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Concept Manual
for
Inventory and Purchasing System
for the
Iowa State Highway Commission

MEISCON DIVISION / 223 WEST JACKSON BOULEVARD, CHICAGO, ILLINOIS 60606

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CONTROL DATA
CORPORATION

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for
Inventory and Purchasing System
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Iowa State Highway Commission

December 1969

Control Data Corporation
Meiscon Division
Chicago, Illinois

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INTRODUCTION

The Purchase and Inventory System Concept Manual expresses the basic philosophy of the system and makes recommendations for policy decisions. To support the recommendations, proposed practices and methods are suggested for consideration. Control Data Corporation, Meiscon Division is submitting the manual as a part of the project undertaken to evaluate and recommend a system which will provide accountability and control over purchasing and inventory activities. The system must be simple and practical but must not jeopardize the prime objectives.

The Iowa State Highway Commission must decide on the system and direct the implementation. Therefore, it is important that Management weigh the recommendations and alternatives, and then formulate the policy. The policy must be expressed in writing and disseminated to the employees by the means of detailed procedures. The Commission's procedures must be more specific and in greater detail than the General Procedures written by Control Data Corporation.

The system is integrated and depends upon clear, concise definitions of responsibility. The major policy considerations recommended by Control Data are dependent one upon the other,

in many cases, in pursuit of a common goal of control and accountability. The Commission is urged to ratify the policy recommendations. However, if the Commission would like to adopt new alternative policy, any deviation from principle will undermine the control and accountability of the system.

SYSTEM OBJECTIVES

The concept of the Purchase and Inventory System is discussed in this manual. The system is designed specifically for the Iowa State Highway Commission and has a two-fold purpose: namely, {1} to improve accountability and control over purchasing, warehousing and the distribution of materials and supplies inventory, and {2} to improve operating efficiency with a minimum of cost. The system is structured on a principle of simplicity so that it will be more easily understood by the using personnel and operate at maximum efficiency to the extent practical without foregoing control.

The manual discusses the philosophy and the reasons for the suggested procedures in considerable detail, and it always considers the need to meet a criteria of adequate internal control and accountability.

The principle objectives of the system are as follows:

1. To define responsibility and authority to make the system operational.
2. To appraise the departments and sections of their responsibilities and set forth the procedures to be followed to avoid misunderstanding and friction.

3. To establish standardized operating procedures.
4. To provide standards of authorization and approval which will authorize a department to perform tasks within its stated function. To permit the department to act promptly and with dispatch when the proper authorization is presented.
5. To obtain maximum operating efficiency in the Commission.
6. To utilize the Commission's assets by providing control and accountability reports and records.
7. To provide for physical protection of assets against carelessness, theft, or misuse.
8. To provide accounting data consistent and compatible with other accounting procedures and internal check.

The manual discusses the various facets of the purchasing, warehousing and distribution system as they pertain to the interfacing requirements needed to compliment or support other systems. The need to make it an integral part of the overall management and accounting system is recognized in the design.

The system is dedicated to utilizing modern management techniques and technical advancements. Reporting is dedicated to the exception principle of informing manage-

ment as to needed action and coincidentally, provide the necessary information to make timely and prudent decisions.

Responsibilities have been suggested and typical job descriptions have been prepared for a few key positions which result from a significant redefinition of previous functions or from a requirement for a new function. This data should be helpful for the evaluation of existing personnel and to serve as a standard for recruiting personnel.

Subsequent sections of the Concept Manual will recommend policy and procedures. The Commission should review the recommendations and either revise existing policy or adopt new policy for guiding and directing the activities of the appropriate personnel. The continuation of the system at an acceptable level is dependent upon maintaining policies and procedures current.

ORGANIZATION

The Purchase and Inventory System as proposed, assumes the assignment of responsibility to the Division and/or Department most capable and qualified to satisfy the needs. The importance of assigning responsibility must be evaluated carefully to preserve the basic objective of control with accountability.

Proper definition of responsibility will eliminate friction and duplication of effort and permit better utilization of personnel. These results contribute to the simple and economical objective of the design. Frequently, the economic aspects are evaluated in terms of alternative considerations which overlook the control requirement.

The system will contribute to reduced costs in areas other than personnel. Consider the reduction from buying to needs, reduced losses from technical changes, improved security, better pricing and other areas of savings.

The relationship of major functions to departmental responsibility is summarized to briefly define the various departmental activities by function in the following exhibit:

CHART OF SYSTEM FUNCTIONS BY MAJOR DEPARTMENTAL RESPONSIBILITY

SYSTEM FUNCTIONS	DEPARTMENTS REQUIRING MATERIAL	INVENTORY MANAGEMENT DEPARTMENT			PURCHASING DEPARTMENT	ACCOUNTING DEPARTMENT	DATA PROCESSING DEPARTMENT	
		SHIPPING - RECEIVING SECTION	WAREHOUSING SECTION	INVENTORY CONTROL SECTION				
	REQUISITIONING (INVENTORY STOCK)				2. Prepare Inventory Stock Requisition {A}			1. Prepare Need to Order Report
	REQUISITIONING (NON-STOCK)	1. Prepare Purchase Requisition 2. Obtain Approval				3. Review Request for Inventory Stock Substitution 4. Verify Approvals		
	PURCHASING		5. Files Receiving Authorization-To Be Used as Receiving Report on Delivery			1. Prepare Purchase Order 4. File Acknowledge- ment 6. Expedite{If Needed}	2. Approve Purchase Order After Encumb- ering Funds	3. Update Inventory Stock Status
	RECEIVING	5. Accepts Requested Material {A}	1. Accepts Delivery 2. Complete Receiving 3. Obtain Inspection 4. Deliver Per Request	5. Identify and Stock Materials {A}				6. Update Inventory Stock Status File
	STOCK ISSUING	1. Presents Inventory Issue Form 3. Accepts Inventory Stock		2. Issue Inventory Stock			4. Price and Invoice Inventory Stock Issues	5. Update Inventory Stock Status File
	FIELD RESTOCKING		5. Deliver Inventory Stock Per Transfer Order	4. Pick and Pack Inventory Stock Per Transfer Order	3. Approve Request of Inventory Stock Per Transfer			1. Update Inventory Stock Status File 2. Prepare Inventory Transfer Orders
	INVOICE PAYMENT						1. Edit Vendor Invoice 2. Approve Invoice 3. Voucher Invoice for Payment	4. Process Voucher for Preparation of Warrants
	INVENTORY ADJUSTMENTS				1. Initiate and/or Review Inventory Adjustments {A}		2. Price and Approve Inventory Adjust- ment to General Ledger Accounts	3. Update Inventory Stock Status File

NOTE: Numbers Indicate Processing Sequence by Function

{A} Sign Shop, Radio Shop and Materials Laboratory Inventory has Comparable Requirements and the Respective Departmental Foreman is Responsible

The remainder of this section of the manual describes the functions by responsibility and relates some of the reasons and needs for doing the task in the particular department. In addition, later chapters of the manual discuss the details of responsibility, department by department.

It is recommended that a new department, Inventory Management, be created. The department is to be responsible for the physical accountability of the inventory except for a few particular areas such as the sign shop, radio shop and material testing. The responsibility would extend to ordering, storage, issuance and physical security. The new department is needed to centralize and direct the inventory activities which are widely dispersed as to sites and used by several functions. To accomplish this, it is suggested that the detail data records be processed on the computer. The Inventory Management Department would be responsible for the preparation of the source documentation. They would be responsible for providing the field inventory sites with a well-balanced stock and a central warehouse to furnish the back-up stock in addition to a distribution system for the orderly replenishment of field stock. The prime object of the department would be to maintain detail stock records which would reflect current status and provide order control.

At some of the service operation centers located in Ames, there are inventory requirements different from those in the outlying sites. An example is the sign shop or the radio repair shop, where supplies are maintained and used in their operation. Because the items are unique to the operation and not generally required at other locations, it is appropriate to exclude these from the primary responsibility of the Inventory Management Department. Responsibility for the ordering, storage and issuance as well as the physical security must be assigned to the respective department foreman. He can then be held accountable for the management of that inventory. However, because the Inventory Management Department is staffed by personnel more experienced and knowledgeable in inventory matters, it is expected that they will provide counsel and guidance to the department foreman on reporting and control procedures.

The Purchasing Department is responsible for procuring all of the required materials, supplies, equipment, and services needed by the Commission whether for inventory stock or otherwise. This will be done by requesting bids and then making contract awards or through negotiations with various vendors. The department acts upon receipt of a properly approved authorization; a "Request for Purchase" or a "Travelling Purchase

Requisition^v. Their primary responsibility is to obtain the products required, to the stated specifications, at the best price, in the time needed, and from a reputable vendor. Generally, after the product or service has been delivered and has been accepted, the Purchasing Department has concluded its function for that particular transaction.

Subsequent handling of the shipment may reveal concealed shortages or a question may arise concerning quality of the item when it is used. If this occurs, action should be initiated through the Purchasing Department by filing a claim or obtaining replacement.

The Accounting Department is responsible for reporting to the Commission. A primary requirement is the valuation of the assets, including inventory, for balance sheet purposes. This requires accountability for the item. A unit cost value is needed to bill the materials used and to determine the loss from pilferage or obsolescence. Therefore, Accounting is responsible for recommending an inventory pricing policy; a method of determining the unit value to be used for pricing inventory transactions along with the needed procedures.

The Accounting Department is responsible for the review and approval of vendor invoices before payment. To perform this verification, it is necessary that all

pertinent data must be sent to them, such as the purchase order, the receiving report, the inspection report as well as available shipping papers. When the above papers are complete and accurate, the Accounting Department can review and approve for payment, all properly presented vendor invoices. In any case, the procedures must conform to the requirements set forth by the State Auditor.

In the areas of accounting responsibility outlined above, the actual preparation and handling of paper will often be done by personnel other than members of the Accounting Department. Therefore, the duty of the Accounting Department is to define in the procedures the specific accounting functions which must be followed by the departments. A continual review, by audit, is recommended to determine if the procedures are effective and reliable, and if they are being followed.

*How often?
How reliable?*

The Data Processing Department is responsible for updating and reporting inventory transactions in accordance with schedules and procedures. The magnitude of the Purchasing and Inventory System records and transactions require that they be handled quickly and accurately, therefore, the system is dependent upon the Data Processing Department. Data Processing is charged with providing a service to meet this requirement and they

must receive documents which are legible and complete if they are to process according to the mutually agreed upon schedules. Data Processing is expected to perform so that there will be a high degree of confidence on the part of all departments dependent upon their services. Data Processing must be provided with the report format, accurate data and the processing specifications.

In subsequent chapters of the manual, the recommended responsibility of the various departments will be described in more detail. It is important that the functions are controlled by the department which is responsible and accountable for the performance. It is important that the detailed procedures released by the Commission clearly describe the processing requirements by other departments because these delegated functions are likewise subject to accountability. All employees must perform at a high level of efficiency when performing assigned tasks set forth in the standard procedures. Everyone must be advised of their role in the system and any deviation from the prescribed procedures requires prompt, corrective action.

How do we ensure this?

COMMISSION INVENTORIES

This chapter provides an explanation of inventories. A suggested definition of inventory is made to assist Commission personnel in deciding what should be considered inventory.

DEFINITION OF INVENTORY

Inventory is made up of items that have been purchased or fabricated {highway road signs}, have value, and are being held for future usage. The inventory account is a part of the general ledger and generally the contents should be limited to:

- {a}. Items which have a current demand; not obsolete because of engineering or technical changes.
- {b}. Items which are usable; not deteriorated from exposure or shelf life.
- {c}. Items which are required in normal operations in a relatively short period of time {to distinguish from vehicles, equipment, buildings, etc. which are carried as fixed assets in the Commission Balance Sheet}; not a ten year ⁷ ₆ supply.

NOTE: If high volume usage and nominal unit cost make it impracticable to justify economically the recording of small quantities, such items may be handled differently in the inventory and expensed in greater quantity issues to the departments. This is a practical manner of handling such items as wiping rags, nails and lock washers.

It is reasonable to expect that special requirements may arise where items, which do not conform to the above limitations, should be included in inventory. The approval to include these in the inventory account is a Finance Division responsibility because these items have a bearing upon the Commission Balance Sheet.

Items that have been in use for some period of time, which are no longer required and are removed, such as culverts, traffic signs, guard rails, or bridge rails, are not to be returned to inventory by field personnel. Whether the reason for removal was because of a temporary need, a discontinued need, not required as a part of a construction project, obsoleted by change in standards or similar circumstances does not alter the policy. Such items should be handled in one of the following manners:

- {a}. Return to the appropriate shop in Ames for refurbishing. After the shop has refurbished

the items to acceptable specifications, the item will be returned to stock in accordance with recommended procedures "Salvage and Return to Stock" in Chapter 4.

- {b}. Hold for emergency situations in a specifically designated area, other than inventory storage.
- {c}. Initiate disposal authorization in accordance with Commission procedures.

The responsible department in Ames must handle the refurbishing and determine if the item meets the acceptability standard. For the items to be excluded, the inventory system is not to be followed. This material should not be referred to as inventory to avoid possible confusion. Recognizing that these items may be found at field locations and have some intrinsic value, a reporting procedure should be initiated to advise other departments or locations of the presence of such items.

The physical inventory instructions must clearly define the necessary requirements for an item to be classified as inventory, such as new or refurbished, and in a usable condition, so that the inventory system is maintained at a standard level. In all cases, where the item does not conform to the standards, the item is not subject to inventory procedures for documentation and should not be counted at the time of the physical inventory.

The determination of items to be considered inventory stock rests with the person{s} assigned the responsibility for the respective inventory^{1}. Addition of items to inventory records requires that the responsible person forward a request to add the item to the properly designated section of the Inventory Management Department. The request will be reviewed and considered only if all the appropriate information for establishing an inventory record has been submitted with the request. Likewise, it will be necessary to request the removal of an inventory stock number from the records, but prior to doing so, adequate information must be provided to make certain no quantity remains in stock.

CATEGORIES AND ACCOUNTABILITY

It is practical to segregate portions of the inventory into categories by departmental usage and to assign responsibility. Responsibility should be delegated from the Division Head to the Supervisor in an expeditious manner such as the examples shown in the following table:

{1} Policy and interpretation of policy will be the responsibility of the Finance Division, Accounting Department.

Primary Responsibility	Immediate Responsibility	Description of Inventory Items
Central Services	Radio Repair Shop Foreman	All materials required for servicing and maintaining the radio system of ISHC
Central Services	Sign Shop Foreman	Wood, letters, paint, reflective sheeting, all supplies essential to constructing or refurbishing highway signing
Materials Engineer	Materials Laboratory	All supplies used specifically for samples of concrete, core, aggregate, bituminous mixes, and such other supplies maintained specifically for materials testing requirements
Inventory Management	Inventory Control Supervisor	All repair parts for vehicles and equipment, materials used in maintaining bridges, highways, approaches and adjoining features, landscaping supplies, safety supplies, tools, hardware, vehicle and equipment supplies, striping paint and beads, janitorial supplies, office supplies and stationery

The Sign Shop has many unique inventory items which they require for production. The Sign Shop Foreman is knowledgeable of specifications, quantities required, the storing of materials and the withdrawal for production. The assignment of responsibility to the Sign Shop Foreman can be described and appropriate records and reports

established which pertain to this category of inventory. Similar conditions exist for the Radio Repair Shop and the Materials Department.

In other cases, inventory is common to several field locations and to many departments; i.e., repair parts, maintenance materials, janitor supplies or office supplies. A centralized function is recommended for servicing and maintaining such an inventory. This function should be maintained by a separate department which would be responsible for the Central Warehouse, all field warehouses, the office supplies and stationery warehouse, and shipping and receiving.

An Inventory Management Department is recommended to provide this inventory service to all locations. The department should do the requisitioning, stocking, and distribution of inventory items to the various field sites throughout the Commission. While the personnel at field locations report to Field Operation Supervisors, the basic determination of how, what, why and the stocking quantity of an item should be determined by Inventory Management. The Inventory Management Department would be responsible for supervising the Central Warehouse personnel, and would have a functional {i.e., staff} responsibility only with regard to inventory activities for the personnel at the field locations.

The Inventory Management Department's primary responsibility should be to maintain an adequate, well balanced stock of materials and supplies at specified field locations consistent with the requirements and needs of the field operation departments. They would also maintain and staff a Central Warehouse facility in Ames to provide a base or emergency back-up stock. To accomplish this service, they should utilize modern inventory management techniques for reordering base stocks and for replenishing field warehouse stocks. Such techniques as minimum/maximum stocking points would indicate when to restock and how much. Constant review and evaluation of inventory data would permit verifying the reasonableness of the minimum/maximum quantities or would indicate when changes are needed.

In subsequent chapters, the manual defines the various responsibilities for inventory activities such as requisitioning, preparation of documentation, participation in taking of physical inventory, identification, storage, security and other areas. Procedures and form samples are included in the General Procedures Manual. Throughout the procedures, reference is made to areas requiring special attention to detail and the need for accurate information. Bear in mind that each policy and procedure pertinent to inventory applies to the particular person(s) responsible for a given category of

inventory. Each person responsible for a specific inventory is accountable for ordering, identifying, stocking, records, security, etc. The Accounting Department's staff responsibility extends to all inventories.

It may be necessary to detail specific procedures applicable to a given category of inventory to clarify certain unique activities, such as material identification, requisitioning, or special handling to prevent loss from deterioration.

PHYSICAL CONTROL

One justification for an inventory is to provide the prompt availability of the material when required for use. Accurate records, neat warehouses, or available people mean little if the inventory item cannot be found when needed.

Physical control is a broad subject and warrants considerable attention. In this chapter of the manual, the physical identification and proper security of inventory is discussed.

1. Inventory Identification

Wherever a myriad of inventory items are stored, there is a need to standardize on identification of the individual item. The more practical means has been a

numerical stock symbol. One of the advantages in the use of numbers is the convenience for adaptation to data processing.

The distinctive characteristic of the number is a convenient way of distinguishing between items which are unique to themselves, but may appear to be the same to the uninformed. The stock number permits the use of a consistent means of reporting transactions rather than descriptions which are long and difficult to standardize. Equally important is the need to identify each item of inventory stock with the applicable stock number. Various means are available, such as accumulating all like items in stock bins and identifying the bin with the proper stock number.

If identification is limited to an area such as a bin and the individual item is not specifically identified, it is important that warehouse discipline be strictly enforced to avoid mixing items or losing control. Likewise, where the program is to identify each individual stock item, it is important to consider the possible loss of identification which results from tag removal, weathering, break-down of packaging for issuance, or similar possibilities which can occur.

There are impractical aspects to using manufacturers stock numbers for identification because of the great

inconsistency which prevails between the various manufacturers. It is generally considered more practical to use a stock numbering system peculiar to the individual organization. To identify stock by manufacturer, the use of catalogues with cross index reference data to the Commission stock number is recommended. The catalogue should be distributed widely and maintained in a current status and when necessary, supplemental data should be supplied between revisions.

2. Inventory Security

Security is a prime consideration to any warehousing operation. The attitude of employees must be oriented to preserving the inventory and directed to documentation of inventory movement to trace the flow of materials. All inventory materials being warehoused must be isolated and enclosed, to the extent practical, so that responsibility and accountability may be clearly defined.

The Commission must establish a criteria of minimum standards to maintain the security level at the various warehousing locations. The physical characteristics of the warehouse, as well as the training of personnel, must be considered when establishing the standards. Some of the factors to be considered are:

- {a}. The need to compare the value of the item to

the expense of protecting the item.

- {b}. Attractiveness of the product to possible theft.
- {c}. The training and supervision of personnel for conformance and enforcement of published warehousing policies and procedures.

There is no need to keep inventory behind locked doors if everyone has a key, or to place a cyclone fence around the grounds and buildings, and then leave the gates open, doors unlocked and/or permit unlimited access to the facilities. To minimize losses, management must define responsibility. A preferred method is to place individuals in charge of the inventory functions and then hold them responsible for all discrepancies over which they have control.

Commission personnel must be informed of their responsibility and the need to maintain the prescribed standards for safeguarding the inventory. They must report unauthorized personnel in restricted areas. They also must prepare documents for withdrawal to account for the assets and maintain the records. The cost of investigations and the time wasted to correct errors arising from carelessness is a very significant item to many organizations.

Security starts by assigning responsibility and then

following up with accountability. After that, fences and bars for the windows become an expedient means of effecting control.

Often the subject of security is directed to reducing or eliminating pilferage and the possibility of inventory losses from poor warehousing practices is overlooked. Poor practices are those which may result in loss from fire or flooding, breaking of packages, unnecessary exposure to the elements, lack of proper identification or other equally important possibilities.

Security means preservation and it requires full-time vigilance and communication on the part of management personnel.

The policies relating to physical security measures apply to all categories of the inventory and to the person responsible for that inventory.

MANAGING THE INVENTORY

This chapter explains the various activities associated most directly with inventory management. Inventory is a critical activity within the Commission which can be abused and become a very costly investment if permitted to run without specific objectives. The objectives must be envisioned as boundaries and guides which will contribute to improved services and reduced expenses. Carelessness, inadequate information, lack of coordination, untimely decisions and many more events can have a very adverse effect on the inventory of materials and supplies.

STOCK REPLENISHMENT

The inventory system depends heavily on the method used to replenish the base and field inventory stocks. The Commission must decide what criteria will be established for an acceptable inventory investment program. Everyone would agree that 100% no-stock-out position would be prohibitively expensive to maintain. Equally unacceptable would be a position of no purchases until existing stock of the item is depleted.

This chapter discusses the considerations and the approach which appears to be the most reasonable in

light of the present Commission mode and standards of operation. It must be recognized, however, changing conditions may necessitate a revision of objectives.

1. Forecasting Stock Levels

A sound inventory management program requires a balancing of the cost of the inventory investment against the cost of placing inventory replenishment orders. The right quantity to order is the one which best balances the costs related to the number of orders placed against the costs related to the size of the orders placed. When these costs have been balanced properly, the total cost is minimized and the resulting order quantity is called the economic lot-size or economic ordering quantity {E.O.Q.}.

The economic ordering quantity concept does not apply to all items.

The forecasting of stock levels begins with estimated usage and is influenced by the dollars of inventory investment and the ordering costs. It is possible to keep inventory investment low by placing frequent orders, but the resulting costs for the many orders will be very high. It is, therefore, beneficial to find that quantity which results in the lowest total cost.

This concept will generally apply when the following conditions exist:

- {a}. The item is replenished in lots or batches
- {b}. Usage rates are uniform and are relatively low

E.O.Q. adapts itself to lot or batch purchase of items used in a uniform rate because it facilitates the use of the significant factors such as inventory carrying cost, quantity discount price breaks and more accurate and reliable determination of reorder time and stock requirements during the replenishment period.

Forecasting usage is fundamental to the inventory control system. Many factors will have direct influence on the reliability of the forecasts. It is necessary to develop indicators, which may be the actual measurement of data and the subsequent analysis of changes. This data may be used as trend indicators and may be applicable to classes of inventory or they may be pertinent to just one item.

This is further compounded in the Commission because trends may frequently be unique to a geographical location.

In the Commission, because of the many stock items which are seasonal in nature, it will be necessary to make a number of one-per-year purchases. Such purchases are in line with the best practices of meeting operating requirements. This is not to be confused with the

subject of "Forward Buying" which is discussed later.

It is important to remember that two fundamental questions must be answered in every instance with regard to inventory, namely:

- {a}. How much to buy at one time
- {b}. When to buy this quantity

There are factors which bear directly on the answers to the above stated questions and they are:

- {a}. Requisitions - this will be an estimated amount on a unit/time basis.
- {b}. Quantity in stock and on order - this will be available in the "Stock Status Summary" report issued on a scheduled basis.
- {c}. Procurement time - the total length of time necessary to obtain a fresh supply.
- {d}. Obsolescence - this must be considered for control. Conceivably this may become the keystone to the ultimate value and effectiveness of the entire Inventory and Purchasing Project.

2. Minimum/Maximum Quantities

The effectiveness of the inventory system will depend to a great extent on the utilization of data processing. Minimum/maximum levels may be utilized with status records to enable the responsible persons

to maintain a more effective surveillance on items which are becoming dangerously low. A reasonable reorder point {minimum level} is one where the on-hand quantity is approximately equal to the expected needs during the normal replenishment time period.

The maximum of the normal minimum/maximum quantities is the normal reorder quantity which establishes the high level of inventory or that amount which can be on-hand at any point in time.

The adoption of minimum/maximum quantity control for inventory items may take on several forms of expression. For instance, it may be a check and review of on-hand quantity against the reorder point established. Such a check can be done manually or it may be incorporated into the data processing programs. It may also be accomplished through use of a two-bin system, where the reserve stock needed to meet normal demand during the period of replenishment, is segregated from normal issue stock. When normal issue stock is depleted and the reserve stock is made available, this action triggers the request to replenish the base stock.

3. Reorder Requisitions

As a means of communication and to assure proper purchase authorization, a "Request to Purchase" or a "Travelling Purchase Requisition" must be prepared and

forwarded to the Purchasing Department when it is necessary to replenish inventory stocks.

It is important that the quantities requested on the requisitions are reviewed and evaluated for reasonableness in light of the current requirements and practices. Considerations, such as change in demand, possible discontinuance of the item, or economic factors may have a significant bearing on the order quantity. The responsible department, i.e. Inventory Management, Sign Shop, Radio Shop, or Materials Testing, should continually appraise minimum/maximum quantities and not accept them without challenge until a crisis develops.

4. Travelling Purchase Requisition

A Travelling Purchase Requisition is used for repetitive reordering of materials. One form per stock number is set up and kept in the office of the person responsible for the inventory. They are printed on card stock inasmuch as they are reused frequently and transferred between the Inventory Management Department (or other inventory areas) and the Purchasing Department.

When replenishment of stock is required, the card for the specific item is pulled from the file, quantity and date required are indicated and forwarded to the Purchasing Department.

After the buyer has made suitable notations as to

the date and the purchase order number issued to the vendor, it is returned to the appropriate department and filed for future use.

The advantage of this system is the utilization of repetitive data. Stock number, description, manufacturers, catalogue numbers, suppliers, and ordering and pricing history are among the many records available. They may be used to assist the inventory function in determining the amount of stock required and in assisting the purchasing function in the selection of a vendor by reference to previous buying history.

5. Job Authorization

Often there are changes to the normal operating events which warrant consideration. Specific job authorization or project, such as resigning highways or modifications to the fleet or equipment, may require special ordering, which is not consistent with the minimum/maximum quantities established.

While the Inventory Management Department is responsible for the major portion of the Commission's inventory, the various staff Divisions and/or Departments must keep them advised of major projects which have been approved or significant changes in operations. The staff area coordinating or implementing the action should send a memorandum setting forth significant

details so that additional materials may be obtained or records marked as possible obsolete stock resulting from the change. Only when the Inventory Management Department is properly advised can they render a service.

b. Forward Buying

There may be circumstances where the Commission would want to investigate and ultimately authorize what is commonly termed "Forward Buying". This could occur when known or anticipated economic factors such as increasing costs or a shortage of supply may make it a prudent decision to contract for the product. It is important that such decisions be made after reviewing the facts. A presentation should be made of the probable benefit, as well as the contingencies, so that the decision can be made by the appropriate Commission personnel in accordance with policy.

Limitations, which may develop because of the Revolving Fund or the possibility of drastic standard changes, do not always permit the realizing of the anticipated saving. This is why a critical analysis of all of the facts must be made. It is important that all interested areas such as Finance, Support Services, and Operations become involved, so they can contribute to or challenge the facts presented.

These occurrences should be few in number and

and should be scrutinized carefully and in light of all facts.

STOCK ISSUES

Control of stock issues through sound policies and procedures is needed for systems reliability. Prompt processing of data will update individual stock status records and provide reliable data for use by persons charged with the inventory responsibility. Of equal importance, the user of the material or supplies must be billed for the items. The issue ticket generates a transaction document which provides the necessary data.

The system requires an authorized material issue form which is also the basis of charges for the material used. The authorization procedures are based on responsibility and an approval signature program which assures charges being made corresponding to the person(s) held accountable.

1. Over The Counter

At many of the field warehouse sites, inventory can be issued and recorded on a form designed to itemize multiple transactions for each day. At the larger warehouses where storekeepers are in attendance, it is possible to make issues more promptly when a request, properly completed and signed by an authorized person, is presented. The stockkeeper should be expected to

review the accuracy of the data on the form. It is important, to the extent, practical, that the forms be prepared in advance of presentation to the store-keeper.

At the Ames Central Warehouse, there will be some portion of the storeroom activity which will require counter issues. The same preparation and authorization procedures should apply as were expressed for the larger warehouse field sites. It would be advantageous to have requisitions submitted on designated days of the week so that the items could be packed and delivered to the requesting department, thus reducing the number of trips between work station and warehouse made by departmental personnel. To effectively utilize warehouse personnel, special or emergency issues should be limited on a schedule basis to a period of one hour in the morning and one hour in the afternoon.

The inventory areas must be restricted to authorized personnel only. Counters should be manned during the scheduled hours of service to provide prompt, efficient handling of requests and to increase the efficiency of the entire operation.

2. Outside Of The Commission

On occasion, materials and supplies may be made available to other governmental agencies or to highway

construction contractors. The Commission is generally reimbursed for the materials. The procedure for handling such requests should be in accordance with the requirements of the State of Iowa Statutes.

STOCK RETURNS

Stock returns are discussed with emphasis on two distinct circumstances. The first is when material is withdrawn and not used. The other is when material has been used and it is possible to salvage.

If items are withdrawn for anticipated immediate usage but subsequently it is found they are not required, they should be returned to the warehouse for future needs {a matter of a few days, generally}. The item{is} should be returned to the warehouse which previously issued the stock where it will be accepted and a form completed which will be marked "Credit". This form will be used to increase the on-hand quantity in the stock status and to credit the department {cost center} returning the item.

Materials which have been in place and used as intended and are subsequently removed, may be salvageable. Such items as highway signs, automotive engines or parts, or guard rail sections may be returned to Ames where one of the service operations will refurbish, renovate or rebuild the item before return to warehouse stock.

NOTE: Once it has been in place and used, regardless of the time elapsed or the circumstances, it is not to be put back in stock by personnel at the site, but must be returned to Ames for proper handling.

The objective of this procedure is to recover all materials possible as long as it can be justified economically. However, only personnel at Ames, who are qualified, will determine the acceptability of the salvaged item as to compliance with standards.

No credit is to be given for such materials until such time as they have been accepted for stock and have been warranted as meeting minimum standard specifications. Then the service department who refurbished or reworked the material will prepare an inventory Return to Stock Form. Credit for the value of the item will be to the Reserve Section of the Inventory Revolving Fund.

When salvageable items are to be returned from the various field sites, they are to be properly tagged and prepared for return to Ames by truck {when the size or weight of the items is significant, Ames should be notified of the pick-up}. The final decision to rework and the determination of the economic justification shall rest with the foreman of the particular service operation department. The cost of salvage will come

from the departmental budget and the department will not be credited for the recovered value.

Before the material is sent to the warehouse for normal stock and usage, it must have the Return to Stock Form approved by the Manager of the Inventory Management Department. It will be his decision to mark or otherwise identify the item as reworked or rebuilt if he feels it is necessary.

STOCK ADJUSTMENTS

The effectiveness of the system is dependent on two significant factors, namely accuracy and timeliness. Each individual stock item is important. When discrepancies are found between the physical count of the item and the corresponding stock record, steps should be instituted to correct the records.

When a record adjustment is contemplated, there are major considerations of importance that must be reviewed before action is taken. They are as follows:

- {a}. Has a reconciliation of all pertinent transactions been made to establish the validity of the record as to completeness of updating.
- {b}. If hasty adjustments are made which result in an error, it will only be a matter of time and another adjustment must be made to correct the error.

- {c}. Has the cause been detected and corrective action instituted so that errors will not continue.
- {d}. Accounting must value the adjustment so that the inventory general ledger accounts reflect the correct inventory value. Therefore, the adjustment must be posted.
- {e}. Adjustments must be reviewed and approved by areas of responsibility other than departments responsible for the physical accountability of inventory. This is a basic requirement for strong internal control.

Therefore, the inventory adjustment procedure must be very precise and detailed as to instructions. The departments recommending adjustments must be limited to those with personnel, who by training and knowledge can make the appropriate reconciliation of records to determine, without reasonable doubt, that a discrepancy does in fact exist.

Secondly, but of greater importance, is the review of the adjustments to determine cause and to see that appropriate action is taken to prevent recurrence whether stealing, carelessness in handling, poor documentation, or any other possibility.

This is the area of the system that ultimately

determines if the system is highly competent in accuracy and data or whether it is just another exercise in clerical effort.

GASOLINE INVENTORY

An alternative method of accounting for gasoline purchases which would include general ledger accounts, usage, shrinkage losses and weekly reconciliation reports should be considered. About 40% of the current inventory transactions are gasoline tickets. Control under the present system is non-existent and the reporting effort is practically a waste of time. To change means a drastic departure from present procedures. New methods will require funds and substantial effort on the part of people.

There is no justification for a gasoline stock status record. It is not required for ordering, to set min/max, to contact vendors or other reasons that justify the need of stock status records.

Under present procedures, internal control is nil. Usage transactions are not kept in a controlled procedure for good accountability. The present procedure requires reporting to the nearest gallon and no comparison to miles travelled or hours of operation is made. The pump meters are not calibrated. These two deficiencies must be corrected before significant improvement can be

realized. The difference in volume between gasoline and other inventory transactions, indicates a need to clarify the subject. Diesel fuel should be included in this category, but not items such as motor oil, antifreeze, etc. Gasoline has little in common with the others. Minimum stock balance is not a factor for reordering in the same manner as recommended for the other inventory items. In fact, the cut-off of document processing to issue stock status for reviewing the field inventory, need not be jeopardized or limited by delays which occur frequently when gas transactions are included.

First, an objective to be accomplished must be defined. Gasoline must be viewed as a very attractive commodity, difficult to identify as being Commission property, and kept at widely dispersed locations throughout the state. If apprehension of thieves is made, it is difficult to identify and the possibility of reconstructing the events is lost in a matter of minutes. This more or less indicates a priority for control.

The possibility of control with maximum security and minimum expense is very realistic. Control involves two means of recording available data. One is the comparison of usage to the hours or miles of operation for each piece of equipment. Second, the meter on the pump, when properly calibrated, can be used to record quantities. An accountability procedure which will withstand

audit and facilitate a high reliability can be developed, even to the reconstruction of transactions, when necessary.

Gasoline should be controlled by location through a weekly report with an opening quantity, purchases {supported by invoice or delivery ticket}, less amount pumped {supported by a tally summary of cards forwarded to Ames} and an ending inventory balance. The delivery tickets and the charges would be subject to verification when processed by data processing where they would be matched with summary figures for control. The physical quantity can be verified by stick measuring to determine if an error exists.

Each gasoline delivery ticket prepared for a motor driven vehicle with an odometer would show the reading at time of the delivery. This would permit an analysis of consumption by the computer or manually, which would detect abnormal usage or incorrect charges. The driver or operator would be required to sign the ticket. An audit trail would be established. This would provide Central Services with a means of establishing standards of operating costs and eventually they would be able to summarize operating costs by specific items of equipment.

A decision should be made to separate gasoline and diesel fuel from the normal field inventory. Also, the inventory of items which generally are a limited

quantity of small supplies such as motor oil, antifreeze, STP or similar items should be handled differently at locations with primarily a gas pump. These items should be expensed to a cost center at the time they are delivered.

NOTE: It is not intended that gasoline or diesel fuel would be charged off at time of delivery, only the other inventory items being transferred from central warehouse.

Consideration must be given to the possible methods of preparing transaction documents, whether optical scanning, mark-sensing or pre-punching data is utilized to speed document handling and reduce expense.

The Commission must state the objectives in the form of a policy statement. Procedures must be written for the field personnel which will direct them to the specific requirements for documenting gasoline transactions.

PURCHASING DEPARTMENT

The Purchasing Department is charged with a major responsibility involving several millions of dollars each year. It is also a primary source of contact with other than state agencies and is a very image-creating activity. Integrity must be above reproach and the Department must have very specific policies and procedures to guide them in day-to-day activities.

This chapter will set forth basic philosophies for consideration in the development of such policy.

CENTRALIZATION

The present centralized concept of purchasing for the Iowa State Highway Commission is considered to be the most advantageous procedure overall. The success of operating an efficient centralized Purchasing Department is dependent upon policy development and the follow-up for conformance. The majority of the purchasing requirements originate and/or a final approval and authorization must be obtained from staff personnel at Commission Headquarters.

It is felt that decentralizing of purchasing, such as at Districts, would not be prudent and could not be

justified as to economics or efficiency at this time.

Purchasing, as an activity, will become more efficient and effective as statistical data is developed and maintained on a current and factual basis. Vendors look forward to working with and seek out customers who display a professional attitude toward procuring materials and services. This high level of professionalism should be maintained and the future objective should be to improve the attitude toward purchasing.

POLICY DEFINITION

The policy statements which relate to the purchasing function must be specific and precise. A statement of direction is of particular importance in this area because of negotiations with outside vendors. It is important that a fair and equitable treatment be afforded all vendors and potential vendors.

Purchasing should encompass all facets of procurement and delivery, but should not directly influence the determination of specifications, quantities, or delivery requirements. The primary purpose must be to arrange for the delivery of the product to the proper place at the proper time, from a financially responsible vendor and at a reasonable and favorable price. The responsibility for establishing product specifications must rest with the ultimate user. Submission of specifications

must be complete and understandable. Likewise, the requester must determine the quantity, the place and the time of delivery, if he is to be held accountable.

Purchasing Department policy must avoid being too restrictive because their guidance and counsel will be valuable and appreciated by other parties when they are faced with product selection and determining requirements.

It is important that the Purchasing Department have a complete "Request to Purchase" or "Travelling Purchase Requisition" form for requesting their service. Such requests should contain complete statements of requirements to provide the information needed. The form should have implicit instructions regarding the proper preparation. The approval signature should reflect authority and approval commensurate with overall responsibility. In addition, it must indicate that the request being submitted has been appraised for reasonableness.

Management must establish authorization levels and all management personnel must be properly instructed as to the responsibility within the approval procedures. It is strongly recommended that practices of pre-signing or rubber stamping be abolished as these are usually associated with the delegation of responsibilities and

this is not consistent with our proposal of an approval policy.

PURCHASE AUTHORIZATION

The policy on authorization limits for signing Purchase Requisitions should be very specific as to the responsibility and the person. Responsibility is intended to apply to a person who can make a commitment and be held accountable. It is valueless to implement "control" procedures which permit unauthorized personnel to make purchases for which another person is held accountable. Likewise, the designation of alternate signatures should be limited and used only for the emergency. It is not intended to be a full-time practice to avoid clerical work.

The Purchasing Department should refuse all "Request for Purchase" which are incomplete. They should be returned immediately to the requester. The information provided on the request must be complete and stand on its own as Purchasing is not expected to evaluate and approve the requisition, but only to review for conformance, completeness and authorization.

1. Requisitions {Including Travelling}

The Purchasing Department must be provided with a properly prepared Request to Purchase, complete in every detail and approved by a person with authority. Travel-

ling Purchase Requisitions are to be considered the same as a Request to Purchase inasmuch as its only function is to avoid repetitive copying of identical information on purchase requests.

In conformance with policy intent, the Purchasing Department should not accept and process requests for a series of requisitions where the intent is to break up orders into small segments to circumvent dollar approval limitations.

A part of the Purchasing audit program must include a review for the request authorization to support each Purchase Order issued. An approved Request to Purchase must be on file in the Purchasing Department for all purchases, whether bid award or exempt purchases, except where a Travelling Purchase Requisition is indicated. Likewise, if significant changes are made to a Purchase Order resulting in added value because of changing specifications, unit price or quantity, a new Request to Purchase, properly processed, must be presented before a "Purchase Order Change Notice" is issued.

2. Commission Order Resulting From Bids

When the Commission policy states that the purchasing must be predicated on a bid and award basis, the Purchasing Department would be authorized to prepare and sign a Purchase Order upon receipt of an approved Commission Order. Such an order will result from recom-

mendations submitted and documented by the Purchasing Department to the Commissioners at their regularly scheduled meetings. The Commissioners' authorization can be assumed to be an award on the basis of serving the best interests of the Commission as a whole.

FIELD PURCHASE ORDER

The Field Purchase Order should be used to conduct certain activities within the Commission's operation. It must be recognized that specific instruction and continued surveillance are needed because this is an area where abuses can destroy the benefits of the system.

Two critical areas must be policed diligently. Stringing of two or more orders for the specific purpose of avoiding the dollar limit placed on this type of purchase, must not be permitted. The failure to adhere to the approval limitations and the required justification for these purchases would undermine the system.

The Field Purchase Order should be considered and should be treated as a privilege. Withdrawal of the privilege should be exercised, if necessary, to preserve the procedure. The Purchasing Department actually extends, to authorized members of the Commission, the right to represent them in the purchasing of materials, supplies, or services under defined and limited circumstances. The Field Purchase Order is intended

to permit emergency purchases that will contribute to the efficiency and high standard of operations of the Commission. The same procedure may be used to permit the purchasing of nominal value items in a more straight forward and less expensive manner than would be required by the methods and procedures used to purchase the majority of supplies, materials, equipment and services.

In general, the procedure is intended to permit authorized personnel to make purchases from a readily available source. The vendor is presented with an authorization to sell and he also obtains an acknowledgement of receipt of the item from a Commission employee, so that the invoice for the purchase will receive prompt approval and payment.

An emergency purchase is defined as a purchase of material or service urgently required, but not readily available and arises out of an unforeseen need. The emergency must arise from an urgent need because of a safety hazard or the inability to operate equipment or perform services. Generally, such occurrences, if delayed an unreasonable time become excessively expensive to the Commission when compared to normal operations.

Nominal value purchases are deemed to be direct purchases of less than \$150.00, for items not carried in inventory and which are not a substitute for existing

and available inventory items, or such purchases may be for a one-time service to a single piece of equipment.

For direct purchases, an authorized Field Purchase Order must be prepared in conformance with instructions. The more important considerations of this procedure are the justification for the purchase and the obtaining of proper authorizing signatures. In extreme emergencies, verbal approval may be obtained if the written documentation is processed as promptly as circumstances permit.

The approval limits must be set commensurate with the responsibilities of the various personnel designated to make approvals. The system is intended to permit a normal operation with maximum control over outside purchasing activities. It must be understood that improved inventory practices and closer supervision should minimize the requirements and improve the effectiveness of this recommended Field Purchasing System.

PURCHASING PROCEDURES AND STANDARDS

The selection of the source of supply is the responsibility of the Purchasing Agent. Source selection is a continuing challenge and it is the leverage and the tool whereby the Purchasing Agent attains a level of performance as a professional in the material supply function.

It is important that requests presented to the Purchasing Department be approved and complete in detail. Purchasing procedures must be specific if they are to carry out the expressed intent of the policy. The standards of performance should be a reflection of the policy objective which can be quickly well-defined and used for comparison to actual performance.

The following sections detail the basic criteria which should be considered when formal purchasing policy is expressed together with a few management techniques considered appropriate for inclusion in the detailed procedures applicable to Purchasing.

1. Discriminate Selection of Vendor

The ultimate selection of the vendor will vary greatly because of the many facets of the transaction which must be considered and evaluated in light of the requirements. Some of the more significant areas of consideration are set forth:

{a}. Price - One of the very important considerations, but not an answer to all questions. Price is only justified by value and a buyer has the responsibility to seek an equitable relationship between the two.

{b}. Transportation Cost - Must be considered in light of weight, point of origin, carrier,

tariff classification, as well as the effect of competition between carriers.

- {c}. Terms of Payment - These tend to prevail within industries but there are exceptions, so the amount and the days allowed will have the effect of a price differential.
- {d}. Price Protection - The assurance that the price will remain firm until shipment is made.
- {e}. Quality - This is generally a measurement of the desired characteristics of the product in light of its suitability to the needs rather than a degree of perfection.
- {f}. Financial Responsibility - The vendor should be evaluated on his ability to warrant the product, present a dependable source of supply and general integrity in contract matters.

The above are not all inclusive and equally important matters of service, repair parts, delivery, past performance and additional factors must be considered.

In source consideration, it is often very prudent and advantageous to have more than one source for materials. It does contribute to price integrity as well as creates a better atmosphere of operation and improves competition.

The method of selecting a vendor is largely dependent upon the experience of the Purchasing Agent. It is very difficult to express the proper path to follow, particularly where there are numerous items and many possible sources. The available data for determining sources extends beyond the customary yellow pages, buyers' guides and registers. Catalogues and advertising literature are a good source, but must be cross-indexed by commodity and kept current. A vendor's file with addresses, names, purchase order history and other information will improve the conducting of business, whether used for placing a telephone call or securing the proper mailing address.

2. Invitation To Bid

The adoption of a formal document for Invitations to Bid is essential in most instances to achieve a satisfactory understanding between the buyer and the seller. This means of communication is only valuable when time and effort is taken to be specific about quantities, deliveries, specifications, terms, transportation, and special considerations such as packaging. Many well-directed questions such as price in relation to the quantity range, the effect time and number of deliveries has on price, the duration of time that prices remain fixed, are all meaningful considerations which should be incorporated in the Invitation to Bid.

If the method of preparation of the Invitation to Bid Form being sent to suppliers rather clearly indicates there is competition, it is advantageous to the buyer. However, it should not inform the supplier of other suppliers being contacted.

3. Vendor Contract And Purchase Orders

The Purchase Order is a contractual instrument and has important legal functions affecting the rights and obligations of the purchaser. The form should set forth terms and conditions which are essential to the protection of the purchaser's interest.

The important reason for an acknowledgement copy is because of the time-honored requirements for a legally enforceable contract which require the following:

- {a}. Offer and acceptance
- {b}. Parties competent to contract
- {c}. Legality of subject matter
- {d}. A sufficient consideration

The Purchasing Agent must be alert to the possibility of unacceptable terms in a seller's acknowledgement because prompt objection to unacceptable features may be required to protect the buyer's interest.

There are also times when oral commitments may be made by placing an order by telephone. Again, the prompt follow-up with properly executed written documentation

will serve the best interests of the parties.

VENDOR CONTACT

Purchase order adjustments are change notices or revisions issued to a vendor to cancel, alter, change the price, or otherwise modify the Purchase Order as originally issued. This is best accomplished by use of a standard form, the "Purchase Order Change Notice". The acknowledgement copy of a change notice has the same impact as previously discussed for a purchase order.

It is advisable for the Purchasing Department to handle the majority of error corrections with the vendors. In cases where Accounting, in the course of invoice audit, detects invoice errors of a minor nature, it is frequently possible for them to contact the vendor directly and not involve the Purchasing Department.

It is possible that a standard form which would permit Accounting to show the specific nature of the error together with a remarks section for explanation, when needed, would eliminate unnecessary processing, speed up handling and serve as a means of advising the vendor of the error.

ROLE IN DISPOSITION OF SALVAGE AND SCRAP

The arrangement for the sale of scrap and salvage, is customarily handled by the centralized Purchasing Department. This is usually desirable because of previous

experience in negotiating for salvage and scrap sales and will usually result in a far greater return.

Where it is practical and the volume of surplus at one location is sufficiently large, it should be sold "at site" since any cost expended in moving material will tend to reduce net proceeds. In other cases, it may be more advantageous to consolidate quantities to attract better offers.

ACCOUNTING DEPARTMENT - INVENTORY

The Accounting Department has a major role and responsibility in the inventory program. The role and the responsibility must be clearly defined and expressed in published policy.

Accounting per se should be charged with maintaining a high standard of performance and integrity within the data preparation and processing procedures to assure accurate documentation of changes in status.

This chapter of the Concept Manual will discuss Accounting and its interrelationship for processing transactions pertaining to inventory. It will recommend desirable policy statements applicable to inventory accountability.

POLICY DEFINITION

The Accounting staff should be given a role of responsibility for the inventory. The Accounting Department must have the responsibility for developing accounting procedures to be used for ordering, receiving, storing, issues, and related activities which insure effective control of inventory. Accounting should be responsible for the valuation of transactions which report items

moving in and out of inventory and for the pricing of the annual physical inventory. The department is the proper place to review and approve adjustments necessary to balance the general ledger account with the physical inventory. An important fundamental of inventory control is maintenance of adequate internal check to prevent errors and misappropriation. Planning and supervising the annual physical inventory process should be a function of the Accounting Department. Accounting should be assigned a staff responsibility for determining that proper and adequate security measures are being maintained and that the items of inventory are in a usable condition and currently required for operation of the Commission.

REVOLVING FUND REQUIREMENTS

The Commission provides support services and facilities to the operating departments through the Revolving Fund. The basic concept of providing the service to the operating unit and then receiving revenue for the services is frequently used in governmental operations. The inventory falls within this particular mode of operation.

Accounting is responsible for maintaining the Revolving Fund with particular emphasis on proper charges for purchases and proper reimbursement to the Fund for the services provided. The monies in the Revolving Fund

are specific as to purpose and, therefore, Accounting must honor this trust.

The manual sets forth policy recommendations for consideration. Some applicable procedural concepts which would provide maximum control and be economically feasible are presented for review.

It is important that any recommendations be considered in light of restrictions which may be set by statutory limitations or reporting requirements necessary to conform with other agency procedures. The manual is restricted in scope because it is limited to matters directly associated with inventory and purchasing activities. There are other areas of the Revolving Fund which are pertinent but are outside the scope of the project.

1. Sustaining Inventory Stocks

Policy and procedures issued by the Commission have to be scrutinized carefully to assure that the objectives will sustain the Fund and provide the intended service. Recognition should be given to establishing an additional charge over and above the inventory value which will accumulate, but not an excess amount, of revenue required to provide for losses and thus assure maintaining the stock or service at a level consistent with the need.

The Commission should evaluate two important consid-

erations that have a direct bearing on the work load requirements of the Revolving Fund:

{a}. The use of unit standard prices can be established once a year for valuation of the inventory and for pricing all interim transactions. This method simplifies processing and is readily adapted to data processing. However, when extenuating circumstances arise, interim changes to the unit standard cost could be made.

{b}. Items of nominal unit value and high volume usage should be dropped from the routine inventory procedures and handled on a modified system to reduce paper processing. Likewise, some serious consideration should be given to adopting modified reporting procedures for inventory accounting of gasoline and diesel fuel.

After a period of introduction for the new inventory system, alternative reporting techniques, which will permit Accounting to report on the inventory composition, could be implemented. This would evaluate the working level requirements and the emergency back-up or risk reserves to determine if they are justified or merely personal preference. Modified report procedures should be considered to break out this type of data for analysis

at some later and more appropriate date.

2. Providing for Gains and Losses Resulting from Pilferage, Economics or Obsolescence

The Revolving Fund must be maintained at a level which will assure the availability of funds to provide the required services. Possible sources of fund depletion must be determined and an adequate provision must be made to compensate for the loss. The principle areas would be:

- {a}. Price Variance - If unit standard costs are used, and actual cost is greater or less than the standard cost, it will generate variances. This may result from price changes, quantity breaks, transportation or other reasons.
- {b}. Salvage Proceeds - The sale of items that are not required for operation will result in revenue. This must be anticipated as a revenue source.
- {c}. Losses - Bad reporting, stealing, fraudulent activities or mysterious disappearance must be provided for in the fund. If the item is not available, it reduces the source of revenue which is necessary to sustain the fund.
- {d}. Obsolescence - Discontinued materials or repair parts will result in loss of value and

therefore deplete the fund unless consideration is given to providing a source for compensating for these losses.

It is recommended that a charge for the net requirements arising from the above and other contingencies be made to the using departments. This should not be considered as a factor in establishing the standard cost, but it should be an added amount; i.e., a rate or a graduated range which would be added to the departmental billing each month. This charge should be isolated for the express purpose outlined and appropriately charged or credited in a manner which would facilitate analysis and evaluation.

NOTE: To inflate standard cost would overstate inventory investment and correspondingly be an overstatement of all charges for loss, theft, obsolescence or mysterious disappearance which may arise.

INVENTORY ACCOUNTS

The Accounting Department is responsible for maintaining general ledger inventory account(s) for inclusion in the Commission Balance Sheet. This responsibility includes the development of the accounting requirements to be included in the procedures. Subsequently, the procedures must be policed to assure that a proper system

of internal control and check is functioning. The procedures must provide for documenting changes in the inventory which result from stock additions, withdrawals for use, or inventory adjustments.

The Accounting Department depends, to a considerable extent, on the personnel of other departments to prepare the source documents necessary for reporting activity changes, particularly as to receipts or withdrawals. Two most important requirements for accuracy of data preparation are:

- {a}. Very descriptive and illustrated procedures for the field personnel to use when training new personnel and to answer questions which may arise in day-to-day operations.
- {b}. A very well defined and directed program of internal audit at the field locations and at the Central Offices. The addressing of attention to operating changes will determine the continuing effectiveness of the system.

Dependence upon the Data Processing Department for the majority of the detail work necessitates editing and batching procedures to develop a high level of accuracy and accountability for processing of all source documents. Grouping and sending of daily documents should be held to a designated routing and schedule to

assure that all documents are included in the processing. This is particularly important when determining the inventory balance as of the close of business on a specific date. It is also important to the various support functions such as internal auditing, inventory management and the field supply locations, who depend upon accuracy of the reporting for making operating decisions.

INVENTORY PRICING

Various means of pricing inventory are available. Considering the advantages and disadvantages to the Commission, it appears that a unit standard cost would be the more appropriate.

Standard cost means that each inventory item would be assigned a standard cost, one which would approximate actual cost under normal and reoccurring purchases. This cost would be used for entering, carrying, issuing, adjusting and any other requirements, to value inventory transactions for recording in the general ledger. To utilize unit standard cost, all actual purchases must be compared to the standard cost and a price variance, either a debit or a credit, must be prepared to adjust the records for the difference, if any.

The standard cost should be reviewed and revised, if necessary, once each year to maintain a current and reliable valuation base. With the use of electronic

computers, it is a simple procedure to identify the inventory item by stock number and to maintain a data file which includes standard cost. This method permits readily accessible cost data for valuing the item. Of course, when standards are revised, it becomes necessary to change the unit standard cost in the data file.

Statistical data should be accumulated and records maintained for reference when reviewing and revising standards. Records which cannot be economically justified should not be considered. The price variance should be considered as a prime source of reference for reviewing standards, but it involves analysis to determine if the purchase was unusual {not acceptable}. This should indicate where there is a possibility of change in the standard. The outside forces of demand and supply, quantity, and various economic forces must be considered before finally changing the standard cost. The Purchasing Department should be available to counsel, recommend, assist and evaluate the standards, but the ultimate responsibility should be and must remain with the Accounting Department. They must be able to support their conclusion for the unit standard cost by describing the source of the data.

Other available records that are possible references, when standards are reviewed, are the travelling

requisition and the purchase order change notice files. These files may indicate price adjustments which should be considered. After reviewing standards a few times, the departments will anticipate other data of value in establishing standard cost. This will encourage setting up new records on an as-required basis.

PHYSICAL INVENTORY

At least once each year, the Accounting Department should schedule a physical inventory at each inventory location. The Accounting Department would establish the time {with concurrence of other departments}, determine the personnel requirements, write detailed counting procedures, provide training and coordinate with the State Auditor. They would have to determine the value of the physical, reconcile differences between book or physical by location, measure effect of change in unit standard costs and generally account for the reasonableness of the inventory.

The counting of the physical inventory should be performed to minimum standards and the following are only guidelines, as equivalents may be substituted:

- {a}. Two independent counts, checked against each other and differences resolved.
- {b}. All inventory tags printed must be accounted for {used, voided or unused}.

- {c}. No movement of material from time counting begins until completion.
- {d}. An Accounting Department representative at each inventory location must issue tickets, periodically review the counting procedures, edit tickets for completeness and account for all tickets.
- {e}. The processing requirements needed to assemble and analyze the physical inventory data must be provided to the Data Processing Department.

Physical inventory is a big and costly job and it should be approached with a great deal of planning, the assignment of responsibility and a need for full cooperation from all participating departments.

It is recommended that short-cuts in counting, such as one count for verifying a predetermined quantity, be discontinued. For such a system to be effective, it requires policing, training and supervision which may be more expensive than the customary self-checking methods.

AUDITING AND INTERNAL CONTROL

Auditing by the Accounting Department and by the Internal Audit Staff is important to the continuing effectiveness of the system. Auditing has a two-fold purpose, which is:

- {a}. To periodically review the processing procedures, to evaluate the effectiveness of each step in the procedure, to determine that a logical processing sequence is maintained and that responsibilities are clearly defined and appropriately segregated to provide maximum checks.
- {b}. To satisfy the Commission that the personnel are following the prescribed procedures and thus carrying out the prescribed policy objectives.

Auditing of inventory per se involves a greater sphere of activity because good, practical judgment must be applied to the review of the overall physical properties of the inventory. It takes an innate ability to detect possible weaknesses in storage site security measures. Obsolescence and property deterioration are major contingencies in an inventory. This requires constant vigilance to minimize losses, but it is justified.

ACCOUNTING DEPARTMENT - VOUCHERS

The disbursing of dollars in payment for satisfactory completion of contracts, performance of service or delivery of materials is subject to the voucher approval by the Accounting Department. Accuracy and promptness are important because of the relationship with outside sources. This area requires a definite expression of Commission policy. It is an area which calls for maximum attention to control procedures and internal check.

POLICY DEFINITION

It is recommended that policy be specific as to the Commission objectives regarding two areas, encumbering and payment of obligations. The detailed procedures must be defined to assure processing requirements accomplish these objectives. Statutory provisions create the minimum requirement but these should be reviewed to determine if the Commission's objectives will be satisfied.

The function of encumbering should be specifically pointed to determining the adequacy of funds for future payment and to assure that the funds are being reserved for commitments which have been approved in accordance with the Commission's approval policy. When the policy

is definite, the accounting procedures can be very precise and all requests which are not in conformance can be rejected.

The policy requirements for voucher approval prior to payment should be specific as to the type and the content of the supporting documentation. The procedures should be particularly detailed as to the source, approval and content of the documents submitted to Accounting to establish the validity of the liability incurred before approval for payment.

The policy statements must be extended to all facets of the Commission's operation and the above recommendations should not be construed as applying to inventory transactions only. The responsibility of Accounting in this area is very encompassing and warrants full support and cooperation from management.

ENCUMBRANCE OF FUNDS

The Accounting Department is responsible for maintaining the Commission's financial records. It should be responsible for approval of fund availability before commitments are made. Accounting determines the department, cost center and/or object code that will incur the charge. Therefore, it follows that the review should be made by them to determine the fund availability and to minimize conflicting interpretations when the invoice is presented.

Further, Accounting must know that the proper authorization was obtained and that the subsequent events were in order to verify the liability and to approve payment to the vendor; therefore, Accounting is the most logical processing area.

Encumbering should be extended to the area of the Revolving Fund for two very important reasons, namely:

- {a}. To maintain a high degree of accountability for the spending of the Revolving Fund. The Fund is limited to the amount of service revenue available and must be kept within the expressed intent of the Statutes.
- {b}. To guide and direct responsible department heads in the proper use of the Revolving Fund, it is necessary to provide reliable data on commitments and availability on a current basis.

Encumbering is primarily a function of recording commitments for specific legislated financial expenditures to assure conformance to intent and avoid contracting for services or materials in excess of funds. It is readily seen that such restrictions extend well beyond the limitations of purchasing for inventory and therefore the encumbering procedures must give recognition to all facets of the Commission's operation.

PAYMENT OF VENDOR INVOICES

Accounting is responsible for processing and approving all vendor invoices for payment, including those resulting from inventory purchases from the Revolving Fund. To assure an adequate internal check, the Accounting Department must receive specific data submitted in conformance to approved procedures. This data is needed to supply them information about authorization, product quantity, meeting specifications and at contracted price. With the proper flow of data, it is reasonable for Accounting to evaluate the reliability of the invoice, to approve and to forward the invoice for payment. All matters associated therewith, such as coding for charges and detailing to appropriate jobs or projects, must conform to and interface with the Commission's accounting system.

DATA PROCESSING DEPARTMENT

The Data Processing Department is the keystone to the Inventory and Purchasing System. Accurate data is a very important and necessary requirement for a dynamic and successful inventory system. The Data Processing Department must establish and maintain high standards of performance. The legibility and the accuracy of the source data provided to them is a determining factor as to their ability to meet these standards.

This chapter of the Manual covers the role of the Data Processing Department and its interrelationship with other departments for processing source data pertaining to inventory and purchasing. It will also describe the recommended procedural philosophies that pertain to the system overall.

POLICY DEFINITION

The Data Processing Department is responsible for providing a service to the Commission. The service is to include maintaining files of data for the Inventory and Purchasing System. They also must provide the programs to maintain the files in a current status and to report data for management use.

The Department should recommend and assist in the development and implementation of the data processing activities of the system. Because the reliability of the data has a direct effect on the financial reporting, financial status, operating efficiency and general welfare of the Commission, they must coordinate and direct their operations in an economical and timely manner.

The role of Data Processing must be oriented and directed toward providing a service to the other departments who require the information for fact and decision making in the course of day-to-day operations.

REPORT PREPARATION

The reporting requirements for the Inventory and Purchasing System are important and essential to the efficient performance of day-to-day departmental operations. There are cases where the reports are informative to management only and are intended to alert trend development or encourage management review and analysis.

It is important that strict adherence to schedules be enforced to assure that all required data is included before processing a summary report. Careless handling of data could result in the failure to update the inventory ledger account when a liability has been recorded; this would result in a misstatement of the financial position.

Planned reports should be reviewed to determine that the data complies with statutory requirements and that it conforms to the requirements of other state agencies for inventory and fund accounting.

FILE MAINTENANCE

A data file, with a myriad of facts as to the history and current status of an inventory item, is the focal point around which the system is conceived. The responsibility for the data base, its information and its maintenance must be clearly defined.

There are two specific areas, namely:

- {a}. The Accounting Department has very specific data requirements for the detail information supporting the general ledger accounts. It is charged with the responsibility for the procedural detail, the source of the data and the ultimate reports resulting from the data. Only properly signed documents from Accounting can add, delete or change data which is the responsibility of the Accounting Department. Within this specific area, approval, communication and transmittal of data must be between the Data Processing and the Accounting Departments.
- {b}. Included in the data file is data which is

primarily for the requirements of the Inventory Management Department. The same mode of operation must be maintained between the Inventory Management and Data Processing Departments as was discussed above for accounting data.

Data processing is only accountable for the processing of the data and not for the contents. Each department must establish adequate controls over document transmittal and they must edit the proof listings, if necessary, to assure the reasonableness and accuracy of the data. In addition, internal audit programs should be extensive enough to assure that the reliability of reporting data is being upheld by adequate procedures and that the data is processed as outlined in the procedures.

There must be respect for the importance of the data in the data file and only authorized personnel should be permitted to submit new data or adjust existing data. The Data Processing Department must institute procedures which will review and accept data from authorized persons only.

INVENTORY MANAGEMENT DEPARTMENT

The Inventory Management Department is recommended because of the need to segregate purchasing and inventory management functions. The primary reason is to upgrade the procedures for better internal control. The isolating of the service function, namely the inventory warehousing which is wide-spread geographically and crosses many department boundaries, is justified because of the need to direct attention to service and cost.

Inventory Management must be a dynamic organization. They must direct attention to detail on one hand and attention to planning and modifications for upgrading the existing operation on the other hand. The importance of planning and anticipating the requirements of subsequent periods cannot be overlooked.

This chapter of the Manual covers the Inventory Management Department's relationship with other departments, describes the recommended policy considerations and points to areas which should be considered for the development and staffing of this Department.

POLICY DEFINITION

Inventory Management is responsible for the physical

characteristics of the inventory, except for the sign shop, radio repair parts and materials laboratory which are specifically excluded. Physical characteristics are termed as ordering, receiving, identifying, warehousing, security and issuance of inventory items. The items in inventory will be approved for inclusion by the appropriate division that calls for the particular material or supply. An example would be, the approval for repair parts should come from the Central Services Division.

To a large extent, the Commission must state its policy which is an expression of objectives and serves as a guide for decision making.

SCOPE OF ACTIVITY

The Inventory Management Department is a service group organized to provide materials and supplies to operational units on an as-needed basis. The objective is one of maximum service at a minimum investment. The Department is not to be the determinant area for the items to be carried but more specifically they will be interested in where, when, how much and other physical characteristics, such as handling and storage techniques and security.

The inventory for which Inventory Management is responsible should not include those locations with

unique stock requirements pertaining to a specific activity such as sign shop, radio repair shop and materials laboratory. For those inventory areas just described, the department should have full accountability and should be expected to describe the standards of performance expected for physical handling. They must provide for inspection and reporting as necessary to safeguard the inventory physically. Physical safeguard is stressed because of the Accounting Department {valuation and asset determination} responsibility and accountability which is at a staff level.

In the event other operating areas are considered for exclusion, the decision should come from the Director and should be expressed as a new policy statement.

The Inventory Management Department should counsel and recommend as well as solicit help from other departments when the best interests of the Commission can be served. The service objective is of primary import to this Department.

OPERATION OBJECTIVE

The Inventory Management Department must perform a service for the Commission by stocking and, as required, replenishing stock to sustain the most advantageous inventory position. Functionally, it will be guided and to some extent directed by the Divisions responsible for

designating projects and determining the specifications of the various products required to execute the programs. This means that Inventory Management must be advised of new programs or projects, together with requirements, inasmuch as the needs may exceed the availability under the normal replenishment cycle. Then the Department must give immediate attention to these necessities to assure that the inventory is available at a specific location and in sufficient quantity to execute the program.

The Department has direct line responsibility to supervise the routine central warehousing operations at Ames. At field support locations, they must provide standard procedures in published form for them to follow. Periodic visits must be made to assist and instruct field personnel. They must advise them if they are not following prescribed procedures.

The Inventory Management Department must maintain a very responsive and advisory relationship with other departments and notify them of stocks which are obsolete, slow moving or deteriorated. Likewise, the other staff departments should recognize the service being performed by the Inventory Management Department and advise and guide them when contemplated changes will effect inventory. If new equipment or material is considered, the potentiality of obsolescence should be reviewed so

prompt recall, restocking or preferential usage may be indicated. Such planned evaluations and action will maximize the utilization of inventory.

FUNCTIONAL ROLE OF SECTIONS

The recommendations for the system included the creating of a new department with emphasis on inventory management. The need to group functions for supervision is apparent because of the broad and dissimilar activities involved. To illustrate the type of boundaries and groupings possible, sections have been broken down and discussed separately. It is not intended to be a firm recommendation, but only to serve the Commission as a guide. The assignment of personnel and the comparison of job responsibility to capability should be the determining factor in finalization.

1. Inventory Control

This section of Inventory Management should be responsible for the maintenance of inventory stocks. The section should determine when field stocks are to be replenished from central warehouse and when central warehouse stock is to be replenished. The section must take appropriate action when out-of-balance stocks, obsolete or deteriorated product warrants action. The use of modern techniques, such as min/max limitations and modern computer techniques, are to be utilized, where economically

feasible, to operate the section at maximum efficiency.

2. Administrative

Should be responsible for the recommending and implementing, by training and/or supervision, Commission policy and operating procedures, as necessary, to maintain a proper, well-balanced inventory for the operating departments. They should be responsible for the development of an operating budget and for training personnel to upgrade and improve operations and/or reduce costs. Generally, the section should administer the operation and establish a liaison to assure performance at maximum efficiency and minimum expense.

3. Shipping and Receiving

Should be responsible for shipping and receiving function at Ames with specific attention to assuring that the best interests of the Commission are being served through attention to accuracy and security. The field distribution activity involves assembling orders, loading and delivery to the field locations when stock replenishment is necessary. This would include other deliveries which management may consider appropriate and also returns from field sites.

4. Warehousing

Should be responsible for operating the central warehouse in Ames. This function includes such activities

as identifying, stocking, picking orders, verifying physical quantity with records and other normal warehousing tasks. As and when requested, to train or assist the field warehouse personnel in maintaining an orderly, well-stocked, properly identified array of inventory items proportionate to the immediate needs of the area or the functions being served.

5. Clerical Control and Review

Should be responsible for the review and editing of source reporting documents. All documents must be reviewed for completeness and legibility, then batch controlled and transmitted to other departments for processing. In addition, they would be responsible for setting up new data files which include obtaining the necessary data from approved sources, assigning inventory stock numbers and maintaining, on a current status, data for catalogue purposes. They would also obtain the necessary information to delete data files when no longer required.

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