Compendium of Industry Specific Internal Audit Guides

(As on January 1, 2015)

Volume V

Foreword

In past several decades, rapid changes amplified by technology have made the overall business environment more complex. This dynamic environment has given rise to new types of risks. Internal audit function has the potential to help manage the increasingly sophisticated risk factors faced by today's organizations, and drive efficiency and sustainability. Internal audit function needs to focus on providing business insights, becoming a strategic advisor, balancing assurance and advisory thereby meeting increased stakeholder's expectations.

The Internal Audit Standards Board of the Institute of Chartered Accountants of India (ICAI) has been bringing out high quality technical literature on internal audit and risk management to upgrade the skill sets of the members. With a view to provide guidance to the members on internal audit of different industries, the Board has brought out a number of industry specific internal audit guides highlighting the peculiar aspects of these industries. I am pleased that this "Compendium of Industry Specific Internal Audit Guides" would consolidate all these industry specific internal audit guides and will be a one stop referencer for the benefits of the members.

At this juncture, I would like to congratulate CA. Charanjot Singh Nanda Chairman, Internal Audit Standards Board and all the other members of the Board for their initiatives in developing technical literature on internal audit.

I am sure that this Compendium would prove to be a useful technical resource for the members.

February 4, 2015   **CA. K. Raghu**
New Delhi   President, ICAI

Preface

Globalization, advances in technology, complex regulatory environment have led to an increased focus on risk management, fraud prevention and corporate governance. It is more important than ever for internal audit to be seen as a credible business partner, able to identify control weaknesses that may undermine business drivers or breach regulatory requirements. Internal audit function should overcome these challenges of higher expectations by thinking and acting strategically, building partnership of trust with all stakeholders, remaining aligned with the organization's strategy and business objectives and by delivering high quality reports that are clear and forward looking.

The Institute of Chartered Accountants of India through Internal Audit Standards Board has been working relentlessly, to reinforce the primacy of the Institute as a promoter, source and purveyor of knowledge relating to internal audit and other aspects related to it, so as to enable it's members to provide more effective and efficient value added services. The Board has been bringing out Standards on Internal Audit, Technical Guides of both generic and industry specific nature for the guidance of the members. In 2011, the Board had issued "Compendium of Technical Guides on Internal Audit" which contained text of all the Industry Specific and Generic Guides issued by the Board till June, 2011 and further issued revised edition of the same in 2013.

In 2015, the Board is bringing out separate Compendiums for Industry Specific Internal Audit Guides and Generic Internal Audit Guides. This *Compendium of Industry Specific Internal Audit Guides (As on January 1, 2015)* is divided into five volumes. The first volume contains industry specific Guides on Aluminium Industry, Upstream Oil and Gas Companies, Telecommunication Industry, Stock Brokers, Sugar Industry. The second volumes comprises of Guides on Educational Institutions, BPO Industry, Retail Industry and Life Insurance Companies. The third volume includes Mutual Fund, Infrastructure, Stock and Receivables Audit, Mining and

Extractive Industry and Not-for-Profit Organizations Guides. The fourth volume Guides are on Construction Sector, Textile Industry, Pharmaceutical Industry and Petrochemical Industry. The fifth volume contains Oil and Gas Refining & Marketing (Downstream) Enterprise, Waste Management, Beverages and IT Software Industry. In addition to this, the text of all these Guides have also been published as a separate publication of the Institute.

I would like to express my gratitude to CA. K. Raghu, President, ICAI and CA. Manoj Fadnis, Vice President, ICAI for their continuous support and encouragement to the initiatives of the Board. I must also thank my colleagues from the Council at the Internal Audit Standards Board, viz., CA. Shriniwas Yeshwant Joshi, Vice Chairman, IASB, CA. Rajkumar S. Adukia, CA. Prafulla Premsukh Chhajed, CA. Sanjeev K. Maheshwari, CA. Dhinal Ashvinbhai Shah, CA. Shiwaji Bhikaji Zaware, CA. V. Murali, CA. S. Santhanakrishnan, CA. Abhijit Bandyopadhyay, CA. Sanjiv Kumar Chaudhary, CA. Atul Kumar Gupta, CA. Naveen N.D. Gupta, Shri Manoj Kumar, Shri P. Sesh Kumar and Shri R.K. Jain for their vision and support. I also wish to place on record my gratitude for the co-opted members on the Board, viz., CA. R. Balakrishnan, CA. N. S. Ayyanagoudar, CA. Sunil H. Talati, CA. J. Vedantha Ramanujam and CA. Milind Vijayvargia and special invitees, CA. Nagesh D. Pinge and CA. Hardik Chokshi for their invaluable guidance as also their dedication and support to various initiatives of the Board. I also wish to express my thanks to CA. Jyoti Singh, Secretary, Internal Audit Standards Board, CA. Arti Bansal, Asst. Secretary and CA. Pallavi Aggarwal, Management Trainee in giving final shape to the Compendium.

I am sure that this publication would be warmly received by the interested readers.

February 3, 2015   **CA. Charanjot Singh Nanda**
New Delhi   Chairman, IASB

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Volume IV

Note : Detailed contents of each of these Guides is given at the beginning of the respective Guide.

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TECHNICAL GUIDE ON INTERNAL AUDIT IN OIL & GAS REFINING & MARKETING (DOWNSTREAM) ENTERPRISES

Foreword

The oil and gas industry is risky, wildly expensive and critical to every person on the planet. It fuels nearly every other industry in the world, from agriculture to information technology. Growing energy demand of India and necessity to service that to ensure economic growth is not compromised, presents opportunities in the complete value chain of oil and gas sector. This trend of rising demand for petroleum products coupled with the concentration of petroleum reserves in few geographical areas, amongst other factors, pose challenges as well as opportunities for the petroleum refining industry as a whole.

Chartered accountants can play a significant role in the oil and gas sector which faces unique physical and financial challenges. In 2007, the Internal Audit Standards Board had issued "Technical Guide on Internal Audit in Oil and Gas Refining and Marketing (Downstream) Enterprises" which briefly dealt with basic operations undertaken in a refining and marketing (downstream) oil and gas company and the detailed procedures to be undertaken by the internal auditor in respect of each areas. I am happy to note that the Internal Audit Standards Board is bringing out this revised 2013 edition which includes latest updates in the oil and gas sector of the country. This updated publication would surely help the members to understand entire spectrum of operational, conceptual and practical issues related to internal audit in this sector.

I am sure that this Technical Guide would be help our members to learn and sharpen their skills in this sector and thereby be more professionally competent.

January 2, 2013   CA. Jaydeep Narendra Shah
New Delhi   President, ICAI

Preface

The petroleum sector plays a vital role in the economic growth of the country as every economy is largely dependent on petroleum products for it's day-to-day activities. With economic growth and modernization, the demand for petroleum. products has been on the rise and is expected to rise further, thereby putting. pressure on exploration and production of crude oil and refining and marketing of petroleum products. This makes it essential that oil and gas companies have proper internal controls in place to ensure that maximum output is achieved through these valuable natural resources.

Considering the importance of this industry, the Internal Audit Standards Board of the Institute had in 2007 issued "Technical Guide on Internal Audit in Oil & Gas Refining & Marketing (Downstream) Enterprises". The objective of the Technical Guide was to provide to the members an overview of the basic operations undertaken in a refining and marketing (downstream) oil and gas company and the detailed internal audit procedures in respect of all the major areas. This revised edition has been brought out to include recent changes that have taken place in the oil and gas sector of the country. In the revised edition, additions have been made regarding changes in Oil industry structure in India, Liquified Petroleum Gas, Natural Gas, Pipelines and its Accounting, Enterprise Resource Planning, Cost Accounting Records (Petroleum Industry) Rules, 2011, Service tax, Oil accounting calculations and certain new terms have also been added in the glossary. Further, the scheme of chapters remains the same as earlier edition and has been divided into seven main chapters – introduction, technical aspects involved in refining and marketing, internal audit of refining activities, internal audit of marketing activities, internal audit of special areas, cost audit and information systems audit.

At this juncture, I am grateful to CA. M. Ravi Bala Subrahmanyam, who had authored the earlier edition of the Guide also, for making updations and bringing out this revised edition of the Guide.

Abbreviations

APM	Administrated Pricing Mechanism
ASTM	American Society for Testing and Materials
ATF	Aviation Turbine Fuel
ATU	Amine Treatment Unit.
BBU	Bitumen Blowing Unit
BIS	Bureau of Indian Standards
BPCL	Bharat Petroleum Corporation Limited
BRPL	Bongaigon Refineries & Petrochemicals Limited
CIF	Cost, Insurance and Freight
CPCL	Chennai Petroleum Corporation Limited
CST	Central Sales Tax
CVD	Countervailing Duties
DCS	Digital Control System
DGH	Directorate General of Hydrocarbons
E & P	Exploration and Production
EIL	Engineers India Limited
FDZ	Free Delivery Zone
FO	Furnace Oil
FOB	Free On Board
GAIL	Gas Authority Of India Limited

GDP	Gross Domestic Product
GNP	Gross National Product
GOHDS	Gas Oil Hydro De-sulphurisation Unit.
GOI	Government of India
HPCL	Hindustan Petroleum Corporation Limited
HRD	Human Resources Development
HSD	High Speed Diesel Oil
IBP	IBP Co. Limited
IIP	Indian Institute of Petroleum
ILP	Industry Logistic Plan
IOCL	Indian Oil Corporation Limited
IQCM	Industry Quality Control Manual
JVC	Joint Venture Company
KL	Kiloliter
KM	Kilometer
KRL	Kochi Refineries Limited
LDO	Light Diesel Oil
LOBS	Lube Oil Base Stock
LPG	Liquefied Petroleum Gas
LSHS	Low Sulphur heavy Stock
MDPM	Market Determined Pricing Mechanism
MI	Main Installation
MMT	Million Metric Tonnes

MMTPA	Million Metric Tonnes Per Annum
MOP and NG	Ministry Of Petroleum and Natural Gas
MRPL	Mangalore Refineries & Petrochemicals Limited
MS	Motor Spirit
NOC	National Oil Company
NSU	Naphtha Splitter Unit
OCC	Oil Coordination Committee
OCRC	Oil Cost Review Committee
OEB	Oil Economics Budget
OIDB	Oil Industry Development Board
OIL	Oil India Limited
OISD	Oil industry Safety Directorate
ONGC	Oil and Natural Gas Corporation Limited
OPC	Oil Pricing Committee
OPEC	Organization of Petroleum Exporting Countries
OPRC	Oil Prices Review Committee
PCRA	Petroleum Conservation Research Association
POL	Petroleum, Oil and Lubricants
PPAC	Petroleum Planning and Analysis Cell
PSA	Pressure Swing Absorption
PSF	Price Stabilization fund
PSU	Public Sector undertaking
R & D	Research and Development

RIL   Reliance Industries Limited

ROI   Return on Investment

RON   Research Octane Number

RPO (RO)   Retail Pump Outlet

RR   Railway Receipt

RSP   Retail Selling Price

RTD   Round Trip Distance

SKO   Superior Kerosene Oil

SRU   Sulphur Recovery Unit

ST   Sales Tax

SWS   Sour Water Stripper Unit

TAIPP   Tariff Adjusted Import Parity Price

TMT   Thousand Metric Tonnes

TOP   Tap Off Point

VBU   Visbreaker unit

WTO   World Trade Organisation

Glossary

Additive   A chemical added to oil, gasoline, or other products to enhance certain characteristics or to give them other desirable properties.

Alkylation   A chemical conversion process to form gasoline from lighter fractions using catalysts like sulphuric and hydrofluoric acids.

Aromatics   A class of organic compounds, related to hydrocarbons, which is used to raise the octane quality of gasoline.

Basin   A synclinal structure in the sub-surface, once the bed of a pre-historic sea. Basins, composed of sedimentary rock, are regarded as good prospects for oil exploration.

Bitumen   Any of various mixtures of hydrocarbons together with their non-metallic derivatives, asphalts and tars.

Black Oil   A term denoting residue oil. Oil used in ships' boilers or in large heating or generating plants; bunker oil.

Blending   The process of mixing two or more oils having different properties to obtain a lubricating oil of intermediate or desired properties. Certain classes of lube oils are blended to a specified viscosity. Other products, notably gasoline(s), are also blended to obtain desired properties.

Block   An area of land made up of a number of contiguous leaseholds large enough to drill an exploratory well.

Catalyst	A substance that hastens or retards a chemical reaction without undergoing a chemical change itself during the process.
Cat Cracker	A large refinery vessel for processing reduced crude oil, naphtha, or other intermediates in the presence of a catalyst.
Condensate	Liquid hydrocarbons produced with natural gas are separated from the gas by cooling and various other means. Condensate generally has API gravity of 50 degrees to 120 degrees and is water white, straw, or bluish in colour.
Corrosion	The eating away of metal by chemical action or an electrochemical action. The rusting and pitting of pipelines, steel tanks, and other metal structures caused by a complex electrochemical action.
Cracking	The refining process of breaking down the larger, heavier, and more complex hydrocarbon molecules into simpler and lighter molecules. Cracking is accomplished by the application of heat and pressure and, in certain advanced techniques, by the use of a catalytic agent. Cracking is an effective process for increasing the yield of gasoline from crude oil.
Crude oil	Oil as it comes from the well; unrefined petroleum.
Cut	A petroleum fraction; a product such as gasoline or naphtha distilled from crude oil.
Demurrage	The charge incurred by the shipper for detaining a vessel, freight car, or truck.
Deposit	An accumulation of oil or gas capable of being produced commercially.

Diesel fuel   A fuel made of the light gas-oil range of refinery products. Diesel fuel and furnace oil are virtually the same product. Self-ignition is an important property of diesel fuel, as the diesel engine has no spark plugs; the fuel is ignited by the heat of compression within the engine's cylinders.

Distillate   Liquid hydrocarbons, usually water-white or pale straw colour and of high API gravity (above 60 degrees), recovered from wet gas by a separator that condenses the liquid out of the gas stream.

Distillation   The refining process of separating crude oil components by heating and subsequent condensing of the fractions by cooling.

Distillation column   A tall, cylindrical vessel at a refinery or fractionating plant where liquid hydrocarbon feedstocks are separated into component fractions, rare gases, and liquid products of progressively lower gravity and higher viscosity.

Downstream   Downstream are the operations after production of crude oil, i.e. refining and marketing.

Exploration   The search for oil and gas, including surveying, geological studies, geo-physical surveying, coring and drilling of wildcat wells.

Ex bond   Imported products kept in the customs bonded warehouse by executing INTO bond bill of entry, shall be discharged on payment of appropriate customs duty through Ex bond bill of entry.

Feedstock   The raw or semi-finished material that is processed in a refinery or other processing plant.

Flare gas	Gaseous hydrocarbons discharged from safety relief valves on process units in a refinery or chemical plant. Should a unit go down from an electrical or cooling water failure, making it necessary to dump a batch of liquid feed or product, the flare stack is equipped to handle such an emergency. If it were impossible to dump both gases and liquids in an emergency, the plant personnel and the operating units would be in danger. With the recovery equipment larger plants are installing flare gases as well as the dumped process fluid are recovered. The gases are used as fuel; the liquids are reprocessed.
Flash point	The temperature at which a given substance will ignite.
Floating storage	A large, converted, permanently moored oil tanker that holds production from offshore wells for transfer to seagoing oil transport vessels or to lighters for transport to shore stations.
Fluid Catalystic Cracking Unit (FCCU)	A large refinery for processing reduced crude, naphtha, or other intermediates in the presence of a catalyst. Catalytic cracking is regarded as the successor to thermal cracking as it produces less gas and volatile material; it provides a motor spirit of 10 to 15 octane numbers higher than that of thermally cracked product. The process is also more effective in producing isoparaffins and aromatics that are of high antiknock value.
Fractionator	A tall, cylindrical refining vessel where liquid feedstocks are separated into various components or fractions.
Free Delivery Zone (FDZ)	Each strategic point i.e. Depot/ Installation/ Refining is having a zone with a radius of 19.5

	km i.e. one way on all directions, called free delivery zone. Whenever the loaded tank lorry leaves the depot/installation/refining to a retail outlet the vehicle on its way travels through this zone during its upward journey and re-enters this zone on its return after the delivery of the product. Therefore, the round trip distance of this zone works out to 39 kms known as FDZ.
Fuel oil	Any liquid or lequifieble petroleum product burned for the generation of heat in a furnace or for the generation of power in an engine, exclusive of oils with a flash point below 100 degree F.
Furnace oil	Heating oil; light gas oil that can be used as diesel fuel and for residential heating.
Gas	Any fluid, combustible or noncombustible, which is produced in a natural state from the earth and which maintains a gaseous or rarefied state at ordinary temperature and pressure conditions.
Gas condensate	Liquid hydrocarbons present in the casing head gas that condense upon being brought to the surface; formerly distillate, now condensate.
Gasoil/ gasoline	A refined fraction of crude oil somewhat heavier than kerosene, often used as diesel fuel. Motor gasoline is a blend of different cuts or fractions in the gasoline range.
Heavy ends	In refinery parlance, heavy ends are the heavier fractions of refined oil- fuel oil, lubes, paraffin, and asphalt- remaining after the lighter fractions have been distilled off.
Hexane	A hydrocarbon fraction of the paraffin series. At ordinary atmospheric conditions hexane is

a liquid, but often occurs in small amounts of natural gas.

Hydrocarbons
Organic chemical compounds of hydrogen and carbon atoms. There are a vast number of these compounds, and they form the basis of all petroleum products. They may exist as gases, liquids or solids.

Hydrocracking
A refining process for converting middle boiling or residual material to high octane gasoline, reformer charge stock, jet fuel, and/ or high grade fuel oil. Hydrocracking is an efficient, relatively low – temperature process using hydrogen and catalyst. The process is considered by some refiners as a supplement to the basic catalytic cracking process.

Hydrodesulphu risation
A process to reduce the sulphur content in products by converting sulphur compounds to hydrogen sulphide which is then removed.

Hydrogen Sulphide (H_2S)
An odorous and noxious compound of sulphur found in 'sour' gas.

Import Parity Price
Landed cost of a product at a given port location based on specified supply location outside India.

Integrated oil company
A company engaged in all phases of the oil business i.e. exploration, production, transportation, refining, and marketing; a company that handles its own oil from wellhead to gasoline pump.

INTO bond
On import of the products, the products are being kept in customs bonded premises under INTO bond bill of entry executed with customs authorities ie; products are being kept in the customs warehouse without payment of import duties

Jet fuel	A specially refined grade of kerosene used in jet-propulsion engines.
Joint venture	Business or enterprise entered into two or more partners. Usually the partner with the largest interest in the venture will be the operator.
Kerosene	Kerosene cut from the distillation of crude oil, not treated or 'doctor tested' to improve odour and colour.
Light crude	Crude oil that flows freely at atmospheric temperatures and has an API gravity in the high 30s and 40s, a light coloured crude oil.
Light ends	The more volatile products of petroleum refining, e.g. butane, propane, gasoline.
Liquefied Natural Gas (LNG)	Natural Gas that has been liquefied by severe cooling (-160 degrees C) for the purpose of shipment and storage in high pressure cryogenic tanks. To transform the liquid to a usable gas, the pressure is reduced and the liquid is warmed.
Liquefied Petroleum Gas (LPG)	Butane, propane and other light ends separated from natural gasoline or crude oil by fractionation or other processes. At atmospheric pressure, liquefied petroleum gases revert to the gaseous state LPG.
Liquid Hydrocarbons	Petroleum components that are liquid at normal temperatures and atmospheric pressure.
Manifest	A document issued by a shipper covering oil or products to be transported by truck.
Methane	A colorless, odorless flammable gas (CH_4). Methane is the main constituent of natural gas, which is produced as free gas, and also associated with crude oil as it comes from the well. The simplest saturated hydrocarbon.

Methanol	Methyl alcohol; a colourless, flammable liquid derived from methane (natural gas).
Methyl Tertiary Butyl Ether (MTBE)	An additive used in unleaded gasoline to improve the octane quality. One of the important oxygenates for use in reformulating gasoline to reduce noxious emissions.
Metric ton	A unit of weight equal to 1,000 Kilograms.
Middle distillates	The term applied to hydrocarbons in the so-called middle range of refinery distillation, e.g., kerosene, light diesel oil, heating oil, and heavy diesel oil.
Round Trip Distance (RTD)	Round trip distance is the distance from the depot/ installation /refinery to the retail outlet and back. Gross RTD is the combination of round trip distance of FDZ and the round trip distance of beyond FDZ.
Motor octane number	The measures of a gasoline's antiknock qualities, whether or not it will knock or ping in an engine with a given compression ratio. Motor octane number of a gasoline is determined by test engines run under simulated conditions of load and speed.
Motor spirit	A highly volatile fraction in petroleum refining, an ingredient of motor gasoline, commonly referred to as petrol.
Multibuoy Mooring System	A tanker loading facility with five or seven mooring buoys to which the vessel is moored as it takes on cargo or bunkers from submerged hoses that are lifted from the sea bottom. Submarine pipelines connect the pipeline-end manifold to the shore.
Naphtha	A volatile, colour less liquid obtained from petroleum distillation used as solvent in the manufacture of paint and as dry-cleaning fluid.

Natural gas   Gaseous forms of petroleum consisting of mixtures of hydrocarbons gases and vapours, the more important of which are methane, ethane, propane, butane, pentane, and hexane; gas produced from a gas well.

Octane number   A measure of Gasoline's propensity to ignite under compression. The higher the octane number the less flammable a gasoline is.

OECD   Organisation for Economic Cooperation and Development. Member countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Republic of Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States of America.

OPEC   Organization of Petroleum Exporting Countries. Oil producing and exporting countries in Middle east, Africa and south America that have organized for the purpose of negotiating with oil companies on matters of oil production, prices, and future concession rights. OPEC in 1984 had 13 members: Algeria, Ecuador, Gabon, Indonesia, Iraq, Iran, Libya, Kuwait, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates and Venezuela. The oraganisation was created in November 1960.

Oxides   Mineral compounds characterized by the linkage of oxygen with one or more metallic elements such as Cuprite, CU_2O or Spinel, $MgAl_2O_4$.

Oxygenates   Additives for motor gasoline to promote cleaner burning in the engine and thus reducing polluting emissions, unburned hydrocarbons, and carbon monoxide. An oil industry term employed to describe a blending component

capable of rapidly increasing the oxygen content of motor car fuels.

Petrochemicals   Chemicals derived from petroleum; feed stocks for the manufacture of variety of plastics and synthetic rubber.

Petroleum   In its broadest sense, the term embraces the whole spectrum of hydrocarbons-gaseous, liquid, and solid. In the popular sense, petroleum means crude oil.

Pour point   The temperature at which a liquid ceases to flow or at which it congeals.

Propane   A petroleum fraction; a hydrocarbon, gaseous at ordinary atmosphericconditions, but readily converted to a liquid. When in a liquid state, propane must be stored in a high –pressure metal container. Propane is odourless, colourless, and highly volatile. It is used as a household fuel beyond the gas mains.

Refinery   A modern refinery is a large plant of many diverse processes. A refinery receives its charge stock, or crude oil, from the field via pipeline or from a tanker if the plant is located on a waterway. By processes that include heating, fractionating, pressure, vacuum, reheating in the presence of catalysts, and washing with acids. The crude is divided into hundreds of components: from exotic light gases to volatile liquids down through gasoline, naphtha, kerosene, gas oils, and light and heavy lubricating oil stocks to heavy bunker fuel, residue oil, and finally petroleum coke, the bottom of the barrel.

Reforming process   The use of heat and catalysts to effect the rearrangement of certain hydrocarbon molecules without altering their composition

appreciably; the conversion of low-octane gasoline fractions into higher octane stocks suitable for blending into finished gasoline; also the conversion of naphtha to obtain volatile product of higher octane number.

Reid vapour pressure
A measure of volatility of a fuel, its ability to vaporize. Reid vapour pressure, the specific designation, is named after the man who designed the test apparatus for measuring vapour pressure.

Retail outlet
Point of sale of petroleum products, primarily MS and HSD, for use as fuel for road transportation, commonly referred to as petrol pump.

Retail sales
Sales through retail outlets.

RON
Research Octane Number; a measure of a gasoline's antiknock quality determined by tests made on engines running under moderate conditions of speed and load.

Sedimentary basin
An extensive area (often covering thousands of square miles) where substantial amounts of un- metamorphosed sediments occur. Most sedimentary basins are geologically depressed areas (shaped like a basin). The sediment is thickest in the interior and tends to thin out at the edges. There are many kinds of such basins, but it is in these formations that all the oil produced throughout the world has been found.

Single-buoy mooring system
An offshore floating platform (20 to 35 feet in diameter) connected to pipelines from the shore for loading or unloading tankers. The SBM system is anchored in deep water, thus permitting large tankers to offload or lift cargo in areas where it is impractical to build a

	loading jetty or the close-in water is too shallow for deep-draft vessels.
Strategic reserves	Crude oil/ petroleum products stored as a fuel reserve in the event of a national emergency or a prolonged oil embargo by foreign suppliers.
Stream	A stream – whether oil, gas, or product-is what is being pumped through a pipeline, moved from one process unit to another.
Sweet crude	Crude oil containing very little sulphur and having a good odour.
Tail gas	Residue gas from a sulphur-recovery unit; any gas from a processing unit treated as residue.
Tank farm	A group of large riveted or welded tanks for storage of crude oil or product. Large tank farms cover several square miles.
Tap off point	The place at which petroleum products carried by a cross country pipeline are drawn off into storage tanks for distribution therefrom by various modes.
Turnkey contract	A contract in which a contractor agrees to furnish all materials and labour and do all that is required to complete a well in a workmanlike manner. When on production, he delivers it to the owner ready to 'turn the key' and start the oil running into the lease tank, all for an amount specified in the contract.
Ullage	The reserve space in a storage tank between the top of the oil and the top of the tank. This space or ullage allows for expansion of the oil when it warms up from the sun or artificial heating.
Upstream	Pertaining to exploration and production of crude and natural gas.

Contents

Chapter 1
Introduction

1.1   The petroleum sector plays a vital role in the economic growth of the country as every economy is largely dependent on petroleum products for its day-to-day activities. Out of the total energy mix of oil, natural gas, coal, hydroelectric and nuclear/ others, the petroleum component occupies a major share. The demand for the petroleum products is increasing year by year thereby putting pressure on exploration and production of crude oil and refining and marketing of petroleum products. The increasing trend in the population and growth in the individual consumption has multiplied the demand for petroleum products manifolds. With economic growth and modernisation, the demand for petroleum products has been on the rise and is expected to rise further.

1.2   Petroleum has emerged as the world's most useful source of energy and a vital commodity in international market. The use of crude oil as a source of energy started around 1890 only. Till early forties, demand of petroleum products was low but with worldwide growth of industry there was a sudden shift in favour of petroleum as energy source as compared to coal. Major expansion and development in automobile industry also took place during this period. Oil dominated as a source of energy for transportation, electricity generation, etc. It also becomes essential as a petrochemical feed stock.

1.3   India is one of the countries, which have the highest growth rate in the consumption of petroleum products. The country's indigenous production of crude oil is, however, not sufficient to meet the overall demand for petroleum products, consequently, the country is heavily dependent on import of crude oil. Production/ import of crude oil, refining and marketing of petroleum products (with the exception of lubricants to a certain extent) was till recently done only by the Public Sector Undertakings (PSUs). A noticeable change has, however, taken place in the petroleum sector over the last couple of years, for example, oil fields have been offered for exploration to foreign/ Indian companies in the private sector,

private sector has been allowed to set up refineries, import of a number of products has been decontrolled, parallel marketing of LPG under free pricing has also been allowed to the private sector. As the demand for petroleum products is growing, the extent to which the same is being met out of indigenous production is declining and only about 30 per cent of the oil and gas demand is likely to be met out of indigenous production. Consequently, the increased level of import of crude oil has serious repercussions on the country's balance of payment position and energy security, particularly in the background of increasing oil prices in the international markets.

1.4 The Oil sector is founded on two major activities, *one*, exploration and production (E and P) and *two*, refining, distribution and marketing. Whereas exploration and production of crude oil and gas is an upstream activity, refining, distribution and marketing are classified as downstream activities. Exploration and Production encompasses discovery and production of oil and gas by undertaking geological and geophysical surveys like remote sensing, airborne magnetic and field gravity surveys to identify the principal areas of adequate sediment cover, seismic surveys, drilling exploratory well, economic evaluation of the project, entering into agreements with the state, formulation of field development and production plan, decommission of the well.

1.5 Refining activity, involves receiving the crude through pipelines/ coastal tankers from the indigenous/ imported destination, for refining the crude into different products at different temperature on the basis of demand/ requirement of respective product. Refining is an important activity since the crude, which was produced has to be refined into different products for the final use of products by the consumers. India can perhaps claim to have established one of the earliest refineries in the world.

1.6 Marketing activity involves the process of receiving the finished products or refined crude oil products, through pipeline, costal tankers, rail wagons and tank trucks for storing the products in the Installation/ Terminal/ Depot for onward distribution to final consumers.

1.7 In India, the operations of petroleum companies can be grouped into:

i) Exploration and Production

ii) Refining and Marketing

iii) Pure Refining

iv) Pure Marketing.

The following diagram brings out the oil industry's structure in India, the major players in the various upstream and downstream activities as on January 1, 2007.

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                          │  Industry  Structure │
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│ Exploration & Production│ │ Natural Gas & Pipelines│ │  Refining & Marketing  │
└───────────────────────┘ └───────────────────────┘ └───────────────────────┘
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Exploration & Production:
- ● Public Sector
- ● ONGC
- ● OIL

Private Sector (Reliance, HOEC, Shell, BG, Cairn etc.)

Natural Gas & Pipelines:

Gas Distribution
GAIL

LNG Projects (Shell Petronet LNG, BG, IOC, etc.

Pipelines
IOCL
BPCL
HPCL
Petronet India
GAIL

Refining & Marketing:

Refining & Marketing
Public Sector
ONGC
IOCL
HPCL
IBP*@$
MRPL***
NRL**
CPCL*
BRPL*
KRL#
Private Sector
Reliance
Essar
Shell @

Note:
* Majority stake acquired by IOCL
** Majority stake acquired by BPCL
*** Majority stake acquired by ONGC
@ Exclusive Marketing Company
$ Being merged with IOCL
# Fully merged with BPCL

Compendium of Industry Specific Internal Audit Guides

1.8   This Technical Guide provides an insight with regard to:

1)   Refining and marketing activities

2)   Internal audit for refining and marketing activities.

The Guide will be useful to the readers in ascertaining various technical aspects and internal audit requirements of a downstream oil company. Since the size, functioning and nature of activities may vary from one company to another, the Guide cannot cover all the intricacies that might be involved in all practical situations. The various aspects/ principles enunciated in this Guide, `might`, therefore, require appropriate modification/ adjustments depending on size, function and nature of activities of a company under audit. The Technical Guide therefore does not touch upon internal audit of other aspects such as payroll, finance, etc., which are more or less common in all types of industries.

Chapter 2

Technical Aspects of Refining and Marketing Activities

Refining

2.1 Crude petroleum oil is a complex mixture of alkaline hydrocarbons with water, salt and earth particles. Hence, before it can be used for specific purposes, it has to purified or refined. The process of separating the crude petroleum oil into more useful fractions is called refining.

2.2 Petroleum refining is a continuous process industry wherein several products carrying different boiling points and molecular compositions are produced from crude oil. The refinery units comprise of the Distillation Unit, Secondary processing Unit like Lube stock, FCCU, hydro finishing units for fuels, Diesel Hydro De-sulphurisation Units, Sulphur Units, Petrochemical feed stock Units, Wax Unit etc., with associated facilities – offshore and utilities. The refining of crude oil is done by process of fractional distillation. In other words, petroleum is separated into its constituents by the process of fractional distillation. The refining of petroleum into different components is based on fact that the different components of crude oil have different boiling point range.

2.3 The crude petroleum oil is heated to a temperature of about 400 degree Centigrade in a furnace and the vapours thus formed are passed into a tall fractionating column from near its bottom. As the mixture of hot vapours rises in the column, it starts getting cooled gradually. Due to this, the vapours of the higher boiling fractions of petroleum condense first in the lower part of the tower, whereas the vapours of the low boiling fractions rise up into the tower and condense later. In this way, the fraction of petroleum having highest boiling point range is collected in the lowest part of the fractionating tower whereas the fraction having lowest boiling point range is collected in the top-most part of the tower. The

gases, which do not liquefy, are taken out from the top of the fractionating column. The fractional distillation is continued until the crude oil is separated into five or six hydrocarbon fractions, each fraction having different boiling point over a different range of temperature. In this way, the fractions having different boiling ranges are collected separately. The residual oil or liquid residue, which does not vaporise under these conditions, is collected and subjected to further fractional distillation by heating above 400o C to get more useful fractions. The various fractions obtained by the fractional distillation of crude petroleum oil are petroleum gas, gasoline or petrol, kerosene oil, diesel oil, fuel oil, lubricating oil, paraffin wax and asphalt. The three fractions - lubricating oil, paraffin wax and asphalt - are obtained by the further fractionation of residual oil which collects at the bottom of the fractionating column. **APPENDIX A** contains a diagrammatic representation of the basic refining process.

2.4   Each fraction obtained from petroleum after refining is not a single compound but a simpler mixture of compounds. The various fractions of petroleum differ in the number of carbon atoms in their molecules. The various fractions of products obtained by the fractional distillation of petroleum will differ in their molecular compositions and boiling point ranges. **APPENDIX B** shows details of refinery block diagram with various refining units. The core issues involved in processing the crude include:

a.   Improving the yield of the distillates;

b.   Producing high value products;

c.   Optimising the energy consumption;

d.   Minimising the loss of hydrocarbons;

e.   Environmental management issues; and

f.   Product quality issues.

Cost of Refining

2.5   The cost of refining consists of the following elements:

A.   ***Delivered cost of crude oil*** – This includes expenditure incurred in respect of:

(i)   cost of crude;

(ii)   transportation of crude to refineries;

(iii)   marine/ transit insurance;

(iv)   ocean loss/ pipeline loss;

(v)   wharfage;

(vi)   other landing charges;

(vii)   customs duty or excise duty;

(viii)   auxiliary duty; and

(ix)   other levies.

B.   ***Refining cost*** – This includes expenditure incurred in respect of:

(i)   Chemicals and catalysts;

(ii)   Consumables;

(iii)   Utilities like water and power;

(iv)   Salaries and wages;

(v)   Overheads;

(vi)   Repair and maintenance;

(vii)   Depreciation;

(viii) Finance charges on working capital; and

(ix)   Normal production loss.

Technical Parameters in Refining Activity

2.6   The technical parameters in the refining activity comprise the following:

●   Types of crude;

●   Oil Industry Safety Directorate (OISD) norms;

●   Explosives Norms – Petroleum Act, 1934 and Rules;

●   Pollution control norms;

●   Petroleum products and their usage; and

●   Quality control.

Types of Crude

2.7   There are three types of crude namely,

●   Sweet;

●   Sour; and

●   Heavy crude.

Processing of sweet crude involves lesser complications while producing the finished petroleum products as compared to processing of sour and heavy crudes. The refining configuration is built to take care of processing any type of crude. Sour and heavy crudes are cheap but require superior metallurgy and treatment. Pre and Post treatment of sour and heavy crude and precuts leads to higher capital and operation costs. The finished petroleum products obtained as a result of processing of the crude can be classified as:

a.   Light distillates;

b.   Middle distillates; and

c.   Heavy ends/ distillates.

2.8   *Light distillates* are high value products consisting of LPG, Naphtha and Petrol. *Middle distillates* have lesser product value than light distillates, and consist of Kerosene, ATF, HSD and LDO. *Heavy distillates* are lesser value products as compared to light and middle distillates, and consist of FO, LSHS, HHS, lube oils and Bitumen. The trend world over is towards higher conversion of crude into light and middle distillates to obtain 85 per cent and balance of 15 per cent for heavy distillates/ ends. The consumption mix in India is tilted in favour of middle distillates as shown below.

POL Consumption Mix
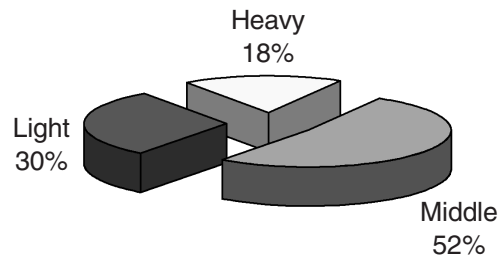
Out of total the consumption of petroleum products, middle distillates account for 52 percent consumption, light distillates account for 30 percent and Heavy ends/ distillates accounts for 18 percent.

Oil Industry Safety Directorate (OISD) Norms

2.9   Hydro-carbon processing and handling plants are inherently hazardous. Large and complex plants present substantial risk potential. The industry over the years has learnt lessons from fires and explosions and mishaps and also updates plant safety norms on a regular basis. The norms lay down minimum requirements of layouts within the plant boundary for petroleum refining, oil/ gas production and processing plants, LPG filling plants and other petroleum storage installations/ depots including inter distances between facilities and their relative locations. The facilities too are constructed as per the layout and distance norms laid down by OISD.

Explosive Norms

The Petroleum Act, 1934

2.10   The activities relating to import, transport, storage, production, refining and blending of petroleum are to be in compliance with the provisions of the Petroleum Act, 1934, which extends to the whole of India. Petroleum means any liquid hydro-carbon or mixture of hydro-carbons and any inflammable mixture (liquid, viscous or solid) containing any liquid hydro-carbon. The Act classifies petroleum products in the following classes:

Class "A" -   Flash Point < 23° C

Class "B" -   Flash Point >= 23° C < 65° C

Class "C" -   Flash Point >= 65° C < 93° C

The Act deals with control over petroleum, testing of petroleum, penalties and procedure.

The Petroleum Rules 1976

2.11   The Petroleum Rules, 1976 came into force with effect from August 1, 1976 and deal with the procedures to be followed for import, transport, storage, electric installation licences, refining and blending of petroleum and testing. The Rules also contain general provisions on restriction, delivery and despatch of petroleum, approval of containers for storage, prevention of escape of petroleum, prohibition on employment of children and intoxicated person, prohibition of smoking, fires, and special precautions against accident and payment of fees, etc.

Gas Cylinders Rules 1981

2.12   These Rules deal with provisions relating to filling, possession, import and transport of cylinders, valves, safety devices, etc., for use in LPG.

Pollution Control Norms

2.13   The oil industry needs to comply with the pollution control

norms while discharging effluents into water bodies, air and earth etc. Emissions to atmosphere become a problem especially while processing sour and heavy crudes and burning high sulphur fuels. The main legislation relating to environment protection includes:

(i)   Water (Prevention and Control of Pollution) Act, 1974

(ii)   Water (Prevention and Control of Pollution) Cess Act, 1977

(iii)   Air (Prevention and Control of Pollution) Act, 1977

(iv)   Environment (Protection) Act, 1986

(v)   Forest (Conservation) Act, 1980

(vi)   Wildlife (Protection) Act, 1972

(vii)   Motor Vehicles Act and Rules, 1989.

Petroleum Products and their Usage

2.14 The petroleum products generated from the refining process normally have the following use:

Petroleum gas is used as fuel as such or in the form of liquefied petroleum gas. Petroleum gas is also used in the production of carbon black (needed in the tyre industry) and of hydrogen (needed in the fertilizer industry) and also used in the manufacture of gasoline (petrol) by the process of polymerization. LPG is also used for cooking.

Gasoline or Petrol is used as a fuel in motor cars, scooters, motor cycles, and other light vehicles. Petrol is also used as a solvent for dry cleaning of clothes and for making petrol gas.

Kerosene oil is used as household oil, as an illuminant in hurricane or petromax lamps, also used for making oil gas. A special grade of kerosene oil is used as aviation fuel in aero planes.

Diesel oil is used as a fuel for heavier vehicles like buses, trucks, railway engines and ships. It is also used to run water pumps required for irrigation in fields and in diesel generators to produce electricity on small scale.

Furnace oil is used in industries to heat boilers and furnaces. Fuel oil is a better fuel than coal because fuel oil burns completely and does not leave any residue.

Lubricating oil is used for lubricating machinery to reduce the friction and wear and tear of the same under severe operating conditions. It is used for both industrial and automotive applications.

Paraffin wax is used for making candles, Vaseline, ointments, wax paper, toilet goods and grease.

Asphalt/ Bitumen is a black sticky substance used for making road surfaces and the final residue of petroleum.

Light Diesel Oil is used for slow speed diesel engines in agriculture/ marine industrial sectors. Also as a fuel in certain specialised industrial applications.

Low Sulphur Heavy Stock is used as fuel for industrial boilers and furnaces as well as feed stock in manufacture of fertilizers.

Grease is a semisolid product of dispersion of thickening agent in liquid lubricant.

Naphtha is used as feed stock for manufacture of fertilizer, Petrochemicals and power generation.

Mineral Turpentine Oil used as solvent for textile printing, dry cleaning, polish and insecticides.

APPENDIX C shows the types of products produced from crude oil.

Quality Control

2.15 The quality of petroleum, oil and lubricants (POL product) is controlled keeping in view the requirements of the end users and is in conformity with the BIS specifications. The Ministry of Environment, BIS and other agencies of Petroleum Ministry such as Indian Institute of Petroleum (IIP), Centre for High Technology (CHT) are jointly developing standards for products.

2.16 There is world wide concern about environmental pollution caused by emissions from automobiles. These emissions contain lead and benzene which are carcinogenic and adversely affect the health of the people. Sulphur and Suspended Particulate Matter (SPM) from diesel vehicles cause breathing problems such as asthma. Specifications of MS and HSD also have undergone changes and more stringent pollution control norms in the form of Bharat II and Bharat III (like Euro II and Euro III) are in place. Meeting these norms involve huge investment especially for those companies in the oil industry which processes sour and heavy crudes.

DOWNSTREAM SUPPLY CHAIN
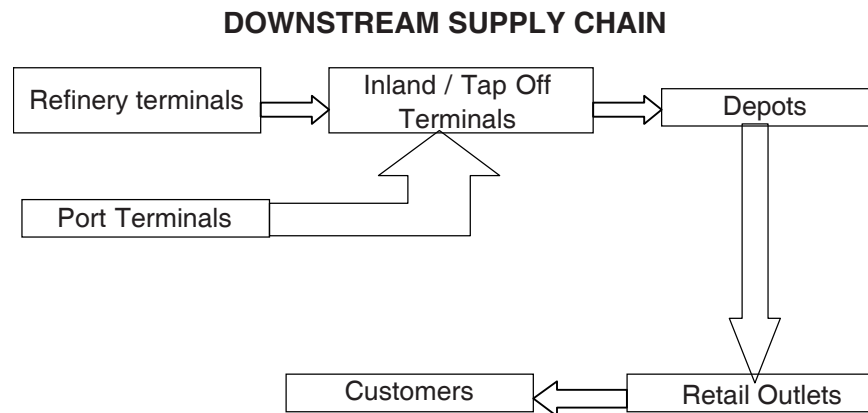
2.17 The quality control measures begin at the refinery itself at the time of transfer of product from the refinery to the TOP of the marketing company or loading of the tanker directly from the refinery to another port location. The concerned refinery provides its report confirming that the product in the tank for which transfer is proposed meets the quality specifications. Quality control labs are also set up at the refinery, TOPs, depots, port installations etc., to ensure that the products conform to the required specifications.

Marketing Process

2.18 Petroleum products being mostly liquid in nature require special facilities for storage, transportation and distribution. Most of these are volatile in nature and require special care in handling delivery. Marketing and distribution of the products is done by oil

companies normally through a large network of storage and distribution facilities as given below:

2.19 Marketing of petroleum products demands finer marketing skills in as much as the market leader is company, which can make products available to consumers in the most efficient manner at all times at right price, in right quantity, of right quality and at the right place. The marketing image can only be enhanced by extending excellent customer service and ensuring consumer/ public satisfaction. Further, market share can be improved *vis-à-vis* that of others by being pro-active and meeting customers' needs.

2.20 The marketing and distribution activity in an oil company normally falls under the following heads:

(i)   *Installation*: This consists of storage tanks and product handling facilities for receipt of products from port and/ or refineries for onward despatch to direct customers in bulk and inland depots.

(ii)   *Distribution*: This consists of depots and transportation facilities for onward movement of products to retail outlets and direct customers.

(iii)   *Administration*: For efficient management of the all India network of installations, depots, LPG bottling plants, etc., oil companies have head office, regional and divisional offices.

(iv)   *Air Field Stations*: Oil companies have infrastructure at the airfield stations consisting of storage tanks, hydrants, pipelines, hoses etc., for fuelling aircraft.

(v)   *Retail Pump Outlets*: This is the last link in the distribution and the oil companies have dedicated dealer network for retailing MS and HSD.

(vi)   *LPG Filling*: Bulk LPG imported or from the refineries is bottled at the LPG bottling plants before being marketed to the domestic and industrial customers.

Transportation

2.21 Transportation cost plays a vital role in determining the final selling prices for the consumers. The various modes used for transportation of petroleum and crude to consumers include coastal tankers, river barges, multi-product cross country pipelines, branch pipelines, railway wagons, road tank-trucks, etc. Crude oil is transported to the refineries either by tankers or by pipelines. The product from the refinery/ port installation are moved by rail, road, pipeline and coastal vessels. The centers of consumption and production and the points of import of petroleum could be at places separated by hundreds of miles. Surplus products at a location also need to be transported to areas facing deficit. Refineries could be anywhere in between the consumption and production centers. With the economics of refinery location determining the exact position, crude has to be transported from production centers or points of import to the refineries and refined petroleum products have to be transported from refineries or points of import to the consumption centers.

2.22 All modes of transportation of petroleum products complement each other and form essential components of the logistics system. For bulk transportation of petroleum products, pipelines are the most energy efficient, convenient and preferred mode of transportation. With deregulation, the oil companies and shippers have multiple options in selecting the mode of transportation and there is an increased emphasis on quality and reliability of service.

Market Intelligence

2.23 It may appear that oil companies are operating in the seller's market, the fact is that oil companies engaged in marketing gives rise to a healthy competition among the companies. Collecting market information is a critical factor for sustaining and improving operational efficiency. Being well informed also helps in knowing the pulse of the market, which would in turn, help in taking pro-active decisions and also in anticipating events before the actual occurrence and taking corrective action before the events become a part of history. The market intelligence can also be acquired by

systematic and timely collection and collation of some important facts about various markets such as:

(i)   Geographic details of area with number of States, districts, cities/towns, *talukas* and villages.

(ii)   Population of various districts, *talukas*/ villages, main occupation of the people and important crops/ agricultural seasons.

(iii)   Vehicular population and important fleet operators, workshops and garage.

(iv)   Road map showing important roads, such as national highway, state highway, MDR (Major District Roads) and village roads and their starting and terminalling points and also showing depots/ terminals/ ROs.

(v)   Road, rail, airline connection and road development, present and future.

(vi)   Competitors' activities/ strength.

(vii)   Industrial developments, number of major and minor industries and their locations, existing and expected/projected industries.

(viii)   Agricultural developments – minor and major irrigation projects, World Bank sponsored schemes.

(ix)   Infrastructure and other development of the area, housing as well as commercial.

(x)   Master plans for improvement in cities/ *talukas*.

(xi)   Government set up, important and concerned Ministers, Deputy Commissioner, Collectors, Police officials, PWD Engineers, Fire Force Officers, pertaining to each district.

Strategic Reserves

2.24 The marketing/ refining companies have to maintain strategic

reserves of petroleum products in the country since an oil supply crisis can disrupt the economic life of the country. It is therefore desirable to have a buffer to cope with the difficulties and manage the crisis should it reach a critical stage. However, before this stage is reached, it is desirable to intervene in the course of the crisis, for as supplies begin to dry up, there is a risk of speculation which fuels price increase and, to a certain extent, the crisis itself. It, therefore, makes good economic sense to have a means of defusing the crisis by off-loading the reserve stocks on the market before the crisis develops. Further, this buffer itself is a powerful deterrent for those who might be tempted to unleash a supply crisis.

Sharing Arrangements

2.25 Memorandums of Understanding (MoUs) are a common feature in the oil industry, wherein one oil company enters into an MoU for sharing product supply, storage facilities with other oil companies which have product availability and infrastructure at a given place. As one company cannot have its own source of supply and infrastructure throughout the country, this type of arrangement is necessary for oil companies for effective utilisation of their product and facilities.

Product Sharing Arrangements

2.26 MS, HSD, SKO and LPG are mass consumption products. Each marketing company has created extensive retail network to satisfy the consumer's needs. In case of LPG, customers are enrolled by each company in all demand centres and the product requirement is met out of the production of the nearest refinery and/ or out of imports.

Sharing of Other Infrastructure Facilities

2.27 It is difficult for a single oil company to have all the facilities throughout its marketing network for storing and distribution of products. It is, therefore, a normal practice in the oil industry to utilise the facilities of other company at the place where it does not

have one and in turn lend its own facilities where the other company does not have such facilities.

Sharing of Product Pipelines

2.28 The product pipelines are natural monopolies. The pipelines are shared by industry to protect consumer interests. This results in avoiding wasteful use of resources of the country, by cutting the need to build a second parallel pipeline one to the existing one.

Sharing of Port Facilities

2.29 Like sharing of pipelines, the port facilities are also shared by the Industry.

Supply to Remote Areas

2.30 There are several parts of our country which are remotely located and do not consume enough volumes of petroleum products to warrant setting up of storage and distribution facilities. Marketing companies due to socio-economic reasons are required to supply petroleum products to these areas even at losses.

Technical Parameters in the Marketing Activity

2.31 The technical parameters involved in the marketing activity undertaken by the oil companies comprise:

(i)   Facilities - Storage tanks, under ground (UG) tanks/ above ground (AG) tanks, pipelines, products pump house/ loading pump house, fire fighting system like water and foam

(ii)   OISD Norms

(iii)   Petroleum Act and Rules – Explosive norms

(iv)   Pollution control

(v)   Quality control

(vi)   ISO requirements

(vii)   Marketing guidelines

(viii) Transport discipline guidelines

(ix)   Types of markets

(x)   Types of distribution channels.

Facilities

2.32 The important factors to be noted in respect of the facilities of the oil companies include:

a)   *Product Storage Tanks* – The crude and petroleum products at the refineries/ terminals/ depots are stored in bulk in suitably calibrated storage tanks of capacity, which is related to the throughput of the location. The storage tanks are invariably installed above the ground level and are constructed on sand bed/ concrete foundation. These tanks are vertical, cylindrical in shape and either have a fixed cone roof or a floating roof. The floating roof tanks are installed to control the product losses due to evaporation. At times, the underground tanks of suitable capacity are also used for storage of petroleum products at depots. Apart from this, special types of tanks are also installed for specific uses.

b)   *Inlet and Outlet pipelines* - The inlet and outlet pipes are provided to the tanks to facilitate receipt and withdrawal of products. These lines are provided at the bottom of the tank to avoid splashing of the products at the time of receipt and ensure maximum withdrawal of product. The delivery lines invariably have pumps to guide operations. Receipt lines are also provided with pump wherever necessary.

c)   *Rail Wagon/ Tank Truck Filling Sheds* - Bulk of supplies to depots/ customers are effected by rail wagon/ tank truck. Each refinery/ depot/ installation are provided with rail wagon/ tank truck filling sheds to facilitate loading of tank trucks/ rail wagon. The number of bays provided at the rail wagon/ tank truck filling shed is commensurate with the daily/seasonal peak volumes handled at the refinery/ installation/ depot.

Rail wagon/ tank truck filling bay is connected to the tanks by pipeline of requisite diameter.

d)   *Observance of safety regulations* – As mentioned earlier, the petroleum products are classified according to their closed cup flash point as follows:

Class "A" – Liquids which have a flash point below 23°C

Class "B" – Liquids which have flash point of 23°C or above but below 65°C

Class "C" – Liquids which have flash point of 65°Cor above but below 93°C Unclassified liquids have a flash point of 93°C and above. Thus, depending on the class of petroleum products, which is required to be stored in the tank, the fabrication of the tank is carried out and required safety regulations are observed at the installation/terminal, while installing these tanks.

e)   *Product pump house/ Loading pump house* - This consists of pipeline from storage tanks, together with pumps for each products for loading the product into Tank Wagon and Tank Truck.

f)   *Fire fighting systems*- consists of water pipelines, pump house, fire engines, water storage, foam storage for controlling and putting off any fire hazards.

Oil Industry Safety Directorate (OISD) Norms

2.33 *(Please refer paragraph 2.9 for details).*

Petroleum Act and Rules - Explosives Norms, Petroleum Rules 1976 and Gas Cylinder Rules 1981

2.34 *(Please refer paragraphs 2.10 to 2.12 for details).*

Pollution Control Norms

2.35 *(Please refer paragraph 2.13 for details).*

Quality Control

2.36 The petroleum products marketed by the oil Industry conform to the Indian Standard Specifications which is followed as a marketing specification for each product. The concerned refinery provides its report confirming that the product in the tank for which transfer is proposed meets the specifications. Thereafter, required quality control measures are taken at all stages, i.e., receipt of product at TOPs through pipelines, through rail wagon, through tank trucks etc. Required procedures are followed to ensure quality control checks at various stages till the product is finally delivered to the consumer. For this purpose, quality control labs are set up at the refinery, TOPs, depots, port installations etc., to ensure that the products conform to the required specifications. Mobile laboratories are also set up to check the quality of the products while it is in transit from the supply location to the premises of the consumer (in case of delivered supplies). The mobile laboratories are also established for checking the quality of the product being dispensed from the Retail Outlet.

2.37 Product quality and specifications conform to the Industry Quality Control Manual. Petroleum products are received, stored and delivered at the Installation/ Depot as per the quality control manual for non-aviation products. The responsibility of ensuring proper quality control in various terminals/ installations and depots etc., rests with Operations Department of the respective oil company.

Motor Spirit and High Speed Diesel Order, 1990

2.38 In exercise of powers conferred by Section 3 of Essential Commodities Act 1955, the Central Government has passed this Order. The Order extends to the whole of India and its objective is to prevent malpractices in the supply and distribution of MS and HSD. For the purpose of the Order, adulteration, pilferage, stock variation, unauthorised exchange, unauthorised purchase and

unauthorised sale are considered as acts of omission and commission in respect of Motor Spirit and High Speed Diesel.

ISO Requirements

2.39 The main requirements for getting ISO – 9002 certification on the performances and working of a marketing terminal/ depot/ tap-off/ retail outlet with a total commitment on quality of services render to customers is driven by the following goals:

a) To maintain internationally benchmarked Quality Management and Environment Management system.

b) To maintain growth in marketing of products.

c) To train all employees for products knowledge, right attitude and customer satisfaction and loyalty for improving image of the company.

d) To organize oil conservation and quality awareness programs at regular intervals.

e) To train employees and dealers for overall management and dealer's staff in customer service as well as to launch new products and schemes developed by the company.

2.40 The ISO certifying agency normally looks at the following aspects before certifying that the particular marketing terminal/ depots/ tap-off point/ retail outlet meets ISO -9002 requirements:

(i) Specifications as to the responsibilities and authority of personnel as they apply to quality.

(ii) Structures of the quality system, the various levels of documentation used and the indented use of each level of documentation.

(iii) Whether the customer requirements are understood and reviewed prior to processing orders.

(iv) Whether design control is ensured.

(v) The control information that affects quality by ensuring whether the relevant documents, both internal and external, are reviewed and approved by authorized personnel prior to release, and whether all relevant personnel have access to pertinent issues and whether revisions receive the same level of authorization as the originals.

(vi) Whether the company has established and maintained a system for ensuring that purchased items and services conform to specific requirements.

(vii) Whether it is ensured that all customer supplied material and services are verified, stored and maintained.

(viii) Whether the company has established and maintained a system for identifying the product by suitable means.

(ix) Whether the company has established and maintained a system for ensuring that activities are carried out under controlled conditions.

(x) Whether the company has established and maintained a system for the inspection and testing, to ensure compliance with customer requirements.

(xi) Whether the company has established and maintained a system to control, calibrate and maintain inspection, measuring and test equipments.

(xii) Whether the company has implemented and maintained a system for indicating the inspection status of goods.

(xiii) Whether the company has ensured that goods or services containing any non conformity to specification are promptly identified, documented and auctioned in accordance with company procedure.

(xiv) Whether the company has established and maintained a system for implementing corrective and preventive action to eliminate the causes of actual or potential non conformity.

(xv) Whether the company has implemented and maintained a system for the handling, storage, packaging, preservation and delivery.

(xvi) Whether the company has established and maintained a system for identification, collection, indexing, filing, storage and disposition of quality records.

(xvii) Whether the company has established and maintained a system for planning and implementing internal quality audits.

(xviii) Whether the companies has established and maintained a system for identifying training needs and provide for the training to all personnel performing activities affecting quality.

(xix) Whether the company has established a servicing system.

(xx) Whether the company has established and maintained a system for applying statistical techniques a basis for the assurance and Control of Quality.

2.41 The above requirements have to be complied with, by the Marketing terminal/ depot/ tap-off off point/ retail outlet as it pertain to the area of operations, for getting ISO – 9002 Certification.

Marketing Discipline Guidelines (MDGs)

2.42 The Marketing Discipline Guidelines are formulated by the Ministry of Petroleum and Natural Gas and all the marketing activities of the oil companies are governed by these Guidelines. The basic objective of the Marketing Discipline Guidelines is to protect the ultimate customers' interests, so that they get the full value for their money in terms of correct price, quantity and quality. The Guidelines deal with the following:

I. Handling of MS/HSD/SKO at the oil company's storage point such as depots, terminals and installations.

II. Handling of products at retail outlets by dealers.

III. Maintenance of company equipment at retail outlets.

IV.   Inspection of retail outlets/SKO dealerships.

V.   Prevention of adulteration at retail outlets - checks/actions to be taken.

VI.   Prevention of malpractices/irregularities at retail outlets.

VII. Prevention of malpractices/irregularities at SKO/LDO dealerships.

Transport Discipline Guidelines

2.43 The purpose of these guidelines is to ensure that:-

a.   petroleum products are delivered in tank trucks in accordance with quality control manual for non aviation products as per specifications;

b.   petroleum products are transported and delivered to dealers/ customers and other storage points in good condition confirming to the specification; and

c.   a well defined system of checks exists at various stages of handling of petroleum products.

Under the transport agreement with the company the transporter are responsible for offering fit tank lorry to carry petroleum products and transporting/ delivering the same in good condition, as per specifications to the dealers/ customers, other storage points and are held accountable for any malpractice/ adulteration *enroute*.

Types of Markets

Retail Market Classification

2.44 This is mainly to identify the class of market in which an outlet has been set up.

"A" Class Market – Metropolitan cities and other cities having a population over 8 lakh as per the 2001 census.

"B" Class Market – Cities having a population below 8 lakh as per

the 2001 census excluding North Eastern States, Himachal Pradesh, Jammu and Kashmir and Uttarakhand.

"C" Class Market – All other towns/ cities not covered under "A", "B" and

"E" markets excluding locations on National/ State Highways. *"D" Class Market* – Retail outlets on National/ State Highways.

"E" Class Market – Remote areas not covered by National/ State Highways and pockets of consumptions having no retail outlet within 10 KMs radius and to cater to the requirements of the agriculturalists etc., in the remote areas i.e., areas which are not on National/ State Highways, North Eastern States, Himachal Pradesh, Jammu and Kashmir, Lakshadweep and Uttarakhand.

Types of Distribution Channels

2.45 There are two channels of marketing in selling of petroleum products, one, retail and second, direct. The retail channel comprises the following three:

a. Retail outlets for MS, HSD, Lubricants, Greases. Under the category, the following types of retail outlets are further identified:

   "A" site – which are Company owned and company controlled.

   "B" site – which are Dealer owned and company controlled.

   "C" site – which are Dealer owned and Dealer controlled.

b. Utility pumps for HSD.

c. Agency for Kerosene, LDO, Lubricants/ Greases.

Chapter 3

Internal Audit of Refining Activities

3.1   The objective of internal auditing is to assist members of management at all levels in the effective discharge of their responsibilities by furnishing them with analysis, constructive appraisals, recommendations and pertinent comments concerning the activities reviewed.

3.2   Management is a process by which the affairs of an enterprise are conducted in such a manner that its goals and objectives are attained through optimum utilization of all available resources, within the legal, social, economic and environmental constraints. To achieve optimum utilization of resources, the management should determine the goals and objectives of the concern, quantify them to the extent possible, develop major policies and plans, implement them and exercise control over such implementation. The internal auditor should constantly review each of the aforesaid managerial functions. Hence, the scope of internal audit covers the following:

•   Appraising the reliability and integrity of financial and operating information by evaluating the means developed by management to identify, classify, measure and report such information.

•   Appraising the systems, management has established to ensure compliance with policies, plans, procedures, laws and regulations that could have a significant impact on operations and reports.

•   Appraising the means, management has established to safeguard assets, and, as appropriate, verifying the existence of such assets.

•   Appraising the systems, management has established to ensure economical and efficient use of resources.

- Appraising the systems, management has established to ensure results are consistent with established objectives/ goals and operations or programs are carried out as planned.

Crude

3.3   Crude is the main input for producing refined petroleum products. Crude purchase may be indigenous or imported. The significant elements of the cost of the crude purchase includes the cost of crude, freight, customs duty, demurrage, wharfage or the port trust dues, ocean loss, other taxes and duties, insurance, etc.

Cost of Crude

3.4   It includes the price paid for indigenous/ imported crude. FOB cost of imported crude is paid according to the rates as per Term/ Spot contract with the supplier. The FOB cost of indigenous crude is paid at the rates at par with international crude prices.

Freight

3.5   Crude is generally transported through oil tankers of shipping companies and the freight is payable according to the terms of the contract of affreightment signed and entered into with the shipping companies.

Customs Duty

3.6 Customs Duty is paid on imported crude at the prescribed tariff rate. In case there is bonded storage facility, duty is payable only at the time of removal of crude oil for processing/ refining.

Demurrage

3.7   Demurrage refers to the compensation payable by the Refinery to the shipping company in case of any delay in unloading crude from the vessel, over and above the lay time as stipulated in the contract of affreightment. The holder of the Bill of Lading is required to pay demurrage at the agreed rate to the owner of the vessel.

Wharfage (Port Trust Dues)

3.8　Wharfage on crude, both imported and indigenous unloaded at the port location, is payable as per respective Port Trust rate.

Ocean Loss

3.9　This is applicable for both imported and indigenous crude. If ocean loss in a voyage is more than the prescribed limit, a claim is lodged with the shipping company for the ocean loss.

Other Taxes and Duties

3.10 Cess, royalty and sales tax, if any, is payable on indigenous crude.

Insurance

3.11　Insurance is arranged with insurance companies for an open insurance cover for crude oil shipments while in transit from foreign load points or coastal loading points till the crude oil is actually discharged at the refinery.

Internal Audit of Crude

Cost of Crude

3.12　In respect of cost of crude, the internal auditor would verify:-

(i)　Whether the crude purchase of imported/ indigenous crude is calculated as per the crude purchase agreement.

(ii)　Whether the quantity received as per the crude intake certificate corresponds with the surveyor's report.

(iii)　Whether in case the difference in the quantity loaded at the port of loading and the quantity received at the destination port is more than the specified limit, claim for transit loss (Ocean loss) is made with carrier as per the terms of the Chartered Party agreement.

(iv)   Whether the comparison of the on board quantity at the destination port with actual shore receipt has been made to ascertain the difference as a percentage of the Bill of Lading quantity. If the percentage so calculated is more than the specified limit, whether the carried quantity, if any, has been discharged in the next voyage or recovered from the carrier.

(v)   Whether the carrier has preferred protest notes with the supplier of the crude for huge difference between the gross Bill of Lading quantity and load port onboard quantity.

(vi)   Whether the difference is claimed from the supplier in case the supplier accepts the protest note.

(vii)   The Entry Tax, handling and survey charges and their accounting.

(viii)   Whether in case of imported crude, payment is made for net Bill of Lading quantity.

(ix)   Whether there is an adequate system of monitoring the due dates for payment of crude purchase whether the same is functioning properly.

(x)   Whether the payment of cost of imported/ indigenous crude is made within due dates.

(xi)   Whether correct exchange rate has been adopted while utilising the buyer's credit.

(xii)   Whether correct exchange rate have been adopted for imported crude.

Freight

3.13 In respect of freight, the internal auditor would:-

(i)   Examine the arrangements as regards transportation of crude based on terms of the purchase contract like FOB, Cand F, Time Chartered Vessel to verify whether the payment of freight made to shipping company is as per the contract of agreement signed and entered.

(ii)   Verify whether overage benefit in freight has been availed.

(iii)   Verify whether lighterage dues have been properly computed for C and F vessels and Chartered Vessels.

(iv)   Verify whether the dead weight freight paid is as per terms of agreement.

(v)   Verify computation of address commission and commission payable to private/ Government agencies.

(vi)   Verify whether the payment is made within stipulated time.

(vii)   Verify whether the exchange rate adopted for calculation of freight is as per the chartered party agreement for the Voyage.

(viii) Verify whether provision for liability has been made for the amount due at the end of financial year.

(ix)   Verify accounting treatment for the above in annual account closing.

Insurance

3.14 While auditing the insurance aspect, the internal auditor would:

(i)   Verify whether the provisional tanker details are intimated to the insurance company before the actual loading takes place as per the terms of the marine open declaration policy.

(ii)   Verify the calculation of insurance premium with regard to the FOB quantity, freight and insurance and rate of insurance.

(iii)   Verify whether the insurance certificate is received for each Voyage.

(iv)   Verify whether the provisional amount deposited with the insurance company is adjusted against the final payment towards the Voyage and the balance is carried forward for adjustment in the subsequent payments.

(v)   Verify whether sufficient balance is maintained with the insurance company to ensure that the crude in transit is always covered.

(vi)   Verify that appropriate policies to be covered for employee's mediclaim, group accident cover; public liability cover and transit cover for incoming and outgoing cargos.

(vii)   Verify whether any no-claim bonus in case of nil – claim, has been accrued and if so, whether claimed in time. This is generally applicable in case of mega risk policies, since basic amount deductible in the policy claim is kept substantially high; hence the number of claim would normally be few or nil.

Customs Duty

3.15 While verifying customs duty, the internal auditor would verify whether:

(i)   Assessable value on the basis of which customs duty is paid has been calculated with regard to FOB cost, insurance, freight and landing charges.

(ii)   The rate of exchange notified by the customs authorities as on the date of filing of INTO Bond, is adopted for calculation of assessable value.

(iii)   The actual cost of crude paid is considered at the time of finalization of customs duty payments.

(iv)   The payment is made as per the customs duty rates applicable as on the date when the Ex-Bond is filed with the customs authorities.

(v)   The payment is made for crude processed on the basis of FIFO assumption.

(vi)   The sum of the quantity drawn for production as per the Ex-Bond filed on the various dates is equal to the quantity as per the crude intake certificate for each shipment.

(vii) Proper distinction is made between indigenous crude and imported crude, as customs duty is applicable only for imported crude.

(viii) A periodic reconciliation of "Current Account with Customs" as per the current account monthly statement given by customs authority and general ledger is done.

Demurrage

3.16 In respect of demurrage, the internal auditor would need to verify:

(i) The exchange rate adopted for payment of demurrage is as per the chartered party agreement.

(ii) The reasons and the calculation of excess hours for which demurrage payment is made from the shipping documents given by the carrier.

(iii) Whether the payment is withheld if the carrier makes the claim after the stipulated period, as per the Chartered Party agreement.

Wharfage

3.17 In respect of wharfage, the internal auditor would verify whether:

(i) The wharfage is paid for the gross quantity of crude discharged by the tanker as shown in the crude intake certificate.

(ii) The rate is paid as per terms of MOU with port trust.

(iii) The provisional amount deposited with port trust is adjusted against the final payment for each vessel.

(iv) A periodic reconciliation of current account with port trust as per the current account monthly statements and general ledger is done.

Clearing Agents and Surveyors

3.18 Clearing agents are appointed to co-ordinate the process of compliance with the port trust and customs formalities. Surveyors prepare the survey report giving details of quantity of crude oil received, based on which the payment is effected. In this respect, the internal auditor would need to verify whether the payment made to clearing agents and surveyors are as per the terms of the contract and also whether the contract is renewed on expiry.

Crude Oil Ledger

3.19 Oil companies also maintain Crude Oil ledger showing the details of receipt of crude oil tanker wise and all components of crude cost. The internal auditor would need to verify the following information in the Ledger:

(i)   Whether the cost is maintained separately for imported and indigenous crude.

(ii)   Whether all the components of cost of crude like FOB cost, freight, customs duty, insurance, wharfage is entered properly.

(iii)   Whether the throughput as shown in COL is the same as the throughput shown in the monthly production statement.

(iv)   Whether the COL is maintained on FIFO basis.

Verification of other Aspects in Refining

3.20 In addition to the above aspects, the refining process involves certain other significant processes/ aspects which need to be subjected to internal audit. These aspects include:

(i)   Licencing.

(ii)   Raw water facility.

(iii)   Bitumen drum fabrication

(iv)   Bitumen plant operation.

(v)   Oil movement and storage.

(vi)   Captive power plant activities.

(vii)   Maintenance.

(viii) Shut down activities.

(ix)   Energy consumption.

(x)   Laboratories.

(xi)   Operations.

3.21 The internal auditor's procedures for verification of these aspects are discussed in the following paragraphs.

Licensing

3.22 The internal auditor would need to verify the validity of the following licences:

(i)   Waste heat recovery boilers and fired boilers of captive power plant

(ii)   Explosive licences under Petroleum Act and Rules and Gas cylinder rules and SMPV rules.

(iii)   DGCA approval to store ATF under category D and E.

(iv)   Pollution Control Board Licence for air-consent, water consent, hazardous waste management licence.

(v)   For tanks under legal metrology.

(vi)   For storage of petroleum products.

(vii)   Factory licence including approval of plant.

(viii) Weighbridge licence including plant approval.

(ix)   State sales tax registration and renewal.

Raw Water Facility

3.23 Broadly, following need to be seen by the internal auditor in respect of raw water facility.

(i)   Whether the required levies like right of way, insurance charges, raw water cess etc., have been paid.

(ii)   Whether the water pumped at the facility and water received at the refinery is being periodically monitored.

(iii)   Where the raw water facility is shared with other organisations, whether the water pumping costs and fixed costs that are required to be shared with hinterland organisations are being shared fully and recovered.

Bitumen Drum Fabrication

3.24 In respect of bitumen drum fabrication, the internal auditor would need to verify the following:

(i)   The related contract and the bank guarantees.

(ii)   Whether the fabricator has been issued steel coils beyond the bank guarantee limits.

(iii)   Any additional costs reimbursed to the fabricator and whether the same are as per the contract.

(iv)   Whether the insurance cover available at shop floor of the fabricator is sufficient to protect client's interest.

(v)   Whether the fabricator keeps stocks other than that of client. If so, how the distinction is being maintained physically.

(vi)   The results of physical verification of steel coils at fabricator and recovery action for shortage.

(vii)   The records for defective drums and lids and their replacement.

(viii) Whether the fabricator is giving the correct number of drums for the coils supplied. If not, whether he has made good the shortage, else recovery made from him.

(ix) Whether there are any product losses due to drum leakage and if so, whether recovery action has been taken.

Bitumen Plant Operation

3.25 Bitumen is a category of organic liquids that are highly viscous, black, sticky and wholly soluble in carbon disulfide. Asphalt and tar are the most common forms of Bitumen. Bitumen in the form of asphalt is obtained by fractional distillation of crude oil. Bitumen being the heaviest and being the fraction with high boiling point, it appears as the bottom- most fraction. Bitumen is primarily used for paving roads. Its other uses are for the general water proofing products, including in the production of roofing felt and for sealing flat roofs. In a Bitumen plant, manufacture of Bitumen takes place as also filling of the Bitumen into drums for dispatch and sale. The internal auditor would need to verify the following aspects of bitumen plant operation:

(i) Capacity utilisation, whether the same has been optimised.

(ii) Fuel/ electricity etc. consumed *vis-a-vis* norms.

(iii) Efficiency of operation as per the management's laid down norms.

(iv) Idle time and reasons therefor.

(v) Consumption of chemicals/ catalysts with laid down norms.

(vi) Production planning *vs*. actual execution.

(vii) Matching of production schedule with sales

(viii) Reasons for off-spec production and remedial measures taken.

(ix) Where there is manufacturers' guarantees are in place, verify whether the guaranteed outputs/ consumption etc., are matched.

Oil Movement and Storage

3.26 This activity is an offsite management facility, which deals with:

(i)   Entire stock accounting of crude oil.

(ii)   Analysing the stock loss on crude oil.

(iii)   Payment of statutory levies on crude oil.

(iv)   Verification of calibration of storage tanks.

(v)   Stock accounting of refined petroleum products.

(vi)   Payment of statutory levies on finished products.

(vii) Sludge generation and disposal there off.

(viii) Verifying fuel loss accounting.

(ix)   Verifying the actual production with the budgeted production.

(x)   Filing of returns of excise and customs duty with statutory authorities.

3.27 In respect of the oil movement and storage, the internal auditor would need to undertake the following procedures:

(i)   Verify water drainage from crude tank/ other tanks – production losses.

(ii)   Verify operation Loss (other than fuel and loss).

(iii)   Verify crude receipts.

(iv)   Analyse ocean loss – loading losses, transit losses, and unloading losses.

(v)   Verify surveyor's gauging for tanks.

(vi)   Verify production planning – crude composition *Vs* yield composition and RTP *Vs* demand forecast.

(vii)   Verify calibration chart of tankages and their validity.

(viii) Verify flow meter reading *vis-à-vis* tank gauges for receipt/ despatches.

(ix)   Verify slop generation (dry-wet slop).

(x)   Verify sludge generation/ disposal record of sludge generation (in storage tanks).

(xi)   Verify list of contaminated products received/ treatment.

(xii)   Verify PLT losses – dispatch *Vs* receipt.

(xiii) Verify dormant tanks loss (Refer RG1 and AR3As).

(xiv)   Verify inter tank transfer losses.

(xv)   Verify operation loss (export) from these tanks (loaded *Vs* received at ship).

(xvi)   Verify gauge tickets for serial no., signatures, dips in dip register, corrections, and cancellation.

(xvii) Verify fuel and loss accounting.

3.28 Additionally, following aspects of the production planning are also required to be verified by internal audit:

(i)   Dip Stock Statement.

(ii)   Production Report-internal format.

(iii)   Daily deviation report.

Captive Power Plant (CPP) Activities

3.29 Captive power plant provides uninterrupted power and steam supply for running the pumps, compressors and other equipments. For meeting any emergency, alternative source of power supply from outside is also lined up. Super heated and saturated steam at various pressures is also supplied for process units and offsite area from this system. Steam is used for heating, striping in

columns, atomisation of fuel oil before burning in furnace, fire fighting, driving steam turbines and power operation. A steam turbine is a mechanical device that extracts thermal energy from pressurized steam and converts it into useful mechanical work. A Turbo generator is a Turbine directly connected to an electric generator for generation of electric power. Steam powered Turbo generators provide a majority of world's electricity and are also used by steam powered.

3.30 The procedures for internal audit of CPP activities would include:

(i)   Verification of capacity utilisation, whether optimized.

(ii)   Verification of fuel/ electricity etc., consumed *vis-a-vis* norms.

(iii)   Verifying the efficiency of operation as per the Management's laid down norms.

(iv)   Verifying the idle time and reasons therefore.

(v)   Verifying production planning *Vs* actual execution.

(vi)   Where there is manufacturers' guarantees are in place, verifying whether the guaranteed outputs/ consumption etc., are matched.

Maintenance

3.31 In a refinery there is an increased emphasis on sustaining high level of throughput and low level of down time. To achieve this it is necessary that the plant and equipment be maintained in good working order. Successful maintenance operations assist in maximizing efficiency and postponing or reducing future Capital expenditure. Maintenance can be preventive maintenance or corrective maintenance. The preventive maintenance refers to the efforts to avoid damages/ breakdown prior to the any noted damage or brake down. The corrective maintenance refers to efforts to rectify a breakdown or imminent breakdown of equipment in the Refinery.

3.32 The scope of internal audit in respect of the maintenance activity includes verification of:

(i)   Schedule of preventive maintenance.

(ii)   History cards of equipments – due date for maintenance.

(iii)   Segregation of equipments as per nature – critical/ non-critical.

(iv)   Monthly performance of rotating equipment.

(v)   Maintenance suggested by inspection department.

(vi)   Recommendations by annual internal safety audit *vis-à-vis* compliance thereof.

(vii)   Completion time *Vs* planned time.

(viii) Actual cost *Vs* planned cost.

(ix)   Actual job done *Vs* planned scope.

(x)   Utilisation of cranes/ compressors – idling time.

(xi)   Idle equipment.

(xii)   Budget *Vs* actual expenses.

Shutdown Activities

3.33 The throughput of major Refinery units declines as the catalyst becomes spent and the corrosion resulting from heat and minerals reduces product flows. Production overtime is closely monitored and plans are set to 'Turnaround" or "Shutdown and Overhaul" a unit. This requires a major effort on the part of the Refinery and has significant financial impacts in terms of both cost and short term loss of revenue. In a turnaround or shutdown and overhaul, the units are completely overhauled. Pumps are replaced, trays are repaired or replaced, and, in catalytic units, the catalyst is refurbished and replaced and all corrosion is removed. Major turnarounds or shutdowns are required to be performed on an annual or bi-annual basis.

3.34 Internal audit of the shut down activities involves verification/ analysis of the following aspects:

(i) Periodicity of shutdown.

(ii) Recommendations made by inspection for turn around *vis-à-vis* compliance.

(iii) Unit-wise planned shut down duration *vis-à-vis* actual period and reasons for variations.

(iv) Unit-wise records maintained during shutdown.

(v) List of POs placed by maintenance for shutdown work.

(vi) Utilisation of procured items as well as surplus generation.

(vii) Local cash purchases in turnaround.

(viii) Crane hiring *Vs* crane utilization at garage.

(ix) Price for items purchased during shutdown *vis-à-vis* price for regular purchase.

(x) Material received after shutdown.

(xi) Budget *Vs* actual expenditure.

(xii) Creation of fixed assets.

Energy Consumption (Encon)

3.35 Every refinery consumes fuel/ energy while refining the crude oil into refined products. Energy efficient processors/ equipment such as furnaces, pumps, exchanges are to be examined and monitored for optimum consumption of fuel/ energy. Continuous updation of energy consumption techniques for efficient utilization of fuel/energy is required.

3.36 The internal auditor's procedures in respect of audit of Encon include:

(i) Verification of the records maintained for consumption of the fuels.

(ii)   Verification of the consumption of the fuel *vis-à-vis* the pattern and the reasons for higher consumption and remedy therefore.

(iii)   Verification of the reasons for the unidentified losses/ gains.

(iv)   Examining the abnormal variation in case of higher fuel and loss.

(v)   Verifying the envisaged benefits of the upcoming ENCON projects.

(vi)   Verifying the benefits of the completed ENCON projects.

Laboratories

3.37 After the crude oil is refined into the finished products and the products are taken to the product tanks, samples of the finished products are sent to the laboratory for testing. Once the product meets the quality specification as per BIS or customer requirement, then the certificate of quality is issued by the laboratory. Thereafter, the product is dispatched to market.

3.38 The following is an illustrative set of procedures for the internal audit of laboratories:

(i)   Verify quality control – testing as per specifications/ cancelled/ revised test reports.

(ii)   Verify time taken to release test reports.

(iii)   Verify treatment to off-spec batches.

(iv)   Verify monthly MIS/ statutory reports.

(v)   Verify whether the activities of R and D centre are in line with the proposal.

(vi)   Verify utilisation of all the equipment/ facilities.

(vii)   Verify idle facilities/ equipment.

Internal Audit of Operations

3.39 Internal audit of the operations covers the following aspects of the refinery:

(i)   Crude distillation unit.

(ii)   Hydrocracker unit.

(iii)   Hydrogen unit.

(iv)   Gas oil hydro-desulphisation unit.

(v)   Visbreaker unit.

(vi)   Sulphur recovery unit.

(vii)   Consumption of chemicals and catalysts.

Crude Distillation Unit

3.40 This unit is used for distillation of crude oil which is carried out in the column and Gas oil, Kerosene and Heavy Naphtha are withdrawn as side draw-offs. The unit is based on the principle of fractional distillation as discussed earlier in the publication. Crude oil is separated into fractions by fraction distillation. The fractioning column is cooler at the top than at the bottom so the vapours can condense more easily while moving up the column. The heavier fractions that emerge from the bottom of the fractionating column are often broken up (cracked) to make more useful products.

Hydrocracker Unit

3.41 The purpose of Hydrocracker unit is to crack (split) crude oil into different types of products at different ranges of temperature. Hydrocracking is a catalytic cracking (splitting) process. The products of this process are saturated hydro carbons. Major products from hydro cracking are Jet Fuel, Diesel, relatively high octane rating gasoline fractions and LPG. All these products have a very low content of sulphur and contaminants.

Hydrogen Unit

3.42 The need of Hydrogen is increasing day by day for treating the products like Petrol (Motor Spirit), HSD, fuel oils and feeds for FCC (Fuel Catalytic Cracking) and other plants for bringing down the sulphur. The purpose of Hydrogen plant is to produce Hydrogen for meeting the requirement of various Hydro treatment process of crude oil. The feed for Hydrogen plant is Refinery fuel gas, saturated LPG, Natural Gas and light Naphtha.

Gas Oil Hydro-Desulphurisation Unit

3.43 The purpose of the unit is to remove Sulphur and Nitrogen, convert olefins/ aromatics[1] to saturated compounds; and remove contaminants like oxygenates and organometallic compounds. This unit is used for the production of extra low sulphur diesel with a sulphur content of less than 0.25 per cent, which results in positive environmental protection in the control of automotive emissions.

Visbreaker Unit

3.44 It is an operation that converts high viscosity Petroleum stocks to lower viscosity Petroleum stocks suitable as heavy fuel oil. Viscosity is a measure of resistance to flow and is an important parameter for desalting. It is also highly dependant on temperature. Higher viscosity crude needs high temperature for effective desalting. There is a limit for temperature in de-salters operation. Viscosity is an important property for lube oils because it gives the lubricating property to the oil. This is required to prevent wear and tear in the moving parts of a machine on occurrence of metal to metal contact. For fuel oils, it gives flow properties which are needed for pump selection for transporting. The process of removing salts from crude oil is called desalting. These salts cause severe corrosion in crude refining units. The de-salters are designed for removal of 99 percent salt in crude oil. De-salters remove salts, sludge and mud from crude to avoid corrosion and fouling in exchangers' columns and down stream equipment.

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1 Olefins/ Aromatics are unsaturated Hydrocarbons.

3.45 A visbreaker is a chemical plant where thermal cracking in a furnace reactor (at high temperature) is used to transform heavy Hydro carbons (e.g., vacuum distillation residue) into lighter hydro carbons (LPG, Gasoline). Heavy hydro carbons are generally used as fuel oil in chemical plants. The product of the visbreaker has lower viscosity.

Sulphur Recovery Unit

3.46 Sulphur is a mixture of 'Sourness" and "Sweetness" of crude, sweet grades have less than 0.5 per cent of Sulphur whereas sour grades will have greater than 0.5 per cent of Sulphur. Sulphur, besides being corrosive to the fuel systems, is a pollutant to the air and affects life. Global efforts are being made to minimize the sulphur content in Petrol, High Speed Diesel and fuel oils. The objective of Sulphur recovery unit is to convert Hydrogen Sulphide (H_2S) into elemental Sulphur. Sulphur recovery is required because of increasing demand for environmental friendly fuels, increased use of High Sulphur and heavier crudes in future as also tightening of emission of standards by government/ regulatory bodies.

3.47 Internal auditor's procedures in respect of the crude distillation unit, hydrocracker unit, hydrogen unit, gas oil hydro-desulphisation unit, vis breaker unit and sulphur recovery unit are more or less similar and include:

(i)   Verifying whether there is optimum capacity utilisation.

(ii)   Verifying fuel/electricity etc. consumption vis-a-vis norms.

(iii)   Verifying efficiency of operations as per the Management's laid down norms.

(iv)   Verifying idle time and reasons therefore.

(v)   Verifying consumption of chemicals/ catalysts with laid down norms.

(vi)   Reviewing production planning *Vs* actual execution.

(vii)   reviewing production schedule vis a vis sales

(viii) Examining reasons for off-spec production and remedial measures taken.

Where there are manufacturers' guarantees in place, the internal auditor would verify whether the guaranteed outputs/ consumption etc., are matched.

Consumption of Chemicals and Catalyst

3.48 During the refining process of crude oil, various chemicals and catalysts are used. The purpose of chemicals is mainly to improve the quality of products so as to meet the desired specifications. Catalysts are used in various reformers and other secondary processing facilities. A catalyst is the substance that is introduced into the refining process, which initiates a chemical reaction that cracks (splits) the crude oil molecules into its components. Catalysts used in the refinery process are usually various metals including precious metals.

3.49 In respect of the consumption of chemicals and catalysts, the internal auditor would normally verify the following:

(i) Inventory of chemical/ catalyst.

(ii) Slow moving chemicals and verify their shelf lives.

(iii) Status of temporary items/ regular items/obsolete items.

(iv) Disposal of obsolete items.

(v) Procurement of chemical/ catalyst *Vs* consumption.

(vi) Issue *Vs* consumption.

(vii) Consumption versus budget and consumption versus norms.

(viii) Excess consumption of chemical catalyst.

(ix) Catalyst replacement activity and disposal process of spent catalyst.

(x) New catalyst procurement activity *vis-à-vis* the performance criteria adopted and the guarantees obtained.

Chapter 4
Internal Audit of Marketing Activities

Purchases

4.01 Marketing companies purchase the refined products from the refinery/other marketing companies for the storage and distribution of products to the ultimate consumers. The purchase accounting between the Oil Companies is termed as Inter Oil Company transaction/ product exchange, which includes not only purchase of products, but also rendering storage assistance, by one company to another company. The product exchange, storage assistance and other hospitality arrangements are entered into between oil companies with a view to eliminate the avoidable cross-haul of products and reducing the strain in the transportation network and as well as to bring down the distribution cost.

Quantity Determination

4.02 Quantity delivered by the refinery is determined in terms of KL at 15 degree centigrade by converting the dip reading into volume by using valid calibration charts issued by the CPWD. Where the products are to be billed in MT basis, the volume is to be converted into MT quantity by using the ASTM tables by duly applying the volume reduction factor and density.

Types of Inter Company Transactions

4.03 The inter oil company transactions (sourcing of products) among marketing oil companies normally take the following forms:

- Outright purchase/ sales.

- Hospitality assistance.

- Safe keeping assistance.

- Loan transaction.

- Decantation of Tank wagons.

Outright Purchase/ Sale

4.04 These transactions take place at the industry locations *viz.,* refinery supply points, pipeline tap off points and marketing company's terminals put up near a refinery. The produce is transferred from the seller to the buyer company, ordinarily, by means such as tank wagon (TW), tank trucks (TT), tank to tank transfer through pipelines, tanker or barge. It is also important for the internal auditor to understand that where such outright purchase takes place at the refinery, the costs involved in such transactions at the refinery include the refinery transfer point (RTP) or the import parity price (IPP), the excise duty, inland freight upto inland refinery from the nearest port, terminalling charges and other applicable taxes and statutory dues. If, however, the purchase takes place at a point other than the refinery then the freight upto the depot/ tap off or installation point from nearest port as well as the inventory carrying costs would also be included in the cost as mentioned afore.

Hospitality Assistance

4.05 Hospitality arrangement envisages extending storage assistance by the company owning the facilities to another company who may or may not have storage facilities at that location. The hospitality assistance involves costs in terms of terminalling charges and the stock loss as per norms.

Safe Keeping Assistance

4.06 Safe keeping assistance can be rendered by a marketing oil company to another marketing oil company at negotiated terms at the assisting company's storage location at the port or upcountry installation. It can also be extended at depot location where assisted company's own storage facilities are inadequate to handle additional volume. Safe keeping assistance also involves costs in terms of terminalling charges as well as stock loss as per norms.

Loan Transactions

4.07 Such transactions are entered into on spot basis to tide over the emergent situations of product shortage or slippage of the arrival of TT and TW. All loan transactions are repayable by the borrowing company from out of the subsequent purchases by it.

Decantation of Tank Wagon

4.08 At times, tank wagon originally consigned to up-country location of a marketing oil company might be diverted or wrongly placed at the siding of other marketing companies or their bulk customers. Industry has in place a procedure to trace these transactions and to find out the original dispatch details. On ascertaining the original information of dispatches, the settlement of accounts between marketing oil companies is effected. Valuation of product decanted is based on the source of the product for TAIPP and destination for excise duty/ sales tax, freight and terminalling charges. Quantity received at the decanting location should be as per dispatch quantity. All transit losses should be borne by the decanting company. There should not be any under recovery for the original consignee company on any account.

Product Accounting

4.09 All product accountings are done at 15OC. For products pumped in the local pipelines, accounting thereof is based on the following factors:

(i)   The actual quantities pumped from the mother tanks, in case of marketing terminals of one oil marketing company to Marketing terminals of other oil marketing companies.

(ii)   The actual quantity received in Marketing terminals tanks of one oil marketing company from the Refinery tanks of other oil marketing companies.

(iii)   Actual quantity pumped from the Refinery tank of one oil marketing company to Refinery tanks of other oil marketing companies.

(iv)   In case of coastal movement, the billable quantity is determined on the basis of quantity of products delivered as measured in the shore storage tanks at the loading location. In case of import of product, all import related cost, including ocean losses, is normally shared in the ratio of quantity received by each party.

Settlements

4.10   Inter oil company transactions take place reciprocally (i.e., purchase and sale of petroleum products takes place between the marketing oil companies at different locations simultaneously). Hence, to avoid multi- point settlement work, a centralised net settlement system has been established by the oil industry. These centralized settlements take place every month. Local Sales tax payable on sales/ purchase transaction, if any, is paid by the assisted company to assisting company on the due date of payment as per the applicable sales tax law. Monthly settlements among the companies are based only on Joint Certificates (JCs). Separate JCs are prepared for the current month and for prior period transactions. Based on the JCs, monthly billings for all elements of price, duty, freight, taxes and other charges are exchanged and final settlement thereof effected. Payment for the terminalling charges is made on a monthly basis on receipt of the claims from an oil marketing company. Cost of coastal tanker movements including ocean losses and other associated costs incurred as per ILP are shared by the oil marketing companies. It should be, however, noted that in case of oil companies marketing their own refined products, the above purchase accounting would not apply.

4.11   The internal auditor needs to verify the following aspects of purchase accounting:

(i)   The type of inter company transaction made.

(ii)   Whether the elements of purchases are recorded as per the type of inter company transactions.

(iii)   Whether the product accounting are done as per paragraph 4.09.

(iv)   Whether the quantity billed is as per the joint certificate

(v)   Whether TAIPP price as prevalent at the time of despatch has been charged.

(vi)   Whether Excise Duty at prevailing rate as on the date of despatch has been charged.

(vii)   Whether relevant Railway Freight/ Siding/ Coastal Freight/ Pipeline Freight has been paid.

(viii)   Whether relevant inventory holding charges/installation charges are paid as per the MoU with other companies.

(ix)   Whether the product despatched from the loading base has been received at the receiving location and look into the same if not received.

(x)   Whether other amounts paid are in line with MoU between the Companies.

(xi)   Whether the payments are made as per payment terms specified in the MoU between the companies.

Sales Accounting

4.12   After producing different products from crude, the Refinery undertakes sale of products through the marketing companies/ units or directly to the customers. The sales may take place in the form of Sales to marketing companies/ units in respect of mass consumption products like MS, HSD, SKO (D), LPG (D), ATF, in line with marketing arrangement and also other petroleum products or direct sale by refinery in respect of LDO, FO, LSHS, Naphtha, LPG (B), Base Oil (for Lube manufacturing), Wax, Bitumen, Hexane, Propylene, Hydrogen and other industrial petroleum products. The transfer of product takes place by way of coastal tanker, pipeline, rail wagon, tank lorries and trucks.

4.13   A Product Outturn Certificate (POC) is the basis of preparation of invoice for sale of petroleum products. This certificate indicates

opening and closing dip measurement of oil and water, temperature, density, volume correction factor and gross oil, free water, net oil at observed temperature, net oil at 15OC in volume and weight and quantity of oil transferred worked out after applying volume correction factor.

4.14 Sales are affected through a supply distribution network comprising of installation, despatch unit, depots, LPG bottling plant, from where the products are sold to dealers, distributors as well as direct consumers. Products are sold either directly to the consumers or through a network of dealers. In case of bulk purchasers, deliveries are affected through pipeline or through other modes of transport. In case of MS and HSD the sales are affected through Retail Pump Outlet (RPO), which are either operated by dealers appointed by the Company or by the companies themselves. The prices chargeable to Retail Outlet Dealer/ Direct Consumer are intimated to respective Depots/ Installation on a regular basis and as and when there is a change in the prices. The sales invoice package is installed at the Depot/ Installation for raising the invoices and receiving the payments thereof. The sales invoice is raised from the supplying location like Depot/ Installation and payments are collected at the location itself. In case of sales to dealers, the payment is against supply of products. In other words, the sales are on "Cash and Carry" basis. Since the amount is collected immediately on sale of products, there are no debtors in this case. However, Government consumers and certain major consumers are extended credit facilities.

Types of Sales

4.15 Sale of finished petroleum products falls into two categories – retail and industrial/ direct consumers. The following table gives the details of product, type of sale, type/ mode of payment:

Product	Type of Sale	Type/ Mode Of Payment	Remarks
MS	Retail/ Credit	Advance Payment/ Payment against Supply / Extension of credit	For sales through Retail Pump Outlets only.
HSD	RetailIndustrial/ Direct Customers	Advance Payment/ Payment against Supply/ Advance Payment/ Payment Against Supply/ Extension of Credit.	
SKO	PDS	Advance Payment/ Payment against Supply	This kerosene is doped with Blue Dye for PDS
SKO (I)	Industrial/ Direct Customers	Advance Payment/ Payment against supply/ Extension of Credit.	
LDO/FO/ Naphtha/ LSHS/ Bitumen	Industrial/ Direct Customers	Advance Payment/ Payment against supply/ Extension of credit	
LPG	Domestic	Advance payment/ Payment against supply	
LPG	Industrial/ Direct Customers	Advance payment/ Payment against supply/ Extension of credit	
ATF	Aviation Sector	Advance payment/ Payment against supply/ Extension of credit	
Other Heavy Crude of Petroleum Products	Industrial/ DirectCustomers	Advance payment/ payment against supply / Extension of credit.	
Base Oil	Industrial/ DirectCustomers	Advance payment/ payment against supply/ Extension of credit.	

4.16 The internal auditor's procedures with regard to the sales accounting would include:

a)   Verifying the type of sales affected, whether cash or credit and Retail or Direct Customer.

b)   Verifying that the appropriate price is charged to each customer/ dealer, as applicable to them depending on the delivery point.

c)   Verifying, in case of credit sales, that proper approval has been given by the competent authority, as per Credit Policy, after appropriately evaluating the credit worthiness of the Customer/ Dealer.

d)   Verifying that price change, whenever it occurs, is properly billed to Customer/ Dealers and accounted for.

e)   Verifying that each Customer/ Dealer is paying the invoice amount through such mode of payment (as approved by the competent authority).

f)   Verifying the age-wise analysis of debtors on regular basis.

g)   Verifying that the discounts/ rebates charged to customers/ dealers are as per the rates approved by the competent authority, as applicable to each customer/ dealer or category of customers/ dealers.

h)   Verifying that short-payments are received from the customers/ dealers within a reasonable time.

i)   Whether a periodic report of customer dues, invoice wise taken and analysed for overdue payment.

j)   Whether periodic reconciliation of customer balances is done.

k)   Whether 'balance confirmations' are obtained from customers.

l)   Verifying that outstanding dues are collected as per due dates and in case of collection beyond due dates, interest and penalty, in case the sales contract so provides, are collected.

m)   Verifying that the appropriate sales tax rates are applied and necessary concession forms in respect of Sales Tax are collected.

n)   Verifying that appropriate concessional excise duty rates are applied and the necessary concessional forms in respect of Excise Duty collected.

4.17 In respect of the export sales, the internal auditor would need to verify the following:

•   Advance Licenses/ Duty drawback and utilisation of same.

•   Duty free replenishment certificates.

•   Liabilities provided and the end of the accounting year towards the above.

Sales Tax

4.18 Sales Tax is paid to respective State authorities on or before the due date on the basis of tax register generated on a monthly basis. The monthly returns are filed along with the payment made every month. In addition, an annual return is also filed before the prescribed dates. Yearly assessment is taken up immediately after the close of the yearly account and completed at the earliest.

4.19 In respect of the sales tax, the procedures of the internal auditor would include verification of the following:

(i)   Whether the monthly turnover as per the books reconciles with the turnover as per monthly sales tax return.

(ii)   Whether sales tax return is filed with sales tax authorities within due dates.

(iii) Whether the approval of competent authority has been taken for charging concessional sales tax to customers.

(iv)   Whether the concessional forms are filed with sales tax authorities along with monthly returns.

(v)   Whether the applicable taxes are charged to customers

(vi)   Whether the revision in tax rates are applied from the due date.

(vii) Whether in addition to monthly returns, annual returns are filed with sales tax authorities.

(viii) that in the case of any disputes in sales tax demanded by tax authorities, whether necessary appeal is filed with Appellate Authority and are shown as Contingent Liabilities.

Value Added Tax (VAT)

4.20 The Value Added Tax (VAT) concept has been adopted by all the States Sales Authorities except Tamil Nadu and Uttar Pradesh. The concept of Value Added Tax is that at each stage of sale of goods/ products, the subject goods/ products will be taxed at the applicable VAT rate. The reseller of the goods will be entitled to get a set off of the tax paid on purchase of goods against the sales tax payable on resale of goods. With the introduction of VAT, multiplicity of taxes levied by State Sales Tax Authorities like Turn over tax, surcharge on sales tax, additional surcharge are abolished.

4.21 In respect of VAT, the internal auditor would examine the following aspects:

(i) That VAT registration has been applied and obtained the registration number.

(ii) That Input Tax Credit has been availed in case of purchase of products/ goods which are eligible for Input Tax Credit.

(iii) The list of products/ goods which are eligible for Input Tax Credit.

(iv) That Tax payer Identification Number (TIN) has been shown in all invoices.

(v) That Returns to be filed monthly/ quarterly as specified in the State VAT Act/ Rules are complied with.

(vi) That VAT rates are applied at applicable rates

(vii) That the VAT payable on sale of goods are paid after set off

of the Input Tax on purchases of goods and paid to authorities as per due dates.

(viii) That Self Assessment returns are filed as per the VAT Act.

(ix) Whether there is any demand for tax/ penalty from VAT authorities for non payment of VAT tax with in due dates and for non filing of returns with in due dates.

Excise Duty

4.22 Excise Duty becomes due as soon as manufacture of a product is completed. Accordingly, after refining of crude oil is completed, duty has to be paid on all products at the applicable rates. The duty is charged at the time of removal of products from refinery. While verifying the excise duty, the internal auditor would need to verify:

(i) Whether excise returns are filed with department within the stipulated time as per the Act.

(ii) Whether the Cenvat credit available for a particular month is set off against excise duty payable, to arrive at the balance amount payable to excise department.

(iii) The action taken in case of show cause notices received from the excise department.

(iv) Whether the product list is periodically filed with Excise department as and when there are changes in the same.

(v) Whether there are instances where the excise duty is collected from the customers but the same has not been remitted to excise authorities.

(vi) Whether there is any disputable duty demanded by the excise authorities, if yes, then whether in that case appeal is filed with the appellate authorities and are shown as Contingent Liability.

(vii) Whether there is a list maintained classifying various items as cenvatable or non-cenvatable so as to facilitate availing of Cenvat credit

(viii) Whether the documents received are properly maintained in Cenvat Section to facilitate preference of claims and for further reference.

(ix) The accounting of Cenvat claims, including the details of total Cenvat claimed, utilized and expunged and balances to be claimed.

(x) Whether there is any time delay in preference of Cenvat claims.

(xi) Whether RG23 Part C is prepared as required under Statute and the same is submitted to central excise before the due date for the respective month.

Collection Accounting

4.23 Operations of an oil company are normally spread out throughout the length and breadth of the country, treasury activities being centralised at the corporate head quarters. As such, the sales proceeds are remitted to the head office, from all the selling points. Most of the major payments are handled at the head office. Consequently, the process of collection of funds at the up-country locations (Depots, Installation, LPG Bottling Plants) and its subsequent movement to head office assumes considerable importance.

It normally covers all the operations from the time the sale is affected till the monies are received and used. It commences from the point the instruments are lodged at the up-country locations and it covers the movement of the funds and ends with the ultimate use at head office. Collections are generally in the form of demand draft, pay order, cheques, electronic transfers, etc.

4.24 The internal auditor, while carrying out internal audit of the collection accounting aspect would need to look into the following:

a) Whether the payment instruments are deposited in the designated bank on a daily basis at the product supply point.

b) Whether the designated bank transfers the amount deposited

on a daily basis, to the Main Collection Account at the Head/ Corporate Office, as per the agreement with the respective banks.

c) Whether the bank charges collected by the bank are as per the agreement.

d) Whether in case of delay of transfer of funds, the banks are paying interest for the delayed transfer, as per the agreement.

e) Whether all the bank statements are received as on a regular basis.

f) Whether monthly reconciliation of all the bank accounts is being done to find out the missing credits to be given by banks.

g) The correspondence with the banks for getting missing credits.

h) The control measures adopted over the dishonoured instruments and subsequent receipt of amount together with interest and penalty.

i) Age-wise analysis of amounts not credited by the bank.

Sales Tax

4.25 Sales tax collected on sale of products are paid to the respective State authorities on monthly basis depending on due dates of respective tax authorities. The payment of sales tax is based on the sale tax summary obtained on monthly basis from sales accounting. The internal auditor's procedures in this regard would be similar to those in paragraph 4.19.

Value Added Tax (VAT)

4.26 The concept of VAT and the internal auditor's procedures in that regard has been discussed in paragraphs 4.20 and 4.21.

Excise Duty

4.27   Excise duty is payable on the products only when the products received from the refinery are under bonded movements. In other words, duty is payable when the refinery transfers the products to marketing terminal/ installation/ depot under Bond without payment of duty.

4.28   The areas to be covered by the internal auditor in this regard include:

a)   Verifying whether duties have been paid at the applicable rates.

b)   Verifying whether assessable values have been properly ascertained.

c)   Verifying whether duties have been debited to PLA Register on the due date only i.e., 5th of the following month for the previous month removals.

d)   Verifying whether RG1 Register is kept up to date with all the information.

e)   Verifying whether re-warehousing of AR3As for bonded movements have been done within permissible time limit.

f)   Verifying that monthly returns are filed in time.

g)   Verifying that the condonable limit of storage/handling/in transit losses as per Excise Act have been availed, were applicable.

h)   Verifying whether all the show-cause notices have been replied within a reasonable time and proper action taken thereon.

i)   Verifying issue of invoices subjectable to cenvat.

j)   verifying the availment of cenvat on raw materials, base oils and additives (for Lube Plants).

k) Verifying that in case demand raised by authorities is not accepted, appeals have been filed with appellate authorities and shown as contingent liability.

Customs Duty

4.29 Customs duty is payable when finished products are imported, for example, in case of shortage and also in case of shut down of refinery for maintenance.

4.30 The internal auditor's procedures in this regard would include:

a) Verifying INTO Bond BOE-Rate declaration quantity.

b) Verifying certification by surveyors/ CE authorities – receipts.

c) Verifying payment of duty (ex-bond) *Vs* actual clearance – delay and impact.

d) Verifying holding of customs product over a year in bond and filing for codonation, where required.

e) Verifying final BOE (scrutinised by authorities).

f) Verifying removal of Customs Product *Vs* Duty Payment.

g) Verifying the terms and conditions of the contract with the clearing and forwarding agents, if any.

h) Verifying the ocean losses analysis and claim status.

i) Verifying review of other payments to Port, Customs, etc.

j) Verifying that where in case demand raised by authorities are not accepted, appeals are filed with appellate authorities and are shown as Contingent Liability.

k) Verifying the extent of duty paid stocks held and funds blocked over and above consumption requirement.

Stock Accounting

4.31 A sound stock accounting system enables timely preparation

of Balance Sheet and Profit and Loss Account, submission of accurate monthly statements in a timely manner to bank(s) for hypothecation of goods where necessary, submission of accurate monthly returns in a timely manner to insurance company under Declaration Policy, accurate assessment of adventitious gains/ losses on account of changes in ex- Refinery price/ Excise Duty/ Freight, follow up of consignment in transit and prefer timely claim on Railways/ Transport contractors, maintenance of records as stipulated by the Excise authorities, and last, but not the least, managerial control for optimizing profit.

4.32 Since the sales are affected from Depot/ Terminal, all the products are stored at the storage tanks kept at Depot/ Terminal. Stock Accounting is done separately for Bonded and Duty paid stocks, Bulk and Packed stocks and products and packages. Each stock location maintains stock records giving details of:

a) Opening stock.

b) Receipts, Transfers, purchases – local and imported.

c) Operating gains/ transit gains.

d) Inter tank product movement receipts.

e) Total of receipts side.

f) Sales.

g) Transfers to other locations/ other companies.

h) Inter tank product movement issues.

i) Transit loss/ Operating loss/ Accident and other losses.

j) Own issues, issues for manufacturing/ blending/ samples.

k) Total of issues.

l) Closing stock.

Each location sends the monthly summary of the stock report to the regional/head office for the ultimate accounting of the stocks.

Physical Verification of Stocks

4.33 Physical stock of crude and finished petroleum products is calculated by taking dip measurement of each tank. The measurement of dip is referred to calibration chart of each tank to find out the volume of the product. The calibration chart, which is certified by CPWD contains the details of volume of the products corresponding to dip measurement. The quantity ascertained by physical measurement is verified with books stock to find out actual loss/ gain on daily basis.

Product Losses/ Gains

4.34 The petroleum products are highly volatile products and susceptible to losses during transit, storage and handling and also due to variation in temperature. Transit losses or gains occur during transportation of products by way of pipelines, coastal tankers, tank wagons, by road (by tank lorries). The losses are minimal in case of transit through pipelines. Operating or handling losses/ gains occur when the storage tanks are operated for deliveries/ cleaning. During storage of products in tanks, loss/gain may arise due to evaporation/ temperature variation.

Valuation of Stocks

4.35 Stocks are valued at cost or net realisable value, whichever is lower. The cost is determined as under:

•   Crude/ Intermediates – At cost on FIFO basis.

•   Base Oils – At Ex-Refinery price.

•   The *finished stock* at refinery is valued at cost which is calculated in the following manner:

•   Total sales value of production based on applicable actual incurred IPP of all the products for the month is calculated which is reduced by crude cost and operating cost to get the net margin percentage.

- The above net margin percentage is applied on refinery transfer price of each product and the same is reduced from the refinery transfer price to get the cost of the product.

The stocks of the *refined products* are valued as follows:

- Mass Consumption Products like MS, HSD, SKO, LPG (D) - at cost (IPP + Excise Duty + Freight)

- Industrial Products Products like FO, LDO, LSHS, Naphtha, LPG (I), SKO (I), Bitumen, ATF, Base Oil - at IPP + Excise Duty + Freight.

- Lubricants – Bulk and Packages – at weighted average manufacturing cost

Products for own use, samples and losses :

a) at the Port Installation – at IPP + Excise Duty.

b) At the Depots – at IPP + Excise Duty + Freight for the location.

Recovery of Losses

4.36 During the transportation of products from the Refinery to Installation/ Depot, if the transit losses are more than the normal percentage of loss, the same is normally recovered from the transporters like Coastal Tankers, Railways and Tank Lorry Contractors.

4.37 While examining the stock accounting aspect of the oil company, the internal auditor would look into the following areas:

(i) Whether stock reports are received from the Supply/ Distribution locations on daily/ weekly/ fortnightly/ monthly basis, as the case may be.

(ii) Whether various stocks are valued as per elements discussed above.

(iii) Whether the stock/ product dispatched by the supply locations are received at receiving locations.

(iv) Whether stocks are physically verified on a periodical basis.

(v) Whether in case of movement of product by coastal tankers, tank wagon and tank trucks that stock in transit at the end of each month are subsequently received by the receiving locations.

(vi) Whether stocks/ products are valued as per the Accounting Standard (AS) 2, *Valuation of Inventories,* issued by ICAI.

(vii) Whether various stock losses discussed above are within the normal norms of losses.

(viii) Whether stocks at all locations are adequately insured.

(ix) Whether monthly stock declarations are filed with the insurance company in order to avail stock declaration policy, thereby reducing the quantum of premium.

(x) Whether losses to be recovered from various transporters like coastal tanks, railways and tank truck contractors are received on a regular basis.

(xi) Whether an age-wise analysis of stock held, particularly lubricants and greases are periodically done.

(xii) Whether slow moving and obsolete stocks/ products are identified and properly accounted for.

Railway Claims

4.38 Railways are an economic, convenient and reliable mode of transportation of petroleum products. The oil industry, therefore, normally uses tank wagons provided by the Indian Railways for transporting its bulk products. These tank wagons are calibrated by the Oil Industry on behalf of Central Tank Wagon Calibration Committee. Sometimes, tank wagons loaded at the loading location do not reach the receiving location due to various reasons. The consignor oil company can raise a claim in respect of credit for the

products decanted wrongly by other Oil Company/ Railways or the value of the product for non-receipt of such wagon within a reasonable time. If any wagon is not received for more than a month, all efforts should be made to trace the wagon and to obtain necessary product credit or lodge claim on Railways for compensation as the case may be. Following are some of the situations under which claims are normally lodged with Railways:

- *Interception*: The product tank wagon, mostly with HSD, is intercepted by loco foremen of Railway for Railway's consumption at any of the stations *enroute* to the destination station. Although the Railways have got the consumer supply arrangement with oil companies, yet at times, some of their locations likely to become dry due to delay in receipt of wagons despatched on Railway's account and the loco foremen may decide to pull out few wagons from the rack of wagons moving on the line and decant into their storage tanks.

- *Non-Delivery*: If any of the tank wagon in a rack is not received beyond three months and the same is not traceable, then a "Partial Delivery" certificate is obtained from the destination station for non- delivery of the tank wagons and claim lodged with Railways for compensation for the value of products contained in the wagons non-delivered.

- *Short Receipt* : Short receipt of the products arise due to:

  - Leakage of products due to defective/ tampered/ missing seals.

  - Transshipment of products *enroute* from the original tank wagons into some other tank wagons due to the original tank wagon becoming defective and declared sick.

  - Rail accidents and while salavaging the products from the wagons met with an accident and transshipped into some other wagon or tank truck for transportation to the nearest depot location.

- *Excess Freight*: Some times the freight charged are paid in excess due to application of wrong rate. Necessary documents with claim are lodged with Railways for refund of excess freight.

4.39 Notice for claim for compensation in respect of all claims is required to be lodged with the Railways within six months from the date of booking or date of the Railway Receipt. The claims lodged after six months period are declared as Time Barred claims. The following documents need to be furnished to the Regional Railways Officer for lodging the claim notice:

- Copy of Railway Receipt.

- Loading/ Despatch Advice or *Challan.*

- Joint Dip Measurement and Shortage certificate issued by the Railways in case of Short Delivery claim.

- Partial Delivery or Non-delivery Certificate.

- Transhipment Certificate, if any.

- Laboratory Certificate, if any tests have been conducted.

4.40 For verifying the claims raised against the Railways, the internal auditor should:

a) Verify that stocks are reconciled on a periodical basis i.e., weekly, fortnightly and monthly basis to find out the non-receipt of products at receiving locations, after a reasonable time.

b) Verify that the claims lodged with railways are covered under any one or more of the situations mentioned above.

c) Verify that efforts are made to trace the non-receipt of products and obtaining necessary product credit or lodge claim on the Railways for compensation, as the case may be.

d) Verify that claims are lodged to the jurisdiction of respective Railway Zones.

e) Verify that claims are lodged with the Railways within six months from the date of loading or date of Railway Receipt, failing which the claims would become time barred.

f) Verify that claims are made in prescribed form separately since claim forms for non-delivery and claims for short receipt differ.

g) Verify the MIS maintained for recovery of claims.

h) Verify the necessary accounting entries made while loading the claim and after receipt of claim.

i) Verify that all the necessary documents required for lodging claim notice are filed with the Railways.

j) Verify the age-wise analysis of Railway claims.

Chapter 5

Internal Audit of Special Areas

5.1   Operations in the oil refining and marketing companies are vast, comprising numerous and extremely complex processes. Effective internal audit in such companies requires an in depth technical knowledge of these processes. It is also necessary for the internal auditor to understand and devote specific attention to certain special areas in such companies, which have a lasting impact on the effective and efficient functioning of the company. The areas requiring special attention in the refinery are (i) standard and throughput production patter; (ii) fuel consumption and loss; (iii) optimization of product mix; (iv) apportionment of joint costs; and (v) oil accounts. The aspects of marketing needing special attention of the internal auditor include (i) pricing of products; (ii) installation or terminals; and (iii) transportation. The following paragraphs provide a brief insight into internal audit of these critical areas.

Refinery

Standard Throughput and Production Pattern

5.2   The fixing of standard throughput and standard product pattern of each refinery is important as it is at this level of throughput that the refinery gets full compensation for the cost incurred and capital investment. Any refinery processing less than the standard refinery throughput is likely to incur loss whereas a refinery processing more than the standard refinery throughput will get an extra margin. The internal auditor's procedures with regard to internal audit of standard throughput and production pattern would include verification of the following aspects:

a)   Whether the standard throughput level has been fixed.

b)   Whether a standard product pattern of the refinery is defined.

c)   Whether the refinery achieves the standard throughput to get full compensation for the fixed cost and capital investment.

d)   Whether the refinery achieves more than 100 percent of the standard throughput to get more margins.

e)   Whether the actual yield is commensurate with the expected yield.

f)   The trend of production in the last few years *Vs* ILP (Industry Logistic Plan).

g)   ILP *Vs* actual upliftment.

h)   Gross Refinery Margin (GRM).

Fuel Consumption and Loss

5.3   Some crude oil is consumed as fuel and lost in the process of refining. The ceiling fixed for fuel consumption and loss in refineries is generally high, higher than even the actual figures. Thus, there is no deterrent against fixing higher percentage of fuel consumption and loss. Since both these factors ultimately reduce the net availability of crude oil for refining, they should be minimised with reference to a given pattern of production to achieve the maximum efficiency.

5.4   Internal audit of fuel consumption involves verification of the following aspects:

a)   Whether ceilings are fixed for fuel and loss are comparable with other refineries of similar nature.

b)   Whether the actual loss is not more than the ceiling fixed.

c)   Whether the quantum of consumption of crude oil as a fuel in the refining process is pre-defined.

d)   Whether the actual consumption of crude oil as a fuel is not more than the ceiling fixed so that the net availability of crude oil for refining is maximised.

Optimisation of Product Mix

5.5   The next aspect in oil and gas refining companies requiring special attention of the internal auditors is the optimisation of the

product mix. The optimisation of the product mix is an operational parameter with fine tuning of temperature controls and cut points being used to produce excess quantity of one product over another. The degree of automation in controls and the experience of control technicians would determine the operational efficiency on the product mix front. In addition to flexibility in determining the product mix, the ability to process various kinds of crude helps in exploiting the trading differentials between various grades of crude.

5.6   The internal auditor's procedures for examining the aspects related to optimisation of product mix include:

a)   Verifying that there exists an operational parameter for fine tuning of temperature controls for production of a product to a desired extent.

b)   Verifying the automation in controls and experience of control technicians to determine the operational efficiency on product mix front.

c)   Verifying the flexibility in determining the product mix to maximise the efficiency and profitability.

d)   Verifying the facility of processing of various grades of crude.

e)   Verifying that the various utilities like water, steam, or power are optimally used.

Apportionment of Joint Cost

5.7   The total cost of production of refinery is required to be allocated to individual products on a reasonable basis to determine the cost of production of each product. In petroleum refining the numerous units like distilling units, cracking units, alkylation and polymerisation plant are involved. Each of these units produces intermediate product streams, which require extensive reprocessing, heating and blending. The effect of these processing and successive stages multiplies the difficulty in allocating the joint cost of raw materials and processing charges to the refined products with any degree of reasonable accuracy. Even assuming that with difficulty the cost of different products can be worked out from the

joint and common costs, the end results may not be in tune with market preferences for different petroleum products and their prevalent prices. Strict application of conventional process costing method will result in low cost for high value products, such as MS, Naphtha and ATF and comparatively higher cost for low value products, such as FO and bitumen.

5.8   Since all the final products come from the same raw material, the final products can be termed as joint products. Joint products may be defined as products which are by very nature of production process cannot be produced separately, and which have equal economic importance. The basic problem in respect of joint products is that of apportionment of the cost incurred upto the point of split off. Since all the processes are very complex and interlinked, it is very difficult to have any accurate method of apportionment and allocation of cost. Apportionment and allocation, is therefore, done by employing various joint costing methods available *viz.*,

●   Physical measurement.

●   Selling prices a separation point or after further processing.

●   Marginal cost technique.

●   Working back from sales to an estimated cost.

5.9   Normally, apportionment of joint cost to the final products by physical measurement or, alternatively, by selling prices at separation point, is adopted as method(s) for allocation of cost since the production of petroleum products involves various processes and produced from various types of crude, making it difficult to find out the number of processes a particular product undergoes before it is finally separated. In other words, till a particular products meets its specification, it has to go through several processes repeatedly which makes it difficult to find out the actual number of processes undergone and computation of cost thereof under process costing techniques.

5.10   Examination of the joint costs requires verification of the fact that:

a)   All refining costs are collected and collated.

b)   Apportionment of joint costs is done to know the cost of production of each product.

c)   The methods used for allocation of joint costs can reasonably determine the cost of each product.

Oil Accounts

5.11 This department is responsible for consolidation of dip readings in the Daily Dip Statement (DDS) based on dip memos, preparation of Daily Transfer Sheet (DTS), Daily Production Statement (DPS), Excise returns, Crude Intake certificate, Product Outturn Certificate (POCs), Product Intake Certificate (PICs) and calculation of loss percentage based on information from technical services department and co-ordination with clearing agents for filing of INTO and EX bond with Customs authorities.

5.12 Internal auditor's procedures for verifying the oil accounts normally include:

(i)   Verifying whether the POCs are prepared correctly based on the dip readings.

(ii)   Verifying whether the details of production and calculation of fuel and loss are proper.

(iii)   Verifying whether the reconciliation of opening of stock of crude processed, crude received and closing stock of crude is properly done.

(iv)   Verifying whether the details of production/ inter-tank transfer/ despatch as per the Daily Transfer Sheet (DTS) for the day matches with the difference between the closing dip as per the Daily Dip Statement (DDS) of the previous day with the closing dip as per the DDS for the day.

(v)   Examining the reconciliation of the closing and opening dip with the quantity of receipt/ despatch as per the dip memos received from the pump house i.e., whether the quantity of increase or decrease as per the dip memo is equal to the quantity of increase or decrease as shown in the dip statements/ DTS.

(vi)   Verifying whether the product-wise total of dispatches for a day as per the POC is equal to the dispatch as shown in the DTS for the day.

(vii) Verifying whether the dip readings as per the automatic radar gauging system are comparable with the dip readings as per the dip memo.

(viii) Verifying whether the despatches as shown in the DTS are equal to the dispatch as shown in the Daily Production Statement (DPS).

(ix)   verifying whether the following details as recorded in the dip memos and the POC are the same:

    a.   Tank number.

    b.   Product description.

    c.   Batch number.

    d.   AR3A number.

    e.   Installation to which the product is despatched.

    f.   Pumping time – start time and stop time.

    g.   Gross opening and closing dips of product and water level.

    h.   Temperature etc.

(x)   Verifying whether the details of production, dispatch and receipt as shown in the excise return RT-12, AR3A forms, are in agreement with DTS, DPS and POC.

(xi)   Verifying whether there is any movement of product/ crude from tanks designated for maintenance.

(xii) Verifying whether the dip memos are maintained in the order of the serial number.

(xiii) Verifying whether in case of alterations of dip memos, they

are cancelled and new dip memos prepared and the cancelled dip memos retained.

(xiv) Verifying whether supplementary POCs are prepared in case of alterations of POCs.

(xv) Verifying whether the actual production (total throughput and products produced) is comparable with the budgeted production estimates as given by Production Planning Department.

Marketing Activity

Pricing of Products

5.13 Selling prices are fixed with reference to nearest source of supply. The products are moved from refinery in a regulated manner so as to ensure that the customers get the product at the most economical cost i.e., from the nearest source of supply by cheapest practical mode of transport. The product movement from refineries to customers as well as the mode of transports commonly employed is given below:

```
                    ┌──────────────────────┐
                    │      Refinery        │
                    └──────────────────────┘
                                │      ┌ ─ ─ ─ ─ ─ ─ ─ ─ ┐
                                │        Pipelines / Bunkers
                                ▼      └ ─ ─ ─ ─ ─ ─ ─ ─ ┘
                    ┌──────────────────────┐
                    │   Main Installations │──────────────────┐
                    └──────────────────────┘                  │
                               ┌ ─ ─ ─ ─ ─ ─ ─ ─ ┐     ┌ ─ ─ ─ ┐
                                 Railways / Tank Trucks       Tank
                               └ ─ ─ ─ ─ ─ ─ ─ ─ ┘       Trucks
                    ┌──────────────────────┐           └ ─ ─ ─ ┘
                    │       Depots         │                   │
                    └──────────────────────┘                   │
       ┌ ─ ─ ─ ┐              ┌ ─ ─ ─ ─ ─ ─ ─ ┐                │
         Tank                    Tank Trucks                   │
         Trucks                └ ─ ─ ─ ─ ─ ─ ─ ┘                │
       └ ─ ─ ─ ┘    ┌──────────────────────┐                   │
              ────▶ │   Retail Outlets     │ ◀─────────────────┘
                    └──────────────────────┘
                              ┌ ─ ─ ─ ─ ─ ─ ─ ┐
                                Dispensing Pumps
                              └ ─ ─ ─ ─ ─ ─ ─ ┘
                    ┌──────────────────────┐
                    │     Customers        │
                    └──────────────────────┘
```
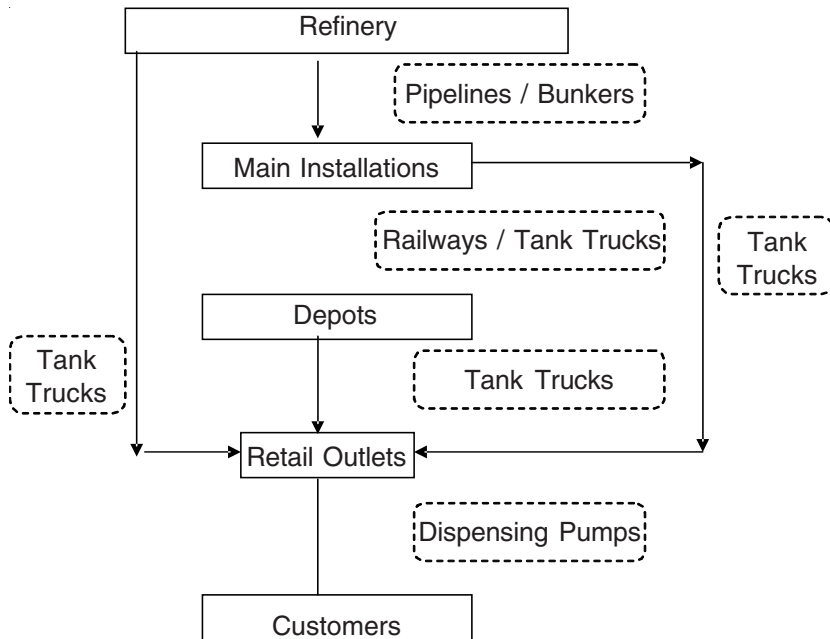
Pricing Area

5.14 There are various refineries in the country refining the product to meet the petroleum products' requirement. The supplies to the ultimate consumers have to be from nearest port attached to the refinery/ inland refineries by demarcating specific boundaries for each port refinery/ inland refineries. Bulk products are moved from nearest refinery attached to a port, in a regulated manner so as to ensure that the customers get the product at the most economical cost i.e., from the nearest source of supply by the cheapest practical mode of transport. All the port refineries/ inland refineries are known as Primary Pricing Points. The oil industry computes the final selling prices to be charged to the consumers taking into consideration the nearest primary pricing point (Port)/ secondary pricing point (inland location), irrespective of the actual source of supply. The general guiding principle for the above is that the price to the consumer should be cheapest from the pricing base. It may be noted here that for deciding the pricing base for retail outlet, the various alternate sources of supplies are considered. The price to consumer should be the cheapest being the guiding principle, the freight economics from various pricing points is considered for working out the RPO price.

Selling Prices

5.15 The selling prices of petroleum products MS, HSD consist of the following elements:

a) Ex-refinery gate price/ Refinery Transfer Price (RTP)/ Import Parity Price (IPP).

b) Marketing cost plus margin.

c) Siding and shunting charges at MI.

d) Rail/ pipeline freight.

e) Siding and shunting charges at Depot.

f) State Specific Cost.

g) RPO charges/ RPO surcharges.

h) Excise duty.

i) FDZ delivery charges (at the rate of Rupees per kilo litre).

j) Delivery charges beyond FDZ (at the rate of Rupees per kilo litre per kilo metre).

k) Toll taxes.

l) Sales tax as applicable.

m) Dealers' commission.

n) Shrinkage allowance (in case of high altitude markets).

o) Rounding off differential.

5.16 The ceiling selling prices of petroleum products SKO – Public Distribution System consist of the following elements:

a) Ex-refinery gate price/ Refinery Transfer Price (RTP)/ Import Parity Price (IPP).

b) Marketing cost plus margin.

c) Siding and shunting charges at MI.

d) Rail/ pipeline freight.

e) Siding and shunting charges at Depot.

f) State Specific Cost.

g) Excise duty.

h) Toll taxes.

i) Sales tax as applicable.

j) Transportation costs.

k) Wholesalers commission.

l) Retailers commission.

m) Rounding off differential.

5.17 The prices for other products comprise the following elements of cost:

a) Ex-refinery gate price/ Refinery Transfer Price (RTP)/ Import Parity Price (IPP).

b) Marketing cost plus margin.

c) Siding and shunting charges at MI.

d) Rail/ pipeline freight.

e) Siding and shunting charges at Depot.

f) State Specific Cost.

g) Excise duty.

h) Local Levies and Sales Tax.

5.18 The pricing of petroleum products like MS, HSD, SKO (D), LPG (D), ATF upto 31st March, 2002, used to be fixed by the Oil Co-ordination Committee (OCC) under Ministry of Petroleum and Natural Gas under Administrative Pricing Mechanism (APM), thereby the margin per KL of these products was fixed by OCC and other elements of sale price/purchase cost were surrendered/ claimed to/ from the Pool Account operated by OCC. The oil companies had to follow the price fixed by OCC and they had no role to play in price fixation. However, with effect from April 1, 2002, the prices are being fixed by oil companies on Industry basis and margin per KL fluctuates according to changes in international crude price.

5.19 The pricing of petroleum products like FO, LSHS, LDO, Naphtha are fixed by the Industry since April 1, 1998. The prices charged in these cases by the oil companies may differ ultimately when they finally sell to direct/ industrial customers depending on the discounts/ rebates given by individual oil company. The techniques of marginal costing are applied in case of these products if supply of product is more than demand. The price of lubricants/

greases was also decontrolled from November 1993. The prices of these products are fixed by individual oil companies on their own. The marginal costing concepts are equally applied in pricing of lubricants as well for industrial sector.

5.20 The procedures of the internal auditor for examining the aspects related to pricing would include verifying:

(i)   That fixation of port-based prices is based on agreed norms.

(ii)   That the prices fixed for various retail outlets are with special reference to cheapest source of supply.

(iii)   Analysing the international price movement of crude.

(iv)   That products are sourced from the most economic supply source.

(v)   That appropriate excise duty rates are charged in RSP and incorporated the changes wherever there is revision of excise duty.

(vi)   That appropriate sales tax rates are charged in RSP and incorporated the changes wherever there is revision of sales tax rates.

(vii)   That appropriate distances to the retail outlets from the supply location are determined for the fixing up the selling prices for each outlet.

(viii) That round trip distances are updated wherever there is change in the source of supply.

(ix)   That the pricing of outlet has been determined based on the set guidelines.

(x)   That all local taxes like octroi/ toll tax have been included wherever applicable

(xi)   Whether price revisions have been implemented/ communicated on time and correctly.

(xii) That in case of any new depot, the depot rate built-up is as per the prescribed guideline.

(xiii) That the consumer rates are determined as per the guidelines.

Installations/ Terminals

5.21 Installations/ Terminals consist of storage tanks and product handling facilities for receipt of products from port and/ or refineries for onward despatch to direct customers in bulk and inland depots.

5.22 The internal audit procedures in this regard comprise verifying that:

(i) All the facilities are utilised to the optimum extent.

(ii) There are no idle assets.

(iii) The product is received into the tanks as per the invoice raised by the supplying company.

(iv) All the excise formalities are complied with in case of bonded location for storage and distribution of products.

(v) Daily physical stock dips are taken and calculations of stocks are as per the calibration chart of each tank.

(vi) The product tanks are calibrated and calibration charts are certified by the CPWD.

(vii) The receipt losses, storage/ handling and transit losses are kept to the minimum extent possible.

(viii) Applicable changes like rent, electricity are collected from the companies, as per agreement, to which the space is provided for.

(ix) The safety norms are complied.

(x) All the fire fighting facilities are available and monthly fire drills are carried out.

(xi)   All quality control tests required as per industry quality control manual are carried out.

(xii)   All the MIS, accounting returns are sent to Head Office on regular basis.

(xiii) Adequate security arrangements are available.

(xiv)   All the assets and product stocks are adequately insured.

(xv)   Appropriate controls are exercised over the contaminated products and its accounting thereof.

(xvi)   All the statutory licences/ approval required for the location are obtained.

(xvii) The operating cost/ profitability as a cost centre and profit centre.

(xviii) Demurrage is paid for delay intake of product from the coastal tankers.

(xix)   Short receipt of product in respect of coastal tankers is claimed from the shippers.

(xx)   Tankage hiring facility, if applicable, including the terms of hiring, product losses in transit and settlement etc.

Depots

5.23 A depot normally consists of storage tanks and product handling facilities for receipt of products for onward despatch and transportation facilities for onward movement of products to retail outlets and direct customers.

5.24 The internal audit of a depot ordinarily comprises the following procedures:

a)   Verifying all the points mentioned in paragraph 4.22 except points xviii and xix.

b)   Verifying whether demurrage charges are paid to Railways (for delayed decantation of product from wagon or (for delayed filling of product into the wagon.

c)   Verifying that in case of short receipts of product through rail wagon, a certificate to that effect has been received to lodge claim with Railways.

d)   Verifying that product shortage in case of tank lorry receipts are fully recovered from the transport contractors.

Tap Off Points (TOP)

5.25 Internal audit of tap off points involves the same procedures as mentioned in paragraph 4.22 except points xviii and xix.

LPG Bottling Plants

5.26 Bulk LPG imported or from the refineries is bottled at the LPG bottling plants before being marketed to the domestic and industrial customers. Following are some of the procedures for internal audit of LPG bottling plants:

a)   Verifying that bulk LPG receipt at the bottling plant is as per the invoice raised by the supplying location.

b)   Verifying that the applicable changes like rent, electricity are collected as per the agreement, from the companies to whom the space is provided.

c)   Verifying that confirmation of approval from LPG area office is received for releases of regulators to dealers.

d)   Verifying the control exercised over stock of valves/ regulators and releases to the dealers.

e)   Verifying that appropriate pricing is applied for domestic and non domestic sales.

f)   Verifying that appropriate sales tax rates are applied for domestic and non-domestic sales.

g)   Verifying the inventory of bulk LPG and accounting of receipts/ filling losses.

h)   Verifying the stock of filled and empty cylinders and reconciliation of stock of cylinders.

i)   Verifying that monthly returns are prepared in time and sent to area office.

j)   Verifying that all the safety norms applicable to plant are adhered to.

k)   Verifying the accounting of cylinders from fabricators and treatment of defective cylinders.

l)   Verifying the calibration and accuracy of Weigh Bridge for receipt of bulk LPG.

m)   Verifying the accuracy of weighing scales for filling of LPG into various types of cylinders.

n)   Verifying that the plant is utilised to its installed capacity.

o)   Verifying the control executed over loss or theft of cylinders, valves and regulators.

p)   Verifying that all the assets and product stocks are adequately insured.

q)   Verifying that all the statutory licence/ approval required for the plant are obtained.

r)   Verifying the operating cost/ profitability as a cost centre and as a profit centre.

Taluka Kerosene Depot

5.27 Taluka Kerosene Depot is a depot for storing Kerosene for delivery to Public Distribution System. Needless to say that such depots hold an important place in the economy and society as a whole. The internal auditor therefore needs to pay special attention to audit of such depots.

5.28 The internal auditor's procedures for carrying out audit of *taluka* kerosene depots involve verifying:

a)   The validity of agreement/ renewal of agreement

b)   The payments are made to contractors as per terms of agreement.

c) Control over manual records maintained.

d) Utilisation of facilities at the location.

e) That all the assets and product stocks are adequately insured.

f) That the product tanks are calibrated and calibration charts are certified by CPWD.

g) That all the statutory licences/ approval required for the location are obtained.

Aviation Service Facilities

5.29 Oil companies normally also have infrastructure at the airfield stations consisting of storage tanks, hydrants, pipelines, hoses etc., for fuelling aircrafts. Internal audit of aviation service facilities involves examining:

a) The agreements entered into various airlines for fuelling of product.

b) Whether invoices are raised and payments received are, as per agreements.

c) Whether appropriate prices are charged to respective airlines.

d) Whether the applicable sales tax rates are charged to respective airlines.

e) Whetherall the excise formalities and related records are maintained in case the location is bonded warehouse.

f) Whether the product tanks are calibrated and calibration charts are certified by CPWD.

g) Whether physical stocks dips are taken on daily basis and reasons for variation in stocks, if any, are appropriately recorded.

h) Whether all the safety norms are adhered to.

i) Whether all the assets and product stocks are adequately insured.

j)   Whether all the facilities are optimally utilised.

k)   The operating cost and profitability as a cost centre and profit centre.

Lube Depot

5.30 The lube depot stores blended lubricants and greases for automotives and industrial needs. The internal auditor's procedures for auditing the lube depots would differ from one product to another. Illustrative procedures for the products are discussed below.

Base Oil

a)   Verifying the receipt of base oil with respect to invoice received or bill of lading received.

b)   Verifying the base oil AR3A quantities *Vs* pipeline receipts ex- refinery.

c)   Verifying the control on loss of the product received.

d)   Examining the mode of payment for imported cargo.

e)   Verifying whether daily physical dips of all the tanks are taken and reasons for variation, if any, appropriately recorded.

Chemicals and Additives

a)   Verifying the receipt of chemical and additives *vs* indent pattern.

b)   Verifying the stock holding *vs* actual utilization, slow and surplus stocks.

c)   Verifying the shortages in receipts and recoveries control.

Containers

a)   Verifying the indents on fabricators *Vs* purchase order quantity and terms.

b) Verifying the execution of call ups by the fabricator and time delay in execution.

c) Verifying the receipt confirmation and inspection reports of the same.

d) Verifying the control over rejects and receipts without GRNs.

Cartons, Packing Materials and Consumables

a) Verifying the indents on suppliers *Vs* Purchase Order quantity and terms.

b) Verifying the quality testing and sample test reports.

c) Verifying the control over damages in cartons and control over wastage.

d) Verifying the inventory control system at the blending plant.

e) Verifying the accounting and treatment of rejected materials.

Blending/ Production

a) Verifying the adequacy of control in production process.

b) Verifying the utilisation of materials and consumption pattern.

c) Verifying quantity mix ratios *Vs* actual mix ratio on test check basis.

d) Verifying the production plan and market demands/ indents.

e) Verifying the filling *Vs* empty drums/ containers.

f) Verifying the accounting of the finished goods.

g) Verifying utilisation of blending facilities – idling assets and unutilised facilities.

Repacking/ Small Fillings

a) Verifying the agreements/ Purchase Order with re-packers for small filling.

b)   Verifying control over the finished product stocks sent to small packs and receipt of filled packs thereof.

Transportation

5.31 Transportation cost plays a vital role in determining the final selling prices for the consumers. Crude oil is transported to the refineries either by coastal tankers or by pipelines. All modes of transportation of petroleum products complement each other and form the essential components of the logistic system. For bulk transportation of petroleum products, pipelines are the most energy efficient, convenient and most preferred mode of transportation. Efficient and economic transportation of petroleum products to the consumption centers is a major challenge. In order to ascertain the source of supply to a particular area, it is vital to examine and ensure that there will not be any price disparity in the neighbouring areas of each pricing area boundaries therefore; the equivalent cost norm plays a vital role in demarcating economic supply zone. Different supply zones of each port or inland refineries are thus demarcated on the basis of equivalent cost of one of the major product.

5.32 The principle of distribution is to plan and execute the movement of petroleum products from the refineries/ main ports to various distribution centres in a systematic and organized manner. The bulk petroleum products are required to be moved by one or more of the following mode of transportation:

Coastal Tankers/ Barges

5.33 These are used for carrying petroleum products from port refineries to port terminals. At the receiving location, an oil jetty is available for discharging the tanker through a pipeline, which runs from the oil jetty to the terminal. The discharge of the product is carried out with the help of high capacity pumps. The internal auditor's procedures with regard to coastal tankers involve:

a)   Verifying whether the payments to shippers are done as per the agreement/contract with them.

b)   Verifying whether the quantity base on which charges have been levied is correct.

c)   Verifying that if the coastal tanker cost is being reimbursed to any other oil company then whether it is as per agreement.

d)   Checking whether the parcel sizes are as per assumed parcel size.

e)   Verifying whether the lay time is as per agreed terms

f)   Examining whether the demurrage claims is as per agreed terms

g)   Verifying whether the detention, exceptions, lay time is as per agreed terms

h)   Verifying the charter hire, bunker cost and port charges

i)   Verifying wharfage, survey fees, agency fees etc.

j)   Verifying insurance payments

k)   Examining the idling cost of vessels

l)   Verifying whether the ocean is prorated as per final receipt quantity

Pipelines

5.34 Some of the mainland installations are connected through a pipeline from the refinery to the installation. Such installations are called Pipeline Terminals. In case of long pipeline running through the mainland, receiving, storing and distribution facilities are set up at suitable locations *enroute*. These are called Tap-off points since product is tapped off here from the main pipeline. Internal audit procedures for examining the transportation through pipelines involve:

●   Verifying whether the contract of agreement for transportation of products has been entered to with owner of pipelines.

● Verifying whether the freights is paid as per the agreed terms of the contract.

● verifying whether there are any transit losses

Tank Wagons

5.35 By far the most common mode of product movement to inland depot locations is through railway tank wagon. For receiving the product through tank wagons, each depot is provided with a siding of suitable capacity and the products are discharged through a pipeline, which runs from the railway siding to the depot tank. The procedures employed for internal audit of transportation by means of railways include the following:

● Verifying whether the payments are released as per due dates agreed in the agreement with the Railways.

● Verifying whether the payment is released as per the amount mentioned in the Railway Receipts (RR).

● Verifying whether the freight charged and calculations in RR is in line with railway tariff table rates.

● Verifying whether appropriate tariff rates are applied as per the railway tariff table *i.e.*, if a particular consignment is eligible for charging on train load rates, wagon load rates are not charged.

● Verifying whether freight paid on behalf of other marketing companies are recovered within the due dates agreed.

● Verifying whether in case there is excess payment of freight due to application of wrong rates, the necessary refund claims are submitted within reasonable time.

● Verifying whether in case there is excess payment of freight due to short receipt of product, the necessary refund claims are submitted within reasonable time.

● Verifying whether demurrage charges are paid to railway for delayed decantation of product or delayed loading of the product into the wagon.

Tank Trucks

5.36 Tank trucks are used extensively in transporting products from a source to the last point of sale i.e., retail outlets/ customer premises. Internal audit of transportation by means of tank trucks/ lorries involves examination of the following aspects:

- Whether transport contractors are selected as per approved policy.

- Whether the transport agreement/ contract has been entered into with contractor.

- Whether the security deposit payable as per the contract agreement has been received.

- Whether the approved tank lorry vehicle as mentioned in the contract agreement has been used to deliver the products.

- Whether the contractor complies with transport discipline guidelines, during transportation of the products.

- Whether the rate and amount claimed is as per the contract and is within the contract validity period.

- Whether the payment is released after getting acknowledgement copy of the goods received.

- Whether the RTD kilometers claimed by the contractor tallies with approved RTD kilometers from that particular location.

- Whether the shortages certified by tank driver have been recovered from transportation bill.

- Whether the payments are released only to the approved list of tank lorry vehicles maintained.

- Whether the master data of each approved tank lorry is maintained.

- Whether the black listed tank lorries have been removed from the approved list of tank lorries.

- Whether the payments released for quantities claimed by the contractors tallies with actual sales made.

- Whether the provision for liability has been provided in case of amounts payable to contractor, at the time of closing of books of accounts.

Fleet Cards

5.37 Oil marking companies have started issuing Fleet Cards to the Fleet Owners/ Operators to facilitate cashless purchase of Petrol, Diesel and Lubes from the selected Retail Outlets. The Fleet Cards provide the following features to the Fleet Owners/ Operators:

a) Flexible Prepaid and credit option

b) Fuelling at select quality and quantity assured outlets on all major highways and halting points

c) Single/ multiple cards loading at all participating retail outlets.

d) Attractive rewards program

e) Free personal accident insurance cover for fleet owners, drivers, co–drivers and helpers.

f) Free vehicle tracking facility through web site.

g) Option for real time truck tracking at subsidized cost

h) Each fleet owner is issued a fleet card for every vehicle enrolled. The card is assigned a unique Personal Identification Number (PIN). The card also bears the name of fleet owner, vehicle registration number, Card number and card validity date.

5.38 The internal audit procedures of in respect of the fleet cards comprise:

a) Examining the policy of fleet card program

b) Verifying whether the eligible fleet owners are given cards as per the policy.

c) Verifying whether the amount paid in advance by the fleet owners are accounted for properly in the books and booking of sales is done on a daily basis based on the up-liftment of Petrol, Diesel and Lubes.

d) Verifying whether the card swiping machines are working properly.

e) Verifying whether the reward points are given to fleet owners as per entitlement in relation to the up-liftment of Petrol, Diesel and Lubes.

f) Verifying the periodic account statement of each fleet card.

Chapter 6
Cost Audit

6.1   Central Government has notified Cost Accounting Records (Petroleum Industry), Rules 2002 for the financial year commencing on or after first day of April 2003 to be followed by petroleum companies. It is applicable to every company engaged in production, processing and manufacturing of crude oil, gases (including Compressed Natural Gas or liquefied natural gas and re-gasification thereof) or any other petroleum product. Every Company to whom the rules are applicable are in respect of each of its financial year commencing on or after first day of April 2003, required to keep proper books of accounts relating to the utilization of materials, labour and other elements of cost in so far as they are applicable to any of the products or activities referred in the Rules.

6.2   In case of down stream activities, Cost Accounting Records (Petroleum Industry) Rules 2002 is applicable only for Refineries/ Lube blending Units. In respect of companies having only marketing activities, the Rules do not cover such marketing activities. Pipelines used for transportation of crude would only get covered as part of refining activity. The pipelines meant for transport of finished products are considered to be a part of the marketing activity and therefore not considered for the purpose of reporting as per Cost Accounting Record (Petroleum Industry) Rules 2002. The Lube blending plants form part of the manufacturing activity and hence separate records as per the requirement of Cost Accounting Record (Petroleum Industry) Rules 2002 need to be maintained. The LPG bottling plants are part of marketing activities and do not fall under the definition of manufacturing. Hence, the Cost Accounting Record (Petroleum Industry Rules) 2002 are not applicable for LPG plants at marketing locations i.e., outside the refinery.

6.3   Under the above Rules, it is mandatory to maintain proper books of accounts and records related to manufacturing of product under reference. Further, information in the prescribed proforma 'A' to 'I' has to be furnished to the Central Government within 90 days of the close of the financial year. The records are subject to

audit by a Cost Auditor under the Cost Audit Order issued by the Central Government. The statutory auditor, pursuant to the requirements of the Companies (Auditor's Report) Order, 2003, is required to comment whether the company has maintained proper cost records in conformity with Section 209 (1d) of the Companies Act, 1956.

Chapter 7
Information Systems Audit

7.1   With the advent of the information technology revolution in every sphere of economic activity, it has also become necessary to obtain assurance that the IT systems in place are working as designed since the cost of errors and irregularities in the IT systems can be very high and detection of the same is also rendered difficult. Hence, the need for the information systems audit. The prime objective of information systems audit is to determine whether the procedures followed and the system design maintains data integrity and utilises resources optimally.

Information Systems Security

7.2   Information systems security is defined as the "procedures and practices to assure that computer facilities are available at all required times, that data is processed completely and efficiently and that access to data in computer systems is restricted to authorised people only". For any organization, the security objective is met when:

- Information systems are available and usable when required.

- Data and information are disclosed only to those who have a right to access .

- Data and information are protected against unauthorized modification.

7.3   Systems security encompasses the various layers of information systems such as the physical layer and logical layer. The physical layer would encompass physical and environmental security. The logical layer would encompass security at various layers such as Operating System, Network, Database and Applications Software. The overall nature of business, organisation structure, Management philosophy and IT deployment would determine the type of security to be deployed in the enterprise.

Types of Information Systems Audit

Type of Audit	Description
1. Application Review	• Access control • User management • Security architecture • Test of adherence to policies • Server configuration • Password policy/ Standards • System monitoring • Backup and recovery
2. Desk Top Management	• Software inventory • Hardware inventory • Software license management • DeskTop Support (including annual maintenance contracts)
3. Computer	• Services Department Review • Review of changes control process • Authorization procedures for new users • Process for disabling access for terminated employees • Disaster recovery and business resumption plans • Inventory and software licensing procedures
4. Network Review	• Detailed review of network management • Server configurations including security parameters. • Routers access control list • User management • Event logging and system monitoring

Appendix A

Process of Refining

Fractionating Column or Tower

Petroleum Gas (Below 40°C)

Gasoline (Petrol) (Below 40°C to 170°C)

Kerosene Oil (170°C to 250°C)

Crude Oil Vapours

Diesel Oil (250°C to 350°C)

Fuel Oil (350°C to 450°C)

400°C

400°C

Crude Oil

Residual Oil (Above 400°C) (This on further fractionation gives; Lubricating Oil, Paraffin wax and Asphatt)

Furnace

2768

Appendix B

Refinery Block Diagram

Refinery Block Diagram

VBU : Visbreaker Unit
AAU : Amine Absorption Unit
CDU : Crude Distillation Unit
VDU : Vacuum Distillation Unit
NSU : Naphtha Splitters Unit
NHDS : Naphtha Hydro DeSulfurisation Unit
KHDS : Kerosene Hydro DeSulfurisation Unit
FPU : Feed Preparation Unit
FCCU : Fluidised Catalytic Cracking Unit
GCU : Gas Concentration Unit
LEFPU : Light Ends Feed Preparation Unit
ARU : Aromatics Recovery Unit
RPU : Raffinate Purification Unit
SRU : Sulfur Recovery Unit
DHDS : Diesel Hydro DeSulfurisation Unit
PIBU : Poly Iso Butene Unit

Appendix C

Types of Products Produced from Crude Oil
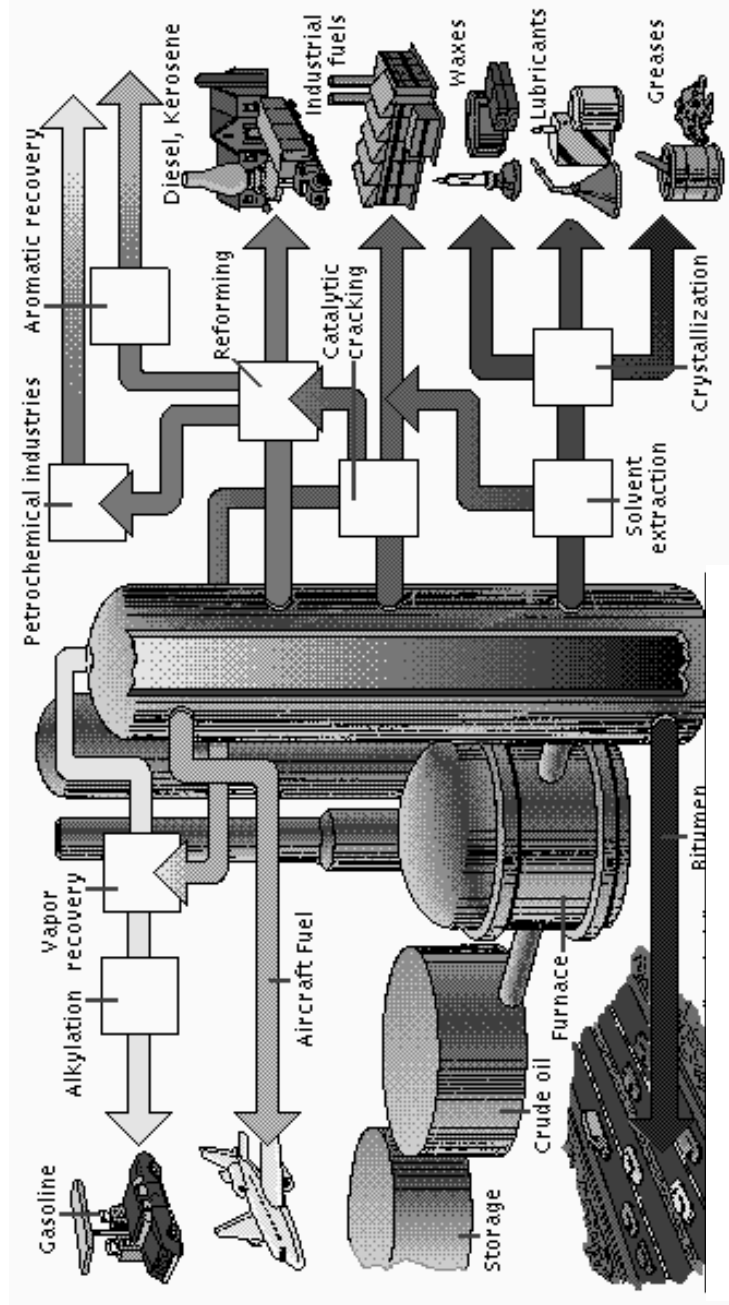
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TECHNICAL GUIDE ON AUDITING WASTE MANAGEMENT

Foreword

An offshoot of industrialization and growth of mankind has been generation of various hazardous and non hazardous wastes. Waste may take various forms such as household, industrial, medical, electronic and so on. In order to make the world a better place to live, it is pertinent that the wastes so generated are managed well.

The very high rate of urbanization has made waste management in Indian cities a challenging task. It is important for business organizations to manage waste properly to reduce its effect on the health of people and the environment.

Deficiencies in waste management systems are a matter of national importance and, therefore, of interest to the chartered accountants. Chartered accountants have an important part to play in responding to these concerns as by conducting Waste Management Audit they can provide credible and objective information, which would help the organizations to examine compliance with legal and other requirements.

I congratulate CA. Rajkumar S. Adukia, Chairman, Internal Audit Standards Board of The Institute of Chartered Accountants of India and other members of the Board for bringing out this "Technical Guide on Auditing Waste Management" which is very important in today's times. This comprehensive publication would surely help the members to effectively audit waste management systems and thereby reduce the problems caused by waste in the country, by revealing shortcomings in the waste management systems and identifying areas that need improvement.

I am sure that this informative publication will prove to be a useful for audits of waste management and help in creating a sustainable environment.

January 3, 2013   **CA. Jaydeep Narendra Shah**
New Delhi   President, ICAI

Preface

Waste Management is increasingly recognized as a policy approach that can make a key contribution to green growth, and the challenges that are posed by sustained global economic and demographic growth. One of the key challenges is to effectively address the environmental impacts that can occur along the life-cycle of material, which frequently extend across borders and involves a multitude of different economic actors. Issue of waste management has been given increased attention by international and national policy making bodies and citizens. This world scale problem needs a focus from the auditing professionals also so that they can play an important role in pushing the green planet agenda and improving environment.

Keeping this in mind, the Internal Audit Standards Board is issuing the *Technical Guide on Auditing Waste Management,* so as to provide guidance to internal auditors in carrying out internal audit of entities operating in waste management industry. The Guide deals with operational areas peculiar to waste management with emphasis on compliance as mandated as per various applicable regulations. The Guide provides a glimpse of the Indian waste management industry and challenges faced by the entities operating in this sector. It also explains various segments in waste management industry and disposal methods. It also provides details of laws and regulations in India regarding waste management. The Guide also covers industry-wise analysis, risk and challenges faced by the industry. The Guide discusses in detail major areas of internal audit significance peculiar to waste management industry which need to be covered in addition to the regular internal audit procedures. It also contains glossary, internal audit checklist on bio-medical waste and environmental management audit/ regulatory compliance checklist.

At this juncture, I am grateful to CA. Guru Prasad M. and his study group members, for sharing their experience and knowledge with us and preparing the draft of the Guide.

I wish to thank CA. Jaydeep N. Shah, President and CA. Subodh Kumar Agrawal, Vice President for their continuous support and encouragement to the initiatives of the Board. I must also thank my colleagues from the Council at the Internal Audit Standards Board, *viz.,* CA. Rajendra Kumar P., Vice-Chairman, IASB, CA. Amarjit Chopra, CA. Shiwaji B. Zaware, CA. Ravi

Holani, CA. Anuj Goyal, CA. Nilesh Vikamsey, CA. Atul C. Bheda, CA. Charanjot Singh Nanda, CA. Pankaj Tyagee, CA. G. Ramaswamy, CA. J. Venkateswarlu, CA. Abhijit Bandyopadhyay, CA. S. Santhanakrishnan, Shri Prithvi Haldea, Smt. Usha Narayanan, Shri Gautam Guha, Shri Manoj Kumar and Shri Sidharth Birla for their vision and support. I also wish to place on record my gratitude for the co-opted members on the Board *viz.*, CA. Porus Doctor, CA. Masani Hormuzd Bhadur, CA. Ghia Tarun Jamnadas, CA. Deepjee A Singhal, CA. Nitin Alshi, CA. Narendra Aneja and CA. Guru Prasad M and special Invitee, CA. Sumit Behl and CA. Sanjay Arora for their invaluable guidance as also their dedication and support to the various initiatives of the Board. I also wish to express my thanks to CA. Jyoti Singh, Secretary, Internal Audit Standards Board and CA. Arti Bansal, Sr. Executive Officer in giving final shape to the Technical Guide.

I am sure that this publication would prove to be a useful reference guide for our members and others concerned.

January 4, 2013   **CA. Rajkumar S. Adukia**
Mumbai   Chairman
                                                           Internal Audit Standards Board

Glossary

Airspace
The projected bank cubic yards (BCY) of the landfill to be filled with waste as determined by survey and/or other engineering techniques.

Baler
A piece of equipment used to compress and form recycled material into bales.

Boiler
A device used to absorb the heat released during the combustion process of burning waste. This combustion produces steam that can be sold or converted into electrical power.

Brownfield Development
Abandoned, idled, or under-used industrial and commercial facility where expansion or redevelopment is complicated by real or perceived environmental contamination.

Capping
This is the process of placing the final cover material on the landfill.

Cell
Landfills are constructed in phases (cells) that adjoin one another, separated by a berm to contain leachate within an area. The entire permitted area will be divided into separate cells for construction.

Closed Site (Landfill)
A landfill that has reached its permitted waste capacity and has been permanently capped and certified as closed by the appropriate state regulatory agency.

Closure
The period of time after a landfill has reached its permitted capacity but before it has received certification of closure from a state regulatory agency. During the closure period, certain activities must be performed to comply with environmental and other regulations (e.g., capping, landscaping, etc.).

Commercial Customer	A segment of the business that is made up of commercial and industrial collection.
Construction and Demolition (C&D)	A waste stream that is primarily received from construction sites. Some examples of C&D waste include, but are not limited to, concrete, rebar, wood, 2777anelling, linoleum, and carpet.
Container	Any receptacle used to accumulate waste from residential, commercial and industrial sites. Containers vary in size and type according to the needs of the customer or restrictions of the community. Containers are also referred to as dumpsters.
Chemical Waste Management (CWM)	The operating name of Waste Management's hazardous waste landfills.
Daily Cover	The material used to cover the working face of a landfill at the close of each day.
Disposal Fee	A fee charged for the amount of waste disposed of by customers at a landfill. (also see Tipping Fee)
Drop-off Box or Centre	Sectioned containers where individuals and businesses can put recyclable material or containers used for waste collection where individual service is not available.
Dumpster	A generic term use for front-load and rear-load containers
Emission Control Equipment	A category of equipment used at waste-to-energy facilities to meet emission standards and generate reports required by agency regulators.
Gatehouse	A gatehouse is found at a landfill or a transfer station. All incoming vehicles must stop to be processed and weighed, and all outgoing vehicles must stop to be weighed and receive a disposal ticket for charges.

Greenfield Development	A tract of undeveloped property purchased with the intention of obtaining necessary permission on which to operate a landfill. This would not include expansions to existing landfills.
Hauling Fee	A fee charged to roll-off customers calculated from the amount of time it takes to pick up their roll-off container or compactor, dispose of the waste and return it to the customer.
Hazardous Waste	Waste that is designated such by regulatory agencies either because it has elevated levels of hazardous chemicals or materials, because it exhibits a potentially dangerous characteristic (e.g., ignitable, corrosive, etc.) or because the material belongs to a general family of materials which have been deemed hazardous by regulatory agencies.
Hopper	The hopper is the part of a garbage truck or compactor where trash is emptied before compaction into the container.
Landfill	A modern engineered way to deposit waste into the ground and still protect the environment.
(Landfill, Construction & Demolition (C&D)	A landfill that has been permitted by a state regulatory agency to accept Construction and Demolition waste. This type of landfill must have properties and design features specific to this type of landfilling that have been established by the state regulatory agency.
Landfill, Hazardous Waste	A waste may be considered hazardous if it is ignitable (i.e., burns readily), corrosive, or reactive (e.g., explosive), contains certain amounts of toxic chemicals.
Landfill, Municipal Solid Waste (MSW)	A landfill that has been permitted by a state regulatory agency to accept municipal solid waste. This type of landfilling must have properties and design features specific to this type of landfill that

have been established by the state regulatory agency.

Landfill footprint	Parcels of land that are designated and permitted to perform landfilling activities. This would include the entrance, staging area, buffer area and the area that will accept waste for disposal (the waste footprint area).
Leachate	Liquids that have come in contact with waste. Leachate accumulates in the waste footprint of the landfill. Leachate levels within the landfill must be monitored and cannot exceed state regulatory agency established levels.
Liner	A clay and/ or synthetic protective layer that is placed on both the bottom and top of a landfill.
Lock-bar	An optional feature of front-load containers. The lockbar allows a customer to lock the container. When the container is emptied, and the container is raised up and over the truck, gravity causes the bar to drop allowing the container to be emptied.
Materials Recovery Facility (MRF)	Line of business where recyclable material is processed, separated, and sold. This is a facility where recyclable materials are sorted and processed for sale. This process includes separating recyclable materials (manually or by machine) according to type, and baling or otherwise preparing the separated material for sale. Operating costs and revenues for MRF's are accounted for as a separate line of business.
Methane	A gas byproduct generated through natural decomposition of solid waste in landfills. This gas is monitored to maintain state regulatory agency levels. Accumulated gas is either burned off using a flare or is converted to energy by use of a gas plant.

Methane Gas Plant	A plant where methane gas (generated from decomposing solid waste) is collected and transported to a gas-processing facility at the landfill site. Once processed, the methane gas is sold directly to industrial users or to an Affiliate of WM to use as a fuel to power electricity generators.
Municipal Solid Waste (MSW)	"Regular" garbage from non-industrial sources, such as residential homes, restaurants, retail centers, and office buildings.
Port-O-Let TM	The trademarked name for WM's portable toilet line of business.
Post-closure	The period of time after a landfill is certified as closed by a state regulatory agency, until WM has no further monitoring responsibility. Environmental and other regulations require the owner of the closed landfill to continue monitoring activities and general maintenance of the site for a specific period of time
Solid Waste	"Regular" garbage from non-industrial sources, such as residential homes, restaurants, retail centers, and office buildings. Typical MSW includes paper, discarded food items, and other general discards. Green waste is considered MSW and includes yard clippings, leaves, trees, etc.
Special Waste	Any waste that requires special handling. Special waste is non-hazardous waste generally from an industrial generator and must be profiled to ensure that it does not contain elevated levels of potentially hazardous chemicals or materials.
Transfer Station	A facility that consists of a large pad where residential and commercial collection vehicles empty the contents of their trucks. Other machinery (e.g., bulldozers) is then used to push the garbage into long-haul trailers for transport to disposal facilities.

Turbine Generator   Device that converts the heat energy of the steam from the boiler into electrical power.

Waste Stream   Specific types of waste found in customer's disposal (trash, cardboard, aluminium, metal, etc.) or a more broad definition of disposal type.

Waste-to-Energy Plant   The WM waste-to-energy facilities consist of large incinerator-type operations where trash is incinerated (burned). The heat from this combustion process is converted into high-pressure steam, which can be used to generate electricity for sale to public utility companies under long-term contracts. The residue from the incineration process is disposed of in a Landfill.

Contents

Chapter 1
Introduction

1.1   According to Basel Convention "Waste" are materials that are not prime products for which the initial user has no further use in terms of user's own purposes of production, transformation or consumption, and which user wants to dispose. Wastes may be generated during the extraction of raw materials, processing of raw materials into intermediate and final products, consumption of final products, and other human activities. Residuals recycled or reused at the place of generation are excluded.

Waste management is the collection, transport, processing or disposal, managing and monitoring of waste materials. Waste management is a process generally undertaken to reduce the effect of waste on health, environment and resources.

The process of managing waste is generally undertaken either by the generator of waste or by an entity which is engaged in the business of providing service by collecting the waste and disposing of the waste subject to treatment of such waste. Waste managed by the generator is a cost to the generator and waste managed by service provider is an income to the service provider.

1.2   Waste management practice may differ for developed and developing countries, for urban and rural areas and for residential and industrial producers. Management of non-hazardous residential and institutional waste is usually the responsibility of the local government. Management of non-hazardous commercial and industrial waste is the responsibility of the generator subject to local, national or international controls.

Depending on the physical state of waste, wastes are categorized into solid, liquid and gaseous. Solid wastes are categorized into municipal wastes, hazardous wastes, medical wastes and radioactive wastes. Managing solid waste generally involves planning, financing, construction and operation of facilities for the collection, transportation, recycling and final disposition of the waste.

Objective and Scope of Technical Guide

1.3   This technical guide is intended to assist Internal Auditors in carrying out internal audit of entities operating in the waste management/ generating industry. The management in concurrence with the internal auditor with the various pronouncements of ICAI and other regulatory requirements, assessment of control environment and business domain knowledge primarily decides the scope of the internal audit. The technical guide deals with operational areas of entities operating in this Industry with emphasis on compliance as mandated as per various regulations as applicable to the specific entity.

This Technical Guide has been divided into following six parts:

Part I   Glossary.

Part II   Elaborates the scenario in the Indian Waste Management Industry and challenges faced by an entity operating in this Sector.

Part III   Segments in Waste Management Industry and Disposal Methods.

Part IV   Laws and Regulations in India regarding Waste Management Industry.

Part V   Industry wise analysis.

Part VI   Risks and Challenges for Industry.

Part VII   Need for Internal Audit.

Part VIII   Appendix.

1.4   This technical guide does not cover the following aspects covered by other publications and pronouncements by ICAI and which are of specialised nature and non-operational in essence:

(i)   Internal audit of routine operations in finance and other areas/ functions of business;

(ii)   Internal audit performed by the associated enterprises;

(iii)   Special audits;

(iv)   Investigations;

Chapter 2
General Understanding of Waste Management Industry

2.1 The term "Waste" refers to materials that are not prime products (i.e products produced for the market) for which the generator has no further use for own purpose of production, transformation, or consumption and which he discards, or intends or is required to discard. Wastes may be generated during the extraction of raw materials during the processing of raw materials to intermediate and final products, during the consumption of final products, and during any other activity.

The following are excluded from the term waste:

- Residuals directly recycled or reused at the place of generation.
- Waste materials that are directly discharged into ambient water or air.

In other words, waste includes all items that people no longer have any use for, which they either intend to get rid of or have already discarded. Wastes are such items which people are required to discard by law because of their hazardous properties.

Waste originates from many sources, not only from households but also from industry and commerce.

Types of Waste

2.2 Waste comes in many forms and they are as follow:

Agricultural Waste, Animal by-products, Biodegradable waste, Bio medical waste, Bulky Waste, Business Waste, Chemical Waste, Clinical Waste, Coffee Waste water, Commercial waste, Composite Waste, Construction and Demolition waste, Consumable Waste, Controlled waste, Domestic Waste, Electronic Waste (E-Waste), Food Waste, Gaseous Waste, Green Waste, Grey Water, Hazardous Waste, Heat waste, Household waste, Human Waste (Sewage sludge), Industrial Waste (Slag, Fly Ash, Sludge), Inert Waste, Kitchen waste, Litter, Liquid Waste, Marine debris, Medical waste, Metabolic waste, Mineral waste, Municipal Solid waste, Nuclear waste,

packaging waste, radioactive waste, recyclable waste, residual waste, Toxic waste, waste water, etc.

Impact of Waste on Environment and Health

2.3 The Global Development Research Center, GDRC defines Quality of Life (QOL) as the product of the interplay among social, health, economic and environmental conditions which affect human and social development. QOL reflects the gap between the hopes and expectations of a person or population and their present experience.

In a country like India, which aspires to be a global economic giant, public health and quality of life are degrading everyday with the increasing gap between services required and those provided. India is also considered a sacred nation by the majority of its inhabitants but the streets and open lands in Indian cities are filled with untreated and rotting garbage. These untreated waste leads to lots of environmental and health hazard.

2.4 Disposal of e-wastes is a particular problem faced in many regions across the globe. Computer wastes that are landfilled produces contaminat leachates which eventually pollute the groundwater. Acids and sludge obtained from melting computer chips, if disposed on the ground causes acidification of soil. For example, Guiyu, Hong Kong a thriving area of illegal e-waste recycling is facing acute water shortages due to the contamination of water resources.

This is due to disposal of recycling wastes such as acids, sludges, etc. in rivers. Now water is being transported from faraway towns to cater to the demands of the population. Incineration of e-wastes can emit toxic fumes and gases, thereby polluting the surrounding air. Improperly monitored landfills can cause environmental hazards. Mercury will leach when certain electronic devices, such as circuit breakers are destroyed. The same is true for polychlorinated biphenyls (PCBs) from condensers. When brominated flame retardant plastic or cadmium containing plastics are land filled, both polybrominated dlphenyl ethers (PBDE) and cadmium may leach into the soil and groundwater. It has been found that significant amounts of lead ion are dissolved from broken lead containing glass, such as the cone glass of cathode ray tubes, gets mixed with acid waters and are a common occurrence in landfills.

Need for Waste Management

2.5   In order to make the world a better place to live, it is pertinent that the wastes so generated are managed better. Waste management practices can differ for developed and developing nations, for urban and rural areas and for residential and industrial producers. Management for non-hazardous residential and institutional waste in metropolitan areas is usually the responsibility of local Government authorities, while management for non-hazardous commercial and industrial waste is usually the responsibility of the generator subject to local, national or international controls.

2.6   Waste management is the collection, transport, processing or disposal, managing and monitoring of waste materials. The term usually relates to materials produced by human activity, and the process is, generally undertaken to reduce their effect on health and environment.

A solid waste management (SWM) system includes the generation of waste, storage, collection, transportation, processing and final disposal. Agricultural and manufactured products of no more value are discarded as wastes. Once items are discarded as waste, they need to be collected. Waste collection in most parts of the world is centralized and all kinds of waste generated by a household or institution are collected together as mixed wastes.

2.7   Solid waste management (SWM) is a basic public necessity and this service is provided by respective urban local bodies (ULBs) in India. SWM starts with the collection of solid wastes and ends with their disposal and/or beneficial use. Proper SWM requires separate collection of different wastes, called source separated waste collection. Source separated collection is common in high income regions of the world like Europe, North America and Japan where the infrastructure to transport separate waste streams exists. Most centralized municipal systems in low income countries like, India collect solid wastes in a mixed form because source separate collection systems are non-existent. Source separated collection of waste is limited by infrastructure, personnel and public awareness. Indian cities are still struggling to achieve the collection of all MSW generated. Metros and other big cities in India collect between 70- 90% of MSW. Smaller cities and towns collect less than 50%. The benchmark for collection is 100%, which is one of the most important targets for ULBs at present. This is a reason why source separated collection is not yet in the radar.

Waste Disposal Mechanism

2.8   The method of waste so generated is categorised into large scale disposal and small scale disposal. The various method of disposal falling under these categories are Open Dumps, Landfills, Incineration, Composting, Recycling, Reuse, Recovery, etc.

The most favoured and least favoured option of waste management is best expressed in the form of below mentioned picture.
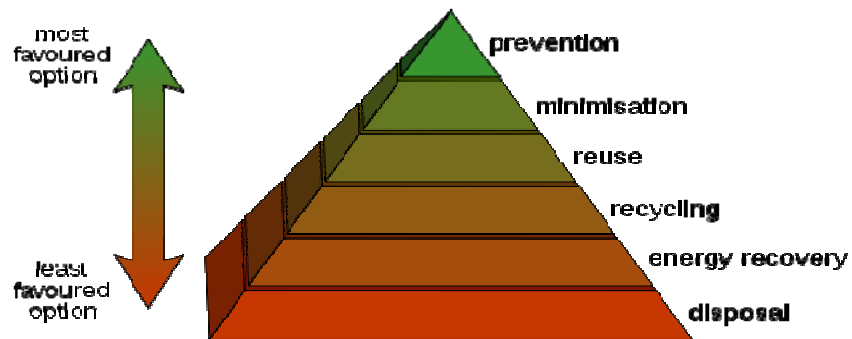
Government Initiative and Voluntary Contribution

2.9   The role of Government cannot be understated while thinking in terms of managing the waste be it solid, electronic waste, plastic waste. The government both central and state have together as well as separately have introduced various laws for managing the waste.

Some of the laws introduced are as follows:

- Bio-Medical Waste (Management and Handling) Rules, 1998

- E-Waste Management and Handling Rules

- Karnataka State Policy on Integrated Solid Waste Management

- Municipal Solid Waste Management and Handling) Rules

- Plastic Waste (Management and Handling) Rules, 2011

There are corporates and other entities including not for profit organisation are taking efforts in bringing awareness to the public and also bringing in policies internal to their organisation for managing the waste. Though the Government and some entities volunteer to manage waste including spreading awareness, the onus to manage waste is with every individual and/or the entity generating waste. Very recent mandate from various ULB's

based on the guidance from both state and central government on segregating the waste at source into dry and wet waste is an indication that the onus to manage waste is from the place waste is generated and by the generator of waste.

Statistical Analysis of Waste

2.10   Due to population growth, industrialization, urbanization and economic growth, a trend of significant increase in municipal solid waste (MSW) generation has been recorded worldwide. MSW generation, in terms of kg/capita/day, has shown a positive correlation with economic development at world scale. Due to rapid industrial growth and migration of people from villages to cities, the urban population is increasing rapidly.

Waste generation has been observed to increase annually in proportion to the rise in population and urbanization. The per capita generation of MSW has also increased tremendously with improved life style and social status of the population in urban centres. As more land is needed for the ultimate disposal of these solid wastes, issues related to disposal have become highly challenging.

2.11   India, with a population of over 1.21 billion account for 17.5% of the world population (Census of India 2011).According to the provisional figures of Census of India 2011, 377 million people live in the urban areas of the country. This is 31.16 % of the country's total population. The very high rate of urbanisation coupled with improper planning and poor financial condition has made MSW management in Indian cities a herculean task.

The quantity of MSW generated depends on a number of factors such as, food habits, standard of living, degree of commercial activities and seasons. Data on quantity variation and generation are useful in planning for collection and disposal systems. The rate of increase of MSW generated per capita is estimated at 1 to 1.33% annually. MSW generation rates in small towns are lower than those of metro cities, and the per capita generation rate of MSW in India ranges from 0.2 to 0.5 kg/ day. The Central Pollution Control Board (CPCB) had conducted a survey of solid waste management in 299 cities[*] and has given the data of waste generation for different cities.

[*] Published in "Municipal Solid Waste Management in Indian cities – A Review" accepted on 12 Feb. 2007.

Sl. No	State Name	No. of Cities	Municipal Population	MSW (ton/day)	Per Capita generated (Kg/day)
1	Andhra Pradesh	32	10845907	3943	0.364
2	Assam	4	878310	196	0.223
3	Bihar	17	5278361	1479	0.280
4	Gujarat	21	8443962	3805	0.451
5	Haryana	12	2254353	623	0.276
6	Himachal	1	82054	35	0.427
7	Karnataka	21	8283498	3118	0.376
8	Kerala	146	3107358	1220	0.393
9	Madhya Pradesh	23	7225833	2286	0.316
10	Maharashtra	27	22727186	8589	0.378
11	Manipur	1	198535	40	0.201
12	Meghalaya	1	223366	35	0.157
13	Mizoram	1	155240	46	0.296
14	Orissa	7	1766021	646	0.366
15	Punjab	10	3209903	1001	0.312
16	Rajasthan	14	4979301	1768	0.355
17	Tamil Nadu	25	10745773	5021	0.467
18	Tripura	1	157358	33	0.210
19	Uttar Pradesh	41	14480479	5515	0.381
20	West Bengal	23	13943445	4475	0.321
21	Chandigarh	1	504094	200	0.397
22	Delhi	1	8419084	4000	0.475
23	Pondicherry	1	203065	60	0.295

Per Capital Quantity of MSW in Indian Cities

Sl. No	Population	Waste generation Rate Kg/Capita/day
1	Cities with a population < 0.1 Million (8 Cities)	0.17 - 0.54
2	Cities with population of 0.1 - 0.5 Million (11 Cities)	0.22 - 0.59
3	Cities with Population of 1-2 Million (16 Cities)	0.19 - 0.53
4	Cities with population of > 2 Million (13 Cities)	0.22 - 0.62

2.12   It suggests that the average MSW generation from 0.21 to 0.50 Kg per capita per day in India. The urban population of India is approx. 341 million in 2010. MSW quantities are expected to increase from 34 million tonnes in 2000 to 83.8 million tonnes in 2015 and 221 million tonnes in 2030. It is also reported that per capita per day production will increase to 1.032 Kg and urban population as 586 million in 2030. Studies have indicated that for every Indian ₹ 1000 increase in income the solid waste generation increases by one kilogram per month

2.13   On the basis of per capita income the states can be divided into three categories namely - low income, medium income and high income. In low income group of cities municipal bodies dispose MSW in low lying areas in the outskirts of the city and fill these areas one after the other haphazardly due to limited knowledge and awareness regarding contamination, waste reduction techniques and other aspects of MSW management. Although MSW generation is high in states of high income, they are well equipped and have well surveyed mass and material flow data which are sometimes unavailable for low income states. The quantity of average MSW generated and the average generation rate of MSW for low, medium and high Income states suggest that solid waste generation depends on the economy of the people and per capita generation increases with the level of income of the family or the individual.

2.14   The quantity of MSW (T/d) and per capita generation rate is high in high (per capita) income states (Delhi) in comparison to medium (Andhra Pradesh, Gujarat, Haryana, Himachal Pradesh) and low income states (Uttar

Pradesh, Bihar, Madhya Pradesh, Manipur) in India. This may be due to the high living standards, rapid economic growth and high level of urbanisation in comparatively high (per capita) income states.

Collection of MSW is the responsibility of corporations/ municipalities. In many mega cities the collection is done with the help of NGOs. Some urban areas are using the welfare association for collection of MSW. The average collection efficiency of MSW in Indian cities and states is about 72% which shows the collection efficiency is high in the states where private contractors and NGOs are employed for collection and transportation of MSW. In low income states, MSW collection and disposal services are poor as either the citizens are either unwilling or unable to pay for the service. Citizens throw away the waste in and around the place of residence or business at different points in time which makes the collection of MSW difficult. The Central Pollution Control Board has found that the manual collection accounts for 50% whereas collection using trucks comprises of 49% in a survey of 299 class-1 cities in India.

Waste Management Industry in India – Overview

2.15   Waste collection in India goes back to the 17th century, where bones, rags and paper were among the first commodities to be collected. Solid waste management was traditionally the responsibility of municipal bodies. Across the country, the workforce carrying out solid waste collection and transport activities consisted primarily of socially excluded communities on the margins of society.

Current Structure of the Informal Waste Sector

2.16   Nowadays, large numbers of people are associated with waste management in India. Researchers estimate that about 1% of the urban population in India is active in the informal recycling sector. The informal waste sector is socially stratified in a pyramid with scrap collectors (waste pickers and itinerant waste buyers) at the bottom and re-processors at the top. The majority of retailers are former waste pickers who have managed to assemble some capital and to take up another activity.Scrap collection is the first stage in the recycling sector and is undertaken by two categories of workers: waste pickers and itinerant buyers.

Waste pickers retrieve paper, plastic, metal and glass scrap from garbage bins or receptacles provided by municipalities for the disposal of garbage on the street, and from landfill sites where collected garbage is transported and

dumped. They rudimentarily sort and then sell the collected scrap commodities to retail scrap establishments by weight or unit. Itinerant buyers purchase small quantities of scrap from households, offices, shops and other small commercial establishments.

2.17   The retail traders form the top stratum of the scrap trade and are most often located in slums with significant populations of scrap collectors. They have a direct relationship with the scrap collectors from whom they purchase scrap. Processing and reprocessing industries that source scrap usually exist in both the informal and the formal economy. Plastics and electronic waste are typically processed in the informal sector while paper, cardboard, metals and glass are handled by the formal sector.There are currently 24 officially recognised waste picker organisations in India, with various levels of contractual and non-contractual relations to the formal authorities. They are formed as co-operatives or associations and are integrated in local source segregation schemes at different levels. Their tasks vary from door-to-door garbage collection to the management of recycling centres and scrap trading.

Organisational Developments in the Informal Waste Sector

2.18   Since 1972, efforts have been made by local NGO's to organise the waste pickers, but the results do not yet extend across India. Due to the predominant role of women in waste picking, women's organisations were the first to cast light on waste pickers and their interests. These early approaches encouraged waste pickers to transfer to work less demeaning to their dignity and less hazardous to their health. The key activities were formation of cooperatives for contract cleaning and housekeeping, collection of waste paper from government offices and institutions and trade in waste paper.

In 1990 the Project for the Empowerment of Waste pickers of the Women's University in Pune in Western India started organising waste pickers around their work issues. Amongst other initiatives, the project issued identity cards to waste pickers and promoted source segregation of waste and its door–to-door collection by waste pickers.

In subsequent years waste picker organisations were formed in Delhi, Bangalore and other cities, based on the understanding that waste pickers have a customary right to recyclable scrap and asserting that waste pickers' livelihoods could best be protected and enhanced by promoting source

segregation of waste and its door-to-door collection. All of the organisations underscored the value and the work of informal sector waste recyclers.

2.19   The projects had the following principle aiming to:

- integrate waste pickers into community based, decentralised solid waste management;

- promote the contribution of waste pickers;

- reductions in municipal waste handling costs, resource recovery; environment conservation, recycling and economic productivity;

- improve work conditions and livelihoods rather than transferring waste pickers into other occupations.

Subsequent developments in the following years led to the formation of different waste management initiatives and included engaging in dialogue with waste generators to enable them to understand the relevance of involving waste pickers in emerging waste management initiatives.

2.20   As a result of their increasing involvement, a National Alliance of Waste Pickers was founded in 2005. The various organisational support efforts collectively led to high levels of integration of informal waste pickers into the solid waste management system in various cities. In Pune, for example, waste pickers have been authorised by the municipal government to provide household waste collection, providing them with direct access to recyclables.

In many places, informal sector workers in solid waste management are not part of a regularised business environment, but work autonomously, pursuing several parallel economic activities and are, thus, not regularly active in solid waste collection and recycling. In initiatives to fully integrate informal waste collectors into waste collection enterprises, the drop-out rate was high and waste pickers either lost their income opportunities or returned to individual waste picking activities in poor working conditions. Because of the unsteady nature of informal worker activity in waste management, these workers are sometimes perceived as unreliable service providers for waste collection services.

Informal sector workers can position themselves as regular service providers by organising themselves in co-operatives and other structures able to provide a regular collection service, independent of the workforce of individual informal sector workers. The use of near relatives as

replacements for waste pickers who are irregular in their waste collection has been successful in India.

This organisational ability and entrepreneurial capacity is important also in recycling activities, in order to establish regular business relations with the administration and clients in the manufacturing and export sectors. Co-operatives of waste pickers are most durable when they take into account the specific working habits and conditions of waste pickers but nevertheless create a minimally structured environment for reliable business partnership.

Waste Management by Corporates/ NGOs – Case Study

2.21   NGO's often create crucial links between the formal and the informal private sector. NGO's can provide technical expertise, financial and legal support and advisory services. Due to their humanitarian approach, they work without self-interest for the development of waste pickers and can therefore be trustworthy and accepted partners. They can reduce distrust between the formal and the informal sector and between socially excluded waste pickers and the general public and can thereby serve as arbitrators and process facilitators.

2.22   The SWaCH (Solid Waste Collection and Handling) cooperative of waste pickers and other urban poor was established in 2007 to provide doorstep garbage collection services across the city of Pune. It was designed as a professionally managed service delivery organisation within the broad framework of developing models that are inclusive of the poor. SWaCH operates in the area of waste management that includes collection, resource recovery, scrap trading and waste processing. It is, therefore, an autonomous entity but its operations are being financially supported by Pune Municipality (PMC) for a period of five years, during which it is tasked with exploring revenue sources and becoming an independent income-generating entity. The PMC is committed to supporting the management, equipment, infrastructure costs and certain welfare costs during the start-up phase. User fees are to be recovered from service users.

The user fees and income from the sale of recyclables will constitute the earnings of waste pickers. Structurally, the governance arm of SWaCH comprises 14 waste pickers/collectors, 2 PMC representatives and 1 representative of the KKPKP cooperative. The management arm of SWaCH is headed by a Chief Executive Officer, supported by a team of staff for

operations, administration and finance, marketing, customer care and relations, management, information systems and data management. Provision has also been made for technical consultants in areas including citizens' education, management information systems, composting and biomethanation.

2.23   In India, for example, the legal framework is generally enabling in making provisions for incorporating the informal sector in solid waste management. The Indian experience also shows that the legal implementation of informal sector integration is a learning process.

The Municipal Solid Waste (Collection and Handling) Rules were issued in 2000 under a federal act. The rules not only acknowledged the importance of waste segregation and recycling, but also made it obligatory. Yet despite the vital role of the informal sector in the segregation and recycling of solid waste, it was not mentioned in the legislation. Various problems occurred as a result. Waste pickers had to compete with incinerators for waste of high calorific value. Municipalities outsourced door-to-door collection to large corporate players, thereby displacing the waste pickers. Ultimately, the Rules failed to link solid waste management policy to existing good practices such as segregation and recycling by informal sector actors.

A few years later, in 2006, a national law mentioned the informal sector for the first time. The National Environment Policy contained clauses strengthening the capacity of local bodies for segregation recycling and giving legal recognition to informal sector systems.

Chapter 3
Segments in Waste Management Industry

3.1   Waste management industry can be segregated as follows:

- Municipal Solid Waste

- Industrial Waste

- Bio-medical Waste

- Electronic Waste

- Radioactive Waste.

Municipal Solid Waste

3.2   Municipal solid waste (MSW), also called Urban Solid Waste, is a waste type that includes predominantly household waste (domestic waste) with sometimes the addition of commercial wastes, construction and demolition debris, sanitation residue, and waste from streets collected by a municipality within a given area. They are in either solid or semi-solid form and generally exclude industrial hazardous wastes. MSW can be broadly categorized into five broad categories as follows:

(i)   **Biodegradable waste–** food and kitchen waste, green waste (vegetables, flowers, leaves, fruits), paper (can also be recycled).

(ii)   **Recyclable material–** paper, glass, bottles, cans, metals, certain plastics, etc.

(iii)   **Inert waste–** construction and demolition waste, dirt, rocks, debris.

(iv)   **Composite wastes–** waste clothing, tetra packs, waste plastics such as toys.

(v)   **Domestic hazardous waste** (also called "household hazardous waste") & **toxic waste–** Medication, e-waste, paints, chemicals, light bulbs, fluorescent tubes, spray cans, fertilizer and pesticide containers, batteries, shoe polish.

Sources and Type of MSW

3.3   The following are some major sources of MSW:

Sources	Typical waste generators	Components of solid waste:
Residential	Single and multifamily dwellings	Food wastes, paper, cardboard, plastics, textiles, glass, metals, ashes, special wastes (bulky items, consumer electronics, batteries, oil, tires) and household hazardous wastes.
Commercial	Stores, hotels, restaurants, markets, office buildings	Paper, cardboard, plastics, wood, food wastes, glass, metals, special wastes, hazardous wastes
Institutional	Schools, government center, hospitals, prisons	Paper, cardboard, plastics, wood, food wastes, glass, metals, special wastes, hazardous wastes
Municipal services	Street cleaning, landscaping, parks, beaches, recreational areas	Street sweepings, landscape and tree trimmings, general wastes from parks, beaches, and other recreational areas

Comparison between the per capita MSW generation rates in Low, Middle and High Income Countries is as follows–

Country	Per capita urban MSW Generation(kg/day)	
	1999	2025
Low Income Countries	0.45 - 0.9	0.6 - 1.0
Middle Income Countries	0.52 - 1.1	0.8 - 1.5
High Income Countries	1.1 - 5.07	1.1 - 4.5

3.4   Municipal Solid Waste (MSW) collection–is the component of waste management which comprises lifting and removal /passage of a waste material from the source of production to either the point of treatment or final disposal. Collection of generated solid waste is the crucial part in MSW management. Efficiency in collecting solid waste and segregating it decides how well solid waste is managed. Collection includes not only the gathering of solid waste, but also the transport of these materials, after collection, to the location where the collection vehicle is emptied. This location may be a material processing facility, a transfer station or a landfill disposal site.

3.5   Collection of MSW broadly involves following functional elements:

Stage I– Collection from Non point Source

This stage includes door-to-door collection of waste. Most collection is done by garbage collectors who are employees or firms under contract to the government. Garbage collectors employed by local governing bodies manually collect the waste generated at the household level and dump it in the community bins at specified street corners. Municipality is not responsible for door to door collection of waste from houses, offices, small shops and small markets. Here people are required to deposit their wastes in communal containers/ community bins (stationary or haul types), from which it is collected by municipal crew. The vehicle used in this stage for collection, is small and simple & varies from place to place. It may be two-wheeled cart pulled by an individual or bell ringing vehicles (*ghanta gadi*).

Stage II– Collection from Point Source

Waste collected from non–point source is deposited to definite point sources namely communal bins. Communal bins are placed near markets, in apartment complexes, and in other appropriate locations. Shopping complex, hotels, public places like, gardens, religious places are other definite point sources. Vehicles collect's large amount of waste from these point sources and then transport it to transfer stations and disposal sites. Manually or mechanically loaded compactors are often used in this stage. Placing communal bins at appropriate locations for deposit and storage of waste is important to manage waste properly.

For better MSW management garbage should be lifted frequently from these point sources. Frequency in lifting garbage from these points really matters otherwise garbage pile up and create other problems. It is challenging task particularly in metros. In Mumbai 983 Municipal and Private Vehicles are

used for collection of waste making 1396 number of trips each day (2009,BMC website).

Stage III: Transportation to Disposal Sites

Transfer refers to the movement of waste or materials from collection points to disposal sites. Transportation of waste from collection point to disposal sites is carried out by using different types of vehicles depending on the distances to be covered by them. Larger vehicles carry the waste from the collection points to the disposal sites. Comparatively small vehicles discharge waste at transfer stations where the wastes are loaded into larger vehicles for transportation to the disposal sites. In metro cities transfer stations are located at different places to support intermediate transfer of waste from the surrounding areas upto the dumping grounds.

Transfer stations are centralized facilities where waste is unloaded from smaller collection vehicles and re-loaded into larger vehicles (including in some instances barges or railroads) for transport to a disposal or processing site. The transportation of garbage from the transfer stations is done generally, using Trailers and Bulk Refuse Carriers. In large cities, open flatbed trucks, covered trucks, and some compactors are in use, whereas in smaller cities tractor-trailers, tricycles and animal carts are common. Study shows that in metros like, Mumbai, around 60 per cent of waste is transported through stationary compactors, mobile compactors and closed tempos; 10 per cent is through partially open dumpers whereas 20 per cent is through tarpaulin covered vehicles, which includes silt and debris.

Segregation and Disposal of Waste

3.6   The waste dumped in community bins is a mixed type of waste, i.e., all types of waste biodegradable, recyclable, inert and non-biodegradable waste is found in one bin, which become very hard to manage. Following table shows Varity of waste material generally found in a dustbin.

3.7   For disposal of solid waste commonly used methods are open dumps, landfills, sanitary landfills, and incineration plants. One of the important methods of waste treatment is composting. Selection of proper disposal method is necessary and primarily it depends on the 'quantity of MSW generated and type of waste to be disposed'. There is, however, no single technique which is suitable in all situations.

Collection and Transportation of Municipal Solid Waste

Door-to-door Collection

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Community Bins

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Collection from Community bins (Carried out once in 24 hrs) requires manual and multiple handling of waste to dump into transportation vehicles.

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Transfer Stations (TS)		Disposal Sites

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Disposal Sites
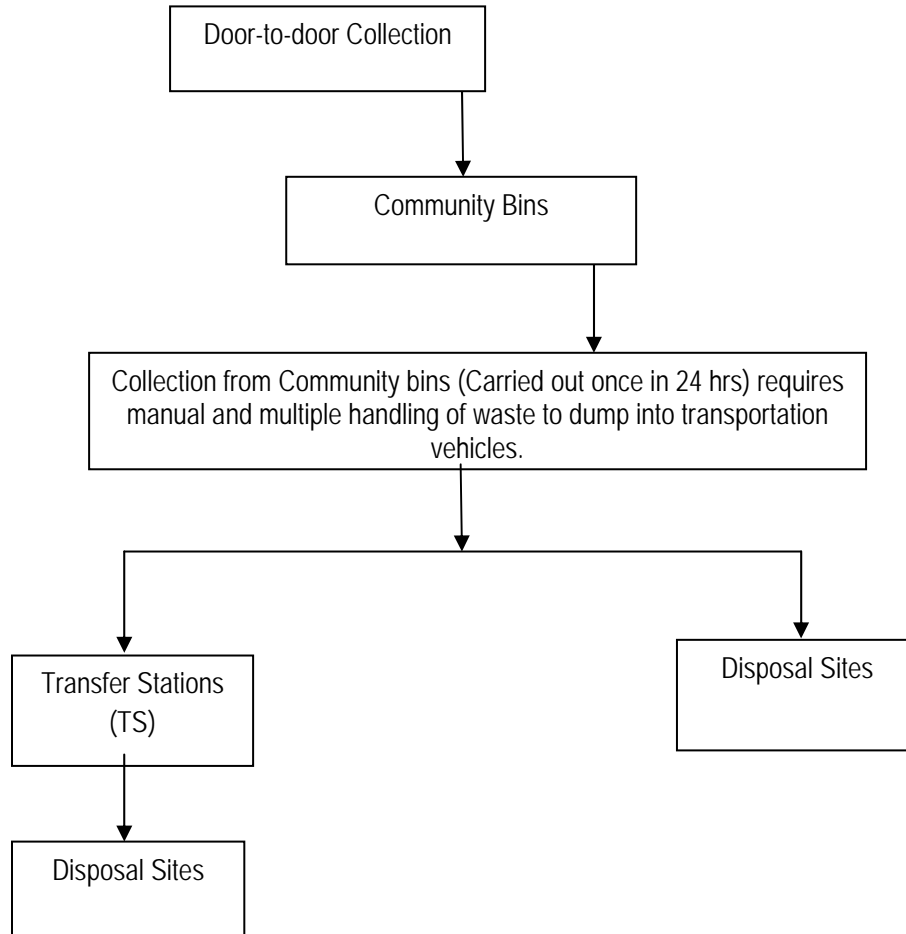
Classification of Waste

Biodegradable Wastes	Non-Biodegradable Wastes	
Organic Waste	Recyclable Waste	Others (Inorganic /Hazardous Waste)
• Used Tea Leaves/ powder	• Rubber	• Some medicines
• Egg Shells	• Shampoo bottles	• Paints
• Kitchen waste	• Glass	• Fluorescent tubes
• Fruit peels	• Wires	• Spray cans

• Meat	• Metal/ Metal objects	• Fertilizers and pesticide containers
• Bones	• Plastic	• Batteries
• Flowers	• Rags	• Shoe polish
• House dust after cleaning	• Leather	
• Garden Waste		

Industrial Waste

3.8 **Industrial waste** is the waste produced by industrial activity, such as that of factories, mills and mines. It has existed since the outset of the industrial revolution.

In a broad sense, industrial wastes could be classified into following two types:

(i) Hazardous Industrial Waste

Hazardous wastes, which may be in solid, liquid or gaseous form, may cause danger to health or environment, either alone or when in contact with other wastes. Various agencies have defined hazardous wastes in different ways and as such, there is no uniformly accepted international definition so far. It is presumed that about 10 to 15 percent of wastes produced by industries are hazardous and the generation of hazardous wastes is increasing at the rate of 2 to 5 percent per year.

Hazardous industrial wastes in India can be categorized broadly into two categories:

(i)   Hazardous wastes generated from various industries in India; and

(ii)   Hazardous industrial wastes imported into India from Western Countries for re-processing and recycling.

Inventorisation of hazardous wastes generating units and quantification of wastes generated in India are being done by the respective State Pollution Control Boards (SPCBs).

Hazardous waste in particular includes products that are explosive, flammable, irritant, harmful, toxic, carcinogenic, corrosive, infectious, or toxic to reproduction.

Sources of Various Hazardous Waste

Hazardous Waste Component	Source
Heavy Metals	
Arsenic	Mining, non anthropogenic geo-chemical formation
Cadmium	Mining, fertilizer industry, battery waste
Chromium	Mining areas, Tanneries
Lead	Lead acid battery smelters
Manganese	Mining areas
Mercury	Chlor-alkali industries, healthcare institutes
Nickel	Mining, metal refining
Hydrocarbons	
Benzene	Petrochemical industries, solvents
Vinyl chloride	Plastics
Pesticides	Insecticides
Organic chemicals	
Dioxins	Waste incineration, herbicides
PCBs	Fluorescent lights, e-waste, Hydraulic fluid

(ii)   Non-Hazardous Industrial Waste

Non-hazardous or ordinary industrial waste is generated by industrial or commercial activities, but is similar to household waste by its nature and composition. It is not toxic, presents no hazard and, thus, requires no special treatment.

In particular, it includes ordinary waste produced by companies, shopkeepers and trades people (paper, cardboard, wood, textiles, packaging, etc.). Due to its non-hazardous nature, this waste is often sorted and treated in the same facilities as household waste.

Treatment Options for Non-hazardous Industrial Waste

3.9   Non-hazardous industrial wastes being diversified in their chemical nature, physical texture and moisture content and calorific values, etc., demand distinct treatment options which are broadly classified as follows:

Industries	Prominent Wastes Generated	Treatment Option	Application
Sugar Mills	Sugar bagasse	Combustion and Gasification	Heat and Power
	Pressmud	Composting	Fertilizer
	Sugar molasses	Fermentation	Ethanol synthesis
	Fermentative Yeast biomass	Biomethanation	Biogas production and digestate
Slaughter houses	Organs, Tissues, Blood, Hides, Animal excreta and Carcass, etc	Biomethanation	Biogas production and digestate
Paper mills	Pulp	Biomethanation	Biogas production and digestate
	Paper shavings	Combustion	Heat and power
	Wood wastes and Paper boards	Combustion and gasification	Heat and power
Dairy Plants	Whey and Milk cream	Biomethanation	Biogas production and digestate
Sago factories	Starch materials and peels	Biomethanation	Biogas production and digestate
Tanneries	Hides and skins	Acid treatments and	Biogas production and

Industries	Prominent Wastes Generated	Treatment Option	Application
		biomethanation	digestate
Animal Husbandries	Animal excreta and body fluids	Biomethanation	Biogas production and digestate
Fruits and vegetable processing units	Pulp wastes	Biomethanation	Biogas production and digestate

Treatment options of Industrial waste has been mentioned elsewhere in the report under the head Disposal methods.

Bio-Medical Waste

3.10   The bio-medical waste is the waste that is generated during the diagnosis, treatment of immunization of human beings or animals or in research activities pertaining thereto, or in the production or testing of biological components. The different location or points of generation of waste in a health care establishment are:

(i)   Operation theatres / wards / labour rooms

(ii)   Dressing rooms

(iii)   Injection rooms

(iv)   Intensive Care Units

(v)   Dialysis room

(vi)   Laboratory

(vii)   Corridor

(viii)   Compound of hospital or nursing home

Bio-Medical Waste Rules

3.11   The Government of India as contemplated under Section 6,8 and 25 of the Environment (Protection) Act, 1986, has made the Bio-medical Wastes (Management & Handling) Rules, 1998.

The rules are applicable to every institution generating bio-medical waste which includes hospitals, nursing homes, clinic, dispensary, veterinary institutions, animal houses, pathological lab, blood bank, etc.

Responsibilities of Hospitals

3.12   It is mandatory for such institutions to:

- Set up requisite bio-medical waste treatment facilities like, incinerators, autoclave and microwave systems for treatment of the wastes, or ensure requisite treatment of the waste at a common waste treatment facility.
- Make an application to the concerned authorities for grant of authorization. A fee as prescribed shall accompany each application for grant of authorization
- Submit a report to the prescribed authority by 31 January every year. The report should include information about the categories and quantities of bio-medical wastes handled during the preceding year.
- Maintain records about the generation, collection, reception, storage, transportation, treatment, disposal and / or any form of handling of bio-medical waste.
- Report of any accident to the prescribed authority.

Categories of Waste

The bio-medical wastes are categorized into ten according to its characteristics taking into account treatment and disposal. The different categories of waste as per the rule are given in Table 1.

TABLE 1
Categories of Bio-medical Waste

Waste Category	Type of Waste	Treatment And Disposal Option
Category No. 1	Human Anatomical Waste (Human tissues, organs, body parts)	Incineration/deep burial
Category No. 2	Animal Waste (Animal tissues, organs, body parts, carcasses, Bleeding parts, fluid, blood and experimental animals used in research, waste generated by veterinary hospitals and colleges, discharge from hospitals, animal houses)	Incineration/ deep burial

Waste Category	Type of Waste	Treatment And Disposal Option
Category No. 3	Microbiology & Biotechnology Waste (Wastes from laboratory cultures, stocks or specimen of live micro-organisms or attenuated vaccines, human and animal cell cultures used in research and infectious agents from research and industrial laboratories, wastes from production of biological, toxins and devices used for transfer of cultures)	Local autoclaving/ microwaving / incineration
Category No. 4	Waste Sharps (Needles, syringes, scalpels, blades, glass,	Disinfecting (chemical treatment / autoclaving /microwaving and mutilation / shredding
Category No. 5	Discarded Medicine and Cytotoxic drugs (Wastes comprising of outdated, contaminated and discarded medicines	Incineration / destruction and drugs disposal in secured landfills
Category No. 6	Soiled Waste (Items contaminated with body fluids including cotton, dressings, soiled plaster casts, lines, bedding and other materials contaminated with blood.)	Incineration/ autoclaving/ microwaving
Category No. 7	Solid Waste (Waste generated from disposable items other than the waste sharps such as tubing, catheters, intravenous sets, etc.)	Disinfecting by chemical treatment/ autoclaving / microwaving and mutilation / shredding
Category No. 8	Liquid Waste (Waste generated from the	Disinfecting by chemical Treatment and discharge

Waste Category	Type of Waste	Treatment And Disposal Option
	laboratory and washing, cleaning, house keeping and disinfecting activities)	into drains
Category No. 9	Incineration Ash (Ash from incineration of any biomedical waste)	Disposal in municipal landfill
Category No. 10	Chemical Waste (Chemicals used in production of biological, chemicals used in disinfecting, as insecticides, etc.)	Chemical treatment and discharge into drains for liquids and secured landfill for solids.

Segregation of Bio-Medical Waste

3.14 Colour Coding and Type of Container are as follows :

Colour Coding	Type of Container	Waste Category	Treatment Options (Schedule I)
Yellow	Plastic bag	Cat.1,Cat.2, Cat.3 and Cat.6	Incineration/ deep burial
Red	Disinfected container/plastic bag	Cat.3, Cat.6, and Cat.7	Autoclaving/Micro waving/ Chemical treatment
Blue/White Translucent	Plastic bag/ puncture proof container	Cat.3, Cat.6, and Cat.7	Autoclaving/Micro waving/ Chemical treatment and destruction/ shredding
Black	Plastic bag	Cat.5, Cat.9, and Cat.10 (solid)	Disposal in secured landfill

Personnel Safety Devices

3.15   The use of protective gears should be made mandatory for all the personnel handling waste:

(i)   Gloves– Heavy-duty rubber gloves should be used for waste handling by the waste retrievers. This should be bright yellow in colour. After handling the waste, the gloves should be washed twice. The gloves should be washed after every use with carbolic soap and a disinfectant. The size should fit the operator.

(ii)   Aprons, Gowns, Suits or Other Apparels– Apparel is worn to prevent contamination of clothing and protect skin. It could be made of cloth or impermeable material such as plastic. People working in incinerator chambers should have gowns or suits made of non-inflammable material.

(iii)   Masks– Various types of masks, goggles, and face shields are worn alone or in combination, to provide a protective barrier. It is mandatory for personnel working in the incinerator chamber to wear a mask covering both nose and mouth, preferably a gas mask with filters.

(iv)   Boots– Leg coverings, boots or shoe-covers provide greater protection to the skin when splashes or large quantities of infected waste have to be handled. The boots should be rubber-soled and anti-skid type. They should cover the leg up to the ankle.

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                          ┌─────────────────────┐
                          │  Infectious Waste   │
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Sharp	Plastics	Pathological Waste	Microbiological Waste	Liquid Waste

Sharp → Needles, scalpels, syringes, blades and glass which can cause needle stick injury or be unwisely reused.

Sharps can be autoclaved and shredded using special shredding equipment. Some of these metals may be recycled when they have been properly treated.

→ Recycling

→ Landfill

Plastics → Contaminated items include syringes, blood & urine bags, IV bottles and tubing. This is often single use PVC which should not be incinerated

→ Autoclave → Shredding to prevent reuse → Recycling / Landfill

Pathological Waste → Human tissue, blood bandages, soiled cotton dressings, etc.

→ Microwave (not suitable for blood sterilization)

Microbiological Waste → Viral and bacterial infected waste from all sources should never be mixed with uninfected waste.

→ Incineration → Deep Burial

Liquid Waste → All body fluids – blood, urine and suctions.

Chemical Disinfection. Liquids usually collected and treated with 1% bleach for 1 hour after which it can be discharged to sewer.
Sodium Hypochlorite solution is mixed with the liquid to produce bleach concentration of 1%

At Health Centre, the waste goes to on site waste water treatment

→ Recycling

→ Landfill

→ Incineration

Treatment options of bio-medical waste have been mentioned elsewhere in the report under the head disposal methods.

Electronic Waste

3.16 The discarded and end-of-life electronics products ranging from computers, equipment used in Information and Communication Technology (ICT), home appliances, audio and video products and all of their peripherals are popularly known as electronic waste (E-waste).

The ill effects of e-waste could be on soil through leaching of hazardous contents from landfills; in water due to recycling process, if not carried out properly, can cause damage to human being through inhalation of gases during recycling, contact of the skin of the workers with hazardous substances and contact during acid treatment used in recovery process.

The hazardous and toxic substances found in e-waste include lead and cadmium in printed circuit boards (PCBs). Lead is primarily found in all electronic products/ assembly, cathode ray tubes (CRT), etc. Cadmium is found in monitor/ CRTs while there may be mercury in switches and flat screen monitors. Mercury is also found in CFL, relays and some other specific products. Besides the cadmium in computer batteries, cadmium is also used for plating metal enclosures/ metal parts in sub-assemblies. Polychlorinated biphenyls are found in capacitors and transformers and as brominated flame retardant on printed circuit boards, plastic casings, cable and polyvinyl chloride (PVC) cable sheathing for insulation and PBD/PBDE in plastic parts of electronics.

3.17 E-waste is not hazardous if it is stocked in safe storage or recycled by scientific methods or transported from one place to the other in parts or in totality in the formal sector. The e-waste can, however, be considered hazardous if recycled by primitive methods. E-waste contains several substances such as heavy metals, plastics, glass, etc., which can be potentially toxic and hazardous to the environment and human health, if not handled in an environmentally sound manner. E-waste recycling in the non-formal sector by primitive methods can damage the environment.

Greenpeace had undertaken a survey of the environmental pollution during manufacturing of electronic products in China, Thailand, Philippines and Mexico. The study is an assessment on pollution due to the use of some of the hazardous chemicals in the manufacture of electronic products in these countries. The industries included the printed circuit board and semiconductor chip manufacturing units and various assembly units of

television, computers, monitors, etc. No such study has been carried out in India.

Effects of E-Waste on Health

Source of E-wastes	Constituent	Health effects
Solder in printed circuit boards, glass panels and gaskets in computer monitors	Lead (PB)	• Damage to central and peripheral nervous systems, blood systems and kidney damage. • Affects brain development of children.
Chip resistors and semiconductors	Cadmium (CD)	• Toxic irreversible effects on human health. • Accumulates in kidney and liver. • Causes neural damage. • Teratogenic.
Relays and switches, printed circuit boards	Mercury (Hg)	• Chronic damage to the brain. • Respiratory and skin disorders due to bioaccumulation in fishes.
Corrosion protection of untreated and galvanized steel plates, decorator or hardner for steel housings	Hexavalent chromium (Cr) VI	• Asthmatic bronchitis. • DNA damage.
Cabling and computer housing	Plastics including PVC	Burning produces dioxin. It causes • Reproductive and developmental problems; • Immune system damage; • Interfere with regulatory hormones

Source of E-wastes	Constituent	Health effects
Plastic housing of electronic equipments and circuit boards.	Brominated flame retardants (BFR)	• Disrupts endocrine system functions
Front panel of CRTs	Barium (Ba)	Short term exposure causes: • Muscle weakness; • Damage to heart, liver and spleen.
Motherboard	Beryllium (Be)	• Carcinogenic (lung cancer) • Inhalation of fumes and dust. Causes chronic beryllium disease or beryllicosis. • Skin diseases such as warts.

Management of E-waste

3.18   It is estimated that 75% of electronic items are stored due to uncertainty of how to manage it. These electronic junks lie unattended in houses, offices, warehouses, etc. and normally mixed with household wastes, which are finally disposed off at landfills. This necessitates implementable management measures.

In industries management of e-waste should begin at the point of generation. This can be done by waste minimization techniques and by sustainable product design. Waste minimization in industries involves adopting:

➢   Inventory management,

➢   Production-process modification,

➢   Volume reduction,

➢   Recovery and reuse.

Responsibilities of the Government

3.19   The following paragraphs give an overview of responsibilities of Government in waste management:

(i)   Governments should set up regulatory agencies in each district, which are vested with the responsibility of co-ordinating and consolidating the regulatory functions of the various government authorities regarding hazardous substances.

(ii)   Governments should be responsible for providing an adequate system of laws, controls and administrative procedures for hazardous waste management (Third World Network. 1991). Existing laws concerning e-waste disposal be reviewed and revamped. A comprehensive law that provides e-waste regulation and management and proper disposal of hazardous wastes is required. Such a law should empower the agency to control, supervise and regulate the relevant activities of government departments.

Under this law, the agency concerned should

➢   Collect basic information on the materials from manufacturers, processors and importers and to maintain an inventory of these materials. The information should include toxicity and potential harmful effects.

➢   Identify potentially harmful substances and require the industry to test them for adverse health and environmental effects.

➢   Control risks from manufacture, processing, distribution, use and disposal of electronic wastes.

➢   Encourage beneficial reuse of "e-waste" and encouraging business activities that use waste". Set up programs so as to promote recycling among citizens and businesses.

➢   Educate e-waste generators on reuse/recycling options.

(iii)   Governments must encourage research into the development and standard of hazardous waste management, environmental monitoring and the regulation of hazardous waste-disposal.

(iv)   Governments should enforce strict regulations against dumping e-waste in the country by outsiders. Where the laws are flouted, stringent penalties must be imposed.

(v) Governments should enforce strict regulations and heavy fines levied on industries, which do not practice waste prevention and recovery in the production facilities.

(vi) Polluter pays principle and extended producer responsibility should be adopted.

(vii) Governments should encourage and support NGOs and other organizations to involve actively in solving the nation's e-waste problems.

(viii) Uncontrolled dumping is an unsatisfactory method for disposal of hazardous waste and should be phased out.

(ix) Governments should explore opportunities to partner with manufacturers and retailers to provide recycling services.

Responsibility and Role of Industries

3.20   The following are major responsibilities and roles of industries is waste management:

(i) Generators of wastes should take responsibility to determine the output characteristics of wastes and if hazardous, should provide management options.

(ii) All personnel involved in handling e-waste in industries including those at the policy, management, control and operational levels, should be properly qualified and trained. Companies can adopt their own policies while handlinge-wastes. Some are given below:

- Use label materials to assist in recycling (particularly plastics).

- Standardize components for easy disassembly.

- Re-evaluate 'cheap products' use, make product cycle 'cheap' and so that it has no inherent value that would encourage a recycling infrastructure.

- Create computer components and peripherals of biodegradable materials.

- Utilize technology sharing particularly for manufacturing and de manufacturing.

- Encourage /promote /require green procurement for corporate buyers.

- Look at green packaging options.

(iii)   Companies can and should adopt waste minimization techniques, which will make a significant reduction in the quantity of e-waste generated and thereby lessening the impact on the environment. It is a "reverse production" system that designs infrastructure to recover and reuse every material contained within e-wastes metals such as lead, copper, aluminium and gold, and various plastics, glass and wire. Such a "closed loop" manufacturing and recovery system offers a win-win situation for everyone, less of the Earth will be mined for raw materials, and groundwater will be protected, researchers explain.

(iv)   Manufacturers, distributors, and retailers should undertake the responsibility of recycling/ disposal of their own products.

(v)   Manufacturers of computer monitors, television sets and other electronic devices containing hazardous materials must be responsible for educating consumers and the general public regarding the potential threat to public health and the environment posed by their products. At minimum, all computer monitors, television sets and other electronic devices containing hazardous materials must be clearly labelled to identify environmental hazards and proper materials management.

Responsibilities of the Citizen

3.19   Waste prevention is perhaps more preferred to any other waste management option including recycling. Donating electronics for reuse extends the lives of valuable products and keeps them out of the waste management system for a longer time. But care should be taken while donating such items, i.e., the items should be in working condition.

Reuse, in addition to being an environmentally preferable alternative also benefits society. By donating used electronics, schools, non-profit organizations, and lower-income families can afford to use equipment that they otherwise could not afford.

E-wastes should never be disposed with garbage and other household wastes. This should be segregated at the site and sold or donated to various organizations.

While buying electronic products opt for those that:

➢   are made with fewer toxic constituents

➢   use recycled content

> ➢ are energy efficient

> ➢ are designed for easy upgrading or disassembly

> ➢ utilize minimal packaging

> ➢ offer leasing or take back options

> ➢ have been certified by regulatory authorities. Customers should opt for upgrading their computers or other electronic items to the latest versions rather than buying new equipment.

Recycling

3.20   Today, the electronic waste recycling business is in all areas of the developed world a large and rapidly consolidating business. Part of this evolution has involved greater diversion of electronic waste from energy-intensive down cycling processes, where equipment is reverted to a raw material form. This diversion is achieved through reuse and refurbishing. The environmental and social benefits of reuse include diminished demand for new products and virgin raw materials; larger quantities of pure water and electricity for associated manufacturing; less packaging per unit; availability of technology to wider swaths of society due to greater affordability of products; and diminished use of landfills.

One of the major challenges is recycling the printed circuit boards from the electronic wastes. The circuit boards contain such precious metals as gold, silver, platinum, etc. and such base metals as copper, iron, aluminium, etc. Conventional method employed is mechanical shredding and separation but the recycling efficiency is low. Alternative methods such as cryogenic decomposition have been studied for printed circuit board recycling, and some other methods are still under investigation.

Benefits of Recycling

3.21   Recycling raw materials from end-of-life electronics is the most effective solution to the growing e-waste problem. Most electronic devices contain a variety of materials, including metals that can be recovered for future uses. By dismantling and providing reuse possibilities, intact natural resources are conserved and air and water pollution caused by hazardous disposal is avoided. Additionally, recycling reduces the amount of greenhouse gas emissions caused by the manufacturing of new products. It simply makes good sense and is efficient to recycle and to do our part to keep the environment green.

Hazardous Substances

3.22   The following are some of the hazardous substances

Americium: The radioactive source in smoke alarms. It is known to be carcinogenic.

Mercury: It is found in fluorescent tubes (numerous applications), tilt switches (mechanical doorbells, thermostats and flat screen monitors. Health effects include sensory impairment, dermatitis, memory loss, and muscle weakness. Environmental effects in animals include death, reduced fertility, slower growth and development.

Sulphur: It is found in lead-acid batteries. Health effects include liver damage, kidney damage, heart damage, and eye and throat irritation. When released into the environment, it can create sulphuric acid.

BFRs: It is used as flame retardants in plastics in most electronics. Includes PBBs, PBDE, DecaBDE, OctaBDE, and PentaBDE. Health effects include impaired development of the nervous system, thyroid problems, and liver problems. Environmental effects: similar effects as in animals as humans. PBBs were banned from 1973 to 1977 and PCBs were banned during the 1980s.

Cadmium: It is found in light-sensitive resistors, corrosion-resistant alloys for marine and aviation environments, and nickel-cadmium batteries. The most common form of cadmium is found in Nickel-cadmium rechargeable batteries. These batteries tend to contain between 6 and 18% cadmium. The sale of Nickel-Cadmium batteries has been banned in the European Union except for medical use. When not properly recycled it can leach into the soil, harming microorganisms and disrupting the soil ecosystem. Exposure is caused by proximity to hazardous waste sites and factories and workers in the metal refining industry. The inhalation of cadmium can cause severe damage to the lungs and is also known to cause kidney damage.

Lead: It consists of solder, CRT monitor glass, lead-acid batteries, some formulations of PVC.A typical 15-inch cathode ray tube may contain 1.5 pounds of lead, but other CRTs have been estimated as having up to 8 pounds of lead.

Beryllium oxide: It is used as filler in some thermal interface materials such as thermal grease used on heat sinks for CPUs and power transistors, magnetrons, X-ray-transparent ceramic windows, heat transfer fins in vacuum tubes, and gas lasers.

Radioactive Waste

3.23   Nuclear power is the only large-scale energy-producing technology which takes full responsibility for all its wastes and fully costs this into the product. The amount of radioactive wastes is very small relative to wastes produced by fossil fuel electricity generation. Used nuclear fuel may be treated as a resource or simply as a waste. Nuclear wastes are neither particularly hazardous nor hard to manage relative to other toxic industrial wastes. Safe methods for the final disposal of high-level radioactive waste are technically proven; the international consensus is that there should be geological disposal.

3.24   All parts of the nuclear fuel cycle produce some radioactive waste (radwaste) and the relatively modest cost of managing and disposing of this is part of the electricity cost, *i.e.* it is internalised and paid for by the electricity consumers. At each stage of the fuel cycle there are proven technologies to dispose of the radioactive wastes safely. For low and intermediate level wastes these are mostly being implemented. For high-level wastes some countries await the accumulation of enough of it to warrant building geological repositories.

Unlike other industrial wastes, the level of hazard of all nuclear waste - its radioactivity - diminishes with time. The main objective in managing and disposing of radioactive (or other) waste is to protect people and the environment. This means isolating or diluting the waste so that the rate or concentration of any radionuclides returned to the biosphere is harmless. To achieve this, practically all wastes are contained and managed – some clearly need deep and permanent burial. From nuclear power generation, none is allowed to cause harmful pollution.

All toxic wastes need to be dealt with safely, not just radioactive wastes. In countries with nuclear power, radioactive wastes comprise less than 1% of total industrial toxic wastes (the balance of which remains hazardous indefinitely).

Types of radioactive wastes

(i)   Exempt waste and very low level waste

(ii)   Low level waste

(iii)   Intermediate-level waste

(iv)   High-level waste

Exempt Waste and Very Low Level Waste

3.25   Exempt waste and very low level waste (VLLW) contains radioactive materials at a level which is not considered harmful to people or the surrounding environment. It consists mainly of demolished material (such as concrete, plaster, bricks, metal, valves, piping, *etc*) produced during rehabilitation or dismantling operations on nuclear industrial sites. Other industries, such as food processing, chemical, steel, *etc* also produce VLLW as a result of the concentration of natural radioactivity present in certain minerals used in their manufacturing processes.

Low-Level Waste

3.26   Low-level waste (LLW) is generated from hospitals and industry, as well as the nuclear fuel cycle. It comprises paper, rags, tools, clothing, filters *etc*, which contain small amounts of mostly short-lived radioactivity. It does not require shielding during handling and transport and is suitable for shallow land burial. To reduce its volume, it is often compacted or incinerated before disposal. It comprises some 90% of the volume but only 1% of the radioactivity of all radioactive waste.

Intermediate-Level Waste

3.27   Intermediate-level waste (ILW) contains higher amounts of radioactivity and some requires shielding. It typically comprises resins, chemical sludges and metal fuel cladding, as well as contaminated materials from reactor decommissioning. Smaller items and any non-solids may be solidified in concrete or bitumen for disposal. It makes up some 7% of the volume and has 4% of the radioactivity of all radwaste.

High-Level Waste

3.28   High-level waste (HLW) arises from the 'burning' of uranium fuel in a nuclear reactor. HLW contains the fission products and transuranic elements generated in the reactor core. It is highly radioactive and hot, so requires cooling and shielding. It can be considered as the 'ash' from 'burning' uranium. HLW accounts for over 95% of the total radioactivity produced in the process of electricity generation. There are two distinct kinds of HLW:

- Used fuel itself.

- Separated waste from reprocessing the used fuel

HLW has both long-lived and short-lived components, depending on the length of time it will take for the radioactivity of particular radionuclides to

decrease to levels that are considered no longer hazardous for people and the surrounding environment. If generally short-lived fission products can be separated from long-lived actinides, this distinction becomes important in management and disposal of HLW.

3.29   In terms of radioactivity, high-level waste (HLW) is the major issue arising from the use of nuclear reactors to generate electricity. Highly radioactive fission products and also transuranic elements are produced from uranium and plutonium during reactor operations and are contained within the used fuel. Where countries have adopted a closed cycle and utilised reprocessing to recycle material from used fuel, the fission products and minor actinides are separated from uranium and plutonium and treated as HLW (uranium and plutonium is then re-used as fuel in reactors). In countries where used fuel is not reprocessed, the used fuel itself is considered a waste and therefore classified as HLW.

Low and intermediate-level waste is produced as a result of operations, such as the cleaning of reactor cooling systems and fuel storage ponds, the decontamination of equipment, filters and metal components that have become radioactive as a result of their use in or near the reactor.

3.30   Waste management for used fuel and HLW from nuclear power reactors:

Country	Policy	Facilities and progress towards final repositories
Belgium	Reprocessing	Central waste storage at Dessel Underground laboratory established 1984 at Mol Construction of repository to begin about 2035
Canada	Direct disposal	Nuclear Waste Management Organisation set up 2002 Deep geological repository confirmed as policy, retrievable Repository site search from 2009, planned for use 2025
China	Reprocessing	Central used fuel storage at LanZhou Repository site selection to be completed by 2020 Underground research laboratory

Country	Policy	Facilities and progress towards final repositories
		from 2020, disposal from 2050
Finland	Direct Disposal	Program start 1983, two used fuel storages in operation Posiva Oy set up 1995 to implement deep geological disposal Underground research laboratory Onkalo under construction Repository planned from this, near Olkiluoto, open in 2020
France	Reprocessing	Underground rock laboratories in clay and granite Parliamentary confirmation in 2006 of deep geological disposal, containers to be retrievable and policy "reversible" Bure clay deposit is likely repository site to be licensed 2015, operating 2025
Germany	Reprocessing but moving to Direct Disposal	Repository planning started 1973 Used fuel storage at Ahaus and Gorleben salt dome Geological repository may be operational at Gorleben after 2025
India	Reprocessing	Research on deep geological disposal for HLW
Japan	Reprocessing	Underground laboratory at Mizunami in granite since 1996 Used fuel and HLW storage facility at Rokkasho since 1995 Used fuel storage under construction at Mutsu, start up 2013 NUMO set up 2000, site selection for deep geological repository under way to 2025, operation from 2035, retrievable

Country	Policy	Facilities and progress towards final repositories
Russia	Reprocessing	Underground laboratory in granite or gneiss in Krasnoyarsk region from 2015, may evolve into repository Sites for final repository under investigation on Kola peninsula Pool storage for used VVER-1000 fuel at Zheleznogorsk since 1985 Dry storage for used RBMK and other fuel at Zheleznogorsk from 2012 Various interim storage facilities in operation
South Korea	Direct Disposal, may change	Waste program confirmed 1998, KRWM seet up 2009 Central interim storage planned from 2016
Spain	Direct Disposal	ENRESA established 1984, its plan accepted 1999 Central interim storage at Villar de Canas from 2016 (volunteered location) Research on deep geological disposal, decision after 2010
Sweden	Direct Disposal	Central used fuel storage facility – CLAB – in operation since 1985 Underground research laboratory at Aspo for HLW repository Osthammar site selected for repository (volunteered location)
Switzerland	Reprocessing	Central interim storage for HLW and used fuel at ZZL Wurenlingen since 2001 Smaller used fuel storage at Beznau Underground research laboratory for high-level waste repository at Grimsel since 1983

Country	Policy	Facilities and progress towards final repositories
		Deep repository by 2020, containers to be retrievable
United Kingdom	Reprocessing	Low-level waste repository in operation since 1959 HLW from reprocessing is vitrified and stored at Sellafield Repository location to be on basis of community agreement New NDA subsidiary to progress geological disposal.
United States	Direct Disposal but reconsidering	DoE responsible for used fuel from 1998, accumulated $32 billion waste fund Considerable research and development on repository in welded tuffs at Yucca Mountain, Nevada The 2002 Congress decision that geological repository be at Yucca Mountain was countered politically in 2009.

3.31   Waste Generating Top Ten States Waste Generating Top Ten Cities are as follows:

State	WEE (Tones)
Maharashtra	20270.59
Tamil Nadu	13486.24
Andhra Pradesh	12780.33
Uttar Pradesh	10381.11
West bengal	10059.36
Delhi	9729.15
Karnataka	9118.74
Gujarat	8994.33
Madhya pradesh	7800.62
Punjab	6958.46

State	WEE (Tones)
Ahmedabad	3287.5
Bangalore	4648.4
Chennai	4132.2
Delhi	9730.3
Hyderabad	2833.5
Kolkata	4025.3
Mumbai	11017.1
Nagpur	1768.9
Pune	2584.2
Surat	1836.5

Soil Pollution

3.32   Soil pollution is defined as the build-up in soils of persistent toxic compounds, chemicals, salts, radioactive materials, or disease causing agents, which have adverse effects on plant growth and animal health.

Soil is the thin layer of organic and inorganic materials that covers the earth's rocky surface. The organic portion, which is derived from the decayed remains of plants and animals, is concentrated in the dark uppermost topsoil. The inorganic portion made up of rock fragments, was formed over thousands of years by physical and chemical weathering of bedrock. Productive soils are necessary for agriculture to supply the world with sufficient food.

3.33   Many different ways soil can be polluted are as below:

- Seepage from a landfill

- Discharge of industrial waste into the soil

- Percolation of contaminated water into the soil

- Rupture of underground storage tanks

- Excess application of pesticides, herbicides or fertilizer

- Solid waste seepage

The most common chemicals involved in causing soil pollution are as follows:

- Petroleum hydrocarbons

- Heavy metals

- Pesticides

- Solvents

3.34   Soil pollution is caused by the presence of man-made chemicals or other alteration in the natural soil environment. This type of contamination typically arises from the rupture of underground storage links, application of pesticides, percolation of contaminated surface water to sub-surface strata, oil and fuel dumping, leaching of wastes from landfills or direct discharge of industrial wastes to the soil. The most common chemicals involved are petroleum hydrocarbons, solvents, pesticides, lead and other heavy metals. This occurrence of this phenomenon is correlated with the degree of industrialization and intensities of chemical usage.

3.35   A soil pollutant is any factor which deteriorates the quality, texture and mineral content of the soil or which disturbs the biological balance of the organisms in the soil. Pollution in soil has adverse effect on plant growth.

Pollution in soil is associated with

- Indiscriminate use of fertilizers

- Indiscriminate use of pesticides, insecticides and herbicides

- Dumping of large quantities of solid waste

- Deforestation and soil erosion.

3.36   The following are some effects of soil pollution :

Agricultural	Industrial	Urban
Reduced Soil fertility Reduced nitrogen fixation Increased erodibility Larger loss of soil and nutrients Deposition of silt in tanks and reservoirs Reduced crop yield Imbalance in soil fauna and flora	Dangerous chemicals entering underground water Ecological Imbalance Release of pollutant gases Release of radioactive rays causing health problems Increased salinity Reduced vegetation	Clogging of drains Inundation of areas Public health problems Pollution of drinking water resources Foul smell and release of gases Waste management problems.

Waste Management in Villages

3.37   If there are some 25000 villagers, then the total waste generation may go up-to 7500 Kilograms of solid waste per day reveals a survey. Out of which 34.87% is organic; 61.57% is organic mixed with soil and remaining primarily consists of plastics on the roadside, vacant land and outskirts of the village. These non biodegradable waste causes number of problems for the environment and include

- Hazardous emissions when waste is burnt

- Incorporation of waste into the soil in large volumes causes suffocation of soil biota

- Waste is often contaminated with biologically hazardous wastes such as, medical wastes and additional contamination occurs through materials such as, heavy metals from dry cell batteries.

3.38   The volume and variety of non- bio-degradable wastes will increase dramatically as average income rise and consumer items, particularly processed foods become more widespread. This will predominantly occur in lightweight packaging materials, which are not collected for recycling.

The legal responsibility for collecting, storing and disposing of these wastes lies with the local municipal authority. This responsibility falls to the local Panchayats. Unfortunately providing SWM services to village residents has not caught their attention to date. However, this may change in the short to medium term. In the meantime residual waste continues to be indiscriminately dumped throughout villages and surrounding farmlands.

There are certain NGOs like Exnora, Auroville which have taken initiatives in managing the waste in villages with the co-operation from Panchayat leaders.

Chapter 4
Disposal Methods

4.1 Improper and unscientific techniques adopted for MSW disposal are economically non–viable and socially unacceptable, due to this selection of proper disposal method is necessary. Quantity and characteristics of the MSW are two major factors, which are to be considered as the basis for the design of efficient, cost effective and environmentally compatible disposal method. One can choose the appropriate disposal method which is generally categorized on the basis of large scale and small scale disposals below:

For Large Scale Disposal

Open Dumps

4.2 The cheapest and the oldest easy method of MSW disposal is 'open dumping' where the waste is dumped in low–lying areas on the city outskirts and leveled by bull–dozers from time to time. Open dumping is not a scientific way of waste disposal. Open dumps refer an uncovered site used for disposal of waste without environmental controls. The waste is untreated, uncovered, and not segregated. In spite of its simplicity in execution, the financial involvement for this traditional method of waste management has been quite high particularly for the big metropolis. Uncontrolled, open dumps are not a sound practice. Open dumps are exposed to flies and rodents. It also generates foul smell and unsightly appearance. Loose waste is dispersed by the action of wind. Drainage from dumps contributes to pollution of surface and ground water and also the rainwater run-off from these dumps contaminates nearby land and water thereby spreading disease.

Landfill

4.3 Disposing of waste in a landfill involves burying the waste, and this remains a common practice in most countries. Landfills are generally located in urban areas where a large amount of waste is generated and has to be dumped in a common place. The equipment required to operate is relatively inexpensive and can be used for other municipal operations as well. Serious threat to community health represented by open dumping or burning is avoided in this method. Landfills are often established in abandoned or

unused quarries, mining voids or borrow pits. Unlike an open dump, it is a pit that is dug in the ground. The waste is dumped and the pit is covered at the dumping ground with debris/ soil and spread evenly in layers. At the end of each day, a layer of soil is scattered on top of it and some mechanism, usually earth moving equipment is used to compress the garbage, which now forms a cell. Thus, every day, garbage is dumped and becomes a cell. The organic waste undergoes natural decomposition and generates a fluid, which is known a leachate, and is very harmful to the ecosystem. After the landfill is full, the area is covered with a thick layer of mud and the site can thereafter be developed as a parking lot or a park.

Sanitary Landfills

4.4   An alternative to landfills or modern landfill which solves the problem of leaching to some extent is a sanitary landfill which is more hygienic and built in a methodical manner. Designed **"landfill"** means a waste disposal site for the deposit of residual solid waste in a facility designed with protective measures against pollution of ground water, surface water and air fugitive dust, wind-blown litter, bad odour, fire hazard, bird menace, pests or rodents, greenhouse gas (Methane) emissions, slope instability and erosion. These are lined with materials that are impermeable such as, plastics and clay, and are also built over impermeable soil. Deposited waste is normally compacted to increase its density and stability, and covered to prevent attracting vermin (such as mice or rats). Many landfills also have landfill gas extraction systems installed to extract the landfill gas. Gas is pumped out of the landfill using perforated pipes and flared off or burnt in a gas engine to generate electricity. Fully operated landfills may even enhance property values. Constructing sanitary landfills is very costly and they are having their own problems.

4.5   A properly-designed and well-managed landfill can be a hygienic and relatively inexpensive method of disposing of waste materials. Older, poorly-designed or poorly-managed landfills can create a number of adverse environmental impacts such as, wind-blown litter, attraction of vermin, and generation of liquid leachate. Another common by-product of landfills is gas (mostly composed of methane and carbon dioxide), which is produced as organic waste breaks down aerobically. This gas can create odor problems, kill surface vegetation, and mainly is a greenhouse gas. By and large, crude dumping of waste is done in the most of the cities without following the principles of sanitary landfilling. As negligible segregation of waste at source

takes place, all waste including hospital infectious waste, generally, finds its way to the disposal site.

4.6   Quite often industrial hazardous waste is also deposited at dump sites meant for domestic waste. The waste deposited at the dump site is generally, neither spread nor compacted on a regular basis. It is also not covered with inert material. Thus, very unhygienic conditions prevail on the dump sites. Improperly managed and designed landfills attract all types of insects and rodents that spread disease.

4.7   Sanitary landfills are not properly practiced and waste is dumped unattended in open sites, resulting in several hazards. In many sites compaction is not carried out and earth cover is not provided. Leachate if not treated properly it penetrates the soil and, if not prevented, pollutes the ground water. Also, flies, mosquitoes and many other pests breed on the waste and unless properly maintained, the dumps are a public health hazard. Some authorities claim that often the plastic liner develops cracks as it reacts with various chemical solvents present in the waste.

Unplanned land fill have caused an environmental disaster posing health hazards both to workers and to general population. The rate of decomposition in sanitary landfills is also extremely variable. This can be due to the fact that less oxygen is available as the garbage is compressed very tightly. It has also been observed that some bio-degradable materials do not decompose in a landfill.

Incineration

4.8   The process of burning waste in large furnaces is known as incineration. Incineration is a disposal method that involves combustion of waste material. Incineration and other high temperature waste treatment systems are sometimes described as "thermal treatment".

Incineration is carried out both on a small scale by individuals and on a large scale by industry. It is used to dispose of solid, liquid and gaseous waste. Incineration facilities, generally, do not require as much area as landfills. Waste-to-energy or energy-from-waste is broad terms for facilities that burn waste in a furnace or boiler to generate heat, steam and/or electricity. At the end of the process all that is left behind is ash. This method produces heat that can be used as energy. Incinerators convert waste materials into heat, gas, steam, and ash. It is recognized as a practical method of disposing of certain hazardous waste materials (such as,

biological medical waste). Incineration of waste is a thermal process, which reduces the waste to 15-20 per cent.

However, due to lower calorific value of waste, this process has not been fully exploited.

4.9   Both the fly ash and the ash that is left in the furnace after burning have high concentrations of dangerous toxins such as, dioxins and heavy metals. Disposing of this ash is a problem. The ash that is buried at the landfills leaches the area and causes severe contamination.

Incineration is a controversial method of waste disposal, due to issues such as, emission of gaseous pollutants. Improperly operated incineration plants cause air pollution. Burning garbage is not a clean process as it produces tons of toxic ash and pollutes the air and water. Cost of incinerator and additional investment on pollution control devices make the process capital - intensive. Under Indian conditions large scale incineration plants are economically non–viable in view of their capital–intensive character and the low calorific value of city garbage available.

For Small Scale Disposal

Composting

4.10   Decomposition and stabilization of solid organic waste material has been taking place in nature ever since life appeared on this planet. **Composting** is the process of decomposition and stabilization of organic matter under controlled condition. Waste materials that are organic in nature, such as, plant material, food scraps, and paper products, can be recycled using biological composting and digestion processes to decompose the organic matter. It is a biological process in which micro-organisms, mainly fungi and bacteria, convert degradable organic waste into humus like substance. The resulting organic material is then recycled as mulch or compost for agricultural or landscaping purposes. In addition, waste gas from the process (such as methane) can be captured and used for generating electricity. The intention of biological processing in waste management is to control and accelerate the natural process of decomposition of organic matter.

4.11   There is a large variety of composting and digestion methods and technologies varying in complexity from simple home compost heaps, to industrial-scale enclosed-vessel digestion of mixed domestic waste. Methods

of biological decomposition are differentiated as being aerobic or anaerobic methods, though hybrids of the two methods also exist.

Special Provisions for Hilly Areas

4.12   Cities and towns located on hills shall have location-specific methods evolved for final disposal of solid wastes by the municipal authority with the approval of the concerned State Board or the Committee. The municipal authority shall set up processing facilities for utilization of bio-degradable organic wastes. The inert and non-biodegradable waste shall be used for building roads or filling-up of appropriate areas on hills. In view of constraints in finding adequate land in hilly areas, wastes not suitable for road-laying or filling up shall be disposed of in specially designed landfills

Reduce

4.13   The most uncontrollable phase in Solid waste management is 'Waste generation'. Generated solid waste particularly from Non-point sources is always a challenge for local administration, so best practice is to reduce the generation of Solid waste.

- The reduction of waste can happen only when everybody reduces waste generation in the first place.

- Every individual has to contribute in doing so. There is urgent need of public awareness about waste generation. There should be awareness at all levels of society, which will motivate them to change their casual habits which creates waste.

- Public Private Partnership should be engaged in this awareness activity.

- Definite Point Sources of waste generation like Hotels, Restaurant, and Shopping, Complexes, etc should contribute their space for disposal in their area itself, which ultimately reduces the burden of Collection.

- For Public Gatherings and Events organized in public places for any reason (including for processions, exhibitions, circuses, fairs, political rallies, commercial, religious, socio-cultural events, protests and demonstrations, etc.), it will be the responsibility of the organizer of the event or gathering to ensure the cleanliness of that area.

Reuse

4.14   Utilization value of any item should be known to people who are using it.

- NGOs working for under privilege society should work for establishing centres which provides goods for secondary use. Such centres can be set up at the source.

- Private sector involvement should be encouraged, repairing facilities should be offered so goods can be used as per its utilization value.

- Large production companies of electronic appliances, gadgets, etc should establish the collection centres, where damaged items can be repaired and reused.

- NGOs, Self-help group, etc can organize workshop, seminars which encourage people to use waste material to create some decorative articles.

Recycle

4.15   The process of transforming materials into secondary resources for manufacturing new products is known as recycling.

- Waste recycling leads to less utilization of raw materials, saves on landfill space, reduces the amount of energy required to manufacture new products. In fact recycling can prevent the creation of waste at the source.

- Promoting/ motivating citizens to start segregation of waste at source involving NGO's, co-operatives, private, commercial and industrial sectors for appropriate mass awareness campaigns.

- Source separation should be done by keeping recyclables and organics waste separate at source, i.e., at the point of generation facilitate reuse, recycling, and composting.

- Segregate the waste in the house by keeping two garbage bins and see to it that the biodegradable and the non-biodegradable is put into separate bins and disposed off separately. Biodegradable waste can be recycled.

- Dry waste consisting of cans, aluminium foils, plastics, metal, glass, and paper could be recycled.

- There should be recycling plant at local level.

- The least technically complex and most cost-effective solution should be chosen.

- Separation of waste for efficacious recycling and environmentally friendly purchasing habits are two areas for effective management.

Pyrolysis/ Gasification

4.16   Pyrolysis is a process of chemical decomposition of organic matter brought about by heat. In this process, the organic material is heated in absence of air until the molecules thermally break down to become a gas comprising smaller molecules (known collectively as syngas).

Gasification can also take place as a result of partial combustion of organic matter in presence of a restricted quantity of oxygen or air. The gas so produced is known as producer gas. The gases produced by pyrolysis mainly comprise carbon monoxide (25%), hydrogen and hydrocarbons (15%), and carbon dioxide and nitrogen (60%). The next step is to 'clean' the syngas or producer gas. Thereafter, the gas is burned in internal combustion (IC) engine generator sets or turbines to produce electricity.

Anaerobic Digestion/ Biomethanation

4.17   In this process, the organic fraction of the waste is segregated and fed into a closed container (biogas digester). In the digester, the segregated waste undergoes biodegradation in presence of methanogenic bacteria and under anaerobic conditions, producing methane-rich biogas and effluent. The biogas can be used either for cooking/ heating applications, or for generating motive power or electricity through dual-fuel or gas engines, low-pressure gas turbines, or steam turbines. The sludge from anaerobic digestion, after stabilization, can be used as a soil conditioner. It can even be sold as manure depending upon its composition, which is determined mainly by the composition of the input waste.

Deep Burial

4.18   A pit or trench should be dug about 2 m deep. It should be half filled with waste, and then covered with lime within 50 cm of the surface, before filling the rest of the pit with soil. It must be ensured that animals do not have access to burial sites. Covers of galvanized iron/wire meshes may be used. On each occasion, when wastes are added to the pit, a layer of 10cm of soil be added to cover the wastes. Burial must be performed under close and dedicated supervision. The deep burial site should be relatively impermeable and no shallow well should be close to the site. The pits should

be distant from habitation, and sited so as to ensure that no contamination occurs of any surface water or ground water. The area should not be prone to flooding or erosion. The location of the deep burial site will be authorized by the prescribed authority. The institution shall maintain a record of all pits for deep burial.

Autoclaving

4.19   The basic objective of autoclaving is to disinfection and treating biomedical waste.

(i)   When operating a gravity flow autoclave, medical waste shall be subjected to:

    (a)   A temperature of not less than 121°C and pressure of 15 pounds per square inch (psi) for an autoclave residence time of not less than 60 minutes; or

    (b)   A temperature of not less than 135°C and a pressure of 31 psi for an autoclave residence time of not less than 45 minutes; or

    (c)   A temperature of not less than 149°C and a pressure of 52 psi for an autoclave residence time of not less than 30 minutes.

(ii)   When operating a vacuum autoclave, medical waste shall be subjected to a minimum of one pre vacuum pulse to purge the autoclave of all air. The waste shall be subjected to the following:

    (a)   A temperature of not less than 121°C and a pressure of 15 psi for an autoclave residence time of not less than 45 minutes; or

    (b)   A temperature of not less than 135°C and a pressure of 31 psi for an autoclave residence time of not less than 30 minutes.

(iii)   Medical waste shall not be considered properly treated unless the time, temperature and pressure indicators indicate that the required time, temperature and pressure is reached during the autoclave process. If for any reason, time, temperature or pressure indicator indicates that the required temperature, pressure or residence time was not reached, the entire load of medical waste must be autoclaved again until the proper temperature, pressure and residence time were achieved.

(iv)   Recording of operational parameters– Each autoclave shall have graphic or computer recording devices which will automatically and continuously monitor and record dates, time of day, load identification number and operating parameters throughout the entire length of the autoclave cycle.

Chapter 5
Laws and Regulations in India

5.1   Considering the waste generated in various forms and its impact on the environment, Indian Government has introduced laws and regulations. The laws and regulations introduced are based on the type of waste generated. The Government has in such laws clearly mentioned the ways/ methods through which the waste are to be managed or disposed, reporting requirements, record maintenance, segregation of waste at source.

The provision of some of the laws introduced by the Government and important aspects of such laws from the internal auditor's perspective has been mentioned below.

The laws and regulations covered for this guide are –

* Bio-Medical Waste (Management and Handling) Rules, 1998

* E-Waste Management and Handling Rules

* Municipal Solid Waste Management and Handling) Rules

* Plastic Waste (Management and Handling) Rules, 2011.

Bio-Medical Waste (Management and Handling) Rules, 1998

5.2   These rules apply to all persons who generate, collect, receive, store, transport, treat, dispose or handle bio-medical waste in any form. Bio medical waste should not be mixed with other wastes. Such waste has to be segregated at the point of generation itself prior to its storage, transportation, treatment and disposal. The containers should be labelled. For the container to be transported from the premises of generation of waste to waste treatment plant outside the premises it shall be labelled as prescribed in schedule III of this Act. Untreated bio-medical waste should not be kept stored beyond 48 hours provided if necessary permission has been obtained to store beyond the period specified in this Act. An Annual report in Form 11 be submitted on or before every January 31 providing information about the categories and quantity of Bio-medical waste handled in the previous year. This will help the authorities to send the information to Central Pollution Control Board by 31st March every year. Record relating to generation,

collection, reception, storage, transportation, treatment, disposal and/or any form of handling of bio-medical waste in accordance with the rules and guidelines issued. Record so maintained are subject to inspection and verification by prescribed authority at any time.

E-Waste (Management and Handling) Rules, 2011

5.3   The aim is reduce the use of hazardous substances in electrical and electronic equipment by specifying the threshold for use of such hazardous materials including lead, mercury and cadmium. It shall apply to every producer, consumer or bulk consumer, collection centre, dismantler and recycler of e-waste involved in the manufacture, sale, and purchase and processing of electrical and electronic equipment or components. There are certain exceptions for applicability of these rules like these rules are not applicable to micro and small enterprises as defined in Micro, Small and Medium Enterprises Development Act, 2006. As per these rules the main responsibility for waste management is on the producers of electrical and electronic equipment through the introduction extended producer responsibility.

5.4   Extended producer responsibility requires personal computer manufacturers, mobile handset makers and white good makers to come-up with e-waste collection centres or introduce 'take back' systems. Records have to be maintained regarding generation of E-waste and make such records available with State Pollution Control Boards or the Pollution Control Committee. State pollution control board will be required to compile and report an annual report with regard to implementation of these rules by September 30th of every year. Based on this data, Central Pollution Control Board shall submit a report to the Government by December 31st every year.

Municipal Solid Wastes (Management and Handling) Rules, 2000

5.5   It applies to every municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid waste. Municipal Authority shall submit an annual report on or before June 30th to state board or committees. State Board or committee shall prepare and submit to central pollution control board an annual report with regard to implementation of rules by September 15th every year. Central Pollution control board shall prepare a consolidated annual review report on management of municipal solid waste and forward it to central government

along with its recommendation before 15th of December every year. Any municipal solid waste generated in a city or a town, shall be managed and handled in accordance with the compliance criteria and the procedure laid down in Schedule-II. The waste processing and disposal facilities to be set up by the municipal authority on their own or through an operator of a facility shall meet the specifications and standards as specified in Schedules III and IV.

Plastic Waste (Management and Handling) Rules, 2011

5.6 This rule has replaced "Recycled Plastics Manufacture and Usage Rules, 1999 with effect from February 07th, 2011. Some of the salient features of this new rule are –

- Use of plastic materials in sachets for storing, packing or selling gutkha, tobacco and pan masala has been banned.

- Food stuffs will not be allowed to be packed in recycled plastics or compostable plastics.

- Recycled carry bags shall conform to specific BIS Standards.

- Plastic carry bags shall either be white or only with those pigments and colorants which are in conformity with the bar prescribed by the Bureau of Indian Standards (BIS). This shall apply expressly for pigments and colorants to be used in plastic products which come in contact with foodstuffs, pharmaceuticals and drinking water.

- Plastic carry bags shall not be less than 40 micros in thickness. Under the earlier rules, the minimum thickness was 20 microns. Several state governments have stipulated varying minimum levels and now 40 microns will become uniform standard to be followed across the country.

- The minimum size (8x12inches) for the plastic carry bags prescribed under the earlier Rules has been dispensed with.

- Carry bags can be made from compos table plastics provided they conform to BIS Standards.

- The new rules require the municipal authority to constructively engage agencies or groups working in waste management including these waste pickers.

- No carry bags shall be made available free of cost to consumers. The municipal authority may determine the minimum price for plastic carry bags.

- The municipal authority may also direct the manufacturers to establish plastic waste collection centres either collectively or individually in line with the principle of extended producer's responsibility.

- The new rules have stipulated provisions for marking or labelling to indicate name, registration number of the manufacturer, thickness and also to indicate whether they are recycled or compostable.

Government Initiatives

5.7   "E-Parisaraa" is a project supported by the Indo-German e-waste initiative. The pilot project is to manage e-waste without causing ecological damage has been set up with the backing of the Karnataka State Pollution Control Board in Bangalore city. Most software firms in Bangalore city have agreements with E-Parisaraa to collect their e-waste. E-Parisaraa pays these firms for the e-waste and brings it to their processing facility. What makes E-Parisaraa different is that unlike the backyard handling of e-waste, there is no melting involved in the sorting. The waste enters the disassembly-line process where it is dismantled and sorted in plastics, rubber and metal sheets. The leftover printed circuit boards and glass items such as tube lights and picture tubes go to the next stage where they are then cut into strips and powdered

5.8   Processes used by E-Parisaraa are as follows:

- Manual Dismantling

- Hands on Segregation

- Shredding and Density Separation

- Toner Cartridge Dismantling

- Gold recovery from printed circuit boards strips and components

- Silver recovery from silver coated components

- Circuit for reusing fused CFLs

- Printed circuit boards are shredded to 1.5″ x 1.5″ size and exported to Belgium for smelting

5.9   The waste electronic and equipment are converted into raw materials like Metals, Plastics and Glass. The entire system of recycling is based on the principles of clean environment. The benchmark of recycling is to recycle e-waste to about 99% and 1% hazardous materials which cannot be further recycled or reused goes for scientific and secure landfill to adjacent treatment and disposal plant. The central government has passed various laws and regulations in regard to waste management. In line with these laws, state government has framed policy on integrated solid waste management. Karnataka state policy on integrated solid waste management has been mentioned here as an example on state policy as every state policy cannot be covered comprehensively.

Karnataka State Policy on Integrated Solid Waste Management

5.10   The goal of effective MSWM services is to protect public health, the environment and natural resources (water, land, air). An effective MSWM service can be achieved only by improving the efficiency of MSWM activities, thereby leading to the reduction of waste generation, separation of MSW and recyclable material, and recovery of compost and energy.

The objectives of this State Municipal Solid Waste Management Plan are:

(a)   Providing directions for carrying out the waste management activities (collection, transportation, treatment and disposal) in a manner, which is not just environmentally, socially and financially sustainable but is also economically viable.

(b)   Establishing an integrated and self contained operating frame work for MWSM, which would include the development of appropriate means and technologies to handle various waste management activities.

(c)   Enhancing the ability of ULBs to provide effective waste management services to their citizens.

5.11   The touch stone principles, which govern the future approach to provision of MSWM services, include the following:

(a)   Promoting awareness of waste management principles among citizens and other stakeholders

(b)   Minimizing multiple and manual handling of waste, and designing a system to ensure that MSW does not touch the ground till treatment and final disposal.

(c)   Defining the roles and responsibilities of various stakeholders and putting in place an operating frame work, which would include appropriate contractual structures.

(d)   Developing systems for effective resources utilisation and deployment.

(e)   Promoting recovery of value from MSW; developing treatment and final disposal facilities, which, while adhering to the statutory requirements, are sustainable, environmentally friendly and economical.

(f)   Directing the waste management initiatives to the waste generator level, and entrust the responsibility of our segregation and primary collection to the relevant community based organisation/ resident welfare association/ Self-help group(SHG).

(g)   Developing and maintaining, at the KUIDFC, details of the Information, Education and Communication (IEC)activities and awareness programs designed by the State Resource Center for planning and designing.

(h)   Utilizing the services of non-governmental organisations (NGOs) to operate and coordinate between the ULB, Community and SHG/RWA, in order to propagate the awareness program, the IEC campaign, and to provide support to the informal sector (ragpickers, wasterecyclers etc.).

(i)   Utilizing the services of non-governmental organisations (NGOs) to operate and coordinate between the ULB, Community and SHG/RWA, in order to propagate the awareness program, the IEC campaign, and to provide support to the informal sector (ragpickers, wasterecyclers, etc.).

(j)   Information education and community activity is key to success of modern MSW management. Materials required for the IEC campaign like manuals, flipcharts and other media communication are designed by State Resource Center, Mysore. A detailed Terms of Reference has been prepared for NGO activity.

(k)   Providing necessary equipment, vehicles, apparels for collection and disposal of MSW.

Chapter 6
Industry-wise Analysis

6.1   Waste is generated in every industry which is considered as unavoidable by-product of economic activity. Waste is generated from inefficient production processes, low durability of goods and unsustainable consumption patterns. The generation of waste reflects a loss of material and energy and imposes economic and environmental costs on society for its collection, treatment and disposal. The impact of waste on the environment, resources and human health depends on its quantity and nature. The generation and of waste includes emissions to air (including greenhouse gases), water and soil, all with potential impacts on human health and nature. Such waste generated needs to be managed systematically through assessment of potential hazards, disposal and proper utilisation of waste so generated. Even though waste is generated in every industry, limited but important industry with a huge impact on environment has been considered for the purpose of this guide. The importance of other industry not covered as part of this guide is in no way under estimated.

The industries covered in the guide are mining industry, iron and steel industry, automobile industry and garment industry.

Mining Industry

6.2   In mining industry, wastes are generated in every stage of the operations. The types of waste generated from both the industries are solid, liquid and gaseous wastes. Waste from the mining or extractive operations (i.e., waste from extraction and processing of mineral resources) is one of the largest waste streams in the world. It involves materials that must be removed to gain access to the mineral resource, such as topsoil, overburden and waste rock, as well as tailings remaining after minerals have been largely extracted from the mine.

6.3   Mining waste from the exploration and removal of the minerals cast challenges for many local inhabitants. Mining extraction and beneficiation can create environment problems including acid mine drainage, erosion and sedimentation, chemical release, fugitive dust emission, habitat destruction, surface and ground water contamination, and subsidence.

The waste generated can be utilized or can be reused as raw material for

other processes, if not, has to be disposed safely so that it will not affect the environment.

Mining Waste Disposal Techniques are Terrestrial Impoundments (Tailing Ponds); Underground Backfilling; Deep Water Disposal (lakes and sea) and Recycling.

Iron and Steel Industry

6.4   Iron and steel industry characteristically is a heavy industry. All its raw materials are heavy and colossal. They encompass iron-ore, coking coal and limestone. Location of this industry is thus governed by its proximity to raw materials, predominantly coking coal.

Steel production at an integrated steel plant involves three basic steps.

(i)   The heat source used to melt iron ore is produced i.e., coke making.

(ii)   Next, the iron ore is melted in a furnace.

(iii)   Finally, the molten iron is processed to produce steel.

These three steps can be done at one facility; however, the fuel source is often purchased from off-site producers.

6.5   The operations in an integrated steel plant are very complex. Several other activities such as, power generation and production of refractories are also performed in varying degree inside the steel works. A vast quantity of raw material are handled and processed and solid wastes are generated at every stage of operation. These wastes have wide ranging impact on the environment. These solid wastes contain valuable material which can be recovered and recycled in the process.

Production of steel involves several operations. It starts from the naturally occurring raw material like, iron ore, coal and flux stones to produce hot metal in blast furnace, conversion of hot metal into steel and the subsequent rolling of steel in finished product in the rolling mills. Several other activities such as, power generation and production of refractories are also performed in varying degree inside the steel works. Large quantities of wastes are generated in view of the above activities. These wastes have wide ranging impacts on the environment. These solid wastes are classified into three basic categories:

(i)   Wastes which are hazardous and must be treated suitably before throwing them as waste.

(ii)   Wastes which are not hazardous and recovery recycle and reuse of valuable in it could be done economically.

(iii)   Wastes which are not hazardous but recovery recycle and reuse may not be economical.

6.6   In many cases, these solid wastes contain valuable material which can be recovered and recycled in the process. Recycling and utilization of these solid wastes through an integrated waste management has gained special significance due to several factors such as, economic advantage of the primary resources, better and cleaner environment, conservation of energy and water and compliance with the law.

The main solid waste comprises:

(a)   Blast furnace slag.

(b)   Steel making slag.

(c)   Sludge from sinter plant and blast furnace gas cleaning systems.

(d)   Dust recovered from de-dusting system.

(e)   Mill scale.

(f)   Fly ash

(g)   Waste refractories.

(h)   Raw material spilled out of the carrying system.

(i)   Waste consumables

6.7   Major Solid waste generated in Steel Plant are as below:

Plant	Solid Waste Generated
Iron Making	Air cooled BF slag, Granulated BF slag. Desulphurization slag, Flue dust, GCP sludge, Pig iron.
Steel Making	BOF slag, BOF sludge, Lime dust, Steel scrap.
Rolling Mills	Mill scale and Silicon steel mill sludge.
Coke Oven	Coke Breeze
Coal Chemical department	Sulphur sludge, Tar Sludge
Power generation	Fly ash, Bottom ash, clinker
Others	Used refractory, Oil refining sludge, Machine shop turning

Solid waste can be categorised as Ferruginous, Non-ferruginous and Fly Ash.

6.8   Waste Management in Steel Plant is done as follows:

Solid Waste	Liquid Waste	Gaseous Waste
• Solid waste generation is controlled by efficient and optimum use of raw material. • Solid wastes should be disposed properly through a proper disposal system. • New technologies should be adopted for eco-friendly solid waste disposal. • Transportation of solid waste from generation point to disposal point should be in a controlled and proper way. • Displaying the area as solid waste disposal area • If possible, selling some of the solid wastes to be further used in some other ways converting waste into wealth.	• All major and maximum liquid wastes should be recycled • Monitoring of the reclaimed water drawn from the respective plants • Liquid wastes should be disposed properly through the proper and efficient disposal system. • Transportation of liquid wastes from the generation point to disposal point should be in a controlled and proper way. • Displaying the area as liquid waste disposal area. • Selling some of the liquid waste to be used in beneficial ways.	• Recycling of dust product to the respective process. • Online monitoring of combustion products such as SO_x, CO, NO_x analyzer at stack dust emission level. • Monitoring ESP efficiency and stack volume. • Measuring and monitoring of ambient air quality.

Garment Industry

6.9   Waste is generated at various stage in Garment Industry. Such wastes are considered as normal loss in the business. Some of them are as follows:

- Fabric Store - Inspection of the incoming fabric is very important. The fabric which is sourced from outside into the fabric store should be inspected for defects.

- Cutting Room –Sources for waste generation in cutting room can be from incorrect marking, roll remnants, etc

- Bundling Room – if the inspection is not 100%, some defective pieces goundetected and reach the stage of production.

- Production Floor – The loaders load the line with the bundles which pass on the line according to the operation. The operator may find the piece defective at any stage and dispose it off then and there.

- Dyeing and Washing – The wastage happen when the pieces are misplaced or lost during the transportation to dyeing unit. Similarly, incorrect dyeing can also lead to wastage.

- Printing/ Embroidery – The printing on the garment does not match the standard while in the case of embroidery it may not be the correct place on the garment or the number of threads uses are less and desired effect is not obtained.

- Sample Production – Mistake in design communication; craftsman ship problem may lead to wastage.

- Finishing Department – Fitting/ measurement problem will lead to garment wastage.

Waste management in Garment Industry is undertaken by establishing a process wherein the focus is on finishing in time, minimum changes in original design, least rework, optimising usage of materials, enhancing labour productivity through training, etc.,

Automotive Industries

6.10   Used oil has been classified as hazardous wastes by the Ministry of Environment and Forests, Government of India which demands its proper management to avoid serious threat to the environment and for economic

gains. Used oil could be recovered or reprocessed and reused as base oil thus, saving the use of virgin oil.

Used oil means any oil derived from crude oil or mixtures containing synthetic oil including used engine oil, gear oil, hydraulic oil, turbine oil, compressor oil, industrial gear oil, heat transfer oil, transformer oil, spent oil and their tank bottom sludge and suitable for re-refining.

6.11   Used oil dumped on the ground, sewers or sent to landfills is capable of seeping into ground and surface water. Just one litre of used oil can render one million litres of water undrinkable (NUOMAC, 2004). It is also a serious threat to plant and animal life. Marine species can be adversely affected by oil concentrations as low as one ppm. The oil film on water blocks sunlight thereby, making it harder for plants to photosynthesize.

6.12   The major processes that generate used oil are the machining operations such as, cutting and drilling. Coolant oil and neat cutting oil are the major contributors to the used oil generation in these processes. Used compressor oil and hydraulic oil also contribute to the used oil generation. This oil used in the machining operations is reused within the same process several times (for a period of about 3 - 6 months) before being disposed to barrels.

All the industries send the used oil from their premises to registered recyclers as per the legal requirements. A portion (about 5–10%) of the used oil is occasionally sent to construction industries for use as shuttering oil. To which recycler the used oil is sent from the industry depends upon the price quoted by the recycler which varies between Rs 6.25 to Rs15 per litre of used oil.

6.13   The sources for used oil generation are:

Fuel Injection Pumps; Injector Nozzle; Piston (for both diesel and petrol engine); Rings used in piston; Leaf spring; Steering assembly; Brake Assembly;

Methods to effectively manage the used oil generation and reduce used oil generation are as follows:

- Equipment scheduling adjustment

- Practice good housekeeping

- Assign coolant management to one person

- Maintain inventory control.

6.14   The following is used Oil re-refining chart:
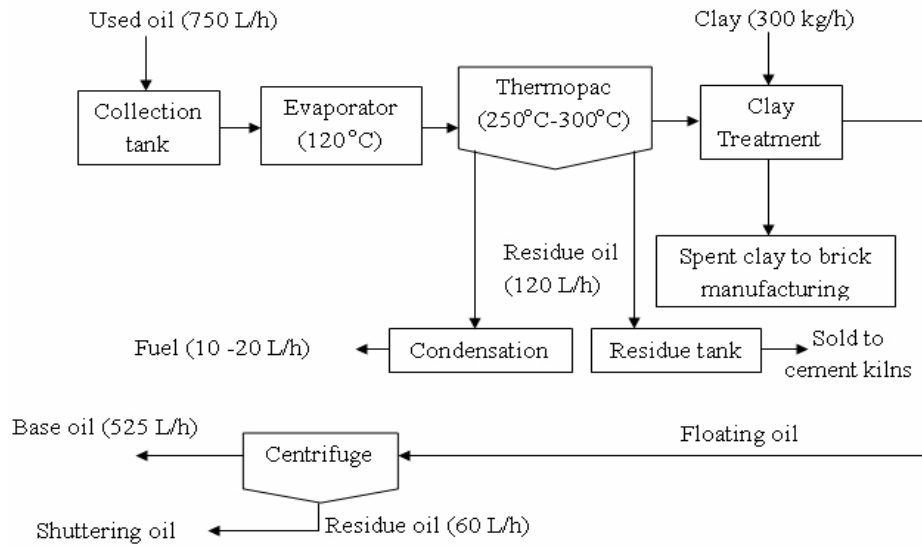
The re-refining of used oil can help in reusing the oil for industrial use.

Chapter 7
Risks and Challenges — Waste Management Industry

7.1 Since waste management involves collection, transportation, disposal of waste collected the entities in this industry face lots of challenges like, unavailability of land, improper infrastructure facilities, inadequate training and facilities provided to employees, no proper policy with set goal, etc.,

The internal auditor should make a risk assessment of the entity under audit. This is extremely important on account of prevention of any non-compliance or undesirable event. Given below, is a brief of the different risks faced by the entity operating in the Waste Management Industry.

7.2 The internal auditor needs to verify whether sufficient controls are available in the entity to detect such risks and prevent them from happening in the light of overall business environment.

The risks faced by a Waste Management Industry can be broadly classified as follows:

(i)   Business risk

(ii)   Political risk

(iii)   Inventory management risk

(iv)   Environment risk

(v)   Brand / Reputation risk

(vi)   Systemic risk

(vii)   Technology and data security risk

(viii) Business continuation risk

The Internal Auditor may also refer to various Technical Guides on risk management issued by the ICAI.

Business Risk

Weak Waste Collection, Transportation and Handling Infrastructure

7.3   In most countries the existing waste handling capacity is insufficient. There is need to streamline the waste collection and transportation operations as intermingling of hazardous waste and municipal waste is not uncommon. In addition, the efficiency of the sorting process needs to be improved. Presently, recyclable recovery rate is low. Further, in the absence of local recycling facilities, there is no alternative except to dump the otherwise recyclable material at landfills.

Waste Recycling is Expensive

7.4   Though recent years have seen an increase in the number of waste recycling facilities the economics of recycling is still not very favourable. In many cases recycling waste is expensive compared to buying the product. Government support in terms of cheaper land for landfills, subsidies is often necessary for commercial viability.

Under Developed Market for Recycled Products

7.5   Insufficient demand for recycled products in the local market is another reason, which has hampered the growth of the waste recycling industry. There are a few units engaged in recycling waste paper, paperboard and plastics. Much of the recycled products are then exported to markets like, India, Pakistan and other Southeast Asian countries.

7.6   The major challenges in the village environment are:

- Lack of responsibility, action and applied resources by local Panchayats who are legally responsible for providing for the collection, storage and disposal of waste in the villages.

- Lack of waste disposal infrastructure.

- The widespread practice of keeping private spaces very clean, but using public spaces as dumping areas for waste.

- Perceptions that waste management work is of low value and low status, and therefore is not a priority.

- Organic wastes used in fields are often contaminated with plastics, hazardous wastes such as, dry cell batteries, and medical wastes.

- Limited awareness that there is a solid waste problem, and general apathy towards making positive changes.

- Lack of idea initiation or ownership within the village.

- Lack of adequate maintenance leading to overflowing bins. Lack of a disposal facility where waste can be buried.

- Lack of an adequate public education campaign.

While these problems are common to most of India, Government resources to provide solutions are usually directed to urban environments, where higher population densities and rapid urbanisation creates more urgent situations.

7.7 Rural areas receive little attention, despite the reality that approximately 75% of Indians are living in rural village environments. Apart from the above business risks specific to the waste management industry, the following are general business risk which an entity has to face -

(i)   A change in the legal environment that imposes new conditions, costs or restrictions upon the manner of providing the services, the means by which the services are delivered to the customer;

(ii)   A change in the volume of transactions, either to

   a)   Increase (requiring additional hiring and perhaps a change in business process); or

   b)   Decrease (resulting in sub-optimization of dedicated resources or reallocation of resources).

(iii)   Unprecedented increase in the cost of real estate leading to increased cost of operations and strain on the profitability.

(iv)   Increase in workers' compensation cost and retention of key employees.

(v)   Risks on account of non-compliance with statutes.

(vi)   Changing importance for locations might have a significant impact taking into consideration the initial investment required to be made at every location and higher rentals that might be paid for them in comparison to the others in the vicinity.

(vii)   Credit risks related to commercial business consumers

(viii) Timely availability of information to enable decision making at the right time.

(ix) Risks due to fraud and theft and impact of crime committed in the location of the entity by miscreants.

(x) Risks due to acts of god such as earthquake, flood, windstorms, etc.

Political Risk

7.8 Political risk represents the degree to which social and governmental environments may change in the future. This risk may manifest itself in events over which a government has no control – such as riots, new elections, etc.

The possibility of local authority or state government not sanctioning the location which is needed for disposing off the waste resulting in deference of disposal of the waste or over using the existing location's capacity.

Inventory Management Risk

7.9 This is one of the greatest risks and might have a direct impact on the profitability of business. The entity's procedures with regards to mitigation of risks might be crucial to ensure business competency. The risks with regards to inventory management might include the following factors.

(i) Delay in receipt of waste due to poor supply chain management / supplier management. With the interconnectedness and flow that has to come to make the chain work well, even the smallest of disruptions can throw an organization off course.

(ii) Inability to source waste in the right way and at the right prices.

(iii) Inefficient inventory management system wherein the wastes are not collected at the right time from the customers leading to poor branding and decline in customer loyalty.

(iv) Rapid obsolescence of inventory.

(v) Technological obsolescence of equipments handling waste disposal.

(vi) Shipping risks due to delicate nature of waste collected.

(vii) Improper handling of waste.

Environment Risks

7.10 Environmental risks associated with the waste management industry generally fall into one of the following three categories:

(i)   Site acquisition, development, and construction – Considering that waste management entities buy and develop property to suit the infrastructural requirement of the business; the entity should develop an effective due diligence process, and manage environmental risk. The significant cost would be on account of

- **Cleanup Cost Cap** for "capping" the cost of cleaning up known pollution conditions

- **Pollution Legal Liability** for transferring the risk of cleaning up unknown preexisting pollution conditions, third-party claims, and other related exposures

- Loss of Income due to **delay in opening** / scheduled completion of the project.

Brand/ Reputation Risk

7.11   Enterprise viability depends on maintaining the goodwill of the enterprise brand. Damage to reputation might never be recovered, or might only be recovered at great expense and distraction. Reputational risk is significant in a waste management industry.

Brand risk management techniques include the use of scripts, supervision, random audits, ongoing training and customer feedback. Legal issues in reputational risk can arise where the enterprise customer wishes to terminate a service provider, redirect its efforts or adjust the pricing to reflect a loss of goodwill.

Technology Risk

7.12   Technology risk refers to the risk that an entity faces due to change in technology or obsolescence of existing technology. In the event of change in technology, the investment made by the entity becomes futile. Technology could be in the form of purchase/ creation of software or hardware.

Business Continuance Risk

7.13   The major risks which affect the business continuance would include improper supply chain management, damage of brand and significant changes in economic situations. The entity must be prepared to mitigate these risks and ensure successful carrying of business.

Risks Mitigation Techniques

7.14   An illustrative list of risks mitigation techniques that the management might opt for would include:

- In the current environment, the entity should have complete knowledge about those risks and consider all pitfalls, understand the exposures, and develop risk management practices and programs that address this evolving exposure.

- Prioritizing the risks, creating a plan to strategically manage the risks, implementing the plan as necessary, and monitoring the plan's implementation for evaluation and improvement purposes.

- Certain risks such as, frauds, environmental damage might be reduced through visual inspections, carrying on surprise checks and verification, etc.

- It might be appropriate for the entity to have a comprehensive insurance policy to cover significant part of risks.

- Training of employees in inventory handling, especially in the case of managing open/ broken bags, containers, perishable and sensitive products.

- Proper store maintenance procedure should be implemented.

- A risks identification system would be required to be installed. Further, the Management Information System should provide for certain yardsticks which would enable the management identify the critical risks and its impact on the entity.

- Indemnity clauses with suppliers and external vendors would ensure that any loss arising due to suppliers and external vendors would be indemnified.

Internal auditor might be required to make a complete assessment of enterprise risks and provide an insight on methods of mitigation of risks. Internal auditor might prepare a questionnaire or a checklist for this purpose.

Opportunities

7.15   In last few years, planning authorities have awarded a number of contracts to the private sector for setting up and operating Integrated Waste Management Facilities or waste recycling units. However, opportunities in the sector are still largely untapped. The following are some major areas:

(i) Waste Collection and Transportation Services– A number of private players are active in the waste collection and transportation market. At present, around 70 percent of the total waste in Dubai is collected by private sector. There is good growth potential for such services in the market.

(ii) Management of Landfill Operations– At present, municipalities manage the majority of the landfills; however, it is likely that new facilities would be built under BOOT or BOT contracts. In fact, Singapore-based Keppel Corporation is setting up an integrated waste management facility in Qatar. Once the facility is operational, the company will also be responsible for its operations and maintenance for 20 years.

(iii) Waste Recycling– Recycling of waste paper, paper board, metals and glass is already practiced in GCC albeit at very small scale. Currently, around 80 percent of the total waste generated is sent to landfills, which is high as per international standards. With only 20 percent of the total waste being recycled, recycling is set to increase. As waste management practices become more efficient across the region, waste recycling is likely to be more attractive commercially.

(iv) Waste to energy opportunity– Planning authorities across the region are contemplating setting up waste to energy facilities. The market for such technologies is likely to see rapid growth over next few years.

(v) Equipment Suppliers– Increased focus on waste management represents a growing market for suppliers of compactor trucks, garbage bins, incinerators and other auxiliary equipment.

As countries work towards the implementation of next generation waste management practices to address challenges of global warming, environmental preservation and sustainability, the waste management market is set to enter an exciting phase. Recent amendments to various laws and strict compliance to these laws help to make the world a better place to live.

Chapter 8
Need for Internal Audit

8.1   Considering the nature of the Waste Management Industry and the pace at which the Industry has grown over the past decade, the need for ensuring proper controls need not be over-emphasized. India waste management industry is one of the industries in India which require lots of attention especially with environmental hazards created due to over use of resources, improper disposal mechanism, especially over the last few years. Though the waste management industry in India is mostly unorganized, the governments both central and state have taken lots of significant initiatives in encouraging this sector to be more organised given the importance of speed of operations required in waste management industry.

8.2   With increasing volume of wastes generated and considering the vulnerability of the sector to modification of environment and slowness in adopting to the change, internal audit becomes significant. Internal audit also helps in verifying the controls in place within the entity with regard to sufficient and effectiveness in the light of overall business of managing the waste generated or collected and in complying with various laws in force in this regard. Internal audit also helps in assessing the risks faced by the entity and provide a method for management of the same. Internal controls and risk management are extremely important activities in an entity operating in the waste management Industry.

8.3   Effective internal audit provides a tool to ease out all complexities, ensure that systems and processes are adequate to support the growth and are adapted to the changes in various regulations, thereby ensuring sustained growth and development.

Preface to the Standards on Internal Audit, issued by the Institute of Chartered Accountants of India defines the term Internal Audit as:

" 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."

8.4   The definition highlights the following facets of an Internal Audit.:

- Internal auditor should be independent of the activities they audit. The internal audit function is in general considered independent when it can carry out its work freely and objectively. Independence permits internal auditors to render impartial and unbiased judgment essential to the proper conduct of audits.

- Internal audit is a management function, thus, it has the high-level objective of serving management's needs through constructive recommendations in areas such as, internal control, risk, utilization of resources, compliance with laws, management information system, etc.

- Internal audit's role should be a dynamic one, continually changing to meet the needs of the organization. There is often a need to change audit plans as circumstances warrant. These changes may include coverage of new areas, assistance to management in solving problems, and the development of new internal audit techniques.

- An effective internal audit function plays a key role in assisting the board to discharge its governance responsibilities. Thus, it contributes in accomplishment of objectives and goals of the organization through ethical and effective governance.

- Risk management enables management to effectively deal with risk, associated uncertainty and enhancing the capacity to build value to the entity or enterprise and its stakeholders. Internal auditor plays an important role in providing assurance to management on the effectiveness of risk management.

- Internal audit function constitutes a separate component of internal control with the objective of determining whether other internal controls are well designed and properly operated. Thus, the examination and appraisal of controls are normally components, either directly or indirectly, of every type of internal auditing assignment.

Factors Contributing to the Evolution of Internal Audit

8.5 General Guidelines on Internal Audit issued by the Institute of Chartered Accountants of India describes the factors contributing the evolution of Internal Audit in India. A few such factors are:

(i) *Increased size and complexity of businesses*

Increased size and business spread dilutes direct management oversight on various functions, necessitating the need for a full time, independent and dedicated team to review and appraise operations. Complexity of operations results in requirement of specialists in the field to guide the management.

(ii) *Enhanced compliance requirements*

Increase in the geographical spread of the businesses has also led to crossing of political frontiers by businesses in a bid to tap global capital for improving the technology. This has thrown up compliance with the laws of the home country as well as the laws of that land as a critical factor for existence of businesses abroad.

(iii) *Focus on risk management and internal controls to manage them*

Internal auditors can carry out their job in a more focused manner by directing their efforts in the areas where there is a greater risk, thereby enhancing the overall efficiency of the process and adding greater value with the same set of resources.

(iv) *Stringent norms mandated by regulators to protect investors*

The regulators are coming up in a big way to protect the interests of the investors. The focus of the latest regulations being ethical conduct of business, enhanced corporate governance and reporting requirements to various Boards and committees.

(v) *Unconventional business models*

Businesses today use unconventional models and practices, for example, outsourcing of non-core areas, such as, collection of waste generated to another organization rather than dealing with on its own.

(vi) *An increasingly competitive environment*

Whereas deregulation and globalization have melted the political as well as other barriers to entry in the markets for goods and services, free flow of

capital, technology and know-how among the countries as well as strong infrastructure has helped in better access to the existing best practices globally and technology and equipment to carry on the business smoothly. This in turn, has lured more and more players in the existing markets, thereby, stiffening the competition.

Standard on Internal Audit

8.6 Internal auditor should carefully go through Standard on Internal Audit (SIA) issued by ICAI. Standards on Internal Audit (SIA) is recommendatory in nature for the initial period. These standards shall become mandatory on such date as notified by the Council.

A list of Standards on Internal Audit issued by the ICAI is listed hereunder:

SIA 1	Planning an Internal Audit
SIA 2	Basic Principles Governing Internal Audit
SIA 3	Documentation
SIA 4	Reporting
SIA 5	Sampling
SIA 6	Analytical Procedures
SIA 7	Quality Assurance in Internal Audit
SIA 8	Terms of Internal Audit Engagement
SIA 9	Communication with Management
SIA 10	Internal Audit Evidence
SIA 11	Consideration of Fraud in an Internal Audit
SIA 12	Internal Control Evaluation
SIA 13	Enterprise Risk Management
SIA 14	Internal Audit in an Information Technology Environment
SIA 15	Knowledge of the Entity and its Environment
SIA 16	Using the Work of an Expert
SIA 17	Consideration of Laws and Regulations in an Internal Audit
SIA 18	Related Parties

Standards on Internal Audit are important for carrying out an Internal Audit of Waste Management Industry as they codify the best practices. The internal auditor and the audit team are expected to be updated on the latest pronouncements issued by the Institute in order to conduct an effective Internal Audit.

Terms of Audit Engagement

8.7   The client is expected to formally communicate the appointment to the Internal Auditor. Upon receiving the communication, the Internal Auditor should send an engagement letter, preferable before the commencement of engagement so as to avoid any misunderstandings. The Internal Auditor and the client/ auditee should record the terms of engagement in the letter or other suitable form of contract this shall also confirm objective and scope of audit with the Client and thereby fixes the responsibilities of internal auditor. The internal auditor may refer *SIA 8 "Terms of Internal Audit Engagement"* for providing greater clarity on the terms of the internal audit engagement between internal auditors and the users of the service.

The engagement letter should, generally, include reference to the

- Objective of the Internal Audit

- Management's responsibilities

- Scope of Internal Audit (including reference to the applicable legislation, regulation and various pronouncement of ICAI)

- Access to records, documents and information required in connection with the Internal Audit

- Expectation to receive management's written confirmation in respect to representation made in connection with the audit

- Basis on which fees shall be computed and the billing arrangements thereof

- Industry specific area

- References received from the parent company, if any.

- Undertakings and locations to be covered.

The internal auditor should review the engagement letter with scope of work performed periodically, to meet the changed circumstances. In case of any changes in the terms of the appointment, it is necessary that a communication should be made in written form. Moreover, the internal audit

may be on a continuous basis, monthly, quarterly or even annual. It is important for the internal auditor to ensure that the periodicity of the internal audit is sufficient in the light of overall business condition.

Knowledge of Business and Consideration of Laws and Regulations Applicable

8.8   Before the commencement of audit assignment, the internal auditor should have or obtain the knowledge of the business. The internal auditor should acquire sufficient knowledge to enable him to identify and understand the events, transactions and practices that can have significant effect on the internal audit process. Such knowledge shall be helpful to the internal auditor in assessing the inherent risk and control risk and in determining the nature, timing and extent of the internal audit procedures. Knowledge of the business assists the internal auditor in:

• Assessing the risk and identifying the problems

• Planning and Performing the internal audit effectively and efficiently

• Evaluating audit evidence

• Providing better service to the client

The Internal auditor should prepare the flow of events, transactions, processes and practices within the organisation. This will help in gaining better understanding of the process and the existence of the internal controls.

Non Compliance with laws and regulations could result in financial consequences for the entity such as, fines, litigation, etc. Internal auditor cannot be expected to detect non-compliance with all laws and regulations; however this argument shall not apply to engagements where the internal auditor is specifically engaged to test and report separately on compliance with specific law and regulations.

8.9   The management is responsible to ensure that the entity's operations are conducted in accordance with Laws and Regulations. The responsibility for prevention and detection of non-compliance shall be that of the Management; however the internal auditor should plan and perform the internal audit recognising that the internal audit may reveal conditions or events that would lead to questioning whether an entity is complying with Laws and Regulations.

Audit Planning, Materiality and Sampling

8.10   After acquiring the knowledge of business and various laws and regulation applicable to the Waste management industry in general and to the client specific, the Internal Auditor should plan out the internal activity. Planning helps in achieving the objectives of internal audit function.

Adequate planning ensures that:

- Appropriate attention is devoted to significant areas of audit
- Potential problem are identified
- Skills and time of the staff are appropriately utilised
- Work is carried out in accordance with the applicable pronouncements of ICAI
- Work is carried out in conformity with the applicable laws and regulation.

In preparing an internal audit program, internal auditor should obtain an understanding of the accounting and internal control system prevalent within the entity, and exercise preliminary judgement regarding the critical areas to be considered during the internal audit. It also helps the auditor in determining the audit materiality, and nature and extent of audit procedures to be adopted.

While designing an audit sample the Internal Auditor should consider the specific Audit objectives, materiality, population from which the internal auditor wishes to select the sample, area of audit significance and the sample size.

Internal Control

8.11   Internal controls are a system consisting of specific policies and procedures designed to provide management with reasonable assurance that the goals and objectives it believes important to the entity will be met.

"*Internal Control System*" means all the policies and procedures (internal controls) adopted by the management of an entity to assist in achieving management's objective of ensuring, as far as practicable, the orderly and efficient conduct of its business, including adherence to management policies, the safeguarding of assets, the prevention and detection of fraud and error, the accuracy and completeness of the accounting records, and the timely preparation of reliable financial information. The internal audit

function constitutes a separate component of internal control with the objective of determining whether other internal controls are well designed and properly operated.

8.12   Internal control system consists of interrelated components as follows:

- Control (Or Operating) Environment

- Risk Assessment

- Control Objectivity Setting

- Event Identification

- Control Activities

- Information and Communication

- Monitoring

- Risk Response.

The system of internal control must be under continuous supervision by management to determine that it is functioning as prescribed and is modified, as appropriate, for changes in environment. The internal control system extends beyond those matters which relate directly to the functions of the accounting system.

8.13   The internal auditor should obtain an understanding of the significant processes and internal control systems sufficient to plan the internal audit engagement and develop an effective audit approach. The internal auditor should use professional judgment to assess and evaluate the maturity of the entity's internal control. The auditor should obtain an understanding of the control environment sufficient to assess management's attitudes, awareness and actions regarding internal controls and their importance in the entity.

The internal auditor should examine the continued effectiveness of the internal control system through evaluation and make recommendations, if any, for improving that effectiveness. The importance of internal controls in a waste management entity need not be over-emphasized. Internal audit plays a major role in determining the effectiveness of internal controls and highlight areas for improvement.

The internal auditor may also refer to *SIA 12 "Internal Control Evaluation"* for a detailed discussion on Internal Control Evaluation.

Overview of Compliance

8.14   Compliance means ensuring conformity and adherence to regulatory Acts, rules, procedures, laws, regulation, directives and circulars.

SIA 17 to *"Consideration of Laws and regulations in an Internal Audit"* states that 'when planning and performing audit procedures and in evaluating and reporting the results thereof, the internal auditor should recognize that non-compliance by the entity with laws and regulation may materially affect the financial statements. However, an audit cannot be expected to detect non-compliance with all laws and regulations. Detection of non-compliance, regardless of materiality, requires consideration of the implications for the integrity of management or employees and the possible effect on the other aspect of the audit.'

The term "*Non-compliance*" refer to acts of omission or commission by the entity being audited, either intentional or unintentional, which are contrary to the prevailing laws and regulations. Such acts include transactions entered into by, or in name of the entity or on its behalf by the management or employees. Non-compliance does not include personal misconduct (unrelated to the business activity of the entity) by the entity's management or employees.

Understanding of Laws and Regulations

8.15   Laws and regulation vary considerably in their relation to the financial statements. Some laws or regulations determine the form or content of an entity's financial statement or the amount to be recorded or disclosures to be made in financial statements. Other laws or regulation are to be complied with by management or prescribe the provisions under which the entity is allowed to conduct its business. Non-compliance with laws and regulation could result in financial consequences for the entity such as fines, litigation, etc. It also has a potential effect on going concern as an entity. The internal auditor should plan and perform the audit recognizing that the audit may reveal conditions or events that would lead to questioning whether an entity is complying with laws and regulations.

8.16   In order to plan the audit, the internal auditor should obtain understanding of the legal and regulatory framework applicable to the entity and how the entity is complying with that framework. To obtain this understanding, the internal auditor would particularly recognize that non-compliance of some laws and regulations may have a fundamental effect on

the operations of the entity and may even cause the entity to cease operation, or call into question the entity's continuance as going concern. To obtain the understanding of laws and regulations, the internal auditor would ordinarily:

- Use the existing knowledge of the entity's industry and business.

- Inquire with management as to the laws or regulations that may be expected to have a fundamental effect on the operations of the entity.

- Inquire with management concerning the entity's policies and procedures regarding compliance with laws and regulations.

- Discuss with management the policies or procedures adopted for identifying, evaluating and accounting for litigation claims and assessments.

After obtaining the understanding, the internal auditor should perform procedures to identify instances of non-compliance with those laws and regulations were non-compliance should be considered while preparing financial statements, specifically:

- Inquiring with management as to whether the entity is in compliance with such laws and regulations.

- Inspecting correspondence with the relevant licensing or regulatory authorities.

Significance of Compliance

8.17   The Significance of Compliance is:

(a)   The benefits to the Industry are:

- Helps in compliance with Legal terms and covenants and thereby reduces penalties and charges.

- Increased Internal Control

- Reduction of Internal Frauds and Losses

- More time available for other core activities

- Increases efficiency in operations

- Customer satisfaction

(b)   Benefits to the Customers:

- Ensures safer market place

- Safeguards the customer interests

- Quality Assurance

- Enhanced Consumer Protection

(c)   Benefits to the stakeholder:

- Ensures risk containment and safer market place

- Better Investor confidence

- Uniform Practices

- Better image, hence, better value for the investor.

As per *SIA 17* issued by the ICAI, it requires that when planning and performing audit procedures and in evaluating and reporting the results thereof, the internal auditor should recognize that non-compliance by the entity with relation to laws and regulations may materially affect the financial statements. However, an audit cannot be expected to detect non-compliance with all laws and regulations. Detection of non-compliance, regardless of materiality, requires consideration of the implications for the integrity of management or employees and the possible effect on other aspects of the internal audit. Thus, in addition to the various acts, rules, bye laws, regulations, circulars, pronouncements, etc., the internal auditor is required to verify of some of the other applicable regulations which includes:

(i)   Governance Laws

- The Companies Act, 1956

- Partnership Act, 1932 / Limited Liability Partnership Act, 2008

- Shops and Establishments Act of respective states

- The Sale of Goods Act, 1930

- The Negotiable Instruments Act, 1881

- The Income tax Act, 1961

- Service Tax under the Finance Act, 1994

- The Indian Contract Act, 1872

- Land Acquisition Act, 1894

(ii)   Labour Laws

- Employees Provident Fund Scheme, 1952

- Employee State Insurance Act, 1948

- Payment of Gratuity Act, 1972

- Payment of Bonus Act, 1965

- Professional Tax enacted by the respective states

- The Child Labour (Prohibition and Regulation) Act, 1986

- The Minimum Wages Act, 1948

- The Weekly Holidays Act, 1942

Apart from the above laws, the internal auditor is required to be aware of the local legislations under which the entity/ undertaking operates. For e.g., Under Karnataka Shops and Commercial Establishments Act, 1961, the act prescribes the daily and weekly hours, extra wages for overtime work, holidays for all entities established in Karnataka.

The internal auditor is required to ensure the compliance of respective state legislations too as part of his internal audit procedures.

(iii)   Statutory laws applicable to Waste management Industry

- Bio-Medical Waste (Management and Handling) Rules, 1998

- E-Waste Management aand Handling Rules

- Municipal Solid Waste Management and Handling) Rules

- Plastic Waste (Management and Handling) Rules, 2011

The excerpts of the rules specific to waste management industry have already been mentioned in detail hence not covered here.

Major Areas of Internal Audit Significance

8.18   General internal audit procedures that apply to any industry also apply to an entity operating in the waste management Industry. In this technical guide, internal auditing procedures pertaining to waste management Industry have been specified. We have incorporated procedures and techniques that are unique to this industry and which would be required to be combined with the internal auditors' judgment, skill and experience can perform an effective internal audit.

These audit procedures are an illustrative list which can be performed in addition to the regular internal audit procedures performed by an internal auditor. Entities in waste management industry are classified primarily into two categories namely –

(i)   Entities generating waste as well as disposing it on its own;

(ii)   Entities engaged in the business of collection of waste and disposing it.

Invoicing and Billing

8.19   The Invoicing process varies significantly and is directly based on the nature of customer from whom the waste is collected. To elaborate, it varies from a systematic billing process and checking process in the case of customer being a business unit to non-systematic cash based billing in the case of customer being a domestic household or small business unit.

The billing and invoicing process in the waste management industry needs to be simple, systematic, fast, secure and error-free to ensure avoiding unnecessary waiting time for billing processes and plays a major role in the success of the organisation. It might be pertinent to note that potential for omitted/ manipulating income is greater in this industry as the recipient of cash from customers need not give a bill/ invoice in case of domestic household/ small business units. It is important for the internal auditor to check if bill books are printed and whether the amount collected matches with the number of business units/ household from whom the waste is collected.

In general, cheques are generally collected only from medium/ large business unit and 75% of the collection will be in cash.

Cash Pay Outs

8.20   As discussed above, accounting for cash is a primary focus for the internal auditor. Considering that cash is paid for a significant part of the billing by the entity, maintenance of proper records is a critical part of the overall organisation management. It is equally important to ensure that there is sufficient and appropriate fixing of responsibility in the case of management of cash and banking of them.

Considering the nature of industry, most of the payments that are made, including payroll charges, will be paid through cash. The employees associated may not be from high income group and opening a bank account will be a burden on the employees. There is a possibility of recording salary

twice for the same employee. It is important for the internal auditor to check sufficient control exists in the company.

Fixed Assets

8.21   If the waste management company collects and process the disposal of waste on its own accord then there is a possibility of having its own fixed assets. In such case, care needs to be taken by the auditor to check whether there is any subsidy granted by the government for procuring such assets. If yes, then the auditor needs to check the amount capitalised in the books and the related depreciation calculation.

If the company does not own any vehicle for collecting the waste instead it has hired the vehicle on rent then such rental agreement needs to be checked. The internal auditor needs to check whether periodical maintenance of equipment used for treating the waste collected or generated, vehicles used for transportation are taken up.

Point of Collection

8.22   On collection of waste from business units/ hospitals, it is important that the company provides a description of waste collected on periodical basis. This is pertinent especially with regard to bio medical waste collection and disposal. The hospital is required to provide details of bio medical waste generated and disposed during the year by January 31st of succeeding year. Further, the document prepared at the time of collection of waste will act as a basis for future reconciliation of payments received. Internal auditor needs to check whether the details are provided regularly to the generator of waste and also the government department periodically.

Cash Management Policies

8.23   Efficient cash management processes are pre-requisites to execute payments, collect receivables and manage liquidity. Managing the channels of collections, payments and accounting information efficiently becomes imperative with growth in business transaction volumes. This includes enabling greater connectivity to internal corporate systems, expanding the scope of cash management services to include "full-cycle" processes (i.e., from purchase order to reconciliation). Cash management services targeted at the needs of specific customer segments. Cost optimization and value-add services are customer demands that necessitate the creation of a mechanism to service the various customer groups.

8.24   Some of the Cash Management Techniques followed by Companies include the following:

(i)   Account reconciliation services– Balancing a cheque book for a very large business can be quite a difficult process. Banks have developed a system to overcome this issue. They allow companies to upload a list of all the cheques whereby at the end of the month, the bank statement will show not only the cleared cheques but also uncleared ones.

(ii)   Positive pay– It is effective anti-fraud measure for cheque disbursements. Using the cheque issuance data, updated regularly with cheque issuance and payment, the bank balances all cheques offered for payment. In the case of any discrepancies, the cheque is reported as an exception and is returned.

(iii)   Balance reporting services– Balance reporting provides help in procuring a company's current banking information from its accounts. With this service, the banks can offer almost all types of transaction-specific details.

(iv)   Cheque writing– In order to execute the payments faster, banks are providing cheque writing facility to the corporate customers wherein customer can print the cheques locally at their own office with the facility of digital signatures and company logos.

(v)   Liquidity management– In order to have efficient utilization of excess funds corporate today avail the facility of liquidity management. Liquidity management system prudently manages various assets and liabilities (on-and off-balance sheet) and ensures that cash inflows have an appropriate relationship to the approaching size of cash outflows. The system ensures that necessary funds are available to entertain all cash outflows as they fall due.

Adequate cash management mechanisms ensure efficient collection systems, systematic disbursements, and ideal deployment of idle funds, tiding over immediate cash needs, and compensating the banks that support these activities of the company. An advanced cash management system enhances the possibilities of earning high net interest income, creates efficient balance sheets, minimizes expenses on resources, and reduces the company's exposures to potential risks related to seasonality of business and debt repayments.

8.25   Cash management processes in the waste management sector are currently in the focus as most of the transactions happen through cash.

Cash continues to play a dominating role in the Waste management industry. After the ascent of the cashless payments, still more than 75 percent are cash transactions.

The internal auditor's key task of cash management is therefore, to identify the core issues in waste management sector, and to develop processes that are an optimal fit for their operations.

In order to find the most effective solution in each case, our work is divided into the following four steps:

- *Analysis of structures and processes*– Analyse the factors such as, customers' payment habits or organization at the point of sale. This gives an exact picture of the status quo in a company store.

- *Development of solution proposals*– Parallel to this, the Waste management company's intentions and objectives with regard to cash automation are discussed and specified. Together with the hard facts from the status quo analysis, these aspects form the basis for working on concrete solution scenarios.

- *Piloting in the store*– Recommendations involve not only the POS hardware but also include redesign and optimization of the entire cash process in a store. They include return on investment calculations, which, due to the current situation analysis, already contain very detailed and realistic pay-back forecasts.

- *Decision on the project*– With the experiences gained during piloting, possibly enhanced with a customer survey, the waste management company has sufficient data and facts on which to take his investment decision. This is then specified, the project is planned in detail, and the rollout scope and schedule defined.

The following are advantages of these steps:

- Potential for savings through automated end-to-end handling of the cash flow from the point of sale to the cash office and on to the cash-in-transit operator for posting at the bank.

- Considerable reduction in discrepancies (at the point of sale and between the cash center and store) due to efficient controlling and better monitoring facilities.

- Fewer interfaces thanks to a closed cash cycle.

- Cash flow transparency with end-to-end controlling and reporting to reduce operational risk.

8.26 Model Checklist related to the Billing process is as follows:

	PARTICULARS	Yes	No	N/A
1	*Verification of Billing Mechanism*			
1.1	Is there a proper billing system commensurate with the size of business?			
1.2	Have we verified the controls in place to ensure fixing of appropriate responsibility to the person? Are there sufficient systems to ensure periodic job rotation preventing misappropriation of funds?			
1.3	Are the systems inbuilt to detect any billing mistakes and errors?			
1.4	Is there any log maintained by the entity as regards errors and mistakes in billing?			
1.5	Does the entity take sufficient measures in ensuring prevention of such instances?			
1.6	Does the entity have a proper system of collection of the amount billed?			
1.7	Is the collection made in a manner enabling smooth collection of payments apart from ensuring that there are sufficient control processes?			
1.8	Is there a routine checking of collections made at the time of change in billing personnel?			
1.9	Is the collection performed by an authorised person?			
1.10	Is the collection verified and reconciled on a daily basis and approved?			
1.11	Are the processes sufficient to ensure appropriate banking of cash and sending of coupons to the head office?			
1.12	Is there sufficient monitoring by the entity to ensure prevention and detection of fraud by			

	PARTICULARS	Yes	No	N/A
	persons collecting cash from household/ business units paying in cash?			
1.13	Has there been a sufficient system audit / verification performed by the internal auditor to ensure that the billing system is without any mistakes?			
1.14	Has the Internal auditor performed any statistical function in estimating the queuing system and area allocation system of the store?			

Collection of Waste and Disposal

8.27   Collection of waste is the most important activity in the waste management industry. They refer to the waste procured by the concern either for its sales or disposal. The procurement involves the process of sourcing of waste based on different categories. The collection of waste either based on segregation at source or segregation at the point of disposal plays a vital role in order to determine the method of disposal of waste. In certain cases, on collection of waste the entity has to pay to the generator of waste. Also the entity has to incur cost on disposal.

Sourcing can be done directly from the following sources.

- Manufacturers of waste

- Intermediaries - Wholesalers, distributors and dealers.

8.28   Considering that the total cost of waste collected accounts for around 75% of the expenditure incurred by the entity and the entity, generally, operates in a very small net margin, the importance of procurement of products at the right time and the right sources plays a significant role in ensuring the profitability of business and sustainability of business.

The internal auditor needs to verify whether the entity has evaluated each type of waste for determining the basis and process of evaluation. Further, the screening process should ensure that the vendor has ethics and has no track record of any frauds in the past.

	PARTICULARS	Yes	No	N/A
1	*Procurement of Waste and Disposal*			
1.1	Does the entity have a written policy for the procurement process?			
1.2	Is the written policy sufficient and complete in all aspects?			
1.3	Is the policy updated on a frequent basis?			
1.4	Are there sufficient controls to trace the purchase of waste and its status within the entity to ensure receipt of materials without delay and to avoid any health hazard?			
1.5	Are there any contracts entered by the entity with suppliers to ensure adequate supply at a reasonable price?			
1.6	Are there sufficient procedures to inspect materials as regards to specification and quantity, received by the entity at the site before unloading and signing of the delivery note?			
1.7	Are there sufficient documentary controls such as gate pass for entry of goods?			
1.8	Has a sample check for compliance of procedures performed?			
1.9	Is the process of receipt of material properly co-ordinated to the Finance department to ensure proper accounting?			
1.10	Does the material receiving department maintains sufficient records of receipt and inspection of material?			
1.11	Before making the entry, has the delivery note been approved by the appropriate level of authority?			
1.12	In cases where materials are supplied by client, has the internal auditor ensured that there has been appropriate accounting of such material?			
1.13	Does the entity have proper control for materials received from the client? Are they			

		PARTICULARS	Yes	No	N/A
		separately identified and demarcated?			
1.14		Does the entity have a process of evaluation of all the waste collected which is sufficient in the light of overall volume and size of business?			
1.15		Has the contract between suppliers made complete with all terms and conditions and have the risk been appropriately specified?			
1.16		Are there areas where we are risking more than we are saving by entering into an agreement with generator of waste?			
1.17		What would be the likely financial impact of a critical operational issue/ disruption to our operations?			
1.18		Does the entity have a system of disposal booking commensurate to the size of business?			
1.19		In the case of credit sales, does the entity have sufficient measures to book sales at the appropriate time in accordance with the terms of sale?			
1.20		What would be the likely environmental impact of a critical operational issue/ disruption to our operations?			

Supply Chain Management

8.29   Supply chain management (SCM) is the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by the end customers. Supply chain Management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point of origin to point of consumption.

The Supply chain function involves vendor management, quality assurance and transportation. Vendor management assumes critical importance in waste management business where one has to deal with multiple type of waste.

Supply chain management is typically viewed to lie between fully vertically integrated firms, where the entire material flow is owned by a single firm and those where each channel member operates independ.

8.30   Six Sigma in supply chain management (SCM) helps in achieving substantial benefits in terms of costs and quality. Effective implementation of Six Sigma in supply chain management requires collection of data from multiple organizations spread across multiple geographical locations.

Six Sigma enables

- Improvement in delivery time.

- Reduction of logistics cost.

- Lesser inventory cost.

- Improvement in the disposal mechanism of waste collected

Supply chain management involves two broad categories i.e. strategic and operational.

8.31   As the term implies, strategic decisions are made typically over a longer time horizon. These are closely linked to the entity's strategy and guide supply chain policies from a design perspective. On the other hand, operational decisions are short term, and focus on activities over a day-to-day basis. The effort in these type of decisions is to effectively and efficiently manage the product flow in the "strategically" planned supply chain.

The strategy needs to include four major decision areas in Supply Chain Management:

(i)   Location,

(ii)   Production,

(iii)   Inventory, and

(iv)   Transportation (distribution).

8.32   Typically, a supply chain management would include the following components

(i)   **Distribution Network Configuration–** Number, location and network missions of suppliers, production facilities, distribution centers, warehouses, cross-docks and customers. This froms the perspective of entity collecting the waste through various associate enterprises from generator of waste.

(ii)   **Distribution Strategy–** Operating control e.g., centralized, decentralized or shared; collection scheme, e.g., direct shipment, pool point shipping, DSD (direct store delivery), closed loop shipping; mode of

transportation and transportation control (e.g., owner-operated, private carrier, common carrier, contract carrier).

(iii)   **Trade-Offs in Logistical Activities–** The above activities must be well coordinated in order to achieve the lowest total logistics cost. Trade-offs may increase the total cost if only one of the activities is optimized. It is therefore imperative to take a systems approach when planning logistical activities. This trade-off is key to developing the most efficient and effective Logistics and SCM strategy.

(iv)   **Inventory Management–** Quantity and location of inventory, work-in-progress (WIP) and finished goods.This is a major area in the waste management industry taking into consideration not only the volume of inventory, but also type of waste collected. Hence, the entity needs to also ensure that the material are stored at the appropriate place with sufficient infrastructure facility. To enable this, the system should be comprehensive enough to track details of all products procured from different suppliers.

(v)   **Cash-Flow–** Arranging the payment terms and methodologies for exchanging funds across entities within the supply chain.

8.33   Internal audit functions are increasingly important as entities work to manage its increasingly complex and pervasive supply chain risk. Supplier disruption can immediately and significantly affect profitability, impair growth opportunities, shatter shareholder value, and compromise reputation through a decreased level of public confidence.

The following procedures might be performed by the internal auditor to estimate the supply chain management system.

	PARTICULARS	Yes	No	N/A
1	*Analysing the Supply Chain Management System*			
1.1	Has the entity made a comprehensive study on the supply chain?			
1.2	Is the Supply chain management system commensurate with the size of business?			
1.3	Has the entity taken steps to evaluate the cost-benefit of having an in-house system to an external service provider?			
1.4	Are the terms of contract with the external service provider appropriate in the overall			

		PARTICULARS	Yes	No	N/A
		business scenario?			
1.5		Are there sufficient indemnification clauses available in the agreement to enable management of risk to an appropriate level?			
1.6		Is there a clear understanding of the true cost(direct plus indirect) of supply chain risk events?			
1.7		Is the estimate of the cost made and reviewed at frequent intervals?			
1.8		Are there any pre-defined management responses corresponding to increased levels of supplier risk?			
1.9		Has the entity focussed on early intervention and identification of any default than a crisis management?			
1.10		Is there a contingency plan for recovery in the event the distributor/ distribution system fails for any reason?			
2		*Distribution Network Configuration*			
2.1		Has the entity analysed the benefit of an external distributor as against an internal system?			
2.2		Considering the importance of the distribution network, does the entity have a prescribed network and organised system of movement of products?			
2.3		Does the Company have a written policy for its distribution network and mobilisation of goods?			
2.4		Does the entity have all its major suppliers at strategic locations?			
2.5		Are the distribution centres located at strategic locations to enable quick			

		PARTICULARS	Yes	No	N/A
		movement and timely availability of products?			
2.6		Are there sufficient controls in the entity to ensure that the decisions are made by the appropriate personnel and every movement is authorised by the appropriate level of authority?			
2.7		Does the entity have a process of identifying frequent delays/ errors/ losses and rectifying the same?			
2.8		Does the entity have a control matrix for sourcing of good and products from various production locations, warehouses and distribution centres?			
2.9		Are the controls sufficient to ensure that sourcing is made from the right suppliers/ distributors and available on a timely basis?			
3		*Distribution Strategy*			
3.1		Does the entity have a strategy for efficient handling and managing inventory movement?			
3.2		Does the strategy clearly cover all areas of decision making?			
3.3		Is the strategy renewed at a frequent basis?			
4		*Trade-Offs in Logistical Activities*			
4.1		Has the entity made an evaluation of the cost of alternatives possible?			
4.2		Does the entity have a scientific basis of evaluation of the overall cost of transportation?			
4.3		Has the method of evaluation of cost of transport between options made in a			

	PARTICULARS	Yes	No	N/A
	comprehensive manner?			
4.4	Do the Logistics Company cause any critical operational problems? Are they reliable?			
4.5	Has a comprehensive agreement made between them to ensure that the Logistic Company would bear the risks related to transportation of goods?			
4.6	If the entity has an in-house logistics division, are there sufficient controls within the Company to ensure that there is no excess cost involved in transportation?			
4.7	Are there written policies for logistics cost to be incurred?			
5	*Information*			
5.1	Does the entity have a comprehensive system to track all the cost incurred for logistics operations and distribution system management?			
5.2	Does the entity makes a risk analysis based on such information?			
5.3	Has the entity have a comprehensive system to study the transportation time, transportation cost per location?			
6	*Inventory Management:*			
6.1	Does the entity have sufficient control on the individual product stock available at different locations?			
6.2	Is there an automated/ semi-automated system of routing of inventory from different locations to enable the smooth disposal of products?			

Payroll

8.34   In a waste management industry, the cost of payroll in relation to the turnover of the entity might not be very significant. But, the success of the waste management company depends on the management of personnel and the availability of personnel. Though the entity individually might be hiring huge number of employees, but, the collective employment given due to the waste management industry is quite significant in terms of number of people employed in this sector across the nation.

Most entities process payroll for the month, based on the records of a different period. Say payroll for the month of December is processed, the leave records, performance record for the period 25th November to 24th December would be considered. The main reason for such processing is to ensure disbursement of payroll by the specified day of the month. The internal auditor needs to ensure that proper, adequate and appropriate cut-off procedures are in place to ensure proper computation and disbursement of salary to the employees.

8.35   The procedures for computations of amount to be deducted on various heads also need to be verified in accordance with organisational policies and procedures. The internal auditor needs to verify the policies and procedures and compliance of the same on a sample basis.

Compliance with various regulations too is a tedious job especially when the entity has presence across different states. In such a scenario, the entity might have to obtain separate registration certifications for different statutes such as, VAT, Shops and Establishments Act, Professional Tax, Tax Deduction Account Number (TAN), to name a few. The entity generally has protocols for ensuring compliance with regulations.

A *time sheet* is a method for recording the amount of a worker's time spent at work to enable tracking of details related to leave and absence to enable the determination of employee's compensation accordingly. In some situations, the recording of time sheet is done through an electronic/ automatic process and is driven by software. In such cases, the internal auditor is required to understand the process in detail and verify the process on a sample basis. Exceptions if any noted on the project should be taken seriously by the internal auditor and adequate explanations should be obtained.

8.36 The internal auditor may also perform additional analytical procedures over a period of time and compare them for ascertaining any inconsistency such as following:

(i)   No. of bills raised/ no. of hours

This ratio is determined by the number of bills an employee processes to the total time taken by him over a period of time. By analysing this ratio, the internal auditor can understand the skill level of employees, steps taken by the management towards maintaining efficiency, importance of training and ability of the management in identifying the right person for the job.

This ratio gains significance especially because, by processing of bills quickly, customer's satisfaction can be maintained and thereby enables development of brand and loyalty.

(ii)   Total Revenue per location to number of employees/ employee cost.

This ratio can be computed based on the total revenue of the location in a particular period to the number of employees/ employee cost in the same month. This would provide an insight for the internal auditor to understand the importance of a firm in terms of its significance.

(iii)   Employee Turnover ratio

Employee turnover ratio helps the internal auditor to verify the attrition rate and assess the entity's effectiveness and steps taken towards prevention of attrition and retention of key employees. In case of employee turnover ratio being higher than the industry, the internal auditor must obtain explanations for the reason for such high turnover ratio.

(iv)   Reconciliation with respect to changes in the no. of employees due to additions, terminations, retirements, etc between various months.

The internal auditor can assess the movement in employees for a month in comparison with another through tracing the additions and deletions in month based on each grade and obtain an insight on the plans of the management.

8.37   Model Checklist related to Payroll Process is as follows:

	PARTICULARS	Yes	No	N/A
1	*Specific areas of payroll processing*			
1.1	Does the entity have a payroll process as approved by appropriate level of authority?			
1.2	Is the payroll process complete in all aspects, as applicable to the entity?			
1.3	Does the entity maintain a check-list of statutory remittances to be made on account of PF, ESI, Labour Welfare Fund and alike?			
1.4	Are cheques prepared and signed by two different employees?			
1.5	If the entity opts for bank transfer, is there sufficient Level of Authority to issue to a bank transfer instruction to the bank?			
1.6	Is the payroll processing cross checked before payment is made?			
1.7	Are there sufficient manual records maintained by the entity in regards to their recruitment, offer letter, appraisals and increments and all other correspondences with the employee?			
1.8	Have the incentive schemes been verified by the internal auditor on a test basis?			
1.9	Are controls in place to ensure that incentives are computed in accordance with the schemes?			
1.10	Have these controls been tested for effectiveness?			
1.11	Have we performed sample testing of incentive workings made and paid to the employee to ensure adherence to the Incentive system?			
1.12	Is the attrition rate exceedingly high? Have justifications for such a high rate, if any obtained?			
1.13	Does the entity maintain separately all complaints, redressals received from the employees?			
1.14	Have the reasons and explanations for any			

	failures and control weakness observed on review of these complaints?			
1.15	Does the entity have sufficient controls, records for cases where disbursements are made to employees working from various locations?			

Fixed Assets

8.38   In general, an entity operating in the waste management industry would have the following types of fixed assets:.

- Freehold Land and Leasehold Land

- Buildings, warehouses and leasehold improvements

- Plant and Machinery

- Office equipment

- Computer and software

- Furniture and Fixtures

- Electrical Installations

- Vehicles

In the event of a comprehensive distribution system operated by the entity, the entity might have a large number of warehouses and storage locations apart from transportation vehicles. The entity might be required to have sufficient control in such cases to ensure that the assets put into proper usage and periodic physical verification might be of paramount importance.

8.39   There could be instances wherein the entity might lease certain assets for installation at the location. The internal auditor might be required to verify whether there is proper control over such leased assets.

The internal auditor might be required to ensure that there are sufficient controls within the entity to differentiate between own assets and those assets provided by the vendors/ manufacturers to promote their product.

8.40   The internal auditor may also perform additional analytical procedures over a period of time and compared them for ascertaining any inconsistency such as following:

(i)   Ratio of assets installed to area

The internal auditor might verify the ratio of the total value / no. of assets put to use per square foot across different stores and in case of any significant

difference arising in such a ratio, the internal auditor needs to seek explanation thereon.

(ii)   Asset utilisation ratio

Asset utilisation ratio is the ratio of total revenue to the total assets. It helps the internal auditor to assess the effectiveness of assets with respect to the revenue made by the entity. The greater the asset utilisation ratio, the entity is operating at a higher efficiency.

(iii)   Asset coverage ratio

Asset coverage ratio is a measure of a specific company's ability to cover the amount of its existing debts. Essentially, an asset coverage ratio measures the tangible physical and monetary assets of a company against its outstanding debts and overall liability to derive a understanding of the company's current financial situation. This measure is usually part of a larger liquidity analysis, which takes into consideration factors like, cash in hand, long-term financial obligations, and current liquidity assessments.

If the internal auditor is required to perform fixed asset verification procedures too as part of the scope of his work, the auditor can refer to *Guidance Note on Audit of Fixed Assets.*

8.41   Model Checklist related to Fixed Assets is as follows:

	PARTICULARS	Yes	No	N/A
1	*Audit of Fixed Assets*			
1.1	If there are assets issued to employees, does the entity have sufficient control over such assets? Are these assets verified on a frequent basis?			
1.2	Does the entity have sufficient protection for its assets from both internal and external damage?			
1.3	Does sufficient control and process exist to ensure capitalisation of assets on the appropriate date.			
1.4	Has the entity taken assets on lease and is there sufficient control on such assets?			
1.5	In the case of assets held at mobile/ temporary location, does the entity have sufficient control over them and do they make a periodic physical verification?			

1.6	How are assets received from manufacturers identified and ensured that they are not disposed off?			
1.7	In the event, the entity is dealing with distribution are there sufficient controls and procedures to ensure appropriate classification of assets owned by the entity and assets owned by the distribution partner?			

Security

Physical Security

8.42   The most important driver for the physical security is the need of entity to safeguard their property, staff, customers and the waste collected for treatment/ disposal. Entities also use physical security as a deterrent to prevent miscreants entering the premises and cause damage to the environment by adding chemicals which is dangerous to the health and environment. Entities also view loss prevention as an essential management tool. Further, to ensure enhanced security, entities are looking towards technology and automated systems to prevent crime. The tools include video surveillance and integrated systems.

Ensuring the security of organization would mean protecting customers, staff and assets, preventing miscreants from creating problems while benefitting from complete visibility of sales floor, point-of-sale (POS), receiving doors, distribution centres and parking facilities. It would involve security for the following areas/ activities.

(i)   In-Store

- Ensure integrated surveillance of POS and cash-handling areas

- Manage access to restricted areas and locked displays

- Protect customers and employees

- Verify fire, intrusion and electronic article surveillance (EAS) event alarms using video.

(ii)   Back Office and Warehouse

- Protect employees and prevent theft

- Safeguard assets and equipment

- Monitor productivity and safety

- Track time and attendance through access control

(iii)   Parking and Outdoor Premises

- Identify suspicious vehicles

- Ensure entry and exit point security

- Protect assets and buildings

- Monitor merchandise delivery

Further, International organizations have also established standards and guidelines for physical security as part of an overall security management program that also includes information security and meets governmental requirements and consumer expectations.

8.43   Certain examples of internationally recognized standards and guidelines that are used to implement management systems to effectively manage physical security pertaining to the Waste management industry would include:

- BS 25999-1:2006: Business Continuity Management Code of Practice (management system for disaster recovery and business continuity)

- ISO/PAS 28000: Specification for Security Management Systems for the Supply Chain (management system specification for physical security)

- OHSAS 18001: Occupational Health and Safety Management (specification for health and safety management systems)

The internal auditor might extend his scope of internal audit to verify the importance given by management to Physical security. Further, he might be able to understand and correlate the relationship between reduction of costs related to theft/ shrinkage in relation to the costs incurred for enhanced physical security.

8.44   An illustrative list of procedures that an internal auditor might perform would include following:

	PARTICULARS	Yes	No	N/A
1	*Physical Security*			
1.1	Does the entity provides sufficient importance to physical security and security measures?			
1.2	Are the security arrangements made reviewed by the management on a periodic basis to ensure that there is sufficiency of security measures at each location?			
1.3	Does the management ensure a continuous shifting of security personnel from each location?			
1.4	How does the management treat intrusion of miscreants in the event the miscreant has been traced?			
1.5	Does the management believe in periodic modification of security procedures and systems to ensure that there is limited possibility for external people and employees in ascertaining failures in internal security?			
1.6	Does the management make an estimate to verify as to what would be the maximum possible loss in the event of failure of security measures and systems?			
1.7	Are there sufficient Disaster recovery systems within the organisation to act in the event of any mishap/ failing of security measures? Are the employees sufficiently trained in that aspect?			

Operating Costs

8.45 The significant operating costs in any waste management entity include the following:

(i) Lease Expenses

Lease expenses could be of the nature of leasing of office building for work space, or leasing of assets for official purpose or accommodation provided to employees. This would be a significant part of the expenses considering that the entity needs to own the location or lease the location for its display. The success of the entity is based on location of entity and incidentally to have a entity at the right location would mean incurring higher cost.

(ii) Advertisement and Marketing Expenses

Advertisement expenses are incurred predominantly for the purpose of creation and development of a strong brand name apart from creating awareness among the generator of waste. Branding is one of the most important aspects of any business, large or small, retail or Business to Business (B2B). An effective brand strategy gives a major edge in increasingly competitive markets. A brand is something that tells the customers (existing and prospective) what they can expect from the entity's method of working.

There are many strategies that the entity might use for marketing below:

Multi-channel marketing is marketing using many different marketing channels to reach a customer. In this sense, a channel might be the employee collecting waste, NGOs associated with the waste management industry, restaurants, hospitals, public utility places a web site, a mail order catalogue, or direct personal communications by letter, e-mail or text message. The objective of the company doing the marketing is to make it easy for a consumer to connect with the entity whenever they require in whatever way it is most appropriate.

To be effective multi-channel marketing needs to be supported by good supply chain management systems, so that the details are displayed consistent across the different channels. It might also be supported by detailed analysis of the return on investment from each different channel, measured in terms of customer response and conversion of sales. Multi-channel marketing allows the waste management entity to reach its prospective or current customer in a channel of his/ her liking.

(iii)   Finance Charges

Finance charges are incurred for the purpose of working capital and capital expenditure of a entity in waste management industry. The entity needs to ensure cost efficiency in borrowing of funds. The entity might also opt for an External Commercial Borrowing for the purpose of incurring expenditure in foreign currency.

Maintenance of Books, Reporting, Management, Control & MIS

8.46   The internal auditor is required to verify the sufficiency of controls related to maintenance of books of accounts by the entity. The internal auditor is also required to verify the controls for allocation of costs between different departments in every location and whether it is adequate and reliable in the light of overall business operations.

An entity might have various stores and accounting operations might be performed centralised, decentralised or may be a combination of both manner. The entity might find it best suited if the accounting system is comprehensive enough to provide a Management Information System which would be sufficient to provide information for decision making and enable the entity to understand complexities of business, status of implementation of new ideas and last the true status of operations of the entity.

8.47   The Reporting system should be comprehensive enough and should be able to provide the following information:

(i)   Sales and Collection:

- Daily statement of sales through Cash and credit sales.

- Reconciliation between Bills raised and collection status with outstanding debtors.

- Benefits of advertisement through additional revenues and customer loyalty.

(ii)   Inventory Management:

- Loss of inventory on account of theft, spillage / perishing of goods.

- Inventory at each location based on type of waste, stage of disposal of waste.

8.48   Model checklist related to maintenance of accounts and Documents is a follows:

	Particulars	Yes	No	N/A
1	*Books of Accounts and Documents*			
1.1	Does the Entity have proper accounting system commensurate with the regulatory requirements?			
1.2	Does the Entity have specific books of accounts for each location across states to enable proper declaration of turnover in terms of quantity and value for statutory purposes?			
1.3	Are the Control Systems in place in estimating the revenue generated location-wise sufficient to ensure that proper books are maintained for the location?			
1.4	Does the Entity have location wise employee details to ensure proper allocation of payroll cost to the location?			
1.5	Are the books of accounts closed every month?			
1.6	Whether the time period for the closure of the books of accounts on a monthly basis is reasonable with regards to the operations of the entity?			
1.7	Are the controls for re-opening of books proper to ensure prevention of manipulation?			
1.8	Are the books maintained in a manner to provide Information to the management for decision making?			

Surprise Verification

8.49   If physical verification or examination is done without prior information to the management, it is called as surprise check. An element of surprise is experienced by management or the employee in such cases. Surprise check is used in physical verification of cash, security items, inventory etc. Further, the internal auditor might also consider surprise check towards compliance of required procedures and policies by the employees of the organisation.

The Internal Auditor might use surprise checks as an effective tool for finding effectiveness and continuity of internal controls.

Chapter 9
Specific Issues Related to Internal Audit of Waste Management Company

Revenue Earned by the Company

9.1 The revenue model of the waste management company will be different from that of other companies. The company might earn revenue from waste collections from residential areas which includes organic and inorganic wastes, industrial waste which includes metal and other scraps and other commercial wastes like, bio-degradable and non bio-degradable wastes and wastes which cannot be recycled or reused.

The following is the check list for auditing the revenue model of a waste management company. This is not an exhaustive check list.

S.No.	Particulars
1	*Internal Audit of Revenue*
1.1	Does the company have any contracts with buildings in residential areas?
1.2	Does the company processes organic waste into compost? If it is processing then what is the method used to arrive at the selling price?
1.3	Does the company sell the compost for both agricultural and domestic use? If yes, then is it selling at different prices?
1.4	Does the company processes the inorganic waste and sells it directly to customers or does it sells the inorganic waste to a third party?
1.5	If the company is selling the inorganic waste by processing then what is the method used to determine the selling price?
1.6	If the company is selling it to a third party then what is the method used to determine the selling price? Whether it calls for a tender or has a contract with few of the parties?
1.7	Does the company enters into contracts with its clients for collecting and segregation of waste?

S.No.	Particulars
1.8	Are the charges collected by the clients towards collection and segregation of waste or only towards collection?
1.9	If the company has to segregate the waste does it collect separate charges towards segregation?
1.10	Is the contract with the clients renewed periodically or is termination being initiated by the clients?
1.11	Does the company dump the inert wastes (which cannot be recycled or reused) into landfills?
1.12	If it is dumping it into landfills has it taken the prior approval of local municipal bodies and the government?
1.13	Has the company entered into an agreement with the local bodies and the government to fix a tipping fee for dumping of waste into the landfills?
1.14	What is the frequency at which the company will be paid the tipping fee, i.e., whether monthly, quarterly, etc.?
1.15	Is the company being paid only the tipping fee or is it also receiving reimbursements for transportation and other expenses?
1.16	Does the company processes waste metal and converts it into scrap used for industrial process?
1.17	If the company is selling the scrap what is the method used to determine the selling price? Whether it calls for a tender or has a fixed price in tune with the industry standards?
1.18	Does the company shreds paper, cardboard, textile or recycles and sells it?
1.19	If the company is recycling the paper and cardboard is it selling it as finished goods to the end users or is it selling it as raw material for further processing?
1.20	Does the company undertakes document destruction? If yes, what are prices charged for wholesale and retail customers?
1.21	Does the company recycles such shredded documents or incinerate them?
1.22	Does the company buys used furniture, cardboard boxes that could be recycled and reused? If yes, what is the method used by the company to determine the selling price of the products?

S.No.	Particulars
1.23	Does the company receives any subsidies or grants from state or central government?
1.24	Does the company receives any concession for setting up of the plant or for its operation or renewal or obtaining of licenses?
1.25	What is the weighing measure used for calculating the weight (eg., kilograms, tons etc)? What is the price per kg/ton of waste sold?

Verification of Major Expenses

9.2 The major heads of expense that might be incurred in waste management company would be:

- Labour charges

- Processing charges

- Transportation of wastes

- Disposal expenses.

Labour Charges

9.3 Labour charges refer to the various employee expenses incurred in order to ensure that the operations of waste management company like, collection and segregation of waste, processing and incineration of waste, transportation and disposal of waste, etc., are carried out smoothly. These are the steps involved in audit of labour charges:

S.No	Particulars
2	*Labour Charges*
2.1	Check whether any muster roll or payroll to record the payroll expenses employee wise.
2.2	Verify if the labour is hired by the company itself of they have been hired on contract basis from a third party.
2.3	Verify the contracts with the clients to ascertain whether the personnel for carrying out the collection, segregation and disposal should be hired by the company or by the client.
2.4	Verify monthly booking of labour charges and check if it is tallying with the muster roll.
2.5	Verify if there is any register or log maintained for the quantity of

S.No	Particulars
	waste collected and segregated or disposed of by each employee.
2.6	Obtain an understanding of the employee benefits and post employment benefits like, pension, provident fund, etc. offered to employees and labour by institutions.
2.7	Verify the procedure of valuation and disclosure of employee benefits with reference to Accounting Standard 15 "Employee Benefits".
2.8	Review the personnel file maintained for work records for checking hours worked, time reports, payments made, etc.
2.9	Check the contracts of employees hired on part time basis and ensure that they are paid for the period they are employed as per the terms of contract.

Processing Charges

9.4   Processing of waste encompasses following major steps:

(a)   Treatment of effluents

(b)   Processing of scraps for resale

(c)   Segregation of solid wastes into organic and inorganic wastes.

(d)   Incineration of wastes

The steps involved in audit of processing charges are as follows:

S.No	Particulars
3	*Processing Charges*
3.1	Check for various input of wastes and check the ratio of derivable output for each unit of input waste.
3.2	Verify if the waste which is processed can be further processed or should be disposed off as per the rules of Pollution Control Board.
3.3	Verify if the processing is done as per the rules framed by the Pollution Control Board.
3.4	Review the amount booked under this head under the various ledgers with supporting documents and vouchers.
3.5	Examine whether the processing expenses have been properly classified and disclosed under appropriate account heads in the financial statements in accordance with the recognized accounting principles.

Transportation Charges

9.5 Transportation charges include all expenses incurred towards transporting the waste from the point of collection to the point of treatment and later to the point of disposal. The process involved in audit of transportation charges is:

S.No	Particulars
4	*Transportation Charges*
4.1	Verify whether the company owns the trucks and tippers or it has taken them on hire.
4.2	Review the contract agreements if the vehicles are taken on hire.
4.3	Verify whether the vehicles will be hired by the company or by the client.
4.4	Check whether there are security stamps, check in pass, etc. for the waste being transported inside and out of the factory.
4.5	Check the entries recorded in books with supporting documents and vouchers for expenses relating to transporting charges.
4.6	Verify that exact amount of waste sent from one location reaches the other location in same quantity.
4.7	If there is a difference of quantity the reason for the same has to be enquired and verify if it is a normal or abnormal loss.
4.8	Examine whether the transportation expenses have been properly classified and disclosed under appropriate account heads in the financial statements in accordance with the recognized accounting principles.

Disposal Expenses

9.6 Disposal expenses relates to all the expenses incurred for the final disposal of the wastes. Different kinds of wastes have to be segregated and disposed in right ways. Wrong disposing techniques leads to fatal health issues.

The process of auditing the disposal expenses is as follows:

S.No	Particulars
5	*Disposal Expenses*
5.1	Verify the agreements with third party for disposal of final wastes.
5.2	Verify if the wastes have been disposed in proper methods and ways as per the rules framed by the Pollution Control Board.

S.No	Particulars
5.3	Check the amount booked under various ledgers with supporting and vouchers relating to disposal expenses.
5.4	Verify if there is any spillage of wastes during the disposal process and if there is any spillage; verify the steps taken to clean it.
5.5	Examine whether the disposal expenses have been properly classified and disclosed under appropriate account heads in the financial statements in accordance with the recognized accounting principles.

Types of Wastes and Disposal Techniques

9.7 Industries are of different kinds using different inputs. Hence, the output wastes generated by each of the industries would differ. The different kinds of wastes generated would be mainly classified as under:

• Non-Hazardous wastes

• Hazardous wastes

• Radioactive wastes

The following are ways of disposal of different types of wastes:

Non hazardous waste	Hazardous waste	Radioactive wastes
Chemical container disposal	Physical treatment	Vitrification
Livestock carcass disposal	Chemical treatment	Ion exchange
Waste incineration	Biological treatment	Synroc
Landfill	Solidification	Above ground disposal
Recycling	Incineration	Geological disposal
		Transmutation
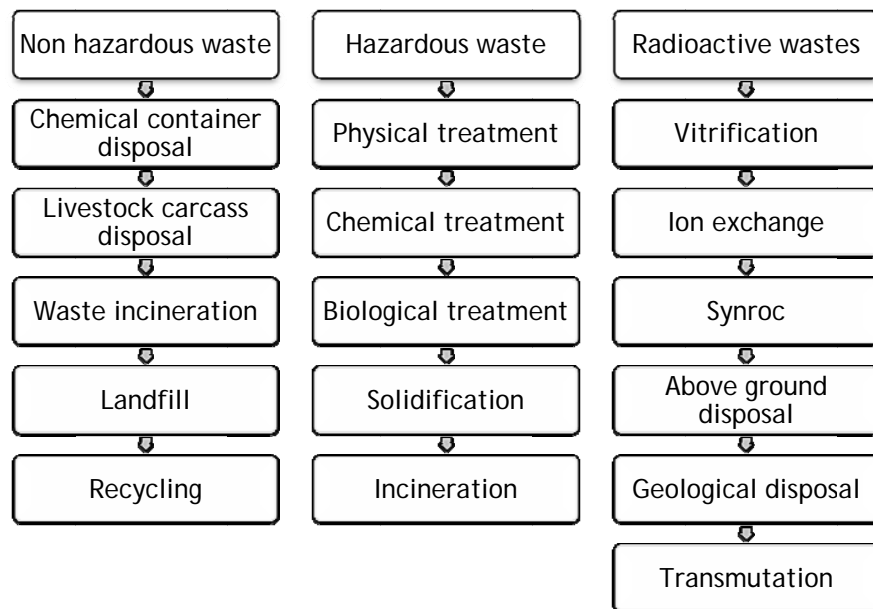
9.8 The process of audit of disposals is as following:

S.No	Particulars
1.1	Check the total waste obtained by the company and how much waste of is apportioned to be disposed.
1.2	Verify whether such wastes have to be disposed of by burying it in landfills or by incineration.
1.3	If it has to be filled in landfills verify the documents granting permission by the government to fill it in that particular landfill or verify if it is notified by the government as a landfill.
1.4	Verify the documents given by the government to ensure that there was a landfill in the first place.
1.5	If the company claims that it has filled up a landfill then physically verify that the landfill is filled completed and it is the same landfill the permission for which is granted by the government.
1.6	Do reverse calculation: Total Waste collected – Scrap – Recycled – incineration – treated waste = Waste for disposal.
1.7	Ensure that there are no transportation spills and if there are any, then verify if any steps are taken to clean the same.
1.8	There should be proper check in and checkout of waste.
1.9	The disposals should have a proper time roll where it shows the quantity and time at which waste for disposals move out.

Additional Issues

9.9 Apart from the usual procedures undertaken by the internal auditor, there are certain specific areas that require his attention in case of entities generating and disposing of the waste on its own. They are:

(a) Whether the waste generated has been collected and stored before disposal based on its type.

(b) Whether the entity has adequate infrastructure for processing the waste.

(c) Whether such infrastructure complies with specifications as prescribed in various laws regarding waste management.

(d) Whether the entity is providing adequate training to its employees engaged in the waste management process.

(e)   Whether the entity is providing regular health checkups for its employees and is maintaining a record for the same.

(f)   Whether the entity is providing adequate accessories like, gloves, etc to the employees.

(g)   Whether the entity has got vehicles for transporting the waste generated in the factory to the premises where it is disposed.

(h)   Whether the equipments used for processing the waste has been maintained regularly.

(i)   Whether the entity has water treatment plant? If so, how the sludge created is disposed of.

(j)   How are the waste generated treated by the entity for costing/ accounting purposes.

(k)   Whether the entity is filing annual report regarding waste management within the due date specified in the respective acts.

(l)   Whether any notice has been served on the entity with regard to waste generation and disposal by pollution control board? If yes, what is the action that has been taken by the entity.

(m)   Whether the persons engaged in the treatment of waste is outsourced employees or they are in the pay register of the company.

(n)   Whether the entity has complied with labour laws relating to such employees.

(o)   Whether the entity is conducting awareness program regarding waste generated and disposed to its employees on regular basis.

9.10   In case of entities engaged in the collection and disposal of waste, apart from the general areas of internal audit and the specific areas mentioned above in relation to disposal of waste, the following additional areas require auditor's attention. They are:

(a)   Whether the entity is engaged in collecting waste for disposal from business units? If yes, whether the entity has entered into any agreement with such business units.

(b)   Whether the terms of agreement specifies the periodicity of collection, consideration for collecting the waste, containers for different type of waste, etc.

(c)   Whether the terms of agreement specifies whether the persons engaged in the waste collection has to be employed by the entity or the business unit.

(d)   Whether any person has to be placed on the location of the business unit for segregating the waste on generation.

(e)   Whether the entity has signed employment contracts and such contracts provide for benefits available to employees due to health hazards arising out of handling waste.

(f)   Whether the entity has obtained license for collecting and treating the waste from the local and statutory authorities.

(g)   If the said license is on renewable basis, whether the entity has renewed the license periodically.

Chapter 10

International Agreements on Waste

10.1   Environmental care is of global interest and vital importance. The term pollution has nothing to do with national boundaries, and is freely transported between countries and continents. The international community has recognized this fact,

A number of attempts to improve the environment have been recorded on paper during the last few decades. The most relevant of these agreements regarding waste are presented below.

Agreements Including Non-Hazardous/ Solid Waste

10.2   Legislations concerning waste are usually differentiated according to the type of waste. International conventions often cover nuclear and hazardous waste, whereas non-hazardous waste, often called solid waste, is more usually regulated at the national level. However, there are a few international conventions that also cover non-hazardous waste. These are presented below

(i)   The OECD Decision C(2001)107/FINAL

The Organization for Economic Co-operation and Development (OECD) has instituted binding agreements for its member countries (30 states) regulating the transboundary movements of waste destined for recovery operations. Between 1984 and 1992, eight OECD Council Acts were adopted covering waste identification, definition, and control of transboundary movements of waste. Seven of these Acts are currently being consolidated and updated with the ultimate goal of developing a global control system for waste movements. The control system aims to facilitate the trade of recyclables in an environmentally sound and economically efficient manner by using a simplified procedure and introducing a risk-based approach to assessing the necessary level of control of material. Waste exported to countries outside the OECD area, whether for recovery or final disposal, are not subject to this simplified control procedure.

The OECD control system is based on two types of control procedures:

- Green Control Procedure: for waste that poses a minor threat to human health and the environment and are consequently not subject to any other controls but those normally applied in commercial transactions

- Amber Control Procedure: for waste that poses a sufficient risk to justify their control.

(ii) London Convention

The London Convention on the Prevention of Marine Pollution by Dumping of Wastes and other matter is a global agreement that was drawn up at the Inter- Governmental Conference on the Dumping of Wastes at Sea in London in 1972. The objective of the Convention is to prevent pollution of the sea by the dumping of waste and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

(iii) The MARPOL Convention

The MARPOL Convention for the Prevention of Pollution from ships is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. It entered into force in 1983. The key objectives of the Convention are:

- To eliminate pollution of the sea by oil, chemicals, harmful substances in packaged form, sewage, garbage and other harmful substances that might be discharged in the course of operations;

- To minimize the amount of oil that could be released accidentally by ships, including also fixed or floating platforms.

- To improve further the prevention and control of marine pollution from ships, particularly oil tankers.

Agreements Including Hazardous Waste

10.3   In the late 1980s, a tightening of environmental regulations in industrialised countries led to a dramatic rise in the cost of hazardous waste disposal. Searching for cheaper ways to get rid of this type of waste, "toxic traders" began shipping hazardous waste to developing countries. There are few international conventions and agreements that cover hazardous waste.

They are presented below:

(i)   Basel Convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their disposal is a global agreement addressing the problems and challenges posed by hazardous waste. The key objectives of the Basel Convention are to minimize the generation of hazardous waste in terms of quantity and hazardousness, to dispose of them as close to the source of generation as possible and to reduce the movement of hazardous waste. It developed criteria for "environmentally sound management". A control system, based on prior written notification, was also put into place.

Environmentally sound management (ESM) is a central goal and means taking all practical steps to minimize the generation of hazardous waste and strictly control its storage, transport, treatment, reuse, recycling, recovery, and final disposal, for the purpose of protecting human health and the environment. One of the guiding principles of the Basel Convention is that, in order to minimize the threat, hazardous waste should be dealt with as close to where it is produced as possible. Therefore, under the Convention, transboundary movements of hazardous waste or other waste can take place only upon prior written notification by the state of export to the competent authorities of the states of import and transit (if appropriate). Each shipment of hazardous waste or other waste must be accompanied by a movement document from the point at which a transboundary movement begins to the point of disposal. Hazardous waste shipments made without such documents are illegal.

(ii)   Bamako and Waigani Conventions

The Bamako convention prohibits the import of hazardous waste into African region. The Waigani convention prohibits the import of hazardous waste into Pacific Island developing countries.

Agreements Regulating Radioactive Wastes

10.4   Radioactive wastes are the most dangerous type of waste that would harm the environment as well as human lives. These wastes can be fatal if not handled properly. Some of the agreement related to radioactive wastes is given below:

(i)   Joint Convention

The Joint Convention on the Safety of Spent Fuel Management and on the

Safety of Radioactive Waste Management was the first legal instrument to address these issues directly on a global scale. The objectives of this convention are:

- To achieve and maintain a high level of safety worldwide in spent fuel and radioactive waste management, through the enhancement of national measures and international co-operation, including safety-related technical co-operation where appropriate.

- To ensure that during all stages of spent fuel and radioactive waste management there are effective defences against potential hazards so that individuals, society and the environment are protected from the harmful effects of ionising radiation, now and in the future, in such a way that the needs and aspirations of the present generation are met without compromising the ability of future generations to meet their needs and aspirations.

- To prevent accidents with radiological consequences and to mitigate their consequences should they occur during any stage of spent fuel or radioactive waste management

(ii)   Convention on Nuclear Safety

The Convention on Nuclear Safety is a global agreement that was adopted in Vienna in 1994. Its aim is to legally commit participating states that operate land-based nuclear power plants to maintain a high level of safety by setting international benchmarks to which states would subscribe. The specific safety obligations in the Convention are based on what are termed "fundamental safety provisions" rather than on highly detailed standards, guidance on the more detailed internationally agreed safety standards are already available, and these are continually being updated.

Chapter 11
Audit Criteria at the International Level

11.1   Depending on the audit topic and international agreements, domestic legislations and policies will be relevant as audit criteria. As EU members have carried out majority of the reviewed audits, EU directives and regulations feature often as audit criteria in addition to national legislation and national policies. The UK National Audit Office audits serve as a good illustration for the use of both EU and national audit criteria. The 2006 waste audit focused on progress compared to targets imposed by the EU Landfill Directive 1999/31/EC, while the 2009 audit on private finance in the waste sector had both the National Strategy for Waste Disposal and the EU Landfill Directive as criteria. The 2010 audit on business waste adopted the Business Resource Efficiency and Waste Programme 2005-2008, the Waste Strategy 2007, the Landfill Tax 1996 and the EU Landfill Directive as audit criteria to examine how business waste was reduced.

11.2   Other waste-related EU directives and regulations that have been applied as audit criteria are as follows:

- Waste framework directive – EU Directive 2008/98/EC

- Shipments of waste - EU Regulation 1013/2006

- Port reception facilities for ship-generated waste and cargo residues - EU Directive

- 2000/59/EC

- End of life vehicles – EU Directive 2000/53/EC

- Packaging and packaging waste – EU Directive 94/62/EC

- Disposal of Animal Waste – EU Directive 90/667/EEC

11.3   Other EU directives that have been adopted as audit criteria in waste management audits consist of:

- Ambient Air Quality and Cleaner Air for Europe – EU Directive 2008/50/EC

- Assessment of the effects of certain plans and programmes on the environment – EU Directive 2001/42/EC

- Urban waste water Treatment – EU directive 91/271/EEC

Among relevant international environmental agreements, the Basel Convention has been applied as audit criteria in several audits. Other international agreements applied as audit criteria include the Helsinki Convention and the Kyoto Protocol. The Helsinki Convention on the protection of the Baltic Sea was used as criteria in the Estonian audit (2004) on the organisation of ship waste and management in ports. The Austrian SAI adopted the Kyoto Protocol as audit criteria in several audits of regional waste management.

Appendix 1
Internal Audit Checklist on Bio-Medical Waste

Name of the Hospital

Address of the Hospital

No. of Beds   Date

Basic Requirement for Biomedical waste					
Sl. No	Check	OT	LR	ICU/ NICU	Lab
1	Adequate no. of BMW Bins as per BMW Guide line (Red, Yellow, Blue and Black) & Green Bins for general waste	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
2	Adequate no. of BMW Bags as per BMW Guide line (Red, Yellow, Blue and Black) & Green Bins for general waste	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
3	Puncture proof containers for sharps/ Blue Bags	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
4	Mutilators (needle/ syringe cutters)	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
5	Calibrated weighing machine for BMW	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
6	Personal protected equipments like Gloves, Caps, Masks, Aprons & Gum boots etc as per BMW guidline	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
7	1% fresh Sodium hypochlorite or Bleaching Powder Solution As per BMW Guide line	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
8	BMW Record Register	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
9	Mercury Spill Management, kits	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO

10	Blood spill Management kits	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
11	Post exposure Prophylaxis Kits	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
12	BMW Storage Rooms With Lock & Key	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
13	BMW Licenses under State Pollution control Board	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
14	Different Forms & Formats (Needle Stick Injury & Annual Report, etc.)	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
Manpower for BMW					
1	Available of a trained Dedicated person for BMW management	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
2	Trained and skilled BMW person for BMW collection & transportation	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
3	Dedicated & Trained Infection Controlled Nurse	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
Training for BMW					
1	Training for BMW management Handlers	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
Generation & Segregation					
From Wards/ O.Ts/ICUs/ Labs/ OPDs/ Blood Bank/ Radiology etc					
Generation					
1	Is the waste segregated at the site of generation	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
2	Is the sharp infectious waste (needles, blades, broken glass etc) to be disposed in white/blue puncture proof containers?	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
3	Is the non sharp Infectious material:(infected plastics,syringe,dressing,gloves,masks, blood bags and urine bags) to be disposed in red plastic bins/bags	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO

4	Is Anatomical Infectious waste(Placenta, body parts) to be disposed in yellow plastic bins or bags	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
5	Is non- infectious (General)waste E.g. packing materials.Cartons,Fruit and vegetable pills, Syringe and needle wrappers, Medicine covers to be disposed in Green/Black plastic bins or bags.	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
6	Is the infectious waste and non - infectious waste mixed at the source of generation?	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
Collection & Storage					
1	Is the waste covered in covered bins	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
2	Is the bins filled up to more than ¾ th level	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
3	Is the bins cleaned with soap and disinfectant regularly	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
4	Is the bins overfilled	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
5	Is the infectious and non-infectious waste filled in same bins	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
6	Is the stored waste kept beyond 48 hours	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
Transportation					
1	Is the waste transported in closed containers	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
2	Are the waste collection bins/Trolleys/wheel barrow used for transporting waste	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
3	Is the Pre defined route available for transportation of waste within the health care facility	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
4	Is the waste transported in open container and bags	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO

5	Is the transportation done during the OPD time or any Emergency	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
Treatment & Disposal					
1	Is your bio medical waste disinfected and mutilated before final disposal	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
2	Is the anatomical waste to be deep buried /incinerated?	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
3	Are the syringes to be cut and chemically disinfected with 1% sodium hypo chloride solution at the source of generation before final disposal?	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
4	Is the infected plastics to be chemically disinfected or autoclaved ,shredded and send for final disposal	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
5	Is the General waste to be chemically disinfected before final disposal	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
6	Is the infectious waste disposed before chemical disinfection and mutilation	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
7	Can the infectious waste and non infectious waste be mixed at any point of time	Yes/ NO	Yes/ NO	Yes/ NO	Yes/ NO
Management of Different waste streams					
1	Is the sharp injury reported and is it reported within 7 hours.If yes then please mention the count per month	Yes/ NO			
2	Are the protective gears like gloves used while handling and syringe	Yes/ NO			
3	Is the barrel and plunger detached before disinfecting the syringe	Yes/ NO			
4	Is the sharp waste mixed with other waste	Yes/ NO			
5	Is the practice of recapping or bending of needles done	Yes/ NO			
6	Is the sharp discarded in poly bags	Yes/ NO			
7	Is the sharp disposed in open area	Yes/ NO			

8	Is the vials and ampoules disposed in sharp containers	Yes/ NO
9	Is the anatomical waste disinfected before final disposal	Yes/ NO
10	Is the anatomical waste disposed in unsecured open areas or in any water bodies	Yes/ NO
11	Is the personal protective gears like mask and gloves used while handling sputum cups and slides	Yes/ NO
12	Is the sputum cup or slides disinfected with <u>5 % hypochlorite solution for at least one hour</u>	Yes/ NO
13	Is the sputum cups finally disposed inside the premises or outside the premises.	Yes/ NO
14	Is the slides of the Sputum test disposed in sharp container	Yes/ NO
15	Is the discarded blood bags punctured before disinfection in 5 % sodium hypochlorite solution for at least 1 hour	Yes/ NO
16	Is the blood bag discarded without mutilation and disinfection for final disposal?	Yes/ NO
17	Is the plastic waste like IV set,bottles,syringes,latex gloves, catheters etc.cut by scissors before disinfection in 1% sodium hypochlorite solution for 1 hour	Yes/ NO
18	Is the disposable gloves and masks reused?	Yes/ NO
19	Is liquid waste spillage (blood, body fluid puss or any discharge) disinfected by adding 1% hypochlorite solution before cleaning.	Yes/ NO
20	Is the blood spill cleaned cloth reused	Yes/ NO
21	Is the mercury spill cleaned with bare hands	Yes/ NO

22	Is the mercury disposed in waste bins and drains	Yes/ NO
23	Is the mercury collected into bottle having some water and tightly covered with the lid	Yes/ NO
24	Is the mercury droplet collected using 2 card board piece /Syringe	Yes/ NO
25	Is the hand washing done before and after any procedure.Eg collecting lab sample, examination of the patient, handling blood and body fluid.	Yes/ NO
26	Is all staff immune to hepatitis B and tetanus vaccine?	Yes/ NO
27	Does the hospital personnel visit the final disposal site even if outsourced or done outside the hospital?	Yes/ NO
28	Is the medicine and chemicals stored in same store?	Yes/ NO

Observer's Signature   Date

Appendix 2
Environmental Management Audit and Regulatory Compliance Checklist–Model

Location …………………………………………..   Date……………..

	1.0 General - including staff awareness
1	What steps have been taken to publicise the Organisation's Environmental Management System and Environmental Policy?
2	Are details of the EMS available? (via Intranet/Internet, posters, leaflets, in-house magazine, training, local procedures etc.)
3	Are staff aware of the EMS and their roles and responsibilities?
4	Are staff encouraged to play an active part in improving the Organisation's environmental performance?
5	Have staff undertaken adequate training e.g. Mandatory, Induction, specific training (examine training records)
	2.0 Air Emissions
1	What potential or actual sources of polluting emissions to atmosphere are there? (these would include chimney stacks from boilers and incinerators, exhaust from CHP plant, medical gases, halon fire fighting systems, fume cupboard extracts and potential Legionellae breeding sites such as evaporative cooling towers - none in Organisation)
2	Does the site comply with relevant legislation
3	Are monitoring, maintenance and control procedures adequate?
	3.0 Aqueous Emissions
1	What is the risk of contaminating storm water drainage by spillages of chemicals, fuels etc?
2	In the event of fires in chemical or materials storage areas, could fire sprinkler water contaminate the storm drains? (LGF at UHW only)

3	Are any environmentally harmful wastes disposed of to a sewer (e.g. mercury amalgam, radio-isotopes, solvents)?
4	Are there adequate safeguards to prevent pollution of ground or surface waters by site effluents?
5	Are there storm and foul water drainage systems drawings for the site, and is the identification of each known?
6	Have gullies, grids and manhole covers been colour coded to aid identification (blue for surface water, red for foul)
7	If interceptors are fitted when were they last cleaned out?
8	Is the integrity of the bunding arrangements regularly checked?
9	Are there spillage kits in close proximity to where hazardous substances are stored?
10	Are instructions for dealing with spillages readily available?
	4.0 Dangerous Substances and Incidents
1	Are any potentially hazardous materials stored or used (e.g. fuel, pesticides, drugs, chemicals, flammable and toxic substances)?
2	Are there adequate safeguards to prevent their escape into the environment? (e.g. containment measures such as bunding, interceptors etc)
3	What is the risk of contaminating storm water drainage by spillages of chemicals, fuels etc?
4	Are there spillage kits in close proximity to where hazardous substances are stored?
5	Are instructions for dealing with spillages readily available?
6	Are there contingency plans in place for dealing with emergencies?
7	Are contingency plans tested?
	5.0 Noise and Nuisance
1	Have there been any complaints about the site from neighbours or the general public?
2	Have there been any problems with the local authority, Environment Agency or any other regulatory authority?
3	What records are kept of complaints?

4	Who deals with complaints and what procedures are followed?
	6.0 Planning (incl Site, Land, Buildings Issues)
1	Are there any Tree Preservation Orders - TPO's on the site and how are they managed?
2	Are there any Listed Buildings on the site and how are they managed?
3	Does the site have any environmental sensitivities, such as proximity to rivers, lakes, forests, townships, rare habitats etc?
4	Have Building Regulations approval been granted for building / development works?
5	Have there been any complaints about the site from neighbours or the general public?
6	Have there been any problems with the local authority, Environment Agency or any other regulatory authority?
7	What records are kept of complaints?
8	Who deals with complaints and what procedures are followed?
9	Is there an up-to-date site plan showing site boundaries, site orientation, plant layout, drainage systems, etc?
10	Are all utilities clearly identified?
11	Are there regular site inspections by management?
12	Are there plans for new developments and how are they progressing?
13	Have the environmental effects of these plans been adequately assessed? [e.g. formal Environmental Impact Assessments
14	Is there scope for improving the site by landscaping, tree planting, putting in lawns, lakes and amenity areas?
15	Where are the main storage areas for materials, especially hazardous substances and fuels?
16	What procedures are in place for coping with fires, spillages and other emergencies?
17	Have there been any previous pollution incidents on the site and, if so, how were they handled?
18	Has there been any damage to the local environment which can be traced directly to the site activities?

	7.0 Resource Consumption (incl. Use of Energy)
1	Does the Procurement/ Purchasing process incorporate environmental clauses in the contract / supplier documentation?
2	Is the environmental performance of suppliers monitored?
3	Are any of these associated with particular environmental problems during their life cycle? (e.g. tropical hardwoods, CFC, paper etc.)
4	Are more environmentally preferable alternatives available?
5	Could these be used?
6	Is there any scope for reducing levels of consumption?
7	Are consumption levels adequately monitored at present?
8	Does the Department currently purchase recycled paper for photocopying or personal computer printers?
9	Does the Department currently purchase other recycled office stationery?
	ENERGY
10	What are the main forms of energy used?
11	Is energy consumption adequately monitored? (ideally, monitored separately for different buildings, departments or functions)
12	Has any significant effort been put into energy conservation?
13	What specific steps have been taken to reduce its energy consumption and to ensure that use of energy is as efficient as possible?
14	Have any energy utilisation surveys been undertaken or detailed advice provided on how to reduce energy consumption recently? (i.e. within the last 3 years)
15	Who is responsible for reporting problems of energy use and supply to the Estate Maintenance Help Desk?
16	Is energy efficiency positively promoted via a Good Housekeeping Scheme?
17	Are there up to date 'switch it off' stickers and posters for lighting and electrical equipment?
18	Has investment been made in energy efficient schemes recently? (i.e. within the last 3 years)

19	Are individual staff encouraged to be responsible for their own energy use?
20	Are employees positive concerning energy reduction and aware of their role and responsibility?
21	Are environmental issues considered when purchasing fuels? (i.e. gas cleaner than oil etc.)
22	Does the monitoring regime in place highlight notable exceptions to normal performance?
23	Are the necessary management arrangements in place to support the delivery of effective energy management?
24	Is there scope for further initiatives?
	WATER
25	What are the main uses for water?
26	Is the consumption adequately monitored?
27	Is there potential for reducing water consumption?
28	What specific steps have been taken to reduce its water consumption and to ensure that use of water is as efficient as possible [Examples include push taps, low flush toilets, urinal controls Are
29	there adequate safeguards to prevent pollution of the mains supply (e.g. by siphoning back)?
30	Has any significant effort been put into water conservation?
31	Is water efficiency positively promoted via a Good Housekeeping Scheme? (Posters, stickers, training etc)
32	Who is responsible for reporting problems of water use and supply to the Estate Maintenance Help Desk?
33	Have any water utilisation surveys been undertaken recently? (i.e. within the last 3 years)
34	Has investment been made in water efficient schemes recently? (i.e. within the last 3 years)
35	Does the monitoring regime in place highlight notable exceptions to normal performance?
36	Are employees positive concerning water reduction and aware of their role and responsibility?

37	Are the necessary management arrangements in place to support the delivery of effective water management?
38	Is there scope for further initiatives?
	8.0 Risk
1	Where are the main storage and collection areas for materials, especially hazardous substances and fuels?
2	What is the risk of contaminating storm water drainage by spillages of chemicals, fuels etc?
3	What procedures are in place for coping with fires, spillages and other emergencies?
4	Have there been any previous pollution incidents on the site and, if so, how were they handled?
5	Where are the main storage and collection areas for materials, especially hazardous substances and fuels?
6	Are there suitable spillage kits readily available to contain potential spillages?
7	Have staff undergone training in the proper use of spillage kits?
8	Is there an adequate monitoring and maintenance regime in place to manage the risks posed by Legionella?
9	Is the monitoring and maintenance regime independently audited by a specialist consultant?
10	Is there an Asbestos Register identifying all known ACMs in premises?
	9.0 Transport
1	Does the site own or operate any vehicles?
2	Are these managed in such a way as to maximise fuel economy?
3	Is there any potential to reduce the number of miles driven (e.g. better route planning, avoiding unnecessary journeys etc.)?
4	Is there potential to convert existing vehicles to greener fuels (e.g. LPG, CNG, ULSD etc.)?
5	Does the site have a published Sustainable Transport Plan?
6	Is there a Transport Manager whose role is to co-ordinate all transport activities?

7	Has a travel to work survey been undertaken amongst staff to establish attitudes and transport patterns for the site?
8	Is secure cycling storage provided, together with lockers and showering facilities for staff?
9	How is the site served with public transport facilities? (e.g. bus services and stops, railway stations, taxi ranks etc.)
10	Is there a fee levied for on-site parking?
11	Is there up to date information and timetables provided for all public transport providers readily available for staff and visitors?
	10.0 Waste
1	What wastes are produced?
2	How are they disposed of?
3	Is there a formal waste policy and strategy for the site?
4	Is the Organisation's Waste Management Policy and Operational Procedures available to staff carrying out waste disposal?
5	Have waste audits been carried out to identify and monitor all waste arisings on the site?
6	Are staff aware of the requirements for waste management under the respective acts
7	Is the disposal service for toxic and flammable waste chemicals provided by Procurement via the Toxic and Flammable Waste Store used?
8	Are records of waste consignments available and up to date? (Records for 3 years must be retained)
9	Are there suitable procedures and facilities for segregating and handling clinical waste and other potentially harmful wastes (e.g. solvents, toxic, special waste etc.)?
10	Are there up to date waste management posters and procedures available in prominent locations e.g. waste rooms, staff rooms etc.?
11	Does the site comply with the requirements of the Various Acts relating to waste management?
12	Are suppliers of goods and services encouraged to reduce packaging or to take empty packaging back for re-use?

13	Are there opportunities for reducing the quantity of waste produced?
14	Is the Organisation's systems for advertising or acquiring redundant equipment made use of?
15	Is there a waste manager whose role is to co-ordinate all waste management activities?
16	Are appropriate waste records e.g. Authorisations, Carriers Certificates of Registration, Hazardous Waste Regulations Consignment Notes, Annual Transfer Notes, Waste Transfer Notes, 'Duty of Care' documentation and audit, Permits, Licences - waste management, Method Statements etc. available and in order
17	Are there opportunities for recycling of the wastes produced?
	• Paper?
	• Cardboard?
	• Aluminium / Steel cans?
	• Glass?
	• Printer toner cartridges?
	• Plastics?
	• Furniture?
	• Wood?
	• Other? (specify)

Auditor's Signature   Date

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I-21

TECHNICAL GUIDE ON INTERNAL AUDIT OF BEVERAGES INDUSTRY

Foreword

Indian beverages industry is extremely competitive with specific challenges confronting the industry such as, ever changing consumer tastes, increasing power of global retailers, increasing emphasis on product safety and quality along with the pressure to keep prices low. To meet these challenges and capitalize on emerging opportunities, companies operating in beverages industry should focus on revenue protection and enhancement, cost reduction leading to margin improvement, improved asset utilization and maintaining brand reputation by achieving compliance with applicable laws and regulations.

Chartered accountants can play an important role by helping companies operating in the beverages industry to understand these challenges and turn them into opportunities in the form of improved internal controls and governance structure and enhanced growth and profitability. I am happy that the Internal Audit Standards Board is issuing "*Technical Guide on Internal Audit of Beverages Industry*" for providing guidance to the members on this crucial industry. This Technical Guide comprehensively deals with the peculiar aspects of beverages industry, including various regulatory aspects and is written in a very lucid and logically flowing manner. At this juncture, I wish to place my appreciation for CA. Shiwaji Bhikaji Zaware, Chairman, Internal Audit Standards Board, for his proactive initiatives in bringing out guiding literature on internal audit for the benefit of the members.

I hope that this Guide would be warmly received and would benefit the members and other interested readers in efficiently discharging their responsibilities.

November 12, 2013   **CA. Subodh K. Agrawal**
New Delhi   President, ICAI

Preface

The Indian beverage industry is continuing to grow at a fast pace due to factors such as, changing lifestyles, growing middle-class, rapid urbanisation and increased disposable incomes. In this consumer-driven environment, the specific growth barriers faced by the beverage industry are pricing pressures, volatile input costs, ability to add new consumers and product innovations. These challenges expose companies operating in the beverage industry to new areas of risks and vulnerability. Internal auditors are well positioned to assist them in improving processes, enhancing rigor in financial management, strengthening governance and control structures thereby leading to value addition to all the stakeholders.

Considering the above, the Internal Audit Standards Board of the Institute has issued this "*Technical Guide on Internal Audit of Beverages Industry*" which deals with operational areas of entities operating in this industry, with emphasis on financial controls and compliance mandated as per various regulations applicable to the beverage industry. The Guide specifically covers non-alcoholic segment of the beverage industry. The Guide provides a brief scenario of the global and Indian beverage industry, market trends and also special features and challenges faced by the entities operating in this industry. The Guide explains in detail business process overview and risk assessment of bottling operations covering procurement process, production process, sales and accounts receivables, marketing expenses, fixed assets, inventory and general ledger and reporting. The Guide also includes a detailed internal audit checklist for beverages bottling operations for all the major processes. In every process covered in the checklist, emphasis has been given on controls to be verified for sub-processes and the specific test procedures to be conducted by the internal auditor in this regard. Legal and regulatory compliance related to beverages industry in India have also been briefly explained. The Guide also contains glossary of terms peculiar to beverages industry.

At this juncture, I am grateful to CA. Rajiv Gupta and his study group members *viz.* Mr. Jayraj T Vyas and CA. Kapil Dev Soni for sharing their experience and knowledge with us and preparing the draft of the publication for the benefit of the members.

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I am sure that this technical guide will be well received by the members and other interested readers.

November 21, 2013   **CA. Shiwaji Bhikaji Zaware**
Pune   Chairman
                                              Internal Audit Standards Board

Glossary

AP	Accounts Payable
AR	Accounts Receivable
CAGR	Compounded Annual Growth Rate
COA	Chart of Authority
CWIP	Capital Work-in-Progress
ER-M	Expense Requisition- Marketing
ESI	Employees State Insurance
FAR	Fixed Assets Register
GR	Goods Receipt
GRN/SRN	Good Receipt Note/ Service Receipt Note
GR/IR	Good Receipt/ Invoice Receipt
HR	Human Resource
IR	Installation Report
KL	Kilo Litre
LR	Load-out Requisition
MODVAT	Modified Value Added Tax
MRN	Material Requisition Note
MSR	Marketing Spend Requisition
OIF	Outlet Identification Form
PF	Provident Fund
PJV	Purchase Voucher
PO	Purchase Order
PRiA	Process Risk Assessment
PR	Purchase Requisition
QA	Quality Assurance

QSL	Quantitative Stock Ledger
RC	Registration Certificate
RFQ	Reference for Quote
SKU	Stock Keeping Unit
SOD	Segregation of Duties
VC	Visi Cooler
VMF	Vendor Master File

Contents

Chapter 1
Introduction

Objective and Scope of Technical Guide

1.1   This Technical Guide is intended to assist internal auditors in carrying out internal audit of entities operating in the beverages industry. The Technical Guide deals with operational areas of entities operating in this industry with emphasis on financial controls and compliance mandated as per various regulations applicable to the specific industry.

Today, the scope of internal audit has increased from mere verification of financial transactions to reviewing of proper, efficient and economical usage of resources by the entity. Therefore, it is imperative that an internal auditor familiarizes with various operational and technical aspects of the beverages industry for performing internal audit in a more efficient and effective manner.

1.2   This Technical Guide covers the following aspects:

(i)   Glossary of terms peculiar to beverages industry;

(ii)   Scenario in the beverages industry, special features and challenges faced by entities operating in this industry;

(iii)   Discussion on Business Process Review and Risk Assessment in Bottling Operations;

(iv)   Major areas of internal audit significance and risks faced by an entity operating in this industry, procedures that an internal auditor can perform (including Regulatory Compliance);

(v)   Appendix.

This Technical Guide does not cover the following aspects:

(i)   Special audits

(ii)   Investigations.

Chapter 2
Overview of Beverages Industry

2.1   The beverages industry consists of two major categories and eight sub-groups. The non-alcoholic category is comprised of soft drink syrup manufacture; soft drink and water bottling and canning; fruit juices bottling, canning and boxing; the coffee industry and the tea industry. Alcoholic beverages categories include distilled spirits, wine and brewing.

The beverages products industry, viewed as an aggregate group, is highly fragmented. This is evident by the number of manufacturers, methods of packaging, production processes and final products. The soft drink industry is the exception to the rule, as it is quite concentrated.

2.2   In most established markets around the world, soft drinks now rank first among manufactured beverages, surpassing even milk and coffee in terms of per capita consumption. Including ready-to-drink, packaged products and bulk mixes for fountain dispensing, soft drinks are available in almost every conceivable size and flavor and in virtually every channel of retail distribution.

Soft drinks are gradually overtaking hot drinks as the biggest beverages sector in the world, with consumption rising by around 5 percent a year according to a recent report from Zenith International. But while the US remains the biggest market for now, Asia is likely to be the main driver of sales growth in the future.

2.3   Growth drivers of the beverages industry in developed countries are different from those in the developing countries. While growing population, favorable demographics and rising income levels are expected to be key drivers in developing countries, rising health consciousness and increasing need for convenience foods are expected to drive growth in developed countries.

As early as the 1960s, most bottlers were producing beverages through machinery that ran at 150 bottles per minute. As product demand has continued to skyrocket, soft drink manufacturers have shifted to faster machinery. Due to advances in production technology, filling lines now are able to run in excess of 1,200 containers per minute, with minimal downtime except for product or flavor changes.
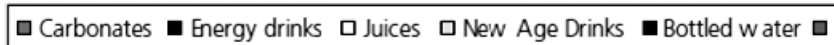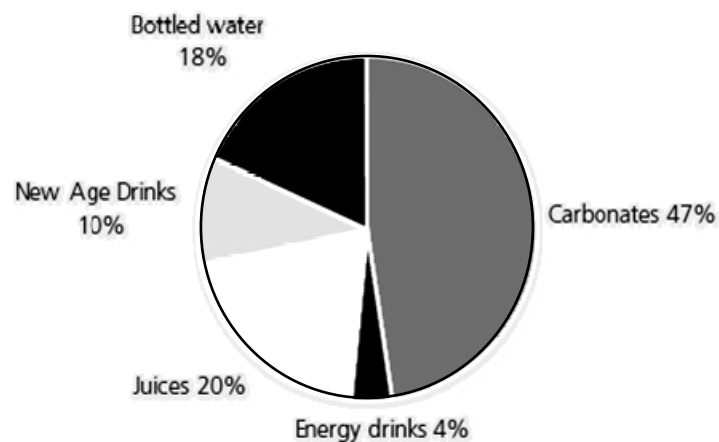
Market Trends and Industry Challenges*

2.2   Market trends for the soft drink industry can be summarized by six fundamental themes:

- Changing consumer beverages preferences, featuring a shift toward health-oriented wellness drinks;

- Growing friction between bottlers and manufacturers in the distribution system;

- Continually increasing retailer strength;

- Fierce competition;

- Complex distribution system composed of multiple sales channels;

- Beverages safety concerns and more-stringent regulations.

While previously dominated by carbonated soft drinks, the industry is now more evenly balanced between carbonates, and product categories with a healthier image, such as bottled water, energy drinks and juice.

Overview of global non-alcoholic beverage industry
Source: Datamat

Legend: ■ Carbonates ■ Energy drinks □ Juices □ New Age Drinks ■ Bottled water ■

Bottled water 18%
New Age Drinks 10%
Carbonates 47%
Juices 20%
Energy drinks 4%

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* Whitepaper on Soft Drinks Industry- Deloitte and SAP

2.5   While carbonates are still the largest soft drink segment, bottled water is catching up fast, with an average of 58 liters consumed annually per capita. Among individual countries, Italy ranks number one in bottled water consumption, with the average Italian drinking 177 liters per year. Overall, bottled water represents the fastest growing soft drink segment, expanding at 9 percent annually. This growth is being partially driven by increasing awareness of the health benefits of proper hydration. The industry has responded to consumers' desire for healthier beverages by creating new categories, such as energy drinks, and by diversifying within existing ones. For example, the leading carbonated soft drink companies have recently introduced products with 50% less sugar that fall mid-way between regular and diet classifications. Similarly, a South African juice company has recently released a fruit-based drink that contains a full complement of vitamins and nutrients.

Relationship of Beverages Companies and Bottlers

2.6   Globally, the soft drink market works on the relationship of beverages companies and the bottlers where the key ingredient (which is concentrate) are supplied to the bottlers by the beverages companies for packaging and distributing the products in market. This structure often causes conflicts of interest between beverages companies and bottlers.   Many factors are contributing to the friction between bottlers and beverages companies:

(i)   Beverages companies often profit from increased concentrate sales at the expense of bottlers' margins.

- Beverages companies have historically had higher returns and lower capital requirements

- Bottlers have historically had lower returns and higher capital requirements for building and maintaining production and distribution networks.

(ii)   Bottlers continue to consolidate in an attempt to offset margin pressure through cost reduction. Specifically, size helps them to:

- Spread fixed costs over greater volume

- Make larger investments in automated production lines

- Contain the costs of acquiring new customers

- Increase customer loyalty.

(iii)   Declining prices have further reduced bottlers' margins.

(iv)   Soft drink manufacturers continue to develop new products and packaging, which increases operational complexity and, therefore, expenses for bottlers.

- More new soft drinks have been introduced in the last two years by the top beverages companies than were introduced in the entire decade of the 1990s. Examples include: Coke with Lemon, Vanilla Coke, Dr. Pepper Red Fusion, Pepsi Blue, DnL, Fanta Berry, SoBe,Mr.Green, Sierra Mist, and Mountain Dew, Code Red.

- While manufacturers view these new products as a way to build a portfolio of options to hedge against product successes or failures, bottlers see them as a burden since they often require additional capital expenditures

Beverages Industry - Specific Processes

2.7

(i)   Planned deliveries – Effective solutions feature powerful tools that businesses can use to efficiently load, dispatch, and track any number of deliveries. Emphasis is placed on eliminating redundant trips and matching the appropriate vehicles and drivers to customers for each delivery. By extending route management into the order management system, companies reap cost savings of 25% to 50%.

(ii)   Monitor route business – Beverages companies must be able to account for every item delivered, and take quick action to resolve item discrepancies. Best-in-class solutions provide powerful check-in and check-out functions that record all deliveries and returned goods. They also provide tools to monitor quickly and accurately the entire transportation operation, or that of a transportation supplier, from loading and delivery to accounting and settlement of returned goods. The system as a whole ensures complete loads, on-time deliveries, solid inventory control, and seamless invoicing.

(iii)   Keep track of empties – Best-of-breed beverages industry solutions paint a detailed picture of the entire empties situation, showing the location and status of crates and pallets, and helping optimize return logistics. It also permits quick access of each customer's empties account as well as print delivery notes or invoices recording the empties involved in a delivery.

(iv)   Manage rebates and bonus agreements – Rebate and bonus agreements are critical to enhancing relationships among beverages manufacturers, wholesalers and customers. Yet, the task of managing rebate

programs is becoming increasingly difficult as current rebate arrangements often involve numerous parties, including many that are not directly involved in the initial transactions. Effective beverages solutions provide companies with the tools needed to manage easily and accurately large, complex partner constellations with any number of bonuses or rebate arrangements. They also provide coupon management. These functions apply both to direct and indirect customers.

(v)   **Manage commissions** – In the beverages industry, complex commission structures are needed to motivate the sales force and to encourage them to push certain brands and to develop specific markets. Best-in-class solutions allow companies to complete commission based transactions, make payments both to internal and external sales forces, and track the payment of these commissions over time.

Soft Drinks Industry in India

2.8   The beverage market has witnessed rapid growth over the past few years in India. Increasing middle class population, rapid urbanization and rising disposable income are some of the major factors fuelling this growth. The carbonated drinks market is close to ₹ 6,000 crores and is growing by 10-12 per cent annually.

The fruit-based beverages market stands at ₹ 5,000 crores and is growing at 35-40 per cent annually. The fruit-based beverages market is divided into three segments — fruit drinks, nectar and 100 per cent juice — and are currently dominated by Dabur, Parle Agro, PepsiCo and HUL.

The Functional drinks segment is dominated by energy drinks. The current market size of energy drinks in India is around ₹500 crores and it is expected to grow at a CAGR of 25 per cent.

2.9   Within the hot beverages category, India is the largest producer of tea with a total turnover of around ₹8,500 crores, growing at a rate of 1-2 per cent annually. India is the world's fifth largest producer of coffee, accounting for 4 per cent of the world's production.

Fruit/ vegetable juice segment is expected to grow at a CAGR of 30 per cent in value terms, followed by the energy drinks segment at a CAGR of around 25 per cent in value terms.

Chapter 3
Methodology for Internal Audit

Standards on Internal Audit

3.1   The Institute of Chartered Accountants of India has, till date, issued eighteen Standards on Internal Audit (SIAs), which aim to codify the best practices in the area of internal audit and also serve to provide a benchmark of the performance of the internal audit services. While formulating SIAs, the Internal Audit Standards Board of ICAI takes into consideration the applicable laws, customs, usages, business environment and generally accepted internal auditing practices in India. The list of Standards on Internal Audit (SIAs) is given below:

SIA 1 Planning an Internal Audit

SIA 2 Basic Principles Governing Internal Audit

SIA 3 Documentation

SIA 4 Reporting

SIA 5 Sampling

SIA 6 Analytical Procedures

SIA 7 Quality Assurance in Internal Audit

SIA 8 Terms of Internal Audit Engagement

SIA 9 Communication with Management

SIA 10 Internal Audit Evidence

SIA 11 Consideration of Fraud in an Internal Audit

SIA 12 Internal Control Evaluation

SIA 13 Enterprise Risk Management

SIA 14 Internal Audit in an Information Technology Environment

SIA 15 Knowledge of the Entity and its Environment

SIA 16 Using the Work of an Expert

SIA 17 Consideration of Laws and Regulations in an Internal Audit

SIA 18 Related Parties

The Framework for Standards on Internal Audit comprises four components

viz., the Code of Conduct, the Competence Framework, the Body of Standards and the Technical Guidance.

3.2   Internal audit is conducted in variant economic, legal, cultural and business environments. The organisations in which internal audit is performed differ widely in size, structure, nature of business, scale, purpose, objectives and geographical spread. Further, the internal audit activity may be performed by an entity's employees or by some external agency. Thus, the Framework for Standards on Internal Audit applies to all the persons performing internal audit activity, irrespective of whether the function is performed in-house or by an external agency.

Purpose of Standards on Internal Audit (SIAs)

3.3   The purpose of Standards on Internal Audit (SIAs) is:

- To provide standards for quality of services during an internal audit.

- To codify the best practices in internal audit services.

Some important aspects on internal audit have been discussed in the following paragraphs.

Terms of Internal Audit Engagement

3.4   The client is expected to formally communicate the appointment to the internal auditor. Upon receiving the communication, the internal auditor should send an engagement letter, preferably before the commencement of engagement so as to avoid any misunderstandings. The internal auditor and the client/ auditee should record the terms of engagement in the letter or other suitable form of contract and it shall also confirm objective and scope of internal audit with the client.

The engagement letter should, generally, include reference to the following aspects:

- Objective of the internal audit

- Management's responsibilities

- Scope of internal audit (including reference to the applicable legislation, regulation and various pronouncement of ICAI).

- Access to records, documents and information required in connection with the internal audit

- Expectation to receive management's written confirmation in respect to representation made in connection with the audit.

- Basis on which fees shall be computed and the billing Arrangements thereof.

Any changes in the terms of the appointment should be communicated in written form. Moreover, the internal audit may be on a continuous basis, monthly, quarterly or even annual. It is important for the internal auditor to ensure that the periodicity of the internal audit is sufficient in the light of overall business condition.

Knowledge of the Entity and its Environment

3.5   Prior to accepting an engagement, the internal auditor should obtain a preliminary knowledge of the Beverages industry and of the nature of ownership, management, regulatory environment and operations of the entity subjected to internal audit, and should consider whether a level of knowledge of the beverages business adequate to perform the internal audit can be obtained.

Following the acceptance of the engagement, further and more detailed information should be obtained. To the extent practicable, the internal auditor should obtain the required knowledge at the commencement of the engagement. As the internal audit progresses, that information should be assessed, enhanced, updated, refined and validated as the internal auditor and the engagement team obtain more knowledge about the beverages business.

3.6   In case of continuing engagements, internal auditor should update and re–evaluate information gathered previously, including information in the prior year's working papers. The internal auditor should also perform procedures designed to identify significant changes that have taken place in the operations, control environment, technology and strategic processes since the last internal audit.

An understanding of business risks facing the entity increases the likelihood of identifying risks of material misstatement in the information subject to internal audit.

3.7   Knowledge of the beverages business is a frame of reference within which the internal auditor exercises professional judgment in reviewing the processes, controls and risk management procedures of the entity

It should be ensured that the internal audit engagement team assigned to an internal audit engagement obtains sufficient knowledge of the business to enable them to carry out internal audit work delegated to them. The internal auditor should also ensure that the audit team appreciates and understands the need to be alert for additional information and the need to share that information with the internal auditor and other members of internal audit team.

In order to make effective use of knowledge about the business, internal auditor should consider how this knowledge acquired, affects his review of internal controls and systems taken as a whole and whether his overall entity–wide assessment of systems, procedures, controls and risk management principles are consistent with his knowledge of the entity's business

The information and knowledge obtained by the internal auditor on the entity and its environment should be adequately documented in the engagement working papers

Audit Planning, Materiality and Sampling

3.8 After acquiring the knowledge of business and various laws and regulation applicable to the beverages industry, the internal auditor should plan out the internal audit activity. Planning helps in achieving the objectives of internal audit function.

Adequate planning ensures that:

- Appropriate attention is devoted to significant areas of audit.

- Potential problems are identified.

- Skills and time of the staff are appropriately utilised

- Work is carried out in accordance with the applicable pronouncements of ICAI.

- Work is carried out in conformity with the applicable laws and regulation.

In preparing an internal audit program, the internal auditor should obtain an understanding of the accounting and internal control system prevalent within the entity, exercise preliminary judgment regarding the critical areas to be considered during the internal audit. It also helps the internal auditor in determining the audit materiality, nature and extent of audit procedures to be adopted. While designing an audit sample the internal auditor should

consider the specific audit objectives, materiality, population from which the internal auditor wishes to select the sample, area of audit significance and the sample size.

Internal Control

3.9   Internal controls are a system consisting of specific policies and procedures designed to provide management with reasonable assurance that the goals and objectives it believes important to the entity will be met.

"Internal Control System" means all the policies and procedures (internal controls) adopted by the management of an entity to assist in achieving management's objective of ensuring, as far as practicable, the orderly and efficient conduct of its business, including adherence to management policies, the safeguarding of assets, the prevention and detection of fraud and error, the accuracy and completeness of the accounting records, and the timely preparation of reliable financial information. The internal audit function constitutes a separate component of internal control with the objective of determining whether other internal controls are well designed and properly operated.

3.10   Internal control system consists of following inter-related components:

- Control (Or Operating) Environment
- Risk Assessment
- Control Objectivity Setting
- Event Identification
- Control Activities
- Information and Communication
- Monitoring
- Risk Response.

The system of internal control must be under continuous supervision by management to determine that it is functioning as prescribed and is modified, as appropriate, for changes in environment. The internal control system extends beyond those matters which relate directly to the functions of the accounting system. The internal auditor should obtain an understanding of the significant processes and internal control systems sufficient to plan the internal audit engagement and develop an effective internal audit approach. The internal auditor should use professional judgment to assess and

evaluate the maturity of the entity's internal control. The auditor should obtain an understanding of the control environment sufficient to assess management's attitudes, awareness and actions regarding internal controls and their importance in the entity. The internal auditor should examine the continued effectiveness of the internal control system through evaluation and make recommendations, if any, for improving that effectiveness.

The importance of internal controls in a beverages entity need not be over-emphasized. Internal audit plays a major role in determining the effectiveness of internal controls and highlights areas for improvement. The Internal auditor may also refer to Standard on Internal Audit (SIA) 12, "Internal Control Evaluation" for a detailed discussion on internal control.

Internal Audit in an Information Technology Environment

3.11   Computer Information System (CIS) environment exists when one or more computer(s) of any type or size is (are) involved in the processing of financial information, including quantitative data and the significance in relation to the audit, whether those computers are operated by the entity or third party.

The overall objective and scope of internal audit does not change in a CIS environment. However, the use of computer changes the processing, storage, retrieval and communication of financial information and may affect the accounting and internal control systems employed by the entity. Moreover, the risks involved in an internal audit may too undergo a change. The internal auditor should have sufficient knowledge of the CIS environment to plan, direct, supervise, control and review the work performed.

3.12   The data in an entity operating in CIS environment is, generally, voluminous. The CIS automatically generates material transaction or entries and exchanges transaction automatically with other organisation as in electronic data interface (EDI) systems. Source documents, computer files and other evidential matter exist only for short period and in machine readable form. The use of the Computer Assisted Audit Technique (CAAT) shall increase the efficiency in the performance and enable the internal auditor to economically apply certain procedures to the entire population or accounts transaction.

The internal auditor should understand the CIS Environment in designing audit procedures to reduce the audit risk to an acceptable low level. The

internal auditor should also document the audit plan, the nature, the timing and the extent of audit procedures performed and the conclusions drawn from the evidence obtained which may be in the electronic form. The internal auditor should ensure that such electronic evidence is adequately and safely stored and is retrievable in its entirety, as and when required.

The internal auditor may refer to Standard on Internal Audit (SIA) 14, "Internal Audit in an Information Technology Environment" for guidance on procedures to be followed when an audit is conducted in a computer information systems (CIS) environment.

Internal Audit Documentation

3.12 Internal audit documentation should be designed and properly organized to meet the requirements and circumstances of each audit. It should be sufficiently complete and detailed for an internal auditor to obtain an overall understanding of the audit. All significant matters which require exercise of judgment, together with internal auditor's conclusion thereon should be included in the internal audit documentation. Documentation prepared by internal auditor should enable reviewer to understand:

- The nature, timing and extent of audit procedures performed to comply with SIAs and applicable legal and regulatory requirements;

- The results of audit procedures and audit evidence obtained;

- Significant matters arising during the audit and conclusions reached thereon; and

- Terms and conditions of an internal audit engagement/ requirements of internal audit charter, scope of work, reporting requirements, any other special conditions, affecting the internal audit.

3.13 It should cover all the important aspects of an engagement *viz.*, engagement acceptance, engagement planning, risk assessment and assessment of internal controls, evidence obtained and examination/ evaluation carried out, review of the findings, communication and reporting and follow up.

Overview of Compliance

3.14 Compliance means ensuring conformity and adherence to regulatory acts, rules, procedures, laws, regulation, directives and circulars. Standard on Internal Audit (SIA) 17 issued by the ICAI relating to "Consideration of Laws and Regulations in an Internal Audit" states that when planning and

performing audit procedures and in evaluating and reporting the results thereof, the internal auditor should recognize that non-compliance by the entity with laws and regulation that may materially affect the financial statements. However, an audit cannot be expected to detect non-compliance with all laws and regulations. Detection of non-compliance, regardless of materiality, requires consideration of the implications for the integrity of management or employees and the possible effect on the other aspect of the audit.

Non-compliance with laws and regulations could result in financial consequences for the entity such as, fines, litigation, etc. Internal auditor cannot be expected to detect noncompliance with all laws and regulations; however this argument shall not apply to engagements where the internal auditor is specifically engaged to test and report separately on compliance with specific law and regulations.

3.15   `The management is responsible to ensure that the entity's operations are conducted in accordance with laws and regulations. The responsibility for prevention and detection of non-compliance shall be that of the management; however the internal auditor should plan and perform the internal audit recognising that the internal audit may reveal conditions or events that would lead to questioning whether an entity is complying with laws and regulations.

The term "Non-compliance "refers to acts of omission or commission by the entity being audited, either intentional or unintentional, which are contrary to the prevailing laws and regulations. Such acts include transactions entered into by, or in name of the entity or on its behalf by the management or employees. However, non-compliance does not include personal misconduct (unrelated to the business activity of the entity) by the entity's management or employees.

Understanding of Laws and Regulations

3.16   Laws and regulation vary considerably in their relation to the financial statements. Some laws or regulations determine the form or content of an entity's financial statement or the amounts to be recorded or disclosures to be made in financial statements. Other laws or regulation are to be complied with by management or prescribed by the provisions under which the entity is allowed to conduct its business. Non-compliance with laws and regulation could result in financial consequences for the entity such as, fines, litigation, etc. It also has a potential effect on going concern as an entity.

The internal auditor should plan and perform the audit recognizing that the audit may reveal conditions or events that would lead to questioning whether an entity is complying with laws and regulations. In order to plan the internal audit, the internal auditor should obtain understanding of the legal and regulatory framework applicable to the entity and how the entity is complying with that framework.

3.17 To obtain this understanding, the internal auditor would particularly recognize that non-compliance of some laws and regulations may have a fundamental effect on the operations of the entity and may even cause the entity to cease operation, or call into question the entity's continuance as going concern. To obtain the understanding of laws and regulations, the internal auditor would ordinarily:

- Use the existing knowledge of the entity's industry and business.

- Inquire with management as to the laws or regulations that may be expected to have a fundamental effect on the operations of the entity.

- Inquire with management concerning the entity's policies and procedures regarding compliance with laws and regulations.

- Discuss with management the policies or procedures adopted for identifying, evaluating and accounting for litigation claims and assessments.

After obtaining the understanding, the internal auditor should perform procedures to identify instances of non-compliance with those laws and regulations where non-compliance should be considered while preparing financial statements, specifically:

- Inquiring with management as to whether the entity is in compliance with such laws and regulations.

- Inspecting correspondence with the relevant licensing or regulatory authorities.

Significance of Compliance

The significance of compliance is:

(a) The benefits to the Industry are:

- Helps in compliance with legal terms and covenants and thereby reduces penalties and charges

- Increased Internal Control

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- Reduction of internal frauds and losses
- More time available for other core activities
- Increases efficiency in operations
- Customer satisfaction.

(b)   The benefits to the stakeholder are:

- Ensures risk containment and safer market place
- Better investor confidence
- Uniform practices
- Better image, hence, better value for the investor.

Chapter 4
Business Process Overview and
Risk Assessment

4.1   Process Risk Assessment (PRiA) is used to perform a risk assessment for each Business Process. There should be one form created for every process that could potentially be audited. This risk assessment form should be updated year after year for any new risk assessment information. The risk evaluation helps to determine the risk level for each process. Risk levels can be high, medium or low depending on each evaluation. The risk level will determine what detail of testing should be performed on the processes.

Procurement Process

4.2   The purpose of the procurement procedures is to ensure that purchases are made judiciously, and that goods of acceptable quality are purchased from reputable vendors, at competitive terms and in a timely manner. Further, to ensure that timely disbursements are made.

These procedures cover goods and services, but exclude purchases from inter-unit locations and capital purchases for projects, etc.

The various types of goods and services purchased are:

(i)   Raw and packaging materials (excluding concentrate)

(ii)   Concentrate

(iii)   Beverages cooler and sales assets which are generating sales volume.

(iv)   Capital goods

(v)   Stores and spares

(vi)   Professional and other services

(vii)   Utilities e.g., electricity, telephone, etc.

(viii) Marketing materials, e.g., premier items, etc.

4.3   Requesting or User department is required to:

(i)   Check availability of material on hand with stores;

(ii)   Prepare PRs in a timely manner;

(iii)   Obtain appropriate (budgetary and other) approval on PR;

(iv)   Allocate applicable department, location and budget codes.

4.4   Purchase function is required to:

(i)   Review PR for completeness, approval, etc.;

(ii)   Plan purchases of regular raw and packing material and consumables;

(iii)   Obtain and evaluate quotations from vendors;

(iv)   Document new vendor evaluation and selection on vendor master form (VMF);

(v)   Negotiate price and other terms of purchase;

(vi)   Prepare purchase order and obtain approvals per COA;

(vii)   Circulate copies of PO;

(viii)   Co-ordinate with vendors for logistics, including for return of rejected goods;

(ix)   Monitor items dispatched on returnable basis;

(x)   Monitor vendor performance over time.

4.5   Finance department is required to:

(i)   Approve POs and update budget commitment;

(ii)   Verify vendor invoice and check for arithmetical accuracy etc.;

(iii)   Perform three-way match, matching invoice, GRN and PO;

(iv)   Update excise records on receipt of vendor's excise invoice (also rejections);

(v)   Record the payable to vendor and withhold taxes, as applicable;

(vi)   Disburse to vendors on a timely basis and deposit taxes withheld;

(vii)   Reconcile with the vendors' statement of account periodically;

(viii)   Undertake cut-off procedures periodically.

4.6   Stores department is required to:

(i)   Receive goods and prepare GRN, on the basis of supplier's delivery challan/ packing list and physical verification;

(ii)   Provide excise invoice, where applicable, to the excise duty section;

(iii)   Update stock ledger, after quality approval of goods;

(iv)   Separately store rejected goods in a marked area and co-ordinate their return;

(v)   Prepare list of obsolete or unusable items, periodically.

4.7   Quality assurance department is required to:

(i)   Check quality and approve or reject material for acceptance;

(ii)   Approve GRNs for goods accepted, and rejection reports for others.

4.8   The requesting or user department is to initiate purchases of goods or services on a Purchase Requisition (PRs). These PRs are to be authorized by the department head as per COA, after verifying the availability of budget and the validity of the need to purchase.

For more regularly consumed raw and other materials (e.g., concentrate, sugar, crowns, CO2, HSD, LDO, activated carbon, filters, etc.), a PR need not be prepared. Procurement for these items is to be monitored by the Supply Chain department, based on the store's inventory status on the Daily Stock Movement Report. The procurement decision is to take into account the production plan (including maintenance schedule), delivery lead-time and contingencies. For certain utility related expenses e.g., telephone, electricity, courier charges, etc., a PR is not necessary.

4.9   All purchases are to be made from approved vendors only. Where expenses are incurred by third parties, and reimbursed by the Company, a prior vendor approval is recommended.

Based on approved VMF received, the working capital section in Finance department is to update the vendor master file. This is to be arranged alphabetically, and include details of vendor name, code, address, telephone number, bank account and the date of activation, and is to be circulated to purchase section and finance. Changes to the vendor master file should be made on the basis of approved VMFs. Requests for changes in basic vendor information (e.g., address, bank account and payee name) should be made by the vendor in writing. The alphabetic list of vendors is to be reviewed before a new vendor is added to check that multiple vendor numbers are not issued to the same vendor.

4.10   When goods are received, the gate security should guide the vehicle to the designated receiving area, preferably separated from the stores. The storekeeper is to carry out a preliminary visual inspection of goods, and compare the items received and quantities, to the vendor's packing

list/delivery note and PO. The storekeeper is to prepare a Goods Receipt Note on the receipt of goods. In case of services, the user department is responsible for confirming the receipt of services, and is to evidence it on the invoice at the point of its approval. The receipt of smaller transactions (say below INR 1,000) may be assumed, as the cost of verification etc., may exceed the exposure.

Where an order is delivered in part, the stores department is to record the partial receipt on the reverse of the PO, to ensure receipts do not exceed the ordered quantity.

4.11   For sugar (and some other items purchased in bulk quantities), weight of the entire load is to be taken on a weighbridge at the time of receipt, where possible. Further, each bag of sugar is to be weighed by production before it is poured into the hopper, and recorded on a Sugar Weight Register. This identifies the shortages by supplier. The differences, if substantial, are to be recovered from the supplier, and recorded on a Materials Returned to Stores Note and provided to stores who in turn are to take it up with the Supply Chain Department.

The AP section is to maintain a GRN Register to track the receipt of invoices, excise copy of invoice, lorry receipt, and to control freight payments. This also facilitates making month-end accruals. For freight payments, the receiver is to record the GRN reference on the reverse of the (transporter's) Lorry Receipt (LR), to be submitted to AP with the freight invoice. The AP section is to link the LR, GRN and the PO, verify the claim and to update the GRN register for freight payment. Emergency freight payments may be made at the time of the receipt of goods from the petty cash. In such cases, the AP section is to update the GRN register next day to prevent duplicate freight payments.

4.12   The Quality Assurance department (QA) is to inspect goods received, and document the quantity approved on the GRN. QA is to track the rejection record of vendors, and take-up potential quality issues with the purchase function. The purchase function is to monitor overall vendor performance, including timeliness, quality, etc. The storekeeper is to update the stock ledger on the basis of the quality approved GRN. The accrual for the payable is to also correspond to this quantity. Thus, rejected quantities are not taken as receipts in the system.

For rejections, QA is to prepare a Quality Control Rejection Report and is to be routed through excise function to enable reversing of the Modvat credit, and the copy for accounting purposes. Where replacement for goods rejected

and returned is received, a fresh GRN is to be prepared and the GRN labeled as "replacements", to facilitate the AP function to perform the three-way match. The AP section is to ensure that invoices against which materials have been rejected are not recorded. Where this has happened, a debit note is to be promptly made. Similarly, for partial rejections, the vendor's invoice is to be recorded at full, and a debit note raised for the value of the rejection.

The AP section is to perform a three-way match between PO, GRN and the invoice. The AP section is not to alter the invoice (e.g., invoice number, date, quantity, amount etc.). A separate debit note is to be issued where deductions are to be made from the invoice. After three-way-match, a pre-numbered Purchase Journal Voucher is to be prepared.

4.13   At month-end, open GRNs are to be accrued for at standard cost (where units use standard costing), based on the vendor's excise invoice or at the PO rate. Accrual is to be reversed at the beginning of the next month.

The AP section is to ensure timely payments to suppliers, and to process invoices by their due date. The disbursement team is to consider early payment discounts and manage cash flows optimally. Access to unused checks is to be restricted to authorized personnel only. Further, a record of checkbooks obtained from the bank, and those issued for use, is to be made on a checkbooks Issue Control Log. All checkbooks are to be stamped "Account Payee only" on receipt from the bank, except one checkbooks, which is to be used for petty cash withdrawals.

4.14   Periodically, a statement of account or confirmation of balance is to be obtained from vendors, to reconcile the payable balance as per books with the records of the vendors. This is especially important for vendors with running accounts. The AP staff involved in preparing (or approving) PJVs or disbursement staff involved in checks preparation should not carry out the reconciliation.

Certain items are classified as central purchase items and it is mandatory for all locations to 'pool purchase' those items. These include all ingredient and packing materials, and certain chemicals, stores and spares and capital goods. The detailed list of central purchase items is available with the Region Offices. The benefit of central/ pool purchasing is better leverage on prices and terms, based on the combined volume for all locations.

4.15   Central purchases are to be similar to regular purchases, except for:

- Corporate office to receive procurement plans for the central purchase items from each Unit;

- Based on the combined volumes planned, corporate office to negotiate prices with central vendors;

- Corporate office to raise POs on the central vendor, with a copy to the Unit;

- Units to indicate the dispatch instructions to the central vendor;

- Unit to receive goods, perform three-way match and process payment to vendor under intimation to Corporate office;

Process Risk Assessment (PRiA)

4.16   The following table gives in detail Process Risk Assessment (PRiA):

Risk Q No.	Sub-Process	Risk Question	Remarks
1	Vendor Master File	Have there been any significant vendor additions during the period at this location?	Higher the number of addition to the vendor master, higher the risk rating to this sub-process.
2	Vendor Master File	Have there been any changes to the VMF during the period (i.e., vendor deleted, vendor information changed, etc.)?	Significant changes in the vendor master file leads to higher risk rating to this sub-process.
3	Vendor Master File	How frequently is the VMF reviewed and maintained at this location?	Periodic review of VMF or audit trail helps in ensuring that no unauthorised change has been made. Higher the frequency, lower the risk.
4	Vendor Master File	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
5	Vendor Selection	Have there been any significant vendor additions during the period at this location?	Higher the number of addition to the vendor master, higher the risk rating to this sub-process.

Risk Q No.	Sub-Process	Risk Question	Remarks
6	Vendor Selection	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
7	Purchase Orders	Were there any purchase orders issued outside of the ERP System at this location during the period? What was the value of purchase orders issued outside of ERP during the period?	Higher the number of manual purchase orders, higher is the weightage or risk ranking of the sub-process.
8	Purchase Orders	Have there been any changes in the location's COA during the period?	Significant changes in the COA leads to higher risk rating to this sub-process.
9	Purchase Orders	Are purchase price and quantity tolerances defined in the system?	If tolerance limits are not defined then 3-way match in procurement process cannot be ensured. Absence of tolerance indicates higher risk rating to this sub-process.
10	Purchase Orders	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher is the weightage or risk ranking of the sub-process.
11	Goods & Services Receipts	Does this location have a significant amount of open PO's or aged 3-way match exceptions?	Higher the number of open purchase orders/ 3-way exceptions, higher is the weightage or risk ranking of the sub-process.

Risk Q No.	Sub-Process	Risk Question	Remarks
12	Goods & Services Receipts	What is the value of goods received but not invoiced at this location?	Higher the value of open GRIR, higher is the weightage or risk ranking of the sub-process.
13	Goods & Services Receipts	Has there been any fraud noted at this location in regards to procurement process? Specify the number of cases?	Higher the number of fraud cases, higher the weightage or risk ranking of this sub-process.
14	Goods & Services Receipts	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher is the weightage or risk ranking of the sub-process.
15	Verification & Approval	Have there been any changes in the location's COA during the period?	Significant changes in the COA leads to higher risk rating to this sub-process.
16	Verification & Approval	Have any new significant recurring payments been set up at this location during the period?	Significant recurring payments lead to higher risk rating to this sub-process.
17	Verification & Approval	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher is the weightage or risk ranking of the sub-process.
18	Debit Notes	Was there a significant amount of debit/credit memos issued at this location?	Higher the number of debit/credit memos, higher is the risk rating to this sub-process.

Risk Q No.	Sub-Process	Risk Question	Remarks
19	Debit Notes	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher is the weightage or risk ranking of the sub-process.
20	Freight Expense	Is there significant increase in the freight expense?	Significant increase in the freight expense leads to higher risk rating to this sub-process.
21	Freight Expense	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher is the weightage or risk ranking of the sub-process.
22	SOD	Has there been any turnover in personnel that perform key AP duties that could result in an employee performing incompatible tasks?	Frequent/ Major Change in function for Procurement role may lead to higher risk rating for this sub-process.
23	SOD	Has there been any fraud noted at this location in regard to AP during the past 3 years?	Higher the number of fraud cases, higher the weightage or risk ranking of this sub-process.
24	SOD	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher is the weightage or risk ranking of the sub-process.

Production Process

4.17 The procedures cover the requisition and receiving of raw, packing and other materials, including empties for production, as per plan. This

includes returning any excess quantities of material to the stores and the transferring of completed production to the warehouse.

(i) Production Department

(a) Prepare planned and a firm next day's production plan.

(b) Requisition for raw, packing and other materials for production.

(c) Prepare production report for each shift and line.

(d) Record breakage during production.

(e) Transfer product to shipping.

(f) Return excess raw and packing material to stores and empties to shipping.

(g) Secure material, if any, on the production floor.

(ii) Sales Department

Provide detailed sales forecast.

(iii) Stores Department

(a) Issue raw, packing and other materials.

(b) Receive any returns from the production department.

(iv) Procurement Department

Ensures availability of materials as per the production plan.

(v) Warehousing Department

(a) Prepare status of empties and fills to facilitate production planning.

(b) Provide empties for production and receive fills from production.

(c) Secure the fills and the empties storage area.

(d) Update excise records, as applicable.

(vi) Quality Department

(a) Perform on-line quality checks during production.

(b) Compute raw material yields

(vii) Finance Department

(a) Record accounting entries for production and consumption of materials.

(b)   Determine and account for other manufacturing costs.

4.18 he sales department prepares sales forecast by brand and pack, broadly in line with the annual business plan, latest sales estimate, specific promotions and the expected market requirements.

Other key factors relevant for this plan are:

- product already available at the plant and distribution warehouses;

- availability of raw and packaging material;

- availability of empties (including new glass);

- production capacity;

- length of time for changing/ cleaning the equipment;

- size of available warehouse space;

- beverages product shelf life; and

- outsource options or requests from other locations.

Based on the Daily Production Plan, the production and QA departments are to requisition and obtain raw, packing, and other material from the stores on a Material Requisition-cum-Issue Note. Upon receipt, the material issue note is to be signed to acknowledge receipt.

The shipping copy of the Daily Production Plan serves as a requisition for empties. The stack from which empties are to be issued for production is to be identified and counted. The empties received from shipping are to be acknowledged by production on an Empties Transfer to Production Form. In case empties are received more than once in the same shift, this form is to be prepared for each such issue by shipping and acknowledged by production.

After each shift, excess inventory on the shop floor is to be returned to stores on a pre-printed and pre-numbered Material Return Note. This is to be prepared in duplicate: the original for stores and the book copy for production. Less preferably, where a secure shop floor store exists and where the quantities are small (and likely to be consumed in the next day or so), the production department may hold unutilized material. This is to be recorded on a Shop Floor Stock Register along with the consumption.

Unused bottles and cases, along with the dirty, scuffed, foreign, other brand or chip neck bottles are to be returned to shipping, on the Empties Transfer To/ From Production.

4.19   High or low fills, cases of incorrect packing or those otherwise identified as unfit by production must be uncorked immediately, to prevent mix-up with good product.   These bottles are to be excluded from the day's production count and drained with the empties being handed over to shipping.

Similarly, samples collected by QA are to be excluded from production. Upon completion of quality tests, the empties are to be returned to shipping on the Empties Transfer to/ from Production Form.

Product put-on-hold or otherwise rejected by QA is to be separately identified on the Empties Transfer to/ from Production Form. Further, "Reject" stickers are to be pasted by QA on each case, and stacked separately by shipping to prevent distribution. Further, draining is to be carried out by shipping, upon receipt of Operation's Head approval.

A line-wise count of the finished product is to be recorded by production on a Production Count Sheet. This is prepared in original only and where automated counters exist, these are to be cross verified with the counters. Where automated counters are used, they should be zeroed before the start of the shift. Further, adjustments are to be made to the counter reading for any empty bottles which pass the counter. Based on counts, the production department is to prepare a Daily Shift and Line-Wise Production Report.

Production department is to prepare a Glass Reconciliation for each shift, taking into account any dirty, scuffed, chip neck, foreign or unsorted bottles returned to shipping, determining the breakage during the production process. Bins are to be placed at specific areas around the line to collect broken bottles. These are to be weighed at the end of the shift to determine (and possibly corroborate) the breakage arrived in Glass Reconciliation, by location.

Daily raw material usage is to be recorded by QA/ production, to determine 'yields'. For this purpose, based on the finished production transferred to shipping, the raw and other materials theoretical consumption is computed. This compared with the actual consumption provides the yield. Similarly, these are to be prepared on a monthly and year-to-date basis. Line utilization levels are also to be calculated, representing the percentage of finished product produced, in comparison to the rated speed for the line.

Production is to transfer fulls to shipping on the Fulls Transfer Form. Shipping is to count the fulls received and match with the production reported on this form, and sign to acknowledge the receipt. Any difference is to be investigated and resolved promptly.

Fulls identified as 'on-hold' by QA is to be recorded in the remarks column of the Fulls Transfer Form, and excluded for updating the excise records. Once approved these are to be corrected on the excise and shipping records. The rejected stock is to be corrected in the shipping records and drained.

Typically, finished products may be moved to the shipping area while production continues. Accordingly, these are to be stored in a separate area within shipping and counted at the end of the shift to determine the production and the quantity transferred. Less preferably, in certain cases product may also have to be dispatched from the day's production. In such cases, production is to be determined taking into account dispatches from current production.

At month end, the finance and the production departments are to record the work-in-progress, if any. Typically, this may be in the form of unused raw or final syrup. The syrup levels in mixing tanks are to be recorded along with the breakdown of equivalent raw materials (at standard conversion factor) on a Month-end Report.

The finance department is to carry out the following activities and periodically process accounting entries as follows:

(i)   Daily:

    (a)   Ensure excise record is updated for production reported.

        [Note: Excise duty is also payable for captive consumption and breakage of fulls in the shipping area. However, no duty is payable on rejected goods, identified prior to their moving into the bonded warehouse, and samples picked up by QA.]

    (b)   Further, that the quantities dispatched per shipping records, agree with the excise records (therefore the finished stock in the shipping area agrees with the excise records).

    (c)   In the accounting system (ERP), record the quantity of finished goods produced by brand and pack to trigger the automated entries for cost of goods sold, etc.

(ii)   Monthly:

    (a)   Perform physical verification of WIP. Based on Month End WIP Report, value equivalent raw material components and record entry.

(b)   Record the month's production entry based on the month's glass reconciliation record breakage.

Sales and Accounts Receivables

4.21   The process pertaining to sales and accounts receivables are explained as per following paragraph.:

Check-in Check-out Process

4.22 The purpose of Stock-out and Stock-in procedures is to establish controls over inventory in the direct route selling process. These procedures describe the manner in which the hand over or takeover of Company products is to occur between functions and to establish the responsibility (for custody).

Typically, a direct route sale is undertaken from a distribution warehouse/ depot, or in certain cases, the plant warehouse. All vehicles on which product is loaded, must be subject to Stock-out and Stock-in procedures, including non-company owned vehicles.

Stock-out and Stock-in duties are performed by checkers. They are required to:

- Check physical stock of fulls, empties and cases given/ received to/ from salesmen;
- Check and report empties for damages and chip necks at Stock-In;
- Prepare Load-out summary.

Salesman is required to:

- Count quantity loaded/ unloaded and sign-off on load sheet;
- Secure vehicle and promptly leave location upon signing of load sheet;
- Sort empties by brand and pack before Stock-In.

Warehouse supervisor is required to:

- Oversee the entire Stock-out and Stock-in process;
- Ensure stocks are loaded on a first-in-first-out (FIFO) basis;
- Ensure physical security controls over Stock-Out and Stock-In area;
- Organize periodic spot checks of vehicles, just outside the warehouse;
- Ensure timely updating of warehouse stock records.

Each salesman on his return from a route is to provide the quantity and product-mix (including premia and other items) for the next day's route. This is to be recorded centrally, either on an assigned board or on a preprinted Direct Load-out Requisition (LR), prepared in original. Telephonic requests received directly at the warehouse are also to be recorded on the LR.

Considering factors like reasonableness, availability of product and sales target planned, the sales supervisor is to appropriately amend and authorize the LR for various routes. The approved LR is to be handed over to the shipping in-charge, to organize the loading of vehicles.

For second or subsequent loads, quantities may be provided to salesmen, based on their requests. In some cases, it may be logistically more convenient to operate feeder vehicles to deliver the product to the route salesman, for subsequent loads.

The loaders are to load vehicles with product in accordance with the LR. Quantities loaded on route vehicles are to be recorded on a preprinted and pre-numbered Load Sheet. Where more than one load is dispatched on the same day, a separate load sheet is to be prepared for the second or subsequent loads, after completing Stock-In procedures for the earlier load. Also a reference is to be given of the earlier load sheet, so as to facilitate settlement. Quantities loaded on feeder vehicles are to be recorded on a pre-printed and pre-numbered Feeder Load Sheet.

The checkers are to supervise the loading, including for non-company vehicles, ensuring no product is concealed in the route truck cabin or other areas. At the time of handing over stock, the salesman is to perform an independent and blind count of stocks on the vehicle assigned to him, and call out his count to the checker. Upon agreeing the count, the salesman and the checker are to both sign the load sheet.

From the point of signing the load sheet, the accountability for the stock passes on to the salesmen, who are to promptly leave the facility. Using the salesman's load sheet, the gate security is to check the paperwork and inspect the vehicle for any concealed stocks, and then allow the vehicle to exit.

When route (or feeder) vehicles return to the warehouse, products are to be unloaded in the presence of both the checker and the salesman. The checker should take a count independent of the salesman, of the unsold fulls and empties, i.e., bottles, canisters and crates collected.

When the salesman and the checker agree on the count, it is to be recorded on the load sheet (the last load sheet, if more than one has been issued).

The original load sheet (after check in) is to go to the settlement clerk, and the second copy is to remain as book copy and used for updating stock records.

The warehouse supervisor is to update the stock register on the basis of the net load on load sheets, and prepare a Net Load Summary. Further, the warehouse supervisor is to prepare a Route Breakage Report for the bursts (liquid and bottle lost), leakage (only liquid lost) and breakage (only bottle lost) and obtain approval of the sales supervisor.

Direct Sales On-Route Procedures

4.23 On-route, a salesman is to visit each outlet on the route map. The salesman is to complete the cash or credit invoice for the sale of product, less return of empties, collect cash and obtain the signatures of the customer.

The on-route procedures describe the controls applicable to salesmen, in recording sales, monitoring the inventory of fulls and empties, and handling the cash and checks collected.

Route salesmen are responsible for all items loaded on their vehicles, as well as for cash, checks and credit memos collected, along with the paperwork associated with the daily sales.

Salesmen are required to:

- Secure the product and cash on-route;

- Make credit sale only to approved credit parties;

- Ensure billings are at correct rates;

- Extend discounts per approved schemes only;

- Account for pre numbered documents;

- Complete paperwork prescribed on-route.

On-route sales are to be recorded by salesmen on a preprinted and pre-numbered Cash Sales Invoice or Credit Sales Invoice, depending on whether sales are for cash or credit. Further, the receivable or payable on account of bottles and cases is to be recorded on a pre-printed pre-numbered Deposit Slip.

All invoices are to be signed by the salesman. Further, each credit sale invoice and where a trade scheme is in force, each cash invoice is to be signed by the customer or his representative also. For a credit invoice this

acknowledges the liability to pay. In other cases, the signature confirms the receipt of free goods or scheme. Where sales is partly on credit and partly on cash, a credit sales invoice is to be used, with the cash collected being recorded through a Collection Receipt.

For all the fulls sold, equal empties are to be collected. Where a difference arises, the deposit for the differential is to be collected/ refunded recording it on the deposit slip. Salesman should bring back empties sorted by brand, and check for any chip necks, breakage/ damage, which is recoverable from the customer.

On-route, salesmen are to also collect debtor dues for credit sales made earlier. For this, salesmen are to issue a pre-printed and pre-numbered Collection Receipt.

All cases given on loan have to be pre-approved by the Sales department. Further, the total value of cases given on credit should not exceed the credit policy limits, unless appropriately approved.

Direct Route Cash Collection Procedures

The purpose of the route cash collection procedures is to establish controls over cash and check collections for cash sales made on routes by salesmen and collections from debtors. The procedures describe the manner in which cash collections are to be reported by salesmen and handed over to cashiers. Further, how cash collections are to be consolidated and banked. At each stage when cash is accessed or transferred, accountability and responsibility is to be fixed, building in adequate segregation in processes.

Salesmen are required to:

- Secure cash on-route and in-depot (before deposit with cashier);

- Report cash and check collections from customers;

- Deposit day's cash and check collections before leaving the location;

- Reconcile promptly any discrepancies in cash collection and deposit.

Cashiers are required to:

- Count cash and check receipts in the presence of the salesman;

- Perform a preliminary review of the validity of checks accepted;

- Verify the cash detail form prepared by the salesman;

- Ensure safety of cash, and hand over for deposit with bank;

- Ensure timely deposit of cash in the bank;

Head Cashier is required to:

- Summarize cash and check collection by cashiers and prepare bank pay-in-slip;

- Reconcile cash collections with that deposited;

Depot Accountant is required to:

- Perform a physical cash count;

- Maintain details of post-dated checks in order of due date;

- Update the bounced check register;

- Prepare a list of parties with check facility withdrawn.

Direct Sales Route Settlement Procedures

4.25   The settlement procedure considers the net load taken out and cash, check and credit memos brought back by a salesman. Each salesman is responsible to account for the value of product taken out by him, and account for it with credit invoices for credit sales, and check and cash for cash sales. Typically, this process must be completed before a salesman leaves with the next day's load.

The purpose of settlement is to safeguard company assets, as also to protect staff involved, by defining clear areas of responsibility and accountability, while ensuring a good control environment. These procedures cover reporting of the net load based on load reports, sales invoices, cash and checks collected and credit sale invoices.

A salesman is to obtain authorization for any free products provided on route (does not include scheme frees). Also the bursts, leakage and breakage identified on the load sheet are to be authorized by the sales department. Until approved, these are to be charged to the salesman.

The settlement clerk is to check that the relevant supports are received, the rates used are current and no unauthorized changes have been made on invoices. Further that frees and discounts are in line with the applicable and approved schemes, and credit provided is authorized. Also that bursts, leakage and breakage are authorized.

In certain cases, to reduce the settlement time, only a quick settlement may be carried out immediately on the return of the salesmen, and the final settlement may follow on to the next morning. In quick settlement, the net

load would be accounted for on the same day. However, the individual sale invoices that make-up the net load would be accounted for subsequently (before the salesman departs with the next day's load), as part of the final settlement process. Accordingly, in a quick settlement, only the credit sale invoices are to be recorded (and the cash sale invoices recorded subsequently). At this stage any unauthorized credit is to be identified and recorded as a salesman shortage. However, where a final settlement takes place immediately, the cash sale invoices would also be recorded.

Based on the above, the system is to compute the settlement, identifying any salesman shortage, and printing the entire information on a Settlement Sheet. The signatures of the salesman are to be obtained. When all sale invoices are recorded, a load variance may arise where the net load reduced by bursts, leakage and breakage does not add up to the quantities per the individual cash and credit invoices. Such difference is to be investigated and recorded as sales made to the salesman. These are to be tracked in an exception report and minimized.

Upon completion of all settlements for the day, the settlement clerk is to summarize these on a Summary Settlement Sheet. The total net load for all settlements should be reconciled with the warehouse inventory records. Further, the net load should be reconciled to the sales recorded and frees and breakages etc. charged-off. The credit sales are to be separately compared with the accounts receivable balance updated and cash sales to the collections.

Indirect Sales

4.26 Indirect sales comprise sales to distributors for onwards sale to outlets. These procedures define the recommended controls over indirect sales, specifically pertaining to:

- The handing over of product to distributors and the collection of empties;
- Receivables collection and credit control; and
- Other aspects like, compliance with agreements.

Indirect sales could be made both from the plant and distribution warehouses. Typically, dispatches are made against an order received from a distributor after credit approval by finance.

Sales to distributors are recorded as (end-customer) sale. However, it is useful to have further details of the distributor's customer base, network, etc.

Also, the company may often support the indirect distribution process by monitoring (and supervising) important distributor routes, and assist in various marketing and other programs in the distributor's market.

Distribution department is required to:

- Appoint distributors and establish a distributor network;

- Process approved sale orders and prepare invoices;

- Arrange logistics and ship product;

- Co-ordinate with distributors for collections;

- Monitor distributor stocks and their set-up.

Finance department is required to:

- Check credit limits and approve sale orders in compliance with credit policy;

- Record collections from distributors;

- Periodically reconcile outstanding balances from distributors;

- Identify and follow-up on outstanding balances.

Shipping or warehouse supervisor is required to:

- Dispatch goods as per approved order form;

- Ensure stocks are dispatched on a first-in-first-out (FIFO) basis;

- Ensure physical security controls over load-out area;

- Update warehouse stock records in a timely manner.

To undertake indirect sales, distributors are appointed by the distribution/ sales department. For this purpose, the Distribution/ Sales Manager is to identify potential parties and carry out various evaluation procedures to determine their financial stability, warehouse space, distribution background, etc. Where selected, a Distributor Master Form is to be completed and a standard agreement may be entered into defining the commercial terms, including accounting for breakage, freight costs, reimbursement of expenses, etc. In case where credit is to be extended, a credit evaluation is to be carried out.

The distribution department is to identify and enter into contracts with transport companies for dispatches. Agreements should cover transit insurance, breakage, and the procedure for the recovery of breakage in excess of the established norms.

Distributors are to provide their product requirements in an Order Form or a designated person of the distributor may be authorized to place orders by phone or fax, for more urgent requirements. Where such an order is received over phone, the distribution department is to note the requirement of the distributor on the order form. The finance department is to evaluate each order on the Order Form to check that credit limits established for individual distributors are not exceeded, unless written approval for the additional credit is obtained. Upon finance approval, orders are to be processed by shipping.

Dispatch vehicles are to be loaded with product in accordance with approved sales orders only. Quantity dispatched is to be recorded on the Fulls Dispatch Note and signed by the checkers supervising the loading. Where goods are to be dispatched from the plant warehouse, the distribution department is to prepare the Excise/ Tax Invoice. The gate security is to check the physical load with the load sheet, and inspect the vehicle for any concealed stocks, and then allow the vehicle to exit.

The warehouse department is to update the warehouse fulls stock ledger based on the book. The distribution department is to keep a track of the stock of fulls and empties with each distributor. A weekly report is to be obtained from the distributors of stocks with them, to monitor the movement of empties and fulls.

For product received, distributors are to return empties, in the return trip of vehicles. In certain cases, empties may also be provided in advance. Loaders are to unload empties under the supervision of a checker. Checkers are to record the count of empties and breakage.

Account receivables section should maintain a separate account for sale of liquids and glass on credit for each distributor. Receivables are to be recorded for liquid based on the sales invoice and the entry for the glass on credit is to be recorded periodically from the Party Ledger. The distribution department is responsible for the timely realization of receivables. Further, to monitor compliance with the credit policy, the finance department is to prepare a weekly listing of distributor wise outstanding with ageing analysis.

Accounts Receivables and Collections

4.27 The procedures for Accounting of Sales, Receivables and Collections are aimed at ensuring that sales, receivables and collections are correctly recorded and that adequate controls can be exercised over trade receivables. Further, that credit to customers is extended per policy and with

authorization, to enable management to monitor and control receivables and promptly identify and follow-up on sticky debts, and if necessary, provide for doubtful ones.

Accounts Receivable clerk is required to:

- Record cash and credit sales in sales journal;

- Maintain invoice-wise customer ledger;

- Ensure prompt deposit of collections;

- Reconcile sub-ledger balances with general ledger;

- Prepare debtors ageing report/ overdue debtors listing.

Salesmen are required to:

- Effect sales and collect dues from customers;

- Submit collections to cashier and clear shortages;

- Inform sales supervisor of customer disputes.

Sales Manager is required to:

- Follow-up on overdue balances;

- Collect outstanding;

- Review compliance with individual customer credit limits;

- Obtain appropriate credit approval for increase in limits.

Finance Manager is required to:

- Review necessity for provision for doubtful debts;

- Review debtors ageing report and overdue listing on a weekly basis;

- Obtain approval as per certain approvals for write-off of balances;

- Review dispatches to credit customers against established limits.

All sales are to be recorded on a Sales Journal - Liquid or Cases on Credit Journal. This is to be consolidated for all salesmen and a single entry is to be processed for all cash and credit sales on the credit side, with the consolidated cash and individual party receivables being recorded on the debit side. Further, collections are to be recorded after matching with the invoice settled. For on account collections, the A/R clerk is to ascertain the invoices settled from the customer.

Based on the debtors' ageing report, salesmen are to collect the receivable amounts from customers. The route salesmen are to carry their invoice copy to support and provide reference of the amounts collected. Any short collections on-route is to be backed up by an explanation. For collections against bounced checks, in the case of dispute, the bank communication may be provided to the customer to indicate the reasons for the dishonor. Bank charges on dishonored checks are to be recovered from the customer. Further, if the customer disputes any invoice, the route salesman is to record the reasons for the dispute on the invoice copy and forwarded it to the accounts receivable supervisor for investigation and resolution. The specific invoices against which monies have been collected are to be recorded on the Collection Receipt. Partial payments of invoices are to be recorded on the invoice copy (salesman book) and signed by both the customer and the salesman. Any adjustments to the invoice amount are to be approved by both the Sales and Finance Managers. The salesman is to communicate such changes to the customer on the next visit and collect any amounts due.

The A/R section of the finance department is to prepare an Overdue Debtors Listing on periodic basis, indicating customer-wise overdue invoices. A Debtor's Ageing Report is to be similarly prepared and distributed on periodic basis. All invoices are to be aged based on invoice date.

Where warranted, an allowance for doubtful debts is to be created for suspected unrecoverable trade receivables. These allowances are to be reviewed by the Finance Manager to identify bad debts. All write-offs are to be approved with an approval, to be approved in accordance with the certain approvals. However, sales and finance departments are to continue to follow-up for amounts, which have been written off.

Process Risk Assessment (PRiA)

4.28   The following table gives in detail Process Risk Assessment (PRiA) for Sales and Accounts Receivable:

Risk Q No.	Sub-Process	Risk Question	Remarks
1	Sales Ordering	What was the value of credit sales at this location?	Higher the value or proportion of credit sales, higher is the risk at the location in terms of collectability and liquidity.

Risk Q No.	Sub-Process	Risk Question	Remarks
2	Sales Ordering	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
3	Shipping of goods	What was the value of total sales at this location? What is the increase of percentage to last year?	Higher the value or change in percentage of sales from previous year, higher the weightage or risk ranking of the sub-process.
4	Shipping of goods	Has there been any turnover in the preparer or reviewer of shipping information in this location?	Shipping is one of the important functions in Sales process. If there is any significant change in this function, it increases the risk around this sub-process and needs more attention in the year of transition.
5	Shipping of goods	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
6	Revenue Recognition	What was the value of new contracts at this location?	In case high value contracts have been entered into, it needs auditor's attention to ensure that compliance with company policies has been ensured and due diligence has been performed.
7	Revenue Recognition	Were there any adjustments to existing arrangements where prices are not fixed in functional or local	Volatile and non-standard prices leads to higher weightage of risk to this sub-process.

Risk Q No.	Sub-Process	Risk Question	Remarks
		currency at this location?	
8	Pricing of SKU	Were there any changes to the Price Master File at this location?	Higher the number of changes in price master, higher is the weightage of the risk to this sub-process.
9	Pricing of SKU	Has there been any turnover in the personnel responsible for the Price Master File at this location?	Pricing is critical function in the sales process. If there is any significant change in this function, it increases the risk around this sub-process and needs more attention in the year of transition.
10	Pricing of SKU	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
11	Invoicing	What was the value of total sales at this location during the audit period?	Higher the value or change in percentage of sales from previous year, higher the weightage or risk ranking of that sub-process.
12	Invoicing	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
13	Daily Sales Settlement	What is the percentage of Direct Sales in this location?	Higher the percentage of Direct Sales, higher the weightage or risk ranking of this sub-process.
14	Daily Sales Settlement	Has there been any fraud related to the daily sales settlement process? If yes, please	Higher the number of fraud cases, higher the weightage or risk ranking of this sub-process.

Risk Q No.	Sub-Process	Risk Question	Remarks
		specify the number of fraud cases identified.	
15	Daily Sales Settlement	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
16	Sales Return	Were any goods returned during the year at this location? What was the value of goods returned during the year at this location?	Higher sales return indicates higher risk in the sub-process.
17	Sales Return	Has there been any turnover in the returns department at this location?	Approval for sales return is significant process to ensure the quality compliance. If there is any significant change in this function, it increases the risk around this sub-process and needs more attention in the year of transition.
18	Sales Return	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
19	Accounts Receivable Monitoring	Was there any turnover in the revenue accounting personnel at this location?	Monitoring of Accounts Receivable is critical to control the bad-debts. If there is any significant change in this function, it increases the risk around this sub-process and needs more attention in the year of

Risk Q No.	Sub-Process	Risk Question	Remarks
			transition.
20	Accounts Receivable Monitoring	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
21	Volume Reporting	What is the value of unit case sales at this location? What is the percentage of change compared to previous period.	Higher the value or change in percentage of sales from previous year, higher the weightage or risk ranking of that sub-process.
22	Volume Reporting	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
23	Master Data Maintenance	Have there been any risk significant customer master file changes at this location?	Higher the number of changes in price master, higher is the weightage of the risk to this sub-process.
24	Master Data Maintenance	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
25	Sales Analysis	Was there any turnover in the revenue accounting personnel at this location?	Frequent/Major Change in function for sales analysis role may lead to higher risk rating for this sub-process.
26	Sales Analysis	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
27	Allowance	Were there any	Significant change in

Risk Q No.	Sub-Process	Risk Question	Remarks
	for Doubtful and Bad Debts	changes to the methodology for calculating allowance for doubtful accounts?	doubtful debts calculation methodology can affect the bottom line. This leads to the higher weightage of risk rating for this sub-process.
28	Allowance for Doubtful and Bad Debts	What is the value of accounts over 30 days?	Higher value of old outstanding increases the risk of recoverability and hence is assigned higher weightage of risk rating for this sub-process.
29	Allowance for Doubtful and Bad Debts	Was there any turnover in the personnel who calculate or review the Allowance for Doubtful Accounts calculation at this location?	Frequent/ Major Change in function for Working Capital Management role may lead to higher risk rating for this sub-process.
30	Allowance for Doubtful and Bad Debts	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
31	Segregation of Duties	Has there been any turnover in personnel that perform key Sales and AR duties that could result in an employee performing incompatible tasks?	Frequent/ Major Change in function for Sales and AR Role may lead to higher risk rating for this sub-process.
32	Segregation of Duties	Has there been any fraud noted at this location in regards	Higher the number of fraud cases, higher the weightage or risk ranking of this sub-

Risk Q No.	Sub-Process	Risk Question	Remarks
		to Sales and AR during the past 3 years?	process.
33	Segregation of Duties	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.

Direct Marketing Expenses

4.28 The objective of marketing expense control procedures is to monitor marketing related commitments and the corresponding actual spend against budgets. The procedure covers the preparation of annual budget by marketing spend category; the recording of commitments; the subsequent recording of actual expenditure for approved schemes and programs, by brand, marketing spend category; and the reporting of marketing expenditure on the sales curve basis. The procedures also describe the process of recording and evaluating the actual results achieved and those expected at the start of the activity.

The marketing and finance departments are to jointly prepare the annual marketing budget and obtain appropriate approvals. Typically, this is based on the expected annual sales.

The broad marketing spends categories are:

(i)   Visi Cooler

This comprises of the cost of Visi Cooler that are written-off upon purchase, the depreciation of those that are capitalized, and the placement and repairs & maintenance costs.

(ii)   Outdoor & Merchandising Budget

This comprises of signage costs e.g., wall painting, pole advertisement, banners, painting of truck, dealer boards, hoarding, point of purchase, etc. This also includes other promotion costs e.g., consumer promotions (*viz.* premier items, local sponsorships, etc.), retail promotions (*viz.* coupon schemes, etc.) and special account costs (*viz.* up-front payments, specific promotion with outlets, etc.). This does not include product discounting.

(iii) Trade Discounts

This comprises of trade discounts e.g. special account discount, free bottle schemes, sampling, specific brand promotions, etc.

(iv) Divisional or Corporate Consumer Marketing

This comprises of centrally administered and supported consumer promotions. Typically, these are nationwide promotions.

(v) Corporate Retail Marketing

This comprises of centrally administered channel development and support costs, e.g., for transportation, eateries, institutional sales, etc.

(vi) National Brand Promotion

This comprises of brand development and equity creation costs through national media, administered by Corporate e.g., commercials on television, newspapers, etc.

(vii) Salesmen Incentive

This comprises of incentives to sales employees for achieving volume targets, etc.

Where possible, the budget is to be broken down into specific activities under each of the broad categories by the Unit for better monitoring of the marketing spends. Upon approval, the detailed marketing budget is to be recorded on the Annual Budget Plan.

For carrying out market promotions or related activities, the marketing department is to prepare a Expense Requisition- Marketing (ER-M) and obtain approval. Expenditure related to trade schemes, event sponsorships, outdoor signage, etc. is to be recorded in the respective expense.

Typically, purchases are to be carried out by the Supply Chain department or a designated marketing person, in accordance with the Purchase Procedures. An approved expense is to serve as the purchase requisition for materials or services (e.g., glow signs, banners, hoarding rentals, wall paintings, event management contracts, etc.).

Purchase orders (POs) are to record the expenses reference and are placed on approved vendors after comparing quotations. Alternatively, POs may be placed on centrally approved vendor at pre-determined prices.

Receipt of materials is to be recorded on the goods receipt note, including direct receipt of materials in the field (e.g., dealer boards at the outlet), etc. Prior to approval, the Accounts Payable section should additionally verify:

(i)   For outdoor activities, sponsorship and merchandising

    o   Authorization for free products (where agreed).

    o   Receipts for up-front advances, if any.

    o   Completion of activity, as certified by the Area Sales person/ executive.

    o   Photographs/ proof of the outdoor activities.

(ii) Signage:

    o   Installation report with outlet and Area Sales Executive signatures.

    o   Photographs/ Proof.

(iii) Trade schemes & sampling:

    o   Free product authorization.

    o   Summary settlement sheet for direct sales.

    o   Distributor's Debit Note & settlement sheet for sales.

(iv) Key account discounts:

    o   Key Account Agreement (to be maintained by finance).

    o   Copy of the invoices raised on the key account.

(v)   Sales incentives:

    o   Approval of the incentive scheme per COA.

    o   Quantum of sales achieved per finance records for incentive calculation.

The actual payments made along with month-end accruals and debit/credit notes relating to marketing spend are to be recorded by the finance department against the original commitment (i.e., expenses and the corresponding PO).

Where the actual spend exceeds the commitment per expenses, the finance department is to immediately inform the marketing department and preferably hold the disbursement or issue of Credit Note to the vendor, or to the distributors and key accounts. A supplementary expense is to be prepared and upon approval the actual spend should not exceed the Expense amount.

Distributor claims are to be received promptly and periodically. The date of receipt is to be recorded and delays are to be followed-up for by finance, by tabulating the period-wise receipt of claims from each distributor. For schemes, the amount claimed is to be supported by the distributor's invoices. Each claim is to be verified and approved by the Sales department. Subsequently, finance is to independently verify the claim, determining it is raised for the correct period, is adequately supported, approved and in accordance with policy.

Premier items are to be charged to the respective marketing expense code, upon purchase. A detailed quantitative record is to be maintained of the receipts and issues and the physical count periodically compared with the inventory records. Collections from the sale of premier items are also to be recorded in the marketing expense account code under the credit sub-account. Premier items may also be provided to redemption centers, which are to be tracked as temporary issues. On the subsequent final accounting with the redemption center, the final issue is to be recorded in the inventory records.

Deductions from Revenue

4.29 This process is designed to monitor marketing related commitments and the corresponding actual spend against budgets with control procedures. Further, it broadly evaluates the effectiveness of the marketing related spend.

The procedures cover the preparation of annual budget by marketing spend category and month; the recording of commitments; the subsequent recording of actual expenditure for approved schemes and programs, by brand, marketing spend category; and the reporting of marketing expenditure on the sales curve basis. The procedure also describes the process of recording and evaluating the actual results achieved and those expected at the start of the activity.

The marketing and finance departments jointly prepare the annual marketing budget and obtain approval as per COA. Typically, this is based on the expected annual sales volume and often stated as cost per case of sales. This budget is to be further detailed by month and marketing spend category.

The broad marketing spends categories are:

(i)   Visi Coolers, etc.

       This comprises of the cost VCs that are written-off upon purchase, the

depreciation of those that are capitalized, and the placement and repairs and maintenance costs.

Note: Ice-chests push carts and other non-electric BRs are to be expensed in the month of purchase.

(ii) Outdoor and Retail Merchandising Budget

This comprises signage costs (e.g., wall painting, pole advertisement, banners, painting of truck back, dealer boards, hoarding, point of purchase - POP material etc.). This also includes other promotion costs e.g., consumer promotions (e.g., premia items, local sponsorships etc.), retail promotions (e.g., premia items, coupon schemes etc.) and key account costs (e.g., up-front payments, specific promotion with outlets, etc.). This does not include product discounting.

(iii) Trade Discounts

This comprises trade discounts (e.g., key account discount, free schemes, sampling, brand promotions, etc.).

(iv) Divisional Consumer Marketing

This comprises of centrally administered and supported consumer promotions. Typically these are nation-wide promotions (e.g., Cricket, Hockey, Football, Bottle opener, various schemes and promotions, etc.).

(v) Division Retail Marketing

This comprises of centrally administered channel development and support costs (e.g., for transportation, eateries, institutional sales, etc.).

(vi) National Brand Promotion

This comprises of brand development and equity creation costs through national media, administered by corporate (e.g., commercials on television, newspapers, etc.).

(vii) Salesmen Incentive

This comprises incentives to sales employees (for achieving volume targets, etc.).

Where possible, the budget is to be broken down into specific activities under each of the broad categories by the Unit for better monitoring of the marketing spends.

For carrying out market promotions or related activities, the marketing department prepares a Marketing Spend Requisition (MSR) and obtains appropriate approvals. This is to be pre-printed and prepared in triplicate: the original and the first copy are for the finance and the marketing departments, the second copy being the book copy.

Typically, purchases are to be carried out by the Supply chain management or a designated marketing person, in accordance with the Purchase Procedures. An approved MS is to serve as the purchase requisition for materials or services (e.g., glow signs, banners, hoarding rentals, wall paintings, event management contracts, etc.).

Receipt of materials is to be recorded on the goods receipt note (GRN – separate series for marketing), including for direct receipts in the field (e.g., dealer boards at the outlet) etc., which are based on information provided by the receiver. Dispatches are to be on a Material Requisition cum Issue Note.

4.30 The Purchase Voucher (PJV) should contain the MS reference. Also, prior to approval, the Account Payable section should additionally verify:

(i)   For outdoor activities, sponsorship and merchandising

    o   Authorization for free products (where agreed).

    o   Receipts for up-front advances, if any.

    o   Completion of activity, as certified by the Area Sales Manager.

    o   Photographs of the outdoor activities.

(ii)   Signage

    o   Installation report with outlet & Area Sales Manager signatures.

    o   Photographs.

(iii)   Trade schemes and sampling

    o   Free product authorization.

    o   Summary settlement sheet for direct sales.

    o   Distributor's debit note and settlement sheet for indirect sales.

(iv)   Key account discounts

    o   Key Account Agreement (to be maintained by finance)

    o   Copy of the invoices raised on the key account.

(v) Sales incentives

   o   Approval of the incentive scheme per COA

   o   Quantum of sales achieved per finance records for incentive calculation.

The finance department is to record expenditure on the PJV and disburse (or issue Credit Note) to the vendors (or distributors) as per agreed terms. Further, the period within which claims are to be submitted should be specified and periodically, the claims not received identified.

The actual payments made along with month-end accruals and debit/credit notes relating to marketing spend are to be recorded by the finance department against the original commitment (i.e. MSR and the corresponding PO). The accruals are to be reversed at the beginning of the next month. Where the actual spend exceeds the commitment per MS, the finance department is to immediately inform the marketing department and preferably hold the disbursement or issue Credit Note to the vendor, or to the distributors. A supplementary MS is to be prepared and approved. Typically, the actual spend should not exceed the MS amount.

Distributor claims are to be received promptly every month. The date of receipt is to be recorded and delays are to be followed-up for by finance, by tabulating the month-wise receipt of claims from each distributor. For secondary schemes, the amount claimed is to be supported by the distributor's invoices. Each claim is to be verified and approved by the Area Sales Manager. Subsequently, finance is to independently verify the claim, determining if it has been raised for the correct period, is adequately supported, approved and is in accordance with the policy. Where possible, claims are paid for in the form of free product.

Process Risk Assessment (PRiA):

Risk Q No.	Sub-Process	Risk Question	Remarks
1	Rebates	What is the value of rebates redeemed by customers for this operation?	Higher the value of rebate, higher is the risk rating to this sub-process.
2	Rebates	Whether any fraudulent instances noted in	Higher the instances of fraudulent cases, higher is the rating to this sub-

Risk Q No.	Sub-Process	Risk Question	Remarks
		the location related to rebate management	process.
3	Rebates	Has the operation had a history of material, out of period adjustments relating to customer rebates?	Significant adjustments related to customer rebates leads to higher risk rating to the sub-process.
4	Rebates	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher is the weightage or risk ranking of the sub-process.
5	Calculation, Pricing, and Approval	Does the operation require contracts for off- invoice rebates?	Off-invoice rebates without much contractual agreement leads to the higher risk rating to the sub-process.
6	Calculation, Pricing, and Approval	What is the value of rebates redeemed by customers for this operation?	Higher the value of rebate, higher is the risk rating to this sub-process.
7	Calculation, Pricing, and Approval	What percentage of rebates granted are manual over-rides?	Larger number of manual rebate processing leads to the higher risk rating to the sub-process.
8	Calculation, Pricing, and Approval	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher is the weightage or risk ranking of the sub-process.
9	SOD	How many issues were noted in last audit in this sub-	Higher the number of issues identified in a sub-process, higher is the

Risk Q No.	Sub-Process	Risk Question	Remarks
		process?	weightage or risk ranking of the sub-process.
10	Balance Sheet Reconciliation	What is the value of the rebate/ allowance accounts at this location?	Higher the value of rebate, higher is the risk rating to the sub-process.
11	Balance Sheet Reconciliation	Were there any material adjustments to the rebate/ allowance accounts for this entity/ location?	Significant adjustments related to rebate/ allowances leads to the higher risk rating to the sub-process.
12	Balance Sheet Reconciliation	Has there been any turnover in the preparer or reviewer of the rebate/ allowance reconciliations for the location?	Rebate reconciliation is one of the important functions in Deduction/ Rebate Management process. If there is any significant change in this function, it increases the risk around this sub-process and needs more attention in the year of transition.
13	Balance Sheet Reconciliation	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher is the weightage or risk ranking of the sub-process.

Fixed Assets

Visi Cooler Distribution and Maintenance

4.31   Visi Cooler (VC) is a refrigerator with glass door from which you can view items placed inside without opening the glass door. Generally, it is placed by beverages companies at the outlets and malls where public can see and select the drink they want.

The purpose of the Visi Cooler (VC) procedures is to establish the controls surrounding VCs, which are an important asset of the company and typically located with third parties and spread over geography. Broadly, the procedures cover the identification of outlets for placement of VCs, their installation, the asset code tagging and tracking, handling of withdrawal and re-installations, and the evaluation of the incremental sales arising from each installed VC.

All concerned departments jointly prepare Visi Cooler requirement plan for entire year along with yearly budget plan. The plan is to consider the purchase cost, which is to be approved as capital expenditure and the write-off or depreciation charge. Additionally, this is to take into account the existing uninstalled VCs on hand, as per inventory records. Ice-chests, push carts and other non-electric VCs are normally expensed in the month of purchase, and are to be accordingly budgeted.

Upon approval of the yearly budget plan, the supply chain department raises purchase order, specifying Visi Cooler-wise quantities approved, along with the delivery schedule indicating the time and location of delivery. The sales department identifies the outlets for installation of Visi Cooler, based on considerations like, expected growth in volume, exclusivity, visibility, effective distribution or other strategic reasons.

Once the Outlet Identification Form (OIF) is approved, sales department prepares installation requests, on a pre-printed and pre-numbered Installation Report (IR), completing Part I (installation request) thereof. This is to be prepared in triplicate: the original and the first copy for the supplier/ service provider the installation team (service center) and the second copy being retained as book copy. The service center completes Part II (the installation report section) with installation details including machine serial number, company's asset tag number etc. and obtain the signatures of the outlet representative on both the IR and on the Visi Cooler Placement Agreement. The Agreement is to be prepared in duplicate: the original for the sales department and a copy for the outlet. The service center obtains the signatures of the Sales Manager on the IR, as acknowledgement of the successful completion of the installation and provides the completed IR (original) and the agreement to the sales department. The sales department then prints the list of VCs installed and provide to finance for release of payment to supplier or service provider.

In case a VC needs to be removed from an outlet for maintenance, a form is prepared in triplicate, the original for the outlet, the first copy for the sales

department and the second copy being retained with the service center. Upon completion of the repair and maintenance, and the reinstallation of the VC, Part II of the above form, i.e., the 'Reinstallation of Equipment' section is completed and signatures of the outlet obtained on the form and provided to the sales department. The service center logs the maintenance of each VC, which is reviewed periodically by the cold drinks function periodically to ensure that the repairs are genuine and reasonable, particularly, where the Company pays for the spares.

Periodically, the sales department analyzes and document productivity of VCs placed based on incremental sales and profitability. Based on such evaluation, certain outlets may qualify for a different VC and some could even fail to meet the expected productivity. In certain cases, where VCs are placed for strategic reasons including visibility, exclusivity, etc., the productivity evaluation may be less relevant. However, an evaluation of the increased visibility, the existence of exclusivity at the outlet, and the incremental sales achieved should still be made and documented.

In case a VC needs to be withdrawn from an outlet, a pre-printed and pre-numbered withdrawal form is prepared in triplicate. The original and first copy for the service center (along with the original Agreement) and the book copy for the sales department. The service center pulls-out the VC from the outlet and hand over the original of the Withdrawal Form to the outlet after obtaining signatures for the cancellation of the Agreement on the first copy. The said copy is then submitted to the sales department along with the cancelled Agreement.

Withdrawn assets are maintained in the custody of the Company, and physically segregated form the new VCs. Periodically, the sales department is to review the VCs approved for pull-out but remaining placed with the outlet. Further, that the VCs pulled-out reconcile with the physical stock on hand.

The cold drinks department organizes periodic verification and reconciliation of the VCs at the outlets with the VC Tracking Register. The verification is to be carried on throughout the year, covering each VC at least once per annum. This may be carried out as part of the maintenance arrangement or separately undertaken through the sales force.

Additionally, an external agency may be hired for carrying out physical verification of VCs on a sample basis (say covering 5 per cent of assets). The results of such verification may then be extrapolated for drawing a conclusion on the population and determining the need to supplement the VC

procedures. Where an asset is missing, the same is to be reported promptly to all concerns for further investigation and action.

Accounting Entries

4.32   Record the following entry based on GRNs for new VC received by Company:

Debit: Inventory – vendors, coolers and dispensers (new)

Credit: Accounts payable - Trade

To capitalize VCs installed based on IRs received from service provider:

Debit: VCs

Credit: Inventory – vendors, coolers and dispensers (new)

It should be noted that no accounting entry is to be recorded for VCs pulled-out and remaining uninstalled.

Expense of Ice chests, push carts etc. in the month of purchase:

Debit: POS material – outside production

Credit: Accounts payable – Trade

Depreciate VCs (including that pulled-out and pending reinstallation):

Debit: Depreciation – VCs

Credit: Accumulated depreciation – vendors, coolers and dispensers

Returnable Containers

4.33   Returnable Containers in non-alcoholic beverages industry includes - Glass Bottles, Plastic Crates and Bulk Jars which are meant to be returned to the factory for refill/ reuse. Therefore, these returnable containers cannot be treated as consumables, and hence, not charged to P&L at the time of their purchases but treated as assets in the financials. In general, returnable containers are spread over the following locations:

(i)   Factory Premises

(ii)   Sales centre/ depots.

(iii)   Market with the distributor/ retailers

(iv)   Lying with consumers

Accounting Treatment will be as follows:

(a)   For purchasing container stock

Container stock account   Dr

Bank/ creditor account   Cr.

(b)   For recording deposit from customers

Bank Account   Dr.

Container Deposit Liability   Cr.

(c)   At the time of return of containers from customer

Container Deposit Liability   Dr.

Bank Account   Cr.

In terms of charging losses on account of breakages of glasses, the accounting treatment may differ from company to company as determining actual breakages is a challenge for any entity since these glasses are spread over various locations and only 15%-25% of the returnable containers remains in factory at any point in time. In case, an entity follows to account for breakages, the accounting entry can be:

(d)   Breakages on container asset

Profit and loss account   Dr. (Breakages)

Container stock account   Cr

Since, it is difficult to ascertain the actual breakages because of the physical location of returnable containers, an organization may adopt depreciation method which is more practical and feasible considering significant volume of glasses at entity level to estimate the losses on account of breakages and monitor the actual movement of glasses separately to account for glass on deposit. The accounting entry can be:

(e)   Depreciation on container asset

Profit and loss account   Dr. (Depreciation)

Container stock account   Cr.

Other Fixed Assets

4.34   The purpose of the fixed assets and depreciation procedures is to ensure that the fixed assets are correctly and consistently accounted for, and that adequate controls are exercised and accountability established for this

significant investment of the company. Broadly, this section covers the accounting for fixed assets and depreciation, including their transfers and disposals. Further, it also covers the procedures for physical control over fixed assets.

Following assets are capitalized:

- Items with a life exceeding one year;

- Purchased software packages, exceeding a specified amount and with a life of more than a year;

- Software development costs

- A substantial refurbishment is to be capitalized. Repair to existing assets, unless substantial and linked to enhance the productivity, are charged to expenditure.

New assets are recorded as construction work-in-progress, until installed and placed in service. The construction work -in-progress account is analyzed periodically and the status of old items is reviewed. Upon completion, new projects are capitalized at cost. Project related preoperative expenses are captured as 'construction work-in-progress'.

Spares, including machinery spares received with original equipment, are not to be capitalized but accounted for as inventory and kept in the stores.

All assets are tagged, preferably with metal tags, and coded in accordance with a standard coding pattern. Tags are affixed in a manner that they are clearly visible.

The finance/ Accounting department prepares and maintains Fixed Asset Register, with the following details:

- Account number

- Asset code

- Description of asset (sufficient to identify)

- Date of receipt

- Date placed in service

- Depreciable life

- Depreciation method

- Cost

- Supporting documentation (e.g., Invoices, Registration, Approvals, POs, etc.)

- Equipment number/ serial number

- Location of asset (as detailed as practical)

- Department responsible for asset

Fully depreciated assets are not removed from Fixed Asset Register until disposed-off or transferred out. When transferred out, the receiving location assigns a new asset number and tags the asset. Besides, change in location of assets is updated on the fixed asset register. This ensures that the depreciation or other associated costs are charged to the correct cost center and the responsibility for custody remains correctly defined.

Fixed assets are physically verified at regular intervals. Physical verification is carried out independent of the person recording the asset and documented on pre-numbered count sheets. As convenient, verification may be conducted on a continuing or cyclical basis, with off-premise assets being confirmed by correspondence. Discrepancies identified on physical verification are reported to the appropriate authority and promptly investigated. Any unrecorded assets identified during physical verification are included after determining the reason for the initial omission.

The company's assets are secured and guarded against theft and destruction. The premises are enclosed by a high fence designed to discourage scaling. Further, security at the premises needs to be adequate and all unmonitored entrances locked and chained. Besides, the safety equipment (e.g., fire extinguishers, etc.) should be adequate, in good working condition and placed strategically to be clearly visible. Assets of the Company should be adequately insured at all times.

All assets, other than freehold land, are depreciated in periodically as defined in company's policy keeping IGAAP and other regulations in consideration.

Process Risk Assessment (PRiA)

4.35 The following Process Risk Assessment (PRiA) of Fixed Assets:

Risk Q No.	Sub-Process	Risk Question	Remarks
1	Asset Capitalization--Accounting and Recording	Did the entity have fixed asset additions during the audit period?	Significant increase in fixed assets amounts to higher risk rating to the process.

Risk Q No.	Sub-Process	Risk Question	Remarks
2	Asset Capitalization- Accounting and Recording	Did the entity have fixed asset transfers during the audit period?	Significant amount of fixed assets transfers amounts to higher risk rating to the process.
3	Asset Capitalization- Accounting and Recording	What is the value of total asset additions, including transfers and CWIP?	Significant addition/ transfer to the asset amounts to higher risk to the sub-process.
4	Asset Capitalization- Accounting and Recording	Have there been any changes in operation that affect this sub-process (i.e., M&A activity resulting in large amounts of additions, applications used, etc.)?	Significant change in this function amounts to higher risk to the sub-process.
5	Asset Capitalization- Accounting and Recording	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
6	Asset Capitalization- CIP and Projects	Did the entity have any capital projects begin this year?	Significant amount of capital project initiated amounts to higher risk rating to the sub-process.
7	Asset Capitalization- CIP and Projects	Is interest capitalized automatically or is it computed using a manual process?	System driven interest capitalisation leads to higher risk for the application controls whereas manual process leads to higher risk to the sub-process.

Risk Q No.	Sub-Process	Risk Question	Remarks
8	Asset Capitalization-CIP and Projects	Were there any material budget shifts or increases between capital projects?	Significant shift of budget amounts to higher risk of the sub-process
9	Asset Capitalization-CIP and Projects	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
10	Balance Sheet Recs	Were there any material adjustments to the PPE accounts for this entity/location?	Higher the number of adjustments in PPE account leads to higher risk ratng to the sub-process.
11	Balance Sheet Recs	Has there been any turnover in the preparer or reviewer of PPE account reconciliations for the location?	Significant change in this function amounts to higher risk to the sub-process.
12	Balance Sheet Recs	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
13	Disposals	Did the entity have any fixed asset disposal or transfer requests during the year? What is the value of disposals	Higher the value of disposals, higher is the risk rating to the sub-process.
14	Disposals	How many issues were noted in last	Higher the number of issues identified in a sub-

Risk Q No.	Sub-Process	Risk Question	Remarks
		audit in this sub-process?	process, higher the weightage or risk ranking of the sub-process.
15	Fixed Asset Register	Were there any asset movements (additions, transfers or disposals) during the year?	Significant movement amounts to higher risk rating to the sub-process.
16	Fixed Asset Register	Does the location have a formalized fixed asset process including tagging and tracking assets?	Non availability of standard procedures and tagging amounts to higher risk rating to the process.
17	Fixed Asset Register	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
18	Impairment	Have there been any impairments recorded this year? If applicable, what was the value of impairments recorded during the year?	Significant amount of impairment amounts to higher risk rating to the sub-process.
19	Impairment	What types of assets make up the fixed asset balance?	Higher proportion of intangible assets or Fixed Assets amount to higher risk rating to the sub-process.
20	Impairment	How many issues were noted in last audit in this sub-	Higher the number of issues identified in a sub-process, higher the

Risk Q No.	Sub-Process	Risk Question	Remarks
		process?	weightage or risk ranking of the sub-process.
21	Maintenance	Have there been any changes to fixed asset policies (i.e., useful lives to asset categories, depreciation conventions) during the audit period?	Significant change in the policies and guidelines amount to higher risk to the sub-process.
22	Maintenance	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
23	Physical Controls	Have there been any instances of material known theft or misappropriation of fixed assets at this location?	Instances noted for theft and missing assets recommends higher risk rating to the sub-process.
24	Physical Controls	Were there any material adjustments to PPE balances as a result of PPE inventories (i.e., PP&E was not fully counted, etc.)?	Significant adjustments to PPE balances indicates gap in physical and book assets and amounts to higher risk rating to the process.
25	Physical Controls	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.

Inventory

4.36 The objective of Inventory Procedures is to establish controls surrounding the issue, holding and reporting of inventory items including raw materials, consumables and stores and spares. Further, to determine the consumption of inventory items for the production of finished goods, obsolete items and shortages, if any. The inventory procedures include the receipt, the issue, storage and count of raw, packing and other inventory items.

Stores department receives materials purchased, along with a quality approved copy of the Goods Receipt Note. The items include raw materials & consumables bottles and cases, stores and spares and miscellaneous items. Based on the GRN and physical quantities received, the Quantitative Stock Ledger (QSL) is updated for each transaction.

Based on the Daily Production Plan, the production and QA departments requisition materials on a Material Requisition Note (MRN). MRN booklets are provided to user departments for requisitioning materials. On receipt of completed and approved MRNs, the stores department assigns a sequential number, based on the MRN Log. Items on which MODVAT credit is availed are recorded separately on the MRN Log. For items not in stock, the stores department makes a noting on the MRN, for the user to prepare a Purchase Requisition. Where the issue of materials is based on flow meter readings (e.g., CO_2, HSD, LDO, treated water, etc.), the stores department records the meter reading on the MRN at the end of each shift along with the production supervisor. The difference between the current and previous reading represents the consumption.

After each shift, excess inventory on the shop floor is returned to stores department on a Material Return Note. Any loose quantities received from production is first issued out. Less preferably, for smaller quantities and where a secure shop floor store exists, excess inventory may be retained for consumption over the next day or so.

Inventory items are stored in a secure place and protected from the weather. As appropriate, these are stacked to facilitate issue on a FIFO basis, with the date of manufacture displayed. Certain smaller and similar items may be kept in bins. Material which are sensitive to temperature are kept in secured location and under temperature control, as prescribed, with access to authorized personnel only.

Obsolete and rejected materials are segregated in the warehouse, and clearly identified to avoid introduction into the production process.

The stores department is to carry out a daily physical count of raw and packing material at a fixed time. Stores and spares are classified as A, B, or C category on the basis of the value of consumption. Category 'A' items are verified more frequently, followed by category 'B' and 'C'.

All significant book-to-physical differences (shortages/overages) are to be investigated and reported to appropriate authority for approval for adjustment in books.

Obsolete material identified are to be destroyed promptly. An approval is required for such write off, and is to be approved as per the approval process. Physical destruction of obsolete stocks is to be carried out in presence of the finance and the quality assurance department under a Certificate of Destruction.

Process Risk Assessment (PRiA)

4.37 The following is Process Risk Assessment of Inventory:

Risk Q No.	Sub-Process	Risk Question	Remarks
1	Receiving	Does this location have inventory? What is the percentage of change over previous period?	Higher the percentage of change or inventory value, higher weightage of risk rating to this sub-process.
2	Receiving	What was the value of inventory purchased during the period at this location?	Significant amount of purchase of inventory indicates higher risk rating to this sub-process.
3	Receiving	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
4	Costing	How much is the production volume in terms of units/ cases	Significant change of percentage of production volume over previous period leads to the higher

Risk Q No.	Sub-Process	Risk Question	Remarks
			risk rating to this sub-process.
5	Costing	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
6	Counts	What is the value of inventory at this location?	Higher inventory value leads to higher risk rating to this sub-process.
7	Counts	Were there any material adjustments made to the inventory accounts based on inventory counts during the period?	Significant adjustment entries in Inventory accounting indicates higher risk weightage to this sub-process.
8	Counts	Are there any inventory items at these locations that use a different unit-of-measure for count and recording purposes?	Non-Standard use of Unit of Measurement and different methodology leads to the higher risk rating to this sub-process.
9	Counts	Does this location have inventory held by third party?	Inventory located at multiple warehouse owned by third party amounts to higher risk rating to this sub-process.
10	Counts	What is the value of inventory held by others?	Higher inventory value held by 3rd party leads to higher risk rating to this sub-process.
11	Counts	How many issues were noted in last	Higher the number of issues identified in a sub-

Risk Q No.	Sub-Process	Risk Question	Remarks
		audit in this sub-process?	process, higher the weightage or risk ranking of the sub-process.
12	Book to physical adjustments	Has a physical inventory count been performed at this location during the period?	If physical verification was not performed, rate this sub-process as high risk.
13	Book to physical adjustments	Were any material differences in inventory noted at this location during the counts?	Significant differences during physical verification indicates higher risk rating for this sub-process.
14	Book to physical adjustments	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
15	Accounting for Bottles and Cases	Were there any material breakage adjustments to the Inventory accounts for this entity/location?	Significant adjustment entries in bottles and cases indicate higher risk weightage to this sub-process.
16	Accounting for Bottles and Cases	Does this location have material prepaid container expense recorded on their books?	In case pre-paid expense is material, rate this sub-process as high risk.
17	Accounting for Bottles and Cases	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
18	Obsolete and	Has the inventory	Lower inventory turnover

Risk Q No.	Sub-Process	Risk Question	Remarks
	slow moving inventory	turnover ratio decreased at this location during the period?	means idle inventory and leads to higher risk weightage for this sub-process.
19	Obsolete and slow moving inventory	Does this location maintain a separate area for materials and goods which are obsolete or expired?	In case inventory is not bifurcated for good and obsolete stock, the risk rating is high for the sub-process.
20	Obsolete and slow moving inventory	Does this location maintain a reserve for obsolete inventory?	In the absence of reserve for obsolete inventory, rate this sub-process as high risk.
21	Obsolete and slow moving inventory	Has this location materially adjusted inventory (write-offs) during the period?	Significant write offs leads to higher risk weightage to this sub-process.
22	Obsolete and slow moving inventory	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
23	Impairment	Have economic or market events occurred which would result in the net realizable value of inventory decreasing at this location during the period?	Any indication of such event leads to higher risk weightage to this sub-process.
24	Impairment	Have container deposit prices/ rates changed at this location during the period?	Significant change in the price for the location leads to higher risk rating to the sub-process.

Risk Q No.	Sub-Process	Risk Question	Remarks
25	Impairment	Does this location estimate bottles and cases breakage/ loss?	In the absence of estimation for breakages and losses of inventory, the sub-process needs to be rated as high.
26	Impairment	How many issues were noted in last audit in this sub-process?	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.
27	SOD	Has there been any turnover in personnel that perform key Inventory duties that could result in an employee performing incompatible tasks?	Frequent/ major Change in function for Inventory Role may lead to higher risk rating for this sub-process.
28	SOD	Has there been any fraud noted at this location in regards to Inventory during the past 3 years?	Higher the number of fraud cases, higher the weightage or risk ranking of this sub- process.
29	SOD	Please indicate how many issues were noted during last assessment.	Higher the number of issues identified in a sub-process, higher the weightage or risk ranking of the sub-process.

General Ledger and Reporting

4.38   The purpose of general accounting and closing procedure is to ensure that all financial transactions are posted to the general ledger in the proper accounting period to enable the operation to prepare periodic trial balance and submit the financial statements.

The start of the process is with passing of journal vouchers, cash vouchers, booking of bills and ends with preparing of financial statements and the closing files. This process affects all Profit and Loss accounts and Balance Sheet accounts.

The accounting system is to be set up to restrict the access right of individual users to their areas of responsibility. For each individual user a separate user ID has to be created to ensure segregation of duties.

Accounting systems provides the option to close the particular period. Every month post-closing activities, Finance department closes the past period and opens the period for current month activities.

Generally, following type of vouchers are passed- Journal Voucher, Purchase Journal Vouchers, Reversible Voucher, System Generated Voucher, etc. These vouchers are parked in the Accounting System by an Accounts executives and needs to be reviewed for supporting, correctness of accounting codes by Accounts Manager.

After the PJVs are posted, the same are available for payment based on the credit terms. AP executives can select the vouchers for payment. Normally only due payments are selected for payments. In case of exceptions the AP executive mentions the reason for out of due selections on the printout of Payment selection register.

After the month ends, the period is blocked by Accounting or Finance Manager, and hence, no entries can be passed in the prior periods.

The Accounting Manager is responsible for posting all entries parked in Accounting System into the General Ledger. Before posting, he reviews the supporting documents and checks whether they are reviewed and approved. To make sure all journal entries are posted to General Ledger at the time of month-end, the Accounting system needs to give an error message to indicate whether there is any un-posted journals in the system.

Process Risk Assessment (PRiA)

4.39 The following is Process Risk Assessment of General Ledger and Reporting:

Risk Q No.	Sub-Process	Risk Question	Remarks
1	GL Maintenance	Is this a Non-Enterprise ERP Location?	In case of non ERP location, the risk is higher.

Risk Q No.	Sub-Process	Risk Question	Remarks
2	GL Maintenance	Have there been any changes to the master data of any system for this location?	Higher the number of changes in the master data, higher the risk rating for the sub-process.
3	GL Maintenance	Have there been any direct postings to the general ledger at this location?	In case direct posting is not prevented through configuration, the risk of the sub-process amounts to higher.
4	GL Maintenance	How many issues were noted in last audit in this sub-process?	Higher the number of issues noted, higher is the risk of the sub-process.
5	Record Transactions and Post to Ledger	Have there been any new interfaces attached to the general ledger at this location?	Higher the number of interfaces, higher is the risk rating to the sub-process.
6	Record Transactions and Post to Ledger	How many issues were noted in last audit in this sub-process?	Higher the number of issues noted, higher is the risk of the sub-process.
7	System Access	Is responsibility for monitoring and testing interfaces formally assigned?	Formally assigned responsibility to monitor the interfaces amounts low risk to the sub-process and vice versa.
8	System Access	How many issues were noted in last audit in this sub-process?	Higher the number of issues noted, higher is the risk of the sub-process.
9	SOD	Has the operation identified possible SOD issues based	Adequate documentation and approval tool for possible SOD violation

Risk Q No.	Sub-Process	Risk Question	Remarks
		on the Approval tool?	amounts lower risk to the process and vice versa.
10	SOD	Do employees with the ability to open and close accounting periods also have the ability to post journals entries?	Access to period open and posting Journal Entries to same person amounts to higher risk to the sub-process.
11	SOD	How many issues were noted in last audit in this sub-process?	Higher the number of issues noted, higher is the risk of the sub-process.
12	Adjusting Entries/JV's	Does this location post journal entries?	Higher the number of journal entries, higher is the risk to the sub-process.
13	Adjusting Entries/JV's	Does this location have parked documents?	In case system is configured to have park and post of Journal entry by different person, the risk to the sub-process is lower and vice versa.
14	Adjusting Entries/JV's	How many issues were noted in last audit in this sub-process?	Higher the number of issues noted, higher is the risk of the sub-process.
15	Reconciliation & Review	Were there any material adjustments to the general ledger for this entity/ location?	Higher the number of adjustments, higher is the risk to the sub-process.
16	Reconciliation & Review	How many issues were noted in last audit in this sub-process?	Higher the number of issues noted, higher is the risk of the sub-process.

Risk Q No.	Sub-Process	Risk Question	Remarks
17	Field Sub-Consolidation	Has there been any turnover in the preparer or reviewer of consolidated investees step up entry calculations for the location?	Frequent/major change in function for GL role may lead to higher risk rating for this sub-process.
18	Intercompany	Does this location have intercompany transactions?	Higher the number of inter-company transactions amounts to higher risk rating to the sub-process.
19	Intercompany	How many issues were noted in last audit in this sub-process?	Higher the number of issues noted, higher is the risk of the sub-process.

Chapter 5
Internal Audit Checklist

Procurement Process

5.1 The purpose of the Procurement procedures is to ensure that purchases are made judiciously, and that goods of acceptable quality are purchased from reputable vendors, at competitive terms and in a timely manner. Further, to also ensure that timely disbursements are made. These procedures cover goods and services, but exclude purchases from inter-unit locations and capital purchases for projects etc.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
1	Vendor Master	Vendor addition/ change requests approved and vendors verified	Vendor addition/change requests, including vendor verification, are independently approved before being added to the Vendor Master.	Preventive	1. Ensure additions/ changes to the Vendor Master are formally authorized in line with the approved policies/ local COA prior to being updated in the Vendor Master. 2. Ensure there are adequate supporting documents to verify the validity and legitimacy of

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					each addition or change. 3. Ensure the additions/ changes approver is an associate different from the requestor and is also independent from the Vendor Master Custodian.
2	Vendor Master	Vendor Master audit trail reviewed	An audit trail with all risk significant vendor master additions/ changes, including vendor name and address, bank account numbers, and other data that may be significant to the local operation is reviewed by an independent associate periodically.	Detective	1. Ensure audit trails were periodically reviewed for all risk significant vendor master additions and changes. 2. Ensure reviews were performed by an individual independent from the Vendor Master custodian.
3	Vendor	Vendor Master	Periodically, the entire	Detective	1. Ensure the Operation

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
	Master	Data Review	Vendor Master is reviewed (e.g., duplicate vendors, etc.) and maintained (e.g., Vendor Master updated to block duplicate vendor account, etc.).		performs a review for inactive and/ or duplicate vendors at periodic level. 2. Ensure all inactive and/ or duplicate vendors identified during the review have been blocked or deleted, respectively.
4	Vendor Selection	Bidding Process	Competitive bid procedures should be established, documented, and enforced in accordance with the local purchasing policy and approved guidelines.	Preventive	1. Ensure the Operation maintains appropriate competitive bid procedures in accordance with the purchasing policy. 2. Ensure competitive bids are comparable (i.e., issued in the same period, addressed to the operation, underlying

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S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					goods and services are comparable), documentation is properly maintained. There is a rationale if no bids were obtained, consideration was given to the best source of supply and bids were submitted within a reasonable period from the purchase date.
5	Release of Purchase Order	Approved Purchase Orders	Purchase orders approved in the system based on the release strategy configured in the system	Preventive	Check whether the release strategy configured in the system is in accordance with the approved COA.
6	Release of Purchase Order	Approved Purchase Orders	Manual Purchase orders should be approved	Preventive	For the selected samples, ensure that

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			based on the COA		purchase orders are approved based on the chart of authority.
7	Release of Purchase Order	Purchase price and quantity tolerances defined	Purchase price and quantity tolerances, as approved by local management, are defined within the application.	Preventive	Check whether purchase price and quantity tolerances defined in the system are in accordance with the limits approved by local management.
8	Goods/ Service Received	Goods/ Services are recorded based on the valid GRN document	Warehouse Manager/ Service receiver makes Goods Receipt Note based on the valid delivery note/ Service completion documents.	Preventive	1 For the selected samples, ensure that Goods Receipt Note has been prepared based on the delivery or Invoice. 2. Goods Receipt Note should be supported with approved Purchase

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					Order. 3. Any variance in PO quantity and Invoice quantity should be approved by the appropriate personnel.
9	Goods/ Service Received	Exception reports reviewed	Open PO's, aged exceptions to 3-way match, unmatched receiving, and unmatched/ blocked invoice reports are reviewed and old/unusual items are investigated and resolved.	Detective	Open PO and PO Violation Reports Testing: 1. Ensure Open PO reviews were performed by the Operation and ensure they were performed timely and aged items are explained/ cleared 2. Ensure violation reports were adequately and timely reviewed by the Operation.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
10	Goods/Service Received	Monthly manual purchasing accruals recorded	Operation maintains procedures to solicit/ obtain a complete listing of goods and services received but not invoiced (i.e., no goods receipt or invoice entry has been entered in ERP) to be included in manual accruals.	Detective	1. For the selected months, ensure that entity has performed manual accrual process. 2. Examine whether accrual process has captured all goods or services received but not invoiced. 3. Verify that working of accruals is supported with confirmation from respective departments for the goods or services received.
11	Invoicing	Invoice workflows control approvals and aligned with the	System invoice workflow authorizations control the invoice approval routing and are	Preventive	Check whether workflow for invoice approval routing is aligned with

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
		Local COA.	aligned with the Local COA.		the Local COA.
12	Invoicing	Invoice processing with support documentation	Accounts Executive process invoice after verifying the details of invoice to ensure that invoice carrying correct PO Number, Description, Qty and Vendor Name.	Preventive	1. For the selected samples, ensure that invoice is supported with approved Purchase Order. 2. Verify whether details of invoice matches with Purchase order in terms of quantity, PO Number, Vendor name and description of goods. 3. In case of any miss-match, required approval has been supported.
13	Payments	Recurring payments approved	New recurring payment setups are properly supported and independently approved and a	Preventive	1. Ensure new recurring payments (those set up since the last audit) have

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			review of existing recurring payments is performed at least annually to confirm the need for continuation of payment.		been reviewed/ approved with proper supporting documentation prior to set up in ERP. 2. Ensure an annual review (at least) of existing recurring payments (those set up prior to the current year) to confirm need for continuation of payment has been performed/ approved.
14	Payments	Approved Payments	The bank authorized signatories must approve the payments within system for payment advice to be released to the bank. Approval is given after	Preventive	1. For the selected samples, verify and confirm persons approving payment advices in system are authorized as per COA.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			comparing the totals on the Hash report and payment summary with the figures on system in case of Automated payment run and after checking the supporting in case of the manual payments. The reports and supporting signed as an evidence of the review.		2. Verify the signatures on hash report/ payment advice to ensure payment are duly authorized. 3. Ensure amounts payable as per payment advice are in match with the payment proposals.
15	Debit/ Credit Notes	Invoice modifications approved	All modifications to an approved invoice via a debit/ credit memo are properly approved.	Preventive	Ensure all debit memos are properly supported and independently approved per the LCOA
16	Balance Sheet Reconciliations	BS Reconciliations prepared and approved	Balance sheet reconciliations for all Accounts Payable Accounts, including GR/ IR accounts,	Detective	1. Select a sample of reconciliations for various periods/months and accounts

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			are prepared to ensure balances are supported, analyzed, and reconciling items are cleared in timely manner. Balance sheet reconciliations are independently reviewed/ approved.		throughout the year. 2. Review the reconciliations and ensure that they are performed and reviewed by the appropriate personnel. 3. Ensure that the reconciliations are performed in a timely manner and ensure that reconciling items are researched and addressed in a timely manner. 4. Review the Balance Sheet by account to identify unusual items (e.g., credit balances in asset accounts, debit

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					balances in liability accounts, etc.)
17	SOD	Functional duties segregated	Functional duties such as, custody, review, approval, and recording are properly segregated.	Preventive	1. Observe key functions of the process. 2. Evaluate if there is appropriate segregation of duties for all main processes.

Production Process

5.2   The procedures cover the requisition and receiving of raw, packing and other materials, including empties for production, as per plan. This includes returning any excess quantities of materials to the stores and the transferring of completed production to the warehouse.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
1	Material Master	Material Master addition/change requests approved.	Material Master addition/ change requests, including Bill of Material for Finished Goods are independently	Preventive	1. Ensure additions/ changes to the Material Master are formally authorized in line with the approved

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			approved before being added to the Master Data.		policies/ local COA prior to being updated in the Master. 2. Ensure there are adequate supporting documents to verify the validity and legitimacy of each addition or change. 3. Ensure the additions/ changes approver is an associate different from the requestor and is also independent from the Material Master Custodian.
2	Material Master	Material Master audit trail reviewed	An audit trail with all risk significant	Detective	1. Ensure audit trails were

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			Material master additions/ changes, including Bill of Material is reviewed by an independent associate periodically.		periodically reviewed for all risk significant content to the Material Masters additions and changes. 2. Ensure reviews were performed by an individual independent from the Material Master custodian.
3	Material Master	Material Master Data Review	Periodically, the entire Material Master is reviewed (e.g., duplicate codes, BOM, etc.) and maintained.	Detective	1. Ensure the Operation performs a review for inactive and/or duplicate Material codes at periodic level. 2. Ensure all inactive and/ or

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					duplicate Material codes identified during the review have been blocked or deleted, respectively
4	Issue Consumption and Output recording	Validation of Process Order	Plant Accountant verifies the correctness and completeness of process order ensuring correct recording of output and validates the consumption booking based on defined BOM	Preventive	1. For the selected Process Order, ensure that output has been recorded based on the production document signed off by the Plant Manager for each production run. 2. Verify whether consumption against output has been booked as per defined

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					BOM. 3. Any variance in defined BOM and actual consumption is followed up for corrective action
5	Issue Consumption and Output recording	Variance Analysis	Plant Finance Manager periodically performs the variance analysis report for standard consumption and Actual consumption. Significant variances are discussed with Production Team for corrective action	Detective	1. For the selected period, ensure that variance analysis has been performed by the Plant Finance Manager. 2. Examine the significant Variances noted during review. 3. Ensure that follow-up actions were taken for corrective measure.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
6	Machine Capacity Utilizations	Validation of capacity utilization norms	Standard Capacity utilization norms are validated by the Plant Head by way of sign off of the report considering all technical inputs and engineer certification. On the basis of norms the overhead allocation is configured into master recipe to determine the cost of production.	Preventive	1. Ensure the capacity utilization norms are supported with engineer's certificate and technical inputs. 2. Examine the utilsation norms are validated by Plant Head by way of sign off. 3. Verify the overhead allocation has been appropriately configured into Master recipe.
7	Machine Capacity Utilizations	Periodic Review of Capacity Utilization.	Plant Head Performs periodic review of capacity utilization norms and	Detective	1. Ensure that periodic review has been performed by Plant

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			any variance in actual and installed capacity is investigated for corrective action.		Head. 2. Examine the variance noted during review. 3. Verify whether such variances investigated and corrective actions were taken for revised allocation of overheads.

Sales and Accounts Receivables

5.3   The purpose of Stock-out and Stock-in procedures is to establish controls over inventory in the direct route selling process. These procedures describe the manner in which the hand over or takeover of company products is to occur between functions, to establish the responsibility (for custody).

Typically, a direct route sale is undertaken from a distribution warehouse/ Depot, or in certain cases, the plant warehouse. All vehicles on which product is loaded, must be subject to Stock-out and Stock-in procedures, including non-Company owned vehicles.

Indirect sales comprise sales to distributors for onwards sale to outlets. These procedures define the recommended controls over indirect sales, specifically pertaining to:

•   The handing over of product to distributors and the collection of empties;

- Receivables collection and credit control; and

- Other aspects like, compliance with agreements.

Indirect sales could be made both from the plant and distribution warehouses. Typically, dispatches are made against an order received from a distributor after credit approval by finance.

Sales to distributors are recorded as (end-customer) sale. However, it is useful to have further details of the distributor's customer base, network, etc. Also, the company may often support the indirect distribution process by monitoring (and supervising) important distributor routes, and assist in various marketing and other programs in the distributor's market.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
1	Master File	Customer Master Verification from Source Data.	Master Data Executive checks whether the request for updating Customer Master/ Price Master/ Discount Master/ Credit Limit is complete and authorized as per DOA.	Preventive	1. Review whether Customer Master/ Price Master/ Discount Master/ Credit limit is updated based on valid request. 2. Ensure that Master data is updated based on valid supporting documents.
2	Master File	Review of correctness and completeness of the updated data	Master Data Manager verifies the correctness and completeness of updation of Customer/ Price/	Detective	1. Review whether audit trail report has been signed off by the Master Data Manager. 2. Examine whether any discrepancies

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
			Discount/ Credit master and signs off the audit log as an evidence of review.		noted during sign off has been followed up for corrective action.
3	Master File	Periodic review of Master Data	Finance Manager performs periodic review of customer master/ Discount Master/ Price Master/ Credit Limit to ensure the correctness and completeness of data.	Detective	1. Verify that periodic review of Master Data has been performed by the Manager Finance. 2. Examine whether any discrepancies noted during review has been followed up for corrective action.
4	Sales Order	Release of Sales Order	Sales orders are released into system only on the basis of valid customer order and available credit limit.	Preventive	1. Review that a credit limit has been established for the credit sales customers. 2. Ensure all approvals are in accordance with the effective credit policy and the COA. If there is any

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
					deviation with regards to the credit limit, ensure adequate approval before invoice was submitted. 3. Ensure sales orders are released based on the valid customer order.
5	Pricing	Data validation by system	ERP automatically calculates pricing based on the customer price masters at the time of creation of sales order. The sales order information is copied to delivery and billing in terms of Material code, order quantity and Pricing which ensures correct movement of	Preventive	Check the system configuration to ensure that system automatically calculates pricing based on the customer price masters at the time of creation of sales order.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
			inventory at the time of delivery and correct billing at the time of invoicing.		
6	Shipment	Invoice verification at Exit Gate	Security personnel perform independent check of the invoice quantity and shipped quantity. Any variance noted is investigated and resolved.	Preventive	1 .For the selected samples, verify whether security personnel has signed off the count of vehicles. 2. Examine whether quantity mentioned as per invoice tallies with the security count. 3. Ensure the corrective action has been taken for any discrepancies for invoice quantity and security count.
7	Shipment	Periodic Reconciliation of order quantity and	Reconciliation between sales order quantity and dispatched goods quantity	Detective	1. For the selected samples, ensure that reconciliation has been

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
		dispatched quantity	is performed by Warehouse personnel. Deviation if any, is followed up and rectified by Debit Note/ Credit Note		performed for sales order quantity and dispatched goods. 2. Verify that corrective actions have been taken for any differences.
8	Shipment	Proof of receipt are obtained as a Proof of Delivery	Invoices or other proof of receipt, signed by credit customers upon receipt of product, are obtained as a Proof of Delivery.	Preventive	1. Select a sample of shipments and ensure the respective invoice has been signed by the customer or another form of proof of receipt has been received. 2. Compare the shipment dates recorded in the system and the actual dates goods were shipped. Any discrepancies should be followed up on by operations in a timely manner. 3. Ensure that

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
					revenue has been correctly recognized for month end sales.
9	Invoicing	Review of Monthly Sales	On a monthly basis, sales analysis is performed by category (sales data extracted from system). The comparison is made against latest forecast. Significant variances are required to be noted and explained. Any resulting actions from the review are documented. The analysis prepared is reviewed by Financial Controller.	Detective	1. Verify for the selected months whether sales analysis has been performed by the appropriate person. (Finance Controller) 2. Examine the variance noted during the review are documented. 3. Ensure corrective action has been taken for the variances noted during review.
10	Invoicing	Balance Confirmation	Debtor balances as per books are circulated to customers for balance	Detective	1. Obtain the guidelines for the periodic balance confirmation. 2. Review the

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
			confirmation. Variations, if any, found out are addressed appropriately.		balance confirmation documents for the selected period. 3. Ensure that necessary adjustment entries were passed in case of variance in balance.
11	Revenue Recognition	Review of Sales during cut-off period	Operation reviews shipments close to period-end and provides necessary adjustment for shipments where title has not transferred as of established period cut-off.	Preventive	1. Obtain Revenue Recognition Policy of the Company. 2. Obtain Sales in Transit Reports/ Revenue Reversal Reports/ List of Goods Shipped But Not Invoiced. 3. Ensure that any shipments which require an adjustment due to period end cut-off have been made properly and in a timely manner. 4. Select

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
					samples of shipments near cut off periods (end of month and beginning of next month) and ensure that the revenue has been captured at the right period.
12	Collection Management	Debtors Ageing and corrective action	On a monthly basis, overdue (aging) debtors' balances and related provisions/ incentives are reviewed. Amounts "past due" more than specified days or overdue amount in case of prompt "payment scheme" are followed up and action is decided and taken,	Detective	1. Obtain the debtors policy and guidelines for provisions. 2 Ensure for the selected months whether ageing analysis has been performed by the appropriate personnel. 3. Examine whether provision for doubtful debts have been calculated as per approved policy. 4. Ensure that corrective action have

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
			including raising debit notes, blocking delivery to customer and creating provision(s) for bad debt. As part of the review, credit limits/ incentive schemes of customer is reviewed and amended or applied.		been taken for default customers e.g., blocking of credit limit or invoicing, etc.
13	Collection Management	Approved write offs for overdue balances	Write off proposal is raised containing the reasons for such write off. The proposal for write off is verified along with all the supporting and approved as per DOA.	Preventive	1. For the selected samples, verify whether write off has been approved as per DOA. 2. Ensure that write off is adequately supported by the working based on the approved policy.
14	Accruals	Adjustment entries for provision	Accounting Manager/ Assistant Accounting	Preventive	1. For the selected samples, verify whether

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
		s and accruals	Manager reviews all journal entries (including accruals, provisions and pre-payment) along with supporting sheets for correctness and validity before approving into system		Journal voucher for provision/ accruals etc has been approved as per DOA. 2. Ensure that journal voucher is adequately supported by the working based on the approved policy.
15	Collections	Incoming payment processing on the basis of invoice.	Incoming payment from customer are matched with invoice by Finance Team and AR balance is cleared on timely basis.	Preventive	1. For the selected samples, verify whether collections are recorded after verifying the invoice amount. 2. Check whether discount/ interest/ fees as applicable for timing of payments are adequately calculated and supported before deriving final amount of payment.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
					3. Ensure whether AR Balances are cleared on timely basis.
16	Collections	Reconciliation between General Ledger and Sub Ledger	Reconciliation between Sub Ledger and General Ledger is done and reviewed by Accounting Manager. Any differences are analysed and resolved.	Detective	1. Check whether reconciliation is prepared between General Ledger (GL) per Sub-ledger (SL). 2. Review the reconciliations for accuracy and their correctness. 3. Ensure that all adjustment entries to support the reconciliation are approved and backed-up with working. 4. Investigate the reason for aged item in reconciliation.
17	Sales Return	Sales return recorded on the basis of	Sales returns are recorded on timely basis by the Order Taking	Preventive	1. For the selected samples, ensure that sales returns

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
		approval	Centre Team on the basis of supporting documents and required approval		are recorded only on the basis of adequate approval. 2. Examine whether sales returns are recorded on timely basis. 3. Verify whether reason for sales returns are adequately documented.
18	Sales Return	Sales Return Reconciliation	On a quarterly basis, Distribution team physically counts the returned goods from randomly selected returned invoice and reconciles with ERP to ensure that returns have been recorded correctly and completely. The reconciliation	Detective	1. For the selected quarter, obtain the document of physical verification documents. 2. Verify whether physical verification has been conducted based on the approved guidelines. 3. Examine whether any discrepancies noted during physical

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
			statement is reviewed by Financial Controller.		verification has been followed up for corrective action.
19	Route Settlement Direct Sales	For direct sales to outlets, settlement associate ensures driver's settlement sheets are prepared and supported by the properly signed documents	In case of Direct Sales to outlets, settlement associate ensures driver's settlement sheets are prepared and supported by the properly signed documents (e.g., cashier signed receipts, checker signed load documents).	Preventive	1.Verify the following documents: - Fulls check in slip - Empties check in confirmation with the PV - System generated settlement sheet 2. Ensure these documents are signed by appropriate authority.
20	Route Settlement Direct Sales	Settlement sheets and supporting documents are audited on a daily basis	In case of Direct Sales to outlets, settlement sheets and supporting documents are audited (e.g., by comparing driver's load document	Preventive	1. Obtain settlement sheets for the period under audit. 2. Check whether settlement sheets are reviewed by an independent person.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
			used in route settlement against checker's copy and by reviewing invoices to ensure they are issued at the approved price) on a daily basis.		
21	SOD	Functional SOD	The functional duties related to this process (such as custody, review, approval, and recording) are properly segregated.	Preventive	1. Observe key functions of the process. 2. Evaluate if there is appropriate segregation of duties for all main processes.

Direct Marketing Expenses

5.4   The objective of marketing expense control procedures is to monitor marketing related commitments and the corresponding actual spend against budgets.   The procedure covers the preparation of annual budget by marketing spend category; the recording of commitments; the subsequent recording of actual expenditure for approved schemes and programs, by brand, marketing spend category; and the reporting of marketing expenditure on the sales curve basis.   The procedures also describe the process of recording and evaluating the actual results achieved and those expected at the start of the activity.

The marketing and finance departments are to jointly prepare the annual marketing budget and obtain appropriate approvals.   Typically, this is based on the expected annual sales.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
1	Pre-Paid Marketing and Media Buying	Investment in coolers is adequately supported.	Amount paid to bottler for investment in coolers are appropriately supported with required approval and have valid agreement.	Preventive	1. Check whether amount paid to Bottler for investment in coolers are supported with valid agreement. 2. Ensure the payment is supported with required approval. 3. Verify whether the payment has been appropriately recorded in the correct GL Code.
2	Pre-Paid Marketing and Media Buying	Amount spent on celebrity fees and media space is appropriately supported.	Amount spent on celebrity fees and media space is appropriately supported with required approval and have valid agreement	Preventive	1. Check whether amount paid to Celebrity and Media Agency for media space are supported with valid agreement. 2. Ensure the payment is supported with

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					required approval. 3. Verify whether the payment has been appropriately recorded in the correct GL Code.
3	Media Buying	Marketing Performance Audit	Marketing finance executes quarterly audits of marketing performance. (billed as contracted or agreed)	Detective	1. Obtain the marketing performance audits for key bottlers. 2. Verify that the report has been reviewed timely. 3. Verify that any adjustment/ follow up action noted during review has been performed.
4	Media Buying	Media Performance Audit	Local media airing/ performance are audited and reviewed on a timely basis.	Detective	1. Understand the media airing/ performance process. 2. Obtain the post-audit report for

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					review. 3. Ensure that follow up action has been performed.
5	Prepaid Marketing and Media Buying	Review on Prepaid Marketing Assets	Marketing assets/ programs amortization calculation and/ or other accounting treatments are properly supported, recorded and independently reviewed and approved	Detective	1. Examine agreements, entries, amortization schedules, etc for new pre-paids and determine whether amounts were properly recorded and reviewed/ approved. 2. Examine amortization for reasonableness and accuracy 3. Verify that amortization is reviewed by authorised person.
6	Marketing Accruals	Procedures to	Operation has	Detective	1. Review the month end

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
		solicit goods/services received but not invoiced for the manual accruals	established procedures to solicit/ obtain a complete listing of goods and services (including marketing assets) received but not invoiced to be included in manual accruals. All accrual accounts need to be reviewed in the next period to ensure the proper fall out recording.		marketing accrual and ensure the basis for preparing the marketing accrual is reasonable, including estimate for marketing claims received from bottlers in preparing the accrual. 2. Obtain the JV to record the accrual and ensure whether the support calculation had evidence of review and approval. 3. Note whether the resulting adjustments were appropriately booked.
7	Impairment	Impairment	Quarterly, Operation	Detective	1. Obtain the quarterly

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
		Survey	reviews the marketing asset balances for possible impairment indicators and supports conclusions prior to submission to the Corporate. Ensure the impairment testing cover the marketing side (i.e., long term marketing assets, investment in coolers).		confirmation submitted to Corporate Finance. 2. Verify if any impairment indicators have been identified. 3. Review the process to identify impairment indicators to ensure the confirmation sent to Corporate Finance is prepared in accordance with the approved guidelines. 4. If accounting adjustments were required and recorded, verify that they were discussed with and approved by Corporate Finance.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
8	Balance Sheet Reconciliation	Balance Sheet Reconciliations	Balance sheet reconciliations for all marketing related accounts (including prepaid media spent, Coolers and accruals) are prepared to ensure balances are supported, analyzed, and reconciling items are cleared in timely manner. Balance sheet reconciliations are independently reviewed/ approved.	Detective	1. Verify that there is adequate supporting documentation and they are independently reviewed and approved. 2. Verify that reconciling items if any are cleared timely. 3. Review the Balance Sheet by account to identify unusual items (e.g., debit balances in liability accounts, etc.)
9	SOD	Functional SOD	The functional duties related to this	Preventive	1. Observe key functions of the process. 2. Evaluate if

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			process (such as custody, review, approval, and recording) are properly segregated.		there is appropriate segregation of duties for all main processes.

Deductions from Revenue

5.5   This process is designed to monitor marketing related commitments and the corresponding actual spend against budgets with control procedures. Further, it broadly evaluates the effectiveness of the marketing related spend.

The procedures cover the preparation of annual budget by marketing spend category and month; the recording of commitments; the subsequent recording of actual expenditure for approved schemes and programs, by brand, marketing spend category; and the reporting of marketing expenditure on the sales curve basis. The procedure also describes the process of recording and evaluating the actual results achieved and those expected at the start of the activity.

The marketing and finance departments jointly prepare the annual marketing budget and obtain approval as per COA. Typically, this is based on the expected annual sales volume and often stated as cost per case of sales. This budget is to be further detailed by month and marketing spend category.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
1	Calculation, Pricing, and	Off-invoice rebate/ allowance calculations	Off-invoice rebate/allowance calculations	Preventive	1. Verify whether calculations are

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
	Approval	properly supported and independently reviewed and approved	are supported by the properly signed contract with bottler/ customer, independently reviewed and approved.		reviewed by an independent person and are properly approved. 2. Verify whether calculations are supported by a properly signed contract with the bottler/ customer or duly approved program. 3. Verify that the rebate is recorded to the appropriate GL account. 4. Determine whether credit memos, claims, or

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
					invoices paid/ deducted was in line with the supporting documentation, agreements or contracts. 5. If payment requires, acknowledgment ensure to obtain evidence that customer receives the payment or products or customer is aware of the deductions in their accounts.
2	Calculation, Pricing, and	New/ changes to Rebate prices are properly	New/ changes to rebate prices are properly approved in	Preventive	1. Ensure that changes are made for the

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
	Approval	approved	accordance with the COA/ rebate policy prior to update in Rebate/ Price Master File.		selected samples of new prices and amendments to the rebate master file as per appropriate level of approval as defined in the local chart of authority. 2. Verify if adjustments are timely encoded in SAP and after approval. 3. Review a list of all adjustments and identify adjustments are approved and supported.
3	Calculation,	Manual override of	Any manual override of	Preventive	1. Obtain a listing of

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S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
	Pricing, and Approval	rebate prices are properly approved	rebate prices are properly reviewed and approved in accordance with COA or applicable policy.		price overrides (exception reports, etc.). 2. Verify that the manual overrides are properly supported and reviewed approved in accordance with COA. 3. Verify the operation is routinely reviewing price overrides.
4	Calculation, Pricing, and Approval	Independent Rebate/Price Master File Audit Trail Review	An audit trail of changes to Rebate/ Price Master File is reviewed by an independent associate periodically.	Preventive	1. Obtain the operation's review of the rebate master file audit trail. 2. Verify that all risk significant changes

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
					were reviewed and approved. 3. Verify that the person performing the review is independent of the rebate update process.
5	Source Data Validation	Independent associate ensures credit memo/ invoice from customer/ check request for off-invoice rebates/ allowances/ fees is properly supported by approved calculation prior to payment	Independent associate ensures credit memo/ invoice from customer/ check request for off-invoice rebates/ allowances/ fees is properly supported by approved calculation prior to payment.	Detective	1. For the selected sample review invoice with signed contracts or agreements, payment approvals and supporting documentation. 2. Ensure that the supporting documentation in line with

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
					agreements or contracts and payment/ credit is calculated based on above. 3. Investigate any significant differences.
6	Accrual Recording and Reconciliation	Operation has established procedures to identify all rebates earned by customer but not paid that need to be included in manual accrual.	Operation has established procedures to identify all rebates earned by customer but not paid that need to be included in manual accrual. Accruals are reviewed for reasonableness and approved by appropriate management.	Preventive	1. For the selected months, obtain the rebates accrual analysis and ensure: (a) Accruals are reasonable based on rebate type. (b) Accruals are reviewed by an independent person and are

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
					properly approved. 2. Compare month-to-month accruals and investigate and conclude on any unusual variances.
7	Balance Sheet Reconciliation	Balance Sheet Reconciliations	Balance sheet reconciliations for all rebate/ allowance related accounts are prepared to ensure balances are supported, analyzed, and reconciling items are cleared in timely manner. Balance sheet reconciliations are	Detective	1. For the selected months review the reconciliations and ensure that they are performed and reviewed by the appropriate personnel. 2. Ensure that the reconciliations are performed in a timely manner and ensure that

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive/ Detective)	Test Procedures
			independently reviewed/ approved.		reconciling items are researched and addressed in a timely manner. 3. Verify that the amortization methodology is in-line with the related Customer Master Agreement.
8	SOD	Functional SOD	The functional duties related to this process (such as custody, review, approval, and recording) are properly segregated.	Preventive	1. Observe key functions of the process 2. Evaluate if there is appropriate segregation of duties for all main processes.

Fixed Assets

5.6   The purpose of the fixed assets and depreciation procedures is to ensure that the fixed assets are correctly and consistently accounted for, and that adequate controls are exercised and accountability established for this

significant investment of the company. Broadly, this section covers the accounting for fixed assets and depreciation, including their transfers and disposals. Further, it also covers the procedures for physical control over fixed assets.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
1	Civil Construction work-awarding	Granting Civil Construction work is adequately controlled.	Civil construction work is evaluated, approved and verified before awarding the work and making payments.	Preventive	1. Ensure that an independent evaluation of the structural drawings (layouts) has been performed by an external consultant to determine the quantum of work and cost to be incurred. Specific focus to be placed on the process documented for awarding of such contracts. 2. Check that based on above, the (RFQ) has

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					been prepared to obtain bids/ quotes from civil works contractors and contracts has been awarded based on established parameters
					3. Verify that the quotations invited are comparable with respect to the specifications of materials etc.
					4. Check whether the final bill of the vendor for construction / renovation has been reviewed by

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					independent civil consultant before payment.
2	Asset Capitalization- Accounting and Recording	Asset Additions properly capitalized prior to updating fixed asset register	Assets-Under Construction are reviewed periodically for capitalization and for asset additions.	Preventive	1. Select sample for assets additions from FAR. (Sample selection criteria e.g. - High value machinery, Civil Work, Items dealt/ purchased by local operations) 2. Analyze FAR and check if asset life and depreciation method have been defined in accordance with the company policy. 3. Verify bids (sufficient number of

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					quotes) for assets purchases. Lesser number of bids should be supported by approved business justification / reasoning.
					4. Check for the correct capitalization in the system (asset category, asset life, asset value, tagging, Installation Date, Put to use date, etc.)
					5. Check account balance in the asset-under-construction account and

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					compare it with detailed project specific report (where project cost is recorded).
					6. Discuss with the unit management about the process of reviewing asset-under-construction (CWIP) account to ensure the timely capitalization of projects.
					7. Review the asset-under-construction (CWIP) transfer entries in FAR for accuracy

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					and timeliness. 8. Perform a physical examination of Asset lying under CWIP account for checking if asset is actually under construction stage. 9. Verify if depreciation is calculated on account balances (transferred from CWIP account) from the date the project is finished and it is recorded in FAR.
3	Intangible Asset Capitalization- Accounting and	Intangible Asset Additions adequately capitalized.	Finance Manager - capitalizes the intangible asset on the basis of approved	Preventive	Examine whether Finance Manager capitalize the intangible

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
	Recording		agreement and details as approved by the authorised person in terms of financial viability of the intangible assets like patent/ copyright/ marketing rights, etc.		assets based on the approved agreement and relevant support documents.
4	Review of Intangible Assets	Independent review of Intangible assets	Accounts Executive forwards asset schedule at the end of every quarter to Manager–Cell for review. Asset schedule captures the accumulated amortization and net value of the intangible asset as on date.	Detective	Verify whether review of intangible assets have been performed to ensure the correctness of amortization and net value of intangible assets.
5	Fixed Asset Register	Independent review of periodic assets movement in FAR	Periodic asset movements (i.e., new, disposed, transferred) recorded in FAR are independently	Detective	1. Verify whether all the assets movements (Additions/ Transfers/ Disposals/ Write-offs)

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			reviewed for accuracy.		as recorded in the monthly / quarterly financial reporting are matching with FAR. 2. Perform a walkthrough of the process followed by Operations for reviewing assets movement. 3. Pick a random sample of 2 months / quarters for testing.
6	Physical Controls	Fixed Asset Tagging	Fixed assets are appropriately and uniquely identified in FAR which includes unique asset numbers to link the physical assets to the asset records.	Preventive	1. For a sample of fixed assets, verify assets have been tagged with a unique asset tag number. Select from

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					floor to sheet and sheet to floor.
					2. Using ACL (other data analytics tools), identify instances where assets tag number is missing and instances of duplicate asset tag numbers in FAR.
7	Physical Controls	Periodic Fixed Asset Verification and reconciliation to FAR	Assets are periodically verified via physical observation and reconciled to FAR. Any differences identified during asset verification are properly recounted, investigated, and supported. Upon completion of	Detective	1. Check if assets are physically verified on periodic basis. 2. Off-premises assets (Vehicles given to distributors, Machinery to co-packers, etc.) should also be

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			investigation provision or adjustments are made for missing assets.		verified as per this periodicity. 3. Verify if latest physical verification report is reconciled with FAR. 4. If assets are found for which there is not record in FAR, reason for their omission should be documented and approved as appropriate 5. Check if recount was performed for variances in the FAR quantity and physically available quantity

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					6. Ensure that provision or adjustment entries are passed for the adjustments identified. 7. Verify if appropriate approvals were obtained before assets are adjusted in FAR.
8	Segregation of Duties	Functional Segregation of Duties	The functional duties related to this process (such as physical custody, recording and approval) are properly segregated.	Preventive	1. Observe key functions in the process. 2. Review Access Controls List from ERP and evaluate if appropriate segregation of duties for all main processes have been defined.
9	Mainten	Changes in Master	Changes to the Master Data	Preventive	Check if all the changes in

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
	ance	Data file	File (e.g., useful lives to asset categories, depreciation conventions) are supported, reviewed and approved.		FAR and depreciation adjustment report are supported.
10	Disposals	Asset disposal and transfers are properly supported and reviewed	For asset disposal and transfers, finance department ensures proper authorization and support prior to updating the FAR.	Preventive	1. Obtain a list of all disposals made to date from ERP. 2. Check whether these disposals have been adequately approved and supported. 3. Verify bids (sufficient number of quotes) for assets purchases. Lesser number of bids should be supported

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					by approved business justification/ reasoning. 4. Verify gate out pass, shipping document, invoices and match details in bids and invoices. 5. Match the invoice with the sales proceeds. 6. Recalculate gain/loss on disposal and trace to the general ledger. 7. Ensure the disposal of the assets was correctly

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					and properly booked.
11	Disposals	Accrual for assets ready for disposal are properly prepared, reviewed and approved.	For asset disposals not processed in the period of impairment identification / discontinuation of asset use, an accrual is prepared, reviewed, and properly approved at the time of identification in order to recognize any associated loss on disposal in the appropriate accounting period.	Preventive	1. Discuss with the operations about the assets identified for disposal. 2. Ensure that appropriate accruals have been made and approved for these assets.

Inventory Process

5.7 The objective of Inventory Procedures is to establish controls surrounding the issue, holding and reporting of inventory items including raw materials, consumables and stores and spares. Further, to determine the consumption of inventory items for the production of finished goods, obsolete items and shortages, if any. The inventory procedures include the receipt, the issue, storage and count of raw, packing and other inventory items. Stores department receives materials purchased, along with a quality approved copy of the Goods Receipt Note. The items include raw materials and consumables bottles and cases, stores and spares and miscellaneous

items. Based on the GRN and physical quantities received, the Quantitative Stock Ledger (QSL) is updated for each transaction.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
1	Receiving	Physical count of the goods is compared with the packing slip, delivery notice, or bill of lading before acceptance.	At the time of GR, the packing slip, delivery notice, or bill of lading is compared to a physical count of the goods before acceptance and is used as evidence to document and record the goods receipt.	Preventive	1. Verify whether the packing slip, delivery notice or bill of lading is compared to a physical count of the goods before acceptance. 2. Verify whether the Operation records the GR at the point of legal transfer of title. Review actual receiving documentation and shipping documentation to

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					ensure SAP GR date is accurate and appropriate.
2	Costing	Standard costs are periodically reviewed and revised as needed.	Standard costs are periodically reviewed and revised as needed (for instance, before being input into the system).	Detective	1. Discuss the process of deciding standard costs for various items. 2. Check if standard cost is established during the annual budgeting process. 3. Check that standard cost are established for new products introduced during the year. 4. Check whether AFM or FM has

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					reviewed/ approved the standard before uploading it in ERP.
3	Costing	Purchase/ production variances are periodically analyzed.	Purchase/ production variances are periodically analyzed and allocated to appropriate accounts and accounting periods.	Preventive	1. Obtain monthly analysis report and review analysis of variances. 2. Verify whether the variances are allocated to appropriate accounts and accounting periods. Review the Deferred Inventory Account to ensure accuracy. 3. Verify whether

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					the labor and overhead applied costs are being reconciled to actual costs on a timely basis. 4. Verify whether the significant variances are highlighted in management reports for review and approval or are monitored by the finance department independently of production. 5. Review variance

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					accounts in the general ledger and investigate and explain unusual entries.
4	Counts	Periodic Physical Counts	Periodic Physical counts for Full goods and Raw materials are performed in accordance with the proper count plan to verify purchases on hand. A proper count plan should include frequency, cut off procedure, inventory held at third party, etc.	Detective	1. Discuss with the Unit Management about process for physical verification of all Inventory items. 2. Check if physical verification is performed by an independent person. 3. Participate in the physical count (falling within audit

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					period) and count few inventory items (high and low value both).
					4. Check if count differences are investigated and recounted for resolution/ confirmation.
					5. Verify if reconciliation between book quantity and physical quantity is performed and it is done by a person independent of custodian/ person performin

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					g count.
					6. Take physical verification report of any other month and verify approvals for adjusting book stock.
					7. Check if all items are covered during the physical verification at the month-end.
					8. Ensure inventory lying at third party locations are covered during the month-end counts. (Third Party Locations

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					may interalia include SGAs lying with external vendors, Jobwork material like resins, etc.)
					9. Sight the confirmation received from third party for inventory lying at their locations
					10. At the time of participating month-end count, check whether the physical movement of inventory including RM/ PM/ FG is

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					stopped at the time of physical verificatio n.
					11. Check whether goods received but not inventorie s are not included for count.
5	Inventor y Counts	Inventory counts are adequately controlled.	1. Invent ory counts sheets / tags are used and controlle d. 2. Invent ory count sheets are not pre-populate d with inventor y balance s as per books. 3. Items	Preventive	1. Check that the inventory count sheets are used during the physical counts. 2. Count sheets must include all the inventory items. 3. At the time of participati on in physical count, check if

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			using different unit-of - measure for count and recording are identified and these conversions are reviewed and approved.		count sheets are prepopulated with on-hand inventory quantities. 4. In the previous months count sheets, check if quantity appears to be pre-populated or computer printed. 5. Discuss with the management if items using different unit-of - measure are identified and their conversion criteria is approved. 6. Check the

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					month-end physical quantity for such items in the books and calculate book quantity as per approved conversion criteria. 7. Verify in the book versus physical reconciliation whether proper conversions are made and reviewed by Plant Manager.
6	Inventory Counts	Inventory Counts at third party	Third-party total inventory balances are monitored for reasonableness to ensure	Detective	1. Review a sample of third-party inventory custodian contracts to ensure material

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			inventory losses are recorded.		loss limits and penalty fees are clearly documented. 2. Verify whether the operation has a process in place to monitor third-party losses. 3. Review a sample of material losses beyond acceptable limits and ensure they have been or will be recuperated/ re-covered.
7	Obsolete and slow moving inventor	Obsolete or expired materials and goods are appropriately	1. Obsolete or expired materials and goods are	Preventive	1. Identify expired finished goods from the

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
	y	segregated and monitored for obsolescence.	appropriately segregated and restricted from being consumed, shipped to customers. 2. Slow moving and excess inventory (including bottles and cases) is monitored for obsolescence and appropriate reserves are established, reviewed, approved and properly recorded. 3. Adjustme		closing inventory records. 2. Discuss with the Unit Management if expired finished goods and other Inventory items are lying in the plant/ depot premises. 3. Verify if expired inventory is properly segregated and marked as "Expired - Not to be consumed / shipped". 4. Discuss with the unit management about the process

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			nts for inventory write-offs (e.g. expired goods write-off, and broken bottles and cases) are booked in the proper accounting period and are properly authorized.		for identifying slow moving/ excess inventory. 5. Check whether enough provision/ reserves were created for such stock. 6. Check if write-off is performed for provided items identified as slow moving/ non-moving/ obsolete. 7. Verify that the inventory write offs are appropriately approved.
8	Check-in / check-	1. The warehou	1. The warehous	Preventive	1. Select a sample of

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
	out	se personnel signs the load document. 2. Check-out/ in is performed away from warehouse storage areas. 3. Independent Check-Out Count and blind count.	e personnel signs the load document to evidence release of goods and receipt of returns. 2. Check-out/ in is performed away from warehouse storage areas where product could be placed on the vehicles without detection. 3. Independent Check-Out Count and blind count is performed.		load documents evidencing the release of goods and receipt of returns. 2. Check whether load document and return receipts are appropriately signed by the shipping department. 3. Check whether goods were physically counted by security prior to release/ return. 4. Check whether check-out/ in is

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					performed away from warehouse storage areas where product could be placed on the vehicles without detection. 5. Observe whether at check-out, an independent (checker) and blind count (other than shipping) is performed for the product loaded on vehicles.
9	Segregation of Duties (SOD)	SOD between custody and book entry.	A person independent of the inventory	Preventive	1. Review User Access List to

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			custodian participates in the entry of final inventory count into the system.		check who all have access to enter inventory count in the system. 2. Ensure that the custodian of inventory is independent of person entering the count in the system.

General Accounting and Closing

5.8 The purpose of General Accounting and closing procedure is to ensure that all financial transactions are posted to the general ledger in the proper accounting period to enable the operation to prepare periodic trial balance and submit the financial statements.

The start of the process is with passing of Journal Vouchers, Cash Vouchers, booking of bills and ends with preparing of financial statements and the closing files. This process affects all P&L accounts and Balance Sheet accounts.

The accounting system is to be set up to restrict the access right of individual users to their areas of responsibility. For each individual user a separate user ID has to be created to ensure segregation of duties.

Compendium of Industry Specific Internal Audit Guides

Accounting Systems provides the option to close the particular period. Every month post-closing activities, Finance department closes the past period and opens the period for current month activities.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
1	GL Maintenance	Changes to master data	Changes to master data are properly reviewed and independently approved prior to their update in the system.	Preventive	1. Obtain understanding of process to add/ change GL accounts. 2. Obtain random samples and perform the following: (a) Verify if the accounts were properly included in the COA (Chart of Accounts) by comparing the additions or changes to the company's chart of accounts. (b) Verify if additions/changes are properly and timely approved.
2	GL Maintenance	Direct posting to GL accounts	Direct posting to G/L accounts is restricted	Preventive	1. Determine whether certain GL accounts are blocked for direct posting.

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S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			by the system.		2. Obtain evidence (screenshots, etc.) that direct posting is blocked.
3	GL Maintenance	GL to Financial Statements mapping	System is designed to map General Ledger accounts to proper Financial Statement lines.	Preventive	1. Understand the structure of the financial statement system. 2. Obtain samples from the Balance Sheet and Profit & Loss Accounts and reconcile that the mapped accounts were properly classified and included in the proper financial statement lines.
4	GL Maintenance	Update of currency table	Currency table is updated on timely basis.	Preventive	1. Verify that exchange rates were updated timely in the system. 2. Ensure that update was reviewed and approved

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					independently.
5	Segregation of Duties	System based duties are adequately segregated.	The system-based duties for all financial processes are properly segregated and violation, if any, are monitored and mitigated in accordance with the company policy.	Preventive	1. Review of access control list vis-à-vis SOD matrix with respect to critical transactions and reports in all financially relevant business process. 2. Discuss any exceptions with the Unit management and check approvals given by appropriate authority for granting the conflicting access.
6	Adjusting Entries and Journal Vouchers	Manual and Recurring Journal Vouchers	Journal Vouchers (Manual or Recurring) are properly supported, and independently reviewed and approved.	Preventive	1. Check whether vouchers are properly supported, reviewed and appropriately approved. 2. Check whether vouchers provide sufficient explanation, acceptable

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					documentation and evidence of independent review/approval. 3. Check if entries were posted timely.
7	System Access	Critical Spreadsheets and financial system access	Access to critical spreadsheets and areas where critical, confidential, and financial data is stored (like shared drives, databases, SharePoint sites, etc.) is properly restricted.	Preventive	1. Obtain a listing of shared drives and the employees who have access to these folders. 2. Review the listing for reasonableness based on folder manager job title and ensures that no terminated employee has access to any of these shared folders. 3. Select a random sample of employees and test their access, according to the access listing, by observing

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
					them attempt to access and modify folders to which they were not granted access as well as folders to which they were given read-only access.
8	GL Maintenance	Closure of calendar month	Operation closes the accounting period in the system as per defined timelines approved by the management.	Preventive	Download GL Calendar Report from financial system and ensure that the accounting periods were closed as per company's calendar month.
9	Financial Closure Process	Sign off of Financial Closure Check-list	Finance Controller signs off the financial closure checklist covering balance sheet/ profit and loss account	Detective	Verify whether book closure check list has been signed off by the authorised person. Ensure that book closure checklist has comments on all the items as defined in SOP.

S. No.	Sub-Process	Control Title	Control Description	Classification (Preventive / Detective)	Test Procedures
			elements as defined in SOP to ensure the completeness and correctness of book closing.		
10	Financial Closure Process	Review of Variance Analysis	Finance Controller reviews the Balance Sheet and Profit and Loss statement. Any variance over the threshold limit defined in SOP is explained and auctioned on quarterly basis.	Detective	Verify the variance analysis has been performed for the Balance Sheet and Profit and Loss Account on quarterly basis. Ensure that all variance over threshold limit has been adequately explained and auctioned.

Legal and Regulatory Compliance

5.9   Even though the overall approach of any internal audit assignment depends on the need and perception of the entity's management, of late certain legal requirements and regulatory prescriptions relating to corporate

governance have assumed importance in this regard.

Increasingly internal auditors are being asked to constantly review processes of compliance with these requirements and evaluate their efficacy. Not only does this provide assurance to the management and also to those charged with governance (e.g., Board of directors) but it also helps in improving corporate governance practices.

The purpose of internal audit in the area of legal and regulatory compliance is to ensure that all applicable commercial, environmental, statutory requirements are being regularly monitored for effective compliance by the organization.

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
1	Pollution Control	Obtain consent/ permission under various Acts and Rules.	Has consent been obtained by the manufacturing unit from the State Pollution Control Board under Air Act, Water Act and Hazardous Waste Management Rules of the Environment Protection Act.	Preventive	1. Check whether conditions on which consent was given are fulfilled? 2. Is the consent valid for the audit period? 3. Check for the actual effluent discharge details and their requirement as per consent letter and

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
					the company's quality policy.
2	Pollution Control	Submit Environmental statements	Has the unit submitted the environmental statement for each financial year to the State Pollution Control Board?	Preventive	1. Check if statement for the last financial year has been sent. 2. Check if it was sent within prescribed time period. 3. Check for the accuracy of data mentioned in the environmental statement. *(Refer to Appendix A – Format of Environmental Statement)*
3	Water	Draw water	Is the unit	Detective	1. Enquire

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
	supply agreement	as per the agreement.	drawing water as per an approved scheme of the central ground water authority/ State government?		from the factory manager or quality manager if plant falls in the critical/ semi-critical (unsafe) zone with respect to ground water availability. *(Approval is not required from CGWA if Unit falls in the safe zone)* 2. Check for compliance with the approved scheme.
4	Water supply	Payment of periodic	Has the unit paid the	Detective	Check whether the

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
	agreement	water bills.	necessary monthly charges/ cess for use of water?		Unit is paying the cess on water usage on timely basis.
5	Food Safety And Standards Act, 2006	License under FSS Act 2006	Has the unit obtained license under the Food Safety And Standards Act, 2006?	Preventive	1. See if license is valid for the audit period. 2. License covers all the products manufactured/ stored by unit. 3. Check compliance with conditions mentioned in the License".
6	Food Safety And Standards Act, 2006	FSS license with distributors.	Do all the distributors of the unit have license under Food Safety And Standards Act, 2006?	Preventive	4. See if license is valid. 5. Check if the license covers all the products

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
					manufactured or stored by unit.
7	Factories Act	License under Factories Act	Has the unit obtained license under the Factories Act?	Preventive	Check whether factory license is valid for the audit period.
8	Factories Act	Overtime exceeding 50 hours per quarter	Is overtime incurred by workmen exceeding 50 hours in a quarter?	Preventive	1. Analyze the overtime tracking record maintained by the unit to check whether overtime by each worker is within permissible limit. 2. Inquire about the reasons of non-compliances with HR Manager.

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
9	Factories Act	Overtime wage rate	Is the overtime paid at double of ordinary wage rate (Basic + allowance)?	Preventive	1. Verify the calculation of wages *(as mentioned in the factories act)* 2. Verify if unit has been paying overtime at double the wage rate.
10	The Minimum Wages Act	Payment of minimum wages	Are the minimum wages paid by the unit as per specified by the state government labor laws?	Preventive	Verify from the salary sheet if unit is paying at least minimum wages specified by government from time to time.
11	The minimum wages Act	Filing of annual return.	Has annual return been filed (Form III)?	Preventive	Verify return has been filed with prescribed authority on timely basis.
12	The	Health	Has a health	Preventive	1. See if

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
	workmen compensation Act *(For those units where ESI act is not applicable)*	Insurance Policy	insurance policy taken by the unit covering all workers their spouse and kids?		policy is valid. 2. Check if the policy covers all the employees of the unit.
13	Contract Labor Act	Registration for engaging contract labor.	If the unit engages contract labor, has it obtained certificate of registration for employing contract labor?	Preventive	Check if license is valid.
14	Contract Labor Act	Use of Certified contractors.	Do the labor contractors have a certificate in Form V for working as contractors?	Preventive	Verify if all the contractors have obtained the said certificate and is valid.
15	Contract Labor Act	Payment of PF and ESI by the contractors.	Is the unit ensuring that PF and ESIC are paid by the contractor?	Detective	Check if PF and ESIC are paid by all the contractors on timely basis.

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
16	Storage of Liquefied gas Rules of the Explosive Act	Storage of Liquefied gas	1. Has the unit obtained license from the Chief Controller of Explosives under the Storage of liquefied gas Rules of the Explosive Act if it is storing more than 100 Kgs of LPG. 2. Has the unit stored LPG in excess of the licensed quantity any time during the period?	Preventive	1. Check if the said license has been obtained and is valid. 2. Analyze daily record of LPG and check if the consumption or storage exceeds the licensed quantity at any point in time.
17	Storage of petroleum products	License for storage of petroleum	1. For storage of petroleum	Preventive	1. Check if the said license

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
		products.	items like Petrol/ Diesel, Furnace oil, etc., has the unit obtained license under the petroleum rules? 2. Has the unit stored Petrol or Diesel or Furnace oil in excess of the licensed quantity at any time during the period?		has been obtained and is valid. 2. Analyze daily record of petrol, diesel and furnace oil and check if the consumption or storage exceeds the licensed quantity at any point in time.
18	Storage of petroleum products	License under the Solvent, Raffinite and slop order	If the consumption of furnace oil exceeds 50 KL in a month and its storage exceeds 20 KL at any point of time,	Preventive	Check if the license is valid during the audit period.

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S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
			the unit is required to take a license under the Solvent, Raffinite and slop order from the District supply officer for consumption of Furnace oil or any other solvent.		
19	Static and Mobile Pressure Vessel Rules	Storage of CO2	1. Has the unit obtained the license for storage of CO2 under static and mobile pressure vessel rules? 2. Has the unit stored CO2 in excess of the licensed	Preventive	1. Check if the license is valid during the audit period. 2. Analyze daily record of CO2 and check if the consumption or storage exceeds the licensed quantity at any point in

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
			quantity at any time during the period?		time.
20	Indian Boiler Act, 1923	License to operate the boilers.	Has the unit taken license to operate the boilers under the Indian Boiler Act, 1923?	Preventive	Check if licenses are available for all boilers and they are valid during the audit period.
21	Indian Boiler Act, 1923	Annual inspection of boiler.	Has the unit ensured annual inspection and testing of the boiler by factory inspector?	Detective	Verify that for the last year every boiler was verified.
22	State Electricity Board	Permission for power and DG sets	Has permission been obtained from State electricity board for authorized maximum power for the unit?	Preventive	1. Compare maximum granted and actual usage of power. 2. If the in-house power generation is

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
					more than 500KWA then ensure that required permissions are available with the location.
23	State Electricity Board	Annual fees for inspection.	Has the unit deposited the annual fees for inspection by the electrical inspector?	Preventive	Verify if said fee has been paid timely.
24	Motor Vehicles Act, 1988	Registrations and insurance of vehicles.	Are all the vehicles owned by the unit registered in its name? Has a comprehensive insurance (including third party liability) been taken? Has fitness certificate been obtained for all the	Preventive	1. Obtain the list of all vehicles available with the Unit from the Fixed Asset Register. 2. See physical documents if all the

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
			company owned vehicles? Do company drivers and fork lift operators have adequate licenses?		vehicles entered in FAR are in the name of unit. 3. Discuss with the Unit Management if certain vehicles are given to distributors and check RC book for those vehicles. 4. Check whether insurance policy for all the vehicles is in place and is valid. 5. Check whether fitness certificate has

S. No.	Sub-Process	Control Title	Control Description	Classification *(Preventive /Detective)*	Test Procedures
					been obtained for all the company owned vehicles. 6. Check whether the company drivers and fork lift operators have requisite licenses.
25	Fire Safety	NOC from Fire agency.	Has a No Objection Certificate been obtained from the local fire service agency	Preventive	Check if the said NOC is in place and valid.
26	Weights and measure act	Certification of weighing scales	Is annual stamping and certification of all weighing scales conducted by Inspector of weights and measure?	Preventive	Verify certification has been done for all weights and measures available with the Unit.

IT General Controls

5.9   IT General Controls, ITGC for short, are the IT controls in place to ensure the proper development and implementation of applications, as well as the integrity of programs, data files and computer operations. ITGC audits are usually done in support of a financial statements audit, where the purpose of the ITGC audit is to review the controls in place for the IT systems that have a direct impact on the financial statements.

There are typically seven main control elements/ sub-processes, namely:

(a)   Access to Programs and Data

(b)   Computer Operations

(c)   Program Changes

(d)   Software Development/ Acquisition

(e)   Install and Test Software and Infrastructure

(f)   Configuration Management

(g)   SLA Management

S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
1	Software Development/ Acquisition	The organization's system development lifecycle methodology (SDLC) includes security, integrity and availability requirements for the development and acquisition of new systems and major	Preventive	Check whether each development project (custom development and/ or the acquisition of vendor applications) adheres to the structured System Development Life Cycle (SDLC) methodology of the company.

S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
		changes to existing information systems.		
2	Software Development/ Acquisition	The SDLC methodology ensures that information systems are designed to include application controls that support complete, accurate, valid and authorized transaction processing.	Preventive	Check whether adequate application controls have been applied to all new information systems development and changes to existing information systems.
3	Software Development/ Acquisition	The organization has an acquisition and planning process that aligns with its overall strategic direction.	Preventive	• Check whether Annual Budgeting and Planning Process have been established. • Check whether rankings are assigned to the projects to set the priority.
4	Software Development/ Acquisition	IT management ensures that users are appropriately involved in the	Preventive	Review the evidences available to demonstrate that users of information system (represented by Business Lead etc.)

S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
		design of applications, selection of off-the-shelf software and the testing thereof. Post-implementation reviews are performed to verify controls are operating effectively.		have been adequately involved in the following phases of application design or selection of software: 1. Initiating and Planning 2. Requirements Analysis 3. Design 4. Build and Test Check whether post-implementation review have been performed to validate that the company's IT Internal Controls are operating effectively.
5	Software Development/ Acquisition	The organization acquires or develops systems software in accordance with its acquisition, development and planning policies and procedures.	Preventive	Check whether acquisition of system software has been made in accordance with the acquisition and planning process. Also check if in-house development of system software was in compliance with the System Development Lifecycle Methodology (SDLC).
6	Install and Test Software and	A testing strategy is developed and followed for all	Preventive	Check whether adequate testing has been performed for all significant changes to

S. No.	Sub-process	Control	Classification (Preventive/ Detective)	Test Procedures
	Infrastructure	significant changes in applications and infrastructure technology, which addresses unit, system, integration and user acceptance testing to ensure that the proposed systems operate as intended.		ensure that all the requirements of an application have been met and no unauthorized/ unintended change has been made
7	Install and Test Software and Infrastructure	Load and stress testing is performed according to a test plan. Interfaces with other systems are tested to confirm that data transmissions are complete, accurate and valid.	Preventive	Check whether plans for application development and support include Load testing and System Stress testing. Check whether interface testing is a part of all test plans for application development and support.
8	Install and Test	The conversion of data is	Preventive	Check whether effectiveness of data

S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
	Software and Infrastructure	tested between its origin and its destination to confirm that it is complete, accurate, valid and has restricted access.		conversion has been reviewed and approved by business owners.
9	Program Changes	IT change requests are standardized, documented and subject to formal Program Changes procedures. Emergency change requests are documented and subject to formal Program Changes procedures.	Preventive	Check whether all change requests are standardized, documented and approved by appropriate authority. (for example by Requester's manager, IT Operation Manager and the Business Owner.) Check whether emergency change request are standardized, documented and approved/ ratified with-in reasonable time.
10	Program Changes	Controls are in place to restrict transport of programs to production only by authorized individuals.	Preventive	• Check if controls are in place to restrict the migration of programs to the production environment only by authorized individuals. • Check if controls are in place to ensure that

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S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
				compiler or other system development tools cannot be installed on production machines. All code shall be precompiled before moving into a production environment where applicable. If a compiler is necessary on a production machine, the access and execution rights are strictly controlled. • Check whether access to production environment has been restricted to authorized release managers only. Also check if application developers have display access only when necessary for a business function.
11	Program Changes	IT management ensures that the setup and implementation of system software do not jeopardize the security of the	Preventive	Check whether setup and configuration of system software (like Windows 2003 Servers, Windows XP, AS400, Domain Controllers, Firewalls, etc.) is in accordance with Technical Security

S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
		data and programs being stored on the system.		Standards laid out by the organization.
12	Access to Programs and Data	Systems are configured to authenticate all users to the system to support the validity of transactions and to enforce periodic password changes in accordance with defined procedures.	Preventive	Check whether all users of the Systems are supplied with a unique user ID that is valid throughout the user's employment. Also check if controls are in place to ensure that user IDs are not reused for other individuals even after termination of the original employee.
13	Access to Programs and Data	Procedures exist and are followed to ensure timely action relating to requesting, documenting, approving, establishing, suspending and closing user accounts. Controls relating to appropriate	Preventive	• Check if documented procedures have been put in place for granting access to new users; changing access of existing users and removing access of separated or transferred users. • Check whether management shall ensure that all company information assets issued to employees and third parties such as,

S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
		segregation of duties over requesting and granting access to systems and data exist and are followed.		laptops, badges, keys, ID cards, secure-ID tokens, software, data, documentation, and manuals are collected and turned in upon the termination or suspension of an employee. • Check whether the request for a user's access to company information is approved by his Reporting Manager and by information owner before access is actually granted to the user.
14	Access to Programs and Data	A process exists and is followed to periodically review and confirm access rights.	Detective	Check whether user access rights to company's Information Systems are reviewed and documented by business owner or delegatee periodically. Also ensure that the review encompasses all employees and third parties with access to company information.
15	Access to Programs and Data	Firewalls, intrusion detection and	Preventive	Check whether firewalls, intrusion detection system, etc. have been

S. No.	Sub-process	Control	Classification (Preventive/ Detective)	Test Procedures
		vulnerability assessments, exist and are used to prevent unauthorized access to the company's network.		appropriately configured, Vulnerability assessments exist and used to prevent unauthorized access.
16	Access to Programs and Data	IT administration monitors and logs security activity, and identified security violations are reported to senior management.	Detective	Check whether security logs are reviewed and monitored regularly for any probable security violation, like, any unauthorized activity or attempted intrusion.
17	Access to Programs and Data	Physical access is restricted to authorized personnel and requires appropriate identification and authentication.	Preventive	1. Check whether controls are in place to ensure that unknown or unauthorized individuals are not allowed into restricted areas without escort. 2. Check whether a process is in place to document the request for data center access to a user. 3. Check whether a

S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
				process is in place to immediately remove a user's access to data center as soon as he has left the organization or when his role has changed.
				4. Also check if the room containing wiring or communications equipment (wiring closets, PBX rooms, etc.) is locked at all times with access restricted to authorized personnel only.
18	Configuration Management	Information systems are configured to ensure that administration privileges are required for software installation. All installed applications and software must be authorized by Head of IT.	Preventive	1. Review the controls implemented by the organization to ensure that users are not allowed to load, download or install software from the Internet on their machines without appropriate approval.
				2. Check whether periodic review of software installed on user machines is performed by the

S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
				organization to ensure that all system resources are in compliance with licensing agreements.
19	Configuration Management	IT management has established procedures across the organization to protect information systems and technology from computer viruses.	Preventive	Check whether : 1. All company information systems use current Company approved anti-virus software. 2. Definitions of anti-virus software are updated periodically. 3. Complete hard drive of user machines is scanned periodically. 4. A system is disconnected from the network immediately if virus is suspected on that machine.
20	SLA Management	A framework is defined and managed to establish key performance indicators to manage service level agreements, both internally and externally.	Preventive	Check whether a network services agreement identify and includes: 1. Security requirements including Non-Disclosure Agreement, 2. Service levels-response time,

S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
				resolution time, etc. 3. Monitoring including penalty clause for failure to comply with agreed Service Levels, 4. Management requirements and 5. Right to Audit.
21	SLA Management	A regular review of security, availability and processing integrity is performed for service level agreements and related contracts with third-party service providers.	Detective	Check whether SLA review is performed covering areas like: 1. Critical Service Level Trends. 2. Call Volumes. 3. Service Desk Response Time Reports. 4. Service Desk Resolution Time Reports. 5. Backup Reports. 6. Disk Capacity Reports.
22	Access to Programs and Data	Management protects information, logically and physically, in storage and during transmission against unauthorized	Preventive	Check whether : 1. Smoking, drinking and eating in system processing rooms is prohibited. 2. Smoke detectors and humidity monitors are installed in the data center. Besides, the

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S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
		access or modification.		same are tested on periodic basis to ensure that they are working as intended. 3. On-site and off-site storage of back-up media is in fire-proof vaults. 4. Backup media, as well as a comprehensive set of operating and application documentation, is stored off-site in a different seismic zone.
23	Access to Programs and Data	Management has implemented a strategy for backup of data and programs.		Check whether : 1. System and application software back-up is performed before regularly scheduled system upgrades and/ or maintenance occurs. 2. Multiple tape back-ups of all critical applications are created regularly. One set is stored onsite at a Company data center and the other set is sent off-site to a remote

S. No.	Sub-process	Control	Classification *(Preventive/ Detective)*	Test Procedures
				location.
				3. Tapes are sent offsite daily for critical applications and periodically, as defined by back-up schedule, for other applications.
24	Access to Programs and Data	Procedures exist and are followed to periodically test the effectiveness of the restoration process and the quality of backup media.	Detective	1. Check whether periodic testing of backups and backup media is performed to get reasonable assurance that backup process is effective. All business critical data has been adequately backed up and is restorable, when needed. 2. Check the worthiness and reusability of backup media

Appendix
Format of Environmental Statement
(Form V)

A – Format of Environmental Statement (Form V)

(See rule 14)

Environmental Statement for the financial year ending the 31ˢᵗ March……………..

PART – A

(i) Name and address of the owner/occupier of the industry operation or process.

(ii) Industry category Primary ----(STC code) Secondary.-----(SIC Code)

(iii) Production capacity.----Units----

(iv) Year of establishment

(v) Date of the last environmental statement submitted

PART – B

Water and River Material Consumption

(1)   Water consumption m3/d:

Process

Cooling

Domestic

S. No.	Name of Products	Process water consumption per unit of product output.	
		During the previous financial Year	During the Current financial Year
1			
2			
3			
4			

1. Substituted by Rule 2 (b) of the Environment (Protection) Amendment Rules, 1993 notified vide G.S.R 3′6 (E) dated 22.04.1993.

(ii) Raw Material Consumption

S. No.	* Name of Raw Material	Name of Products	Consumption of raw material per Unit of Output	
			During the previous financial Year	During the Current financial Year
1				
2				
3				
4				

*Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART - C

Pollution discharged to environment/unit of output

(Parameter as specified in the consent issued)

Pollutants	Quantity of pollutants discharged (mass/day)	Concentrations of pollutants in discharges (mass/volume)	Percentage of variation from prescribed standards with reasons
a) Water b) Air			

PART – D

Hazardous Wastes

(as specified under Hazardous Waste Management and Handling Rules, 1989)

S. No.	Hazardous Waster	Total Quantity (Kg.)	
		During the previous Financial Year	During the current Financial Year
1	From process		
2	From pollution control facilities.		

PART – E

Solid Wastes

S. No.	Waste	Total Quantity	
		During the previous Financial Year	During the current Financial Year
1	From process		
2	From pollution control facilities.		
3	a. Quantity recycled or re-utilized within the unit b. Sold c. Disposed		

PART – F

Please specify the characterizations (in terms of composition of quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

PART – G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.

PART – H

Additional measures/investment proposal for environmental protection including abatement of pollution, prevention of pollution.

PART – I

Any other particulars for improving the quality of the environment.

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TECHNICAL GUIDE ON INTERNAL AUDIT OF IT SOFTWARE INDUSTRY

Foreword

Over the last decade, the information technology sector has played a crucial role in placing India on the global map. The sector has crossed significant milestones in terms of revenue growth, employment generation and value creation, in addition to becoming the global brand ambassador for India. Trends in service delivery like, cloud computing, platform BPO, etc., are remodeling the industry and driving tremendous changes which involve high degree of research and scientific sophistication, and specialist analytical methodology. The software industry faces multiple risks like, strategic risk, economic risk, operational risk, compliance risk, disaster risk, political risk, human capital risk, reputational risk, etc.

In this challenging environment, chartered accountants armed with sound domain knowledge, good analytical skills and in depth process understanding play an important role. As internal auditors, they can assist organizations operating in software industry in ensuring that objectives are achieved, risks are managed appropriately, organizational resources are used responsibly and governance systems are strengthened. I am happy that the Internal Audit Standards Board of the Institute of Chartered Accountants of India (ICAI) has brought out this "*Technical Guide on Internal Audit of IT Software Industry*" which is aimed to equip the internal auditors with deeper understanding of this unique and complex industry. I congratulate CA. S.B. Zaware, Chairman, Internal Audit Standards Board and other members of the Board on issuance of this Technical Guide.

It is my sincere hope that this publication would further strengthen the skills of our members as internal auditors of software industry.

February 6, 2014
New Delhi

CA. Subodh K. Agrawal
President, ICAI

Preface

As one of the key growth drivers of engines of the economy, the Indian software industry has been contributing notably to the economic growth and providing direct and indirect employment to a large number of people. The phenomenal success of this industry can be attributed to availability of strong qualified human resources, favourable government policies, burgeoning demand conditions and competitive environment. Emerging technologies such as, social media, mobility, analytics and cloud computing, etc., are driving the growth in this segment and helping it to escalate to the next level. Challenges faced by the industry are poor infra structure, high competition, small domestic market, defusing industry environment, brain drain, etc.

Keeping this in view, the Internal Audit Standards Board of the Institute has issued this "*Technical Guide on Internal Audit of IT Software Industry*" which deals with operational areas of entities operating in this industry, with emphasis on compliance as mandated as per various regulations as applicable to software industry. It provides detailed guidance on business processes controls, risk management, legal and regulatory compliance, etc., related to software industry. This Guide specifically does not covers entities working in Information Technology Enabled Services (ITeS), Knowledge Process Outsourcing and Business Process Outsourcing. This Guide provides a brief about the IT Software companies covering evolution of IT industry, growth trajectory, initiatives taken by the government, major challenges faced, industry segmentation, project lifecycle, revenue model, etc. Salient features of legal framework and regulations governing Software Industry have been discussed in the Guide. The guide also throws light on major areas of external and internal risks being faced by the software industry. Major areas of internal audit significance like, contracts, fixed assets, government grants, loans and borrowings, foreign currency transactions, related party transactions, information security and privacy of data, patents and copyrights, etc., have also been explained. The Guide also contains an Annexure listing out major compliances applicable to software industry under various governing laws and regulations.

I am confident that this publication would prove to be immensely useful for the members.

Abbreviations

AMC	Annual Maintenance Contract
CAGR	Compounded Annual Growth Rate
CCTV	Closed Circuit Television
CMM	Capability Maturity Model
DGFT	Directorate General of Foreign Trade
DTA	Domestic Tariff Area
DTAA	Double Taxation Avoidance Agreement
ESI	Employees State Insurance
FCNR	Foreign Currency Non-Repatriable
FEMA	Foreign Exchange Management Act
FIRC	Foreign Inward Remittance Certificate
HRD	Human Resources Department
IPR	Intellectual Property Rights
ISO	International Standards Organisation
ISP	Internet Service Provider
ITeS	Information Technology Enabled Services
MSA	Master Service Agreements
NASSCOM	National Association of Software and Services Companies
NSDL	National Securities Depository Limited
NSR	National Skills Registry

PF	Provident Fund
RBI	Reserve Bank of India
RFP	Request for Proposal
RFQ	Request for Quote
SBU	Strategic Business Units
SEZ	Special Economic Zone
SIA	Standards on Internal Audit
SME	Small and Medium Enterprises
SMS	Short Messaging Service
STPI	Software Technology Parks of India
T & M	Time & Material Billing
TDS	Tax Deducted at Source
TRPS	Trade Related Aspects of Intellectual Property Rights
VAR	Value Added Resellers
WCT	WIPO Copyrights Treaty
WPPT	WIPO Performances and Phonograms Treaty
WTO	World Trade Organisation

Glossary

Annual Maintenance Contracts (AMC)	It is the legal agreement entered between two companies wherein the latter agrees to render the maintenance service annually to the former at an exchange of a fixed amount.
Closed Circuit Television (CCTV)	It is the use of video cameras to transmit signal to a specific place, on a limited set of monitors.
Cloud Computing	Cloud computing is a expression used to describe a variety of different computing concepts that involve a large number of computers that are connected through a real-time communication network (typically, the Internet).
Cloud Storage	Cloud storage is a model of networked enterprise storage where data is stored not only in the user's computer, but in virtualized pools of storage which are generally hosted by third parties.
Directorate General of Foreign Trade (DGFT)	It is the agency of the Ministry of Commerce and Industry of the Government of India responsible for administering laws regarding foreign trade and foreign investment in India.
Domestic Tariff Area (DTA)	It means an area within India that is outside the Special Economic Zone and other specified areas.
Double Taxation Avoidance Agreement (DTAA)	It is a tax treaty formally concluded and ratified agreement between two independent nations (bilateral treaty) or more than two nations (multi lateral treaty) on matters concerning taxation, normally, in written form.

Employees State Insurance (ESI)	It s a self-financing social security and health insurance scheme for Indian workers
Foreign Currency Non-Repatriable Account Deposits (FCNR)	FCNR deposits stands for Foreign Currency Non-Repatriable Account Deposits. This is a Fixed Deposit Foreign Currency account and not a savings account. Deposits in this account can be made in any of the major currencies like, US Dollar, UK Pound, Canadian Dollar, Deutsche Mark, Japanese Yen and Euro.
Foreign Exchange Management Act (FEMA)	It consolidates and amends the law relating to foreign exchange with the objective of facilitating external trade and payments and for promoting the orderly development and maintenance of foreign exchange market in India.
Foreign Inward Remittance Certificate (FIRC)	It is a document that provides proof of inward remittance to India.
Firewall	It is software or hardware-based network security system that controls the incoming and outgoing network traffic by analyzing the data packets and determining whether they should be allowed through or not, based on a rule set.
Global Delivery Model	It is a methodology used by IT companies by using a model of executing technology project using a team that is distributed globally.
Intellectual Property Rights (IPR)	It is a legal concept which refers to creations of the mind for which exclusive rights are recognized.
Information Technology (IT)	Companies dealing in information technology are referred to as IT Companies.

Information Technology Enabled Services (ITeS)	It is that sector of IT Industry which aims at providing various services through the use of IT.
National Association of Software and Services Companies (NASSCOM)	It is the premier organisation that represents and sets the tone for public policy for the Indian software industry.
Offshoring	Relocation by a company of a business process from one country to another.
Employee Provident Fund Organization	Employee Provident Fund Organisation is a statutory body of the Government of India under the Ministry of Labor and Employment. It administers a compulsory contributory Provident Fund Scheme, Pension Scheme and an Insurance Scheme.
Reserve Bank of India (RBI)	It is the apex bank of India. The RBI uses monetary policy to create financial stability in India and is charged with regulating the country's currency and credit systems.
Special Economic Zone (SEZ)	It is a geographical region that is designed to export goods and provide employment.
Small and Medium Enterprises (SME)	They are enterprises where the investment does not exceed specified limits.
Software Ecosystem	A Software ecosystem consists of sets of software solutions that enable, support and automate the activities in a social or business ecosystem.
Statement of Work(SOW)	It is a formal document that captures and defines the work activities, deliverables, and timeline a vendor must execute in performance of specified work for a client.

Software Technology Parks of India (STPI)	It is an export oriented scheme for the development and export of computer software, including export of professional services.
Tax Deducted at Source (TDS)	It is a means of collecting income tax in India, governed under the Indian Income Tax Act of 1961.
Value Added Resellers (VAR)	It is a business process that adds features or services to existing product and later resells it.
Y2K	YEAR 2000 was a problem for both digital and non-digital documentation and data storage solutions that resulted in from the practice of abbreviating 4-digit year to 2-digit.

Contents

Chapter 1

Introduction

Objective and Scope of Technical Guide

1.1   This Technical Guide is intended to assist Internal Auditors in carrying out Internal Audit of entities operating in the Software (Information Technology) Industry. The management in concurrence with the internal auditor, in accordance with the various pronouncements of ICAI and other regulatory requirements, assessments of control environment and business domain knowledge primarily decides the scope of the internal audit. The technical guide deals with operational areas of entities operating in this Industry with emphasis on compliance as mandated as per various regulations as applicable to the specific entity.

Indian IT industry is growing steadily despite the global meltdown from the year 2008. Inspite of global gloom across industries, Indian IT industry still managed to register a growth of 5.5%. The Domestic Market is also slotted to witness 12% growth, this year. Potential size of India's offshoring industry is estimated at US $ 120 to 180 billion by 2015. The Industry currently employs around 1 million people and provides indirect employment to around 2.5 million people. It is expected to add another 150,000 jobs in another fiscal according to NASSCOM.

1.2   Indian IT/ ITeS sector is growing substantially with its:

- Expansion into varied verticals

- Well differentiated service offerings

- Increasing geographic penetration

The phenomenal success of Indian IT- ITeS industry can be attributed to availability of strong qualified human resources, favourable government policies, burgeoning demand conditions, healthy growth of related industries and competitive environment prevalent in the industry and the focus on innovation by the IT Industry. The interplay of these forces has led to putting the industry on the global map.

1.3   The Software industry is a giant industry embracing large range of segments. To elaborate further, this sector can be categorised into:

(a)   Software solutions

(b)   IT Services

Scope

1.4   The Technical Guide does not covers following:

(a)   **IT enabled Services (ITeS)** – In this Guide on *Internal Audit of Software Industry*, the services relating to Information Technology enabled services (ITeS) have been excluded.

(b)   **Knowledge Process Outsourcing (KPO) and Business Process Outsourcing (BPO)** – Internal audit processes relating to KPO and BPO have also been excluded. There is a separate drafted Guide by ICAI for BPO areas. The 'Technical Guide on Internal Audit of BPO Industry' covers following:

- Evolution and history of BPO industry in India

- Reasons for outsourcing and initiatives taken by the government

- Special features of the BPO Industry

- Types of services provided by the BPO industry

- Major Challenges faced by the BPO industry

- Legal framework and a Gist of all the applicable regulations to BPO industry

- Statutory laws applicable to Indian BPO industry

- Need for internal audit and factors contributing to the evolution of internal audit.

- Standards on Internal Audit

- Major areas of internal audit significance like, invoicing, SLA adherence, Payroll, Operating Costs, Fixed Assets, Related party transactions, Data security.

- Risks faced by the BPO industry.

- Maintenance of books of accounts and documents.

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Chapter 2

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About IT Software Companies

Eco-System

2.1   The software industry is one of the most promising industries in India. Software companies make widespread use of partner business models like, resell. Some software companies create and manage partner ecosystems around them. Each software ecosystem is created for a purpose and often one finds network effects in a software ecosystem.

Today, there are only a few sources in the literature on the form of cooperation between software companies and on the objectives, structure and forms of cooperation in so-called software ecosystems (e.g., referral). For software companies, this is a crucial problem, since the decision to join or to create a software ecosystem or to partner is not easy. All issues around business models, software ecosystem leverage and software partnerships are roughly summarized in the term "Software Economics".

A software vendor sells software to its customers. The companies in the ecosystem interact with the software vendor or its customers or partners in the following ways:

- They sell products or services to the software vendor´s customers. These products or services might be related to or integrated with the software vendor´s products or services;

- They sell the software vendor´s products, e.g. as Value Added Resellers (VAR);

- They sell services to the software vendor, to the customers or to the software vendor´s partners;

- They purchase or license the software vendor´s products;

- They sell or license software to the software vendor (suppliers);

- They align on standards with the software vendor to create bigger markets based on standardized products or services; and

- Last but not the least, companies are potential candidates for acquisition by the software vendor.

Evolution of IT Industry

2.3   The evolution of IT industry can be studied in 5 phases which have been discussed in the paragraphs given below:

Phase I: Prior to 1980

2.4   The Software industry was literally non-existent in India until 1960. Software used in the computers till that time, were in-built with the systems. Government protected the hardware industry through high tariff barriers and licensing. However, in the west, the need for software development was gradually being felt as the software in-built in the system was not sufficient to perform all the operations. The government of India therefore, realised the potential for earning foreign exchange.

In 1972, the government formulated the Software Export Scheme. This scheme made the provision of hardware imports in exchange of software exports. Tata Consultancy Services Limited (TCS) became the first firm to agree to this condition. The year 1974 marked the beginning of software exports from India.

Phase II: 1980-1990

2.5   Despite the government initiatives, the software exports were not picking up because of two reasons mainly:

- The exports of software, was heavily dependent on the imports of hardware, which was costly as well as the procedure for obtaining the same was very cumbersome.

- Secondly, there was a lack of infrastructural facilities for software development.

To counter these, the government formulated a new computer policy in 1984, which simplified import procedure and also reduced the import duty on hardware for software developers. In an attempt to make software industry independent of hardware industry, the government in 1986 formulated Software policy which further liberalised the IT industry. According to this policy, the hardware imports were de-licensed and were also made duty free for the exporters. This along with the world wide crash in the hardware prices reduced the entry barriers substantially.

In 1990, government established Software Technology Park of India. This scheme was formulated to increase the export of software and services.

Phase III: 1990-2000

2.6   This decade made several significant changes in the economy, including trade liberalisation, opening up of Indian economy to foreign investment, devaluation of rupee, and relaxation of entry barriers. These changes attracted many foreign entities to our nation. These MNC's in India, introduced 'Offshore Model' for software services, according to which the companies used to service their clients from India itself. This model further graduated itself to 'Global Delivery Model', It is the combination of Onsite and Offshore Model. In this Model Offshore Development Centre is located in various locations across the globe.

During this period due to the entry of many players in Indian market, the competition got intensified. Therefore the players started investing in research and development to distinguish their services from others.

Phase IV: 2000 - 2007

2.7   The Global problems like, Y2K, the dotcom crash and recession in the US economy, proved to be a boon to Indian IT Industry. The Y2K problem demanded the existing software to be compatible to the year 2000. Due to the shortage of US based programmers during this period, many mid – sized firms were forced to utilise the services of Indian Firms. This had placed the Indian IT industry on the global Map.

Post 2002-03, the industry had registered a robust growth rate because of increase in the number of clients, large sized contracts and a strong global delivery model.

Phase V: Post 2007

2.8   Economies faced a downward trend during the 2007-10 due to recession in the United States of America and the snowball effect to the European and the Asian countries. This situation got even more aggravated with the uncertainties in the global political and economic environment. This affected economy at large with rising unemployment rates, political instabilities, general uncertainty and large scale cost reduction initiatives by both private and public sector organizations. This has resulted in huge budget cuts on IT investment by large corporations. It leads to stiffer competition for software companies to grab their market share to sustain their growth rates.

Since 2010, the recession impact smoothened and there have been signs of recovery. However, the markets and the corporates are cautious in their approach especially on any long-term strategic investment decisions. This stage evolved into a lot of phenomenal changes in the industry. The key changes post 2010 phase are:

- Early capital budgeting was performed by the companies in order to avoid last minute funds shortage.

- The software industry approach changed towards outcomes based solutions for their clients. The prime motive of the big-players of the industry was to blend their services and products specific to customer requirements and serve their needs efficiently in an Operating Expenditure (Opex) based model rather than the traditional Capital Expenditure (Capex) based model.

- Companies came out with different strategies to adopt with client and to gain customer base. Some of these are gain sharing, investment sharing, etc.

- The most prominent change that emerged after the phase of 2010 was Cloud Computing. Mass storage of data on cloud has not been very commonly used pre-2010. This trend saw a huge change. 90% of today's data of an enterprise or individual users are stored on cloud, with or without our knowledge.

- Mobile had just been a device for calling, SMS and some entertainment like music, videos. Nowadays, the industry is not the same though. Usage of mobiles has come to such a large extent that the same is used for enterprise mobility, decision-making, social media, banking, analytics, etc.

Growth Trajectory

Phase I

High Import Duty

Execution of Lower end services

Presence of few players

Modest beginning in software exports

Phase II

Lower Import Duties

Formation of STPs

Growth in Exports

Phase III

Offshore provisioning of services

Formation of ODCs by MNCs

Phase IV

Indian Firms establish their credibility

Execution of higher end services

ITe BPO sector steadily maturing

Phase V

Customer satisfaction

Capital budgeting

Cloud Computing

Mobility

Analytics

Social Media

Initiatives Taken by the Government

2.9   Although the story of the Indian software industry is a story of private initiative, the government played a supporting role with public funding of a large, well trained pool of engineers and management personnel who could forge the Indian IT industry into a world class treasure in a short time. Early government support came from a few visionary civil servants who championed the cause and helped the industry find its way through a labyrinth of regulations, making exemptions wherever possible. Later,

policies that encouraged local firms and direct foreign investments were introduced.

2.10   Government targeted software exports once the market identified the industry's potential and created the necessary institutions. As early as 1972, the Department of Electronics introduced a policy to permit duty-free imports of computer systems, if importers would promise to export software and services worth twice the value of the imported computers within a specified time. This policy helped a number of leading companies in their inception stage. In the 1980s the Department gave software developers a further boost by initiating software export friendly policies. It formed a software export promotion council and liberalized import rules for materials needed for the industry. Software was explicitly targeted as a key sector for export promotion. In the late 1990s, the government created four major taskforces comprising chief executives of leading software companies to study the sector and recommend actions, and then acted on most of the recommendations. At that time the Department of Electronics became the Ministry of Communication and Information Technology. This was followed by the IT Act to address a large number of issues. In addition to these federal interventions, many states promoted local software industry by improving infrastructure, IT education, and provision of more facilitating environments.

With the beginning of economic reforms in the early 1990s, efforts were made to attract foreign as well as domestic investment. Foreign companies were permitted to establish fully owned subsidiaries in the electronics export processing zones. Within the Ministry of Finance there was greater recognition of India's comparative advantage in the sector, as it abolished entry barriers for foreign companies, made available fast, low-cost data connection facilities, and reduced and rationalized duties, taxes, and tariffs.

2.11   The Reserve Bank of India adopted several measures to support the IT industry. These included: simplification of the filing of Software Export Declaration Form (SOFTEX); acquisition of overseas parent company shares by employees of the Indian company; companies whose software sales were over 80 percent could grant stock options to non-resident and permanent resident employees; foreign exchange could be freely remitted for buying services; and companies which executed contracts in "computer software" abroad could use income up to 70 percent of contract value to meet contract-related expenses abroad.

Tax holidays were given on company profits, although the government is progressively phasing out these deductions. Tax breaks from corporate

income and tax on profits was available to units in any free trade zone, any software technology park, or any special economic zone to the extent of 100 percent of the profits derived from the business. These deductions were not available from Financial Year 2009–2010 onwards.

Indian direct investment in joint venture (JV)/wholly owned subsidiaries (WOS) abroad was simplified and a fast track window is available for large investments. IT software and services companies in India can acquire companies overseas through American Depositary Receipt/ Global Depository Receipt stock swaps without prior approval for up to $100 million or ten times the export earnings of the previous year.

2.12   While the government has enacted significant reforms in the area of intellectual property rights (IPRs), and has joined the World Trade Organization and Trade-Related Aspects of IPRs, the reforms have so far not led to a surge in patents in the Indian software industry, nor have IPRs been perceived as effective in protecting innovations in the Indian software industry.

Several policy reforms in the telecom sector helped accelerate the domestic and export industry. In 1998, a national telecom policy was announced to clarify the role of the regulator, transition from license fee to a revenue sharing model and open domestic long distance to private operators. The ISP gateway monopoly ended in 2000 and permitted private companies to set up international gateways. In 2002, international long distance was liberalized two years ahead of WTO commitments and competition increased in cellular markets. As a result, India's teledensity, the number of phones per 100 people, increased to five and cellular penetration overtook the land line penetration.

2.13   Recognizing the growing need for manpower in the software industry, the Ministry of Human Resources Development took the following actions:

- Helped create and expand computer science departments in existing engineering colleges.

- Eased policies in order to enable private sectors to open educational institutions without public funding. A large number of engineering colleges were opened in the private sector.

- Introduced quality control systems for engineering colleges and other IT training institutions, such as the All India Council for Technical Education and an accreditation system run by professional bodies

such as the Computer Society of India to monitor private training institutions.

- Encouraged the private sector to open training institutions. At its peak nearly one million Indians were being trained in a year with the IT training industry earning over nearly 10 billion rupees in 1998 with no government subsidy.

Software Technology Parks

2.14 Creation of NASSCOM in 1988 and later establishment of STPs in 1990 represented a fundamental approach to policy making for the software industry. An important institutional intervention was the establishment of STPs to provide infrastructure for private companies to export software. Established in 39 locations, including most major towns, they provided ready-to-plug IT and telecom infrastructure. STPs also allowed single-window clearance for all regulatory matters. The benefits and approvals for STPs are similar to those of Export Oriented Units. Incentives provided in the Export–Import Policy are also applicable to STP members.

The companies registered with these parks account for about 68 percent of software exporters. Many of these companies have not benefited from the actual STP infrastructure in any significant way. Perhaps, the major contribution of these STPs was to enable new enterprises to launch, and small and medium enterprises to grow. Already established companies merely registered with these parks but did not use the infrastructure that was created.

The performance of STPs has been variable. Where the environment was right the STPs enabled small and medium enterprises (SMEs) to set up and grow. On the other hand in Gujarat, total sales from 60–70 SMEs was Indian Rs. 1,000 million (US$22 million), miniscule in comparison with industry norms. The Gandhinagar STP had a membership of 300 companies, many of which may have been attracted because of the incentives. However, only 60–70 are active. Out of the 5 Mbps (megabits per second) bandwidth available for use, hardly 2 Mbps was being utilized.

One of the STPs' key contributions is providing high-speed data communication services to the industry. The Software Technology Parks of India (STPI) had international gateways at 39 locations (2003). For the last mile users can connect through point-to-point and point-to-multipoint microwave links, and terrestrial fibre/copper cables were used (where

feasible). The up time of STPI connections is 99.9 percent. STPI works with major international telecom operators such as AT&T, Sprint, MCI, Intelsat and British Telecom. STPI offers two main services: softpoint service, secure and exclusive digital circuits for data and voice transmission; and SoftLink, Internet access on a shared basis.

Competition and Differentiators

Talent availability	Outsouricng	Pyramidal structure	Foreign Investment	Labour arbitrage

2.15 Indian software industry thrives significantly based on the clients from the US market. Although there are a number of clients across other continents, *viz.,* Europe, Middle-East, Asia, Australia, US still has the lion share of market for the Indian software industry.

The key areas which would differentiate Indian Software industry from others are as under:

- The Indian comparative advantage is based on cost and availability of software talent: the ability to offer the services of a large number of software professionals at costs substantially lower than those in the U.S. U.S. firms do not outsource requirement analysis, specification, and high-level design, nor do they outsource larger scale system integration types of activities to India. However, the leading Indian software firms do have the ability to provide these high-end services.

- The option of outsourcing has been of great value to U.S. firms. Virtually, all the U.S. managers noted that outsourcing to Indian firms allowed them to use in-house staff for more valuable and creative activities, such as the development of new business applications with a greater potential for influencing the firm. They greatly value the flexibility inherent in outsourcing – the firm does not take on a long-term obligation when it is uncertain about the future, both about the evolution of information technology and about its own specific uses of the technology.

- Indian software firms do not pose serious competitive challenge to U.S. software firms. Indeed, for the most part, they complement the U.S. industry, with the possible exception of those U.S. firms that provide staff augmentation and software services.

- Pyramidal Structure: The Indian software industry has a pyramidal structure with large corporates ruling the sector. The top players in the industry have more than $1 billion in annual sales.

- Multinational Companies (MNCs) are setting up their branches in India to conduct sophisticated software development activities and as a captive source of R&D, utilising India's abundant man-power.

Major Challenges Faced by the Industry

2.16 The Indian software services industry has been spectacularly successful, growing at over 50% annually for several years. However, the nature of markets and technology is changing. Other changes include rising salaries in India, fast growing higher end markets, talent shortage worldwide, and need for faster implementation of projects. However, for Indian companies a key change could be the growth of market segments that are not so price sensitive, and price based competition from China, Mexico, Philippines and other countries. Challenges arising from sustained high growth, operating as a low cost service provider, challenge of overseas development, managing multiple agencies in a single project, cultural challenges of operating in overseas markets and entry barriers to higher end value added work.

Challenges faced by industry	Less expensive Labour
	Poor infrastructure
	Small domestic market
	High competition
	Brain Drain
	Defusing industry environment

2.17 The major challenges faced by the IT Industry in India are as under:

- Though initially India provided less expensive and highly skilled manpower; currently it has ran out of that "skilled" manpower and whatever manpower is available is either not "skilled enough" or very expensive.

- Indian education system is not able to deliver substantial skilled manpower in terms of skill level in the numbers required. The quality is sore point when comes to the education. There are only a few Indian universities and institutions which can be regarded of international quality. The better educational institutions are highly subsidized by the government and hence the development of the same has not been as good as it could have been. There are some good institutions in the private sector as well but they are as expensive as any in the developed nations.

- Infrastructure in India has not been able to keep pace with the sustained development needs in the software industry. e.g., the rental in the housing markets have increased nearly 4 fold in last 5 years, however the incomes for these software professionals have not increased in the same proportion. Further added is the traffic levels in the software dominated cities is another example of the bottlenecks in the infrastructure.

- Due to the high Dollar inflows into the county due to its lucrative stock market return the Indian Rupee has become very strong compared to the Dollar. The government is also not keen to improve the situation due to the high prices of crude petroleum in the international markets since the petroleum products are highly subsidized in India and any weakening of Indian Rupee will add to the subsidy burden. The high volatility in the foreign currency rates have further worsened the challenge for IT Industry.

- The Eastern European countries provide as much cost benefit as Indians do and they currently are as competitive as Indians are in cost. Similarly, other Asian countries are exhibiting better cost benefit advantage compared to Indian Software Industry.

- The advantage for the Indian software industry has been its early beginning, and a large English Speaking population – the highest in the world. But due to the globalization of economy that advantage is not significant anymore. We have Indian software professionals

working in non-English speaking countries. Similarly, now manpower from less expensive non-English speaking countries is trying to compete for the big bucks of Software Services Industry.

2.18   Some of the other challenges faced by the Indian Software Industry are that the Indian software industry specializes in the export of low-end software development services, competing primarily on cost and availability of software talent.

- The industry is diffusing geographically. Although Bangalore is still home to many of the leading firms, the industry is not confined to Bangalore and is diffusing to regions other than Bangalore and Mumbai, with a substantial presence in Hyderabad, Chennai, and Delhi, and a growing presence in Calcutta and Pune.

- The domestic market is still small. Although PCs are diffusing more rapidly, communication bandwidth is still limited. The bandwidth problem is compounded because of the intransigent attitude of the department of telecommunications as it tries to retain control over telecommunications in India. The result is that Internet access in India is still slow and expensive. In addition, various infrastructure constraints have combined to slow the adoption of IT for business and government operations.

- Project management expertise is scarce, because the industry is still young in India and large-scale projects where project managers are trained are still relatively rare. This problem is exacerbated by a large number of experienced professionals who emigrate to the U.S.

- Management capability is weak. It is likely that many of the existing firms will fail the challenge of moving beyond low-end services. However, this should not be a major problem for the industry as a whole because some Indian firms are already looking outside of their boundaries and even outside India to get the managers they need.

Factors Contributing to Industry Growth

2.19   Software Industry registered a massive expansion in the last 10 years. This industry signifies India's position as the knowledge based economy with a Compounded Annual Growth Rate (CAGR) of 42.3%. In the year 2008, the industry grew by 7% as compared to 0.59% in 1994-95.

India has emerged as a major global exporter of software services in the international economy. Despite predictions that the industry would fail in the midst of global financial crisis, growth of software industry in India continues. Professionals and private consumers are increasingly reliant on computing for smooth day-to-day living. Companies seek to optimize profit through efficient software use, while private consumers use software for many reasons including work, organization and entertainment.

Other market segments, such as professional service automation, cloud computing and content management software are increasingly popular with businesses seeking to optimize their activities. The global software market is expected to continue recording strong growth across all major segments.

Quality Accreditations

2.20   Quality accreditations are most important for a company serving under the software industry. Client satisfaction and quality assured products and services would be guaranteed using the quality accreditations. Quality accreditations will ensure that the process flow in the company does not have a hindrance, even if such drawback exist, the accreditation systems will ensure that the process is put back to place.

The accreditation process also ensures that their certification practises are acceptable and behave ethically and employ suitable quality assurance.

One of the good accreditation systems around the world is ISO 9001. The ISO 9001 standard is related to quality management systems and designed to help organisations ensure that they meet the needs of customer and other stakeholders, while meeting the statutory and regulatory requirements related to product or service.

2.21   A quality accreditation service is not a one-time award or certificate. It has to be renewed by conducting quality assurance audit at regular intervals as recommended by certifying body. The most common interval would be once in three years. Apart from ISO 9001, there are ISO 27001, ISO 14001 are popular quality accreditations used by companies in the software industry.

Other popular quality certifications used by the industry include SEI CMM which stands for *Capability Maturity Model* issued by the Software Engineering Institute. Under this certification Level 5 is the highest grade of certification where the uppermost 5th Level is a state where processes would

be systematically managed by a combination of optimum process utilisation as well as process improvement.

Operating Model

2.22 The IT industry has unique operating model due to the macro economic factors influencing the industry. The global environment and the various industries in which the customers are operating play an important role in the way the IT companies are structured to provide meaningful services. In the Indian market context, these IT companies are focused on providing the services to the global companies at a lower cost with most innovative solutions in a global delivery model. While the origin of the business model began with providing service at a lower cost, it has gradually evolved in to providing more value to the clients through the intellectual capital accumulated over the past several decades. Let us understand the various elements of their operating model.

Business Model

2.23 Global customers especially look for support from India IT players in terms of providing high quality people who could help in their technological requirements. This could be around maintaining their existing technologies, creating new technologies to support their business processes, new platforms, global infrastructure, helpdesk and so on. The primary resources for IT industry are the human resources and technology. These two drive a significant influence on providing value to the customers. Hence, the IT companies operate around where the human resources are available and the environment where new technologies can be generated.

Strength and competitiveness of the IT companies lays in their ability to attract high quality talent who can develop state-of-the-art technologies. This requires high standards of recruitment process, talent development, HR policies, research and development capabilities of the service provider. A professional sales force required at the customer locations that should be building solutions to their requirements. This would also require a number of onsite employees with delivery experience to demonstrate the delivery capabilities.

Recruitment process

Technology adaptation

Software development enablers

Talent Development

R&D Capabilities

HR Policies
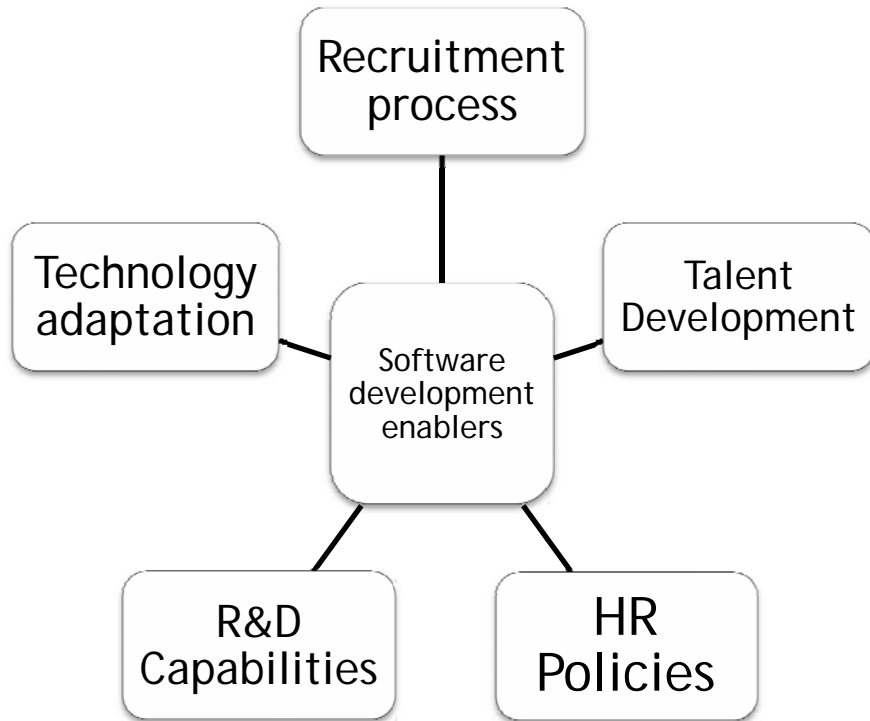
2.24 Depending on the customer requirements, they usually invite service provider by sending out Request for Proposal (RFP) or Request for Quotation (RFQ). This RFP will have all the necessary requirements of the customer that they expect from the service provider. The service provider will have to respond to the RFP by filling in the necessary details and the proposed solution including the pricing. Depending on the solution and the other parameters, the customer evaluates the entire service provider and then finally selects the service provider to award the contract.

The type of contract varies from one-time projects with limited timeframe to long-term Master Service Agreements (MSAs) which covers a suite of services offered by the service provider. This depends on the strategy of the customer and their confidence in working with the service provider as a strategic partner. The contract contains a number of legal requirements which will be binding on both the parties obligated to a number of commitments.

Service Offerings

2.25   The services offerings of IT companies include the below 4 categories with specific areas:

```
                    ┌─────────────────┐
                    │ Service Offerings│
                    └────────┬────────┘
        ┌──────────┬─────────┼──────────┬──────────────┐
┌───────────┐ ┌───────────┐ ┌───────────┐ ┌──────────────┐
│ Consulting│ │ Technology│ │Outsourcing│ │  Products,    │
│           │ │           │ │           │ │ Platforms and │
│           │ │           │ │           │ │  Solutions    │
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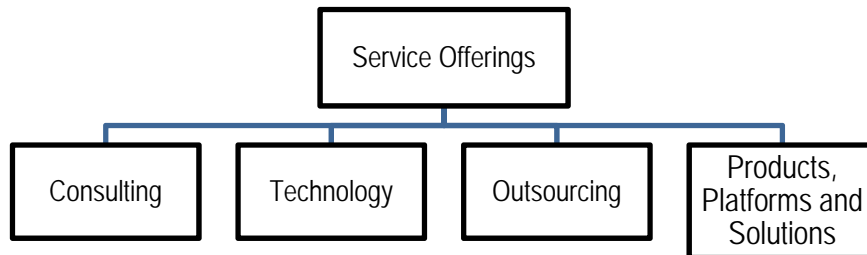
(i)   Consulting

    (a)   Business Consulting

    (b)   Technology Consulting

    (c)   Process Consulting

(ii)   Technology

    (a)   Business Application services, across SAP, Oracle, IBM, TIBCO, Microsoft Dynamics, Salesfore.com, etc.

    (b)   Business IT Services

        (i)   Application Outsourcing Services

        (ii)   Application Services

        (iii)   Independent Validation and Testing Services

        (iv)   Infrastructure Management Services

        (v)   Infrastructure Outsourcing Services

    (c)   Engineering services

(iii)   Outsourcing

    (a)   Business Process Outsourcing (BPO)

(iv)   Products, Platforms and Solutions

    (a)   Cloud

    (b)   Mobility

    (c)   Sustainability

    (d)   Platform solutions

    (e)   Products

Consulting	Technology	Outsourcing	Products, Platforms & Solutions
Business Consulting	Business Application Services	Business Process Outsourcing	Cloud
Technology Consulting	Busines IT Services		Mobility
Process Consulting	Engineering Services		Platform solutions
			Products
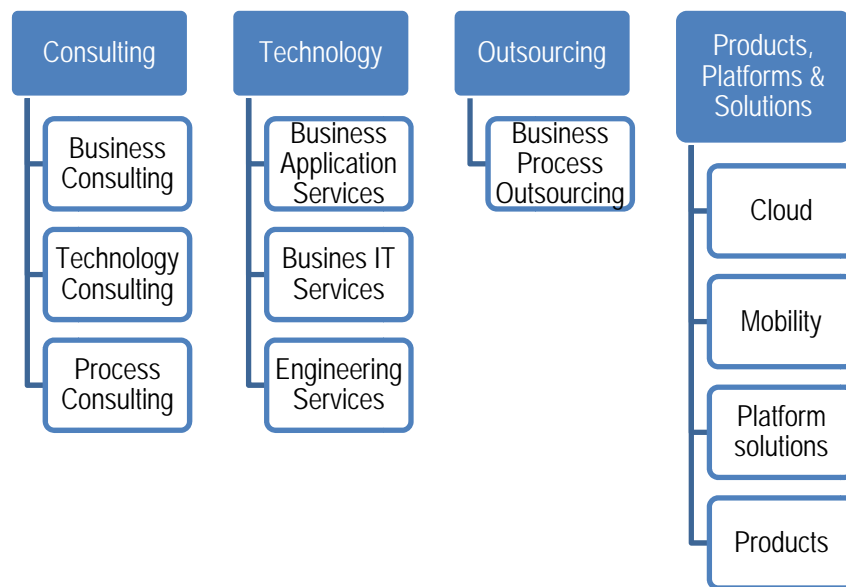
Customer Industry Orientation

2.26 While there are number of service offerings offered by the IT companies, the significant value-add is provided by tailoring these services based on the industry in which their customer's operate. This is to make their services relevant to their customer and also to ensure that their workforce is groomed to build expertise that matches their customer business environment. This is one of the most important leverage for the customer to approach IT service providers as they get access to multi-varied experienced talent which otherwise would not be possible in-house. Therefore, the Industry segmentation organized by the IT companies is in the following Industry verticals as discussed below:

Industry Segmentation

2.27   Industry segmentation refers to the major industries in which Software Industry plays a vital role. The software companies in the industry render services and products to the following industries that fall as part of majority of revenue:

```
Industry segmentation
  ├── Banking, Finance & Insurance
  ├── Construction
  ├── Energy & Utlities
  ├── Government
  ├── Healthcare
  ├── Life sciences
  ├── Manufacturing
  ├── Media & Telecom
  ├── Retail & Consumer products
  └── Travel, transportation & hospitality
```
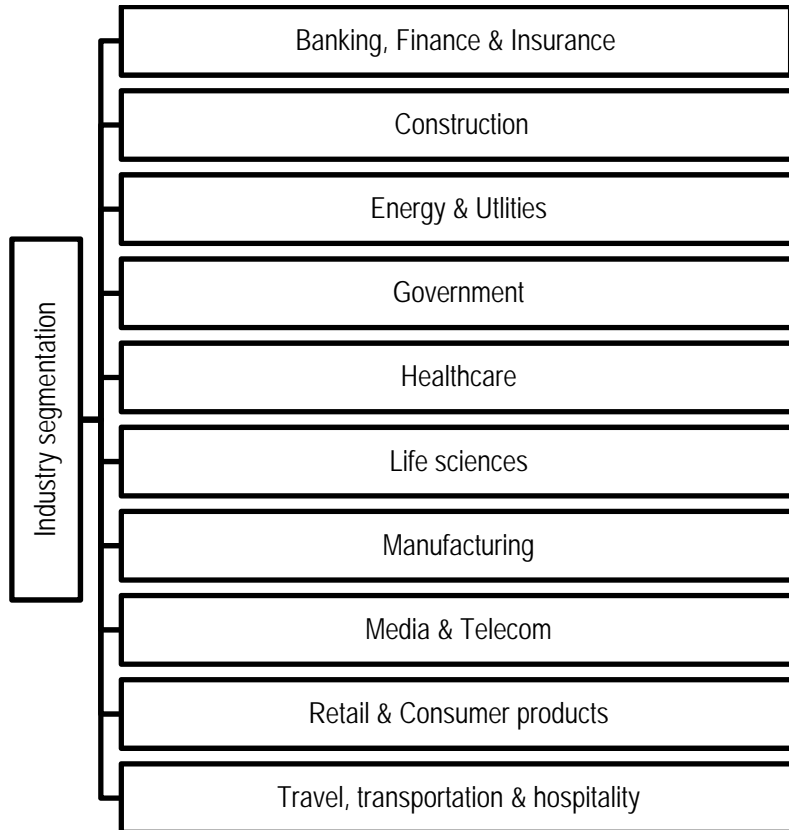
Typical Organization Structure

2.28   The typical organization structure of Software Company is depicted below. This is illustrative to visualize the organization structure normally followed explaining the inter-connectivity of variety of functions within the organization.

```
┌─────────────────────────────────────────────────────────────┐
│                 Chief Executive Officer (CEO)                 │
└─────────────────────────────────────────────────────────────┘

┌─────────────────────────────────────────────────────────────┐
│                 Strategic Business Units (SBU)                │
└─────────────────────────────────────────────────────────────┘

┌─────────────────────────────────────────────────────────────┐
│    Business Enabling services (Finance, M&A, HR, Admin, and Marketing)    │
└─────────────────────────────────────────────────────────────┘

┌──────────────────┐   ┌──────────────┐   ┌──────────────────┐
│  Field Management │───│   Planning   │───│ Products & Services │
└──────────────────┘   └──────────────┘   └──────────────────┘

┌──────────────────┐                      ┌──────────────────┐
│       Sales       │──────────────────────│ Project Management │
└──────────────────┘                      └──────────────────┘

┌──────────────────┐   ┌──────────────┐   ┌──────────────────┐
│  Implementation   │───│   Delivery   │───│      Practice     │
└──────────────────┘   └──────────────┘   └──────────────────┘

┌──────────────────┐                      ┌──────────────────┐
│  Support Business │──────────────────────│      Quality      │
└──────────────────┘                      └──────────────────┘

┌─────────────────────────────────────────────────────────────┐
│                          CUSTOMERS                           │
└─────────────────────────────────────────────────────────────┘
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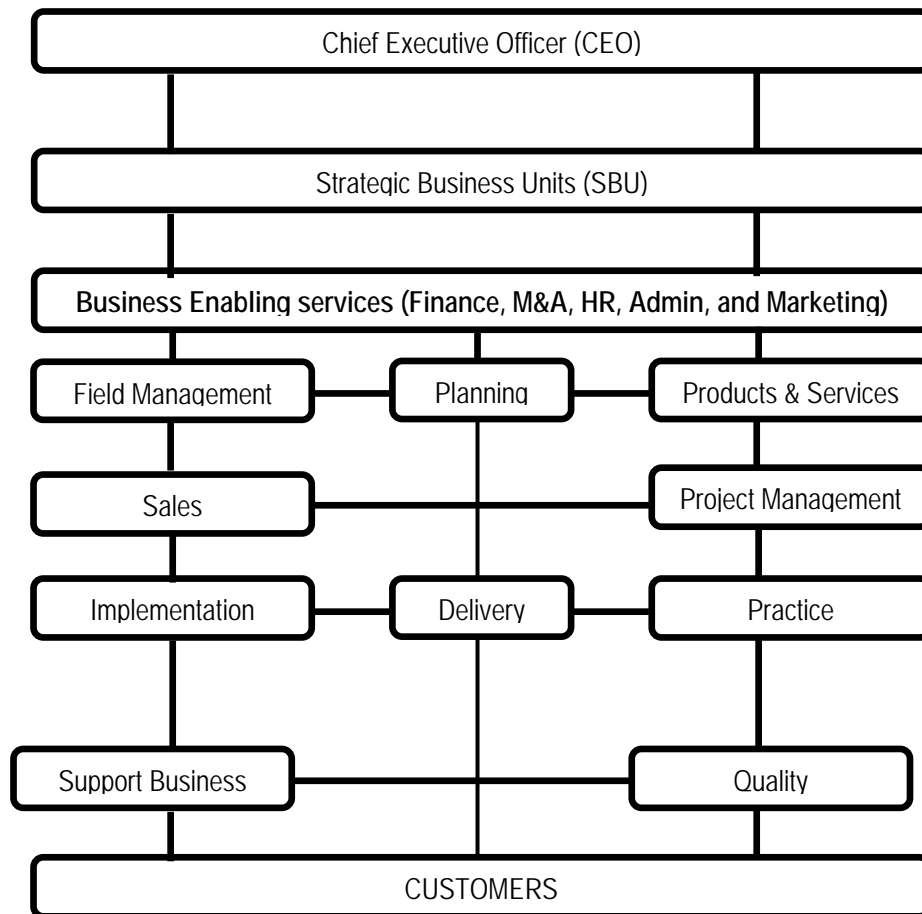
Human Resources Development

2.29 Human Resources Development (HRD) plays a backbone for an IT company, as the dependence on people is significantly high. Therefore, every IT company takes a number of efforts to ensure world class HR practices in their businesses. The broad activities / departments within HRD include:

```
                        Talent
                      Acquistion
        Performance                   Talent
        Management                  Development

   Compensation                        Education &
    & benefits                          Research

        Leadership                    Payroll &
          skills                       related
                     Learning &
                     competency
                     development
```
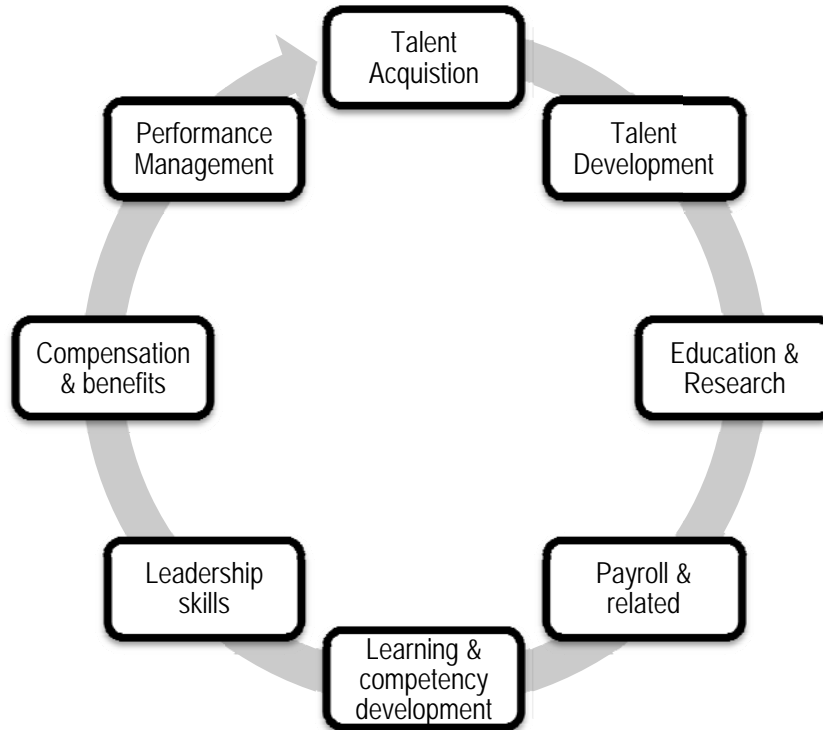
All these functions work in tandem to ensure they hire, retain, and groom best of the breed people within the organization. There are a number of accreditations and certifications provided by organizations for the best in the industry. Such accreditations demonstrate the organization practices around people as this becomes the basis on which customers rely on the services provided by the IT companies. There is a huge competition among the IT companies to differentiate themselves based on the HR practices in order to attract talent as well as to provide confidence to their customers for sustainable service offering.

Revenue Model

2.30   Revenues generated by IT companies vary depending on the nature of service and the arrangement with the customer. The typical billing models are:

Billing Models					
Time & Material based - (T&M)	Milestone based	License- based	Annual Maintenance Contracts - (AMC)	Outcome based	Transaction based

(i)   **Time & Material (T&M) billing** involves billing which could be on hourly rates, daily rates, weekly rates, fortnightly rates, monthly rates or bimonthly rates or quarterly rates, etc. In T&M, billing is done on the basis of the time spent by the people involved in the project. This is being tracked by the time sheets maintained by the employees and approved by the project managers. It is also known as Full Time Equivalent (FTE) method of billing.

(ii)   **Milestone billings** is charged on the basis of achievement of a Milestone which could be Feasibility Study/ Business Analysis/ Development/ Implementation/ Go Live. The completion of the phase has to be signed by both the parties. Milestone contracts are also called Fixed Price Contracts.

(iii)   **Product License sales** could be for examples like, SAP, JDE, Tally MS office, etc. wherein the customer is charged for the number of users using the product of the service provider. This model is usually adopted wherein the product is developed by a service provider and it is installed at the customer location. Typically, this product will require use by multitude of people and, therefore, the customer pays based on the number of users. A typical example would be a banking software, airline software, operating system, etc.

(iv)   **Annual Maintenance Contracts (AMC's)** could be installation of Patches and Upgrades. AMCs may also involve change management of the software.

(v)   **Outcome based pricing**, wherein the service provider charges based on the outcomes realized by the customer. This is typically used in Products, Platforms and Solutions service offerings. This is becoming more popular model as the customers want to pay for outcomes than the efforts of the software company.

(vi)   **Transaction/ volume based pricing,** wherein the customer pays based on the volumes or transactions delivered by the service provider, irrespective of the number of people or effort put in by them.

Project Lifecycle

2.31 The project spans in an IT industry typically spans anywhere from months to several years depending upon the nature of projects. The lifecycle of project would typically follow six sigma DMAIC steps of:

1.   **D**efine

2.   **M**easure

3.   **A**nalyse

4.   **I**mprove

5.   **C**ontrol
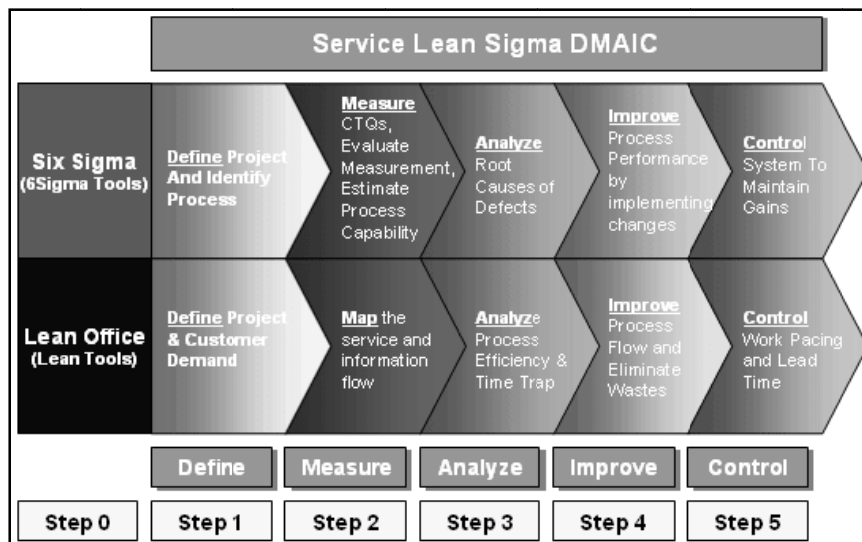
Project Management plays a very significant role in the IT companies as this becomes key enabler to fulfil the customer requirements. Therefore, a number of training and coaching programs are conducted for the people to be fully equipped in managing projects. This is especially essential in a milestone based billing projects. This also helps in projects where there will

be multiple stakeholders involved across both service provider and the customer organizations.

Service Delivery Commitment and Compliance

2.32   The service provider typically commits a minimum service level when it comes to the services offered. This is to provide assurance for the customer as well as to ensure continuity of business operations of the customer. There are many measurement criteria's being used to measure the minimum service levels which are converted into service commitment and built into the contract. The service provider is expected to fulfil this service commitment, failing which, they will be liable to penalties or even consequences of termination of contract. Therefore, in a typical IT project, the delivery commitment paramount becomes guiding factor to be ensured by the service provider. All the key people in the project are expected to be fully familiar with such commitments and ensure that they provide the necessary contribution to ensure it is met.

Governance Model

2.33   As there are number of stakeholders involved across both customer and the service provider across multiple locations, it is indeed essential to have a proper governance model which ensures the communication across levels happens as per agreed frequency. There will be multi-layered governance structure established with specific focus on various topics involved in the engagement between customer and the service provider.

	Governing body	Agenda	Members of Customer	Members of Service Provider	Frequency
1	Strategic: Steering committee	1.Engagement plan 2. Contractual 3.Performance 4 Future plans	Key stakeholders viz. CIO, relationship manager	Business Unit Head, Engagement manager	Quarterly
2	Operational: Project	1. Portfolio review	Project Management	Engagement manager,	Monthly

	portfolio review committee	2. Milestone updates 3. Key issues / challenges 4. New opportunities / improvements	officer, Business stakeholders	Delivery Leaders	
3.	Tactical: Project review board	1. Individual project review 2. Issues / challenges 3. Agreements on performance	Project leader Project team members	Engagement leader Project Leader Project team	Weekly
4	Contract board	1. Contract review 2. MSA review 3. Legal 4. Performance compliance	Legal representative, Relationship manager	Engagement Manager, Legal representative	Monthly

Sustainability

2.34 As the IT service company is high-dense with people and infrastructure requirements, there is a significant need to ensure they follow sustainable practices which takes care of environment and society at large. There are number of stakeholders involved when it comes to the operational functions of the IT company. It is the responsibility of the IT company to ensure that their needs are addressed and met on a sustainable manner. Some of the key stakeholders are:

1. Investors

2. Customers

3. Vendors / Suppliers

4. Employees

5.   Society

6.   Regulators

7.   Environment, Health and Safety

8.   Governments / local legislators

The IT Company is accountable to ensure that all such stakeholders' interests are addressed in the operations of the organization. This is typically reported as part of the **Sustainability Report**, popularly known as **Business Responsibility Report**

The previous trend of losing or backward sustained development in the industry has been replaced. Currently, we can see a number of top corporate bodies serving under the Software industry contributed a lot towards Corporate Social Responsibility (CSR) and society as a whole.

Chapter 3
Special Features of Software Industry

3.1   There are certain special features which are applicable to IT Industry; it might not be applicable to other industries. Some of those features are discussed below in the following paragraphs:

Working from Home

3.2   It is an option increasingly being offered by companies to their employees to better manage their work-life balance by providing them flexibility to work from home. Work from Home (WFH) is now an accepted norm in many companies, especially in the IT sector. As the IT companies work for their clients across the globe in different time zones, their employees are expected to interact with their clients and associates in different locations. A critical point taken into account by a number of companies is that most working people complain of not having enough time to spend with their families. The WFH option offers them the opportunity to gain that much-needed work-life balance, and motivates them to put in their best effort at work in return. While employees are happy, employers feel that in these times of high attrition rates, such an option helps in retention. Along with a good pay package and growth opportunity, employees these days are increasingly looking at work culture of a place before deciding on a job.

Time Sheet Management for Work from Home

3.3   The work from home option is not feasible for all sectors. Only those in which there is minimum personal interaction required, like in some departments of the IT sector, does it work. And in even those, one has to work closely with a supervisor, on a set of deliverables. In such a situation it becomes very important to maintain a time sheet.

The method used to maintain the time sheet should monitor and generate timesheets for each employee which includes a start and end time for each task. A detailed breakdown of tasks as well as the cost incurred for each task should be available. They should report to a supervisor who will monitor the

work done by the employees and will approve the time sheet for further processing.

Geographic Spread of Software Industry

3.4   Recent years have seen the increasing geographic distribution of software development. The software industry now tends to relocate its production units in decentralized zones in which a skilled workforce is more readily available, thus taking advantage of political and economic factors. The main objective of this is to optimize resources in order to develop higher quality products at a lower cost. The distance between the different teams can vary from a few meters (when the teams work in adjacent buildings) to different continents. The situation in which the teams are distributed beyond the limits of a nation is called Global Software Development (GSD). This kind of scenario is interesting for several reasons, mainly because it enables organizations to abstract themselves from geographical distance, whilst having qualified human resources and minimizing cost, thus increasing the market area by producing software for remote clients and obtaining a longer workday by taking advantage of time differences. In this context, "offshoring" refers to the transfer of an organizational function to another country, usually one in which human resources are cheaper. "Nearshoring" is when jobs are transferred to geographically closer countries, thus, avoiding cultural and time differences between members and saving travel and communication costs.

Cloud Computing and Central Servers

3.5   Cloud computing is a colloquial expression used to describe a variety of different computing concepts that involve a large number of computers that are connected through a real-time communication network (typically the Internet). In science, cloud computing is a synonym for distributed computing over a network and means the ability to run a program on many connected computers at the same time. Some of the benefits of cloud computing and central servers are:

- Increase in volume output or productivity with fewer people. Cost per unit, project or product plummets.

- Reduced spending on technology infrastructure.

- People worldwide can access the cloud, provided they have an Internet connection.

- The process will be streamlined.

- It will reduce capital costs as there is no need to spend on hardware, software and licenses.

- It will improve accessibility.

- Projects can be monitored more effectively.

- It will improve flexibility.

Accounting of Software Tools

3.6   A software company will be utilizing a lot of softwares to run its own business. Few of the softwares might be purchased and the rest developed by the company itself. Such softwares will be of high cost and it has to be verified that such expenses are capitalised. The provisions relating to intangibles as per Accounting Standard (AS) 26 have to be followed. If the software is purchased then it has to be entirely capitalised but if the same is internally generated then it has to be verified if the treatment of the expenses in the research stage and the development stage are in accordance with AS 26.

Project wise Costing

3.7   The software companies will be serving many clients and usually maintain accounts in such a way as to ascertain the project wise costing of all the projects in hand. If the books of accounts are maintained for the company on an overall basis and not bifurcating the projects the management should be in a position to identify the costs to be allocated and be in a position to determine the profitability of the individual projects.

Legal Software

3.8   Software piracy is copying and use of software without proper license from the developer. Similarly, simultaneous use of single user license software by multiple users or loading of single user license software at multiple sites also amounts to software piracy. Using trial version software for commercial gains is also piracy. Piracy is punishable offence. By using legal licensed software, it is ensured that critical updates are available when needed, the products are fully supported, reliable and above all it is legal. Any person or company who indulges in unauthorized copying, sale, downloading or loading of software is punishable by imprisonment or by fine. Hence, the software companies should use legal versions of the softwares.

Confidentiality of Source Code

3.9   IT companies should have a secure network complete with firewall, anti-spyware and ant-virus mechanisms to guard itself against threats from outside. But often the threat is more from inside than from outside and this is what companies often ignore. Perpetrators of information theft often resort to social engineering methods than hacking to gain access to confidential information. Software companies should opt for employee surveillance measures like monitoring of e-mails and IMs to be informed of any possible information theft. Cyber criminals often target smaller companies which handle confidential information. In order to protect such confidential information and source codes the company has to restrict the access of source codes. It also has to enter into a non-disclosure agreement with the employees to safeguard its source code.

Software Used for Internal Use

3.10   Due to the advent of technology most of the software companies use softwares for internal use like, leave management, payroll management, HR records, Performance appraisal, and intranet for communication of policies. Due to such softwares there might not be any manual record maintained for such purposes. Hence, the internal auditor has to verify the data maintained in the softwares and satisfy himself that it is appropriate for the size of the company. He has to run some test checks in such softwares and check if there are any discrepancies. If there are any, he has to verify with the management how such discrepancies have been dealt with and suggest methods to avoid and control such discrepancies.

Chapter 4
Legal Framework

Governing Regulations

4.1   In recent times, software development and technical competence, domain knowledge, information technology enabled services experience and expertise for offering quality IT (ITES) including business process outsourcing services and their exposure to working on BPO knowledge process outsourcing various platforms and systems services industry in India has emerged as one of the most dynamic and vibrant sectors in India's economy.

The Government of India has announced promotion of IT as one of the top priorities of the country. India has embarked on a policy agenda which aims to restructure its economy with enhanced global participation, The FDI to supplement domestic investment in for achieving a quantum jump in growth rate is now an integral part of government of India policy initiative impairing the greater transparency to business procedure and integration with the global market place are seen as the hallmark of new industrial, trade and fiscal policies.

National Association of Software and Services Companies (NASSCOM)

4.2   The National Association of Software and Services Companies (NASSCOM) is a trade association of Indian Information Technology (IT) and Business Process Outsourcing (BPO) industry. Established in 1988, NASSCOM is a non-profit organization.

NASSCOM is a global trade body with over 1200 members, of which over 250 are global companies from the US, UK, EU, Japan and China. NASSCOM's member companies are in the business of software development, software services, software products, IT-enabled/BPO services and e-commerce. NASSCOM has been a proponent of global free trade in India.

NASSCOM was set up in 1988 to facilitate business and trade in software and services and to encourage advancement of research in software

technology. It is a not-for-profit organization, registered under the Indian Societies Act, 1860.

Currently, NASSCOM is headquartered in New Delhi, India with regional offices in the cities of Mumbai, Chennai, Hyderabad, Bangalore, Pune and Kolkata.

NASSCOM Initiatives

Global Trade Development

The focus of the Global Trade Initiative at NASSCOM is to engage with a wide variety of domestic and international stakeholders, such as Governments, customers and associations, to collaborate on issues related to international policy, visa/ work permits and business partnerships. Since the regulatory environments continuously change the world over and compliance issues are becoming important across the globe, NASSCOM is helping the Indian IT-BPO industry remain abreast of these developments, and participate in these markets while conforming to their new laws and modified policies. Indian companies are beginning to expand across the world, with the largest organisations becoming significant players in the global marketplace and the countries where they are present. India has in many ways ceased to be a competitor and has become an enabler for industry growth in these nations.

NASSCOM is advising member companies to build stronger and deeper relationships with overseas clients and other stakeholders by maintaining absolute transparency, exhibiting corporate ethics and establishing themselves, as well as India, as "trusted, secure sourcing" destinations. Besides continuing to nurture existing markets,

NASSCOM has also stepped up its focus on developing opportunities in newer areas—geographies, verticals and customer segments. Several high growth and under-penetrated regions such as, Continental Europe, Latin America, Africa, the Middle East and Japan are looking promising for the IT-BPO business.

These regions are increasingly beginning to embrace Indian IT in order to optimise costs, improve operational efficiency and productivity and gain access to specialised talent.

National Skills Registry for IT/ITES Professional (NSR-ITP)

4.4   Human resources are the key assets for IT-BPO industry in India and the industry has focused on developing and implementing best practices in human capital management, safety and security that span across employees, clients and other stakeholders. NASSCOM in partnership with the industry has developed a unique initiative – National Skills Registry –a national database of registered and verified knowledge workers in the industry. This database is managed and run by NDML - a fully owned subsidiary of National Securities Depository Limited (NSDL).National Skills Registry (NSR) aims to build a robust and credible information repository on the knowledge professionals in the sector. The data fields include permanent fact sheet of information on the professional along-with photograph & appropriate background checks (where undertaken), thus providing identity security for the organisation and its clients. Biometrics is also included in this repository to ensure unique identification. The benefits of NSR flow across to clients, service providers and employees. The data is owned by the employee who can authorise prospective employers to validate details and avoid duplication of background checks. The industry benefits by having credible data on current and prospective employees eliminate issues of potential frauds and avoid repetitive background checks. Clients who deal with sensitive data are assured of proper verification checks of employees who are dealing with this data. NSR has enhanced the value proposition of Indian IT-BPO industry, as one that has raised the bars on security standards in pursuit of excellence and client satisfaction.

Sector Skills Council

4.5   Sector Skills Councils are tasked with developing an enabling environment for skills development, including support for (i) clarification of sector-specific competencies/skills (ii) capacity development for skills development institutions/ such as curriculum and standards, faculty development, and so forth; (iii) trainee placement mechanisms, and (iv) monitoring and evaluation, supporting systematic collection and analysis of data about skills development, including employer feedback regarding the quality of trainees (v) quality assurance of independent third-party providers, etc.

Diversity and Inclusivity

Recognizing the need for shared Child Care facilities that are vital for the professional growth and retention of employees, NASSCOM, as part of its Diversity and Inclusion Initiative, had entered into an understanding with ESPERANZA, to provide quality 24 hours child care facility for our members at a concise fee, in the year 2009.

Membership

4.6 NASSCOM's members are primarily companies run by Indian nationals in the business of software development, software services, and IT-enabled/BPO services. The consortium was set up to facilitate Indian business and trade in software and services and to encourage advancement of research in software technology by Indians. It is a non-profit organization, funded entirely by its members. NASSCOM has played a role in ensuring quality of service, and the enforcement of Intellectual Property Rights in the Indian Software and BPO industry. As on June 2007, more than 1,110 information technology companies in India were members of NASSCOM. Membership includes domestic software/ ITES companies as well as multinationals operating in India. The wide range of member companies gives NASSCOM the ability to represent the interests of the Indian software industry with authority. NASSCOM also has a Mentorship Programme for the midsized companies. This is a six month engagement, which will help the organization to develop a better assessment of their strengths and weaknesses.

(a) NASSCOM Membership provides a unique opportunity for an organisation and its professionals to engage and drive thought leadership in activities, forums and industry groups. NASSCOM members address current challenges, build strategies for the future and share best practices, with the overall objective of building a growth-led competitive and sustainable industry.

(b) Insights on Industry Trends

- Access to NASSCOM research and intelligence that tracks industry trends, growth opportunities and best practices

- Access to a repository of industry presentations, blogs, discussions and articles

- An opportunity to engage with the NASSCOM research team and share case studies or transformational stories.

(c) Opportunities to enhance visibility

- Visibility through features and interviews on the NASSCOM website, as well as the monthly newsletter, NASSCOM News line

- Speak, sponsor or participant opportunities at NASSCOM events

- Chance to contribute to blogs and newsletters as thought leaders

- Brand building through NASSCOM awards and recognitions

  o Innovation

  o Emerge 50

  o Healthcare IT

  o Social Innovation

  o Excellence in IT Security

  o Gender Diversity

  o DSCI Security and Privacy

  o Talent Innovation

  o Nominate your customer in India for the IT User Awards

(d) Opportunity to network, build and share best practices

- Chance to leverage the Member database on NASSCOM's website to post a trade lead, or participate in one

- Chance to share or learn best practices through city level networking sessions on human capital development, data security, contract management, quality, diversity and more.

(e) Global Trade Development

- Members can participate in opportunities for global networking and build business at NASSCOM's global events, and through delegations and road shows

- Network with companies in other countries through their delegations to India

- Receive information regularly about policy updates in different countries.

- Understand issues related to visas, immigration through NASSCOM's mobility best practices sessions

- Learn about trends and opportunities in different markets through country reports

Software Technology Parks of India (STPI)

4.7   Software Technology Parks of India' (STPI) is a government agency in India, established in 1991 under the Ministry of Communications and Information Technology, that manages the Software Technology Park scheme. It is an export oriented scheme for the development and export of computer software, including export of professional services. The STP Scheme provides various benefits to the registered units, which includes 100% foreign equity, tax incentives, duty free import, duty free indigenous procurement, CST reimbursement, DTA entitlement, deemed export etc.

STPI has played a seminal role in India having earned a reputation as an information technology superpower. STP units exported software and information technology worth Rs. 2,15,264 crore in FY 2010-11. The state with the largest export contribution was Karnataka (see Bangalore) followed by Maharashtra, Tamil Nadu and Andhra Pradesh. STPI has a presence in many of the major cities of India including the cities of Bangalore, Mysore, Trivandrum, Bhilai, Bhubaneswar, Chennai, Coimbatore, Hyderabad, Gurgaon, Pune, Guwahati, Noida, Mumbai, Kolkata, Kanpur, Lucknow, Dehradun, Patna, Rourkela, Ranchi, Gandhinagar, Imphal, Shillong, Nashik, etc.

Besides, regulating the STP scheme, STPI centres also provide variety of services, which includes High Speed Data Communication, Incubation facility, Consultancy, Network Monitoring, Data Centre, Data Hosting, etc. STPI provides physical hosting for the National Internet Exchange of India.

The tax benefits under the Income Tax Act Section 10A applicable to STP units has expired since March, 2011. While the Government has chosen not to extend the Sec 10A benefits against the demand by the IT units, most of the STP registered SME units shall be affected, who now will have to pay Income Tax on profits earned from exports.

A new incentive scheme for IT & ITES companies is under discussion. It will help dispersal of IT industry in smaller cities and also support STPI-registered units which have not come under SEZs as well as other units which are not covered under any incentive scheme. This incentive scheme is

seen as an alternate scheme to compensate the STPI units, but the same would be restricted to those units located in tier II and III cities. However, proposal is still under consideration and no announcement has been made.

Functions of STPI

4.8   The following are functions of STPI:

(i)   To establish Software Technology Parks/ Centres at various locations in the country

(a)   to perform all functions in the capacity of the successor to the erstwhile Software Technology Park Complex which were taken over by the STPI

(b)   to establish and manage the infrastructural resources such as integrated infrastructure including International communication / Data centre/ Incubating facilities, etc. for 100% export oriented units and to render similar services to the users other than exporters.

(c)   to undertake other export promotional activities such as, technology assessments, market analysis, market segmentation as also to organize workshops/exhibitions/seminars/ conferences etc.

(d)   to facilitate specialized training in the niche areas to meet the above objectives.

(e)   to work closely with respective State Government and act as an interface between Industry and Government.

(f)   to promote secondary and tertiary locations by establishing STPI presence to promote STP/ EHTP Scheme, and promotional schemes announced by Government.

(g)   to promote entrepreneurship through incubation programmes / seed funds / IP development and other awareness programmes.

(h)   to assist State Governments in formulating IT policies and liaison for promoting the IT industries in respective states to achieve an exponential growth of exports.

(i)   to promote quality and security standards in the IT industries.

(j)   to work jointly with venture capitalists for providing financial assistance to the IT industries.

(k)   to provide Project Management and Consultancy services both at national and international level in the areas of expertise of STPI.

(ii)   To perform financial management functions which comprise inter alia the following activities

(a)   to obtain or accept grants, subscription, donations, gifts, bequests from Government, Corporations, Trusts, Organizations or any person for fulfilling the objectives of the STPI.

(b)   to maintain a fund to which shall be credited :

- all money provided by the Central Government, State Governments, Corporations, Universities, etc.,

- all fees and other charges received by the STPI,

- all money received by the STPI by way of grants, gifts, donations, benefactions, bequests or transfers; and

- all money received by the STPI in any other manner or from any other source.

(c)   to deposit all money credited to the Fund in Scheduled Banks/ Nationalized Banks or to invest in such a manner for the benefit of the STPI as may be prescribed. At least 60% of the funds shall be placed with the Public Sector Banks or in such a manner as may be prescribed by the Government from time to time.

(d)   to draw, make, accept, endorse and discount cheques, notes or other negotiable instruments and for this purpose, to sign, execute and deliver such assurance and deeds as may be necessary for the purposes of the STPI.

(e)   to pay out of the funds maintained by STPI or part thereof, the expenses incurred by the STPI from time to time including all expenses incidental to the formation and reorganization of the STPI and management and administration of any of the foregoing activities including all rents, rates, taxes, outgoings and the salaries of the employees.

(f)   to acquire, hold and dispose of the property in any manner whatsoever for the purposes of the STPI, with the prior approval of Governing Council as per the procedure laid down by Government.

(iii)   To do all such acts and things as may be required in order to fulfil the objectives of the STPI

(a)   Strive for the up gradation of the technology to meet customer requirements in ever changing market

(b)   Up gradation of the technical knowledge of STPI personnel through seminars/ conferences/ trainings

(c)   State-of-Art data communication services as per acceptable international standards

(d)   Comprehensive service including project approvals, import attestation, software export certification etc., in a time bound manner

(e)   Achieving customer satisfaction through the combined efforts of planning and execution of the projects through dedicated workforce.

Ministry of Communications and Information Technology, Government of India

4.9   The Ministry of Communication and Information Technology is an Indian government ministry. It contains three departments:

- Department of Telecommunications

- Department of Electronics and Information Technology

- Department of Posts

The following cadre controlling authority of the Civil Services (including Indian Telecommunication Service, Indian Postal Service, Telegraph Traffic Service and Indian Posts and Telegraphs Accounts and Finance Service) are under the administration and supervision of the Ministry of Communications and Information Technology.

The objective of the Ministry with respect to the Information Technology is as under:

- Promotion of Information Technology education and Information Technology-based education

- Matters relating to Cyber Laws, administration of the Information Technology Act, 2000 (21 of 2000) and other IT-related laws

- Matters relating to promotion and manufacturing of semiconductor devices in the country excluding all matters relating to Semiconductor

Complex Limited Mohali; the Semiconductor Integrated Circuits Layout Design Act, 2000 (37 of 2000)

- Interaction in IT-related matters with international agencies and bodies, e. g., Internet for Business Limited, Institute for Education in Information Society and International Code Council-on line

- Initiative on bridging the Digital Divide: matters relating to Media Lab Asia

- Promotion of standardization, testing and quality in IT and standardization of procedures for IT applications and tasks

- Electronics Export and Computer Software Promotion Council

- National Informatics Centre

- Initiatives for development of hardware and software industries including knowledge-based enterprises, measures for promoting IT exports and competitiveness of the industry

- Efforts for increasing the acceptance of FOSS at a national level (NRCFOSS)

- Centre for Development of Advanced Computing (C-DAC)

Key Functions of the Ministry are as under:

- Policy matters relating to Information Technology; Electronics; and Internet (all matters other than licensing of Internet Service Provider).

- Promotion of Internet, IT and IT enabled services.

- Assistance to other departments in the promotion of e–Governance.

- Promotion of Information Technology education and Information Technology–based education.

- Matters relating to Cyber Laws, administration of the Information Technology Act, 2000 (21 of 2000) and other IT related laws.

- Matters relating to promotion and manufacturing of Semiconductor Devices in the country excluding all matters relating to Semiconductor Complex Limited (SCL),Mohali; The Semiconductor Integrated Circuits layout Design Act,2000 (37 of 2000).

- Interaction in IT related matters with international agencies and bodies e.g., Internet for Business Limited (IFB), Institute for Education in

Information Society (IBI) and International Code Council – on line (ICC).

- Initiative on bridging the Digital Divide: Matters relating to Media Lab Asia.

- Promotion of Standardization, Testing and Quality in IT and standardization of procedure for IT application and Tasks.

- Electronics Export and Computer Software Promotion Council (ESC).

- National Informatics Centre (NIC).

- Initiatives for development of Hardware/ Software industry including knowledge–based enterprises, measures for promoting IT exports and competitiveness of the industry.

- All matters relating to personnel under the control of the Department.

Indian Copyright Act, 1957

4.10 The Copyright Act, 1957 (Act No. 14 of 1957) governs the laws & applicable rules related to the subject of copyrights in India. Copyright Law in the country was governed by the Copyright Act of 1914, was essentially the extension of the British Copyright Act, 1911 to India, and borrowed extensively from the new Copyright Act of the United Kingdom of 1956. All copyright related laws are governed by the Copyright Act, 1957.

The Copyright Act today is compliant with most international conventions and treaties in the field of copyrights. India is a member of the Berne Convention of 1886 (as modified at Paris in 1971), the Universal Copyright Convention of 1951 and the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement of 1995.

Though India is not a member of the Rome Convention of 1961, WIPO Copyrights Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT), the Copyright Act is compliant with it.

Copyright Board

4.11 The Copyright Board, a quasi-judicial body, was constituted in September 1958. The jurisdiction of the Copyright Board extends to the whole of India. The Board is entrusted with the task of adjudication of disputes pertaining to copyright registration, assignment of copyright, grant of licences in respect of works withheld from public, unpublished Indian works, production and publication of translations and works for certain specified

purposes. It also hears cases in other miscellaneous matters instituted before it under the Copyright Act, 1957. The meetings of the Board are held in five different zones of the country. This facilitates administration of justice to authors, creators and owners of intellectual property including IP attorney's near their place of location or occupation.

A Gist of Important Regulations that may be Applicable to Software Industry

4.12   The important regulations that may be applicable to Software Industry are as follows:

- The Companies Act, 2013

- Partnership Act, 1932 / Limited Liability Partnership Act, 2008

- Shops and Establishments Act of respective states.

- The Sale of Goods Act, 1930

- The Negotiable Instruments Act, 1881

- The Income tax Act, 1961

- Service Tax under the Finance Act, 1994

- The Indian Contract Act, 1872

- Sales tax Act of respective states

- Foreign Exchange Management Act 1999

- Information Technology Act 2000

- State Specific Shops and Establishment enactments.

- Central Excise and Customs Act

Chapter 5

Need for Internal Audit

5.1   Effective Internal Audit provides a tool to ease out all complexities, ensures that systems and processes are adequate to support the growth and are adapted to the changes in various regulations, thereby ensuring sustained growth and development.

Preface to the Standards on Internal Audit, issued by the Institute of Chartered Accountants of India defines the term Internal Audit as:

"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."
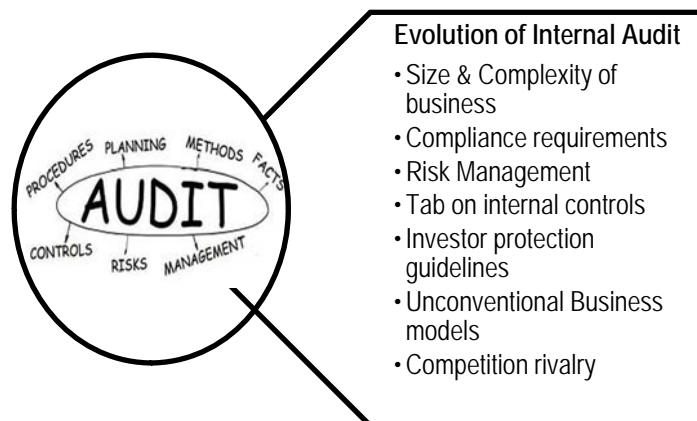
The Definition highlights the following facets of an Internal Audit:

- Internal auditor should be independent of the activities they audit. The internal audit function is in general considered independent when it can carry out its work freely and objectively. Independence permits internal auditors to render impartial and unbiased judgment essential to the proper conduct of audits.

- Internal audit is a management function, thus, it has the high-level objective of serving management's needs through constructive recommendations in areas such as, internal control, risk, utilization of resources, compliance with laws, management information system, etc.

- Internal audit's role should be a dynamic one, continually changing to meet the needs of the organization. There is often a need to change audit plans as circumstances warrant. These changes may include coverage of new areas, assistance to management in solving problems, and the development of new internal audit techniques.

- An effective internal audit function plays a key role in assisting the board to discharge its governance responsibilities. Thus, it contributes in accomplishment of objectives and goals of the organization through ethical and effective governance.

- Risk management enables management to effectively deal with risk, associated uncertainty and enhancing the capacity to build value to the entity or enterprise and its stakeholders. Internal auditor plays an important role in providing assurance to management on the effectiveness of risk management.

- Internal audit function constitutes a separate component of internal control with the objective of determining whether other internal controls are well designed and properly operated. Thus, the examination and appraisal of controls are normally components, either directly or indirectly, of every type of internal auditing assignment.

Factors Contributing To Evolution Of Internal Audit

5.2 *General Guidelines on Internal Audit* issued by the Institute of Chartered Accountants of India describes the factors contributing to the evolution of Internal Audit in India. A few such factors are:-

(i)   Increased size and complexity of businesses

Increased size and business spread dilutes direct management oversight on various functions, necessitating the need for a full time, independent and dedicated team to review and appraise operations. Complexity of operations results in requirement of specialists in the field to guide the management.

(ii)   Enhanced compliance requirements

Increase in the geographical spread of the businesses has also led to crossing of political frontiers by businesses in a bid to tap global capital for improving the technology. This has thrown up compliance with the laws of the home country as well as the laws of that land as a critical factor for existence of businesses abroad.

(iii)   Focus on risk management and internal controls to manage them

Internal auditors can carry out their job in a more focused manner by directing their efforts in the areas where there is a greater risk, thereby enhancing the overall efficiency of the process and adding greater value with the same set of resources.

(iv)   Stringent norms mandated by regulators to protect investors

The regulators are coming up in a big way to protect the interests of the investors. The focus of the latest regulations being ethical conduct of business enhanced corporate governance and reporting requirements to various boards and committees.

(v)   Unconventional business models

Businesses today use unconventional models and practices, for example, outsourcing of non-core areas, such as collection of waste generated to another organization rather than dealing with on its own.

(vi)   An increasingly competitive environment

Whereas deregulation and globalization have melted the political as well as other barriers to entry in the markets for goods and services, free flow of capital, technology and know-how among the countries as well as strong infrastructure has helped in better access to the existing best practices globally, and technology and equipment has helped to carry on the business smoothly. This in turn, has lured more and more players in the existing markets, thereby, stiffening the competition.

Standards on Internal Audit

5.3   The Institute of Chartered Accountants of India (ICAI) has, till date, issued eighteen Standards on Internal Audit (SIAs) and the same are as follows:

SIA 1   Planning an Internal Audit

SIA 2   Basic Principles Governing Internal Audit

SIA 3   Documentation

SIA 4   Reporting

SIA 5   Sampling

SIA 6   Analytical Procedures

SIA 7   Quality Assurance in Internal Audit

SIA 8   Terms of Internal Audit Engagement

SIA 9   Communication with Management

SIA 10   Internal Audit Evidence

SIA 11   Consideration of Fraud in an Internal Audit

SIA 12   Internal Control Evaluation

SIA 13   Enterprise Risk Management

SIA 14   Internal Audit in an Information Technology Environment

SIA 15   Knowledge of the Entity and its Environment

SIA 16   Using the Work of an Expert

SIA 17   Consideration of Laws and Regulations in an Internal Audit

SIA 18   Related Parties

These Standards are recommendatory in nature and codify the best practices in the field of internal audit. "*Framework for Standards on Internal Audit*" promotes professionalism in the internal audit activity and comprises of four components, *viz.*, the Code of Conduct, the Competence Framework, the Body of Standards and the Technical Guide.

Standards on Internal Audit (SIAs) are important for carrying out internal audit of Software Industry. The internal auditor and the audit team are expected to be updated on the latest pronouncements issued by the Institute in order to conduct an effective internal audit.

5.4   As multinational enterprises have recognized an increasing array of risks facing the organization, it is no surprise that the demand for risk management professionals has risen dramatically. Any disciplined approach to growth and value creation assumes that the organization is managing all manner of significant and likely risks effectively. Risk can be considered both at the macro or portfolio level (enterprise-wide risk management) as well as the micro or departmental level. Risk management is frequently an area in

which internal audit can contribute greatly by furnishing analyses and providing wise counsel to top management and the board of directors.

The internal audit function also performs micro level risk assessment for its own purposes to identify those areas which demand the greatest efforts on the part of the internal audit function and for achieving appropriate audit coverage of the audit universe over defined periods of time. Internal auditors can play a significant "partnering" role with management in establishing and monitoring business processes for the assessment, measurement, and reporting of risks in general and in implementing enterprise risk management initiatives.

Modern approaches to risk-based internal auditing allow for the assessment of risks and linking them to business objectives systematically. Indeed, the internal audit function can facilitate the processes by which business units "can develop high quality risk assessments," and this can in turn be very useful to the internal audit function in planning its own work, primarily by enhancing the quality of decision-relevant information and minimizing duplication of effort.

Importance of Internal Audit

5.5   The following parts highlight importance of internal audit:

- Understanding and assessing the risks and evaluate the adequacies of the prevalent internal controls.

- Identifying areas for systems improvement (manual and by automation support) and strengthening controls.

- Ensuring optimum utilization of the resources of the entity, for example, human resources, physical resources, etc.

- Ensuring proper and timely identification of liabilities, including contingent liabilities of the entity and taking a merit based view on contingent liabilities.

- Ensuring compliance with internal and external guidelines and policies of the entity as well as the applicable statutory and regulatory requirements.

- Safeguarding the assets of the entity and adequacy of title to the assets.

- Reviewing and ensuring adequacy of information systems security and control.

- Reviewing and ensuring adequacy, relevance, reliability and timeliness of management information system flowing from common data base.

Importance of Audit Documentation

5.6   "*Internal audit documentation*" means the record of audit procedures performed, including audit planning as discussed in the Standard on Internal Audit (SIA) 1, *Planning an Internal Audit,* relevant audit evidence obtained, and conclusions the auditor reached (terms such as "working papers" or "work papers" are also sometimes used). Thus, documentation refers to the working papers prepared or obtained by the internal auditor and retained by him in connection with the performance of his internal audit.

All the significant matters which require exercise of judgment, together with the internal auditor's conclusion thereon should be included in the internal audit documentation. However, the documentation prepared by the internal auditor should be such that enables an experienced internal auditor (or a reviewer), having no previous connection with the internal audit to understand:

(a)   the nature, timing and extent of the audit procedures performed to comply with SIAs and applicable legal and regulatory requirements;

(b)   the results of the audit procedures and the audit evidence obtained;

(c)   significant matters arising during the audit and the conclusions reached thereon; and

(d)   terms and conditions of an internal audit engagement/ requirements of the internal audit charter, scope of work, reporting requirements, any other special conditions, affecting the internal audit.

Use of Analytical Procedures

5.7   Analytical procedures" means the analysis of significant ratios and trends, including the resulting investigation of fluctuations and relationships in both financial and non-financial data that are inconsistent with other relevant information or which deviate significantly from predicted amounts.

Analytical procedures are used for the following purposes:

- to assist the internal auditor as risk assessment procedures to obtain initial understanding of the entity and its environment and thereafter in planning the nature, timing and extent of other internal audit procedures;

- as substantive procedures when their use can be more effective or efficient than tests of details in reducing detection risk for specific financial statement assertions;

- as an overall review of the systems and processes in the final review stage of the internal audit; and

- to evaluate the efficiency of various business/ management systems.

When analytical procedures identify significant fluctuations or relationships that are inconsistent with other relevant information or that deviate from predicted amounts, the internal auditor should investigate and obtain adequate explanations and appropriate corroborative evidence. The examination and evaluation should include inquiries of management and the application of other auditing procedures until the internal auditor is satisfied that the results or relationships are sufficiently explained.

Unexplained results or relationships may be indicative of a significant condition such as a potential error, irregularity, or illegal act. Results or relationships that are not sufficiently explained should be communicated to the appropriate levels of management. The internal auditor may recommend appropriate courses of action, depending on the circumstances.

Terms of Internal Audit Engagement

5.8   The auditee is expected to formally communicate the appointment to the internal auditor. Upon receiving the communication, the internal auditor should send an engagement letter, preferable before the commencement of engagement so as to avoid any misunderstanding. The internal auditor and the auditee should agree on the terms of engagement before commencement. Standard on Internal Audit (SIA) 8, "*Terms of Internal Audit Engagement*" establishes standards and provides guidance in respect of terms of engagement of the internal audit activity whether carried out in house or by an external agency.

The terms of the engagement should contain a statement in respect of the scope of the internal audit engagement. It should clearly delineate the broad areas of function of internal audit like evaluating internal controls, review of business process cycle controls, risk management and governance.

The engagement letter should, generally, include reference to the following:

- Objective of internal audit;

- Management's responsibilities;

- Scope of internal audit (including reference to the applicable legislation, regulation and various pronouncement of ICAI);

- Access to records, documents and information required in connection with the internal audit;

- Expectation to receive management's written confirmation in respect to representation made in connection with the audit;

- Basis on which fees shall be computed and the billing arrangements thereof;

- Industry specific area;

- References received from the parent company, if any; and

- Undertakings and locations to be covered.

Internal auditor have a specific responsibility arising out of a law or a regulation or a professional standard applicable to the internal auditor, to communicate directly, the above mentioned issues to an appropriate authority or someone within the entity or a regulator, the terms of the engagement should contain a clear mention of such responsibility.

Internal Audit Evidence

5.9   Paragraph 14 of the SIA 2, "*Basic Principles Governing Internal Audit*", states:

"The internal auditor should, based on his professional judgment, obtain sufficient appropriate evidence to enable him to draw reasonable conclusions there from on which to base his opinion or findings. Factors affecting the professional judgment include the activity under audit, possible errors and their materiality and the risk of occurrence of such errors."

The internal auditor obtains evidence by performing one or more of the following procedures:

- *Inspection:* Inspection consists of examining records, documents, or tangible assets. Inspection of records and documents provides evidence of varying degrees of reliability, depending on their nature and source and the effectiveness of internal controls over their processing.

- *Observation:* Observation consists of witnessing a process or procedure being performed by others. For example, the internal auditor may observe the counting of inventories by client personnel.

| Inspection | Observation | Enquiry & confirmation | Computation | Analytical Review |
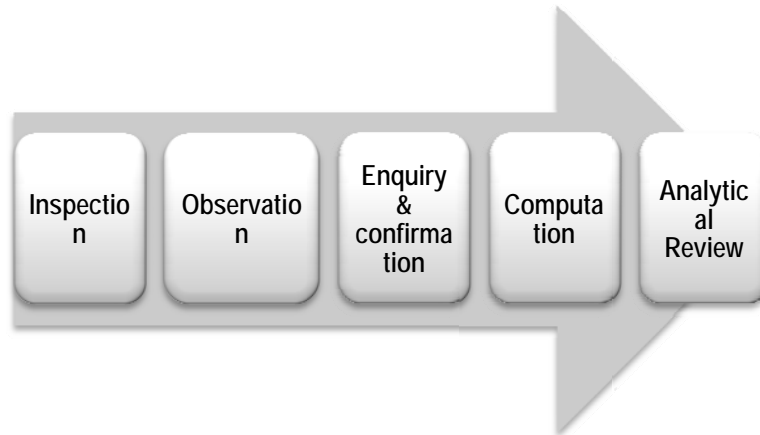
- *Inquiry and Confirmation:* Inquiry consists of seeking appropriate information from knowledgeable persons inside or outside the entity. Inquiries may range from formal written inquiries addressed to third parties to informal oral inquiries addressed to persons inside the entity. Responses to inquiries may provide the internal auditor with information which he did not previously possess or may provide him with corroborative evidence.

- *Computation:* Computation consists of checking the arithmetical accuracy of source documents and accounting records or performing independent calculations.

- *Analytical Review:* Analytical review consists of studying significant ratios and trends and investigating unusual fluctuations and items.

Internal Control Evaluation

5.10 Standard on Internal Audit (SIA) 12, "Internal Control Evaluation" states that "Internal controls are a system consisting of specific policies and procedures designed to provide management with reasonable assurance that the goals and objectives it believes important to the entity will be met".

"Internal Control System" means all the policies and procedures (internal controls) adopted by the management of an entity to assist in achieving management's objective of ensuring, as far as practicable, the orderly and efficient conduct of its business, including adherence to management policies, the safeguarding of assets, the prevention and detection of fraud and error, the accuracy and completeness of the accounting records, and the timely preparation of reliable financial information. The internal audit function constitutes a separate component of internal control with the objective of determining whether other internal controls are well designed and properly operated.

The broad areas of review by the internal auditor in evaluating the internal control system include:

- Mission, vision, ethical and organizational value-system of the entity

- Personnel allocation, appraisal system, and development policies

- Accounting and financial reporting policies and compliance with applicable legal and regulatory standards

- Objective of measurement and key performance indicators

- Documentation standards

- Risk management structure

- Operational framework

- Processes and procedures followed

- Degree of management supervision

- Information systems, communication channels

- Business Continuity and Disaster Recovery Procedures

The internal auditor should obtain an understanding of the significant processes and internal control systems sufficient to plan the internal audit engagement and develop an effective audit approach. The internal auditor should use professional judgment to assess and evaluate the maturity of the entity's internal control.

The auditor should obtain an understanding of the control environment sufficient to assess management's attitudes, awareness and actions regarding internal controls and their importance in the entity. The internal auditor should examine the continued effectiveness of the internal control system through evaluation and make recommendations, if any, for improving that effectiveness.

Internal Audit in an Information Technology Environment

5.11   The overall objective and scope of internal audit does not change in a CIS environment. However, the use of computer changes the processing, storage, retrieval and communication of financial information and may affect the accounting and internal control systems employed by the entity. Moreover, the risks involved in an audit may too undergo a change. The internal auditor should have sufficient knowledge of the CIS environment to plan, direct, supervise, control and review the work performed.

The internal auditor should consider the effect of an IT Environment on the internal audit engagement inter alia:

(i)   Consider the extent to which the IT environment is used to record, compile, process and analyse information, and

(ii)   The system of internal control in existence in the entity with regard to:

- The flow of authorised, correct and complete data to the processing centre;

- The processing, analysis and reporting tasks undertaken in the installation;

- The impact of computer-based accounting system on the audit trail that could otherwise be expected to exist in an entirely manual system.

5.12 The internal auditor should review the robustness of the IT environment and consider any weakness or deficiency in the design and operation of any IT control within the entity, by reviewing:

- System Audit reports of the entity conducted by independent Information System auditors;

- Reports of system breaches, unsuccessful login attempts, passwords compromised and other exception reports;

- Reports of network failures, virus attacks and threats to perimeter security, if any;

- General controls like segregation of duties, physical access records, logical access controls;

- Application controls like input, output, processing and run-to-run controls;

- Excerpts from the IT policy of the entity relating to business continuity planning, crisis management and disaster recovery procedures.

Knowledge of Business

5.13   Prior to accepting an engagement, the internal auditor should obtain a preliminary knowledge of the industry and of the nature of ownership, management, regulatory environment and operations of the entity subjected to internal audit, and should consider whether a level of knowledge of the entity's business adequate to perform the internal audit can be obtained.

In case of continuing engagements, the internal auditor should update and re-evaluate information gathered previously, including information in the prior year's working papers. The internal auditor should also perform procedures designed to identify significant changes that have taken place in the operations, control environment, technology and strategic processes since the last internal audit.

Internal auditor should obtain sufficient, appropriate information about the entity, specifically the following aspects:

(i)   Relevant industry, regulatory, and other external factors including the applicable financial reporting framework.

(ii)   The nature of the entity to enable the internal auditor to understand the classes of transactions, account balances, and disclosures to be expected in the financial statements.

(iii)   Business operations.

(iv)   Investments and investment activities

(v)   Financing and financing activities.

(vi)   Financial reporting.

(vii)   The entity's selection and application of accounting policies, including the reasons for changes thereto.

(viii)   The entity's objectives and strategies, and those related business risks that may result in risks of material misstatement.

(ix)   Business risk may arise from change or complexity. A failure to recognise the need for change may also give rise to business risk. Business risk may arise, for example, from:

(a)   The development of new products or services that may fail;

(b)   A market which, even if successfully developed, is inadequate to support a product or service; or

(c)   Flaws in a product or service that may result in liabilities and reputational risk.

(x)   An understanding of the business risks facing the entity increases the likelihood of identifying risk of material misstatement in the information subject to internal audit.

Overview of Compliance

5.14   Compliance means ensuring conformity and adherence to Acts, Rules, Laws, Regulation, Directives and Circulars.

Standard on Internal Audit (SIA) 17 "*Consideration of Laws and Regulations in an Internal Audit*" issued by the Institute of Chartered Accountants of India requires that when planning and performing audit procedures and in evaluating and reporting the results thereof, the internal auditor should recognize that non compliance by the entity with laws and regulation may materially affect the financial statements. The requirements in this SIA are designed to assist the internal auditor in identifying the significant impact of non-compliance with laws and regulations on the functioning of the entity. However, in view of the inherent limitations on the role of the internal auditor, he is not responsible for preventing non-compliance and cannot be expected to detect non-compliance with all laws and regulations.

Non-compliance refers to Acts of omission or commission by the entity, either intentional or unintentional, which are contrary to the prevailing laws or regulations. Such acts include transactions entered into by or in the name of the entity, or on its behalf, by those charged with governance, management

or employees. Compliance does not include personal misconduct (unrelated to the business activities of the entity) by those charged with governance, management or employees of the entity.

Non-compliance with laws and regulations may result in fines, litigation or other consequences for the entity that may have a material effect on not only the reporting framework of the financial statements but also on the functioning of the entity and which in extreme cases may impair their ability to continue as a going concern itself.

Compliance with laws and regulations is an inherent part of the functioning of an entity. Since the role of an internal auditor is to carry out a continuous and critical appraisal of the functioning of an entity and suggest improvements thereto, the identification of non-compliance with laws and regulations is also an inherent part of his responsibilities. It will be pertinent to adhere that the scope of an internal audit as described in paragraph 9 of the Standard on Internal Audit (SIA) 1, "*Planning an Internal Audit*", is also affected by the statutory or regulatory framework in which the entity operates.

The internal auditor should perform procedures to identify instances of non-compliance with those laws and regulations where non-compliance should be considered while preparing financial statements, specifically:

- Inquiring with management as to whether the entity is in compliance with such laws and regulations.

- Inspecting correspondence with the relevant licensing or regulatory authorities.

- The internal auditor should also perform substantive tests of details of classes of transactions, account, balances or disclosures.

The significance of compliance is as follows:

(i)   Benefits to the Industry are:

- Helps in compliance with legal terms and covenants and thereby reduces penalties and charges.

- Increased internal control.

- Reduction of internal frauds and losses.

- More time available for other core activities.

- Increases efficiency in operations.

- Customer satisfaction.

(ii) Benefits to the stakeholder are:

- Ensures risk containment and safer market place

- Better investor confidence

- Uniform practices

- Better image, hence, better value for the investor.

Chapter 6
Major Areas of Internal Audit Significance

Business Areas

Business Vision and Strategy

6.1   Most of the IT companies will have a vision and a strategy for their business. A description of what an organization would like to achieve or accomplish in the mid-term or long-term future is known as a vision statement of a company. It is intended to serve as a clear guide for choosing current and future courses of action

Strategy can be defined as a combination of the ends (goals) for which the company is striving and the means by which it is seeking to get there. The most important part of implementing the strategy is ensuring the company is going in the right direction which is towards its vision.

A written declaration of an organization's core purpose and focus that normally remains unchanged over time is called as a mission statement. It serves as filters to separate what is important from what is not and clearly state which markets will be served and how, and communicate a sense of intended direction to the entire organization.

Mission Defines what they have to do, Vision defines what they want to do. The Internal auditor has to first read the vision and mission statement and strategy drafted to achieve the same, in order to get a fair idea of the business of the company.

Market Differentiators of the Company

6.2   Market differentiators or differentiation is the process of distinguishing a product or service from others, to make it more attractive to a particular target market. This involves differentiating it from competitors' products as well as a firm's own products. This is done in order to demonstrate the unique aspects of a firm's product and create a sense of value. The objective of differentiation is to develop a position that potential customers see as unique.

Market capitalization

6.3   Market capitalization (Market Cap) represents the aggregate value of a company or stock. Market capitalization is calculated by multiplying a company's shares outstanding by the current market price of one share. The investment community uses this figure to determine, a company's size, as opposed to sales or total asset figures. For example if a company has 10 Lakh shares outstanding, each with a market value of Rs.100, the company's market capitalization is Rs. 1000 Lakhs (10,00,000 x Rs.100 per share). This can be done in case of listed companies. Observing trends of Market Cap helps to understand the perceived value of the company both in terms of financial as well business fundamentals.

Industry *Vs.* Company growth

6.4   The growth of a company means the rate at which the company is growing. Industry growth rate means the rate at which the industry as a whole is growing. The growth rate of both the company and the industry need not be the same. If the industry growth rate is abnormally higher than that of the company growth rate, the auditor has to ascertain as to why the growth rate of the company is low in spite of having a high industry growth rate.

Financial Planning, Budgeting and Forecasting Robustness

6.5   A financial plan is an estimate of the total capital requirements of the company. It selects the most economical sources of finance. It also tells us how to use this finance profitably. Financial plan gives a total picture of the future financial activities of the company.

Financial budgeting is used to project future income and expenses. It is done to estimate whether the person/ company can continue to operate with its projected income and expenses.

Financial forecast is a prediction concerning future business conditions that are likely to affect a company. It is important to understand the rigor of financial planning, budgeting and forecasting practices of the company. This demonstrates the organization's ability to predict and influence their business levers to achieve the desired results.

Business Risks
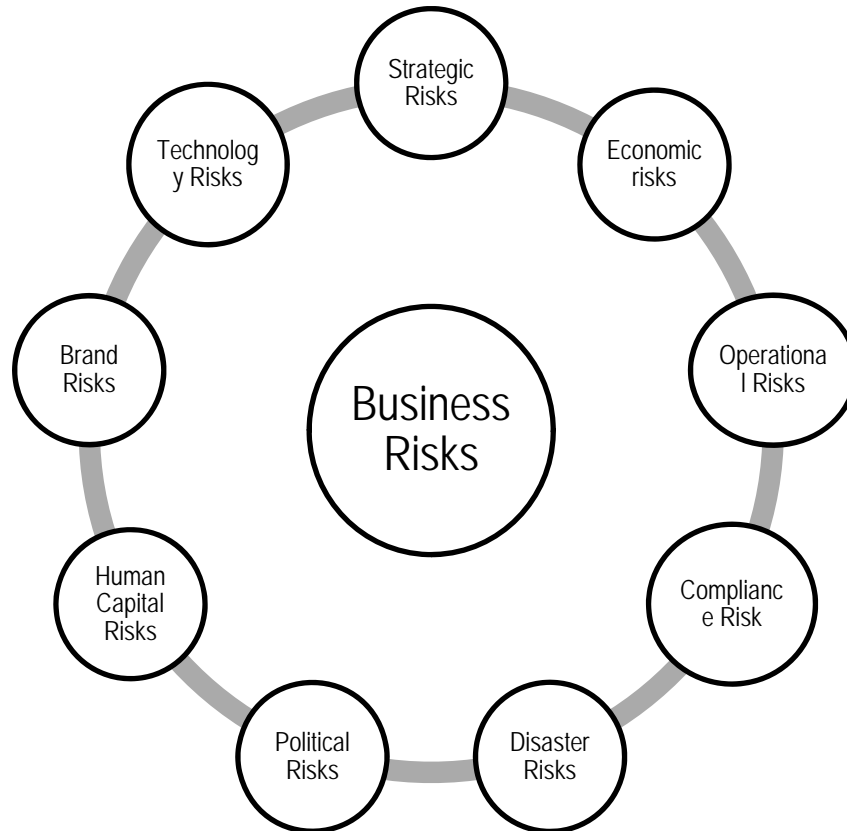
6.6   Business risks can be uncertainty in profits or danger of loss and the events that could pose a risk due to some unforeseen events in future. Business risks may take place in different forms depending upon the nature and size of the business. Business risks can be categorized as, internal risks which arise from the events taking place within the organization and external risks which arise from the events taking place outside the organization. Business risks can be further classified into following

(i)   Strategic Risk

These are risks associated with the operations of that particular industry. It can be caused by changes in supply and demand, competitive structures, and introduction of new technologies, mergers and acquisitions. Strategic risks are also determined by board decisions about the objectives and

direction of the organisation. Sometimes strategic risks are often risks that organisations may have to take in order to expand, and even to continue in the long term. An organisation may accept other strategic risks in the short term, but take action to reduce or eliminate those risks over a longer timeframe.

(ii) Economic/ Financial Risk

These are risks associated with the financial structure and transactions of the particular industry. Also the possibility that shareholders will lose money when they invest in a company that has debt, if the company's cash flow proves inadequate to meet its financial obligations. When a company uses debt financing, its creditors will be repaid before its shareholders if the company becomes insolvent.

(iii) Operational Risk

These are risks associated with the operational and administrative procedures of the particular industry. Few of the examples of such risks are, misappropriation of assets, theft of information, fictitious employees, misrepresentation of cash balances, third-party theft and forgery, data entry errors, accounting errors, failed mandatory reporting, negligent loss of client assets, etc.

(iv) Compliance Risk (Legal Risk)

These risks are associated with the need to comply with the rules and regulations of the government. There are various Acts which are applicable to the software companies. The company has to comply with a variety of compliances as per various Acts. Even if the company does not comply with any one of the statutory compliances the respective government department will issue notices and also might levy fine and penalty. Hence the company has to employ well trained staff to follow all the compliance requirements.

(v) Disaster Risk

There would be different risks like, natural disaster (floods) and others depend upon the nature and scale of the industry. It has been dealt with in the Business continuity plan mentioned below.

(vi) Political Risk

It refers to the complications businesses may face as a result of what are commonly referred to as political decisions that alters the expected outcome and value of a given economic action. For example, political decisions by governmental leaders about taxes, currency valuation, trade tariffs or barriers, investment, wage levels, labour laws, environmental regulations and development priorities, can affect the business conditions and profitability. Similarly, non-economic factors like, political disruptions such as, terrorism, riots, coups, civil wars, international wars, and even political elections that may change the ruling government, can dramatically affect businesses' ability to operate. Political risk is extremely difficult to quantify yet the companies and investors must examine and understand the potential for political risks. Companies should have a comprehensive framework for identifying and assessing all the risks they face, and assessing the impact of risk. Such a framework enables development of mitigation strategies that support company operations through crisis and change. The formal process of gathering and assessing data on political developments should be overseen by a risk manager and disseminated at the corporate, operating unit, and regional level. Companies must monitor political risk on an ongoing basis and use this information proactively to inform investment and operating decisions. At the same time companies have to capitalize on opportunities resulting from political change.

(vii) Human Capital Risk

It refers to the gap between the goals of the organization and the skills of the workforce. Indian IT sector has become an HR manager's nightmare. Their biggest challenge is marinating good people in organisation and keeping the attrition rate in control. The demand for good resources is more than the present supply and they are paid premium salaries. The rising cost of people is reducing the profit margins of the companies though the profit has been increasing by leaps and bounds. With many global companies opening up captives in India to reduce their cost of operations the salaries have shot northward and this has augmented the trouble of Indian IT players. The supply and demand of quality engineers who are capable of working in the IT field is having a huge gap. Companies have started looking for additional options of hiring science graduates and providing them adequate training to enable them to work in IT sector, but still the quality of talent is declining which in turn means lack of quality in work. Companies are struggling to hire new resources and salary war is becoming worse every day.

(viii) Brand/ Reputation Risk

Every company, every organization develops a reputation and, while it may take many years to form and is usually quite durable, a company's reputation can be undone in fairly short period. Reputation is more than just a company's good name, it's a composite of those factors affecting how others, particularly those outside of the organization, view the company. Safeguarding a company's reputation has become a key factor in every company's long-term strategic planning. To safeguard the reputation of a company regular investment in the structures, activities, staff, is essential. The company must take steps to measure its reputation in the market by opting for brand valuation. The checklist for brand valuation is given in the relevant section below.

(ix) Technology Risk

The technology risk faced by the companies would be due to loss of value due to the ever changing technology and the lack of ability of the company to cope up with such change. The company has to be constantly updating itself to the latest technology else it will be wiped out by the competition.

6.7   In order to mitigate the above mentioned risks it is necessary for the company to have a proper control of the operations of the business. This can be achieved by having an effective internal audit. The following are the checklists for few of the major areas of internal audit which are illustrative in nature.

Contracts

6.8   Contracts play a vital role in the IT industry. The Revenue model shall be based on the Contracts entered into and the adherence to the contract is the basic requirement of the business. Written contracts provide businesses with a legal document stating the expectations of both parties and how negative situations will be resolved. Contracts also are legally enforceable in a court of law. Contracts often represent a tool that companies use to safeguard their resources. The model checklist is as follows:

Sl.No	Particulars	Remarks
(i)	Review terms and conditions of contract	
(ii)	Income Recognition and the Compensation Clause needs to be clearly examined	

(iii)	Analyse the impact on the entity on non compliance of terms mentioned there in	
(iv)	Verify non competence agreement, if any in favour/against the company and its compliance.	
(v)	Verify the termination clause, warranties or representations due on company and dispute resolution terms involved.	
(vi)	Verify how contract compliance is monitored and reviewed periodically.	
(vii)	Verify if the terms of the contract are prejudicial to the interests of the company.	
(viii)	Verify if the company has accepted any contracts the business objectives of which are not in the MOA & AOA of the company.	
Statement of Work(SOW)		
(i)	Verify that the SOW has defined the scope of work and the deliverables.	
(ii)	Verify if the SOW has defined the place where the service has to be provided.	
(iii)	Verify if the payments to be received are up front or phased.	
(iv)	If the project requires any special hardware or software or specialized workforce requirements verify as to who will provide the same i.e. the company or the client.	
(v)	Verify if there are any limitations on the number of hours that can be billed per week or month.	
(vi)	Verify if there are any criteria for the buyer or receiver of goods to determine if the product or service is acceptable.	

Fixed Assets

6.9   The entity requires having sufficient control in such cases to ensure that the assets put into proper usage and periodic physical verification might be of paramount importance. There could be instances wherein the entity might lease. The internal auditor might be required to verify whether there is proper control over such leased assets.

If the internal auditor is required to perform fixed asset verification procedures too as part of the scope of his work, the auditor can refer to 'Guidance Note on Audit of Fixed Assets' issued by the ICAI.

The model checklist for verification of fixed assets is as follows:

SI.No	Particulars	Remarks
(i)	Proper authorisation for acquisition/ disposal/ restoration of Fixed Assets.	
(ii)	Physical verification of assets/ update of fixed assets registers at regular intervals.	
(iii)	Compliance with Accounting Standard 10" Accounting for Fixed Assets" and Compliance with Accounting Standard 19 " Leases" in relation to leased assets, issued by the ICAI.	
(iv)	Revaluation of assets value and useful life at regular intervals by independent professional valuers.	
(v)	Insurance coverage for assets of the entity.	
(vi)	Proper recording/ authorisation for inter/ intra entity transfer of fixed assets.	
(vii)	Segregation of responsibilities among employees handling custodian and verification activities.	
(viii)	Verify calculation of depreciation, amortisation, and capitalisation of expenditure incurred.	

Government Grants

6.10 Government grants are assistance given by government in cash or kind to an enterprise for past or future compliance with certain conditions. They may be either accounted under the 'capital approach', under which a grant is treated as part of shareholders' funds, or the 'income approach', under which a grant is taken as income over one or more periods. The treatment depends upon the type and reason for the grant.

The model checklist for verification of government grants is as follows:

SI no	Particulars	Remarks
(i)	Verify the grant letter issued by the government and study the conditions specified therein.	
(ii)	Verify whether the grant is in monetary or non-monetary.	
(iii)	If the grant is monetary verify the accounting method followed to record the grant.	
(iv)	Verify if the entity utilising the monetary grant for the purpose stated is by the government.	
(v)	If non-monetary assets are granted verify it is recorded at acquisition cost or nominal cost.	
(vi)	If the grant is relating to a specific asset verify if the grant has been deducted from the gross value of the asset.	
(vii)	Verify if the grant is refundable and if it is, then verify if it is accounted as an extraordinary item	
(viii)	If grants are received as compensation for expenses or losses incurred in a previous accounting period, verify if it has been accounted as per AS 5.	

Loans and Borrowings

6.11 In an industry such as, the IT industry there tends to be borrowing of some sort. It may be short term or long term; it may be taken from banks or financial institutions, from members or directors, etc.

An important feature of such liabilities which has a significant effect on the related audit procedures is that these are represented only by documentary evidence which originates mostly from third parties in their dealings with the entity.

An illustrative list of procedures that an internal auditor might perform would include:

SI no	Particulars	Remarks
(i)	Verify the credit/ borrowing limits of the board of directors.	
(ii)	Verify if the terms of the borrowing is prejudiced against the interest of the entity.	
(iii)	Verify whether the long term loans are being applied for long term purposes and not for working capital purposes.	
(iv)	Verify if all the statutory compliances have been met by the entity w.r.t borrowings.	
(v)	Verify if interest is paid regularly or a provision for the same has been created.	
(vi)	Verify if the repayment is as per the repayment schedule or is there any variations.	
(vii)	Verify the closing balance with the confirmation letter given by the entity who has provided the loan.	

Foreign Currency Transactions

6.12 The IT Industry has gone beyond the geographical boundaries. As a result of globalisation, a lot of foreign companies have set up their branches all over India. Hence, there will be inflow of foreign currency by way of capital, repatriation, export receivables, etc. The model checklist on foreign currency transactions is as follows:

Sl no	Particulars	Remarks
(i)	Check FCNR and other non resident accounts	
(ii)	Check whether the inward/ outward remittances have been duly accounted	
(iii)	Ensure compliance with RBI/ FEMA compliance in relation to cross border transactions	
(iv)	Review minutes of board meetings pertaining to foreign investments, if any	
(v)	Compliance with Accounting Standard 11 "Effects of Changes in Foreign Exchange Rates".	
(vi)	Compliance with Income tax/ Service tax regulations on payments made to non-residents	
(vii)	Compliance with DTAA/ foreign tax reliefs on taxation of foreign income earned by resident production houses.	
(viii)	Tax issues on Satellite/ Optic fibre Transmission companies/ Foreign companies.	

Related Party Transactions

6.13 As per Accounting Standard (AS) 18, *"Related Party Disclosures"* issued by the Institute of Chartered Accountants of India, related parties are considered to be related if at any time during the reporting period one party

has the ability to control the other party or exercise significant influence over the other party in making financial and/ or operating decisions.

As Section 2(17) of Companies Act, 2013 "relative", with reference to any person, means any one who is related to another, if

(i)   they are members of a Hindu Undivided Family;

(ii)   they are husband and wife; or

(iii)   one person is related to the other in such manner as may be prescribed.

Section 2(41) of Income Tax Act, 1961, lays down that '*Relative*' in relation to an individual, means the husband, wife, brother or sister or any lineal descendant or descendant of that individual. Further, a person shall be deemed to have a substantial interest in a business or profession if:

(i)   In case of company, the person, at any time during the year, carries not less than 20% of the voting power.

(ii)   In any other case, the person, at any time during the year, is beneficially entitled to not less than 20% of the profits of such business or profession.

6.14   Given the increased linkages between the Indian companies with their counterparts across the globe (coupled with the impressive growth achieved and targeted for the sector), the transactions between Indian players and their related parties overseas have increased manifold. Such related party transactions come under the purview of Transfer Pricing ('TP') regulations and require the same to be carried out at an arms-length price.

SI no	Particulars	Remarks
(i)	Obtain sufficient audit evidence on related party transactions.	
(ii)	Review the procedure followed by the entity to identify a related party.	
(iii)	Obtain information on key management personnel and their substantial interest held by them in companies if any.	
(iv)	Understand the pricing norms followed by the company in relation to transactions with related parties.	

(v)	Review the methodology followed by the entity in relation to apportionment of cost between related parties.	
(vi)	Review compliance with Transfer pricing regulations.	
(vii)	Review bank transactions and reconcile receivables/ payables if any from/to related parties.	
(viii)	Review minutes of board meetings and register maintained under Companies Act, 2013 to understand the transactions entered by the directors.	
(ix)	Obtain explanation for abnormal transactions, if any, among related parties	

Legal and Statutory Compliance

6.15 The internal auditor shall perform the following audit procedures to help identify instances of non-compliance with other laws and regulations that may have a significant impact on the entity's functioning:

(a) Inquiring of management and, where appropriate, those charged with governance, as to whether the entity is in compliance with such laws and regulations; and

(b) Inspecting correspondence, if any, with the relevant licensing or regulatory authorities.

The internal auditor is not responsible for preventing non-compliance and cannot be expected to detect non-compliance with all laws and regulations in case of inherent limitations in scope of audit, if any.

Sl no	Particulars	Remarks
(i)	Obtain understanding on legal and regulatory framework applicable to the entity.	
(ii)	Verify compliance with the following regulations: FEMA regulations Information Technology Act	

	Compliance with IPR/ copyrights/ patents STPI Ministry of Information Technology.	
(iii)	Obtain sufficient appropriate audit evidence regarding compliance with the provisions of applicable laws and regulations	
(iv)	Perform specified audit procedures to help identify instances of non- compliance with other laws and regulations .	
(v)	Communication appropriately to non-compliance or suspected non-compliance with laws and regulations identified during the internal audit.	
(vi)	If appropriate obtain written representations from management stating that all known non compliances/ suspected non-compliances have been disclosed to internal auditor.	
(vii)	If the company has a policy of working for 24 hours in shifts, verify if all the labour laws have been complied with.	
(viii)	Verify and obtain sufficient audit evidence that the company has registered with all the statutory authorities like, PF, ESI, Service Tax, Sales Tax etc (if applicable).	
(ix)	Verify if any notices are issued by any of the department and the company has replied the same else has appointed any professional to do the same.	
(x)	Verify that the company is adhering to all statutory compliances like, deduction and remittance of TDS, filing of monthly/quarterly returns, etc	

Information Security and Privacy of Data

6.16 Data security is an important aspect in the IT industry. Any loss or misuse of data will result in huge loss to the entity. At the same time data

security is also a major problem in the industry. The following various types of the ways of threat to data security:

(a)   Natural Calamity

Fire, flood, earthquake, etc., can cause damage to hardware including server, computers and other physical storage devices.

(b)   Theft of Data

Data theft is a growing problem primarily perpetrated by workers with access to technology such as, desktop computers and hand-held devices capable of storing digital information such as, flash drives, iPods and even digital cameras. Since employees often spend a considerable amount of time developing contacts and confidential and copyrighted information for the company they work for, they often feel they have some right to the information and are inclined to copy and/or delete part of it when they leave the company, or misuse it while they are still in employment. A common scenario is where a sales person makes a copy of the contact database for use in their next job.

(c)   Hacking

There are chances that the system might be hacked if the security of the systems is not strong enough. Hackers might gain access the data stored in the entity's systems and publish it online or even sell it to the competitors.

The following is the checklist for data security:

Sl no	Particulars	Remarks
(i)	Is there a sound computer/ laptop usage policy formed by the entity?	
(ii)	Does the usage policy covers all possible areas?	
(iii)	Are there sufficient firewalls installed in the server to ensure proper security and is it frequently updated?	

(iv)	Is there a frequent systems audit done to ensure in time detection of all irregularities?	
(v)	Does the entity take all possible steps to prevent, detect and punish fraud?	
(vi)	Verify if the company takes back up of the data regularly and stores them at a secure location.	
(vii)	Verify the record of lapses tracked by the company and the nature of action steps taken to pervert recurrence.	

Books of Accounts

6.17   The internal auditor is required to verify the sufficiency of controls related to maintenance of books of accounts by the entity. The internal auditor is also required to verify the controls for allocation of costs between different departments in every location and whether it is adequate and reliable in the light of overall business operations. Model Checklist is as follows:

Sl no	Particulars	Remarks
(i)	Does the entity have proper accounting system commensurate with the regulatory requirements?	
(ii)	Are the control Systems in place in estimating the revenue generated location-wise sufficient to ensure that proper books are maintained for the location?	
(iii)	Does the entity have location wise employee details to ensure proper allocation of payroll cost to the location?	
(iv)	What is the frequency of closing the books of accounts i.e. monthly, quarterly etc?	

(v)	Are the controls for operating the books proper to ensure that prevention of manipulation?	
(vi)	Are the books maintained in a manner to provide Information to the management for decision making?	

Operating Costs

6.18   They are costs administered by a business on a day to day basis. They may be fixed or variable costs. Model checklist for few of the important operating costs is given below:

Sl no	Particulars	Remarks
Travelling Cost		
(i)	Evaluate the overall internal control environment resulting from the current processes.	
(ii)	Obtain a copy of travel policy of the company, if any.	
(iii)	Verify the travel voucher and the supporting documents.	
(iv)	If amounts are paid in advance and the expenses incurred are less than the advance, verify that the balance amount is received back from the employees.	
(v)	Verify if there are any limits for incurring such expenses.	
(vi)	Verify that the expenses incurred during the year are for official purpose only.	
(vii)	If there is any personal expenses, verify if it is approved by the authorised person.	
(viii)	Recalculate the total reimbursable amount to test accuracy.	

Communication Expenses		
(i)	Verify if the company has any contract with any of the telecom service provider.	
(ii)	If there is a contract, verify whether the rates agreed upon is not prejudicial to the interests of the company.	
(iii)	Verify if there are necessary steps to prevent misuse of the telephone and internet service.	
(iv)	Verify if the password of the internet and wi-fi is confidential.	
(v)	If there are no contract with any telecom provider verify the monthly bills.	
(vi)	Verify if there are any huge deviances in the bills.	
(vii)	If there are such deviances verify if the management has take steps to investigate the cause for such deviances.	

Software Development Cost and R&D Costs

(i)	Verify that the costs incurred on the development stage is capitalized.	
(ii)	If there are any interest costs relatable to software development verify if it is capitalised as per AS 16.	
(iii)	Verify that cost of upgrades and enhancements are capitalized only if the upgrades or enhancements provide additional functionality.	
(iv)	If existing software is retired from use, any unamortized costs of the old software shall be expensed.	
(v)	Verify that expenditures on research should be recognised as an expense immediately and expenditure under development phase should be recognised as an intangible asset, if the recognition criteria given in AS 26 are satisfied.	

Business Continuity Plans

6.19 Business continuity plans are processes that help organizations prepare for disruptive events, the event might be a fire, storm or simply a power outage caused by short circuit. Management's involvement in this process can range from overseeing the plan, to providing input and support, to putting the plan into action during an emergency.

Disasters can be classified in two broad categories. The first is natural disasters such as, floods, storm or earthquakes. While preventing a natural disaster is very difficult, measures such as, good planning which includes mitigation measures can help reduce or avoid losses.

The second category is manmade disasters. These include hazardous material spills, infrastructure failure, or terrorism. In these instances surveillance and mitigation planning are invaluable towards avoiding or lessening losses from these events.

In an industry such as the IT industry where data plays a very crucial part, it has to be safeguarded in the event of any such disasters occurring. Following is a model checklist for preventing and dealing with disasters enabling the entity to continue its business:

SI no	Particulars	Remarks
(i)	Verify if the company has a business continuity plan in place or has outsourced the same to a third party.	
(ii)	If outsourced, verify if the backup is taken in disks or stored through cloud storage.	
(iii)	If stored in cloud storage, verify that only authorised persons have access to such data.	
(iv)	Verify if regular back up of the data is taken from on-site and automatically copied to off-site disk, or back up made directly to off-site disk	
(v)	Verify that only authorised persons have access to the backup data.	
(vi)	Verify if the plan encompasses on how the employees will evacuate and communicate during such events.	

(vii)	Verify if sufficient steps are taken to prevent fire in the premises by installing stabilizers and surge protectors.	
(viii)	Verify if fire prevention systems such as, alarms and fire extinguishers are existing in the company.	
(ix)	Verify if CCTV's are installed to prevent any sort of theft.	
(x)	Verify that anti-virus, firewalls and other security measures are taken to safeguard the data	
(xi)	Verify if uninterruptible power supply (UPS) and/or backup generators are maintained in the company to keep systems going in the event of a power failure.	
(xii)	Verify the steps taken by the company to provide key operations even in case of exigencies.	
(xiii)	Verify if the company has identified certain staff to provide services in case of contingencies.	

Analysis, Reporting and Financial Control

6.20   Financial analysis means assessment of the effectiveness with which funds (investment and debt) are employed in a firm and the efficiency and profitability of its operations. Financial control is management control exercised in planning, performance evaluation, and coordination of financial activities aimed at achieving desired return on investment. Financial reporting is consolidating the analysis and to determine the effectiveness of control in the form of a report. Funds management, project accounting, Profitability analysis, Management reporting form part of the analysis and reporting. Following is a model checklist for the same.

Sl no	Particulars	Remarks
Funds Management		
(i)	Verify if the funds are applied in the assets as approved by the management.	

(ii)	Verify that the disbursement of large amounts is vested only with the top management.	
Project Accounting		
(i)	Verify that the books are maintained in such a way as to know the financial position of every individual project.	
(ii)	Verify that the common costs are apportioned to every individual projects in a proportionate manner.	
Profitability Analysis		
(i)	Verify that if the company is handling multiple projects whether it is maintaining a profitability analysis for each of the projects.	
(ii)	If any of the projects is not profitable, verify if the reasons for the same has been disclosed.	
(iii)	If there are continuous losses in any of the projects verify the steps taken to correct the same.	
Management Reporting		
(i)	Verify if the company has a policy of preparing and sending a MIS for the management monthly.	
(ii)	Verify the frequency and accuracy of the MIS.	
(iii)	Verify if the management has taken any action based on the MIS reports.	

Patents and Copyright

6.21   Copyright is the right given by law to the creators of literary, dramatic, musical, creation of computer software's and databases and their distribution and a variety of other works of mind. It ordinarily means the creator alone has the right to make copies of his or her works or alternatively, prevents all others from making such copies. The basic idea behind such protection is the premise that innovations require incentives. Copyright recognises this need

and gives it a legal sanction. Moreover, commercial exploitation of copyright yields income to the creators and, thus, making pecuniary rewards to individuals creativity.

A patent can be defined as a grant of exclusive rights to an inventor over his invention for a limited period of time. The exclusive rights conferred include the right to make, use, exercise, sell or distribute the invention. Patents are granted only after the satisfaction of certain requirements, which include the patentable subject-matter, utility, novelty, obviousness and specification. A patent can be obtained only if an invention is industrially applicable. An invention is said to be industrially applicable, if it can be made and used in an industry.

Infringement of a patent is the violation of the exclusive rights of the patent holder. If any person exercises the exclusive rights of the patent holder without the patent owner's authorization then that person is liable for patent infringement.

Copyright piracy is a phenomenon prevalent worldwide. Piracy means unauthorised reproduction, importing or distribution either of the whole or of a substantial part of works protected by copyright. The author of a copyrighted work, being the owner, enjoys certain exclusive rights with respect to his or her works. These include right to reproduce, to publish, to adopt, to translate and to perform in public. The owner can also sell, assign, license or bequeath the copyright to another party, if he wishes so. If any person other than the copyright owner or his authorised party undertakes any of the above mentioned activities with respect to a copyrighted product, it amounts to infringement of the copyright. The model checklist is as follows:

Sl no	Particulars	Remarks
(i)	Verify the registrations under the Copyrights and Patents Act	
(ii)	Obtain documentary evidence on registration/renewal of copyrights at regular intervals.	
(iii)	Advice the entity on regulatory compliances in case of infringement of copyrights/patents by third party against the company.	
(iv)	Compute contingent liability, if any, on infringement of copyrights of third party by the	

	entity there by to provide realistic picture of financial statements.	
(v)	Advice the company on sharing of copyrights with domestic or foreign residents and legal issues involved.	
(vi)	Verify if the company is taking serious legal action against those who have infringed their patents/ copyrights.	

Internal Controls

6.22 As many of the software companies in India are subsidiaries of companies of USA or of any other country, it would need to follow the Sarbanes-Oxley (SOX) Act requirements as per the rules prevailing in its parent company's country. As a best practice, a number of Indian IT companies as well started following SOX requirements. The Act requires all financial reports to include an internal control report. This is designed to show that not only are the company's financial data accurate, but the company has confidence in them because adequate controls are in place to safeguard financial data. Year-end financial reports must contain an assessment of the effectiveness of the internal controls. The issuer's auditing firm is required to attest to that assessment. The auditing firm does this after reviewing controls, policies, and procedures during a Section 404 audit, conducted along with a traditional financial audit. It is designed to review audit requirements to protect investors by improving the accuracy and reliability of corporate disclosures. These standards require management to:

- Assess both the design and operating effectiveness of selected internal controls related to significant accounts and relevant assertions, in the context of material misstatement risks;

- Understand the flow of transactions, including IT aspects, in sufficient detail to identify points at which a misstatement could arise;

- Evaluate company-level (entity-level) controls, which correspond to the components of the Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework;

- Perform a fraud risk assessment;

- Evaluate controls designed to prevent or detect fraud, including management override of controls;

- Evaluate controls over the period-end financial reporting process;

- Scale the assessment based on the size and complexity of the company;

- Rely on management's work based on factors such as competency, objectivity, and risk;

- Conclude on the adequacy of internal control over financial reporting.

The model checklist for internal controls is as follows:

SI no	Particulars	Remarks
(i)	Verify if the requirements as per SOX are maintained by the company.	
(ii)	Select a set of controls and test it repeatedly	
(iii)	Verify if the company has a sound password policy like instructing the employees not to have usual passwords like their name, date of birth, etc., as passwords.	
(iv)	Verify that the database has a strong authorisation program and does not have any loopholes.	
(v)	Verify the external auditor's report of the previous year and check if any loopholes pointed out by them are complied with by the company.	

Computer Assisted Audit Techniques (CAATs)

6.23   It is the practice of using computers to enhance the effectiveness and efficiency of audit procedures. They are computer programs and data that the auditor uses as part of the audit procedures to process data of audit significance, contained in an entity's information systems. The internal auditor should select a suitable CAAT keeping in mind the size and nature of business.

Following are few of the audit tools which the auditor can use in his internal audit.

(i)   Microsoft Excel

It is a spreadsheet application used for calculation, graphing tools, pivot tables etc. It allows sectioning of data to view its dependencies on various factors for different perspectives.

(ii)   Microsoft Access

It is a database management system with a graphical user interface and software-development tools. It stores data in its own format and can also import or link directly to data stored in other applications and databases.

(iii)   ERP's like SAP, etc.

It provides easier global integration and real time information. It reduces the possibility of redundancy errors. It maintains a centralized library of electronic work papers, and automates work paper review and approval.

(iv)   SaaS

It is a software delivery model in which software and associated data are centrally hosted on the cloud. Access to cloud-based ERP systems allows internal auditors to gather audit information on their own, resulting in less internal time committed to the audit. Audit procedures can be performed throughout the year in real time. One of the major advantages is that all transactions create an 'audit trail' that cannot be manipulated by the company.

(v)   Crystal Reports

It is a business intelligence application used to design and generate reports from a wide range of data sources. It allows users to graphically design data connection and report layout.

Business Enabling Functions

6.24   There are various departments which enable a software company business to function smoothly. Few of the important departments are HR, Finance, IT, Facilities, Administration, Quality, Risk management.

The model checklist for the same is as follows.

SI no	Particulars	Remarks
Human Resources(HR)		
(i)	Verify if the recruitments made are according to the talent acquisition policy of the company.	
(ii)	Verify that an attendance sheet is maintained in case of trainings provided for the employees.	
(iii)	Verify if non-disclosure agreement has been entered into with the employees.	
(iv)	In case of employee leaving the company verify if the company has entered into a Non Competence Agreement with the employees.	
(v)	Verify the appraisal mechanisms in the company and check if the same has been followed or not.	
(vi)	Verify the attrition rate of the employees.	
(vii)	If the employee turnover is higher than that of the industry obtain the reasons for the same and report the same to the top management.	
(viii)	Verify if there are any group or medical insurance policies on the employees taken by the company.	
(ix)	Verify if there is any policy of human resource valuation in the company.	
(x)	If it is in existence verify the method used to value the same and how it is accounted.	
(xi)	Verify if the value of human resource has been quantified.	
(xii)	If the value of such an asset is very low verify the reasons for the same.	
(xiii)	Verify if the method selected to value the human resource is appropriate to the company.	

(xiv)	Verify if the pay scale of the employees is on par with the industry or there is a very huge deviation.	
(xv)	Verify if the entity maintains a checklist of statutory remittances to be made on account of PF, ESI, Labour Welfare Fund.	
(xvi)	Verify if there are sufficient records maintained by the entity with regard to their recruitment, offer letter, and all other correspondences with the employee.	
(xvii)	Verify if entity maintains separately all complaints and grievances received from the employees.	
(xviii)	Verify In cases of flexible timings and work from home option provided to an employee, has appropriate approval been obtained.	
(xix)	Verify if cheques prepared and signed by two different employees.	
(xx)	If the entity opts for bank transfer then is there sufficient level of authority to issue bank transfer instruction to the bank.	
Finance		
(i)	Verify the various sources of finance of the company.	
(ii)	Verify the debt equity ratio of the company to find out the leverage of the company.	
(iii)	If the company has taken a loan verify that the same is utilised for the specific purpose only.	
(iv)	Verify the collection period of the debtors.	
(v)	Verify the payment period of creditors.	
(vi)	Verify if the operations team is sufficiently supported by the Finance department by providing variety of reports, analysis and insights for appropriate decision making	

Information Technology		
(i)	Verify the usage of IT policy of the company and whether the employees adhere to it.	
(ii)	Verify if the company is utilising the software it develops for its internal purpose.	
(iii)	Verify if the IT department circulates the relevant hardware and software usage policy to the employees.	
(iv)	Verify there is a rigorous IT helpdesk in place to ensure the IT requirements of the business are addressed on a timely basis.	
Administration		
(i)	Verify if the company has a separate administration department to adhere to the needs of the company.	
(ii)	Verify that the accounts department and administration department are not related.	
(iii)	Verify the requests received by the administration department and the action taken by them to address the issue.	
(iv)	Verify if the administration department is in charge of all the statutory registrations of the company.	
Quality		
(i)	Verify if the company has a defined set of principles to maintain quality of the products.	
(ii)	Verify if there is a quality control team in the company.	
(iii)	Verify that the employees related to production are not related to the quality control team.	
(iv)	Verify if the quality control team conducts tests on all the products and services and reports the same to the management.	

(v)	In case the quality requirements are not met with verify the procedure to be followed for further processing.	
(vi)	Verify if the company obtains feedback from its customers regarding the products and service of the company.	
(vii)	In case of customer complaints verify if their grievances has been addressed to.	
(viii)	Verify if a record of all the complaints and their details are maintained by the company.	
(ix)	In case the product/ service has to be reworked verify if the cost is borne by the company or it is recovered from the customer.	
(x)	After addressing the grievances of the customer verify if the company has taken the feedback from the customer again.	
(xi)	Verify if there are any steps/plans taken to improve the quality.	

Revenue Earned by the Company

6.25   The revenue earned by IT companies would be by sale of products or by providing services. There are various means of revenue which an IT company can earn and the following is a model checklist for the same.

SI no	Particulars	Remarks
(i)	Identify if the company in involved only in exports or even in domestic sales.	
(ii)	If it is into exports verify if the service is provided by the company on site by deputing its employees abroad or from India.	
(iii)	Identify the billing mechanism of the company.	
(iv)	Verify if proper time sheets are maintained by the company if it follows billing on Time and Material basis.	
(v)	Verify if the company is billing under the milestone method, time sheet method or cost plus method.	

(vi)	Verify if there is an escalation clause if the billing is done on progressive basis.	
(vii)	Verify if the company provides warranty and post warranty services.	
(viii)	Verify if the amount charged by the company for post warranty services is different from normal charges.	
(ix)	Verify if the company has entered into an Annual Maintenance Contract (AMC) with its customers	
(x)	Verify the number of services provide under AMC and the prices charged to them.	
(xi)	Verify if there is any price difference in the service provided under AMC and as a standalone basis.	
(xii)	Verify if the company charges for any services not covered under the AMC.	
(xiii)	Verify if the company also provides on demand services to its customers apart from post warranty services and is there any price difference for the same.	
(xiv)	Verify if there are any revenue leakage possibilities due to improper maintenance of time sheets.	
(xv)	If there are any such revenue leakages what are the steps taken by the company to overcome it.	
(xvi	Verify if the revenue recognition adopted by the company is as per AS 9.	

Value of Brand

6.26 Strong brands are necessary in IT industry because technology has increased the number of content providers and made it possible for many more competitors to seek the attention and loyalty of audiences and advertisers. Brands are crucial in separating IT companies and their products from those of competitors, in creating continuity of quality and service across extended product lines, and in helping develop strong bonds with consumers.

The Model checklist is as follows:

SI no	Particulars	Remarks
(i)	Understand the valuation methodology followed and verify if the method selected is appropriated.	
(ii)	Verify the factors considered in valuing the brand like, growth rate, expected life, weights assigned to various factors, competition, and discount rate adopted.	
(iii)	Obtain brand valuation documents from independent valuers, if any,	
(iv)	Reconcile the value of brand with financial statements.	
(v)	Verify amortization/ impairment provided every year.	
(vi)	Advice the client on importance of brand value and the need to get them registered if they are not registered.	

Accounting for Recharges to the Clients

6.27   Accounting for recharges refers to reimbursement of expenses by the client to the company. Model checklist is as follows:

SI no	Particulars	Remarks
(i)	Verify the SOW entered into by the company and the client and determine if there is a clause for reimbursement of expenses.	
(ii)	If there is reimbursement clause, verify if there are any limits specified for the same.	
(iii)	Check that such a reimbursement is not recorded as income in the books of the company.	
(iv)	Verify that such reimbursements are received by cheques.	
(v)	Verify that there is adequate supporting documents are maintained for such reimbursement claims.	

Hedging

6.28 Hedging means reducing or controlling risk. This is done by taking a position in the futures market that is opposite to the one in the physical market with the objective of reducing or limiting risks associated with currency price changes. As majority of the income derived by software companies are by way of foreign exchange they have to hedge in order to safeguard themselves against the fluctuating foreign exchange.

Alternatively, the entity can also maintain an Exchange Earner's Foreign Currency (EEFC) account with any of the authorised Dealers. It is a facility provided to the foreign exchange earners, including exporters, to credit 100 per cent of their foreign exchange earnings to the account, so that the account holders do not have to convert foreign exchange into Rupees and vice versa, thereby minimizing the transaction costs. Such accounts are offered without any minimum balance requirements. The EEFC account balances can be hedged. A unit located in a Special Economic Zone can open a Foreign Currency Account with an authorised dealer in India subject to certain conditions as prescribed by the RBI.

The Model checklist is as follows:

SI no	Particulars	Remarks
(i)	Verify if the company has safeguarded itself against foreign exchange fluctuations by entering into forward contracts, options etc.	
(ii)	Verify that such hedging is duly authorised by the Board of Directors.	
(iii)	Verify if the profits or losses from such forward contracts or options as recognised as per the AS 11.	
(iv)	If necessary, advice the management of the company on the disclosure requirements as per AS 32.	
(v)	Verify that only the authorised persons are operating the EEFC account.	
(vi)	If the company is located in SEZ, verify if the conditions mentioned by the RBI are followed to open the account.	

Checklist for Compliances

SI No	Applicable Statute	Requirement	Remarks
1	STPI	Approval for establishing the unit- STP Import Export Licence Application for	The following grants are obtained: Grant of industrial approval Approval of the foreign technology agreement Approval for import of capital goods
2	STPI	Bonding & Debonding	Bonding is done through a prescribed document which is an agreement of the STPI unit with the Development Commissioner of the STPI. This document binds the unit for importing duty free procurement against export. Debonding of a unit is to relieve itself from this liability and pay applicable duty (if required).
3	STPI	Custom Duty Exemption	Necessary license for import of goods. The importer must carry out the development of software and export either all the software so developed or such other percentage. The importer must execute a bond, in the prescribed form. The bond should be for a sum to be prescribed by the customs authority. The goods sought to be imported must be Capital Goods

			Raw Material
			Components
			Spares for production machinery
			Consumables required for manufacture of goods
			Drawings, blue prints, technical maps and charts, relating to manufacturing activity
			Office equipment, spares and consumables thereof.
4	STPI	Periodic Statutory Reports	*Monthly Progress Reports (MPR) & Quarterly Progress Reports (QPR):* All units are required to submit Monthly Progress Reports & Quarterly Progress Reports by 7th of a month on completion of previous month and by 10th of a month on completion of previous quarter respectively in the prescribed format. It is a mandatory requirement and units which are irregular in submitting MPRs & QPRs can be denied services of STPI. *Annual Performance Reports (APR):* Yearly performance report should be submitted as per the prescribed format.
5	STPI	Books of Accounts	Distinct Identity: If an industrial enterprise is operating both as a domestic unit as well as an EHTP/STP unit, it shall have two distinct identities with separate accounts, including separate bank accounts. It is, however, not necessary for it to be a separate legal entity, but it should be possible to distinguish the imports and exports or supplies affected by the EHTP/STP

			units from those made by the other units of the enterprise. Maintain the accounts as under: Maintenance of Sales Invoices. Maintenances of Fixed Asset Registers. Maintenance of Foreign Inward Remittance Certificate file (FIRC) & Bank Realization Certificate (BRC) file where the original of the FIRCs and BRCs are kept. Maintenance of contract file, where copies of contracts received from buyers are maintained.
6	STPI	Export Obligation	After completion of the project, the STP units will get the exports attested from STPI in prescribed following forms *Reporting Requirement* When export of software is made through data communication, it will be declared on SOFTEX form (which is available for sale to exporters through regional offices of Reserve Bank and STPI centres). The form has to be submitted to the concerned STPI within the stipulated time as per the guidelines of RBI.
7	RBI	On receipt of Foreign Investment	*Intimation to RBI:* If your bank receives the money in foreign currency (say it receives US $) then your bank is supposed to give you a call and tell you that it has received money in so and so currency and ask you when to do the conversion to INR , after this you need to file an intimation with the RBI

			telling them that you received FDI into your company through your bank within 30 days of receiving the funds.
			While remitting funds ensure the following:
			(a) Funds have to flow only from the investors' bank accounts
			(b) The purpose of remittance should be stated as
			"Towards Investment in Share Capital"
			(c) Know Your Customer information to be transmitted along with remittance.
8	RBI	Issue of Shares	Once this intimation is sent, your next step is to actually issue the shares to the foreign investor within 180 days of receiving the funds, failing which you are bound by law to transfer the money back to your investor.
			Reporting on Issue of Shares:
			FC-GPR (Annexure 8)
			FIRC Copies
			A Certificate from the Company secretary for FEMA compliance
			A Certificate from CA indicating the manner of arriving at the price of shares issued to the persons resident outside India A letter stating the reason for delay in submission of FC-GPR (in case of delay)
			Debit authority letter
9	RBI	Annual Reporting	Submit Annual Return of Foreign Liabilities & Assets, in Part B of Form FC-GPR, with the Reserve Bank of India, External Liabilities and Assets

			Statistics Division, Mumbai, before 15th July of every year, also enclose audited financials of the company.
10	RBI	External Commercial Borrowings Automatic Route	(i) Eligible borrowers (as per RBI master circular issued on 02/07/2012. It will be updated every year) (a) Corporates (registered under the Companies Act except financial intermediaries (such as banks, financial institutions (FIs), housing finance companies and NBFCs) are eligible to raise ECB. Individuals, Trusts and Non-Profit making Organisations are not eligible to raise ECB. (b) Units in Special Economic Zones (SEZ) are allowed to raise ECB for their own requirement. However, they cannot transfer or on-lend ECB funds to sister concerns or any unit in the Domestic Tariff Area. (ii) Recognised lenders Borrowers can raise ECB from internationally recognised sources such as (i) international banks, (ii) international capital markets, (iii) multilateral financial institutions (such as IFC, ADB, CDC, etc.,), (iv) export credit agencies, (v) suppliers of equipment,(vi) foreign collaborators and (vii) foreign equity holders (other than erstwhile OCBs). A "foreign equity holder' to be eligible as "recognized lender' under the

				automatic route would require minimum holding of equity in the borrower company as set out below:
				(i) For ECB up to USD 5 million – minimum equity of 25 per cent held directly by the lender.
				(ii) For ECB more than USD 5 million – minimum equity of 25 per cent held directly by the lender and debt-equity ratio not exceeding 4:1 (i.e., the proposed ECB not exceeding four times the direct foreign equity holding).
				(iii) Amount and Maturity
				(a) The maximum amount of ECB which can be raised by a corporate is USD 500 million or equivalent during a financial year.
				(b) ECB up to USD 20 million or equivalent in a financial year with minimum average maturity of three years.
				(c) ECB above USD 20 million and upto USD 500 million or equivalent with a minimum average maturity average maturity of five years.
				(d) ECB upto USD 20 million can have call / put option provided the minimum average maturity of three years is complied with before exercising call / put option.

			End-use
			(a) Investment e.g., import of capital goods (as classified by DGFT in the Foreign Trade Policy), by new or existing production units, in real sector-industrial sector including small and medium enterprises (SME) and infrastructure sector – in India. Infrastructure sector is defined as (i) power, (ii) telecommunication, (iii) railways, (iv) road including bridges, (v) sea port and airport, (vi) industrial parks, and (vii) urban infrastructure (water supply, sanitation and sewage projects);
			(b) Overseas direct investment in Joint Ventures (JV) / Wholly Owned Subsidiaries (WOS) subject to the existing guidelines on Indian Direct Investment in JV/WOS abroad.
			Ends-users not permitted
			(a) Utilisation of ECB proceeds is not permitted for on-lending or investment in capital market or acquiring a company (or a part thereof) in India by a corporate.
			(b) Utilisation of ECB proceeds is not permitted in real estate.
			(c) Utilisation of ECB proceeds is not permitted for working capital, general corporate purpose and repayment of existing Rupee loans.

			Procedures
			Borrowers may enter into loan agreement complying with ECB guidelines with recognised lender for raising ECB under Automatic Route without prior approval of RBI. The borrower must obtain a Loan Registration Number (LRN) from the Reserve Bank of India before drawing down the ECB
11	RBI	External Commercial Borrowings-reporting Requirement	(a) With a view to simplify the procedure, submission of copy of loan agreement is dispensed with.
			(b) For allotment of loan registration number, borrowers are required to submit Form 83, in duplicate, certified by the Company Secretary (CS) or Chartered Accountant (CA) to the designated AD bank. One copy is to be forwarded by the designated AD bank to the Director, Balance of Payments Statistics Division, Department of Statistics and Information System (DSIM), Reserve Bank of India, Bandra-Kurla Complex, Mumbai – 400 051
			(c) The borrower can draw-down the loan only after obtaining the loan registration number from DSIM, Reserve Bank of India.
			(d) Borrowers are required to submit ECB-2 Return certified by the designated AD bank on monthly basis so as to reach DSIM, RBI within seven working

			days from the close of month to which it relates.
12	RBI	Conversion of ECB	*Conversion of ECB into equity is permitted subject to the following conditions:*
			(a) The activity of the company is covered under the Automatic Route for Foreign Direct investment or Government approval for foreign equity participation has been obtained by the company,
			(b) The foreign equity holding after such conversion of debt into equity is within the sectoral cap, if any,
			(c) Pricing of shares is as per SEBI and erstwhile CCI guidelines / regulations in the case listed / unlisted companies as the case may be.
			Conversion of ECB may be reported to the Reserve Bank as follows:
			(a) Borrowers are required to report full conversion of outstanding ECB into equity in the form FC-GPR to the concerned Regional Office of the Reserve Bank as well as in form ECB-2 submitted to the DSIM, RBI within seven working days from the close of month to which it relates. The words "ECB wholly converted to equity" should be clearly indicated on top of the ECB-2 form. Once reported, filing of ECB-2 in the subsequent months is not necessary.

			(b) In case of partial conversion of outstanding ECB into equity, borrowers are required to report the converted portion in form FC-GPR to the concerned Regional Office as well as in form ECB-2 clearly differentiating the converted portion from the unconverted portion. The words "ECB partially converted to equity" should be indicated on top of the ECB-2 form. In subsequent months, the outstanding portion of ECB should be reported in ECB-2 form to DSIM.
13	Income Tax	Sec 10 B- 100% Export Oriented Unit	Special Incentive is been given to the newly established 100% EOU. Under this section the profits and gains derived from the 100% EOU shall not be included in the total income of the tax payers. This benefit is available for the income earned during a period of five consecutive assessment years falling within a period of eight years from the commencement of production. This exemption is available to all the tax payers including the foreign companies and the Non Resident tax payers.
14	Employee's Provident Fund and Miscellaneous Provisions Act, 1952	Reporting Requirements	Preparation of monthly PF remittance statement. Preparation of PF challan prescribed formats and specified copies Preparation and filing of necessary forms and returns Obtaining Form No.2 from new entrants joined during the month.

			Maintenance of a database of all employees giving the details of their names, PF number, transfer/ withdrawal, etc., for future reference and also to follow up with RPFC for transfer /withdrawal till process is complete.
15	The Employee's State Insurance Act, 1948	Reporting Requirements	Preparation of monthly ESI remittance statement. Preparation of ESI challan in Quadruplicate. Preparation of ESI challan prescribed formats and specified copies.
16	Special Economy Zone	Eligibility Criteria	It is not formed by the splitting up, or the reconstruction, of a business already in existence. It is not formed by the transfer to a new business, of machinery or plant previously used for any purpose. Proposal does not involve use of capital goods already used. Other procedural requirements are fulfilled.
17	Special Economy Zone	Reporting Requirements	SEZ units are required to maintain a Positive Net Foreign Exchange earning cumulatively for a period of 5 years from the commencement of operation. Intimate date of commencement. The Unit shall execute a Bond-cum-Legal Undertaking. To submit annual performance report duly certified by CA within specified time from the close of Financial Year, to development commissioner. To undertake not to change name,

			style and location except with approval of development commissioner.
			To intimate change in Board of directors, etc.
			Required to maintain proper books of accounts financial year wise which include records in respect of import/export/ procurements/inter unit transfer/ DTA sale/sub-contracting/ destruction, etc.
			The goods admitted into a Special Economic Zone shall be used by the Unit or the Developer only for carrying out the authorized operations but if the goods admitted are utilized for purposes other than for the authorized operations or if the Unit or Developer fails to account for the goods as provided under these rules, duty shall be chargeable on such goods as if these goods have been cleared for home consumption.
18	Special Economy Zone	Benefits Available	100% Income Tax exemption on export income for SEZ units under Section 10AA of the Income Tax Act for first 5 years, 50% for next 5 years thereafter and 50% of the ploughed back export profit for next 5 years.
			Exempt from paying Service Tax where services are consumed within SEZ. Even otherwise, refund is granted. Service tax is exempted in case of exports also.
			However, services provided by unit in SEZ to DTA are liable to Service Tax.
			Exempted from payment of State Sales tax and other levies as

			extended by the respective State Governments.
			Exemption from Central Sales Tax.
			If any unit in SEZ or STPI purchases any goods from DTA, then the excise duty paid can be claimed as refund.
			In case of any goods manufactured or produced by unit in SEZ,such goods are exempt from payment of excise duty subject to conditions/ limitations.
			Exempt from Customs duty if purchased for authorised operations.
			R&D Cess on import of technology is exempt.
			If any unit in SEZ procures any goods from outside India there is no customs duty payable by the units.
			Exempt from Excise duty if purchased for authorised operations.
			Single window clearance for Central and State level approvals.
			There is no limit for DTA sales.
			External commercial borrowing by SEZ units upto US $ 500 million in a year without any maturity restriction through recognized banking channels.
			Exempt from Dividend distribution tax.

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