

LIVE PROJECT

Effective Material Flow Management for Plant Operations: A Case Study of the Petroleum Refinery

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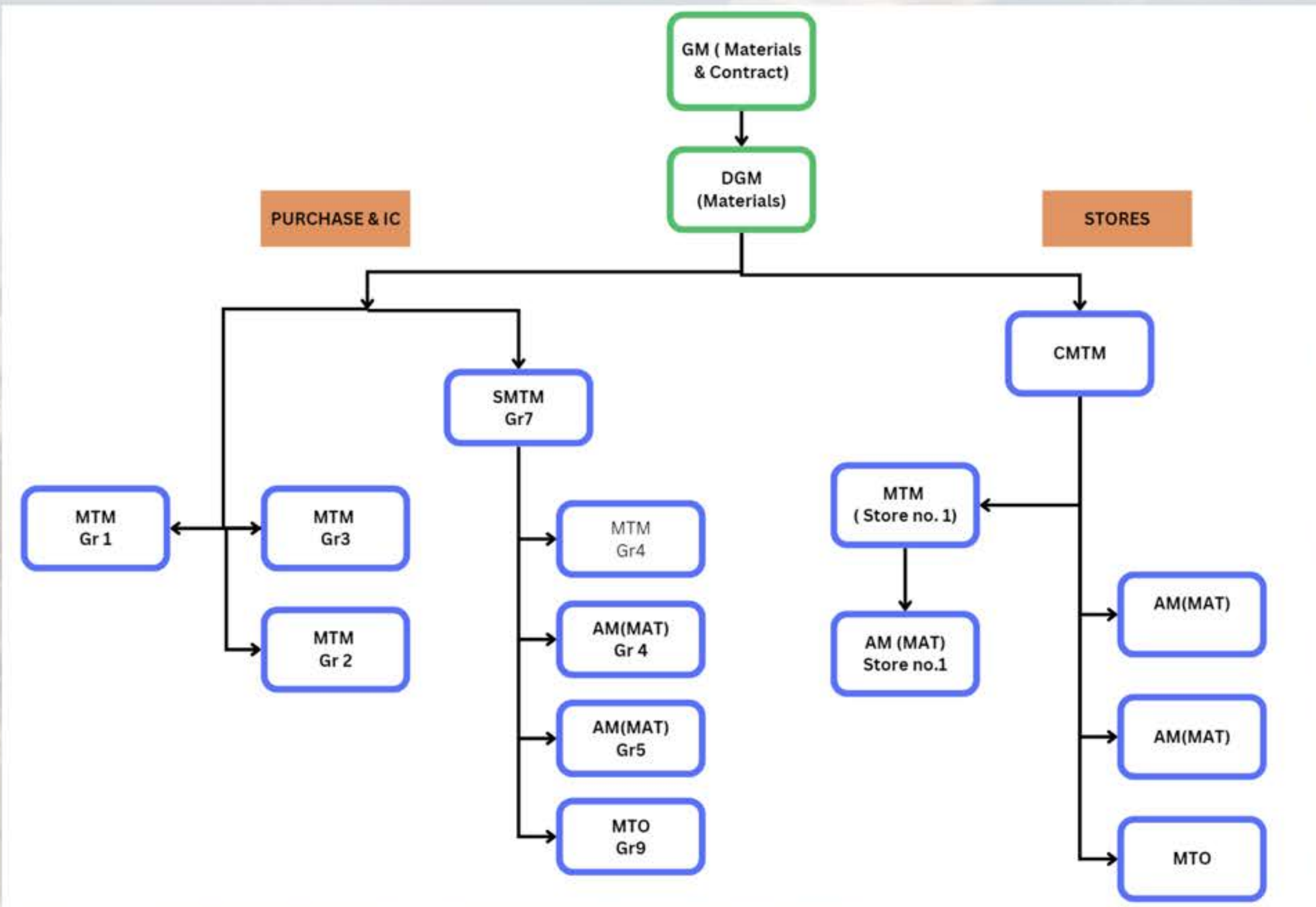
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MATERIAL & CONTRACT DEPARTMENT STRUCTURE



Store section-
operates with segmented sections, each overseen by designated individuals appointed by their superiors.

Receiving Personnel
Materials are directed to the section corresponding to the individual who receives them from the vendor, ensuring seamless integration into the store's inventory.

Material Type
The nature and type of the material being received influence its allocation within the store, ensuring efficient organization and management based on the characteristics of the items.

Purchase and Inventory Control(IC)-
receives purchase requisitions from respective departments.



MATERIAL CLASSIFICATION

01. ROUTINE CONSUMPTION INVENTORY/ IC ITEMS

Essential for day-to-day operations, these items are regularly consumed, purchased, and automatically replenished when inventory levels fall below a certain threshold.

02. ONE-TIME BUY/ REVENUE ITEMS

Crucial for refinery operations, these items do not require frequent replenishment and are purchased as per specific requirements.



03. ON-REQUEST ITEMS/ ADDITIONAL FACILITY ITEMS

These items are acquired based on departmental demand, specified through purchase requisitions.

PROCESS OF MATERIAL PROCUREMENT

Material Requisition:

- A department within IOCL initiates a material requisition by specifying the type and quantity of a particular item needed for their operations.

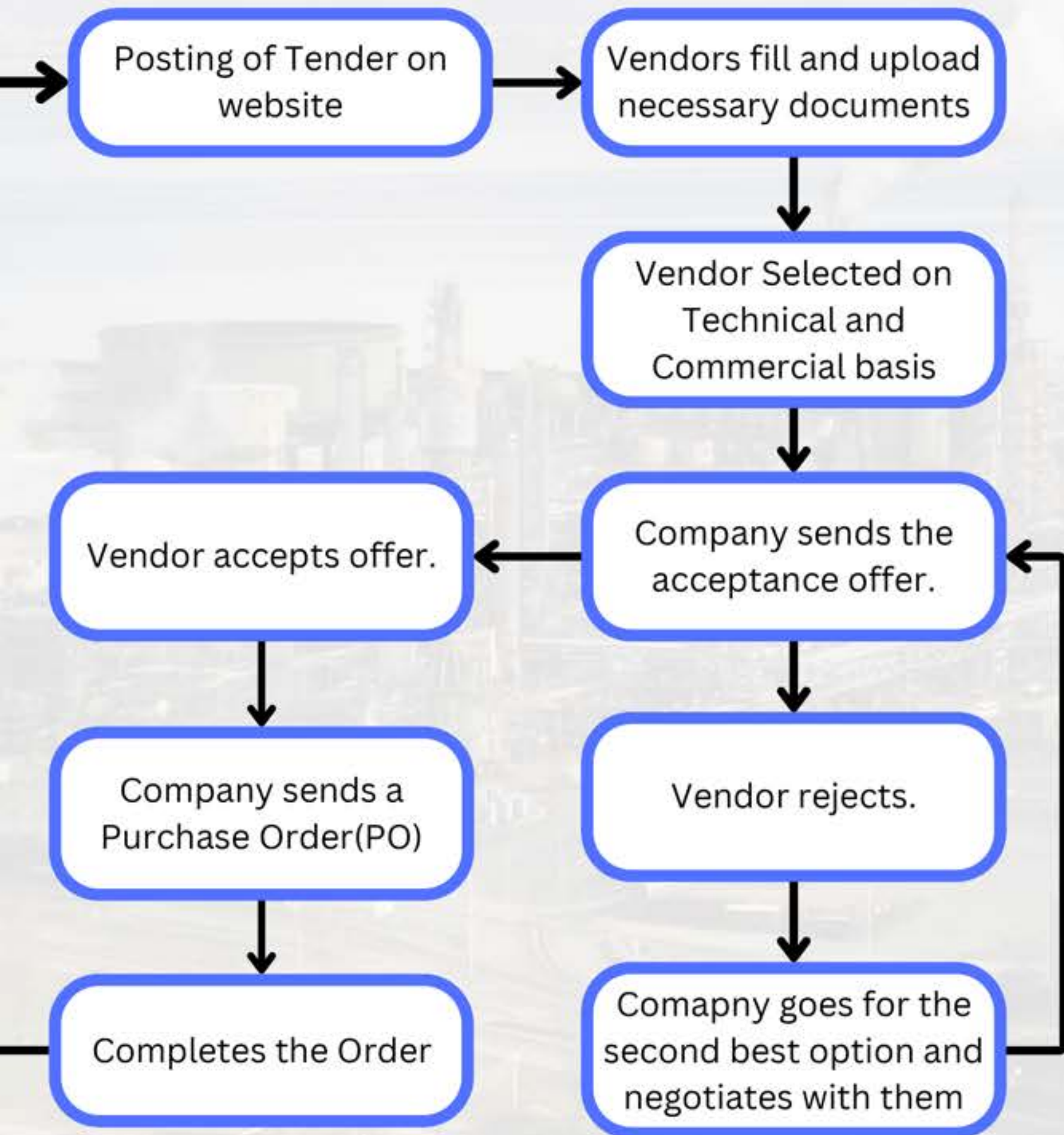
Detailed Specifications:

- The requesting department provides detailed specifications in the form of a "purchase requisition" for the required material, including quality standards, dimensions, and any other relevant information.
- In the case of IC items and revenue items, the "purchase requisition" is taken care of by the Purchase department itself.

Request Approval by
Department

Send Request

Purchase Request
Created



Tendering Process:

- The Materials and Contracts Department at IOCL initiates a tender process by inviting bids from potential vendors.
- The tendering process is conducted only on the designated website.
- Vendors submit necessary documents, including technical specifications, pricing, and compliance details.

Vendor Evaluation:

- IOCL evaluates the submitted bids and shortlists vendors based on compliance, quality, and cost-effectiveness.
- The Procurement Department typically handles this evaluation.

Vendor Selection & Contract:

- After a thorough assessment, IOCL selects the vendor that offers the best combination of quality and cost.
- Contract Details.

International Trade

Considerations: additional steps are involved-

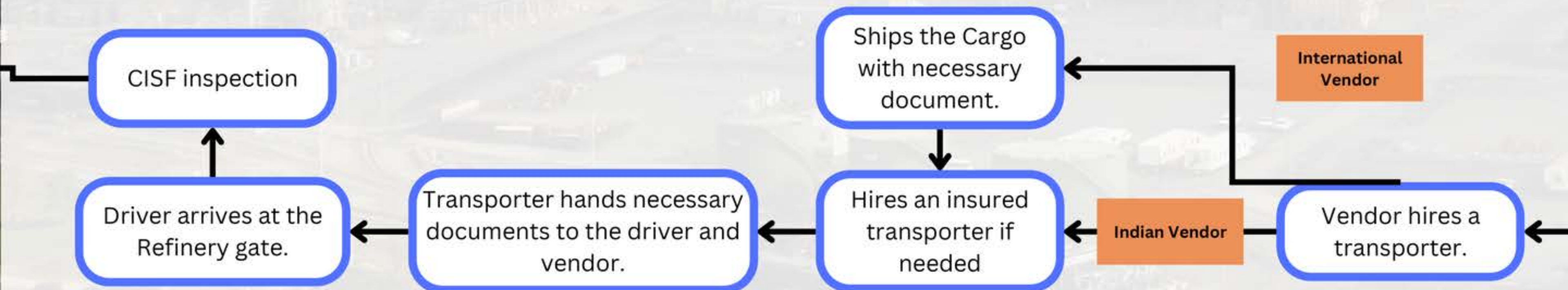
- Shipping and Customs: The material is shipped from Canada to an Indian port. Customs clearance and verification of necessary documents occur.

Transport to Refinery:

- The company instructs the vendor take only a bank-approved transporter according to their terms and condition mention in the contract.

Material Arrival at Refinery:

- Upon arrival at the refinery gate, the material is logged in and tracked further.
- Inspected by CISF for security section.



Receipt section-

- Material transfer from the gate following CISF inspection.
- Conduct their inspection

Unloading and Inspection:

- Inspection Department is notified.
- The Receipt section officer issues a weightment certificate.

Acceptance or Rejection:

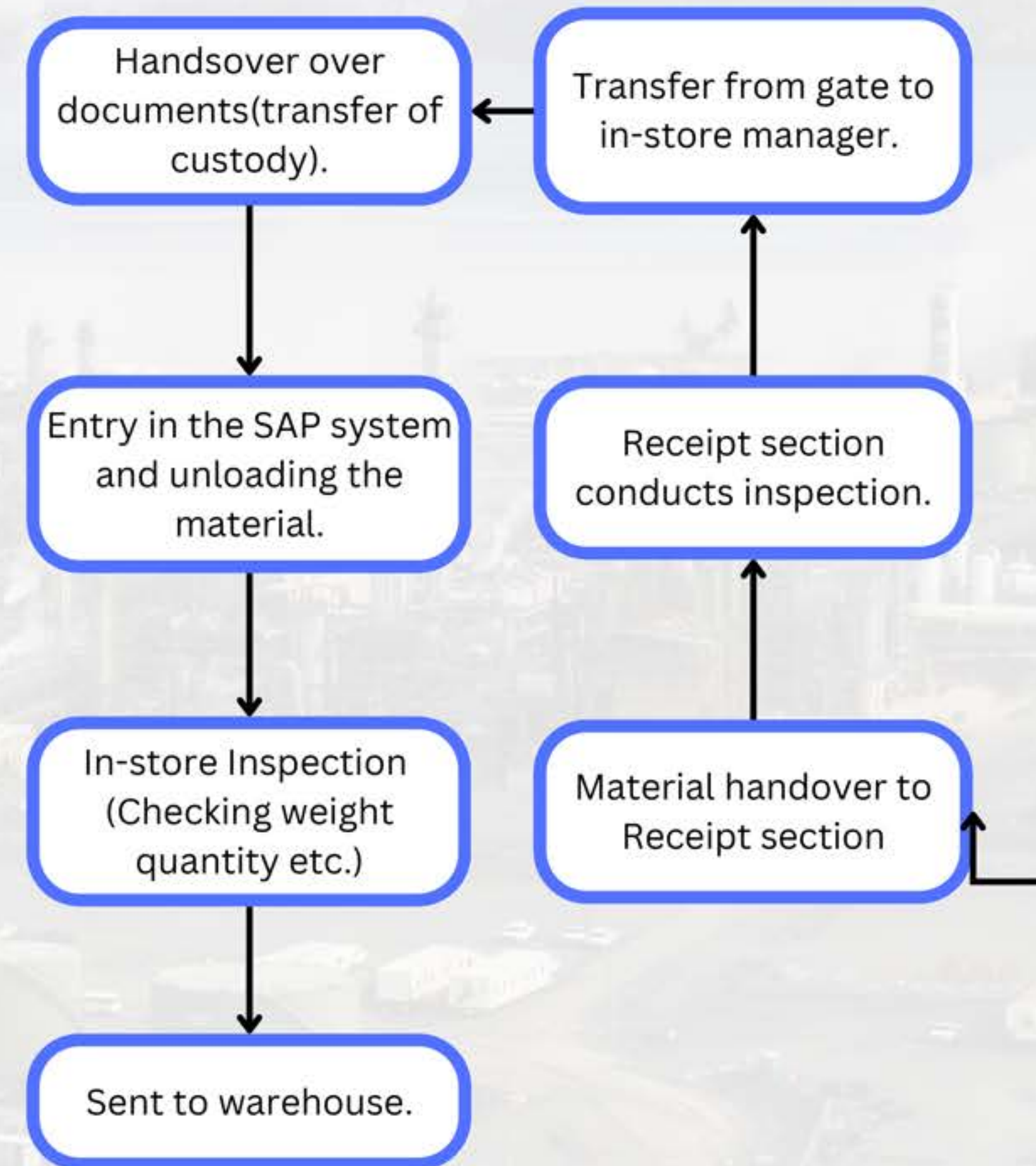
- Accepted material is added to the inventory database only upon payment to the vendor.
- Material is damaged or incorrect- returned to the vendor as per the contract terms.

Transfer of Custody

- Transfer material custody to the store officer along with all necessary documents.

Inventory Management:

- The Materials Department maintains inventory records.
- **Critical spares** - encompass vital components and supplies necessary for uninterrupted plant operations. Failing to procure these items on time can lead to costly shutdowns and production delays, impacting overall efficiency and profitability.



PURCHASE REQUISITION

A formal request for procurement of material,

Content of Requisition:

- Specifies required items, quantities, costs, and present stock.
- Details material characteristics, shelf life, and storage requirements.
- Provides clear delivery specifications, including phased delivery terms.

Requisition Process:

Initiated by Indenting Officer, approved by Functional Head, and validated by Approving Officer

Example.

ACTIVATED ALUMINA (PA), (SOLUTION ADSORBE)

Characteristics- Bulk Density, Surface area, crush strength, and loss on ignition are required for this item. This item was requested by the Chemical Department. The shelf life for the item is 2 years.

PURCHASE REQUISITION

Creation Date :	PR No. :
Change Date :	Print Date :
Tracking No. :	Rel Status :
Department :	
Initiated By :	Budget Head :
Released By :	Purchase Group :

Document Type:

S. No.	Plant Item Code	Quantity	Present Stk.	Est. Cost	Last PO
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Equipment/ Header Details :
Supplimentary Requirements

Item Text

Detailed specification and requirements of the item.

CHARACTERISTICS

Sampling

Total PR Value (Inculsive of all Taxes) (Rs.)

Purpose for which Item(s) is required:

Allocations:

Delivery Period

INDENTING OFFICER
Signature

FUNCTIONAL HEAD
Signature

APPROVED BY
Signature

Name
Designation

Name
Designation

Name
Designation

Phone
Email
Date

Date

Date

TENDERING PROCESS

Tender List :

S.No	e-Published Date	Closing Date	Opening Date	Title and Ref.No./Tender ID	Organisation Chain
1.	20-Apr-2024 04:00 PM	27-Apr-2024 02:30 PM	29-Apr-2024 03:00 PM	[Annual Rate Contract for Unloading of catalyst in inert media, Sieving and Loading of Catalysts in atmospheric media in reactors at Panipat Naphtha Cracker, Panipat.] [RPNC243047] [2024_PR_176830_1]	IndianOil Refineries Panipat Refinery Contracts

IOCL website- iocltenders.nic.in

The following are the documents that need to be uploaded to take part in the tendering process.

- Tender Acceptance Format- Undertaking by The Tenderer(s)
- Enquiry Cum Offer
- Declaration Cum Undertaking Format
- Bid Documents

Enquiry Cum Offer: This ensures that the vendor has read every requirement of the order and thus must put a stamp on each page of the form that mentions all the details.

ATC (Agreed Terms & Conditions): The vendor is required to provide confirmations, acceptances, or comments for each applicable term or condition specified in the material order. This ensures clarity and mutual understanding between the vendor and the purchaser regarding the obligations and expectations associated with the specific order.

Prices quoted shall exclude transit insurance charges as the same shall be arranged by IOCL.	Noted and Confirmed
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Performa for Deviations- Technical Performa for Deviations- Commercial

Vendor Holiday/Suspension Lists:

- for specified or unspecified reasons, giving IOCL discretion to discontinue dealings due to undesirable conduct .
- Generally, vendors move to the Holiday list after receiving a Show Cause Notice
- IOCL retains the authority to suspend vendors without prior notice

PURCHASE ORDER

Sr. No.	Material Code	UOM	Quantity	Unit Price	Amount
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Item Text: Characteristics and Sampling

TERMS AND CONDITIONS

1 Basis of Order

In case of FoB Order

In case of CFR Order

2 Marine Freight/ Transportation

2.1 Bill of Lading

2.2 Name of Ultimate Consignee

2.3 Port Consignee/Notify Party

2.4 Documents fax

2.5 Destination Sea Port

3 Certificate of Analysis

4 Origin of Goods

5(A) Materials safety Datasheet

5(B) Phytosanitary Certificate

6 Import License

7 Post Order Correspondence

8 Confirmation of Order

9 Price Reduction Schedule

10 Performance bank guarantee

11 Repeat Order

12 Part Order

13 Shipping Documents

14 Quantity Tolerance

15 Shelf life

16 GPC

OWNER'S BANKER

VENDOR'S BANKER

Terms of Payment

Delivery Period

VENDOR'S ACCEPTANCE

PURCHASE ORDER

This document outlines all the finalized requirements, including terms and conditions. Key details such as item specifications, quantities, agreed-upon prices, delivery dates, and payment terms are specified in the PO.

In the case of FoB Order: seller is responsible for delivering the goods to the port of departure, and the buyer assumes responsibility from that point forward.

In Case of CFR Order: seller covers the cost of transportation to the named port of destination, but the buyer takes responsibility for the goods upon arrival at that port.

Materials Safety Data Sheet: States that the vendor is obliged to provide an apt storage facility for the materials along with material safety data sheet. This detail about the material states how to oversee the material and any danger that it might cause.

Performance Bank Guarantee:

- The vendor is required to provide a Performance Bank Guarantee (PBG) amounting to 5% of the total order value.
- remain valid for 33 months

Shipping Documents should reach the Bank of IOCL within 7 days of shipment.

TRANSPORTATION

Documents necessary for transportation

- Lorry Receipt/Docket no.- Transporter receipt with receipt given to vendor and driver. Seller responsibility.
- Material Invoice
- e-way bill
- Heavy driver's license
- Fitness certificate/pollution certificate
- Insurance Certificate
- RC-vehicle registration no.
- wt. as per vehicle capacity
- Loaded height.

Lorry Receipt:

This is a document that is given by the transporter to both the vendor and the driver. This acts as a proof, a guarantee, for the vendor that the material is taken by the transporter and is in process of transit. The other copy that is with the driver help him movement of goods.

No. Of Packages		Method of Packing		PARTICULARS		Remarks	
1X20CONT		Said to Contain		M20249065 SR 0008/001		Vehicle Type 1X20 CONT	
20-PACKS		Shipment No.		Job No / Po No.		Actual Weight 16484 KG Charged Weight	
		Invoice No. <input type="checkbox"/> Bill of Entry <input type="checkbox"/> B/L No. <input type="checkbox"/>		Invoice Value Rs 3195509.62		Acknowledgment By Consignee with Stamp	
		Service Category : Goods Transport Agency		AT OWNER'S RISK		Arrival Date & Time for Unloading	
		To Pay / To be Billed at MUMBAI		Booking Executive		Actual Date & Time of Unloading	
		Empty Container Letter valid upto					
GOODS BOOKED ARE CARRIED SUBJECT TO TERMS AND CONDITIONS MENTIONED OVERLEAF						For BLR Logistiks (I) Ltd	
Subject to Mumbai Jurisdiction only						CONSIGNEE COPY	

TRANSPORTATION

In the case of international vendors

SHIPPER CERTIFICATE FOR NON-DANGEROUS GOODS

We hereby certify that the contents of the consignment are not dangerous and are not dangerous of carrying by air according to the current edition for IATA dangerous goods regulation and all the applicable carrier and government regulation. We acknowledge that we may be liable for dangerous resulting from any misstatement for omission and we further agree that any air carrier involved in the shipment of the consignment may rely upon this certificate.

1. NO. OF PACKAGES :
2. PRODUCT NAME :
3. GROSS WEIGHT :
4. NET WEIGHT :
5. DESTINATION :
- CONSIGNEE ADDRESS :

AUTHORITY SIGNATORY

PACKING LIST

REF : - Invoice no.

Delivery Address:-

Consignee:-

Sl.No.	Packing Details	Description of Goods	QTY

Company
Signature & Stamp

Upon shipment, vendors must promptly inform both the recipient and the port consignee via fax, within 48 hours indicating the following:

- Name of the Vessel
- Bill of Lading Number and its Date
- Item description and quantity shipped.
- Invoice Number and its date.
- Value of the material
- Purchase Order Number and date.
- Gross and net weight of the material and the number of packages etc.

Inventory

| Return of issued material

Process of sending unused materials from a plant or department back to the storage or materials department, typically on a quarterly basis.

| Issue of materials to the plant

The materials are transferred from the store to a specific department/plant for final utilization.

| Rejection of material supplied by the vendor

When material supplied by a vendor is rejected, it indicates that the received items do not meet the specified requirements outlined in the contract.

| Receipt & Payment of materials from Vendor

Formal acknowledgment of the delivery of goods to the store or warehouse.

Perpetual Inventory Management System- IOCL's practice of recording every transaction involving inventory in a date-wise manner indicates the use of a Perpetual Inventory Management System. In this system, inventory levels are continuously updated in real time, reflecting every incoming and outgoing transaction.

ITR- Inventory turnover Ratio

	Date	Value	Quantity
Beginning Inventory	31.09.2023	₹ 16,08,12,995	1136
Purchases		₹ 6,39,57,119.20	331.4
Return		₹ 47,78,013.07	25.6
Ending Inventory	31.03.2024	₹ 2,47,85,942	132.8
Inventory used		₹ 19,99,84,172.20	1334.6
	COGS	₹ 19,99,84,172.20	1334.6
	Average Inventory	₹ 9,27,99,468.50	634.4
	Inventory turnover ratio	2.155014198	2.10372

First Weight- Weight of container with material

Second Weight- Weight of container without material.

Net Weight- Weight of material= First weight – Second Weight

Cost of Goods Sold = Beginning Inventory + Purchases - Ending Inventory

Average Inventory = (Beginning Inventory + Ending Inventory)/2

Inventory Turnover Ratio = COGS / Average Inventory

Weightment Certificate

Time

Date

Track Number
Serial Number
Product Code
Party Code
Transporter Code
Destination Code
Challon Number

Container 1 No.
Container 2 No.
Product Name
Party Name
Transporter Name
Destination Name
Challon Date

First Weight
Second Weight
Net Weight
Remarks:

Operator ID

CISF Sign

Driver Sign

Company Sign

ABC ANALYSIS

CATEGORY	Value	Periodicity
A	1.Exceeding Rs, 5 Lac 2.INDAS spares	Once in 6 months
B	1.Exceeding Rs. 1 Lac and upto Rs. 5 Lac 2. Insurance(old AS-2) Spares	Once in a year
C	Exceeding Rs. 25,000 and upto Rs. 1 Lac	Once in 3 years
D	Exceeding Rs. 10,000 and upto Rs. 25,000	Once in 5 years
E	Up to Rs. 10,000	Random Basis each year

INDAS spares- Items in inventory that are of greater value than 10 lakhs are classified as assets which are generating income right now or will do so in the future. Th

Old AS-2 Spares – These are the items that might come in handy at any given point in time (emergency purpose). Such types of items are never classified in non-moving inventory.

NON- MOVING INVENTORY

1

Surplus Identification

User department is responsible for identifying surplus items from the non-moving inventory list.

2

Issue of High-Value Non-Moving Items

High-value non-moving items are issued by the user department.

3

Stock Transfer

Transferred to other units within the organization through corporate broadcasts or other appropriate means.

4

Identification of Absolute Stock Items

Items that are no longer useful or viable for use within the organization and may require disposal or other appropriate action.

An aerial photograph of a large industrial refinery or chemical plant. The facility is filled with complex piping, tall distillation columns, and numerous large storage tanks. Several smokestacks are visible, with thick white plumes of smoke or steam rising into the air. The plant is situated near a body of water, with a road and some greenery in the foreground. The overall scene depicts a large-scale industrial operation.

THANK YOU