

Basis of Allotment of Business to Transporters

(i) Evaluate percentage of business done by each transporter.

(ii) Is the allocation of sectors fair and unbiased?

(iii) Does the company maintain an up-to-date list of fleet strength of all transporters with special emphasis on extra-long chassis trucks?

(iv) Inspect the bank guarantees provided by the transporters for validity and value.

Railway/ Road

(i) Evaluate transit time in both.

(ii) Compare requirements of stocks at depots/ sales cover of stocks *vis-à-vis* transit time.

(iii) Evaluate savings in rail-dispatch in terms of comparative total costs and unit costs. Analyze road and rail dispatches.

(iv) Is the collection of freight recoverable for dispatches to original equipment manufacturers prompt and regular?

(v) Review the facilities/ concessions for placement of wagons at factories.

(vi) Is under loading loss high and can it be reduced.

Bill Passing

(i) Ascertain the system of freight bill passing.

(ii) Is the evidence of receipt of goods attached to carrier's bills?

(iii) In case of loss of material/ Truck whether amount is recovered from the transporter/ Insurance.

(iv) Are deviations in contract terms duly approved by an authorised person?

7

Internal Audit of Finance Function

7.01 Internal audit originated from financial audit. Although its concept has primarily changed to management and operational audit, the importance of financial audit can never be minimised. All professionals working as internal auditors are therefore conversant with financial auditing. The nature of the finance function is by and large uniform for all industries whether it is Aluminium or any other. Most accounting aspects of marketing, purchasing and production having already been covered in preceding chapters, guidance on financial audit is therefore, kept to a minimum. A few special aspects of Aluminium industry, however, need to be kept in mind for their financial implications which has been dealt with hereinafter.

7.02 Aluminium is a cyclical business – hence it calls for the players to have deep pockets of liquidity in order to deal with weak market conditions. It is also necessary to have surplus funds to finance capacity additions/ expansions/ acquisitions as and when the market opportunities arise. As the prices of the metal depend on the movements of international prices on the London Metal Exchange (LME) – and with buyers moving into both short-term/ long-term contracts – the producers need to insulate their earnings from the volatilities of price movements. This calls for the

use of hedging instruments like derivatives (futures, options, etc.). The internal auditor must therefore consider management's adherence to company's treasury policies, procedures and adequacy of controls and MIS related to investment management, interest rate risk management, foreign exchange risk management, commodity hedging, and fund management.

Working Capital

7.03 In today's tight money situation, working capital management in Aluminium industry assumes considerable importance. It is within the internal auditor's ambit to see how effective has been the working capital management. The following are the illustrative focus areas for the internal auditor:

(i) Does the financial management receive daily information on turnover, collection remittances, production, closing stocks, raw material inventories, etc.? Is the information timely and accurate?

(ii) Are collection norms being adhered to or are there undue delays in collection?

(iii) Are funds being deployed to priority items to achieve speedier working capital rotation?

(iv) Are best payment terms being obtained for critical supplies?

(v) Is the finance manager using adequate cost control measures? Does he have the authority to do so over other functional heads?

Insurance

7.04 Aluminium is a capital-intensive industry. Hence, adequate insurance of assets and products is a significant aspect of financial management. Further, the Industry attracts product liability arising out of quality variations/ manufacturing defects. Product liability is the legal liability of an insured to pay compensation against death or bodily injury to any person or damage to his property arising out of use of the product.

As a result, an extensive insurance cover has to be taken by the manufacturing companies for product liability. Without this insurance, exports are not possible to most countries in the world especially to U.S.A. and Canada. Foreign insurers lay extremely stringent and demanding terms for the insurance cover and the premium is quite high. The guideline for the internal auditor would be to examine that an effective cover has been taken at the best possible price and the company's financial security is not being compromised in any possible way.

7.05 The internal auditor's procedures with respect to the various aspects of insurance would include:-

Steamer Claims

(i) Checking whether steamer survey has been conducted within 3 days of discharge of materials at port.

(ii) Checking whether insurance survey has been conducted within the period of insurance.

(iii) Checking whether claim on the carrier agent has been raised within the limitation period (one year from the arrival of the ship).

(iv) Checking whether claim papers are forwarded within reasonable period to Insurance Department by the Clearing Department.

(v) Checking whether claims on insurers are raised by the Insurance Department within a reasonable period.

Road Claims

(i) Checking whether the consignment notes are duly endorsed about the shortage.

(ii) Checking whether the carrier's short certificate has been duly obtained.

(iii) Checking the carrier's short certificate and invoice, to substantiate the value of the loss, and the relevant declaration number has been forwarded to the Insurance Department within a reasonable period.

(iv) Checking whether the claim on the insurer has been raised by the Insurance Department within a reasonable period.

Fire Claims

(i) Checking whether the Fire Brigade Report and Police Investigation report, if any, has been duly forwarded to the Insurance Department.

(ii) Checking whether all necessary documents to substantiate the value of the loss have been forwarded to the Insurance Department.

(iii) Checking whether claims on insurers have been raised by the Insurance Department within reasonable time and followed-up.

Burglary Claims

(i) Checking whether F.I.R. has been lodged with the Police and Police Investigation Report has been obtained and duly forwarded to the Insurance Department.

(ii) Checking whether all necessary claim papers substantiating the loss have been forwarded to the Insurance Department.

(iii) Checking whether claim on insurer has been lodged by the Insurance Department within reasonable period and properly followed-up.

Budgetary Control

7.06 In the face of increasing competition, survival depends on cost efficiency. Control has to be exercised through budgets so that the system in itself can ensure that expenses are maintained within the given parameters. Expenses for the forthcoming year are estimated at the beginning of the year which has a correlation with previous year's actual and projections for the forthcoming year. The budgets are generally approved by the head of Finance Department. It is the duty of the

internal auditor to monitor adverse variations and make in-depth enquiries as to their causes.

7.07 In respect of budgetary control, the internal auditor's areas of focus and his responsibilities with regard to them are discussed in the following paragraphs.

Stock Reconciliation

It is imperative that reconciliation is made between stock figures at individual sales offices and stock figure as per the Head Office accounts.

Stock Reconciliation

(i) Check Challan Edits to ensure that there are no long standing Challans.

(ii) Enquire from the sales office about each Challan Edit to find out whether the stock has been accounted for in the sales office but by inadvertence the information has not been accounted for in the central computer.

(iii) Check DD (Depot-to-Depot transfer) Edits to ensure that there are no old DDs outstanding.

(iv) Enquire from the sales office whether the DDs have actually been received but not accounted for in the central computer.

(v) In case of a discrepancy between sales office stock and H.O. stock, identify the location where discrepancy has taken place and narrow down the field to the month in which the discrepancy arose.

(vi) Go through the transaction listing of the month identified as per para (v) above and arrive at the specific causes of the discrepancy.

(vii) Examine whether the rectifications have been appropriately carried out.

(viii) Eradicate all negative stock balances at the year-end by reversing turnover. Remember negative stock can only arise if invoicing is higher than stock availability.

Debtors Reconciliation

7.08 It is the responsibility of the internal auditor to ensure that the Head Office ledger balance of debtors' tallies with individual memorandum records maintained at the districts.

Debtors Reconciliation

(i) Ensure that both the Head Office and sales office have relied on identical data to arrive at net turnover, i.e., sales minus cancellations. If sales location has accounted for invoices of subsequent month in its turnover, this needs to be reversed.

(ii) Ensure that collections of subsequent month have not been accounted for as the year-end collections.

(iii) Check whether all financial adjustments made at the sales office have been duly accounted for at the Head Office through appropriate journals.

(iv) Inter decentralised centre collections, i.e., collections made by decentralised center for another is always a source of great worry at the time of debtors' reconciliation. The auditor has to ensure that all such credits raised by one decentralised centre for another by the year-end have been appropriately journalised at the Head Office or else the ledger balance will not match with the decentralised center balance.

(v) All rebates and discounts as well as write-offs vide financial vouchers or credit notes at sales office have to be accounted for in the Head Office Ledger.

(vi) At the end of the reconciliation, locations-wise, debtors balance at H.O. must match with sales locations' outstandings.

(vii) Where central billing is resorted to from factories for OE customers, vide appropriate journal, the debtors have to be transferred to the location concerned, otherwise the debt might feature in the Head Office ledger without being accounted for by the concerned depot.

7.09 Besides the above two fundamental reconciliation there are various ancillary reconciliations which an internal auditor needs to examine. These are the Sales Tax Reconciliation (i.e. reconciliation of Sales Tax Account in the General Ledger with details of receipts and payments of Sales Tax) maintained by the sales office, deposit reconciliation, advances to staff reconciliation, etc.

7.10 Some of the other important areas of concern to the internal auditor in respect of the finance function and his procedures therefor are as follows:

Assets

Fixed Assets

(i) Check the Fixed Assets Register as at the year-end and tally it with the ledger. Examine whether depreciation has been correctly charged.

(ii) Tests check the Assets Sold Schedule with receipts and see that profit/ loss has been correctly computed.

(iii) Check Advance Payment Account for asset purchases and examine whether transfers to Fixed Assets Account have been appropriate and timely.

(iv) Is the register of Patents and Trademarks maintained and is it up-to-date?

(v) How often is a physical check made of fixed assets and compared with the Fixed Assets Register?

(vi) Does the Fixed Assets Register contain the appropriate information?

(vii) What is the system of authorisation of capital expenditure?

(viii) If in-house employees do capital work, how is the work valued?

(ix) Check whether the system exists for verification/ confirmation of assets with third parties including assets sent for repairs.

Inventories

(i) Test check the Closing Stock Schedule for finished goods and examine whether appropriate adjustments have been made in valuation of obsolete and slow moving stocks.

(ii) Tests check the Closing Stock Schedule of raw materials and work-in-progress/ stores and cross tally it with the balance sheet.

(iii) Identify major raw materials from the Closing Stock Schedule and reconcile book stock with physical stock. In case there is any major discrepancy ascertain reasons therefore.

Investments

(i) Check the Investments Schedule prepared as at the year-end.

(ii) Are receivables from investments such as dividends, interest etc., being correctly accounted for?

Cash and Bank

(i) Reconcile the cash in hand with decentralised units, and the certificates of unit managers.

(ii) Reconcile the Bank Overdraft Account in the ledger with the bank statements.

Sundry Debtors

(i) Reconcile Sundry Debtors Account in the ledger as at the year-end with the returns submitted by depots.

(ii) Tests check journal entries regarding financial adjustments raised by the depots with actual source dockets.

(iii) Check bad debts written off/ written back and see that the same are properly authorised. Have adequate provisions been made in the accounts for doubtful debts.

Deposits

(i) Check the deposit accounts in the ledger, *viz.,* rent, gas and electricity, telephone etc., with detailed registers maintained at each location.

(ii) Tests vouch the payments/ receipts in this account.

(iii) Enquire into deposits lying outstanding for a long time and find out the reasons therefor.

(iv) Reconcile the Franking Machine Deposit account in the ledger with returns from decentralised units, and in case of any difference enquire into any reason therefore.

(v) Reconcile Port Deposit A/c and Customs Deposit A/c with certified statements.

Receivables

(i) Check the year-end entries for receivables.

(ii) What is the procedure for informing lodgment of claims to Accounts Department? Are there any missing claims?

Liabilities

Acceptances

(i) Cross check the total creditors balance in ledger with the individual creditors' balances.

   a. Test check entries in the creditors' accounts with respect to receipts of materials, payments and acceptances made.

   b. Comment on old creditors' balances, if any, lying unpaid.

(ii) Tests check the acceptances outstanding as at the year-end.

(iii) Analyse advances made to suppliers and enquire into long outstanding advances.

Provision for Taxation

Check the accuracy of Provision for Taxation Account in the ledger.

Accrued Expenses

(i) Analyze outstanding liabilities on the basis of documents, bills etc.

(ii) Are liabilities for expenses certified by the operating managers?

(iii) Is the system of payments strong enough to ensure that duplicate liabilities are not created and missing liabilities are avoided?

Profit and Loss Account

Sales

(i) Tests check the sales booking in the ledger with journal entries passed and monthly returns from sales points.

(ii) Test check products supplied free and at concession for defectives with the returns from the depots.

(iii) Check the challans raised but not invoiced out for direct billings from the factories with invoices raised subsequently.

(iv) Check the company's policy regarding invoices raised but not delivered at the year-end? Is there a deliberate attempt to inflate turnover?

Excise Duty

(i) Reconcile the excise duty deposits in the ledger with excise duty control statement.

(ii) Ensure that CENVAT credit availed of has been properly accounted for.

Rebates on Sale

Crosscheck rebates and discounts in the ledger with the summary prepared on the basis of depot records. Tests check the same with the schemes.

Interest

Check the interest paid/ received in the ledger with respect to bank overdraft/ public deposits/ loan from financial institutions, deposits with agencies and inter-corporate deposits.

Miscellaneous

Suspense Account

(i) Analyze the Suspense A/c in the ledger, if any, with the schedule of expenses comprising the Suspense A/c.

(ii) Enquire into any old outstanding lying in the Suspense A/c and the reasons why they cannot be transferred to appropriate account head.

Budgetary Variance Analysis

(i) Identify the items in respect of which adverse variances have arisen.

(ii) Check the reasons for adverse variances from the concerned locations.

(iii) Find out whether the variance was controllable or uncontrollable. Uncontrollable variances could be such as wage agreements, variable D.A. etc. On these expenses, the location concerned has no control.

(iv) Having identified the controllable expenses where adverse variance have taken place, examine in-depth, the explanations given.

(v) For expenses with favourable variances, question whether cushion was being kept in the budget. Prevent charging of expenses with adverse variances to expense heads with favorable variances to keep overall expenses within total budget.

Cash

Cash Count

(i) Count the petty cash balance and add to it the totals of IOUs and tally it with the balance as per the cashbook.

(ii) Prepare a detailed list of IOUs and comment on the nature of these and whether they are pending settlement for a long time.

(iii) Check the cash receipts lodgments and tally them with the cash book.

Petty Cash

(i) Select a month within the audit period and vouch petty cash payments (100%) to examine, amongst other things, the following:

a. That the vouchers are in sequence.

b. That they are 'paid' stamped and date of payment is indicated.

c. That the expenses are within the entitlement limits as per the company's regulations.

d. That they are routed through the particular department as per the rules framed in this regard.

e. That the departmental authority's signature has been obtained.

f. That the vouchers are supported by adequate documents as per the principles of vouching, and

g. That the correct account head has been used in the vouchers.

(ii) Check that all the relevant information has been correctly entered into the cashbook.

(iii) Tests check some entries on the receipt side of the petty cash book.

Accrued Expenses

Bank Transactions

(i) Bank transaction:

a. Test check bank payments applying principles of vouching and according to the guidelines mentioned in respect of petty cash as above

b. Test check bank receipts with reference to receipts issued and lodgment slips and supporting documents.

c. Examine whether the receipts are banked promptly.

d. Check the transfer charges for remittances by various banks.

(ii) Check whether the telegraphic transfers and other remittances from various locations are being credited to the Head Office Account.

(iii) Test check the interest charged on overdrafts by various banks.

(iv) Test check the bill discounting operation, if any and interest charged. Comment on that.

(v) Bank Reconciliation:

a. Ascertain whether the accounting records are regularly agreed to with the bank statements.

b. Check bank statements of various banks at different locations with reference to the cash book.

c. Check reconciliation statements despatched by various Depot/ Sub-depot locations.

d. Check reconciliation statements prepared at the Head Office for various banks.

e. Prepare a list of long outstanding items in reconciliation and find out what action has been taken.

Staff Cheques

Ascertain whether the procedures for raising of vouchers and receipts have been followed.

Rent Payments

Check the overall control over payment of rent.

(a) Check rent files for different premises.

(b) Reconcile between the rent paid for a few months with that payable.

Road Transport Claim Bills

(i) Check the register and the correspondence file to determine whether the deductions on account of short/ damaged receipts have been made from the freight payable promptly.

(ii) Ascertain the outstanding positions of the bills for which deductions are yet to be made.

Capital Expenditure

Verification of Authenticity

(i) Check whether all sanctions are duly authorised by requisite authorities before capital expenditure is made.

(ii) Examine whether proper procedure is followed before capital expenditure is embarked upon.

Evaluation of Proposal

(i) Check that the accounting department has gone through the appropriate techniques of evaluation of project profitability before approval. In case of new suggestions, inform the management promptly.

(ii) Verify and authenticate with the engineers the data provided by them to the accounting department for evaluation. If the data provided was inaccurate evaluate the impact of inaccuracy and bring it to the management's notice.

Execution of Project

(i) Examine whether the time schedule for capital expenditure has been strictly adhered to. In case of failure, identify accountability centres.

(ii) Check whether there are cost over-runs in the project. Identify whether over-runs were because of errors in evaluation of the project or inefficiency in execution.

(iii) In case of unforeseen factors causing delays in project execution, identify why the factors could not be foreseen at the point of evaluation.

Capital/Revenue

(i) Ensure the revenue expenditures are not being capitalized.

Certification by Engineers

(i) Check whether engineering department gave certificate for installation of equipment and certificate for commissioning of project.

(ii) Check that the capitalisation of the project in the company's accounts has been as per the said engineering certification.

Salvage/ Tenders

Salvage

(i) Check whether the quantities booked as salvage are crosschecked on receipt at salvage.

(ii) Check whether salvage from production shop has duly been authorised by appropriate authority.

(iii) Check housekeeping and security at salvage yard.

(iv) Examine that un-booked materials do not find their way to salvage.

(v) Check whether salvage is appropriately segregated in the yard and appropriately tagged.

Tender

(i) Check whether sealed tenders are received against advertisements.

(ii) Check whether margin money has been deposited.

(iii) Check whether the tender committee has duly authorised disposal of salvage.

(iv) Check whether the tender committee has accepted the highest rate.

(v) In cases where the tender committee has accepted lower rate, assess the reasoning therefore.

(vi) Check whether payments are first deposited before materials are allowed to be lifted from the yard.

(vii) Check whether security control is adequate at the time of lifting.

(viii) Check whether gate passes are authorised before material movement.

APPENDIX I

Glossary

Alumina Section

Alumina	Oxide of Aluminium; Al_2O_3
Alumina Hydrate	It is Alumina in the form of hydrate {Al $(OH)_3$} generally computed as Alumina (Al_2O_3)
Alumina Calcined	When three molecules of water are removed from Alumina hydrate by calcining it at higher temperature, the product is known as Alumina Calcined.
Caustic Concentration, C	Grams of caustic per litre of liquor in the process (NaOH expressed as Na_2CO_3)
Digesters	The vessels in which Alumina content of Bauxite is dissolved in caustic soda solution at defined temperature and holding time.
Digestion Circuit	The area of Alumina Plant where Bauxite in dissolved in caustic soda solution at required conditions and heat is recovered by flashing. It also includes de-silication process.
Digestion Efficiency (%)	It shows the extent of Bauxite's Alumina dissolution in the solution. It depends on factors like Bauxite quality, digester temperature, and

solution's caustic concentration etc.

Desilicated Slurry Bauxite slurry that has undergone de-silication process at defined temperature with sufficient holding time to remove silica content of liquor by converting it to solid phase.

Gibbsitic Bauxite Type of Bauxite in the form of tri-hydrate {Al_2O_3. $3H_2O$} that gets dissolved at lower temperature (106-145 ^{o} C)

Slurry Bauxite solids in liquor for transportation by pumps in pipelines and vessels

Spent Liquor The process liquor mainly as caustic soda in circulation after recovery of Alumina in precipitation circuit. It is circulated to digestion circuit by improving its concentration by evaporating its water content.

TAA (%) It is Total Available Alumina in Bauxite to be processed at definite temperature.

Trihydrate Seed The particles of Alumina trihydrate (both of course and fine fractions) to be used as seed in precipitation process to facilitate agglomeration and growth for maximum Alumina recovery from the system.

Yield/Liquor Productivity (gpl) Alumina recovered from one litre of Aluminate liquor in each cycle. Also known as liquor productivity.

Smelter Section

Bath Ratio — It is the weight ratio of NaF and AlF_3 in electrolyte.

Current efficiency (%) — It measures ratio of actual production and theoretical production of metal. It is one of the important performance parameters of Smelter.

Electrolytic Reduction — The electrolysis process where Alumina gets dissociated in Aluminium (Al^{+3}) and oxygen ions (O^{-2}). Aluminium deposits at cathode and oxygen reacts with carbon to form CO_2.

Gross Carbon Consumption (kg/T) — This is the total number of anodes supplied to Pot room multiplied by average weight of anode.

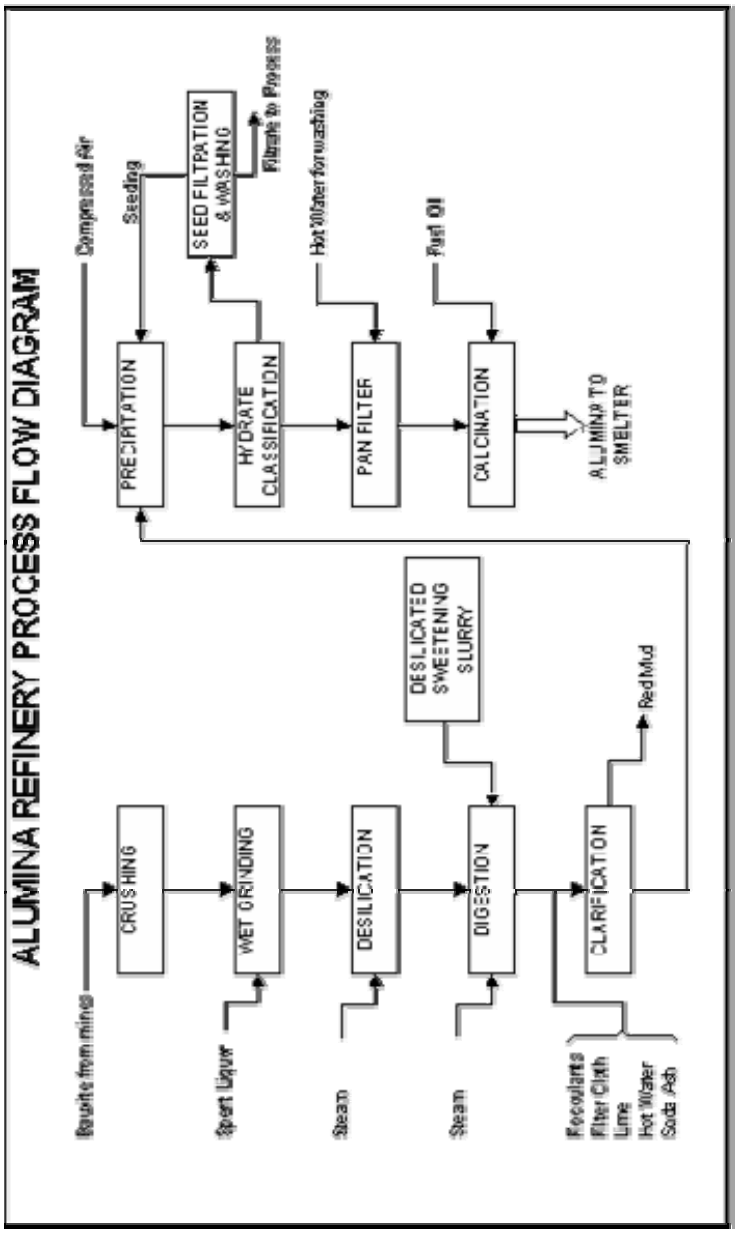
Molten Cryolite (Na_3AlF_6) — It is the major component of Hall Heroult electrolyte having uniquely high solubility for oxides.

Net Carbon Consumption (Kg/T) — This is calculated by subtracting weight of spent anodes returned to paste plant from gross carbon consumption in pot room.

Pot — The specially designed electrolytic cell in which Alumina is dissolved in molten cryolite bath and electrolysis is carried out.

Potline	A number of electrolytic cells connected in series with certain bus bar configuration for passage of current and spread over two rooms constitutes a potline.
Line Current	Current flow in a pot line
Volts/ Pot	Total voltage drop across an electrolytic cell.

APPENDIX II


ALUMINA REFINERY PROCESS FLOW DIAGRAM
Bauxite from mines
CRUSHING
Spent Liquor
WET GRINDING
Steam
DESILICATION
Steam
DESILICATED SWEETENING SLURRY
DIGESTION
Flocculants
Filter Cloth
Lime
Hot Water
Soda Ash
CLARIFICATION
Red Mud
Compressed Air
Seeding
PRECIPITATION
SEED FILTRATION & WASHING
Filtrate to Process
HYDRATE CLASSIFICATION
Hot Water for washing
PAN FILTER
Fuel Oil
CALCINATION
ALUMINA TO SMELTER

APPENDIX III

Aluminium Production: Smelter Process Flow