

INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications Inventory Control
Type of Industry Communications
Name of User The Western Union Telegraph Company

Equipment Used Honeywell 200 Computer System
Friden Add Punch Units
ASR 28 Teletypewriters

Synopsis

Western Union is controlling \$30 million worth of new and used inventory at approximately 175 locations throughout the United States. The company has developed a hierarchy of warehouse procedures that enables it to get equipment to its men in the field with a minimum of delay from the best possible shipping point. The system depends upon computer controlled data communications, utilizing Friden Add Punch units and ASR 28 teleprinters over the public network.

Western Union was founded in 1851 as a telegram and telegraph company. Over the years the firm has grown, along with the need for faster and more efficient communications techniques. In 10 years, the company's TELEX (Teleprinter Exchange Service) has grown beyond the \$35 million mark. Western Union is also involved deeply in the computer and data communications business. Telegram messages still account for nearly one-half of the firm's revenues, which have passed \$300 million. Western Union employs more than 26,000 persons.

Supplying the extensive service and sales force responsible for maintaining Western Union's nationwide communications system requires a sophisticated data processing effort.

The company maintains an inventory that is traditionally valued above \$30 million, ranging from paper clips to sophisticated communications equipment.

The bulk of Western Union's inventory is in five major storehouses located strategically throughout the United States in Allentown, Pa.; Atlanta, Dallas, Chicago and San Francisco. Augmenting the major storerooms are 175 minor storerooms. Western Union divides its stock into two basic categories. "A" stock is basically new materials which are stored in the major warehouses. "R" stock consists of used materials normally housed in the minor storerooms.

The company's major installation is the warehouse in Allentown which serves as the main clearinghouse for materials.

Keeping track of Western Union's inventory is an H-200 computer in New York City. Basically a tape oriented system, the H-200 has a core storage capacity of 32K. The configuration also includes five tape drives, seven magnetic drums with 2.6 million characters per drum, paper tape read-punch, H206 printer, and a card read-punch. Data communications is provided by Friden Add Punch units and ASR 28 teleprinters used to transmit shipping messages to the major and minor storerooms.

The System

Supplies are distributed on a need basis. Personnel needing materials trigger the system with a typewritten "Request For Supplies". Five copies of the document -- known as Form 475 -- are prepared. The original, along with two copies, is forwarded to the division manager of physical distribution for each major storehouse. The other copies are maintained in the office generating the request (except in specific cases where other personnel need copies).

The forms contain all the information necessary for machine processing of orders. The codes enable operators to punch orders on paper tape using the Friden Add Punch units. By typing the proper codes on the requesting form, Western Union has eliminated the problem of looking up specific codes for each order, thereby speeding up the entire data transmission process at point of input. Among the information coded on Form 475 is:

- A two digit card code to identify the type of transaction for data processing.
- A usage code to provide information relating to the ultimate use of the material. Numbers one through nine indicate a hierarchy of stock usages.
- A tax code, which is a two digit number enabling Western Union to compute taxes for the shipment of materials into or out of taxable areas. Taxes are applicable according to the ultimate destination of the materials. Each taxable area has been assigned its own code.

THE WESTERN UNION TELEGRAPH COMPANY

--Warehouse-storeroom code which identifies the distribution center or major storeroom serving the "ship to" city. The warehouse and major storeroom codes are:

<u>CODE</u>	<u>DIVISION</u>	<u>WAREHOUSE</u>
100	Eastern	Allentown, Pa.
200	Lake	Chicago
300	Southern	Atlanta
400	Gulf	Dallas
500	Pacific	San Francisco

Minor storerooms within each division are numbered 01 through 99, preceded by the major storeroom code. Thus Eastern Regional storerooms are numbered 101 to 199.

THE WESTERN UNION TELEGRAPH COMPANY															REQ'N NO.		
REQUEST FOR SHIPMENT OF SUPPLIES															03-4987		
SHIP TO THE WESTERN UNION TELEGRAPH COMPANY										FOR USE AT _____							
CARE OF (TITLE) <u>CITY PLANT SUPVR - WJF</u>										_____							
STREET ADDRESS <u>513 W. 24 ST.</u>										_____							
CITY AND STATE <u>NEW YORK, N.Y. 10011</u>										_____							
CARD CODE NO.	USAGE CODE	TAX CODE	WH-S/R CODE	REQN. CODE		IDENT. CODE	DIST. CODE	STATE CODE	SHIP TO CODE	PROJECT NO.		B IN	SUB BIN	PROJ. OR ACCT. CODE	MCC CODE	DATE REQ'D.	
1-2	3	4-5	6-8	DIST.	NO.	11-14	15-16	17-18	19-20	21-24	25-28	29-30	31-32	33-34	35	36	37-40
93	2	23	100	03	4987	00	03	31	6171	6513	81	29	00	1	0	1028	
QUANTITY		I. D. P. NO.		DESCRIPTION												WHSE USE ONLY	
43-48		49-56														DISPOSITION	
1		01228024		SET, M32TM, ASR													
1		01322090		ADAPTER, 11225C, S14130													
1		01243387		RACK, 12152A, S15575													
1		01160086		TCVR 11860A, S14398													
4		01338137		70952, TYPEBAR ASSEMBLY													
40		01338145		70953, TYPEBAR, ASSEMBLY													
14		01338152		70954, TYPEBAR, ASSEMBLY													

THE SYSTEM TRIGGER IS THE REQUEST FOR SHIPMENT OF SUPPLIES. FIVE COPIES ARE PREPARED.

The requisition form contains a number of other codes including project number codes for accounting purposes, dates required for delivery and a "ship to" code containing basically the same information contained in the top three lines of the requisition form. The ship to code, when input into the system produces the name, address and identification code of the requesting office.

The division manager of physical distribution checks to make sure the data contained on the 475 is correct, then checks the stock requested against a computer-generated list of the inventory contained in the minor storerooms in his district. If inventory is available, he forwards the form to a Friden Add Punch operator who punches a paper tape containing the information on the request for shipment and transmits the information to the computer in New York. The Friden Add punch units transmit a series of numbers which are converted from paper tape to magnetic tape. The computer then reduces the balance of stock in inventory for that minor storeroom, and generates a shipping message which is printed-out at the minor storeroom on teleprinters over the public message system.

Besides the shipping message, an Edited Requisition is produced advising the originator of the request, along with the New York Material Center, of the exact disposition of each item on the order. The form serves as a control factor for shipping and to answer any questions concerning the order that may come up later.

Prior to sending Form 475 to the Add Punch, the physical distribution manager determines what minor storeroom will ship the stock, and codes the form accordingly. All items listed in the shipping message are pre-billed by the computer. When the shipping message has been received at the minor storeroom, and the stock has been shipped, the custodian sends a confirming message advising the major storeroom of exactly what has and hasn't been shipped.

A daily register of all minor storeroom shipping messages are transmitted from the New York computer center to the respective physical distribution managers. Meanwhile, the minor storerooms report the first and last shipping message numbers for the prior working day to the district physical distribution manager. This serves as a control to confirm that all messages have been received.

TH CO MMA OR B		NEW YORK, N.Y.
CUSTODIAN MINOR S/R <u>125</u> 6 CHARLES ST. ROCHESTER, N.Y.		
SHIP TO: CITY PLANT SUPVR. 513 W. 24 TH ST. NEW YORK, N.Y. 10011		
REQN. NBR. <u>1034987</u>		
ACCTG. DATA. <u>65138129</u>		
DATE REQD AT DESTN. <u>1028</u>		
<u>QTY</u>	<u>INP</u>	<u>DESCRIPTION</u>
1	01228024	SET M32TM ASR

THE SHIPPING MESSAGE IS PRINTED OUT AT MINOR STOREROOMS ON TELEPRINTERS. ALL ITEMS LISTED ON THE SHIPPING MESSAGE ARE PRE-BILLED BY COMPUTER.

THE WESTERN UNION TELEGRAPH COMPANY
WAREHOUSE CONTROL COPY

FROM: THE WESTERN UNION TELEGRAPH CO. MERCHANDISE THE WESTERN UNION TELEGRAPH CO.
2040 SOUTH RACINE ST. 4TH CLASS MAIL **SHIPPING LABEL**

THE WESTERN UNION TELEGRAPH COMPANY
PACKING SLIP
(ENCLOSE WITH SHIPMENT) DATE TO BE SHIPPED: _____

THE WESTERN UNION TELEGRAPH COMPANY
NOTICE OF SHIPMENT
DIVISION OR DISTRICT COPY DATE TO BE SHIPPED: 10/21

THE WESTERN UNION TELEGRAPH COMPANY
NOTICE OF SHIPMENT
CONSIGNEE COPY DATE TO BE SHIPPED: 10/21

THE WESTERN UNION TELEGRAPH COMPANY
WAREHOUSE-STOREROOM SHIPPING TICKET

SHIP TO: THE WESTERN UNION TELEGRAPH CO.
CARE OF
CITY PLANT SUPVR-WJF
513 W. 24 TH ST.
NEW YORK, N.Y. 10011

ROUTING		DATE TO BE SHIPPED: _____	
ASSEMBLED BY		PACKED BY	
10/21			

TAX CDE	STK CDE	WH-S/R NO.	REQN. CODE	IDENT. CODE	DIST. CODE	STATE CODE	SHIP TO CODE	PROJECT NO.	ACCOUNT NO.	P/A CDE	M C C	DATE REQD.		
231	100	03	498700	03	31	6171	6513812900	10	1028	1	0	1028		
QUANTITY ORDERED	IDP NO.	DESCRIPTION						WH-S/R	LOC'N #	AUDIT NO.	QUANTITY SHIPPED	STATE CDE	DIFF. CDE	
1	01160086	TCVR 11860A, S14398						A	102B	1	80047164	1	00	0

THE WESTERN UNION TELEGRAPH COMPANY 034987

EDITED REQUISITION 1

THE WESTERN UNION TELEGRAPH COMPANY 034987

EDITED REQUISITION 1

SHIP TO: 6171
CITY PLANT SUPVR-WJF
513 W. 24 TH ST.
NEW YORK, N.Y. 10011

U S A G E	TAX	WH S/R	REQN-CODE	IDENT.	DIST.	STATE	PROJECT NO.	P/A CDE	M C C	DATE REQ'D.	
2	23	100	03	4987	00	03	31	6513812900	1	0	1028

QUANTITY ORDERED	IDP NO.	DESCRIPTION	AUDIT NO.	EDIT CODE	Shipper's Code No.	LEAD TIME OR REMARKS
1.	2.	3.	4.	5.	6.	7.
1	01228024	SET M32TM, ASR	80047161	WH	125	R STOCK
1	01322090	ADAPTER, 11225C, S14130	80047162	BP		
1	01243387	RACK, 12152A, S15575	80047163	EX1		
1	01160086	TCVR 11860A, S14398	80047164	WH	100	
4	01338137	70952, TYPEBAR, ASSEMBLY	80047165	EX4	100	10208
40	01338145	70953, TYPEBAR, ASSEMBLY	80047166	TR1		
14	01338152	70954, TYPEBAR, ASSEMBLY	80047167	TR2		

THE MULTI-PART EDITED REQUISITION IS PREPARED FROM REQUEST FOR SHIPMENT OF SUPPLIES. IT SERVES AS A CONTROL FOR SHIPPING.

If a shipping message is not received, the division manager, referring to the shipping message register and the original form 475 furnishes shipping instructions to the minor storerooms.

If the material disbursed by the computer is not on hand in the minor storeroom, the division manager is notified, the original requisition is corrected with the storeroom code at which the shortage occurred reflected in the header information. An alternate storeroom is then chosen and the data communicated to New York where the computer is updated.

When there is insufficient balance of stock in the minor storeroom to satisfy the quantity of materials transmitted, the computer rejects the entire quantity and the data is returned to the division manager for correction.

Emergency Wire Requests

A normal 48 hour turn-around can be circumvented in emergencies. The custodian of the minor stockroom sends a teletype message to the physical distribution manager advising him of the need and asking for an authorization. Upon receipt of the emergency request, the manager prepares a form 475 inserting the numbers "4999" in the date required block. The data is then forwarded to New York where the special coding causes the computerized shipping message to show "Confirming, Do Not Ship" in the Ship to Address section of the message.

The division manager for physical distribution is responsible for the stock on hand in the minor storerooms in his area. Stock levels are at his discretion and are based on individual location usage as determined by computerized processing of past performance. Minor storerooms contain only used materials, returned from disconnect work. Plant technicians and other field personnel prepare a separate form containing the stock number and description of the unit along with other information such as the job number, and city from which the equipment was removed. The material is tagged with this information and forwarded to the minor storeroom where each unit is verified. When the stock has been logged in, the custodian sends a complete list by teletypewriter to the manager of physical distribution who add punches the data to New York, updating the inventory in the H-200.

Home Office EDP Procedures

Every item in Western Union's mechanized inventory is catalogued by stock (or IDP) number and nomenclature. Items not listed in the Material Nomenclature Catalog are handled under a special procedure. The items in the catalogue have the following index record data stored in computer memory.

- A. Stock number
- B. Official abbreviated description (limited to 25 characters)
- C. Price Data
 - 1. Catalogue Price
 - 2. Price Code
 - 3. Unit of Measure
- D. Stock Classification Code.

This data is not stored in computer memory for non-catalogue items.

Under normal conditions the computer is programed to follow a predetermined warehouse sequence in referring to the stock records in its disc memory. The warehouse code normally designates the division warehouse normally servicing the "ship to" address. However, when the division's A and R warehouses have inadequate stock to meet a request, the computer will automatically refer to the stock records of other warehouses. The following sequence is an example.

<u>DIVISION</u>	<u>EAST</u>	<u>LAKE</u>	<u>SOUTH</u>	<u>GULF</u>	<u>PACIFIC</u>
First WH Selected	Allent.	Chicago	Atlanta	Dallas	S. F.
1st Alternative	Chicago	Allent.	Allent.	Chicago	Chicago
2nd Alternative			Chicago	Allent.	Allent.

Under prearranged programs the computer processes Form 475 transactions as follows:

- A. Verify Add-Punch "Hash" total
- B. Verify Stock Number
- C. Verify Usage Code
- D. Verify Warehouse Code
- E. Verify that the quantity ordered is not excessive by applying the following "trip" formula: Quantity ordered is considered excessive when it exceeds 75 per cent of the established reorder point quantity. If the quantity ordered is excessive the computer punches out a "Trip" card.
- F. Based on the "Usage" code the computer will seek the proper stock record for the warehouse according to the warehouse code and its associated warehouse priority sequence.
- G. Upon locating the proper warehouse stock record the computer will:
 1. Examine the quantity on hand in "A" stock and if demand can be satisfied reduce the on-hand quantity to zero.
 2. If the quantity on hand is inadequate, the computer will reduce the quantity to zero and punch a shipping notice card for the partial quantity to be shipped.
 3. For the unshipped balance the computer will examine the quantity in "R" stock at the same warehouse or if that fails to produce enough stock the computer will check other warehouses.
 4. In the event the entire quantity requisitioned is insufficient in all warehouses, the computer goes back to the first warehouse in the chain to determine if the material is on order, and, if so, back-order the unfilled quantity.
 5. In some cases the material is shipped directly from suppliers, occasionally more than one manufacturer has a contract with Western Union. In this instance, a punched card is produced, alerting the material control center of this condition. Material Control Clerks can then make a decision to order the goods from a supplier. If the goods come from one supplier the computer is programed to generate a purchase order card.
- H. Based on the usage code reported on the form 475, the H-200 updates its usage records for warehouse stocked items.
- I. When the quantity on-hand plus the quantity on order less the back order quantity, is equal to, or less than the reorder point quantity, the computer will punch out a "re-order" card. The card, when processed further, is used to produce a stock status report which details the stock status of the item involved. Once the first reorder card has been produced, intervening transactions which, under normal circumstances, would trigger more reorder cards for that same item, are ignored

by the computer. Once a zero balance of any item occurs, the computer automatically produces an "Out of Stock" Stock Status Report. The report enables Western Union to keep track of the performance of its vendors and take immediate action when deliveries are past due.

REQUISITION EXTRACT REPROCESS RECORD

CHANGED DATA TO BE REPROCESSED

CARD COLS	ITEM	DESCRIPTION	DISPOSITION CODE
68			
69-76			
71-76		IDP NO SUBSTITUTION (USE WITH DSPN CODE 7)	
77-79		CONTRACT NO (USE WITH DSPN CODE 2)	
80		WH-S/R NO.	
		USAGE CODE	

DISPOSITION CODES

- 1 - PROCESS AS BP
- 2 - PROCESS AGAINST CAK
- 3 - BY-PASS TRIP
- 4 - PROCESS AS NEW REQ.
- 5 - PLACE ON BACK ORDER AND BY-PASS TRIP
- 6 - CANCEL
- 7 - SUBSTITUTION-PROCESS AS NEW REQ AND BY-PASS TRIP

EXTRACT CODES

- 1 - EX-1 (MULTIPLE CAK)
- 2 - EX-2 (INSUFFICIENT QTY.)
- 3 - BP (BLANK PURCHASE)
- 4 - BS (CONTRACT)
- 5 - DC (CONTRACT)
- 6 - TR-1 (EXCESS AUTHZD QTY.)
- 7 - TR-2 (EXCESS 60% REORDER POINT)
- 8 - EX-3 (EARMARKED MCC APPROVAL)
- 9 - EX-4 (BACK ORDER MCC APPROVAL)

APPROVED: _____

DATE: _____

KEYPUNCH COLS CHANGED DATA

COLS	CHANGED DATA
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COMPUTER GENERATED CARDS MARK EXCESSIVE QUANTITIES (SEE EXTRACT CODES), AND OTHER STOCK SITUATIONS.

The computer also produces a shipping ticket tape which is used to produce a six-part form containing all the data that appeared on the Requisition Request, as well as the location of goods within the major storerooms. The location feature makes it easier to pick stock for shipment. One part of the form serves as the packing slip, while the others are forwarded to the consignee, the district manager. Other copies are for filing and labeling. The shipping ticket is printed out at the major storeroom by ASR 28 teleprinter.

At the end of each day, the warehouses are required to report receipt of the warehouse shipping tickets. Each shipping ticket is carefully reviewed at the warehouse and the type of transportation and routing is selected based on date required, in transit time and any packing difficulties that may be incurred. Part six of the form is filed, and parts one through five sorted according to accounting classification. Shipping tags and labels are then prepared and attached to the set of forms. The forms are then filed by required date and each afternoon a designated supervisor reviews each group and establishes a stock selection priority for the following day. The system is designed to insure an even flow of work in the selecting, packing and shipping phase of the operation.

When picking is completed the stock selector releases the forms along with the material to the packers and shippers for packaging, and the stock is shipped.

fills in price codes, vendor codes and unit and extended prices. The completed form is returned to data processing where it is keypunched to produce a purchase order. The computer also updates its records to reflect an "on order" status in memory. Copies of the purchase order are sent to the vendor and the warehouse. Once the goods are shipped and the merchandise logged in at the warehouse, verification of receipt is Add Punched to update the computer records.

RESULTS AND FUTURE PLANS

Western Union has been using data processing for inventory control since 1961, and the company believes it would be unable to maintain its current volume without it. Additionally, inventory control is tighter because all inventory can be accessed from one central location. Plans are under way to convert to an IBM System/360, and use Mohawk Data Recorders as input devices to the system.