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USS ENGINEERS and CONSULTANTS, INC.

A Subsidiary of United States Steel Corporation

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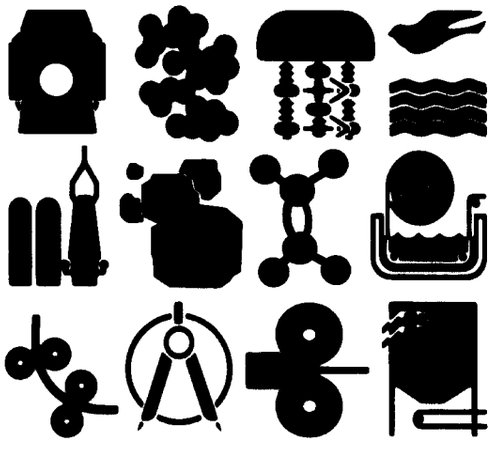
EGYPTIAN IRON AND STEEL COMPANY

MAINTENANCE SYSTEMS AND CONTROLS

USS ENGINEERS AND CONSULTANTS INC.



October 1, 1977

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USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

REPORT INDEX

Introductory Statement

USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

INTRODUCTORY STATEMENT

This report, prepared by USS Engineers and Consultants, Inc., describes systems and procedures designed to provide effective administrative and operating controls for the maintenance activities of the Egyptian Iron and Steel Company located in Helwan, Egypt. The report contains seven separate sections dealing with the items listed in the report index. Subsections of sections IV and V provide detailed instructions for implementing and operating the respective systems described therein. Applicable exhibits are included with each section.

USS Engineers and Consultants, inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

SECTION I - GENERAL DESCRIPTION OF REPORT

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

SECTION I - GENERAL DESCRIPTION OF REPORT

The following paragraphs provide abbreviated descriptions of the purpose, content and objectives of the systems or control procedures covered in the report.

1. SPARE PARTS INVENTORY CONTROL SYSTEM - SECTION II

1.1 Purpose

A basic or fundamental activity of plant maintenance is the repair of worn or damaged plant facilities. Timely and effective execution of such repairs is depending upon the availability of equipment parts and/or components necessary to make such repairs. The Spare Parts Inventory Control System described in this report is designed to assure provision of such parts in an economical, workable and expeditious manner. Controlled by a computer, the system provides control data quickly and economically and adapts to and encourages rapid transaction of required activities.

1.2 Content

The main features of the system include procedures for:

1.2.1 Establishing positive identification of required spare parts and storage areas.

1.2.2 Maintaining adequate inventory stocks at minimum levels.

1.2.3 Rapid transit of parts from storage areas to points of requirement.

1.2.4 Timely and effective methods of adjusting required records.

1.2.5 Preparation and issue of output reports, displaying inventory stock level status, stock replacements and inventory financial evaluations.

1.3 Objectives

The principal objectives of the system are:

1.3.1 To provide accurate identification of spare parts and storage locations thereby permitting timely provision of parts to areas of requirement.

1.3.2 To control inventory stock levels at minimum, yet adequate, quantities required to assure uninterrupted provision of parts to Operating Areas.

1.3.3 To provide plant management with information necessary to assure minimum investment for spare parts.

1.3.4 To provide management with timely reports reflecting current inventory performance.

1.3.5 To provide management with a tool that will enhance plant productivity through provision of services that will minimize delays associated with facility repairs.

2. PREVENTIVE MAINTENANCE SYSTEM - SECTION III

2.1 Purpose

In industrial plants, the failure of a single equipment component can shut down a complete production line causing interruptions to operating and shipping schedules that result in costly downtime, dissatisfied customers and increased costs. The most effective method of minimizing these costly experiences is to establish maintenance practices that provide maximum equipment reliability. Such practices require regularly scheduled activities involving equipment lubrication and inspection and replacement of worn parts. The Preventive Maintenance System described in this report is designed to provide systematic execution and control of such activities. Like the Spare Parts Inventory Control System, it is computer controlled, thereby providing expeditious and economical execution of system requirements.

2.2 Content

The main features of the system include procedures for:

2.2.1 Identifying the maintenance activities to be performed and the equipment to be serviced.

2.2.2 Stipulating the frequency with which maintenance activities will be performed and issuing work orders weekly to accommodate the predetermined schedules.

2.2.3 Providing outputs reports which display on-time and delinquent execution of maintenance practices.

2.3 Objectives

The principal objectives of the system are:

2.3.1 To provide management with a documented record of preventive maintenance tasks and the frequency with which such tasks should be performed on specified equipment.

2.3.2 To provide systematic control over the execution of maintenance tasks in order to assure maximum reliability of equipment.

2.3.3 To provide management with a tool which will minimize wear and tear and deterioration of equipment, improve productivity and reduce maintenance costs.

3. SHOP SCHEDULING SYSTEM - SECTION IV

3.1 Purpose

Proficient and economic usage of plant maintenance shops, labor and facilities requires effective controls to assure consistent and thorough preparation of work orders, timely provision of material to the processing units, adequate assignment of personnel to shop facilities and a queuing of work orders in a manner that accommodates plant priority service requirements. The shop scheduling system described in this report is designed to fulfill all the above stated requirements. As designed, it utilizes a computer to provide expeditious preparation and treatment of data.

3.2 Content

The main features of the system include procedures for:

3.2.1 Preparation and planning of work order specifications.

3.2.2 Providing for and verifying availability of materials required in shop processing.

3.2.3 Transcribing work order data into formats acceptable for computer input.

3.2.4 Maintaining master files or work order specifications in the computer center.

3.2.5 Preparing and issuing system output reports and schedules on a timely basis.

3.2.6 Preparing and reporting labor and equipment utilization data.

3.3 Objectives

The principal objectives of the system are:

3.3.1 To provide the plant Operating Departments with workable and effective procedures for submitting requests for service and priority requirements to the plant Central Maintenance Organization.

3.3.2 To provide the plant Central Maintenance Department with consistent and effective procedures for:

3.3.2.1 Planning and processing shop work orders.

3.3.2.2 Queuing work orders in a manner providing optimum treatment of plant priorities.

3.3.2.3 Scheduling work orders in a manner providing maximum utilization of maintenance labor and facilities.

3.3.3 To provide plant management with an effective tool that will minimize maintenance delays to operating equipment and enhance optimum production performances.

4. FIELD SCHEDULING SYSTEM - SECTION V

4.1 Purpose

Requirements for proficient and economic utilization of maintenance field labor and facilities are similar to those required for utilization of maintenance shops. Work orders must be planned and prepared; material and equipment must be moved to work sites on a timely basis; and labor and work orders must be scheduled and dispatched to accommodate plant service requirements on a priority basis. The Field Scheduling System described in this report is designed to fulfill the above stated requirements. It differs from the Shop Scheduling System, however, because all the functional requirements of the system are performed manually. A computer is not used because field maintenance work is primarily associated with repair operations, which vary in extent and content and do not adapt to repetitive treatment of data.

4.2 Content

The main features of the system include procedures for:

4.2.1 Planning and preparing work order specifications.

4.2.2 Arranging for and delivering materials, tools and equipment to field work areas.

4.2.3 Providing documented special instructions necessary to effectively execute unusual technical and safety requirements associated with a work order.

4.2.4 Determining priority requirements and scheduling and processing work orders accordingly.

4.3 Objectives

The principal objectives of the system are:

4.3.1 To provide the plant Operating Departments with workable and effective procedures for submitting requests for service and associated priorities to the plant Central Maintenance Organization.

4.3.2 To provide the plant Central Maintenance Department with consistent and effective procedures for:

4.3.2.1 Planning and processing work orders.

4.3.2.2 Scheduling work orders in a manner conducive to maximum utilization of maintenance labor and facilities.

4.3.3 To provide plant management with an effective tool that will:

4.3.3.1 Minimize maintenance delays to operating facilities.

4.3.3.2 Enhance optimum operating performance.

4.3.3.3 Minimize plant maintenance costs.

5. FIELD MAN-HOUR ALLOCATION - SECTION VI

5.1 Purpose

Effective utilization of field maintenance facilities is dependent upon workable controls dealing with:

a. Preparation, planning and scheduling work orders.

b. Assignment of Field Labor forces to field maintenance activities.

Section V of this report provides the necessary controls for item a. above. Controls for item b. are set forth in this Section VI.

Effective assignment of field personnel to field maintenance activities must satisfy two basic plant needs. First, it must accommodate all emergency requirements associated with equipment breakdowns and second, it must allocate field personnel to planned repairs throughout the plant in a manner that best sustains plant continuity of operations. The procedures set forth herein are designed to fulfill the stated basic needs.

5.2 Content

Proper allocation of field man-hours as set forth in these procedures involves the use of:

a. Two preprinted forms which permit a quick calculation of man-hour requirements for each plant operating area and man-hour availability in each maintenance craft.

b. A schedule board which shows actual assignment of craft man-hours to plant operating areas.

5.3 Objectives

The objectives of the man-hour allocation controls are as follows:

5.3.1 To provide Maintenance Management with a method of quickly determining field maintenance man-hour requirements and Field Maintenance man-hour assignments.

5.3.2 To provide Operating Management with assurance that plant emergency requirements and planned maintenance requirements are fulfilled in a manner that best sustains plant continuity of operations.

5.3.3 To provide Plant Management with an administrative tool that will optimize utilization of field maintenance facilities and minimize plant maintenance costs.

6. MAINTENANCE ORGANIZATION - SECTION VII

6.1 Purpose

Maintenance control systems, such as those described in this report, can and will improve plant maintenance services. Properly administered they will improve plant productivity and reduce producing and maintenance costs. However, a fundamental requirement for successful operation of systems is that they be administered by a supervisory organization that complements the functional requirements of the systems. In other words, the consistency of execution of activities, inherent in systematic treatment must be supported by similar consistency in decision making in the administration of the system. This can only be accomplished through a well-planned organizational structure and a precise definition of the functional

responsibilities assigned to the positions comprising such structure. The maintenance organization recommended in this report, sets forth the various levels of decision making and the functional responsibilities of the management positions necessary to effectively administer the systems of this report.

6.2 Content

The main features of the proposed Maintenance Management Organization are as follows:

6.2.1 An organization chart displaying the proposed maintenance management positions, the subordinate positions directed and the coordinating activities required.

6.2.2 A listing of the functional responsibilities assigned to the management positions.

6.3 Objectives

The principal objectives of the proposed Maintenance Management Organization are:

6.3.1 To establish a maintenance organization structure that will set forth direct lines of responsibility as well as the function responsibilities of the positions involved.

6.3.2 To provide Maintenance Management with an organization structure that will accomplish the following:

6.3.2.1 Establish direct responsibility for decision making at the various organization levels.

6.3.2.2 Provide recourse to higher levels of decision making when needed.

6.3.3 To provide plant management with a Central Maintenance Organization that can provide expeditious service to the plant maintenance needs.

USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

SECTION II - SPARES INVENTORY AND CONTROL

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

SECTION II - SPARES INVENTORY AND CONTROL

1. OBJECTIVES

The overall objective of the spares program is to provide inventory controls and procedures which will minimize investments for spare parts and at the same time provide sufficient quantities of spare parts to assure proper maintenance of production facilities, minimum downtime and lower equipment repair costs. Specific objectives are:

1.1 To carry in stock the minimum number of spares required to assure uninterrupted operations of works production and support facilities.

1.2 To tag or otherwise mark spares for easy identification.

1.3 To stock spares in an orderly and protected manner in a minimum number of areas having controlled access.

1.4 To provide adequate identification which will locate the right spare promptly when needed.

1.5 To identify and dispose of obsolete and surplus spares.

1.6 To adopt and use a sound procedure for replenishing depleted stocks.

1.7 To adopt and use a practical system for maintaining spares stock records.

2. RESPONSIBILITIES

2.1 Production Department

The Production Department's primary responsibility is to produce quality products at maximum production and at minimum cost. A program of proper and timely maintenance of facilities minimizes production delays due to equipment failures. A good spares program is vital to good maintenance and thus is an important factor in effecting the Production Department's primary responsibility.

The Production Department's responsibility in the administration of the spares program includes the following:

2.1.1 Establish reorder points and reorder quantities for spares to be carried in stock, and review such data periodically for the purpose of recommending necessary changes.

2.1.2 Provide stocking facilities and protection including controlled access where practical.

2.1.3 Provide the necessary manpower to execute the program including such activities as identifying and tagging existing spares, reordering, stocking parts, and maintaining stock records.

2.1.4 Participate with accounting in scheduling and taking physical inventories of all spares over a 3-year cycle.

2.1.5 Mark prompt decision relative to placing orders for replacements.

2.2 Accounting Department

The Accounting Department's responsibilities include control of all inventories. In the case of spare parts, the works manager-accounting is required:

2.2.1 To see that all established spares control procedures are put into effect and that such controls are continuously exercised by designated personnel.

2.2.2 To provide data processing service as required.

In order to facilitate record keeping and to provide a basis for accumulating and summarizing various kinds of information and data, a computer-based mechanical program for maintaining perpetual stock records has been developed and installed. It is called the Mechanical Spares Control, and is the recommended method of maintaining stock records for spares control.

3. STEPS IN IMPLEMENTING SPARES PROGRAM

The following list displays the functional steps required to implement the program. The steps are listed in a suggested order of completion:

3.1 Obtain support from the works top management for initiating and maintaining the spares program.

3.2 Develop an organization:

a. To perform the preliminary work of identifying and stocking spares, and

b. For maintaining the program once it has been established.

3.3 Develop and get works agreement on a procedure for maintaining perpetual stock records. The Mechanical Spares Control System is to be used for this purpose.

3.4 Designate storage areas and buildings to be set aside for stocking spares and establish a coding pattern for storage location identification.

3.5 Establish a coding pattern for identification of spare parts in accordance with the eleven-digit commodity code described in the glossary section of this manual.

3.6 Locate and identify existing spare parts and record the data necessary to maintain the spares program for those items which, in the judgment of works production management, should be included in the spares program.

3.7 Assign a commodity code and a storage location code to each spare part.

3.8 Prepare traveling requisitions for all spares.

3.9 Tag or otherwise mark spares for ready identification.

3.10 Move spares to assigned storage areas and arrange stocks to conform to established good housekeeping practices.

4. MECHANICAL SPARES PROGRAM

The Mechanical Spares Control Program utilizes three basic computer output documents and the traveling requisition to provide works personnel with the basic data needed to meet the objectives of the Spares Program.

4.1 Basic Computer Output Documents

4.1.1 Spare Stock Record (Exhibit II-1)

The spares stock record is printed annually for all items in the master file and weekly for all items with activity (cumulative) since the last annual printing. The report will be printed in one of three sequences: (a) storage area by

commodity code; (b) storage area by local code; or (c) commodity code by storage area. Data furnished on the spares stock record are:

a. Commodity Code.

b. Unit of Measure.

c. Local Code (Blueprint and mark or any other code which seems desirable).

d. Description (30 digits - full order description can be found on the traveling requisition).

e. Storage area and location within storage area.

f. On-hand balances for usable and repairable spares by stock location and total for commodity.

g. Quantity on order includes new purchase requisitions and repairable items that have actually been sent to shops for repairable items.

h. Danger Point.

i. Reorder data (order quantity, reorder point and code).

j. Year-to-date activity - quantities received, disbursed, scrapped, and inventory adjustments.

k. Last disbursement date.

4.1.2 Stock Reorder List (Exhibit II-2)

The stock reorder list is published weekly and is divided into two sections:

Section A: Critical spares (Reorder Code 1) that have reached the reorder point and should be reordered immediately. Spares are considered at the reorder point when the quantity on hand plus the quantity on order is at or below the reorder point. These items will be repeated on the stock reorder list each week until ordered, or until the reorder point code is changed from 1 (critical) to 2 (less critical). Before any item is reordered, a review, based on actual experience, should be made to determine if the reorder quantity, reorder point, or quantity on hand should be changed to reflect actual usage.

Section B: Less critical spares (Reorder Code 2) that have reached the reorder point but are to be ordered only after review. Spares classified as reorder code 2 will appear on this report whenever a disbursement is reported for an item that is at or below the reorder point and/or at the review date in the master file (the review date serves as a reminder file enabling the manager to delay purchase decisions). Items appearing in Section "B" of this report will not appear on subsequent reports until activated by an updated review date in the master file.

Stock Reorder Lists should be reviewed by department managers or other responsible personnel for the purpose of indicating whether items are to be reordered or not, or whether changes are to be made in order quantities, reorder points, reorder codes, and/or new review dates established. After this review, the spares clerk will process traveling requisitions for items to be reordered and data changes for other items as noted.

Data furnished on the Stock Reorder List are:

a. Commodity Code.

b. Unit of Measure.

c. Local Code.

d. Description (full order description is found on the traveling requisition).

e. Storage Area.

f. Quantities on Hand (usable and repairable).

g. Quantity on Order.

h. For items that have reached the danger point.

i. The normal order quantity.

j. Consumption History for past 2-year period:

(1) Current quarter

(2) 1st prior quarter

(3) 2nd prior quarter

(4) 3rd prior quarter

(5) Total of next 4 prior quarters.

k. Last purchase order on which the item was bought.

l. The last unit cost reported.

m. Section A - the number of weeks Reorder Code 1 spares have appeared on the stock reorder list. Section B - an asterisk for items which are listed because of a review date in the master file.

4.1.3 Monthly Spares Summary (Exhibit II-3)

The monthly spares summary summarizes activity for the month and evaluates it in Egyptian Pounds. This report can be used for management control and trend data analysis. Data furnished on the monthly spares summary are:

a. Storage area and title.

b. L.E. Balance - this month and prior month. (L.E. Balance includes only usable items on hand. Repairable items are at no value until repaired, at which time they are transferred to usable category).

c. Current months values for receipts and disbursements.

d. Value of items scrapped and/or sold.

e. Value of adjusted items and number of occurrences for which inventory adjustments were processed.

f. Memorandum value of repairable items. (Value if items were in usable condition.)

g. Value of items on order (new items plus repairable items actually sent to shops for repair, at new item unit cost).

h. Surplus stock values (surplus stock is usable stock on hand which exceeds the reorder point plus reorder quantity).

i. Price adjustments - the amount of L.E. Balance change that results from changes in unit cost.

4.1.4 Traveling Requisition (Exhibit II-4)

The recommended method of reordering spare parts is through use of the traveling requisition. The use of this form eliminates the necessity of writing or typing purchase requisitions each time an order is placed.

The traveling requisition file also serves as an order catalogue file since it contains the complete order description and reorder data and provides a historical record of purchases. Other information such as number of units in service, etc., can also be noted on this form.

4.2 Optional Computer Output Documents

The following analytical reports and special catalogue listing are available on a request basis. Requests are made on the appropriate Report Request Form (Exhibit II-5) depending on the sequence elected for the Spares Stock Record, and submitted with the Computer Input Documents.

4.2.1 Surplus Spares (Exhibit II-6).

4.2.2 Spares Uninventoried in Last (Specify) Months (Exhibit II-7).

4.2.3 Spares Consumption History (Exhibit II-8).

4.2.4 List of Spares with No Usage for (Specify) Months (Exhibit II-9).

4.2.5 Spares Usage by Facility Trend Data (Exhibit II-10).

4.2.6 Spares Inventory Adjustments (Monthly Detail) (Exhibit II-11).

4.2.7 Catalogue Listings (Exhibit II-12).

a. By Alphabetic Description.

b. By Commodity Code.

c. By Local Code.

d. By Interim Class Code.

e. By Storage Area.

f. By Equipment Code.

4.3 Computer Input Documents

Spares input data are reported on two documents as indicated below. Each page submitted must indicate the Works code and the report date, and each line entry on all submitted forms must be completed for the following:

Commodity Code - Eleven digits are required for all entries.

Unit of Measure - Two-digit code as indicated on Exhibit II-15.

Storage Area and Stock Location - Two-digit storage area code is required on all. The 4-digit stock location is required only when reporting physical stock movements (i.e., receipts, disbursements, physical inventories, stock transfers, and on-hand quantities).
(Note: The system provides for carrying a single commodity code in any number of storage areas and up to six (6) stock locations within each storage area.)

Control totals are to be entered on each page of both computer input forms. When the detail submitted to the computer does not balance with the control total, the detail data will be entered into the computer files and a listing of the out-of-balance data will be sent to the Spares Department for verification of the controls and corrections as required.

When activity is reported for items not in the master file, match on commodity code, unit of measure, storage area, and on location for disbursement correction and resubmission.

4.3.1 Spares New Items and Data Changes (Exhibit II-13)

This form is used to enter new items into the master file, to record data changes, and to delete items from the master file. In addition to commodity code, unit of measure, and storage area and stock location, information is to be furnished as follows:

a. New Items - Enter a 1 in the transaction code column and complete all other columns as far as possible. The quantity on hand, purchase order (P.O. or requisition) number and quantity on order can be entered at this time or entered later on the Spares Activity Reporting Form.

b. Data Changes - Enter a 2 in the transaction code column and only the corrected data in the other columns. All other information will remain in the master file.

c. Deletions of Items from the Master File - Enter 3 in the transaction column. This will delete the entire item from the master file providing the quantities on hand and on order are zero. If an item is to be deleted when the quantity on hand and/or on order is not at zero (obsolete item being scrapped and/or sold), write OBSOLETE in the description (col. 35-42).

4.3.2 Spares Activity Input - (Exhibit II-14)

This form is used for reporting on order data, receipts, disbursements, physical inventory checks, and stock location transfers. In addition to commodity code, unit of measure, and storage area and stock location, information is to be furnished as follows:

a. On order - Indicate purchase order number and date and the quantity.

b. Receipts - Indicate date of receipt, quantity received, unit price, and whether the quantity received is a partial shipment or will complete the on order quantity.

(The computer will deduct quantity received from the order quantity when "P" is indicated and will cancel the on order quantity when "C" is indicated.)

c. Repairable Spares - Enter quantity of used spares returned for future repair in the Repairable - Received column. When these repairable items are actually sent to shop for repair, enter them as on order and delete them from the repairable spares in the "Out" column. Also, report repairable items that are scrapped rather than repaired in the out column to d lete them from the repairable inventory.

d. Disbursements - Indicate the usable quantity used, usable quantity scrapped and/or sold, and the cost center and equipment code (when available), where the spare was used.

e. Physical Inventory - Indicate the quantity on hand and the date of inventory.

Note: Only one inventory will be accepted for a single commodity in any one week. The quantity reported must be the quantity on hand after recording all transactions for that week. If two inventories are reported in the same week, only the last date will be recorded.

f. Transfers to - Indicate the 4-digit stock location and quantity being transferred for all items that are relocated from one stock location to another. (Transfers between storage areas must be reported as a delete from one area and a new item in the other.) If the item is a repairable item, enter an "R" in that column. If it is a usable item, leave the "R" column blank.

4.4 Glossary

Authorized Quantity	Reorder point plus reorder quantity. Used in calculation of surplus quantities (usable quantity on hand less authorized quantity equals surplus quantity).
Commodity Code (UCC)	Unique 11-digit item identification number, a portion of the 11 digits recognize established government codes.
Cost Center	Cost collection centers used in Standard Code System.
Consumption (Cons)	Quantity used in repair of facilities - excludes quantities scrapped or sold.
Critical Spares	Spares for which a specific quantity is required to be carried in inventory at all times to insure against excessive downtime. Reorder points, order quantities, and danger points must be established for all critical spares and purchase requisitions should be issued whenever the usable quantity on hand plus the quantity on order reaches the reorder point. Critical spares are classed as Reorder Code 1 spares in the mechanical program to distinguish them from noncritical spares Reorder Code 2.

Danger Point (Dgr. Pt.)	A critical inventory quantity at which it becomes imperative that positive action be taken to replenish usable stock. Items with a no danger point are indicated in the mechanical system by minus 1.
Description	Alphabetic description of stock item. Mechanical output reports are limited to 30 digits and should always begin with a noun. Full-order descriptions are maintained on traveling requisitions.
Equipment Code	Numeric code used to identify the facility or equipment on which spares are used. These numbers are assigned by Works and are used for cost collection purposes.
Interim Class Code	Uniform code devised to facilitate consolidation of like parts for development of Uniform Commodity Codes and consolidation of like stocks.
Inventory Adjustment (Adj.)	Difference between quantity on hand as recorded in the master file after the current week's transactions and that reported on physical inventory count.
Cost Purchase Order (P.O.)	Last purchase order on which the stock item was purchased.
Last Disbursement (Dis)	Last date the item was disbursed for consumption.
Local Code	A 12-digit alphanumerical code used locally to identify the stock item. Generally, this is a blueprint and mark number, but Works can use whatever identification they desire.
On Order	The quantity that has actually been ordered on purchase orders/and or shop orders.

Reorder Code	Code used to distinguish between (1) critical spares (reorder code 1) - those that are of sufficient importance and/or of such frequent usage as to warrant the replenishment of stock when the reorder point is reached and (2) less critical spares (reorder code 2) - those that are stocked for relatively short periods of time, those that have infrequent usage, those associated with facilities that are to be discontinued, and others where reorders are to be placed only after careful review.
Reorder Point	A predetermined quantity assigned to each stock item by the department manager at which point the item should be reordered. An item is at the reorder point when the usable quantity on hand plus the quantity on order is at or below the predetermined reorder point.
Reorder Quantity	A predetermined quantity to be ordered taking into consideration the usage frequency, lead time, price and number of units in a standard package.
Repairable Spares	Used spares that are being held for repair. Since these spares are not in usable condition they are carried in the mechanical program at no value until actual repair orders are issued at which time they are deleted from repairables on hand and shown as on order.
Review Date	Date assigned to noncritical spares (reorder code 2) for reorder review. The use of the review date serves as a reminder file permitting the manager to delay reordering decisions. On the first processing in the month and year of the review date assigned in the master file, the item will be

Review Date (Contd.)	listed on the Stock Reorder List, Section B. When an item appears on this list, a review of its usage potential and a decision to reorder or not is to be made.
Scrap/Sold	Stock items that are obsolete or surplus and are disposed of in any manner other than through normal consumption. Items should not be shown as scrapped or sold until physical disposition has been made.
Spares	Those critical parts which must be in stock to insure against excessive down-time in the event of premature failure or mechanical damage, and parts which must be stocked for ready repair of requipment due to wear.
Storage Areas (SA)	Storage areas identify the operating division or subdivision areas specified for spares storage. The storage area code (2 digits) provides for accumulation of data for statistical reports.
Stock Location (Loc.)	A specific point (bay, rack, shelf, bin, etc.) within a storage area at which the spare is stocked. Stock locations are identified by a 4-digit alphanumeric code.
Surplus	Quantity on hand plus quantity on order in excess of the Authorized Quantity (Reorder Point plus Reorder Quantity).
Unit Cost and/or Price	The most recent acquisition cost. If an actual cost is not available, use an estimated replacement cost. Since only one price is carried in the system for an item, repaired parts are valued at full replacement cost even though the actual repair cost may have been less. Unit costs are expressed in nearest whole Egyptian Pounds.

Unit of Measure (UM)	The standard units of measure by which an item is carried in spares inventory (i.e., each pair, keg, etc.). The unit of measure is identified in the mechanical system by a 2-digit code - see Exhibit II-15.
Usable Spares	New and/or repaired spares carried in stock that are in usable condition. This does not include repairable spares or spares on order.

SPARES STOCK RECORD

JUNE 24, 1972 PAGE 001

WORKS 999

COMMODITY CODE	UM	LOCAL CODE	DESCRIPTION	STORAGE SA-LOC	ON HAND USABL	REP	ON ORD	SCR PT	REORDER QTY	PT	CD	ACTIVITY REC	DISB	YR-TO-DATE ADJ	SCRP	LAST DISB
XXX-XXX-XXXX	XX	XXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XX-XXXX	XXXX-	XXX-	XXXX-	XX-	XXXX	XXXX	X	XXXX-	XXXX-	XXXX-	XXX-	XXXX
000-210-9403	01	S2357 C	BRAKE WHEEL CLAY GUN PLUNG MOT	02-2F41	2			1	2	1	1					0670
000-212-2539	01	S3075 01	PULLEY 24X26 MAIN COKE DUST CV	02-2EWS	1		1	1	1	2	1	1	1			0672
000-711-0554	01	S3076 03	WHEEL SHEAVE C.B.P.COAL HOIST	05-D034	2			1	1	1	1					0368
000-210-4313	01		TRNSFAMR TR23.7 115V OUTPUT 1B	21-1E01	2			1	1	2	1	3	4		1	0672
000-210-9361	01	SL5764 01	BRAKE #5 1H847C #1.2.4 CLAY GU	21-2F45	1		1		1		2				2-	0970
000-211-3785	59		COIL FEEDER F-66SYN FR MG CRHR	21-	2	1			1	1	1		2		2	0472
				21-2FCR	2											
				21-FMDC		1										
000-211-4427	01		BELTS D-42C FERRO MANG CRUSHER	21-IPRA	29				14	5	1				5	1068
000-211-4850	01		BELTS #C158 SMALL MANG CRUSHER	21-IPRA	24				16	8	2		3			0672
000-212-4436	01		CYLINDER #213E.RH #6 CLAY GUN	41-C461					1		2		1			0672
000-220-5078	01		ROBALLO UNIT BALL BEARING #88	41-C322	2	1		1	1	2	1		1			0672
000-421-0589	01		TUBE NEON #877B218P1	42-	4			1	2	1	1					1259
000-421-0597	01		TUBE NEON #877B218P2	42-C253	2											
000-421-1033	01	BTF1254 A	PLUG CONNECTOR #573A382P1	42-C255	2											
000-424-1907	01	BTF1010 AZ	VALVE DOUB PILT RELF	42-C253	2				2	1	1		1			0272
				42-H190	8			1	3	2	1					1259
				42-	3	1		1	1	1	1					0668
				42-L033	2											
				42-L042	1											
				42-7000		1										
000-4.4.2053	01	BTF1432 01	ROD PISTON 6-3/4 STROKE	42-	10			1	1	1	1					067
				42-L041	8											
				42-L038	2											
000-410-3594	71	2735 G	PILLOW BLOCK INSERT SP CVR	60-E070	2				4	3	1		3			0672
000-410-6764	02	31443 G	SHAFT MANIPULATOR	60-D030	1	1			1	1	1		2			0676
000-710-4176	01		BOLT EYE NO.8 3 4.EXP.DOORBLRS	71-0000	3			1	2	6	1	12	8		2-	0672
000-711-0489	01	PH321A2 07	BODY SOCKET W CAP WTR COL	71-0050					2		2					0672
000-211-0521	01	PH431 08	SLEAVE MALE #8 COOLING TOWER	71-XM06	2				1		2					1368
000-820-3084	02		HOSE ASSY H25 PAYLOADER	81-P006	2			1-	1	1	1	1				0771
000-820-3207	02	475321 03	PUMP ASSY MAIN HYDRAULIC	81-D122	1				1	1	1		1			0372
000-820-3279	01	475426 05	SCRUBBER SAND TRAP	82-CCE9	15				2	8	2	10	6		1	0672
000-820-1675	01	298332	SAND TRAP LOCO 666-7623	82-9-C4	32				2	8	1	16	2			0472
000-820-3430	01*	CC82	ROD ASSY KIT XPMT 10	82-TP3E	1											

Note: 1. New items will be indicated in first week only by an asterisk (*) following unit of measure.
2. When an inventory adjustment is reported for an item having a receipt and/or disbursement in the same week, an asterisk (*) will follow the adjustment quantity for that week only. The works may wish to verify the on-hand balance for that item.

EXHIBIT II-1

STOCK REORDER LIST

SECTION A: CRITICAL SPARES TO BE ORDERED THIS WEEK

JUNE 24, 1972 PAGE 001

WORKS 999

COMMODITY CODE	UM	LOCAL CODE	DESCRIPTION	SA	ON HAND USABL	ON HAND REP	ON ORD	D P	ORD. QTY.	QTR-CONSUMPTION HISTORY CURR	1-PR	2-PR	3-PR	4PQRTS	LAST PO #	UNIT COST	#K RC
XXXXXXXXXXX	XX	XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XX	XXXX-	XXX-	XXXX	X	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXXXX	XXXXX	XX
000-212-2539	01	S3075	01 PULLEY 24X26 MAIN COKE DUST CV	02	1		1	D	1	1		1		3	65441	160	1
000-210-4313	01		TRNSFAMR TR23-7 115V OUTPUT TB	21	2				1	2	2	1	3	7	33861	240	1
000-220-5078	01		ROBALLO UNIT BALL BEARING #88	41	2	1			1	1		1		3	21230	642	1
000-410-3594	71	2735	G PILLOW BLOCK INSERT SP CVR	60	2		1		4	1	2	1	2	9	21430	222	1
000-410-6704	02	31443	G SHAFT MANIPULATOR	60	1	1			1	1	1					300	1
000-710-9176	01		BOLT EYE NO.8 3/4-EXP.DOORBLRS	71	3			D	12	3	5	7	6	23	46624	2	4
385-822-5307	02	475321	03 PUMP ASSY MAIN HYDRAULIC	81	1				1		1			2	38423	63	12

SECTION B: LESS CRITICAL SPARES TO BE ORDERED UPON REVIEW

WORKS 999

COMMODITY CODE	UM	LOCAL CODE	DESCRIPTION	SA	ON HAND USABL	ON HAND REP	ON ORD	D P	ORD. QTY.	QTR-CONSUMPTION HISTORY CURR	1-PR	2-PR	3-PR	4PQRTS	LAST PO #	UNIT COST	R D X
XXXXXXXXXXX	XX	XXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XX	XXXX-	XXX-	XXXX	X	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXXXX	XXXXX	
000-211-4450	01		BELTS #C158 SMALL MANG CRUSHER	21	24				16	3				4	38432	5	*
000-212-4436	01		CYLINDER #213E-PH #6 CLAY GUN	41					1	1					34660	5150	
000-711-0489	01	PH321A2	07 BODY SOCKET W/CAP WTR COL	71					2				1		72716	12	
000-711-0521	01	PH431	08 SLEAVE MALE #8 COOLING TOWER	71	2				1						57395	120	
000-820-1279	01	475426	05 NOZZLE SAND TRAP	82	15				12	2	4	1	2	5	55217	20	

EXHIBIT II-2

MONTHLY SPARES SUMMARY

JUNE 30, 1972

WORKS 999

STOR AREA XX	DIVISION OR SUB-DIVISION TITLE XXXXXXXXXXXXXXXXXXX	INVENTORY BALANCE-$ THIS MONTH XXXXXXXX	PRIOR MONTH XXXXXXXX	CURRENT MONTH RECTS-$ XXXXXXX	DISB -$ XXXXXXX	VALUE ITEMS SCRAPPED XXXXXX	INVENTORY ADJUSTMENTS VALUE XXXXXX	NO. XXXX	REPAIRPLE ITEMS VALUE XXXXXXXX	ON ORDER NEW & REP VALUE XXXXXXXX	SURPLUS STOCK VALUE XXXXXXXX	PRICE ADJ-$ XXXXXXX
02	CENT STR-BLAST FCE	315078	320066	2320	5268	620	1543-	3	1320	158835	15459	123
05	CENTRAL BOILER HOUSE	22804	22954		150				1600	886		
21	BLAST FURNACE	974832	997723	18943	47528	300	5750	5		511935	39132	244
30	OPEN HEARTH	1142187	1150408	58578	65500		2410-	20	432365	557264	172079	1111
41	PRIMARY MILL	2270369	2239200	173117	128444		2294-	26	34155	780110	158701	11210-
42	BAR MILL	1232703	1233352	11584	11060		3162-	14		266370	64409	1989
60	GENERAL SERVICES	70030	69905	2200	2250		175	1	250	2447	21264	
71	POWER HOUSE	42675	40129	3134	213		375-	3		1875	62	
81	TRACTOR SHOP	30708	31014	2273	2414	240	245	16		1815	357	170-
82	LOCOMOTIVE SHOP	81643	81573	4317	3740		512-	9		17420	12354	5
999	TOTAL	6183029	6186324	276466	266567	1160	4126-	97	469690	2298957	483817	7908-

TOTAL COMMODITIES ON FILE 24975

EXHIBIT II-3

EXHBIT II-4

42 21417 REV. AA
02 000 0412

TRAVELING REQUISITION

DESCRIPTION					FOREMAN NO.	COMMODITY CODE	INT. CL. CODE
U/M	REORDER CODE	REORDER PT.	ORDER QTY.	DANGER PT.	UNIT PRICE	STORAGE AREA	INV. UNITS IN STD. PKG.

COPIES REQ'D

BUYER NAME AND NUMBER

DESCRIPTION AND MARK, PACK, LOAD, PROTECT, AND SHIP INSTRUCTIONS

A	F.O.B.			TERMS
	MFG. CODE	UNIT	PURCH. CODE	
	VIA			
B	F.O.B.			TERMS
	MFG. CODE	UNIT	PURCH. CODE	
	VIA			
C	F.O.B.			TERMS
	MFG. CODE	UNIT	PURCH. CODE	
	VIA			
D	F.O.B.			TERMS
	MFG. CODE	UNIT	PURCH. CODE	
	VIA			

BILL OF LADING COMMODITY DESCRIPTION

SHIP TO (INCLUDING VIA IF SIGNIFICANT)

CC OR INV. ACCT.	N.C.O.E. INV. SUB	EQUIPMENT CODE	APPROPRIATION CODE	PER CENT	AMOUNT PROVIDED

Deliver To:

DESCRIPTION ADDITION AND MFG. CODE (1)	DESCRIPTION ADDITION AND MFG. CODE (2)	DESCRIPTION ADDITION AND MFG. CODE (3)	DESCRIPTION ADDITION AND MFG. CODE (4)

	REQUISITION			ORDER		DELIVERY	QUANTITY		PRICE			CODE	PER QUOTATION DATED	INQUIRY		COMPLETION DATE	
	A REQ. ITEM	DATE	NUMBER	DATE	APPROVAL		WANTED	UNIT	PRICE	UNIT	DISCOUNT			CODES	APPROVAL	REQUIRED	
1																	
2																	
3																	
4																	
5																	
6																	
7																	

MECHANICAL SPARES PROGRAM

REPORT REQUEST

for

Works with Spares Stock Record Listed by Storage Area by Commodity Code - Group A
" " " " " " " " " by Local Code - Group B

Date_____

ITEM DESCRIPTION	INFOREX FIELDS	DATA REQUESTED
Request Code	1	R
Works Code	2- 4	
Report Requested (Use Number from A below)	5	
Single Storage Area (Area number if applicable or blank)	6- 7	
All Storage Areas (All if all areas requested or blank)	8-10	
For Reports 2 and 4 only - Indicate Number of Months	11-12	
For Report 7 only:		
Sort Sequence (Use 1 or more letters from B below) Left to Right	13-16	
Interim Class Code (2 Digits of interim class to be selected)	17-18	
Commodity Code - 3 Digits (Indicate 1st 3 digits if applicable or blank)	19-21	
Commodity Code - 5 Digits (Indicate 1st 5 digits if applicable or blank)	22-26	
Equipment Code - 7 Digits	27-33	

A. REPORTS:

1. Surplus Spares
2. Spares Uninventoried in Last _____Months
3. Spares Consumption History
4. List of Spares with No Usage for_____Months
5. Spares Usage by Facility Trend Data
6. Spares Inventory Adjustments (Monthly Detail)
7. Catalogue Listings

B. SEQUENCE OF CATALOGUE LISTINGS:

A. By Alphabetic Description
B. By Commodity Code
C. By Local Code
D. By Interim Class Code
E. By Storage Area
F. By Equipment Code

C1.0FC.1637

MECHANICAL SPARES CONTROL INPUT
CHANGE OF COMMODITY CODE AND OR STORAGE AREA

WORKS CODE: ______ (1-3 IN ALL RECORDS)

DATE ______

CHANGE FROM												T C	CHANGE TO														
COMMODITY CODE										STOR. AREA			COMMODITY CODE										STORAGE				
																							SA.		LOC		
4	5	6	7	8	9	10	11	12	13	14	15	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
												6															
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SURPLUS SPARES

WORKS 999

JUNE 30, 1972

COMMODITY CODE	UM	DESCRIPTION	STOR AREA	USABLE ON HAND QTY	VALUE	AUTH QTY	SURPLUS QTY	VALUE	LAST DISB	EQUIP CODE
XXX-XXX-XXXX	XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XX	XXXX-	XXXXXX-	XXXX	XXXX	XXXXXX	XXXX	XXXXXXX
000-211-4627	01	BELTS D-420 FERRO MANG CRUSHER	21	29	290	19	10	100	1066	
000-421-0589	01	TUBE NEON #877B218P1	42	4	16	3	1	4	1259	
000-820-1675	01	SAND TRAP LOCO GEG-7623	82	32	320	20	12	120	0472	
999		TOTAL - 3 ITEMS			626			224		

THIS REPORT IS PRODUCED ON A REQUEST BASIS ONLY.
AUTHORIZED QUANTITY = REORDER POINT + REORDER QUANTITY.
SURPLUS QUANTITY = USABLE QUANTITY ON HAND - AUTHORIZED QUANTITY.

EXHIBIT II-6

WORKS 999 — SPARES UNINVENTORIED IN LAST 20 MONTHS — JUNE 30 1972 — PAGE 001

WKS	COMMODITY CODE	UM	STORAGE SA-LOC	PHYSICAL INVENTORY QTY ON HAND	INVENTORY DATE	LOCAL CODE	DESCRIPTION	LAST DISB	DATE LAST INVENTORY
1-3	4-13	14-15	16-21	86-90	91-96				
XXX	XXX-XXX-XXXX	XX	XX-XXXX	XXXXX	XX-XX	XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXXX	XXXX
999	000-210-9403	01	02-2F41			S2357 C	BRAKE WHEEL CLAY GUN PLUNG MOT	0670	0269
999	000-711-0554	01	05-D034			S3076 03	WHEEL SHEAVE C.B.P.COAL HOIST	0368	1070
999	000-424-1907	01	42-			BTF1010 A2	VALVE DOUB PILT RELF	0668	0569
			42-L033						
			42-L042						
			42-7000						
999	000-424-2053	01	42-L041			BTF1432 01	ROD PISTON 6-3/4 STROKE	0670	0569

WKS	CONTROL	PAGE	TOTAL QTY
1-3	4-8	9-11	51-57
999	TOTAL		

PRINTED ONLY UPON REQUEST

This form can be used for recording physical inventories taken.

EXHIBIT II-7

WORKS 999 SPARES CONSUMPTION HISTORY JUNE 30 1972 PAGE 001

COMMODITY CODE	UM	LOCAL CODE	DESCRIPTION	SA	CONSUMPTION - BY QUARTERS CURR	1STPR	2NDPR	3RDPR	4THPR	5THPR	6THPR	7THPR	REVIEW DATE	UNIT PRICE	DOLLARS ON HAND
XXX.XXX.XXXX	XX	XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XX.XX	XXXXX	XXXXXX
000-160-1434	01		YOKE PLAIN 84884	83				2	4	1		2	1	01.73	35	70
000-212-9211	01		O RING 2H9247	83	2	2			4						1	2
000-213-3510	01		SEAL 8M4988	83	4	6				1		3			4	8
000-211-3353	02	2484 01	RELAY A-245588	83	1	2							08.72	8	24

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EXHIBIT II-8

LIST OF SPARES WITH NO USAGE FOR _36_ MONTHS

JUNE 24 1972 PAGE 001

WORKS 999

STOCK NO.	LOCAL CODE	DESCRIPTION	STORAGE SA LOC	ON HAND USABL	ON HAND REP	ON ORD	OGR PT	REORDER QTY	REORDER PT	CD	LAST DISB	REVIEW DATE	UNIT COST
AE													
### ###.#### ##	############	################################	## ####	####.	###.	####.	##.	####	####	#	####	####	#####
[illegible] .C554 01	53070 03	SHEAVE C B.P COAL HOIST	05.DG34	2			1.	1	1	1	0360		345
[illegible] 711.4627 01		BELTS D 420 FERRO WANG CRUSHER	21.PRA	29			1.	14	5	1	1066		10
[illegible] 421.C500 01			42.C253	2									
			42.C255	2			1.	2	1	1	1259		4
		TUBE NEON [illegible]	42.	4			1.	3	2	1	1259		15
[illegible] 421.C500 01			42.M190	8									
[illegible] 421.1033 01	BTF 254	A PLUG CONNECTOR 0573A382P1	42.L033	2									
[illegible] 424.1907 01			42.L042	1									
			42.7000				1	1	1	1	0660		220
			42.	3				1		2	1260	0373	120
[illegible] 424.1907 01	BTF [illegible]	AT VALVE [illegible] PILOT RELF											
[illegible] 711 0521 01	PH43 [illegible]	SLEAVE WALE [illegible] COOLING TOWER	71.WWG6	2									

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EXHIBIT II-9

EXHIBIT II-10

[redacted] INVENTORY ADJUSTMENTS

JUNE 24, 1972 _ PAGE 001

[redacted] 999

COMMODITY CODE	UM	DESCRIPTION	STORAGE SA-LOC	UNIT COST	ADJUSTMENTS QTY	ADJUSTMENTS DOLLAR	DATE INVENT	
XXX.XXX.XXXX	XX	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	XX-XXXX	XXXXX	XXXX.	XXXXXX.	XXXXXX	____
000.212.2539	01	PULLEY 24X26 MAIN COKE DUST CV	02-2EWS	160	1	160	062072	____
000.210.4313	01	TRNSFRMR TR23.7 115V OUTPUT TB	21-1E01	240	1	240	041572	
000.210.9361	01	BRAKE #511M847C #1.2.4 CLAY GU	21-2F45	30	2.	60.	061072	
000.211.3785	59	COIL FEEDER F-66SYN FR MG CRHR	21-2FCR	285	2	570	051172	____
000.211.4627	01	BELTS D-420 FERRO MANG CRUSHER	21-TPRA	10	5	50	042872	
000.710.9176	01	BOLT EYE NO.8 3/4-EXP.DOOPELRS	71-D000	2	2.	4.	061872	
999		TOTAL 6 ITEMS				956		

THIS REPORT IS PRINTED ONLY IF REQUESTED.

EXHIBIT II-11

CATALOGUE BY (TYPE OF CATALOGUE*)

DATE PAGE

WORKS 999

COMMOD.TY CODE	UM	LOCAL CODE	DESCRIPTION	STOR AREA	ON HAND USABLE	ON HAND REP.	UNIT COST	ORDER QTY	REORDER POINT	CD	DNG PT	INTERIM CLASS CD	EQUIP CODE
XXX-XXX-XXXX	XX	XXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XX	XXXX-	XXX-	XXXXX	XXXX	XXXX	X	XX-	XXXXX	XXXXXXX

* TYPES OF CATALOGUES AVAILABLE:

1. COMMODITY DESCRIPTION (ALPHABETICALLY)
2. COMMODITY CODE (NUMERICALLY)
3. LOCAL CODE
4. INTERIM CLASS CODE
5. STORAGE AREA
6. EQUIPMENT CODE

CATALOGUES PRINTED ONLY UPON REQUEST

EXHIBIT II-12

EXHIBIT II-13

MECHANICAL S[illegible]S CONTROL INPUT
NEW ITEMS AND DATA CHANGES

WORKS CODE ____________ REPORT DATE ____________

COMMODITY CODE	UM (1)	TC (2)	STORAGE Bn	STORAGE Loc	LOCAL CODE	DESCRIPTION	REORDER (3) Qty	REORDER (3) Point	CD	DANGER POINT	UNIT PRICE	EQUIPMENT CODE	COST CENTER	REVIEW DATE	CLASS CODE (4)	ON HAND (5) Qty	ON HAND (5) R	PO OR REQ NUMBER	ON ORDER QTY

CONTROL	PAGE		REORDER QTY	REORDER POINT	UNIT PRICE	ON HAND QTY	ON ORDER QTY
TOTAL							

(1) UM Unit of Measure per [illegible]

(2) TC Transaction Code as Follows
- 1 - New Item
- 2 - Data Change
- 3 - Delete

(3) REORDER-CD 1 for Critical Spares (See Glossary)
2 for Less Critical Spares

(4) CLASS CODE 5 Digit Interim Classification Code

(5) ON HAND-R R for Repairable Spares
Blank for Usable Spares

EXHIBIT II-14

MECHANICAL [illegible]ES CONTROL INPUT
[illegible]ITIES

[illegible] CODE [illegible]

DATE:

COMMODITY CODE	UD (1)	STORAGE		PO OR REQ NUMBER	ON ORDER		RECEIPTS	USABLE STOCK (2)			REPAIRABLE (3)		DISBURSEMENTS				PHYSICAL INVENTORY		TRANSFER TO (4)		
		Sh	Loc		Date of P.O.	Quantity Ordered	Recpt Date Mo Da Yr	Qty. Received	[illegible]	Unit Price	Received Qty	Out Qty	Used	Scrap Qty	Cost Center	Equipment Code	Qty On Hand	Inv Date Mo Da Yr	Storage Loc	Qty	[illegible]

CONTROL	PAGE	QTY ORDERED	QTY RECEIVED	REPAIRABLE RECEIVED	REPAIRABLE OUT	USED	SCRAP	QTY ON HAND	QTY TRANSFER
[illegible]									

(1) UD Unit of Measure per Exhibit "[illegible]"

(2) [illegible] P for Partial; C for Complete

(3) REPAIRABLE-OUT Qty to Be Order or Scrapped

(4) TRANSFER TO-[illegible] "[illegible]" for Repairable Items; Leave Blank for Usable Items

UNITED STATES STEEL CORPORATION

USS Engineers and Consultants, Inc.

SPARES CONTROL PROGRAM

EXHIBIT II-15

Units of Measure and Codes

Code	Unit of Measure	Code	Unit of Measure
01	Each	43	Inch
02	Assbly	44	Cu. In.
03	Bag	45	Jar
04	M Bags	46	Keg
05	Ball	47	Kit
06	Bar	48	Length
07	Barge	49	Light
08	Barrel	50	Link
09	Block	51	Liter
10	Bd. Ft.	52	Lot
11	Bolt	53	Ounce
12	Bottle	54	Try Oz.
13	Box	55	Pack
14	Bucket	56	Pkg.
15	Bundle	57	Pad
16	Can	58	Pail
17	Cake	59	Pair
18	Carat	60	Pallet
19	Carboy	61	Pint
20	Card	62	Pound
21	Car	63	1/2 Lb.
22	Carton	64	M Lbs.
23	Case	65	Quart
24	C.C.	66	Ream
25	Charge	67	Reel
26	Coil	68	Roll
27	Cone	69	Sack
28	Cyl.	70	Sect.
29	Dozen	71	Set
30	Drum	72	Sheet
31	Foot	73	Skein
32	M Feet	74	Spool
33	Sq. Ft.	75	Stock
34	Cu. Ft.	76	Tank
35	Gallon	77	M (Thousand)
36	Gill	78	M Wt.
37	Gram	79	Ton
38	Gross	80	Lg. Ton
39	Group	81	Truck
40	Hank	82	Tube
41	C (Hundred)	83	Yard
42	CWT	84	Sq. Yd.
		85	Cu. Yd.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

SECTION III - PREVENTIVE MAINTENANCE SYSTEM

Table of Contents

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

SECTION III - PREVENTIVE MAINTENANCE SYSTEM

1. INTRODUCTORY STATEMENT

The preventive maintenance system described in this report is a computer-oriented system designed to facilitate the administration of plant maintenance activities associated with:

- The preparation of maintenance work orders dealing with maintenance functions performed regularly and repetitively to minimize wear and breakdown of the plant operating facilities.
- The preparation and issue of schedules for the work orders described above.

The system utilizes manual processing for the preparation of work order specifications and computer processing for the preparation of schedules and system performance reports.

2. SYSTEM OPERATION

Operation of the system involves the following activities:

2.1 Operating Maintenance Management and Craftsmen prepare the work order

specifications which include:

2.1.1 The identification of the equipment to be serviced.

2.1.2 The work functions to be performed.

2.1.3 The frequency with which specific work functions will be scheduled.

2.2 Operating Maintenance Management prepares computer input data reflecting equipment operating schedules and maintenance work order schedules.

2.3 The Computer Center issues work order schedules weekly and system performance reports monthly.

2.4 Assigned maintenance craft personnel execute the work order requirements.

2.5 Assigned maintenance management personnel prepare computer feedback data required for preparation of performance reports.

3. FUNCTIONAL RESPONSIBILITIES

3.1 Operating Maintenance

3.1.1 Determine work order specifications.

3.1.2 Prepare and submit computer input data for the preparation of a computer master file.

3.1.3 Prepare computer input data reflecting operating equipment work schedules necessary for compilation of preventive maintenance work schedules.

3.1.4 Update weekly preventive maintenance schedules with a notation of work orders completed and submit updated schedules to the Computer Center. This data is necessary for the preparation and printing of the monthly performance report.

3.1.5 Prepare and submit computer input data necessary for making additions to, changes to or deletions from the computer master file.

3.1.6 Assign maintenance work orders to maintenance personnel and follow up assignments.

3.1.7 Prepare computer input data requesting special reports as needed.

3.2 Computer Center

3.2.1 Keypunch all computer input data for computer processing.

3.2.2 Prepare and issue all regularly scheduled output reports on a timely basis.

3.2.3 Prepare and issue all special reports as requested by Operating Maintenance.

3.2.4 Audit all input and Master File data for accuracy.

4. COMPUTER INPUT REPORTS

4.1 Preventive Maintenance Chart Data

This report prepared by Operating Maintenance contains all the work order specifications required in the Computer Master File. Preparation of this data involves many charts for each department and equipment. Individual work order specifications constitute a single-line entry on a specific chart. As charts are completed, the information is coded and submitted to the Computer Center for inclusion in the Master File. As the weekly preventive maintenance schedules require, the work order specifications are extracted and printed.

4.2 Preventive Maintenance Schedule Data

This report, prepared by Operating Maintenance, displays operating equipment working schedules necessary in the development of meaningful preventive maintenance work order schedules. When prepared, it is coded and entered into the Computer Master File. Once prepared and entered, no further reporting is required until operating schedules change.

4.3 Data Change and Special Request Reports

These reports are self-explanatory and are prepared by Operating Maintenance as required.

Instructions for preparation of input reports appear in Section Reference 6 of this section.

5. COMPUTER OUTPUT REPORTS

5.1 Work Order Schedule

This report, printed weekly for each department and subsection, lists the work order specifications for all work orders scheduled to be processed in an ensuing week. Space is provided on the report form

to note work order assignments and completions. Properly noted, this report returned to the Computer Center provides source data for the work order completion report.

5.2 Work Order Completion Report

This report, issued monthly to each department and/or subsection of the plant, lists all work orders completed in the past month. The report serves as a performance indicator of preventive maintenance activity as reflected by percent of scheduled work orders completed.

5.3 Request Report

This report displays a list of all work orders included in the Computer Master File and the date of last activity for each work order. Maintenance Management can request such a report as needed.

6. INSTRUCTIONS FOR PREPARING COMPUTER INPUT REPORTS

6.1 Preventive Maintenance Chart Data

This chart data serves as the source document for input data for the Computer Master Files. When extracted from the Master File, it provides the work order specifications displayed on the printed schedules. Preparatory to submitting the required information to the Computer Center, each operating area must prepare charts detailing the preventive maintenance functions to be performed on the equipment within its responsibility.

Separate charts must be prepared for each of the following maintenance activities:

Lubrication
Electrical Inspection
Mechanical Inspection
Instrument Repair
Vehicle Inspection
Cable or Measuring Line Inspection
Calibration and Checking

An example of the chart and the items to be recorded are illustrated in Exhibit III-1.

Note: The description of the operation must always indicate the equipment to be worked on and must be limited to 65 characters. For example:

Grease bearing on runout table.
Check oil level first stand automatic lube system.
Inspect and clean inlet table drive motor.

When a "Preventive Maintenance Functions" chart is completed and frequencies recorded, a "Preventive Maintenance Chart Data" form, illustrated in Exhibit III-2 must be prepared and forwarded to the computer center. The following paragraphs contain instructions for the preparation of the Chart Data Form.

6.1.1 Post an alphabetic description of the appropriate department, section and type of maintenance in the spaces provided in the upper left-hand corner of the form.

6.1.2 Select and post the appropriate 2-digit department and section codes from the code listing shown in Exhibit III-3 of this section. In most instances, the department and section codes will be identical. However, when precise locations are required, separate 2-digit codes may be warranted.

6.1.3 Select and post an appropriate 1-digit type of maintenance code from the following listing.

Type of Maintenance	Code
Lubrication	1
Electrical Inspection	2
Mechanical Inspection	3
Instrument Repair	4
Vehicle Inspection	5
Cable or Measuring Line Inspection	6
Calibration and Checking	7

6.1.4 Post the chart number appearing on the "Preventive Maintenance Functions" Chart.

6.1.5 Post the line number shown on the "Preventive Maintenance Functions" Chart.

6.1.6 Select and post the appropriate 1-digit frequency code from the following list:

Frequency	Code
Each Shift	0
Daily	1
Weekly	2
Monthly	3
Quarterly	4
Semi-Annually	5
Annually	6
Tri-Annually	7

6.1.7 Select and post an appropriate 1-digit card code.

Note: The "Preventive Maintenance Chart Data" form can be used for submitting input data to the Computer Master File for three separate activities. These are:

a. To make initial entries or additions to the Master File.

b. To make changes to the Master File.

c. To make deletions from the Master File.

Appropriate codes for these activities are as follows:

Activity	Code
Initial Entry or Addition	1
Deletion	2
Change	3

6.1.8 Copy the alphabetic description of the operation to be performed as shown on the "Preventive Maintenance Functions" Chart.

6.1.9 Post the appropriate 2-digit month code.

Note: For operations having a frequency of less than quarterly, no month code is required; for operations having a quarterly frequency or greater, select the appropriate 2-digit code displayed in the following list and post it for the next calendar month that the operation is to be performed.

	Code		Code
January	01	July	07
February	02	August	08
March	03	September	09
April	04	October	10
May	05	November	11
June	06	December	12

6.2 Preventive Maintenance Schedule Data

This report (Exhibit III-6 of this section) must be prepared and submitted to the Computer Center so that the Computer can properly associate preventive maintenance work order schedules with department activity levels. Once submitted, the data requires resubmission only at such time as the department or section changes its weekly activity. The following paragraphs detail instruction for preparing the form.

6.2.1 Post an alphabetic description of the appropriate department and section in the spaces allocated for such at the top of the form.

6.2.2 Select and post the appropriate 2-digit department and section codes from the listing shown in Exhibit III-1 of this section.

6.2.3 Post an alphabetic description of the applicable production operation.

6.2.4 Post the number of workdays scheduled per week for the operation in the column captioned "Days".

6.2.5 Post the number of shifts to be worked each day in the column captioned "Shift".

Note: Changes to schedules require a submission of a new form indicating the number of days and shifts to be worked. If the operation is down for a period of time, enter 0 in the column captioned "Days". This entry will prevent the reports from being prepared.

EGYPTIAN IRON AND STEEL COMPANY
PREVENTIVE MAINTENANCE FUNCTIONS

Chart No.	Type of Maintenance	Section Identification	Department Identification

Operation	Frequency	Line No.

EXHIBIT III-1

EGYPTIAN IRON AND STEEL COMPANY
PREVENTIVE MAINTENANCE CHART DATA

Department _____

Section _____

Type of Maintenance _____

	Chart No.	Type of Mtce. Code	Sect. Code	Dept. Code
Card Columns →	9-10	8	6-7	4-5

Month Code	Operation Description	Card Code	Freq. Code	Line No.
79-80	17-78	16	15	11-14

Card Columns

EXHIBIT III-2

No.	Different Sections & Units		Code Number
1	Wahat mines		01
2	Aswan mines		02
3	Sintering Plant No. 1		03
4	Sintering Plant No. 2		04
5	Blast Furnaces No. 1, 2		05
6	Blast Furnaces No. 3, 4		06
7	Slag unit (grains)		07
8	Old Steel Plant		08
9	Unit for burning of limestone	(Mech. Maintenance)	09
10	Unit for burning of limestone	(Utilities Maint.)	10
11	Unit for burning of limestone	(Elect. Maint.)	11
12	Dolomite unit	(Mech. Maint.)	12
13	Dolomite unit	(Utilities Maint.)	13
14	Dolomite unit	(Elect. Maint.)	14
15	Granulated slag unit	(Mech. Maint.)	15
16	Granulated slag unit	(Utilities Maint.)	16
17	Granulated slag unit	(Elect. Maint.)	17
18	Oxygen converter plant	(Mech. Maint.)	18
19	Oxygen converter plant	(Utilities Maint.)	19
20	Oxygen converter plant	(Elect. Maint.)	20
21	Continuous casting	(Mech. Maint.)	21
22	Continuous casting	(Utilities Maint.)	22
23	Refractory department		23
24	Blooming Mill	(Mech. Maint.)	24
25	Blooming Mill	(Elect. Maint.)	25
26	Blooming Mill	(Production Division)	26
27	Heavy section mill	(Mech. Maint.)	27
28	Heavy section mill	(Elect. Maint.)	28
29	Heavy section mill	(Production Division)	29
30	Sheet & strip mill	(Mech. Maint.)	30
31	Sheet & strip mill	(Elect. Maint.)	31
32	Sheet & strip mill	(Production Division)	32

No.	Different Sections & Units		Code Number
33	Light section mill	(Mech. Maint.)	33
34	Light section mill	(Elect. Maint.)	34
35	Light section mill	(Production Division)	35
36	Cold forming mill		36
37	Medium section mill		37
38	Hot Strip mill		38
39	Cold Strip mill		39
40	Pattern shop		40
41	General machine shop (old)		41
42	Foundry		42
43	Forging and steel structural shops		43
44	Machine workshop and heat-treatment (new)		44
45	Repair and erection shop		45
46	Metallurgical workshop		46
47	Civil maintenance shop		47
48	Structural shop		48
49	Central Maintenance department		49
50	Transportation department		50
51	Mechanical power department		51
52	Service water unit		52
53	Gas unit		53
54	Air conditioning and ventilation unit		54
55	Electrical workshop		55
56	Outside repairs		56
57	Electrical networks		57
58	Electrical lab		58
59	Customers		59
60	Lab for measuring instruments (calibration)		60
61	Quality control laboratory		61
62	Laboratory for instruments & communication		62
63	Stores		63
64	Complex project		64
65	Scales unit		65
66	Mascot unit		66
67	Other departments or units.		67

EXHIBIT III-4

EGYPTIAN IRON AND STEEL COMPANY
PREVENTIVE MAINTENANCE SCHEDULE
DATA

Card of Prev. Mtce.__________

Dept.: __________

Section: __________

Shift	Days	Operation	Section	Dept.

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEM AND CONTROLS

SECTION IV - SHOP SCHEDULING SYSTEM
SECTION INDEX

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-A - Summary Report of Shop Scheduling System

Table of Contents

[illegible] IRON AND STEEL COMPANY
[illegible] SYSTEMS AND CONTROLS

Subsection [illegible] - Summary Report of Shop Scheduling System

1. INTRODUCTORY STATEMENT

The Shop Scheduling System is a computer-oriented system designed to facilitate the administration of the plant maintenance activities dealing with:

- The preparation of work orders for Maintenance Shops operations
- The scheduling of work orders, labor and equipment of the plant central Maintenance Shops

The system utilizes manual processing for:

- The preparation of work order specifications
- The preparation and description of data for computer processing
- The preparation, distribution and processing of work order folders

An IBM 360 Model 30 computer is utilized in the preparation and printing of:

- A Master File listing of all work orders.
- A schedule of work orders to be processed by individual Maintenance Shops.

- A list of materials required by individual Maintenance Shops
- A summary of equipment hours scheduled by individual Maintenance Shops

; STORES OPERATION

Operation of the system involves the following activities:

; 1 The Operating and Maintenance Superintendents of the plant initiate requests for shop service in one of the following manners:

; 1.1 Listings of spare parts, displaying reorder requirements, are submitted manually to the Maintenance Planning Center.

; 1.2 Requests for services associated with replacements or repairs of spare parts are initiated with the use of a form titled "Traveling Requisition" (Exhibit I.A.1).

; 2 Service requests are converted into Work Order Requests by the Regional Engineers of the Plant Operating areas and submitted to the Maintenance Planning Center.

; 3 Work Order Requests are converted into Shop Work Orders and adapted to input data for computer processing of the Master File, by the Instrumentation Studies Groups of the Maintenance Planning Center.

2.6 Selection of work orders for inclusion in the Maintenance Change Schedules is accomplished by the Technology Engineer-Processes of Maintenance Planning, as directed by Operating and Maintenance Management attending a weekly Priority Designation Meeting.

Note: Maintenance Planning releases work orders for inclusion in the Change Schedules only after verifying the availability of all materials and parts required for performance of specific work orders.

2.7 Schedules and output reports are prepared and issued by the computer center in accordance with a predetermined time schedule.

2.8 Operations completions are reported daily to Maintenance Planning by the respective shops.

2.9 Maintenance Planning batch controls operations completion notifications and forwards them to the computer center weekly.

2.10 The computer center includes uncompleted operations in the schedules prepared for the following week.

2.11 Files of Master Work Orders and "Completed Work Orders" are maintained by Maintenance Planning.

1. FUNCTIONAL RESPONSIBILITIES

1.1 Operating

1.1.1 Prepare and submit service requisitions to the plant control Maintenance Department

1.1.2 Submit desired changes in planned work orders to the Maintenance Planning Center

1.1.3 Deliver parts in need of repair to the Maintenance Shops on a timely basis and as directed by central Maintenance Planning

1.1.4 Participate in the weekly meeting with central Maintenance Planning to coordinate development of schedules reflecting Department and plant shutdown requirements

1.2 Maintenance Planning

1.2.1 Convert service requisitions submitted by the Operating Departments into planned work orders

1.2.2 Develop and submit required computer data to the Computer Center

1.2.3 Check material inventory records and stocks to ensure material availability for scheduled work orders

1.2.4 Initiate actions to replenish depleted material stocks.

1.2.5 Prepare and distribute work order folders containing drawings, work order specifications and shipping instructions.

1.2.6 Maintain files of work order folders, Master Technology Cards and completed work orders.

1.2.7 Control movement of parts from operating areas to Maintenance Shops.

1.3.8 Develop shops processing schedules.

1.3.9 Adjust or modify published schedules, as required, to accommodate unscheduled or emergency requirements of the operating areas.

1.3.10 Distribute system output reports, as required, on a timely basis.

1.3.11 Schedule and conduct weekly priority meetings.

1.3.12 Maintain and update the file of Master Technology Cards (work orders) applicable to repetitive requisitioning and processing.

1.3.13 Prepare computer input data necessary to delete completed operations from shops schedules.

1.1 Maintenance Shops

1.1.1 Deliver work order folders and materials to the processing facilities

1.1.2 Execute work orders

1.1.3 Arrange for delivery of completed parts to customer stores

1.1.4 Initiate actions to delete completed operations from the shops schedules

1.6 Data Processing

1.6.1 Prepare all data required for computer input

1.6.2 Print output reports and deliver to Maintenance Planning

1.6.3 Maintain Computer Programs

A flow diagram displaying a sequential order of processing the system operations is illustrated in Exhibit IV A-2 of this subsection. A schiller diagram displaying the development of required forms is illustrated in Exhibit IV A-1

4. OUTPUT REPORTS

The following is a listing of system output reports indicating their frequency of issue and suggested usage.

4.1 Work Order Master File (Exhibit IV-A-4)

This report, issued weekly or as requested by Maintenance Planning, provides a complete publication of all the data in the system. The report is issued primarily to provide information that will assist in reconciliation of differences that may occur in the treatment of data by the Operating Department, Data Processing and the Maintenance Shops.

4.2 Master Schedule Sheet (Exhibit IV-A-5)

This report, issued weekly to Maintenance Planning and to each Central Maintenance Shop, displays a list of work orders selected for processing in an ensuing one-week period. Selection of work orders for this report is made primarily in accordance with delivery dates requested by the Operating Departments. The report is used by shop supervision for determination of daily processing requirements.

6.1 Material Requirements (Exhibit II-A-6)

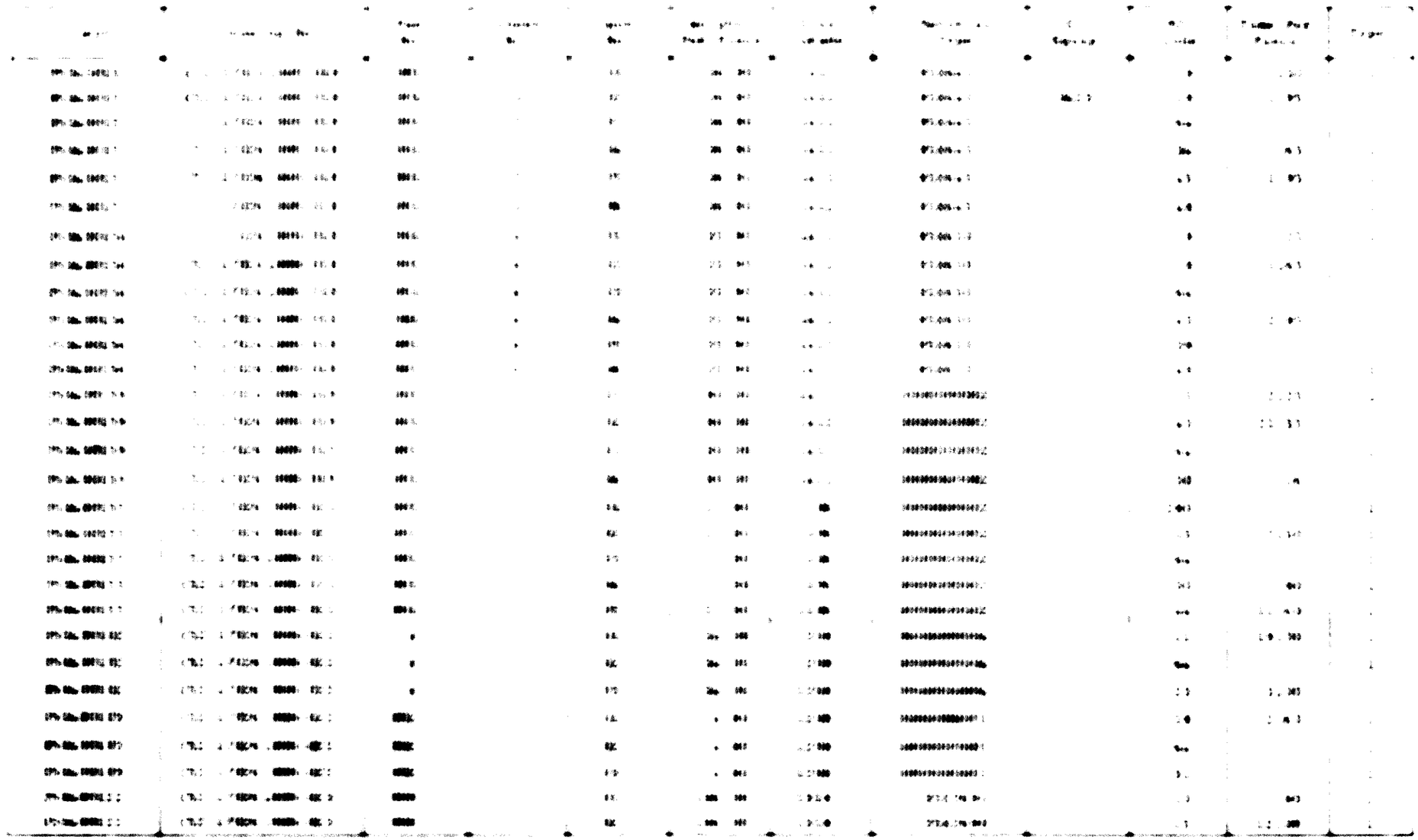
This report, issued weekly to Maintenance Shops, lists the materials to be used by the respective shops in the next seven days of operation. It identifies materials by type and grade and accumulates consumption with orders processed. The report can be used for reconciliation and adjustment of inventory quantities and cost determination.

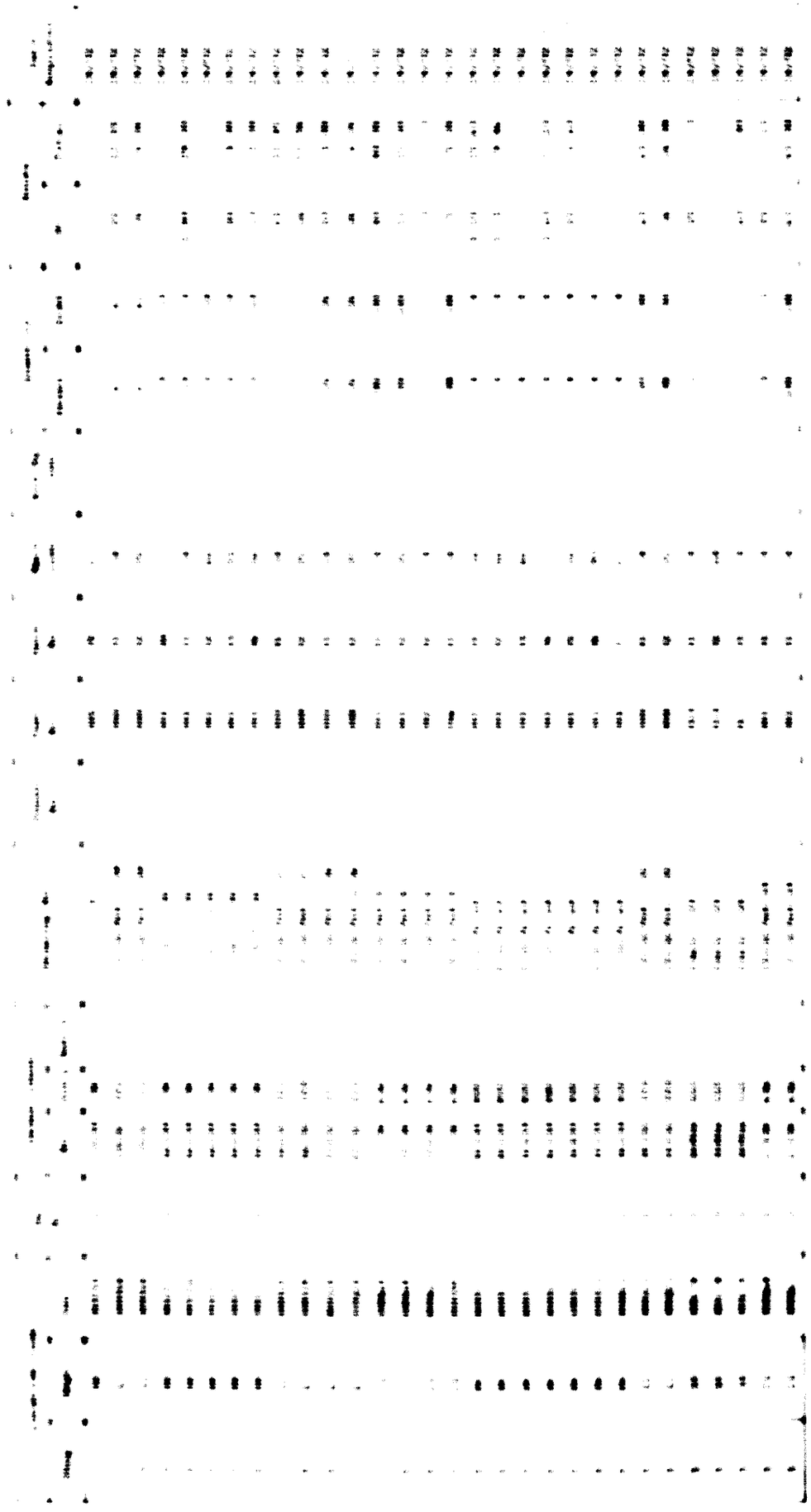
6.2 Total Machine Hours (Exhibit II-A-7)

This report issued weekly to Maintenance Planning and Control Maintenance Shops, displays the total number of hours scheduled by individual facilities or groups of facilities, within the respective shops. The report is furnished primarily to show equipment utilization performance.

EXHIBIT IV A-1

SOME FIGURES
OF THIS DOCUMENT
ARE TOO LARGE
FOR MICROFICHING
AND WILL NOT
BE PHOTOGRAPHED.





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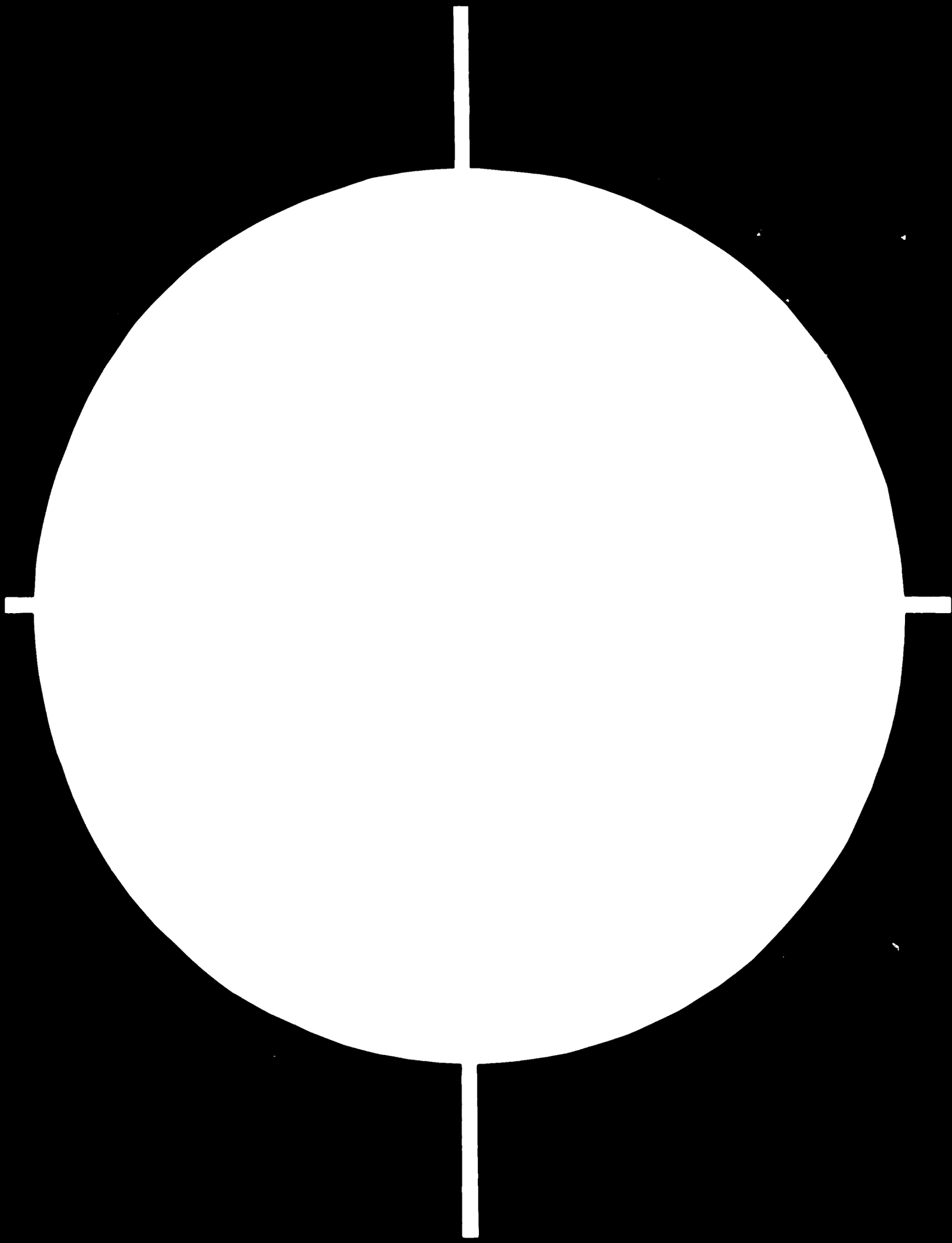

EGYPTIAN IRON AND STEEL COMPANY
SHOP SCHEDULING SYSTEM

EXHIBIT IV A-6

MATERIAL REQUIREMENTS

Department Code	Material Type	Steel Grade	Total Weight	Steel Total Accumulated
5-0800062	1	1208	2,890.20	2,890.20
5-0800041	1	1212	576.00	576.00
5-0800030	1	1222	3,368.00	3,368.00
5-0600038	1	1225	8,400.00	8,400.00
5-0800042	1	1318	4,244.80	4,244.80
5-0800052	1	1412	645.00	645.00

EGYPTIAN IRON AND STEEL COMPANY
SHOP SCHEDULING SYSTEM

EXHIBIT IV A-7

TOTAL MACHINE HOURS SCHEDULED
WEEK OF _____

018,019,020 = 208.03	016,017 = 242.55
012,015 = 72.00	013,014 = 301.00
011 =	004,005 =
002,003 =	001 =
006,007 = 22.54	008,009,010 = 34.56
023,024,025 =	022 =
026,027 = 187.12	028,029,030,031 = 33.22
033,034,037,038,039 = 111.81	035,036 = 13.92
040,044,045,534 = 293.26	043 = 19.53
042 =	046 =
041 = 10.50	032 =
049,275,276,051 =	047,048,273,274,277 =
052,053,054,055,056,067,068,069,070,071,072 = 33.98	

USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-B - Instructions for Performing the Regional Engineer Operation - Shop Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-B - Instructions for Performing the Regional Engineer Operation - Shop Scheduling System

The principal functions performed by the Regional Engineer are:

To prepare Work Order Requests.

To maintain Work Order Request Files.

To attend weekly maintenance meetings scheduled for determination of work order priorities.

To collaborate with the Technology Engineer Processor in the preparation of shop facility schedules.

Note: The above listed functions are those required for effective execution of the shop scheduling system and do not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the above listed functions.

1. PREPARATION OF WORK ORDER REQUESTS

Requests for Central Maintenance Shop Service are initiated by Operating Management or by personnel attending the weekly Priority Designation

Meetings scheduled and conducted by Central Maintenance. Such service requests must be converted into Work Order Requests and prepared in duplicate.

Preparation of the Work Order Request form requires the following information posted in the appropriate form locations as specified in Exhibit IV-B-1.

Posting Location	Item
A.	WORK ORDER NUMBER - Post the unique 5-digit number selected from the group of numbers assigned to the operating area requesting the service. The present practice of assigning the same 5-digit work order number to more than one work order must be discontinued. Work Order number assignments shall be made on a consecutive or sequential basis. After the last of the assigned numbers is used, recycle the assignments. In the highly unlikely possibility that two active orders would bear the same work order number, different delivery dates and drawing numbers will provide individual identity on the Master Files and Schedules.
B.	REQUESTING DEPARTMENT - Post an alphabetic description of the department initiating the service request.

Posting Location	Item

C. DRAWING NUMBER - Indicate whether a German or Russian drawing is involved by circling the appropriate letter in the caption, then post the appropriate drawing number. A maximum of 25 digits is allotted this posting.

D. PART NUMBER - Post the identifying part number shown on the drawing.

E. QUANTITY ORDERED - Post the number of units ordered with the specific order. A maximum of 5 digits is allotted this posting.

F. DATE REQUIRED - If the part is required for a scheduled maintenance activity, post the date of the specific repair turn or scheduled major repair. If the part ordered is for inventory stock replacement, post the estimated date the on-hand quantity in stock will reach zero. Post the date in order of date, month and year.

G. PART NAME - Post an alphabetic description of the spare part. The description should be brief and always start with a noun. For example:

Pulley, idler - sinter conveyor

Bracket - coal hopper

Roll - hot strip entry table

Posting Location	Item
H.	COST CENTER - Post the 4-digit plant cost center code.
I.	MATERIAL - Post an alphabetic description of the type and grade of material to be used in the manufacture of the part. This information is generally available in the "Bill of Materials" shown on the drawing.
J.	FINISHED MACHINE WEIGHT - Post the weight of the finished part shown on the drawing.
K.	PART REQUIRED FOR - Indicate by a check mark in the appropriate space on the form whether the part is requested for inventory stock, repair turn or major repair.
L.	PRIORITY NUMBER - Select and post the applicable priority number from the list established and issued by the Office of the Manager of Central Maintenance illustrated in Exhibit IV-B-2 of this section.
M.	TOTAL WEIGHT - Multiply the number of units ordered times the unit finished weight displayed on the drawing and post the resultant total.

Posting Location	Item
N.	STANDARD QUANTITY REQUIRED - Post the required quantity listed for the specific part in the "Bill of Materials" shown on the drawing.

When postings are completed, forward the original Work Order Request to the Stores Department and file the duplicate copy in the "Active Work Order Request" file.

2. MAINTAINING WORK ORDER REQUEST FILES

All Regional Engineers are required to maintain files of "Active" and "Completed" Work Order Requests for the particular Operating Areas they service.

As mentioned in section reference 1 of this subsection, after a Work Order Request is prepared, the original copy shall be forwarded to the Stores Department and the duplicate copy shall be placed into an "Active Work Order Request" file.

When a specific Work Order Request is fulfilled or completed by the shops, Maintenance Planning will notify the Regional Engineer of such completion by submitting a copy of the Work Order Request stamped "Completed". Upon receipt of such stamped form, the Regional Engineer will remove the original copy from the "Active" file and destroy it. The stamped copy shall then be placed into a "Completed Work Order Request" file for reference as needed.

3. ATTENDING WEEKLY MAINTENANCE MEETING

The Master Schedule Sheet, printed by the computer for each Maintenance Shop, will display work orders scheduled for processing within a given week. The schedule will display work orders grouped by priority rank or class.

The initial priority rank assigned specific work orders is subject to change because of changing plant requirements. Such priority changes are occasioned by emergencies created by equipment breakdown or by changes in plant planned maintenance requirements. To permit timely consideration of such changes, a weekly meeting of Operating and Maintenance personnel shall be scheduled by the Maintenance Planning Center.

The Regional Engineer is required to attend these meetings for the following reasons:

A. To become acquainted with the overall plant maintenance needs.

B. To help communicate the service needs of his assigned operating areas to Maintenance Planning.

C. To expedite work order development for emergency needs.

D. To record all agreed to priority changes for execution of the following instruction 4 of this subsection.

When attending these meetings, the Regional Engineer shall be prepared to provide any documented information, such as departmental priority listing, drawings, etc., necessary to expedite shop services to the operating areas he services.

4. PREPARATION OF SHOP MASTER SCHEDULE SHEET

The computer will print a new Master Schedule Sheet for each Maintenance Shop weekly. Such Master Sheet will display the plant Work Orders scheduled for processing after proper consideration of plant priorities. The decisions reached in the Weekly Priority Meetings will, of course, have primary influence in the designation of work orders to be processed.

Optimum utilization of Shop Facilities will, however, require processing of Work Orders other than those designated at the meetings. To provide optimum utilization of Shop Facilities, each Regional Engineer is required to maintain a list of work orders reflecting the priority needs of the operating areas he services. Using this list he must collaborate with the Maintenance Planning Technology Engineer-Processor in determining which Work Orders from his area should be included in the next weeks Master Schedule Sheet. In the determination and selection of these Work Orders, the Regional Engineer should keep in mind that the new Master Schedule must consider total plant requirements as well as those of his assigned areas. Generally, the selection of Work Orders is influenced by a budgeted distribution of shop hours available.

EGYPTIAN IRON AND STEEL CO. - CENTRAL MAINTENANCE DEPARTMENT
WORK ORDER REQUEST - SPARE PARTS MANUFACTURE DATE:

Work Order Number	Requesting Department	Drawing Number G R	Part No.	Qty. Ordered	Date Required
(A)	(B)	(C)	(D)	(E)	(F)

Part Name	Assembly	Cost Center	Material	
			Type	Form
(G)		(H)	(I)	

Finished Machined Weight	Part Required For			Produced By		Spares Information		
	Invent.	Repair Turn	Major Repair	E.I.&S.	Foreign	Reorder Point	Reorder Quantity	On Hand
(J)		(K)						

Priority Number	Total Weight	Standard Quantity (No. Of)	Foundry	Steel Structural	Forging	Stores Department	Rolled Steel	Mechanical Workshop	Repair and Erection Shop	Pattern Workshop	Pattern Number
(L)	(M)	(N)									

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EXHIBIT IV-B-2
Page 1 of 4

EGYPTIAN IRON AND STEEL COMPANY
GENERAL MAINTENANCE DEPARTMENT

ORGANIZATION SHEET NO. 6/76
SPARE PARTS ORDERS

With reference to organization sheet No. 4/74 concerning spare parts manufacture, in order to expedite delivery of spare parts associated with major repairs, the following priority codes are established for use as of July 1, 1976. The codes properly rank spare part priorities and must be posted appropriately on the Work Order Request Form. Examples of proper method of coding are also illustrated.

Priority Number	Basis of Priority	Coding Example: Order Number	Coding Example: Priority Number
1.	EMERGENCY PRIORITY - This priority code is reserved for emergency breakdown only. Two shops are available for processing emergency work orders. Orders associated with steelmaking departments shall be processed in the Metallurgical shops; emergency orders for all other departments shall be processed in the Old Machine Shop.	12345 /	1/76
2.	URGENT PRIORITY - Requests for urgent service must be initiated and signed by the Department Manager. Quantities made shall be limited to the Standard Quantity.	12345 /	2/76

Priority Number	Basis of Priority	Coding Example Order Number	Coding Example Priority Number
7.	NEW EQUIPMENT PRIORITY - Requests for service of this priority must be initiated and signed by a Department Manager.	12345 /	7/76
8.	MINOR REPAIR PRIORITY - Requests for service of this priority must be initiated and signed by a Field Maintenance Engineer.	12345 /	8/76
9.	OUTSIDE CUSTOMER PRIORITY - Requests for service of this priority must be initiated and signed by the Director of the Central Planning Department.	12345 /	9/76

SUPPLEMENTARY INFORMATION

1. All work orders associated with priorities 3 through 8 require the preparation of a Work Order Request form and a Technology Master Card; Work Orders associated with priorities 1 and 2 require a Technology Master Card only.

2. In the event of a breakdown on the 2nd or 3rd shift, work orders can be executed upon the signature of the Night Factory Director or the Factory Maintenance Engineer. Preparation of documents can be initiated later.

Priority Number	Basis of Priority	Coding Example Order Number / Priority Number
3.	PLANNED REPAIRS PRIORITY - Request for service of this priority must be initiated and signed by the Chief Maintenance Engineer of the department requesting the service.	12345 / 3/76
4.	SPARE REPLACEMENT PRIORITY - Requests for service of this priority must be initiated and signed by a Maintenance Engineer.	12345 / 4/76
5.	DESIGN CHANGE PRIORITY - Requests for service of this priority must be initiated and signed by a Department Manager or Director. At the time of request, the Manager or Director must withdraw the original copy of the drawing from the active files and cancel it.	12345 / 5/76
6.	TOOL OR PRODUCTION AID MANUFACTURE PRIORITY - Requests for service of this priority must be initiated and signed by either a Maintenance Chief Engineer or a Production Chief Engineer.	12345 / 6/76

ESTIMATED PROCESSING TIMES (LEAD TIME)

Based on Organization Sheet 4/74 processing time after receipt of the Technology Master Card is estimated as follows:

	Estimated Processing Time
Casting without machining operation.	3 months
Forged and steel structural parts with machining operations.	4 months
Forged and steel structural parts without machining operations.	3 months
Spare parts requiring special tools.	4 months
Castings requiring model or pattern and machining operations.	6 months
Castings not requiring model or pattern but requiring machining operations.	4 months

NOTIFICATION REQUIREMENT

During the first half of every month, every section or department shall receive a list of Work Orders for spare parts to be completed by the end of the month.

Signature _____
General Manager of the
Central Maintenance Department

22.5.1976

USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-C - Instructions for Performing the Stores Department Review of Work Order Requests - Shop Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-C - Instructions for Performing the Stores Department Review of Work Order Requests - Shop Scheduling System

The purpose of the Stores Department review is threefold:

A. To provide inventory information that will assist Maintenance Planning in determining the urgency and quantity of requirements.

B. To provide information to show whether in the past the requested part has been purchased from an outside supplier or made in the Plant Maintenance Shops.

C. To maintain a log of Work Order Requests processed.

The information supplied by the Stores Department is vital to Maintenance Planning in decision making pertinent to the establishment of a proper shop loading program. It is imperative that no Work Order Request be accepted by Maintenance Planning until the Stores Department has furnished the following information.

1. SPARES INFORMATION

From inventory records, furnish the following data and post appropriately on the Work Order Request.

1.1 Reorder Point Quantity.

1.2 Reorder Quantity.

1.3 On-hand Quantity.

2. PART ACQUISITION SOURCE

From inventory records, determine whether the part is acquired from an outside supplier or is produced by the Egyptian Iron and Steel Company. Post this information in the appropriate space on the Work Order Request form.

Note: Regardless of whether past records show that a part has been purchased from an outside supplier or made in the plant maintenance shops, final decision pertaining to "Make or Buy" is a responsibility of Maintenance Planning.

3. MAINTENANCE OF WORK ORDER REQUEST LOG

To assist the plant in maintaining timely records of Work Order Request activity, the Stores Department shall maintain a log record of all Work Order Requests submitted for processing. Such log record must contain the following information. Other information can be added if deemed advisable.

3.1 Work Order Number.

3.2 Requesting Department.

3.3 Date order received at stores.

3.4 Date order released to Maintenance Planning.

3.5 Produced by - Egyptian Iron and Steel Company or outside supplier.

3.6 Name of person entering the log information.

When the desired information has been posted in the log record, forward the Work Order Request to Maintenance Planning.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-D - Instructions for Performing the Technology Engineer-Processor Operation - Shop Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-D - Instructions for Performing the Technology Engineer-Processor Operation - Shop Scheduling System

The principal functions performed by the Technology Engineer-Processor are:

- To maintain a log record of Work Order Requests.
- To maintain files of Master Technology Cards.
- To initiate and direct the preparation of Work Order Folders.
- To prepare and submit computer input data required for the preparation and printing of the Shops Master Schedule Sheets (Execution Card).
- To review and submit computer input data required for deletion of completed work orders from the Shops Master Schedule Sheets.

Note: The above stated functions are those required for the effective execution of the Shops Scheduling System and do not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the above listed functions.

EGYPTIAN IRON AND STEEL COMPANY

SHOP SCHEDULING SYSTEM

EXECUTION CARD

CARD CODE 9 9 1 (1 2 3)

COLUMN NUMBERS

SHOP CODE	PRIORITY NO.	WORK ORDER IDENTIFICATION			DRAWING NUMBER	SHEET NO.	PART NO.	QUANTITY		DATE REQUIRED
		Number	Sub	Batch				Ordered	Standard	
4 5	6	7 8 9 10 11	12 13 14	15 16 17	18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42	43 44	45 46 47	48 49 50 51	52 53 54 55	56 57 58 59 60 61 62 63

SHOP CODE:

1. Pattern Shop
2. Foundry Shop
3. Structural Shop
4. Forge Shop
5. New Machine Shop
7. Repair & Erection Shop
9. Storeroom
0. Job Can Be Completed in Reporting Period

1. MAINTENANCE OF THE WORK ORDER REQUEST LOG

To eliminate the need for reference to the Stores Department log record of Work Order Requests, the Technology Engineer-Processor shall maintain his own record. It is suggested that this record be similar to that maintained in the Stores Department.

2. MAINTENANCE OF MASTER TECHNOLOGY CARD FILES

A key document used by the Technology Engineer-Processor is the Master Technology Card prepared by the Technology Engineer. This document describes fully the processing specifications for a specific part identified by a drawing number. The Master Technology Card is used as a source document for the following activities:

- Preparing Shop Work Orders.
- Preparing and Submitting Input Data to the Computer Center.

As Master Technology Cards are prepared by the Technology Engineers, the Technology Engineer-Processor shall review the cards for completeness and then file them by drawing number in separate files for each Maintenance Shop.

3. INITIATING AND DIRECTING THE PREPARATION OF WORK ORDER FOLDERS

Expeditious processing of operations in the Maintenance Shops is dependent upon the availability of all data pertinent to such processing. Provision of such data is accomplished with the submission of Work Order Folders which contain all processing specifications, blueprints, etc., to the shops. The responsibility for the preparation and submission of such folders is assigned to the Technology Engineer-Processor.

When a Work Order Request form is received from the Stores Department, the Technology Engineer-Processor shall proceed as follows:

3.1 Refer to the Master Technology Card File to determine if a Master Technology Card had been prepared and filed previously.

3.1.1 If a Master Technology Card had not been filed, proceed as follows:

3.1.1.1 Request the Xerox Printer 1824 Machine Operator to produce a blueprint for each shop to be involved in the part processing.

3.1.1.2 Forward a copy of the blueprint and a copy of the Work Order Request to the appropriate Technology Engineer and request the development and submission of a Master Technology Card.

3.1.2 If a Master Technology Card had been filed, or is submitted by the Technology Engineer as a follow-up of instruction 3.1.1, proceed as follows:

3.1.2.1 Deliver the Work Order Request and the Master Technology Card to the Xerox Printer 1824 Operator and request the initiation of a Work Order Folder. (Complete instructions for the preparation of a Work Order Folder are set forth in Subsections IV-E and IV-F of this report.)

3.2 Upon receipt of the Work Order Folder from the Duplicating Machine Operator, review the folder for completeness and then place it in the Work Order Folder File.

4. PREPARATION OF COMPUTER INPUT DATA FOR THE SHOPS MASTER SCHEDULE SHEETS (EXECUTION CARD - EXHIBIT IV-D-1)

The Shops Master Schedule Sheets will be printed and issued to the respective Maintenance Shops weekly. The schedules will include all work orders selected at the weekly Maintenance Meetings, unfinished work orders from the previous week's schedule, and work orders selected by the Technology Engineer-Processor and Regional Engineers to build up the schedules to a level that will provide effective shop loading. The total processing hours included in each shop schedule shall approximate twice

the total labor hours scheduled for the shop for the week. As developed, the schedules provide total shop loading only; they are not designed to provide specific machine or work station loading. Therefore, provision of more work order hours than scheduled labor hours provides shop supervision with an opportunity to optimize labor and equipment utilization through selective assignments.

The work orders listed on the shop schedules will be grouped in accordance with the priority ratings displayed in Exhibit IV-B-2 of Subsection IV-B of this report. Plant Maintenance needs are best serviced when work orders are processed in the order of these assigned priorities. To the extent possible, efforts should be directed toward first processing all jobs grouped as priority 1 jobs, then priority 2 jobs, etc. With this procedure, critical plant maintenance requirements are given primary consideration.

Preparation of data necessary for the printing of shop schedules and the submission of such data to the Computer Center is the responsibility of the Technology Engineer-Processor. The data must be prepared and submitted on an Execution Card (Exhibit IV-D-1) designed to provide all required information in a format adaptable to key punching. Consequently, all posting on the Execution Card must conform to the following instructions.

4.1 Card Code (Columns 1 through 3)

The three-digit card code applicable to the Execution Card is "991". Since all Master Schedule Card data is submitted in a single-line entry, the code 991 need be posted only once on each sheet in columns 1 through 3 located at the top of the form. The Computer Center will gang punch this code into each line recorded.

4.2 Shop Code (Columns 4 and 5)

Select the appropriate two-digit shop code from the following list and post it in the designated columns.

Shop	Code
Forging Shop	04
Foundry	02
General Machine Shop	06
Main Stores	09
Metallurgical Workshop	08
New Machine Shop	05
Pattern Workshop	01
Raw Material Stores	10
Repair and Erection Shop	07
Steel Structural Workshop	03

4.3 Priority No. (Column 6)

On the Execution Card, the Priority Number is identified as the P. No. Select the appropriate No. applicable to the particular work order from the following list and post it in column 6.

Priority No.	Type of Priority
1.	Emergency - Reserved for equipment breakdowns only.
2.	Urgent - Requires Department Manager's Authorization.
3.	Planned - Reserved for planned scheduled maintenance only.
4.	Spare Replacement - Self-explanatory.
5.	Design Change - Self-explanatory.
6.	Tool or Production Aid Manufacture - Self-explanatory.
7.	New Equipment - Self-explanatory.
8.	Minor Repair - Must be authorized by the Field Maintenance Engineer.
9.	Outside Customer - Must be authorized by the Director of the Central Planning Department.

4.4 Order Identity (Columns 7 through 17)

The order identity must be posted in three separate subcodes as follows:

4.4.1 Order No. (Columns 7 through 11)

Post the five-digit sequence No. shown in the location code of the Master Technology Card.

4.4.2 Sub No. (Columns 12 through 14)

Each work order No. assigned by the Regional Engineer will apply to a single drawing No. involving the processing of one or more parts. The Master Drawing No. and the associated Master Technology Card identify these parts with a part No. in columns 12 through 14 in sequential order. That is, the first part listed shall be identified with suborder No. 1, the second part listed with suborder No. 2., etc. Proper posting of these data shall be accomplished in the following manner:

4.4.2.1 One-digit subnumbers shall be posted in column 14. Columns 12 and 13 shall remain blank.

4.4.2.2 Two-digit subnumbers shall be posted in columns 13 and 14. Column 12 shall remain blank.

4.4.2.3 Three-digit subnumbers shall be posted in columns 12, 13 and 14.

4.4.3 Batch Code (Columns 15 through 17)

At times, the quantities involved in the processing of an order are quite large and require processing the ordered quantity in small batches. When this occurs, each of the batch orders shall

be identified with a three-digit batch code in columns 15 through 17 in the following manner.

Column No. 15 shall identify the number of the batch being processed; Column No. 16 shall contain a slash and column No. 17 shall identify the total number of batches to be processed. When batch processing is not involved, these columns shall remain blank.

Assuming an order for 100 units to be processed in 4 batches of 25 units each, the following is an example of proper coding:

	Column No.		
Batch No.	15	16	17
1	1	/	4
2	2	/	4
3	3	/	4
4	4	/	4

It should be noted that when the number in column 15 matches that shown in column 17, the code number identifies the final batch to be processed.

4.5 Drawing No. (Columns 18 through 42)

Drawing numbers as assigned by the Engineering Department comprehend five separate subareas of identification. These are:

Equipment Complex Identification.

Plant, Department and Subdepartment Identification.

Major Unit Identification.

Subunit Identification.

Serial No. Identification.

All subareas of identification are not used in all drawing numbers. The extent of usage is dependent upon the magnitude or application of the drawing.

Proper posting of the drawing number is accomplished in the following manner:

4.5.1 Complex (Column 18)

This subidentification is reserved for drawing numbers associated with a four-digit area code covering more than one subdepartment. All drawing numbers associated with such coverage are prefixed with the letter "C". When such occurs, the letter "C" must be posted in column 18. If the letter "C" does not appear in the drawing number, column 18 shall be left blank.

4.5.2 Area Code (Columns 19 through 22)

The area code identifies the plant department to which the drawing number pertains. It is always the first 4-digit numerical code appearing in the drawing number. These 4 digits must be posted in columns 19 through 22.

4.5.3 Unit Code (Columns 23 through 26)

The unit code is a one-, two- or three-digit numerical code, preceded by a slash (/) which identifies the major unit within a department to which the drawing applies. For ease of posting, the slash (/) is preprinted in column 23 of the Execution Card. Proper posting of the code is accomplished as follows:

4.5.3.1 If the slash (/) is followed by a one-digit code, such code must be posted in column 26 and columns 24 and 25 left blank.

4.5.3.2 If the slash (/) is followed by a two-digit code, such code must be posted in column 25 and 26 and 24 left blank.

4.5.3.3 If the slash (/) is followed by a three-digit code, such code must be posted in columns 24, 25 and 26.

4.5.4 Subunit Code (Columns 27 through 30)

The subunit code is a one-, two- or three-digit code and is always preceded by a decimal point (.). For ease of posting, the decimal point (.) is preprinted in column 27 of the Execution Card. Proper posting of the one-, two- or three-digit codes is accomplished in the same manner as described in 4.5.3 above for the Unit Code except that columns 28 through 30 are used.

4.5.5 Serial No. (Columns 31 through 34)

The serial No. is an Engineering Department file code designed to sequentially number drawings as they are prepared. The serial No. is also a one-, two- or three-digit code and is always preceded by a dash (-). For ease of posting, the dash (-) is preprinted in column 31 of the Execution Card. Proper posting of the one-, two- or three-digit codes is accomplished in the same manner as described in 4.5.3 above for the Unit Code except that columns 32 through 34 are used.

Columns 35 through 42 are reserved for possible expansion of the drawing numbers. Until such occurs, they will remain blank on all Execution Cards.

4.6 Sheet No. (Columns 43 and 44)

All sheets associated with a drawing contain a one- or two-digit sheet No. These numbers shall be posted in columns 43 and 44. If only one digit is used, it shall be posted in column 44 and column 43 shall remain blank. If two digits are used, they shall be posted in columns 43 and 44.

4.7 Part No. (Columns 45 through 47)

Posting of the part number is accomplished by transcribing the part number shown on the Master Technology Card or the Drawing. One-digit part numbers shall be posted in column 47; two-digit numbers in columns 46 and 47; and three-digit numbers in columns 45, 46 and 47. Unused columns shall remain blank.

If assemblies are involved, they shall be identified in the part No. Columns with the letter "A". Final assemblies will always be identified in column 47 with the letter "A" and columns 45 and 46 shall remain blank. When subassemblies are involved, the letter "A"

shall be suffixed sequentially. The following example illustrates the proper method of posting assembly identification.

	Columns		
	45	46	47
Subassembly 1		A	1
Subassembly 2		A	2
Subassembly 3		A	3
Subassembly 10	A	1	0
Final assembly			A

All unused columns shall remain blank.

4.8 Quantity (Columns 48 through 55)

Two separate quantities must be posted below the appropriately captioned headings. The first is the quantity ordered, the second is the standard quantity. Ordered quantities must be posted in columns 48 through 51, standard quantities in columns 52 through 55. When posting quantities, single-digit quantities must be posted in the furthest column to the right; two-digit quantities in the two columns furthest to the right, etc. Unused columns shall remain blank.

4.9 Date Required (Columns 56 through 63)

The date required is the requested delivery date of the service. Proper posting of the date is accomplished as follows:

4.9.1 The date of the month shall be posted in columns 56 and 57. One-digit dates shall be posted in column 57, two-digit dates in columns 56 and 57.

4.9.2 The month of the year shall be posted in columns 59 and 60. Months requiring only one digit shall be posted in column 60. When two digits are required, they shall be posted in columns 59 and 60.

4.9.3 Only the last two digits of the year need be posted in columns 62 and 63. For ease of posting, dashes (-) are preprinted in columns 58 and 61.

When posting the date required, all unused columns shall remain blank.

5. REVIEW OF COMPUTER INPUT DATA FOR THE DELETION OF COMPLETED WORK ORDERS FROM THE MASTER SCHEDULE SHEETS - (COMPLETED OPERATION CARD - EXHIBIT IV-D-2)

The Completed Operation Card shall be prepared by the Supervisors of the respective Maintenance Shops and forwarded to the Technical Engineer-Processor who shall:

A. Review the card for accuracy of posting.

B. Use it for recording the number of scheduled work hours to be deleted from the Master Schedule Sheets.

C. Submit it to the Computer Center for deletion of work orders from the Master Schedule Sheet.

Upon receipt of the Completion Card from Shop Supervision, the Technology Engineer-Processor shall proceed as follows:

5.1 Review all entries on the card for accuracy of posting.

5.2 Transcribe from the Master Schedule Sheet the total hours per operation or work order to be deleted into the column captioned "Hours Deleted".

5.3 Total the deleted hours posted on the Completion Card.

5.4 Transcribe the total deleted hours to a Summary of Deleted Hours (Exhibit IV-D-3). When completed, this summary shows the total number of hours deleted from the current schedules and serves as a guide in the determination of number of hours that must be added to the respective Shop Schedules for the following week. The form can also serve as an indicator of total shop performance.

5.5 Forward the Completed Operation Card to the Computer Center.

EXHIBIT IV D-2

EGYPTIAN IRON AND STEEL COMPANY
SHOP SCHEDULING SYSTEM
COMPLETED OPERATION CARD

DATE: _____

CARD CODE: 9 9 2 (1 2 3)

CARD COLUMN NUMBERS

SHOP CODE		WORK ORDER IDENTIFICATION										OPERATION NUMBER		TYPE CODE	HOURS DELETED
		Order Number					Sub Number			Batch Number					
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	

Deleted Operation Type Code 4.

Completed Operation Type Code 5.

Cancel Complete Order Type Code 6.

EGYPTIAN IRON AND STEEL COMPANY
SHOP SCHEDULING SYSTEM
SUMMARY OF DELETED HOURS
WEEK OF: _____

Date	Maintenance Shops				
	Forge	Foundry	Machine	Structural	All
Total					

EXHIBIT IV D-3

USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-E - Instructions for Performing the Xerox Printer 1824 Operation - Shop Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-E - Instructions for Performing the Xerox Printer 1824 Operation - Shop Scheduling System

The principal function performed by the XEROX Printer 1824 Operator is to:

- Initiate the preparation of the Work Order Folder.

Note: The above listed function is that required for effective execution of the Shops Scheduling System and does not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the above listed function.

1. INITIATING THE PREPARATION OF THE WORK ORDER FOLDERS

Upon receipt of the Work Order Request and the Master Technology Card from the Technology Engineer-Processor, the Xerox Printer 1824 Operator shall proceed as follows:

1.1 Obtain the drawing number from the Work Order Request.

1.2 Retrieve the appropriate drawing microfilm from the microfilm file.

1.3 Reproduce the appropriate number of blueprints required to accommodate the shops activity indicated on the bottom of the Work Order Request.

1.4 Forward the Prints, the Work Order Request and the Master Technology Cards to the Duplicating Machine Operator.

USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-F - Instructions for Performing the Duplicating Machine Operator Operation - Shop Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEM AND CONTROLS

Subsection IV-F - Instructions for Performing the Duplicating Machine Operator Operation - Shop Scheduling System

The primary functions performed by the Duplicating Machine Operator are:

- To prepare the required number of copies of the Work Order Request.
- To prepare the required number of copies of the Shop Work Order.
- To prepare the required number of copies of the Machine Operator Time Card.
- To prepare the required number of copies of the Shipper Transfer Report.
- To assemble the Work Order Folder.

Note: The above listed functions are those required for effective execution of the Shops Scheduling System and do not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the above listed functions.

1. PREPARATION OF SHOP WORK ORDER REQUEST COPIES

Upon receipt of the Work Order Request form from the Xerox Printer Operator, the Duplicating Machine Operator shall proceed as follows:

1.1 Make a mat of the Work Order Request Form.

1.2 Make one copy for placement in an "Active Job Duplicated" file.

1.3 Make one copy for each shop involved in the processing of the Work Order.

1.4 Forward all copies to the Technology Engineer-Processor, who will use these copies to identify work orders when preparing the Execution Card.

2. PREPARATION OF THE SHOP WORK ORDER COPIES

Machine Shop Work Orders differ in format from those of the Foundry, Forge and Steel Structural Shops. Accordingly, separate instructions are provided as follows:

2.1 Machine Shop

2.1.1 Merge the copy of the Work Order Request (EXHIBIT IV-F-1), with the Machine Shop Master Technology Card (EXHIBIT IV-F-2) and reproduce three copies of the Machine Shop Work Order (EXHIBIT IV-F-3).

2.1.2 Set aside all copies for subsequent insertion into the Work Order Folder.

2.1.3 Return Master Technology Card to the Technology Engineer-Processor.

2.2 Foundry, Forge and Steel Structural Shops

Note: The following instructions describe procedures applicable to the Forge and Steel Structural Shops. Procedures for the Foundry are identical except that a Foundry Master Technology Card is used.

2.2.1 Merge the copy of the Work Order Request (EXHIBIT IV-F-1) with the Forge or Steel Structural Shops Master Technology Card (EXHIBIT IV-F-4) and reproduce three copies of the Forge or Steel Structural Shop Work Order (EXHIBIT IV-F-5).

2.2.2 Set aside all copies for subsequent insertion into the Work Order Folder.

2.2.3 Return Master Technology Card to Technology Engineer-Processor.

3. PREPARATION OF THE MACHINE OPERATOR TIME CARD

The Duplicating Machine Operator shall maintain a stock of blank Machine Operator Time Cards (EXHIBIT IV-F-6 and IV-F-7) to be used in the preparation of a Machine Operator Time Card for each Machine Shop

operation shown on the Machine Shop Work Order. In the preparation of such card, the operator shall proceed as follows:

3.1 Merge the copy of the Work Order Request (EXHIBIT IV-F-1) with the form displayed in EXHIBIT F-6 and reproduce the front of the Machine Operator Time Card (EXHIBIT IV-F-8).

3.2 Reproduce the form displayed in EXHIBIT IV-F-7 on the back of the Machine Operator Time Card.

3.3 Set aside all copies of the completed Machine Operator Time Cards for subsequent insertion into the Work Order Folder.

4. PREPARATION OF THE SHIPPER TRANSFER REPORT

The Shipper's Transfer Report shall be reproduced in sufficient quantity to supply three copies to each shop involved in the work order processing and two copies for the machine shop storage yard. To fulfill this high usage requirement, the operator must maintain a stock of blank forms displayed in EXHIBIT IV-F-9. Reproduction of the Shipper Transfer Report is accomplished in the following manner:

4.1 Merge the copy of the Work Order Request (EXHIBIT IV-F-1) with the form displayed in EXHIBIT IV-F-9 and reproduce the required number of copies of EXHIBIT IV-F-10.

4.2 Set aside all the copies of the completed Machine Operator Time Cards.

5. PREPARATION OF WORK ORDER FOLDERS

Upon completion of the required forms described in section references 2 through 4, the operator shall file a copy of the Work Order Request in the "Active Job Duplicated" file then assemble a Work Order Folder for each shop involved in the part manufacture. Machine Shop Work Order Folders differ in content from those of the Foundry, Forge and Steel Structural Shop. Accordingly, separate instructions are provided as follows:

5.1 Foundry, Forge and Steel Structural Shops

5.1.1 Prepare a Work Order Folder containing the following:

1 copies of the Shop Work Order.

1 copies of the Shipper Transfer Report.

At least 1 copy of the blueprint. At times several copies may be required depending on the number of shop operations or the quantity of units involved in the order. If the operator is unable to determine the proper quantity, such information shall be obtained from the Technology Engineer-Processor.

5.1.2 Forward the Work Order Folder to the Technology Engineer-Processor.

5.2 Machine Shop

5.2.1 Prepare a Work Order Folder containing the following:

1 copies of the Shop Work Order.

1 copies of the Shipper Transfer Report.

1 copy of a Machine Operator Time Card for each Machine Operation shown on the Work Order.

One or more copies of the blueprint depending on size of order and the number of operations involved.

5.2.2 Forward the Work Order Folder to the Time Study Technologist.

USS Engineers and Consultants, Inc.

EXHIBIT IV-F-9

SHIPPER TRANSFER REPORT

Shipped From _____

Shipped To _____

Quantity _____

Material Description _____

_____

Date _____

_____
Shipper's Signature

EGYPTIAN IRON AND STEEL CO. - CENTRAL MAINTENANCE DEPARTMENT
WORK ORDER REQUEST - SPARE PARTS MANUFACTURE DATE:

Work Order Number	Requesting Department	Drawing Number G R	Part No.	Qty. Ordered	Date Required

Part Name	Assembly	Cost Center	Material	
			Type	Form

Finished Machined Weight	Part Required For			Produced By		Spares Information		
	Invent.	Repair Turn	Major Repair	E.I.&S.	Foreign	Reorder Point	Reorder Quantity	On Hand

Priority Number	Total Weight	Standard Quantity (No. Of)	Foundry	Steel Structural	Forging	Store Dept.	Rolled Steel	Mechanical Work-Shop	Repair and Erection Shop	Pattern Work-Shop	Pattern Number

EXHIBIT IV F-2

TECHNOLOGY MASTER CARD-MACHINE SHOP

Drawing Number _____ Part No. _____ Part Name _____

Oper. No.	Technology Work Procedure	Machine Code	Jigs, Fixtures & Attachments	Oper. Hrs.	Insp.

Shop Loading Program Code _____ Page _____ Of _____

FOR MAINTENANCE PLANNING USE ONLY - SPECIAL NOTES OR COMMENTS

Form of Raw Material	Standard Quantity (No. Of)	Foundry	Steel Structural	Forging	Stores Dept.	Rolled Steel	Mechanical Work-Shop	Repair and Erection Shop	Pattern Work-Shop	Pattern Number

EGYPTIAN IRON AND STEEL CO. - CENTRAL MAINTENANCE DEPARTMENT
WORK ORDER REQUEST - SPARE PARTS MANUFACTURE DATE:

Work Order Number	Requesting Department	Drawing Number G R	Part No.	Qty. Ordered	Date Required

Part Name	Assembly	Cost Center	Material Type	Material Form

TECHNOLOGY MASTER CARD-MACHINE SHOP

Drawing Number _____ Part No. _____ Part Name _____

Oper. No.	Technology Work Procedure	Machine Code	Jigs, Fixtures & Attachments	Oper. Hrs.	Insp.

Shop Loading Program Code _____ Page _____ Of _____

TECHNOLOGY MASTER CARD

Foundry: _____ Forge Shop: _____ Steel Structural Shop: _____

Drawing Number	Oper. No.	Operation Description	Machine Code	Oper. Hrs.	Aiding Eq. Code
Part Number					
Part Name					
Raw Material Dimensions					
Weight Per Piece					
Raw Material / Finished					

Shop Loading Program Code _____ Page _____ Of _____

WORKING SKETCH

EGYPTIAN IRON AND STEEL CO. - CENTRAL MAINTENANCE DEPARTMENT
WORK ORDER REQUEST - SPARE PARTS MANUFACTURE DATE:

Work Order Number	Requesting Department	Drawing Number G R	Part No.	Qty. Ordered	Date Required

Part Name	Assembly	Cost Center	Material	
			Type	Form

TECHNOLOGY MASTER CARD

Foundry:_____ Forge Shop: _____ Steel Structural Shop: _____

Drawing Number		Oper. No.	Operation Description	Machine Code	Oper. Hrs.	Aiding Eq. Code
Part Number						
Part Name						
Raw Material Dimensions						
Weight Per Price						
Raw Material	Finished					

Shop Loading Program Code _____ Page _____ Of _____

WORKING SKETCH

Month	Year	Serial No.	Shop	Department

Qty. Made	Work-Shop	Cost Center	Mach. No.	Code	Report

Incent. Time	Start Date	Fin. Date	Workshop Code	Code Diff.	Operation

Labor Hrs.	Mach. Hrs.	Step	Orig. Code	Qty. Last	Exact Qty.

Qty. Under Repair	Scrap Qty.	Insp. Initial	Foreman Sign.	Engineer Sign.

Serial No.	Material Code	U.M.	Mat. Wt.	Fin. Mach. Wt.
1				
2				
3				
4				
5				

EXHIBIT IV F-6
(FRONT)

Machine Hours	Labor Hours	Finish Time	Start Time	Laborers Number	Position	Laborers Name	Date
							/
							/
							/
							/
							/
							/
							/
							/
							/
							/
							Totals

EXHIBIT IV F-7
(BACK)

EGYPTIAN IRON AND STEEL CO. - CENTRAL MAINTENANCE DEPARTMENT
WORK ORDER REQUEST - SPARE PARTS MANUFACTURE

Work Order Number	Requesting Department	Drawing Number G R	Part No.	Quantity Ordered	Date Required

Month	Year	Serial No.	Shop	Department

Qty. Made	Work-Shop	Cost Center	Mach. No.	Code	Report

Incent. Time	Start Date	Fin. Date	Workshop Code	Code Diff.	Operation

Labor Hrs.	Mach. Hrs.	Step	Orig. Code	Qty. Last	Exact Qty.

Qty. Under Repair	Scrap Qty.	Insp. Initial.	Foreman Sign.	Engineer Sign.

Serial No.	Material Code	U.M.	Mat. Wt.	Fin. Mach. Wt.
1				
2				
3				
4				
5				

EGYPTIAN IRON AND STEEL CO. - CENTRAL MAINTENANCE DEPARTMENT
WORK ORDER REQUEST - SPARE PARTS MANUFACTURE DATE:

Work Order Number	Requesting Department	Drawing Number G R	Part No.	Qty. Ordered	Date Required

Part Name	Assembly	Cost Center	Material	
			Type	Form

Shipper Transfer Report

Shipped From _____

Shipped To _____

Quantity _____

Material Description _____

_____

Date _____

_____
Shipper's Signature

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-G - Instructions for Performing the Technology Engineer Operation - Shop Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-G - Instructions for Performing the Technology Engineer Operation - Shop Scheduling System

The primary functions performed by the Technology Engineer are:

- To complete the Work Order Request Form
- To prepare and submit to Maintenance Planning a Master Technology Card for each part manufactured in his assigned shop
- To prepare and submit to the Computer Center a Process Technology Sheet for each part to be manufactured in his assigned shop

Note: The above listed functions are those required for effective execution of the Shops Scheduling System and do not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the above listed functions.

1. COMPLETION OF THE WORK ORDER REQUEST FORM

1.1 Upon receipt of the Work Order Request Form, post the following data onto the form. Use the drawing or shop files as source data.

1.1.1 Is assembly required?

1.1.7 Form of raw material required from drawing

1.1.8 Standard quantity required from drawing

2. PREPARATION OF THE MASTER TECHNOLOGY CARD

The Master Technology Card is the permanent record, maintained by Maintenance Planning, of the processing requirements involved in the manufacture of specific spare parts. The information posted on this card along with that provided on the Work Order Request becomes the basis of the Process Technology Sheet which supplies the Computer with Master File Data.

Technology Master Cards prepared for the Machine Shop differ in content from those prepared for the Foundry, Forge and Steel Structural Shops. Accordingly, separate instructions are provided. Proper preparation of the Master Technology Card requires the following procedure:

2.1 <u>Machine Shop Master Technology Card</u> (<u>EXHIBIT</u> IV-C-1)

2.1.1 Upon receipt of the Work Order Request and the drawing, transcribe the following information from the Work Order Request Form.

2.1.1.1 Drawing Number

2.1.1.2 Part Number

2.1.1.3 Part Name

2.1.2 From information available from Machine Shop files or supervision, record the following information in the appropriately captioned columns on the Master Technology Form.

2.1.2.1 Post the operation or work procedure involved. List the operations in the required or preferred order of processing.

2.1.2.2 Post the name of the machine models required in performance of the listed operations.

2.1.2.3 Post the codes of the jigs, fixtures and attachments required in the performance of the listed operations.

2.1.3 Forward the Master Technology Card to the Time Study Engineer for posting of the operating hours required.

2.1.4 Upon receipt of the Master Technology Card from the Time Study Engineer, prepare a Process Technology Sheet. (See instructions of this subsection.)

2.2 Foundry, Forge and Steel Structural Shops Master Technology Card (EXHIBIT IV-F-4)

2.2.1 Upon receipt of the Work Order Request and the drawing, transcribe the following information from the Work Order Request Form.

2.2.1.1 Drawing Number.

2.2.1.2 Part Number.

2.2.1.3 Part Name.

2.2.2 From information available from shop files or supervision, record the following information in the appropriately captioned columns on the Master Technology form.

2.2.2.1 Post the operation or work procedure involved. List the operations in the required or preferred order of processing and number them sequentially in the column captioned "Oper. No.".

2.2.2.2 Post the name of the machine models required in the performance of the listed operations.

2.2.2.3 Post the code number of aiding equipment, such as patterns or tools required in performing the operation.

2.2.2.4 Post the dimensions of the raw materials required.

2.2.2.5 Post the weight per piece of the raw material and the finished unit.

2.2.2.6 Provide a working sketch when required.

2.2.3 Forward the Master Technology Card to the Time Study Engineer for posting of the operating hours required.

2.2.4 Upon receipt of the Master Technology Card from the Time Study Engineer, prepare a Process Technology Sheet.

1. PREPARATION OF THE PROCESS TECHNOLOGY SHEET (EXHIBIT IV-G-1)

The Process Technology Sheet used in the Shop Scheduling System has been designed primarily to serve two purposes. These are:

A. To provide a document which permits the recording of all data necessary in the compilation of the Computer Master File.

B. To provide an arrangement or format of recorded data which lends itself to accepted keypunching methods.

Master File data requires posting of all the data shown on the Process Technology Sheet in a single-line entry.

The process Technology Sheet also has two secondary purposes. These are:

A. To provide the Computer Center with information required to compile and print a weekly listing of Raw Material Requirements.

B. To provide Shop Supervision with information that will assist Work Order Processing by distinguishing the shop shipment of a part from the movement of parts or material between shops prior to shipment.

The secondary purposes do not require posting of all data comprising a single-line entry. They are accomplished through form adaptations which require posting of selected data only.

Because of the differences in posting requirements, separate instructions are provided.

All data recorded must be posted precisely in accordance with specified instructions. Columns provided for posting the data are numbered to permit consistent posting and accurate and orderly keypunching. Some of the data must be coded. Errors in codings and postings will result

in inaccurate Master File Data. Proper preparation of the Process Technology Sheet is accomplished in the following manner:

1.1 Posting of the Master File Data

1.1.1. Card (Columns 1 through 3)

The purpose of the card code is to identify the type of information being submitted to the computer center. It is a three-digit code which must be punched in columns 1 through 3 located at the top of the Process Technology Sheet. Master File Data is identified with the code "990". Since all Master File Data is recorded in a single-line entry, the card code "990" need be punched only once on each sheet. The Computer Center will gang punch this code into each line of data recorded on the Process Technology Sheet.

1.1.2 Operation Sequence No. (Columns 4 and 5)

The primary purpose of the Operation Sequence No. is to provide a coded identification of the individual operations involved in the processing of work order. On the Master Technology Card, each operation described is assigned a unique operation number. In the development of Master

File Data, this number becomes the Operation Sequence No. Consequently, transcription of the Oper. No. into card columns 4 and 5 of the Process Technology Sheet fulfills the posting requirement of the Operation Sequence No. It is to be noted that when an Operation Sequence No. is posted for identification of a work order operation, Master File posting requirements consist of all the data required in a complete single-line entry.

1.1.1 Drawing Number (columns 6 through 30)

Drawing numbers as assigned by the Engineering Department comprehend separate subareas of identification. These are:

Equipment Complex Identification

Plant, Department and Subdepartment Identification

Major Unit Identification

Serial No. Identification

All subareas of identification are not used in all drawing numbers. The extent of usage is dependent upon the magnitude or application of the drawing.

Proper posting of the drawing number is accomplished in the following manner:

3.1.3.1 Complex (Column 6)

This subidentification is reserved for drawing numbers associated with a four-digit area code covering more than one subdepartment. All drawing numbers associated with such coverage are prefixed with the letter "C". When such occurs, the letter "C" must be posted in column 6. If the letter "C" is not the first character of the drawing number, column 6 shall be left blank.

3.1.3.2 Area Code (Columns 7 through 10)

The area code identifies the plant, department and subdepartment to which the drawing number pertains. It is always the first four-digit numerical code appearing in the drawing number. These four digits must be posted in columns 7 through 10.

3.1.3.3 Unit Code (Columns 11 through 14)

The unit code is a one-, two- or three-digit numerical code, preceded by a slash (/). It identifies the major unit within a department to which the drawing applies. For ease of posting, the slash (/) is preprinted in column 11 of the Process Technology Sheet. Proper posting of the code is accomplished as follows:

3.1.3.3.1 If the slash (/) is followed by a one-digit code, such code must be posted in column 14 and columns 12 and 13 left blank.

3.1.3.3.2 If the slash (/) is followed by a two-digit code, such code must be posted in columns 13 and 14, and column 12 left blank.

3.1.3.3.3 If the slash (/) is followed by a three-digit code, such code must be posted in columns 12, 13 and 14.

3.1.3.4 Subunit Code (Columns 15 through 18)

The subunit code is a one-, two- or three-digit code and is always preceded by a decimal point (.). For ease of posting, the decimal point is preprinted in column 15 of the Process Technology Sheet. Proper posting of the one-, two- or three-digit codes is accomplished in the same manner as described in 3.1.3.3 above for the Unit Code except that columns 16 through 18 are used.

3.1.3.5 Serial No. (Columns 19 through 22)

The Serial No. is an Engineering Department File code designed to sequentially number drawings as they are prepared. The Serial No. is also a one-, two- or three-digit code and is always preceded by a dash (-). For ease of posting, the dash (-) is preprinted in column 19 of the Process Technology Sheet. Proper posting of the one-, two- or three-digit codes is accomplished in the same manner as described in 3.1.3.3 above for the Unit Code except that columns 20, 21 and 22 are used.

Columns 23 through 30 are reserved for possible expansion of the drawing numbers. Until such occurs, they will remain blank on the Process Technology Card.

3.1.4 Sheet No. (Columns 31 and 32)

All sheets associated with a drawing contain a one- or two-digit sheet No. These numbers shall be posted in columns 31 and 32. If only one digit is used, it shall be posted in column 32 and column 31 shall remain blank. If two digits are used, they shall be posted in columns 31 and 32.

3.1.5 Part No. (Columns 33 through 35)

Posting of the Part No. is accomplished by transcribing the part number shown on the Master Technology Card. One-digit numbers shall be posted in column 35, two-digit numbers in columns 34 and 35, and three-digit numbers in columns 33, 34 and 35. Unused columns shall remain blank.

On occasions, shop operations involve the processing of assemblies and/or subassemblies. When such occurs, the columns designated for posting part numbers shall be used to identify assemblies. When only a single or a final

assembly is involved, such assembly shall be identified by posting a letter "A" in column 35. When subassemblies are involved, prior to the final assembly, they shall be suffixed by a numerical sequential identification in column 35. For example:

	Column Nos. 33	34	35
Subassembly 1		A	1
Subassembly 2		A	2
Subassembly 3		A	3
Final assembly			A

When a subassembly is identified on the Process Technology Sheet, it shall be posted immediately following the one-line entries identifying the parts and associated operations involved in processing the parts comprising the assembly.

For example:

Drawing No.	Part No.	Oper. No.
12345	1	1
12345	1	2
12345	2	1
12345	2	2
12345	A1	2

3.1.6 Location Code (Columns 36 through 44)

The Location Code No. is a three-part code. Columns 36 and 37 identify the maintenance shop doing the required processing, columns 38 and 39 identify the department ordering the part and columns 40 through 44 identify the sequence number of the Master Technology Card of the ordering department. Proper posting of the Location Code No. is accomplished as follows:

3.1.6.1 Select the appropriate two-digit shop code from the following list and post in columns 36 and 37.

Shop	Code
Forging Shop	04
Foundry	02
General Machine Shop	06
Main Stores	09
Metallurgical Workshop	08
New Machine Shop	05
Pattern Workshop	01
Raw Material Stores	10
Repair and Erection Shop	07
Steel Structural Workshop	03

3.1.6.2 Refer to the Work Order Request Form for the identity of the ordering department, select the

appropriate two-digit code from the following

list and post it in columns 19 and 20.

Department Identification	Code
Air Conditioning and Ventilation Unit	[illegible]
[illegible]	02
Blast Furnaces No. 1 and 2	03
Blast Furnaces No. 3 and 4	[illegible]
Blooming Mill (Elect. Maintenance)	[illegible]
Blooming Mill (Mech. Maintenance)	[illegible]
Blooming Mill (Production Division)	[illegible]
Central Maintenance Department	[illegible]
Civil Maintenance Shop	[illegible]
Cold Forming Mill	[illegible]
Cold Strip Mill	[illegible]
Complex Project	[illegible]
Continuous Casting (Mechanical)	[illegible]
Continuous Casting (Utilities)	[illegible]
[illegible]	[illegible]
Dolomite Unit (Elect. Maintenance)	[illegible]
Dolomite Unit (Mech. Maintenance)	[illegible]
Dolomite Unit (Utilities Maintenance)	[illegible]
Electrical Lab	[illegible]
Electrical Networks	[illegible]
Electrical Workshop	[illegible]
Forging and Steel Structural Shops	[illegible]
Foundry	[illegible]
Gas Unit	[illegible]
General Machine Shop	[illegible]
Granulated Slag Unit (Elect. Maintenance)	[illegible]
Granulated Slag Unit (Mech. Maintenance)	[illegible]
Granulated Slag Unit (Utilities Maintenance)	[illegible]
Heavy Section Mill (Elect. Maintenance)	[illegible]
Heavy Section Mill (Mech. Maintenance)	[illegible]
Heavy Section Mill (Production Division)	[illegible]
Hot Strip Mill	[illegible]
Lab for Instruments and Communication	[illegible]
Lab for Measuring Instruments (Calibration)	[illegible]
Light Section Mill (Elect. Maintenance)	[illegible]
Light Section Mill (Mech. Maintenance)	[illegible]
Light Section Mill (Production Division)	[illegible]
Machine Workshop and Heat Treatment	[illegible]
[illegible] Unit	[illegible]
Mechanical [illegible] Department	[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

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[illegible] kilograms [illegible] weight.

Columns [illegible] are reserved for recording decimal [illegible] For example:

Per Piece Weight	Column Nos. [illegible]						
[illegible] Kilo					[illegible]	[illegible]	[illegible]
[illegible] Kilos					[illegible]	[illegible]	[illegible]
[illegible] Kilos					[illegible]	[illegible]	[illegible]
[illegible] Kilos				1	[illegible]	[illegible]	[illegible]
[illegible] Kilos			1	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] Kilos		1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] Kilos	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] of the [illegible] finished weight per piece [illegible] by [illegible] the weight [illegible] into the appropriate columns of the [illegible] shall [illegible]

[illegible] Grade of Material (Columns [illegible] through [illegible])

A catalogue of [illegible] codes for grades of material, [illegible] has been prepared but, as yet has not been [illegible] for publication. The codes of the catalogue [illegible] are [illegible] to all the [illegible] example of [illegible] grouped by material grades is shown in EXHIBIT [illegible]

[illegible] of the appropriate code is accomplished by referring to the alphabetic designation of the grade of material in the Quality Category and observing the applicable code from the [illegible] and proceeding to the right [illegible] through 11

[illegible] Grade of Base Material [illegible] through 9:

The thickness of the first or top thickness is used to calculate an equation to allow processing and is applied regardless of the material necessary or the [illegible] The thickness of the applicable regulations the processing of open cut [illegible] Base thickness the range of materials in the second [illegible] of the [illegible] and processing the [illegible] Base thickness are provided for processing steel materials

[illegible] Type of Base Material Thickness 10 and 11:

Between the applicable type designation codes from the following list and given in the thickness 10 and 11

Type of Material	Code
[illegible]	01
[illegible] Carbon	02
Aluminum	03
Stainless	04
[illegible]	05
[illegible]	06
[illegible]	07

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Subsection [illegible]
Page 10

Type of Raw Material	Code
[illegible]	[illegible]
Rectangular Section (Thickness and Width)	[illegible]
Round (Diameter and Length)	[illegible]
Sheet and Plates (Thickness and Width)	[illegible]
Squares (Size and Length)	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible] Raw Material Dimensions [illegible]

The number of [illegible] required [illegible] raw material dimensions will vary depending on the magnitude of the dimensions. The [illegible] these provide eight columns for these [illegible] [illegible] all eight columns [illegible] requiring the [illegible] of the first digit in column [illegible] and [illegible] digits in column [illegible]. The following [illegible] the proper method of [illegible] dimensional [illegible].

Raw Material Dimensions	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	•	•	•	•	•			
[illegible]	•	•	•	•	•	•		
[illegible]	•	•	•	•	•	•	•	
[illegible]	•	•	•	•	•	•	•	•

1.1.10 [illegible]

[illegible]

1.1.11 [illegible]

[illegible]

1.1.12 [illegible]

[illegible]

[illegible]

[illegible]

Coding
Column No.

[illegible]

[illegible]

[illegible]

[illegible] Engineers
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to identify the respective types. The codes and types are listed below.

Code	Type of Notification
1	[illegible]
2	[illegible]
3	[illegible]
4	[illegible]

All entry codes must be punched in column [illegible]

All four types of notification require the submission of all the data required [illegible]

3.2 [illegible]

3.2.1 Identification of Raw Material

[illegible]

specifications into the Master File. This submission is accomplished as follows:

For each part identified by a drawing and part number, a single-line entry coded "00" in columns 1 and 2 of the Operation Sequence No. shall be posted onto the Process Technology Sheet. This one line entry shall precede the posting of the first operation and shall contain the following data only:

- Operation Sequence No. (Code "00")
- Drawing No.
- Part No.
- Sheet No.
- Raw Material Weight Per Piece
- Material Grade
- Material Type
- Material Dimensions

All the data listed shall be recorded in appropriate columns specified on the Process Technology Sheet, and the posting shall conform to the instructions specified in [illegible] above. All unused columns shall remain blank.

[illegible] Designation of Final Shipments

Processing of parts in Maintenance Shops often requires several transfers of parts between shops before final processing and shipment is made. To distinguish the final shipment from intermediate intershop transfers of material, the final

shipment shall be identified on the [illegible] [illegible]. These by punching a code of "99" in columns [illegible] and [illegible]. When punched, it shall always be the last line of a specific work order. Total punching requirements for line "99" consist only of the following:

Operation Sequence No.
Sending Shop
Receiving Shop or Vendor

The sending shop shall be identified by punching the appropriate two-digit shop code in columns [illegible] and [illegible] of the location code field.

The receiving shop or vendor shall be identified by punching the appropriate two-digit code in columns [illegible] and [illegible]. Zero "0" fill columns [illegible] through [illegible]. All other columns shall remain blank.

[illegible] Designation of Inter-Shop Movements of Material Other Than Final Shipment

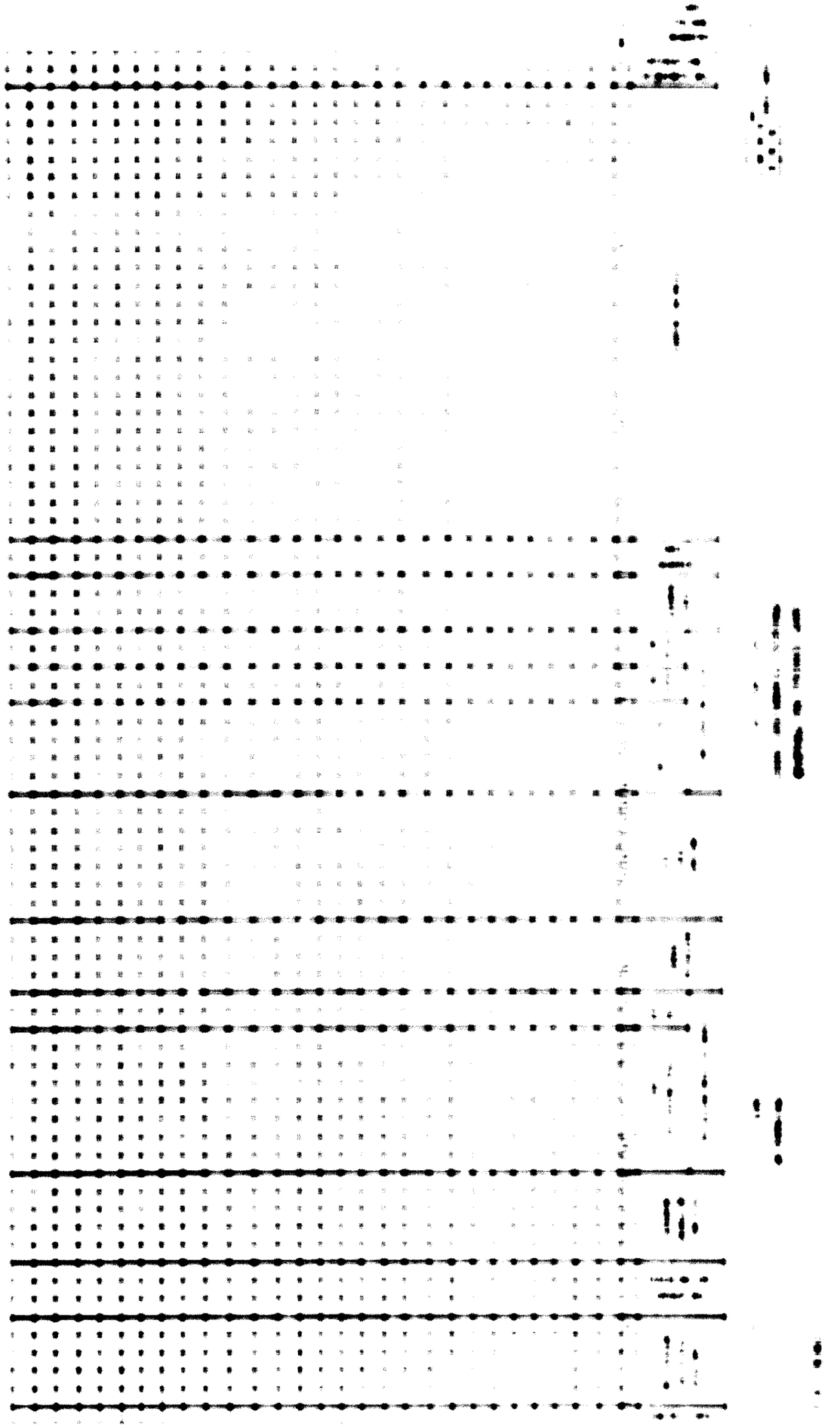
On occasion, it is necessary to process parts that require several movements between shops before final processing and shipment from a shop. In such instances, the intermediate movements between shops shall be coded with an operation

number one digit higher than the number of the last operation performed. For example: If the last operation performed was operation No. 3 and the same processing requirements are [illegible] of the part in another shop, the operations in the other shop shall be coded as operation No. 4. Operation No. 3 shall be the return of the material to the shop and operation No. 4 will be next operation required in the processing sequence. Total processing requirements for those associated with [illegible] [illegible] require only the posting of the following:

Operation Sequence No.
Sending Shop
Receiving Shop

The sending shop shall be identified by posting the appropriate two-digit shop code in columns 10 and 11 of the Location Code No.

The receiving shop shall be identified by posting the appropriate two-digit shop code in columns 41 and 42 of the Location Code No. Columns 10 through 41 shall be zero "0" filled. All other columns shall remain blank.



[redacted]

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[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

[redacted]

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
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[redacted]	[redacted]
[redacted]	[redacted]

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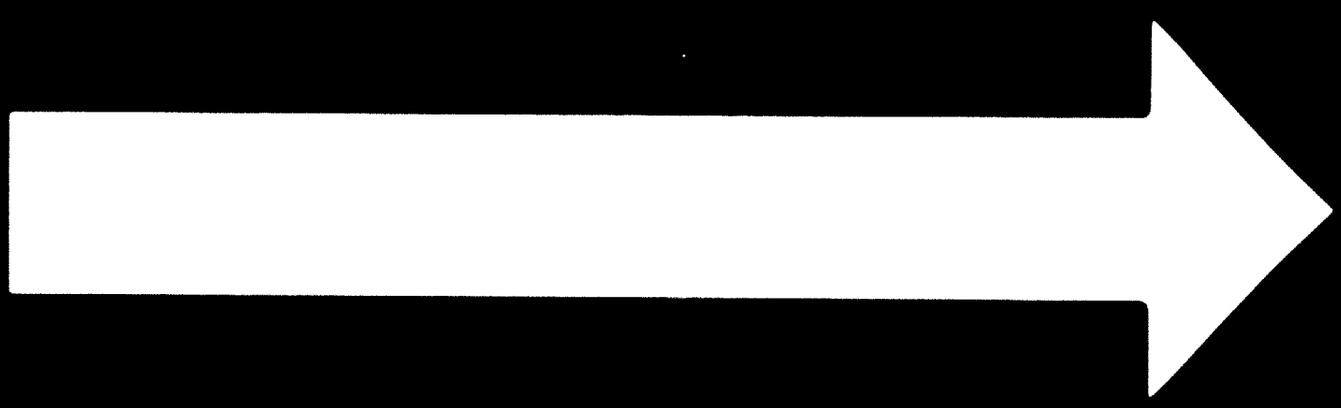

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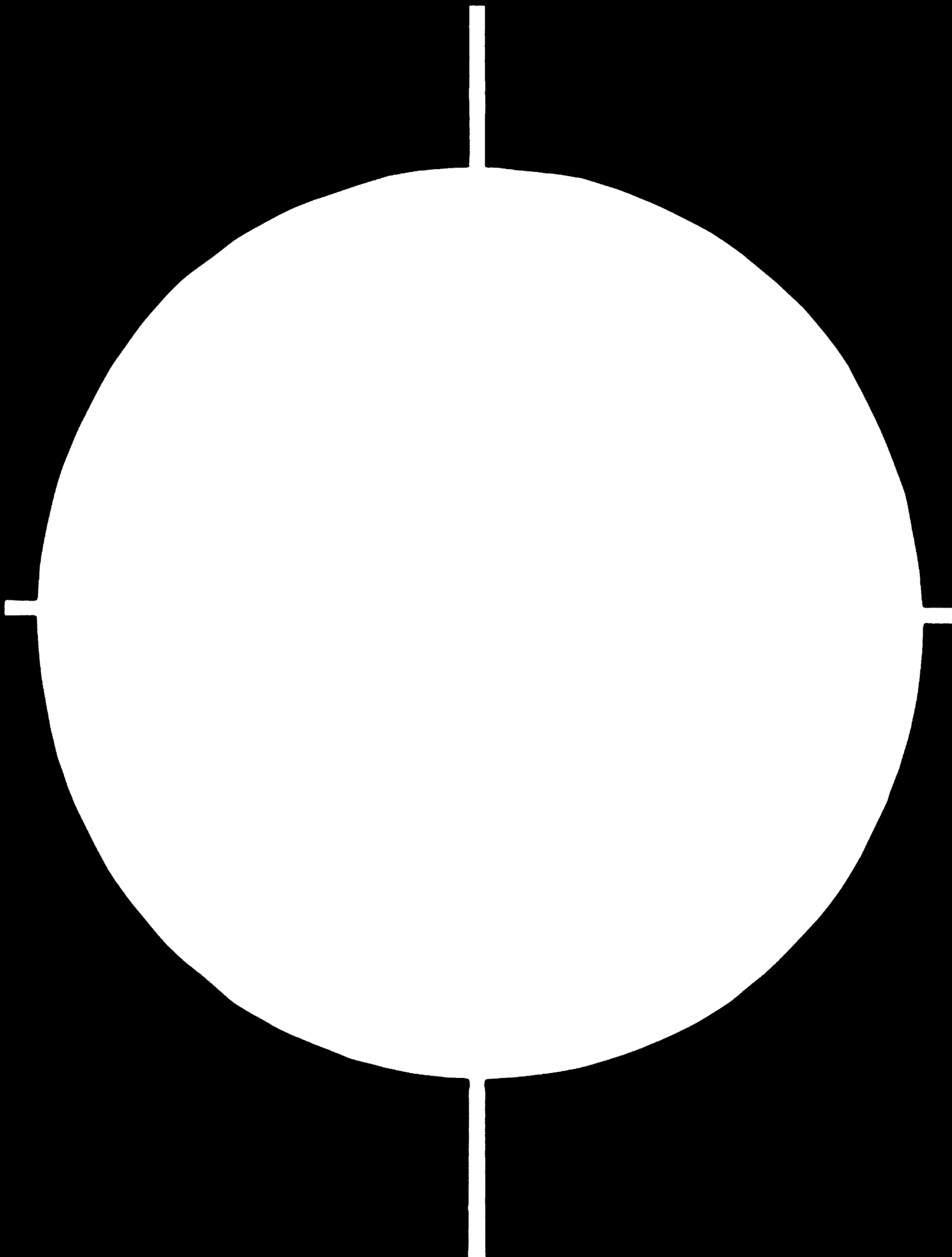

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-H - Instructions for Performing the Time Study Engineer Operation - Shop Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-H - Instructions for Performing the Time Study Engineer Operation - Shop Scheduling System

The principal functions performed by the Time Study Engineer are:

- To post processing hours onto the Master Technology Card.
- To post processing hours onto the Machine Operator Time Card.

Note: The above listed functions are those required for effective execution of the Shops Scheduling System and do not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the above listed functions.

Operations of the Shops are covered by incentive applications, which provide operators an opportunity for incentive earnings if preset time standards are met and/or exceeded. Effective operation of such incentives requires that each operator be informed of the allowed standard time applicable to the operation to be performed. Such notification is accomplished in the Shops Scheduling System in two ways. The standard time per piece is displayed on the Master Technology Card and on the individual Machine Operator Time Cards submitted in the Work Order Folder. The responsibility for posting the

required information on these documents for the Machine Shop and the Structural Shop is assigned to the Time Study Engineer; in other shops, the Time Study Engineer function is absorbed by the Technology Engineer. Proper posting of the data is accomplished as follows:

1. MASTER TECHNOLOGY CARD

Upon receipt of the Master Technology Card, the Time Study Engineer shall proceed as follows:

1.1 Refer to the standard Time Catalogues available in the Shop files and post the appropriate standard time to each operation listed on the Master Technology Card.

1.2 Return the Master Technology Card to the Technology Engineer.

2. MACHINE OPERATOR TIME CARDS

Upon receipt of the Work Order Folder from the Duplicating Machine Operator, remove the Machine Operator Time Cards and record the following information onto each card.

2.1 Post the following in the space under the caption "Report".

2.1.1 If the work order applies to making of a new part, post a description of the part to be made.

2.1.2 If the work order applies to the repair of a part, post a description of the repair.

2.2 Post a description of the operation to be performed in the space under the caption "Operation".

2.3 Transcribe the Operation No. from the Master Technology Card to the space under the Caption "Step".

2.4 Transcribe the Operating Hours per piece from the Master Technology Card into the space under the caption "Incent. Time".

2.5 Insert the cards into the Work Order Folder and forward the folder to the Technology Engineer-Processor.

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-I - Instructions for Performing the Shop Supervisory Activities - Shop Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection IV-I - Instructions for Performing the Shop Supervisory Activities - Shop Scheduling System

Effective operation of the Shop Scheduling System requires precise coordination of activities associated with the distribution of Work Order Folders; follow-up of work done, maintenance of the Master Schedule Sheet; and reporting of work operations completed. The responsibility for coordinating these activities is assigned to supervision of the respective Maintenance Shops. To assist in this requirement, Maintenance Planning prepares and submits to the shops, Work Order Folders containing all necessary Work Order specifications and the Computer Center publishes updated schedules weekly. It is the responsibility of shop supervision to issue Work Order Folders to shop personnel and to update the Master Schedule Sheets on a timely basis. These functions can best be performed in the following manner:

1. PROCESSING AND DISTRIBUTING WORK ORDER FOLDERS

1.1 As Work Order Folders are received from Maintenance Planning, file them by Order No. and Sub No.

1.2 As Shop operations require assignment of work orders, refer to the Master Schedule Sheet to determine the Work Order of highest priority to be performed on the machine or work station requiring assignment.

1.3 Remove the appropriate Work Order Folder from the file and deliver it to the work station and operator requiring assignment.

1.4 When the assignment is completed, note the completion on the Master Schedule Sheet and refile the folder. Repeat instructions 1.2 through 1.4 until the work order is completed.

1.5 When all operations of a Work Order are completed, forward the Work Order Folder to Maintenance Planning.

2. MAINTENANCE OF THE MASTER SCHEDULE SHEET AND PREPARATION OF THE COMPLETED OPERATION CARD

As operations are completed proceed as follows:

2.1 Note the completion of the operation on the Master Schedule Sheet.

2.2 Enter the operation completion on the Operation Completion Card.

Note: The Operation Completion Card is designed to accommodate and facilitate keypunching requirements. Consequently, all data must be posted in a precise manner in accordance with the following instructions.

2.2.1 Post the code "992" in columns 1 through 3 located at the top of the form. This code need be posted only once for each Completed Operation Card.

2.2.2 Post the applicable two-digit shop code in columns 4 and 5.

2.2.3 Transcribe the applicable five-digit Order No. from the Work Order into columns 6 through 10.

2.2.4 Transcribe the applicable one-, two- or three-digit Sub No. from the Work Order into columns 11 through 13 in accordance with the following:

2.2.4.1 If the Sub No. contains only one digit, post the digit in columns 13. Leave columns 11 and 12 blank.

2.2.4.2 If the Sub No. contains two digits, post the digits in columns 12 and 13. Leave column 11 blank.

2.2.4.3 If the Sub No. contains three digits, post the digits in columns 11, 12 and 13.

2.2.5 Transcribe the Batch No. (if applicable) from the Work Order into columns 14 through 16. Post one-, two- and three-digit numbers in the same manner as described in 2.2.4 above.

2.2.6 Transcribe the applicable Work Order Oper. No. from the Work Order into columns 17 and 18. Post one- and two-digit numbers in the same manner as described in 2.2.4 above.

2.2.7 Post the applicable Type Code shown at the bottom of the Completed Operations Card into column 18.

2.2.8 When all operations completed within a given day are recorded on the Completed Operations Card, forward the card to Maintenance Planning.

EXHIBIT IV I-1

EGYPTIAN IRON AND STEEL COMPANY
SHOP SCHEDULING SYSTEM
COMPLETED OPERATION CARD

DATE: _____

CARD CODE		
9	9	2
1	2	3

CARD COLUMN NUMBERS

SHOP CODE	WORK ORDER IDENTIFICATION									OPERATION NUMBER		TYPE CODE	HOURS DELETED
	Order Number					Sub Number			Batch Number				
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	

Deleted Operation — Type Code 4.

Completed Operation — Type Code 5.

Cancel Complete Order — Type Code 6.

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

SECTION V - FIELD SCHEDULING SYSTEM

SECTION INDEX

USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-A - Summary Report of The Field Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-A - Summary Report of The Field Scheduling System

1. INTRODUCTORY STATEMENT

The Field Scheduling System is designed to facilitate the administration of the plant maintenance activities dealing with:

- The preparation of work orders for Maintenance Field Operations associated with installation and repair of plant operating facilities.
- The scheduling of work orders, labor and equipment associated with the plant Central Maintenance Field Operations.

The administrative functions of the system utilize manual processing only. The principal documents used in the Field Scheduling system are:

- A Work Order Request Form
- A Field Work Order Form

2. SYSTEM OPERATION

Operation of the system involves the following activities:

2.1 The operating and maintenance departments of the plant initiate requests for service.

2.2 Service requests are converted into Work Order Requests by the Field Engineers of the Plant Operating Areas and submitted to the Maintenance Planning Center.

2.3 Work Order Requests are expanded into Work Orders by Field Estimators of the various craft shops.

2.4 Work Order Folders containing all documents necessary to process or execute a work order are prepared by Maintenance Planning and forwarded to Shop Supervision as schedules require.

2.5 Files of documents associated with "Active" and "Completed" work orders are maintained by Maintenance Planning.

2.6 Delivery of materials, tools, equipment, etc., necessary to execute the work orders at required plant locations is arranged for by the Field Estimators.

2.7 The selection of work orders for inclusion in the Field Work Order Schedules and the assignment of shop personnel to work requirements, is made by plant operating and Maintenance Management personnel attending a Weekly Priority Designation Meeting.

2.8 Work Order Completions are reported by shop supervision. Adjustment of schedules and disposition of documents associated with completed work orders is directed by Maintenance Planning.

3. FUNCTIONAL RESPONSIBILITIES

3.1 Operating

3.1.1 Submit requisitions for maintenance service on a Work Order Request Form to Maintenance Planning.

3.1.2 Participate in weekly meetings with Central Maintenance Planning to coordinate the development of schedules affecting department and plant shutdown maintenance requirements.

3.2 Maintenance Planning

3.2.1 Convert Work Order Requests into Work Orders.

3.2.2 Prepare required number of copies of blueprints, work orders and job folders necessary to execute field maintenance requirements.

3.2.3 Coordinate the activities of the Field Estimators.

3.2.4 Schedule and conduct Weekly Priority Designation Meetings.

3.2.5 Coordinate the development of work order schedules and the assignment of shop personnel to fulfill work order requirements.

3.2.6 Maintain files of job folders and blueprints.

3.2.7 Distribute job folders to shop supervision on a timely basis.

3.2.8 Direct and coordinate the delivery of tools, materials, equipment, etc., to work areas.

3.2.9 Direct the disposition of documents associated with completed work orders.

3.3 Shop Supervision

3.3.1 Provide Maintenance Planning with data reflecting availability of shop personnel for assignment.

3.3.2 Direct the operations associated with work order execution.

3.3.3 Report completed work orders to Maintenance Planning.

A Flow diagram displaying a sequential order of processing the system operations is illustrated in EXHIBIT V-A-I of this subsection.

SOME FIGURES
OF THIS DOCUMENT
ARE TOO LARGE
FOR MICROFICHING
AND WILL NOT
BE PHOTOGRAPHED.

USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-B - Instructions for Performing the Field Engineer Operation - Field Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-B - Instructions for Performing the Field Engineer Operation - Field Scheduling System

The principal functions performed by the Field Engineer are:

- To prepare a Work Order Request Form.
- To maintain Work Order Request files.
- To provide the Weekly Maintenance Meetings with information reflecting the field maintenance requirements of his assigned operating area.

Note: The above listed functions are those required for effective execution of the Field Scheduling System and do not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the above listed functions.

1. PREPARATION OF THE WORK ORDER REQUEST (EXHIBIT V-B-1)

Requests for Central Maintenance Field Service are initiated by Operating Management or by personnel attending the weekly Priority Designation Meetings scheduled and conducted by Maintenance Planning. Such service requests must be converted into Work Order Requests prepared in duplicate.

Preparation of the Work Order Request form requires the following information posted in the appropriate form locations as specified in EXHIBIT V-B-1.

Posting Location	Item
A.	WORK ORDER NO. - Post the unique five-digit work order number selected from the group of numbers assigned to the operating area requesting the service.
B.	REQUESTING DEPARTMENT - Post an alphabetic description of the department requesting the service.
C.	DRAWING NO. - Indicate whether a German or Russian drawing is involved by circling the appropriate letter in the caption, then post the appropriate drawing number.
D.	PART NO. - Post the identifying part number shown on the drawing.
E.	QUANTITY ORDERED - This information is required only if more than one unit is being installed or repaired.
F.	DATE REQUIRED - Post the date of the specific turn the field work is scheduled to be started.

Posting Location	Item
G.	PART NAME OR REPAIR TITLE - Describe briefly the type of repair or installation to be made.
H.	COST CENTER - Post the four-digit plant cost center code.
I.	WORK REQUIRED FOR - Indicate by a check mark in the appropriate space on the form whether the work to be done is associated with a major repair, a repair turn or if it is routine maintenance.
J.	PRIORITY NUMBER - Post the applicable priority number, from the list established and issued by the Office of the Manager of Central Maintenance, illustrated in EXHIBIT V-B-2 of this subsection.
K.	WEIGHT PER PIECE - List this data only if the work order is for the field maintenance forces to make a part in the field.
L.	TOTAL WEIGHT - List this data only if item K is applicable and several parts are made.
M.	BRIEF DESCRIPTION OF FIELD WORK REQUIRED - Describe briefly what repair is required and, if possible, how such work shall be done.

When postings are completed, proceed as follows:

1.1 File the duplicate copy in an "Active" Work Order Request file.

1.2 Forward the original to the Maintenance Planning Office.

2. MAINTENANCE OF WORK ORDER REQUEST FILES

All Field Engineers are required to maintain files of "Active" and "Completed" Work Order Requests for the particular areas they service. The "Active" Work Order Request File is initiated with the action described in 1.1 above.

When a specific Work Order Request is fulfilled or completed by the shop field forces, Maintenance Planning will notify the Field Engineer of such completion by submitting a copy of the Work Order Request stamped "Completed". Upon receipt of the stamped form, the Field Engineer shall remove the original from the "Active" file and destroy it. The stamped copy shall then be placed into a "Completed" Work Order File for reference as needed.

3. ATTENDING WEEKLY MAINTENANCE MEETINGS

Changes in plant maintenance requirements, occasioned by equipment failures or breakdowns, necessitate constant review and change of priorities assigned to work orders. To permit timely consideration of such changes, a weekly

meeting of Operating and Maintenance personnel shall be scheduled by the Maintenance Planning Center. It is suggested the following personnel attend these meetings for the reasons noted herein.

Manager of Central Maintenance - To preside over the meetings with authority to commit maintenance facilities and personnel as required.

Manager of Maintenance Planning - To coordinate the activities of Maintenance Planning personnel, as required, in the development of field schedules accommodating the decisions made at the meeting.

Technology Engineer-Processor (Field Scheduler) - To supply complete details of jobs completed since the last meeting, jobs in progress and their current status, all Work Order Requests under consideration and the total number of men and hours available from the respective field shops by day and turn.

Field Engineer - To represent the operating areas he services by supplying data comprehending a complete list of work orders requested, a record of jobs completed since the last meeting, a list of jobs currently in progress and their status and a priority list of jobs to be scheduled in his area.

Engineer of Assigned Maintenance - To assist his assigned Field Engineers in making changes in priority designations. The assigned Maintenance Engineers should have authority to make decisions affecting the priority lists established for his assigned operating areas.

The meetings shall be conducted in a manner that will permit each plant Field Engineer, accompanied by his Assigned Maintenance Engineer, to attend the meetings at a specified or scheduled time. The attendance time allotted each Field Engineer shall be limited to 10 to 25 minutes depending on the size and complexity of operating units in the area he services. Adherence to time schedules shall be the responsibility of the Chairman. Implementation of the suggested schedule will permit consideration of total plant requirements in about four hours or one afternoon.

EXHIBIT V B-1

EGYPTIAN IRON AND STEEL CO. - CENTRAL MAINTENANCE DEPARTMENT
WORK ORDER REQUEST - FIELD DATE:

Work Order Number	Requesting Department	Drawing Number G R	Part No.	Qty. Ordered	Date Required
(A)	(B)	(C)	(D)	(E)	(F)

Part Name of Repair Title	Cost Center	Work Required For		
		Routine Maint.	Repair Turn	Major Repair
(G)	(H)		(I)	

Priority Number	Weight Per Piece	Total Weight	Elect. Shop	Pipe Shop	Masonry Dept.	Carp. Shop	Paint Shop	Tin Shop	Boiler Shop	Weld Shop	Riggers Shop
(J)	(K)	(L)									

Brief Description of Field Work Required

(M)

EGYPTIAN IRON AND STEEL COMPANY
GENERAL MAINTENANCE DEPARTMENT

ORGANIZATION SHEET NO. 6/76
SPARE PARTS ORDERS

With reference to organization sheet No. 4/74 concerning spare parts manufacture, in order to expedite delivery of spare parts associated with major repairs, the following priority codes are established for use as of July 1, 1976. The codes properly rank spare part priorities and must be posted appropriately on the Work Order Request form. Examples of proper methods of coding are also illustrated.

Priority Number	Basis of Priority	Coding Example: Order Number	Coding Example: Priority Number
1.	EMERGENCY PRIORITY - This priority code is reserved for emergency breakdowns only. Two shops are available for processing emergency work orders. Orders associated with steel-making departments shall be processed in the Metallurgical shops; emergency orders for all other departments shall be processed in the Old Machine Shop.	12345 /	1/76
2.	URGENT PRIORITY - Requests for urgent service must be initiated and signed by the Department	12345 /	2/76

Priority Number	Basis of Priority	Coding Example Order Number / Priority Number
	Manager. Quantities made shall be limited to the Standard Quantity.	
3.	PLANNED REPAIRS PRIORITY - Requests for service of this priority must be initiated and signed by the Chief Maintanance Engineer of the department requesting the service.	12345 / 3/76
4.	SPARE REPLACEMENT PRIORITY - Requests for service of this priority must be initiated and signed by a Maintenance Engineer.	12345 / 4/76
5.	DESIGN CHANGE PRIORITY - Requests for service of this priority must be initiated and signed by a Department Manager or Director. At the time of request, the Manager or Director must withdraw the original copy of the drawing from the active files and cancel it.	12345 / 5/76
6.	TOOL OR PRODUCTION AID MANUFACTURE PRIORITY - Requests for service of this priority must be initiated and signed by either a Maintenance Chief Engineer or a Production Chief Engineer.	12345 / 6/76

Priority Number	Basis of Priority	Coding Example Order Number	Priority Number
7.	NEW EQUIPMENT PRIORITY - Requests for service of this priority must be initiated and signed by a Department Manager.	12345 /	7/76
8.	MINOR REPAIR PRIORITY - Requests for service of this priority must be initiated and signed by a Field Maintenance Engineer.	12345 /	8/76
9.	OUTSIDE CUSTOMER PRIORITY - Requests for service of this priority must be initiated and signed by the Director of the Central Planning Department.	12345 /	9/76

SUPPLEMENTARY INFORMATION

1. All work orders associated with priorities 3 through 8 require the preparation of a Work Order Request form and a Technology Master Card; Work Orders associated with priorities 1 and 2 require a Technology Master Card only.

2. In the event of a breakdown on the 2nd or 3rd shift, work orders can be executed upon the signature of the Night Factory Director or the Factory Maintenance Engineer. Preparation of documents can be initiated later.

ESTIMATED PROCESSING TIMES (LEAD TIME)

Based on Organization Sheet 4/74, processing time after receipt of the Technology Master Card are estimated as follows:

Type of Processing	Estimated Processing Time
Casting without machining operator	3 months
Forged and steel structural parts with machining operations	4 months
Forged and steel structural parts without machining operations	3 months
Spare parts requiring special tools	4 month
Casting requiring model or pattern and machining operations	6 months
Casting not requiring model or pattern but requiring machining operations	4 months

NOTIFICATION REQUIREMENT

During the first half of every month, every section or department shall receive a list of Work Orders for spare parts to be completed by the end of the month.

Signature _____
General Manager of the
Central Maintenance Department

22.5.1976

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-C - Instructions for Performing the Technology Engineer Processor - Field Operation - Field Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-C - Instructions for Performing the Technology Engineer Processor - Field Operation - Field Scheduling System

The principal functions performed by the Technology Engineer Processor-Field are:

- To maintain a log record of Work Order Requests.
- To initiate and direct the preparation of Work Order Folders.
- To maintain files of Work Order Requests.
- To attend Weekly Maintenance Meetings.
- To coordinate Field Estimator activities associated with delivery of materials, equipment, etc., to field work area.

Note: The above stated functions are those required for the effective execution of the Field Scheduling System and do not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the above listed functions.

1. MAINTENANCE OF THE WORK ORDER REQUEST LOG

To assure proper Maintenance Planning service and continuity of processing in the event of accidental loss of Field Work Order Requests and/or Field

Work Orders, the Technology Engineer Processor-Field shall maintain a log record of Work Order Requests received. Such log shall contain the following information:

1.1 Work Order No.

1.2 Requesting Department.

1.3 Date Work Order Request was received at Maintenance Planning.

1.4 Date Work Order Request was released by Maintenance Planning for the preparation of a Work Order and folder.

1.5 Name of person entering the log information.

2. INITIATING AND DIRECTING THE PREPARATION OF WORK ORDER FOLDERS

Effective field equipment installations and repairs are dependent upon the provision of documented information dealing with material and labor utilization and proper methods of processing. This information is made available to the field maintenance work forces in a work order folder. The responsibility for preparing and assembling such folder is assigned to the Technology Engineer Processor-Field. The proper procedure for initiating actions involved in the preparation of a field work folder is as follows:

2.1 After entering the Work Order Request in the log record, review the request to determine which field shops will be involved in the processing of the work order.

2.2 Note the shops to be involved in the appropriate spaces allocated on the Work Order Request Form.

2.3 Forward the Work Order Request to the microfilm printing machine operator with instructions to prepare the required number of blueprints for each shop to be involved.

3. MAINTAINING FILES OF WORK ORDER REQUESTS

3.1 Upon receipt of the Work Order Request from the Field Estimator, indicating that a Work Order Folder has been prepared, file the Work Order Request in an "Active" Work Order Request File.

3.2 Upon raceipt of the Work Order Folder from the Field Shop, indicating the completion of a Work Order, proceed as follows:

3.2.1 Remove the Work Order Request from the "Active" file, stamp it "Completed" and place it into a "Completed" Work Order Requeat file.

3.2.2 Remove the Work Order Request from the Work Order Request "Duplicated" file, stamp it "Completed" and forward it to the appropriate Field Engineer.

4. ATTENDING WEEKLY MAINTENANCE MEETINGS

Instructions listing the responsibilities of all personnel attending the Weekly Maintenance Meetings are described in Item 1 of Subsection V-B of this report.

5. COORDINATING FIELD ESTIMATOR ACTIVITIES ASSOCIATED WITH DELIVERY OF EQUIPMENT, MATERIALS, ETC., TO THE PLANT WORK AREAS

At times, field equipment repairs and/or installations require personnel from several field shops before the total work order requirements are fulfilled. When such occurs, it is the responsibility of the Field Estimator to arrange for delivery of materials, tools, etc., required at the work area by the respective Field Shops. To assure that such deliveries are made on a timely basis, the Technology Engineer Processor-Field shall coordinate these activities by supplying specific delivery times and following up on deliveries made.

USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-D - Instructions for Performing the Microfilm Printer Operator Operation - Field Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-D - Instructions for Performing the Microfilm Printer Operator Operation - Field Scheduling System

The principal function of the Microfilm Printer Operator is to reproduce the proper number of blueprints necessary in the assembly of Field Work Order Folders.

Note: The above stated function is required for the effective execution of the Field Scheduling System and does not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the stated function.

1. Reproduction of Blueprints for the Work Order Folders

Upon receipt of the Work Order Request Form, containing notations by the Technology Engineer-Processor detailing the number of blueprints required by each shop involved, proceed as follows:

1.1 Reproduce the proper number of blueprints.

1.2 Forward the blueprints and the Work Order Request Form to the Multilith Operator.

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-E - Instructions for Performing the Multilith Operator Operation - Field Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-E - Instructions for Performing the Multilith Operator Operation - Field Scheduling System

The principal functions performed by the Multilith Operator are:

- To prepare a Field Work Order Form
- To assemble a Field Work Order Folder

Note: The above listed functions are those required for effective execution of the Field Scheduling System and do not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the above listed functions.

1. PREPARATION OF THE FIELD WORK ORDER REQUEST COPIES (EXHIBIT V-B-1)

Upon receipt of the Work Order Request and the blueprints from the Microfilm Machine Operator, proceed as follows:

1.1 Make a mat of the Work Order Request Form.

1.2 Reproduce three copies of the Work Order Request form for each shop involved.

1.3 File the original Work Order Request in the "Active Orders Received File".

1.4 File one copy of the Work Order Request in the "Active Orders Duplicated" file maintained for each shop involved.

1.5 Set aside the remaining copies for subsequent insertion into the Work Order Folder.

2. PREPARATION OF THE WORK ORDER COPIES (EXHIBIT V-E-2)

After reproducing the copies of the Work Order Request Form, proceed as follows:

2.1 Merge the Work Order Request with a blank Field Work Order Specification Sheet (EXHIBIT V-E-1) and produce a mat for the Work Order Form (EXHIBIT V-E-2).

2.2 Reproduce three copies of the Work Order form for each shop involved.

2.3 Set aside all copies for subsequent insertion into the Work Order Folder.

3. PREPARATION OF THE WORK ORDER FOLDER

3.1 Prepare a Work Order Folder, consisting of the following, for each shop involved:

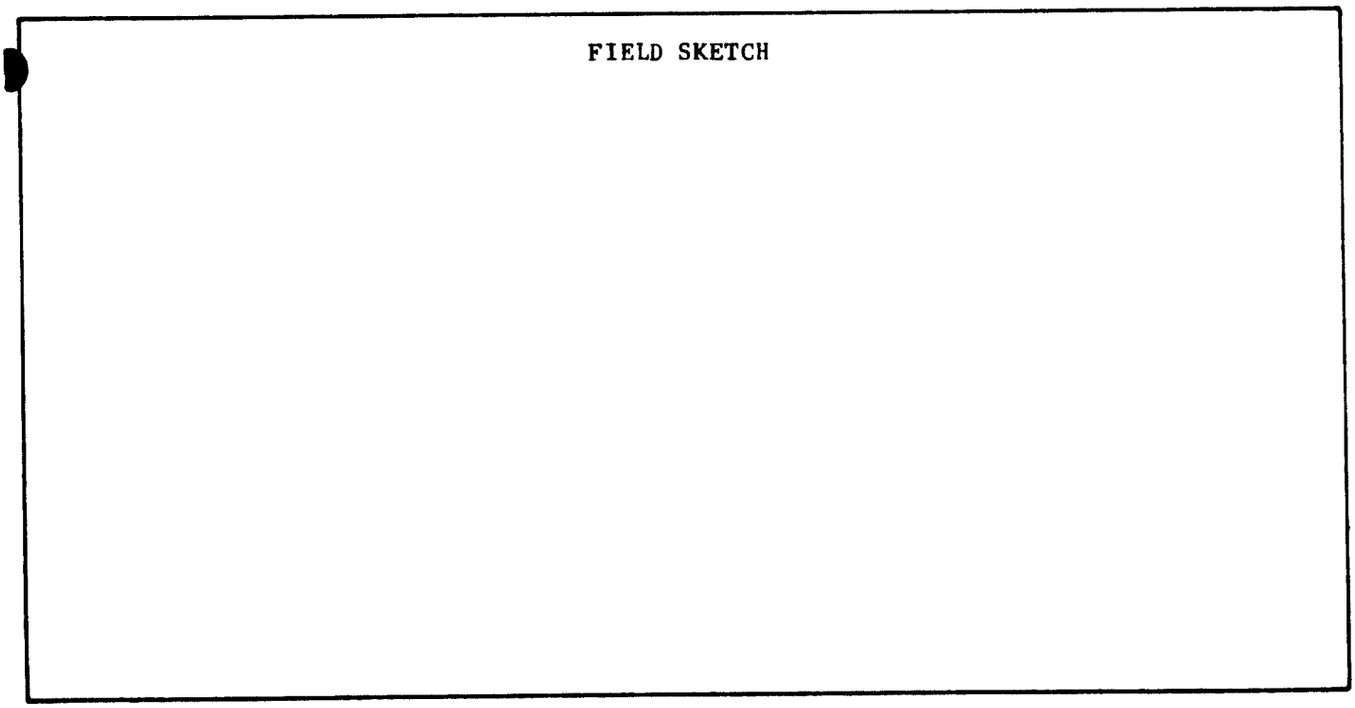
3 copies of the Work Order Form

2 copies of the Work Order Request Form
1 copy of each blueprint required

3.2 Forward one folder to each Field Estimator involved.

(Front)

FIELD SKETCH



Additional Drawing Required

Over

MATERIAL REQUIRED

SHOP TOOLS REQUIRED

SPECIAL EQUIPMENT REQUIRED

PERSONNEL REQUIREMENTS

Craft	Number	Hours	Craft	Number	Hours

SPECIAL JOB INSTRUCTIONS

EGYPTIAN IRON AND STEEL CO. - CENTRAL MAINTENANCE DEPARTMENT
WORK ORDER REQUEST - FIELD DATE:

Work Order Number	Requesting Department	Drawing Number G R	Part No.	Qty. Ordered	Date Required

Part Name of Repair Title	Cost Center	Work Required For		
		Routine Maint.	Repair Turn	Major Repair

Priority Number	Weight Per Piece	Total Weight	Elect. Shop	Pipe Shop	Masonry Dept.	Carp. Shop	Paint Shop	Tin Shop	Boiler Shop	Weld Shop	Riggers Shop

Brief Description of Field Work Required

FIELD SKETCH

Additional Drawing Required

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

MATERIAL REQUIRED

SHOP TOOLS REQUIRED

SPECIAL EQUIPMENT REQUIRED

PERSONNEL REQUIREMENT

Craft	Number	Hours	Craft	Number	Hours

SPECIAL JOB INSTRUCTIONS

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-F - Instructions for Performing the Field Estimator Operation - Field Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-F - Instructions for Performing the Field Estimator Operation - Field Scheduling System

The principal functions performed by the Field Estimator are:

- To prepare Field Work Orders.
- To file and release Work Order Folders.
- To arrange for delivery of materials, equipment, tools, etc., to field maintenance jobsites.
- To maintain files of "Active" and "Completed" Work Orders.

Note: The above listed functions are those required for effective execution of the Field Scheduling System and do not necessarily reflect all functional responsibilities of the position.

The following instructions set forth procedures for performing the activities required to execute the above listed functions.

1. PREPARATION OF THE FIELD WORK ORDER (EXHIBIT V-B-2)

The Work Order Folders submitted to the Field Estimators will contain three blank copies of the Work Order Form. The Field Estimator shall prepare and post the Work Order specifications on all three copies.

Preparation of the specifications may, at times, require the estimator to visit the jobsite to determine specific requirements.

A properly prepared Work Order shall contain the following data posted to the appropriate location on the Work Order Form. The data posted shall pertain only to the craft activities associated with the specific shop assigned to the particular field estimator.

1.1 Field Sketch

A properly drawn sketch shall show the location of the work site and the equipment to be worked on. It shall also show limitations in clearances, elevations, etc., that may affect the processing of the work order requirements. When applicable, it should also show the location of high-tension wiring or other hazardous conditions that may interfere with field work.

1.2 Material Required

List all materials that will be needed to complete the repair or installation covered by the work order. Material descriptions shall be as definitive as possible showing size, grade, number required, etc.

1.3 Shop Tools Required

List all the shop tools that will be required over and above the belt tools normally carried by field maintenance personnel.

1.4 Special Equipment Required

List all equipment, such as mobile cranes, air compressors, trucks, etc., that will be required.

1.5 Personnel Required

Post the number of men and the total hours required by craftsmen assigned from the particular shop involved.

1.6 Special Job Instructions

Post any unusual specifications not covered by items 1.1 through 1.6. Special instructions shall contain items such as the following:

Metallurgical and inspection requirements, such as stress relief, magnaflux, etc.

Special material requirements.

Special Shipping Specifications.

Special Safety Regulations.

Operating Contact.

2. FILING AND RELEASING THE WORK ORDER FOLDERS

After the work order specifications are posted, the Field Estimator shall proceed as follows:

2.1 File one copy of the Work Order Request in an "Active" Work Order Request File.

2.2 File one copy of the Work Order in an "Active" Work Order file.

2.3 Forward one copy of the Work Order Request to Maintenance Planning.

2.4 File the Work Order Folder in an "Active" Work Order Folder File.

After a work order execution date is determined at the weekly Maintenance Meeting, proceed as follows:

2.5 Remove the Work Order Folder from the file and forward it to shop supervision.

3. DELIVERY OF MATERIALS, TOOLS, ETC., TO THE JOBSITE

Effective execution of Work Orders depends on timely availability of materials, supplies, etc., at the jobsite prior to the starting of the work involved. It is the responsibility of the Field Estimator to arrange for and follow-up on all such deliveries required. When more

than one craft shop is involved, the Technology Engineer Processor-Field will coordinate the activities of the several Field Estimators involved.

Timing of deliveries shall be governed by the complexity and magnitude of the work involved. At times, it may be advantageous to delay selected deliveries until after the work has started. The Field Estimator is responsible for following up on such delayed deliveries.

USS Engineers and Consultants, Inc.

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-G - Instructions for Performing the Field Supervisory Activities - Field Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-G - Instructions for Performing the Field Supervisory Activities - Field Scheduling System

Effective operation of the Field Scheduling System requires a precise coordination of activities associated with the distribution of Work Order Folders, follow-up of work done and reporting of Work Orders completed. The responsibility for coordinating these activities is assigned to supervision of the Field Maintenance Shops. To assist in this requirement, the Field Estimator prepares work order specifications and Maintenance Planning prepares and submits Work Order Folders containing work orders and blueprints to Field Shop Supervision. It is the responsibility of Field Shop Supervision to distribute Work Order Folders to Field Maintenance personnel, to follow-up on work performance and to report work order completions. These functions can best be performed in the following manner.

1. PROCESSING AND DISTRIBUTING WORK ORDER FOLDERS

1.1 As Work Order Folders are received from the Field Estimator, review the contents of the folder for accuracy and completeness of data and then place the folder into an "Active" Work Order Folder File.

1.2 When the Technology Engineer Processor-Field submits a notification that a Work Order has been scheduled for processing at the weekly Maintenance Meeting, remove the folder from the file, assign personnel to process the work order and release the folder to the field forces.

1.3 Direct the field forces in the processing of the Work Order.

1.4 When the Work Order is completed, forward the Work Order Folder to the Field Estimator.

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-H - Supplementary Instructions - Field Scheduling System

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

Subsection V-H - Supplementary Instructions -
Field Scheduling System

1. PROCESSING MAJOR REPAIR JOBS

It is recommended that on major repair jobs an Engineer be placed on special assignment to coordinate all phases of the job. The assigned Engineer should be given full responsibility for the preplanning of the job and coordinating the activities of the Field Estimator, Field Engineers and assigned Maintenance Supervision. He should work with Shop Supervision to assure that required prefabricated material will be completed on time. He should expedite the resolution of all problems and to the best of his ability remove all obstacles impending job completion.

The present practice of preparing charts detailing the work elements and assignment of personnel should be continued. These charts, in addition to a complete set of blueprints and other data, should be maintained at a control center at the jobsite. The charts should be updated each turn to show actual accomplishments and each morning should be reviewed with all responsible department heads involved in the repair job. The Charts will show bottlenecks, thereby indicating need for actions to be taken.

It is also recommended that on major repairs an Engineer be assigned on each turn with authority to make decisions pertaining to:

A. Assignment of additional personnel, materials or equipment from the shops.

B. Assignment of craftsmen to specific tasks.

C. Priority of tasks.

With the suggested mode of operation, the most efficient use of men, material and equipment can be made at the time bottlenecks or problems occur.

2. AWARDING JOBS TO OUTSIDE CONTRACTORS

The Manager of Central Maintenance in cooperation with the Manager of Maintenance Planning will have the added reaponsibility of making recommendations to the Plant Chairman as to which jobs must be awarded to outside contractors. These two individuals are in the most knowledgeable position to make these decisions because of the total information available to them. They know the present work schedule, future work schedule, the present work load of each maintenance shop and field crews, and the backlog of all shops and work forces. They are also in a position to recommend the time the contractor must start and finish his project

so that it does not interfere with other Central Maintenance Planned Maintenance Jobs or production schedules.

On certain jobs, it may be advisable to assign an Engineer to coordinate the activities between the contractor and Egyptian Iron and Steel Maintenance forces and shops. With such assignment, any assistance required by the contractor can be planned so that the normal plant maintenance or shop work is not disrupted.

[redacted]

[redacted]

[redacted]

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

SECTION VI - ALLOCATION OF FIELD MAN-HOURS

Field maintenance operations are generally associated with equipment installations or repairs that require the shutdown of selected plant facilities. Consequently, the scheduling and performance of field maintenance work has significant impact on plant productivity. To minimize this impact, maintenance functions must be performed precisely and as quickly as possible, and at the same time, they must be scheduled throughout the plant in a manner that best maintains continuity of plant operations.

The procedures established for planning and scheduling Field Work Orders, as set forth in Section V of this report, are designed to enhance expeditious and effective maintenance service. This section contains procedures designed to maximize the continuity of plant operations through a controlled allocation of field maintenance work forces. The allocation is made in accordance with a budgeted standard that recognizes the magnitude or size of a department and its impact on plant operations.

The following paragraphs set forth procedures for:

A. Determining an allocation standard based on budgetary considerations.

B. Allocating field maintenance man-hours in accordance with such standards.

As set forth, the procedures require the preparation and use to two separate forms, respectively titled, "Production Statistics and Field Man-Hour Allocation" and "Craftsmen Availability Calculation Report". The following instructions contain procedures for preparing the reports.

1. PRODUCTION STATISTICS AND MAN-HOUR ALLOCATION (EXHIBIT VI-1)

The production statistics set forth on this report are used to determine:

A. The standard number of field man-hours used by a specific department at a normal rate of operation.

B. The number of field man-hours to be scheduled at a current rate of operation.

Once calculated, the normal or standard production rate and the standard number of man-hours allocated by shop, can be preprinted on the form. The current or scheduled production rate and the number of man-hours to be allocated at the scheduled rate must be posted each week. The determinations and postings are made as follows:

1.1 For each producing department, select a reference period of one week or more in duration that represents a normal rate of operation.

1.2 Determine the standard production rate for each department in the following manner.

1.2.1 Calculate the average weekly production rate (expressed in an appropriate production determinant, such as, hot metal tons, ingot tons, tons rolled or tons shipped) experienced in the reference period.

1.2.2 Print the calculated weekly rate in the appropriate location on the form.

1.3 Determine the standard number of man-hours allocated per shop as follows:

1.3.1 Calculate the average number of man-hours of the particular shop craft classified per week in the respective departments in the reference period.

1.3.2 Print the calculated number of man-hours classified per week in the appropriate location on the form.

1.4 Determine the number of man-hours to be allocated for each delineative shop of the scheduled rate as follows:

1.4.1 Post the scheduled rate of production for each department on the appropriate location on the form.

1.4.2 Divide the scheduled rate of production by the standard rate of production and post the result opposite the caption "X"

Note: Separate calculations are required for each department

1.4.1 Multiply the standard man-hours allowed for each shop by the X factor calculated in 1.4.2 above and post the resulting man-hours in the spaces designated for scheduled man-hours on the form. The man-hours thus posted will serve as a guide to the allocation of actual hours

If so desired, a man-hour allocation performance can be calculated by dividing the total actual shop hours allowed to a department by the total hours scheduled for a department

[illegible]

Proper allocation of field man-hours to field maintenance jobs requires knowledge of hours available in each maintenance craft. EXHIBIT VI-2 displays a form designed to facilitate the computation of such data. It provides details of calculations which determine the man-hours available each week in each maintenance craft, after adding proper allowances for personnel on holidays, sick leave, absenteeism, special assignment, etc.

It is suggested that each Maintenance Shop submit a Craftsmen Availability Report to Maintenance Planning, sufficiently in advance of the weekly Maintenance Meeting, to permit early determination of personnel requirements for critical high-priority field work. Such preliminary determinations will alleviate and facilitate the allocation of available remaining hours for scheduled allotments specified on the Man-Hour Allocation Report.

3. FIELD MOBILE BOARD (EXHIBIT VI-1)

The assignment of available craftsmen to Field Maintenance Work, must accommodate three basic plant needs. First, personnel must be assigned to top priority or critical jobs, normally, assignments must be made to scheduled planned repairs, and thirdly, the remaining available manpower must be assigned to routine field maintenance work.

To ensure proper consideration be given to top priority jobs and scheduled planned repairs, it is suggested that a large "Schedule Board" similar to that illustrated in EXHIBIT VI-1, be designed and installed in the Maintenance Planning Meeting Room. It is further suggested that prior to the Weekly Meeting, the Field Supervisor of each Maintenance craft identify all their critical jobs and major repairs in which some of the particular crafts must be assigned and then posed the personnel requirements of these jobs.

Availability of these data will enable the personnel attending the Weekly Meeting to determine quickly the number of men available in each craft for assignment to routine or noncritical field work.

[illegible]
[illegible] PRODUCTION STATISTICS [illegible] ALLOCATION
FOR [illegible] ________

[illegible]	Blast Fce	[illegible]	[illegible]	[illegible]	Heavy Section	Ovrg. Conv.

PRODUCTION STATISTICS

[illegible]	[illegible]						
	[illegible]						
	[illegible]						

[illegible] ALLOCATION

[illegible]	At Std.	Sched.	Act.	At Std.	Sched.	Act.	At Std.	Sched.	Act.	At Std.	Sched.	Act.	At Std.	Sched.	Act.	At Std.	Sched.	Act.
[illegible]																		
[illegible]																		
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EXHIBIT VI-1

EXHIBIT VI-2

EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

CRAFTSMEN AVAILABILITY
CALCULATION REPORT

SHOP _____
WEEK ENDING _____

FIRST SHIFT (7 Hours at 6 days)

Total men x 42 hours
Men on holiday or sick x 42 hours (minus)
Total (A)
Absenteeism (% of A) (minus)
Total
Men on special assignments x 42 hours (minus)
Total hours available
Men available (Total Hours ÷ 42)

SECOND SHIFT (8 Hours at) days)

Total men x 40 hours
Men on holiday or sick x 40 hours (minus)
Total (B)
Absenteeism (% of B) (minus)
Total
Men on special assignments x 40 hours (minus)
Total hours available
Men available (Total Hours ÷ 40)

THIRD SHIFT (8 Hours at) days)

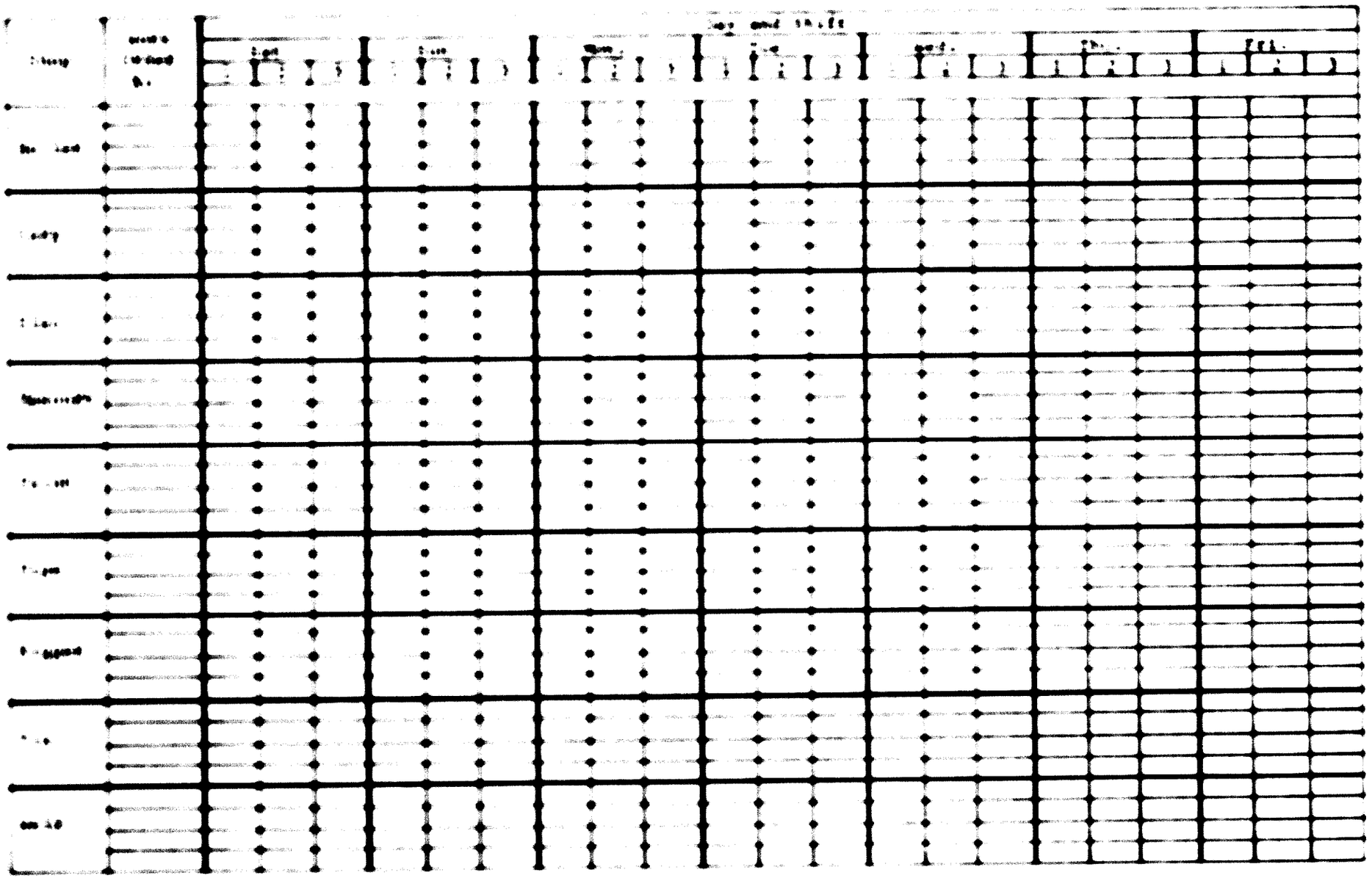
Total men x 41 hours
Men on holiday or sick x 41 hours (minus)
Total (C)
Absenteeism (% of C) (minus)
Total
Men on special assignments x 41 hours (minus)
Total hours available
Men available (Total Hours ÷ 41)

FOURTH SHIFT (12 Hours at) days)

Total men x 48 hours
Men on holiday or sick x 48 hours (minus)
Total (D)
Absenteeism (% of D) (minus)
Total
Men on special assignments x 48 hours (minus)
Total hours available
Men available (Total Hours ÷ 48)

NUMBER OF HOURS AND MEN AVAILABLE

	Hours	Men
First shift		
Second shift		
Third shift		
Fourth shift		
Grand total		



EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

SECTION VII - MAINTENANCE MANAGEMENT ORGANIZATION

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EGYPTIAN IRON AND STEEL COMPANY
MAINTENANCE SYSTEMS AND CONTROLS

SECTION VII - MAINTENANCE MANAGEMENT ORGANIZATION

The maintenance controls described in this report provide a basis for a systematic treatment of the control maintenance activities of the Egyptian Iron and Steel Company. Operated and administered properly, these systems will bring about significant improvements in plant productivity and substantial reductions in purchasing and maintenance costs. However, assurance of effective operation and administration of the systems is dependent upon the inclusion and fulfillment of two very basic management principals. These are:

A. That methods of performing the functional activities involved in the operation of the systems are documented and utilized consistently.

B. That the Maintenance Management organization needed to administer the program be structured in a fashion that will clearly set forth lines of authority and specify the inherent responsibilities of the positions involved.

The first six sections of this report fulfill the requirements of A above. The requirements of B above are set forth in the Maintenance Management organization recommended in this section.

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[redacted]

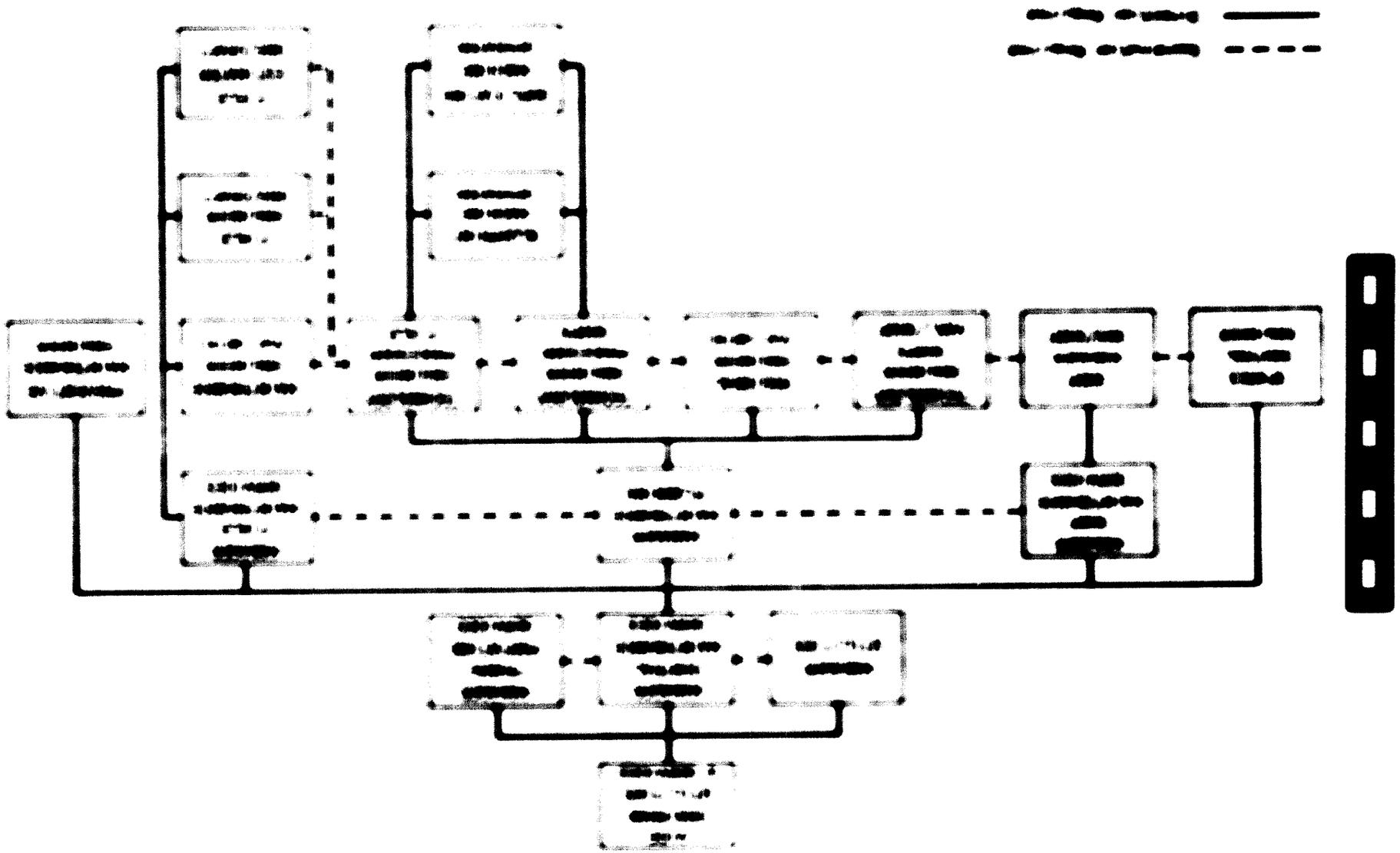
1. [redacted]

1.1 [redacted]

1.2 [redacted]

1.3 [redacted]

[redacted]



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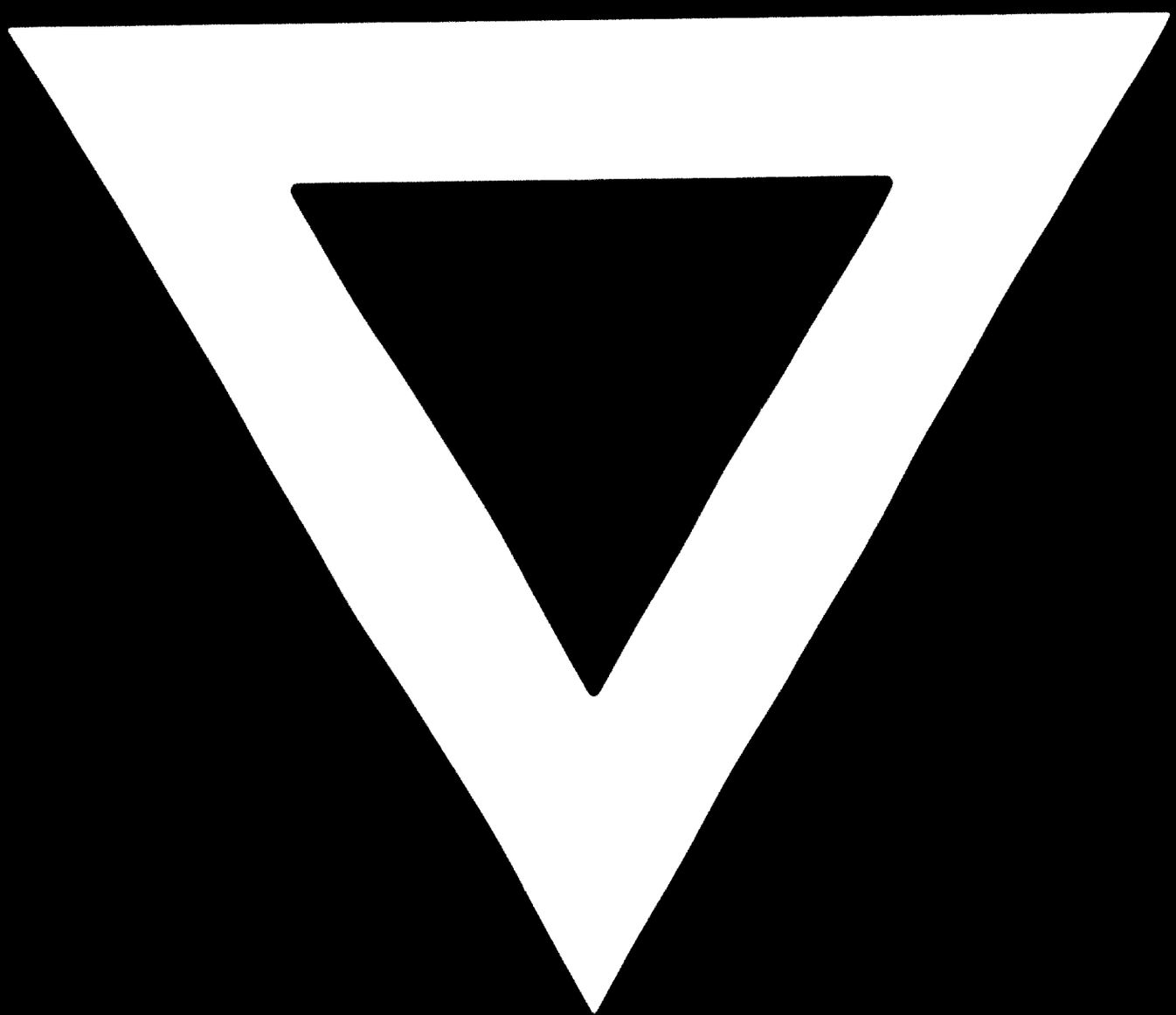

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