

WAREHOUSE STOCK
REPORTING AND ANALYSIS
PROJECT

Burton Grad, Specialist
Production Control Service
Manufacturing Services

William B. Pomeroy, Specialist
Auxiliary Services Section
Apparatus Sales Division

December 22, 1955

The control of warehouse stocks today is often too little and too late. The product department, which should be in the best position to direct its overall stock activities, receives information on the average 14 days after the activity has taken place. In addition, the data is of a summary nature so that details important to most effective control are not in a form suitable for analysis or review.

The objective of the Warehouse Stock Reporting and Analysis Project then was to do two things: take the record-keeping function out of the sales office warehouse and put it back in the product department where it seems logically to belong; secondly, provide all functions in the product department with information as soon after the action as possible in a form adaptable to automatic or mechanized processing. The by-product of these changes should be improved utilization of warehouse stock inventory, plus a substantial clerical cost reduction estimated by Apparatus Sales as being at least one-half of present inventory control operating costs.

Production Control Service and the Apparatus Sales Division represented by Auxiliary Services and the Boston and New York sales offices have worked with the Meter and Distribution Transformer departments as well as six other departments having high interest in this warehouse stock project to develop a satisfactory program. As a result of a series of meetings and discussions, general agreement has been reached on a proposed solution. This involves the use of Western Union and IBM equipment in the following way:

- . After a customer's order for a stock item has been edited in the sales office and availability verified, an 8-part invoice will be prepared on a Western Union teletypewriter.

- . Fixed information such as customer's name and address and product description will be entered automatically by a transmitter reading pre-punched paper tape and the variable data inserted by the typist.
- . Simultaneously with the typing of the invoice set, shipping papers will be prepared automatically on a teleprinter located at the warehouse itself.
- . As a by-product of the typing operation, punched paper tapes will be prepared, one for the district office and one for the product department concerned, each containing only the selected data in which each function is specifically interested.

On this basis, then a single typing operation accomplishes four independent steps simultaneously: invoicing, warehouse shipment authorization, district office tape, and product department tape.

One of the resultant punched paper tapes will be mailed to the product department where it will be passed through a tape-to-card converter to produce punched cards. These cards in turn will form the basis not only for complete mechanized processing of the departmental stock replenishment program but also for the necessary financial and marketing operating reports.

The other punched paper tape covering the district office data will be forwarded to the responsible district office where it will be converted to punched cards and used for the accounts receivable routine.

In order to explore more fully the potential problems inherent in this integrated approach, a laboratory has been set up at Western Union which will be available for both demonstration and workshop purposes until

the end of January. This laboratory, containing both Western Union and IBM equipment will be used to aid in "debugging" the system and to demonstrate to all of the operating departments and sales offices concerned the feasibility and practicality of this system approach to the warehouse problem.

In order to provide a more thorough and realistic evaluation of the system, it has been tentatively agreed that the New York Apparatus Sales Office together with the Meter and Distribution Transformer departments will serve as "guinea pigs" in a test run. It is hoped that this trial can be initiated by February 1, 1956, and that all of the sales offices and affected departments will be converted gradually during the period March 1 through July 1, 1956.

However, this mechanized system does not necessarily satisfy the needs of those departments whose warehouse stock activity is at such a level as to not justify the installation of mechanized equipment. These departments will receive copies of invoices and all other transaction documents necessary to maintain adequate stock records. In a few isolated and special cases, replenishment requisitions may still be required. However, for those departments who can justify punched card equipment, the receipt of pre-punched paper tapes covering the bulk of transactions (invoices, back orders, deferred delivery orders, inter-warehouse transfers, etc.) should enable them to realize substantial reductions in Apparatus Sales assessment yet avoid a corresponding increase in their internal operating costs. As a matter of fact, since in many departments finance is already keypunching cards from each invoice, the internal savings alone should be of significant magnitude.

But this is not yet the whole picture. The proposed system can also serve as a guide to the individual departments in other areas, such as requisition preparation, typing of purchase orders and writing parts lists. Another obvious application would be to use the equipment to type warehouse stock orders in those departments which have their own warehouses. With respect to our present project, it has been decided to use Western Union Machines at this stage because of equipment availability, cost, and transmission potential. These machines can be programmed to use pre-punched input information and to direct selected output data to specified individual punched tape reperforators.

During January, each department and each sales office associated with Apparatus Sales will visit New York to discuss their plans and problems in applying this system to their own business. Since this is an integrated plan the areas of discussion will include the functions of marketing, production control and finance. It is necessary, therefore, that the proposal should be thoroughly reviewed by all three functions prior to your visit; it should prove advantageous to bring a man from each function to attend the New York discussions. We understand that Mr. D.C. Miller or Mr. D.F. Cropsey have already contacted each department and each sales office to make specific workshop arrangements.

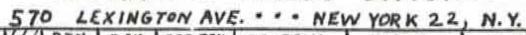
The first part of the meeting is designed to demonstrate the system in detail and thereby answer as many questions as possible. However, the remainder of the meeting will be devoted to discussion of your own plans on mechanization and conversion. In order to aid in the recognition of your own particular needs, you may want to bring copies of financial, marketing and production control reports that you are

currently preparing in this warehouse area. The proposal has already been reviewed and accepted by Meter and Distribution Transformer for their initial trial run in February; this system may not be the final answer, but it does accomplish the objectives outlined at the beginning: departmental control of warehouse stocks through rapid receipt of data in a form suitable for mechanized processing.

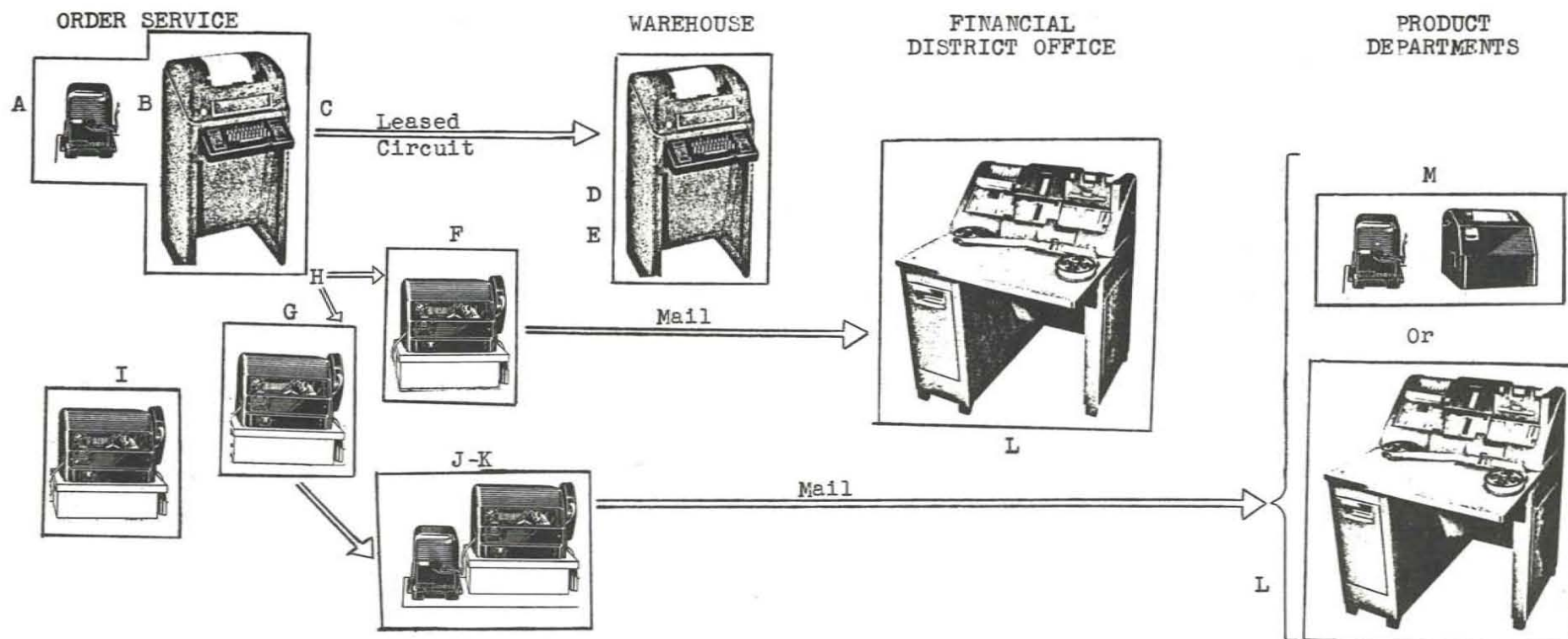
In order to clarify further the proposal as it stands, certain exhibits are attached:

- (1) A copy of the proposed form for invoicing and promise of shipment
- (2) A diagram of the equipment layout
- (3) A simplified flow chart of the functions performed at the Apparatus Sales offices
- (4) A list of each item of data contained on the invoice form together with an indication as to its inclusion on the departmental and/or district office tapes.
- (5) Samples of district office and product department tapes
- (6) Samples of district office and product department punched cards
- (7) Subjects requiring departmental and sales office review and decision

SENDING CODES



OFFICE COPY



- A-WESTERN UNION TRANSMITTER -To be used for prepunched program tape and possibly pre-punched "customer" and/or "product" tape.
- B-WESTERN UNION PRINTER(Model 15,75 speed)-Types orders on multi part forms by transmitter action or keyboard activity.
- C-WESTERN UNION SWITCH-To deactivate printer at Warehouse when typing invoice only, etc., (and accompanying signal light at Warehouse)
- D-WESTERN UNION PRINTER-At Warehouse produces multi part form-activated by printer at office. Can also be used to transmit miscellaneous messages back to office.
- E-WESTERN UNION SIGNAL LIGHT-Will be lighted whenever switch C is used, indicating Warehouse should not send.
- F-WESTERN UNION TYPING REPERFORATOR-Will produce in printed perforator tape that part of order needed by Financial District Office.

- G-WESTERN UNION TYPING REPERFORATOR-Will produce in printed perforator tape that part of order needed by Product Department.
- H-AUTOMATIC SWITCH-Activated by character typed or in tape-turns reperforators on and off.
- I-WESTERN UNION TYPING REPERFORATOR-Additional typing reperforators can be provided if desired. For instance, it might be desirable to use one reperforator for orders to one big Product Department.
- J-K-WESTERN UNION TRANSMITTER-TYPING REPERFORATOR-Combination enables operator to convert individual pieces of tape (representing each order) into a continuous tape for mailing to each Product Department.
- L-IBM TAPE TO CARD CONVERTER
- M-WESTERN UNION TRANSMITTER-PRINTER-For use by Product Departments who do not have punched card equipment.

Apparatus Sales Offices

Operator receives edited
order from Price & Edit
Unit and selects pre-
punched tapes

Operator prepares invoice
set on teletypewriter
using pre-punched tapes
and manual key-board

Slave printer located in
the warehouse and activa-
ted by teletypewriter,
prepares shipping papers,
labels and packing slips

Selective 5-channel tape prepared
as by-product of invoice typing
containing information for Product
Department Production, Marketing
and Financial areas

Selective 5-channel tape prepared
as by-product of invoice typing
containing information for Appara-
tus Sales Accounts Receivable

Tape mailed to Product
Dept. and converted to
cards

Tape mailed to six Finan-
cial districts and con-
verted to cards

DATA ON
WAREHOUSE STOCK FORM

DATA TITLE	DATA DESCRIPTION	Product Dept. Tape	Number of Digits	Apparatus Sales Tape	Pre-punched Information
Product Department	A code identifying the department responsible for the product involved in the transaction.	x	3	x	
Destination	A code referring to the location to which material is shipped. Assigned by states, certain cities within the states and destinations outside of the United States.	x	2	x	x
Tax Code	This code, in conjunction with the destination code is used to indicate whether the transaction is subject to or exempt from a particular tax.	x	2	x	x
Office Taking	Refers to the office on which an order is placed by a customer irrespective of where the order is filled.	x	3	x	x
Office Receiving	Refers to sales department, component area and office receiving credit for the order.	x	5	x	x
Customer	Purchaser's index number identifying customer who orders the material from the General Electric Company.	x	5	x	x
User	Index number assigned to the ultimate user of the product or an industry code applying to the industry of the user customer.	x	5	x	x
Collection Number	Number assigned to unindexed customers for collection identification purposes.		5	x	x
Collection District	Number assigned for identification of responsible collection district.		3	x	x
Terms	Terms applying to payment of the invoice for collection purposes.		1	x	x
Sold to	Name and address of purchaser.		*		x
Ship to	Shipping address.		*		x
GE Requisition Number	Number assigned to uniquely identify the transaction. First three digits identify the office issuing and the last five sequentially number itself.	x	8	x	

DATA TITLE	DATA DESCRIPTION	Product Dept. Tape	Number of Digits	Apparatus Sales Tape	Pre-punched Information
Invoice Number	Number assigned to identify a particular invoice against a requisition. The first three digits identify the warehouse shipped from and the last five sequentially number the invoice itself.	x	8	x	
Invoice Date	Date invoice or order is issued.		6	x	
Customer Order Number	Number assigned by customer himself to identify his order.		14	x	
Date	Customer's order date.		8		
Mark	Special marks to be shown on label with regard to shipping instructions.		*		
Prepaid	Indication if transportation charges were prepaid by General Electric.		1		
Collect	Indication if customer is to pay on receipt of goods.		1		
Shipped from & Via	Warehouse shipped from and method of shipment if other than usual.		*		
Item	The item number as assigned by the customer.		3		
Quantity	Quantity ordered or shipped.	x	4		
Catalog Number	Catalog number of material ordered.	x	16		x
Unit Price	List, Handbook, or base selling price per unit.		7		x
Unit of Measure	Abbreviation for quantity normally sold as a unit, each (E), per hundred (C), etc.		1		x
Type Transaction	Code for product department use to identify the particular type of transaction involved for the specific item on the invoice.	x	2		
Date	A coded fiscal date indicating to product department date shipped or date required based on type transaction. Covers year and week only.	x	3		

DATA TITLE	DATA DESCRIPTION	Product Dept. Tape	Number of Digits	Apparatus Sales Tape	Pre-punched Information
Amount	Net amount for total quantity of the items appearing on this line less appropriate discounts.	x	/		
Description	Short description of material ordered.		*		
Discount	Applicable discounts for particular product and customer to be typed in Unit Price column.		*		
Tax	Tax applying to total invoice based on local areas subject to various taxes.	x	7	x	
Excess Charges	Charges not applicable to all orders for the product, i.e. premium transportation	x	7	x	
Total	Total value of invoice	x	7	x	
<p><u>Note:</u></p> <p>* -- Extended space is available for these data. Since none of these are included on either punched tape, specific definition of field length is not critical. The typist must merely remain within the boundaries indicated.</p>					

APPARATUS SALES TAPE

AE AT A(A275 A) A28 10 214 00214 80506 80506 A) A& A80506 214 1

Statistical Block

VNMK A) AII A& A(A43635 20049089 A) A& A(A010456 A) AII A& A(

Order Identification Block

1535 A) AII A& A(A4AS A1000 A) AII A& A(A, AS A 14679 A) AII

Total Invoice Block

Statistical Block

Order Identification Block

Item Block

Total Invoice Block

[illegible]

INTERPRETER SPACING		R		X		0		1		2		3		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		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86		87		88		89		90		91		92		93		94		95		96		97		98		99		100		101		102		103		104		105		106		107		108		109		110		111		112		113		114		115		116		117		118		119		120		121		122		123		124		125		126		127		128		129		130		131		132		133		134		135		136		137		138		139		140		141		142		143		144		145		146		147		148		149		150		151		152		153		154		155		156		157		158		159		160		161		162		163		164		165		166		167		168		169		170		171		172		173		174		175		176		177		178		179		180		181		182		183		184		185		186		187		188		189		190		191		192		193		194		195		196		197		198		199		200		201		202		203		204		205		206		207		208		209		210		211		212		213		214		215		216		217		218		219		220		221		222		223		224		225		226		227		228		229		230		231		232		233		234		235		236		237		238		239		240		241		242		243		244		245		246		247		248		249		250		251		252		253		254		255		256		257		258		259		260		261		262		263		264		265		266		267		268		269		270		271		272		273		274		275		276		277		278		279		280		281		282		283		284		285		286		287		288		289		290		291		292		293		294		295		296		297		298		299		300		301		302		303		304		305		306		307		308		309		310		311		312		313		314		315		316		317		318		319		320		321		322		323		324		325		326		327		328		329		330		331		332		333		334		335		336		337		338		339		340		341		342		343		344		345		346	
---------------------	--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--	-----	--

The image shows a punched card reader with a single card. The card is labeled "PRODUCT DEPARTMENT TOTAL CARD" at the top. Below this, there are four columns of data: "Duplicated Form Item Card", "Tax Amount", "Excess Charges", and "Total Amount". The card is being read by a device with a vertical scale on the left and a horizontal scale at the top. The vertical scale has markings for "INTERPRETER SPACING" and "PUNCHING SPACING". The horizontal scale has markings for "R", "X", "0", "1", "2", "3", and "4". The card has a series of punch holes along its edges, and the data is represented by the presence or absence of these holes.

Areas for Review and Discussion

Departmental Decision Areas

1. Adequacy of data provided.
2. Degree of use of punched tapes compared to copies of transaction documents.
3. Conversion program and its time phasing.
4. Departmental stock replenishment plan.
 - . Equipment needs
 - . Usability of type transaction coding.
5. Adequacy of transaction coding for marketing and financial analyses.
6. Department's own warehouse operations.

Sales Office Decision Areas

1. Adequacy of data provided for Accounts Receivable.
2. Conversion program and its time phasing.