

INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications Order Processing, Inventory Control, Invoicing
and Bill of Lading Production

Type of Industry Hardware Wholesalers

Name of User Belknap Hardware and Manufacturing Co.
Louisville, Kentucky

Equipment Used IBM System/360 Model 30 (two)
IBM 2311 disc storage units (ten)
IBM 2501 card readers (three)
IBM 2520 card punch

Synopsis

Like any distribution business involving a wide variety and high volume of relatively inexpensive items, the wholesale hardware field is inherently complex. On any Monday, picking tickets for some 45,000 items will flow into the Belknap warehouse. The computerized order-entry system assures that the right picking tickets will go to the right warehouse departments. The tickets direct warehouse employes to pick hardware items, accurately identified and precisely located, in one of the 43 warehouse departments.

Orders are now picked faster and errors have been cut by more than half. Operations have been simplified, from order writing through order working, picking, inventory updating and even automated recapping and bill-of-lading production. The end results are considerable savings in labor dollars and improved customer service.

Belknap Hardware and Manufacturing serves 26 states. Publicly owned, sales reach approximately \$50 million annually. The firm stocks 70,000 items, ships another 10,000 directly to customers (drop-ship) and handles 3,000 orders for 30,000 items on an average day. The firm's first data processing equipment was installed in 1941, and since then Belknap has had computer systems, progressing finally to the present System/360s, required to process increased order volume.

The greatest gain in speed and capacity is due to what is called "multiprocessing," or the ability of the new system to handle up to six programs at the same time. In a single, order-working operation, for example, one Model 30:

- Reads order cards keypunched from the handwritten sales orders;
- Prints an order copy, which is an internal translation of the coded data sent in handwritten form by the sales representative. This copy is complete with item descriptions and prices, for credit department use, and to notify the sales department of price changes;
- Reduces stored inventory data by the quantities ordered;
- Internally sorts the items ordered into warehouse department order, and, within department into sequence by aisle number and/or bay number;
- Prints the picking tickets mentioned, complete with order description;
- Automatically determines the number of cartons that will be required for the customer's order, and prints the proper number of labels.
- Stores the order data on one of ten 2311 disc storage units shared by the two computer systems.

When the release copy of a picking ticket for pre-packaged merchandise comes back to data processing, indicating an order has been filled, the other Model 30 automatically prints a multi-part extended invoice and bills-of-lading from the order data stored on the shared discs.

Each System/360 is linked to three printers. As a result, one system can maintain uninterrupted production of order copies, picking tickets, and labels for fast order processing, while the other prints invoicing and bills-of-lading. Then, as either of the computers has free time during the day, other applications are processed, such as the 1,300-employee payroll and sales analyses -- often at the same time.

BELKNAP ORDER COPY											SALES MGR.		
CUST. NO.	62 7976		CUSTOMER ORDER NO.	SALESMAN 554 ELLIOTT			REGISTER NO.	26 0888		CONTROL NO.	01 12919	PAGE NO.	1
SOLD TO				THE DALTON CO				RECTOR ARK		TERMS 2% 10DA N60			
SHIP TO				BARTON LBR CO				JONESBORO ARK		FREIGHT TERMS PREPAID			
SHIP'G AREA	T	INITIAL CARRIER	SOU FWDG TO MEMPHS				SUBSEQUENT CARRIERS	% SWT		SPECIAL INSTRUCTIONS NO B/O 3			
LINE NO.	ITEM CODE NO.	QUANTITY	UNIT	STOCK NUMBER AND DESCRIPTION			UNIT PRICE	PER	DISCOUNT	EXTENSIONS	SALES CHECK		
0001	138149	1	ONLY	F28-883 TRAVEL BED									
0002	424424	1	ONLY	H04-M5475-50 BAKE AND ROAST PANS									
	252676	1	ONLY	M70-CX126 COLOR FILM INSTAMATIC									

HARD COPY OF A CUSTOMER ORDER

BELKNAP HARDWARE AND MFG. CO.

Also, the two, identical systems provide complete back-up in case of technical problems. Even on a heavy day, functions would still continue effectively with one Model 30.

As mentioned, order-filling accuracy is greatly improved. Since this system went into effect, total claims referred to the warehouse department have been reduced by 63 percent. Damage claims, unaffected by the system, are included in this figure, so the specific reduction in order clerk errors is even greater.

For example, order fillers used to spend about one-third of their time recapping pre-packaged merchandise -- weighing it, figuring the correct weight class, and so forth. This is now handled completely automatically, as indicated, from weight data stored on the discs, reducing recap errors alone by 56 percent. Even shelf-goods errors (the wrong article sent to customers) have been reduced 41 percent, although cards must still be keypunched to produce appropriate bills-of-lading and recap data. The bill-of-lading procedure is initiated after the order has been picked and packed.

DEPT. NO.	SHIP TO NAME		SHIP TO STREET		SHIP TO CITY & STATE		REGISTER NO.	PAGE
08	BARTON LBR CO		JONESBORO ARK				26 0888	1
ROUTING	SPECIAL INSTRUCTIONS				SHIP 02 ORDERS TOGETHER	CONTROL NO.		
T SOU FWDG TO MEMPHS	NO B/O		3			01 12919		554
WORKED BY					CHECKED BY			

LINE NO.	CK	QUANTITY	UNIT	CK	NO. PKGS.	LOC.	STOCK NUMBER AND DESCRIPTION	FRT. CODE	B/L NUMBER	FRT. CLASS	CASE NO.
0005		1	SET			5	006-705-5 OLD HICKORY CUTLERY		463380	085	
0004		2	SPL			10	D34-81T FISHING LINES		464990	135	

BARTON LBR CO 01
JONESBORO ARK
CLEVE ELLIOTT

T SOU FWDG TO MEMPHS 26 0888

-FROM-
BELKNAP
Hardware and Manufacturing Company
Louisville 2, Kentucky




BARTON LBR CO 01
JONESBORO ARK
CLEVE ELLIOTT

T SOU FWDG TO MEMPHS 26 0888

-FROM-
BELKNAP
Hardware and Manufacturing Company
Louisville 2, Kentucky




BARTON LBR CO 01
JONESBORO ARK
CLEVE ELLIOTT

T SOU FWDG TO MEMPHS 26 0888

-FROM-
BELKNAP

BARTON LBR CO 01
JONESBORO ARK
CLEVE ELLIOTT

T SOU FWDG TO MEMPHS 26 0888

-FROM-
BELKNAP

PICKING TICKET WITH SIMULTANEOUSLY PRINTED LABELS

Another major advantage of the new system is the ready availability of detailed information at all levels of the operation, simply as a byproduct of order processing. Cycled inventory reports, for example, are produced monthly and/or semi-monthly for all of the items stocked. Frequency depends on the item and its activity. These reports, which go to Belknap's 15 buying departments, are grouped by class of item and thus to a degree, grouped by vendor. In addition, the system produces immediate exception reports on items that need quick action.

On all new items, the buying department also receives a weekly count for six weeks, until trends and the item's movement develop. In addition, a weekly report of slow-movers is

generated so steps can be taken to weed them out. Slow-movers take up space, and lose money, too, in the form of insurance. Overall, Belknap is able to maintain a more viable, more saleable inventory, and pinpoint back-order situations quickly.

Yet, initially, too much stock control information was produced. This is a normal tendency because the reporting capabilities of computers are impressive. Now, not only in inventory, but in all other areas of our operation, only the information that is needed and will be used is produced. This has become a firm rule at Belknap.

Present inventory data, for example, gives buyers the information necessary to buy most effectively. Working from the various stock status reports, the buyers prepare purchase requisitions. These are keypunched and fed into the computer to print purchase orders and update the on-order inventory file. At the same time, the system prints a merchandise receipt which goes to the receiving department where it is held until the goods are received. Incoming quantities are checked against the receipt which is then sent back to data processing to indicate that the inventory involved should be transferred from on-order status to on-hand.

Also on the System/360s are a wide range of sales analyses -- monthly by product lines, by sales territories commission reporting, accounts receivable, accounts payable, and some general ledger.

FORM 935															REPORT TO BUYER				
DEPARTMENT NO. 05			BOOK NO. 13		Monthly		DATE		Jan 26, 1968										
PAGE NO.	LINE NO.	IBM NO.	ON HAND	ON ORDER	NO. OF ORDERS	MINIMUM QUANTITY	LEAD TIME	SAFETY STOCK	CASH DISCOUNT	P. C. COST	ACTUAL COST	PER	CODE	FLAG					
									QUANTITY SHORTED	QUARTER SALES TO DATE	SALES YEAR TO DATE								
04	13	670-364	E20-140-BE FLUSH RECEPTACLE PLATE						2.0%			100							
			65	0		15	02	03		24	149		1						
04	15	532-952	E20-140G FLUSH RECEPTACLE PLATES						2.0%			100							
			46	0		5	02	03		6	76		1						
04	17	536-581	E20-140P FLUSH RECEPTACLE PLATES						2.0%			100							
			56	0		15	02	03		15	59								
05	01	579-219	E20-130W SWITCH PLATES						2.0%										
			42	0		30	02	03		78									
		579-342	E20-130W SWITCH PLATES						2.0%										

MONTHLY INVENTORY REPORT. THE "IBM NUMBER" IS THE SALESMAN'S ORDER NUMBER.

ITEMS SHORTED ON INVOICES OF JAN 24 1968				
IBM NO.	STOCK NO. AND DESCRIPTION	NO. OF ORDERS	QUANTITY	UNIT
079020	A16-20KR FUSEES	1	6	ONLY *
089771	A26-1G-H FUNNELS	1	3	ONLY
158618	A05-847ES AUTO EMERGENCY SCOO	1	12	ONLY
170290	A05-3994-3 AUTO SPOTLIGHTS	2	6	ONLY
212944	A06-T1300 GAS LINE ADDITIVE	1	24	ONLY
231613	A26-B05G GALVANIZED GASOLINE	2	12	ONLY %
236455	A26-B50 OIL OR UTILITY CANS	12	52	ONLY * %

SHORTED ITEM REPORT

BELKNAP HARDWARE AND MFG. CO.

The development of the random access data storage file greatly increases the attractiveness of computerized order processing. Billing was Belknap's natural next step, with consideration given to inventory control, receivables, sales analyses, commissions, and the like. With order information as a base, it is even possible to build outward into, ultimately, a management information system.

Future plans include replacing the present systems with two Model 40s along with larger capacity disc drives. An on-line terminal system will be added, with keyboards permitting data entry into the system. Multiprocessing will be considerably increased as the system capacity will nearly double.

Form 932

BELKNAP HARDWARE AND MFG. CO.
ESTABLISHED 1840
LOUISVILLE, KENTUCKY 40201

DATE JAN 26 1968
SPECIFY ORDER NO. ON INVOICES

BUYING DEPT. NO. 9 **PURCHASE ORDER** No. 9 01268

To **NORTH & JUDD MFG CO**
500 EAST MAIN ST
NEW BRITIAN CONN 06050

Routing **WILSON** Shipping Date **AT ON CE**

Terms Control No. **4803**

MARK ALL SHIPPING CONTAINERS: "WAREHOUSE SECTION No. 08"
"PURCHASE ORDER No. 9 01268"

QUANTITY	UNIT	IBM NO.	STOCK NUMBER AND DESCRIPTION
40	ONLY		D46-249-1 BOAT SNAPS
40	ONLY		D46-249-2 BOAT SNAPS

Form 934

MERCHANDISE RECEIPT

SHIPPING DATE **AT ON CE**

CONTROL NO. **4803** DATE **JAN 26 1968** PURCHASE ORDER No. **9-01268** STOCK DEPT. No.

FACTORY **NORTH & JUDD MFG CO**
500 EAST MAIN ST
NEW BRITIAN CONN 06050

LINE NO.	IBM NO.	QUANTITY	UNIT	PACK	STOCK NO. AND DESCRIPTION	PKD. CTNS.
1	450-387	40	ONLY		D46-249-1 BOAT SNAPS	013
2	450-395	40	ONLY		D46-249-2 BOAT SNAPS	013
3	450-403	80	ONLY		D46-249-3 BOAT SNAPS	013
4	450-353	40	ONLY		D46-251-1 BOAT SNAPS	013
5	450-361	60	ONLY		D46--251-2 BOAT SNAPS	013

PURCHASE ORDER AND MERCHANDISE RECEIPT

THIS MEMORANDUM is an acknowledgment that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

THIS MEMORANDUM is an acknowledgment that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

THIS MEMORANDUM is an acknowledgment that a Bill of Lading has been issued and is not the Original Bill of Lading, RECEIVED, subject to the classifications and tariffs in effect on the date of the receipt by the carrier of the property described in the Original Bill of Lading.

THIS SHIPPING ORDER must be legibly filled in, in Ink, in Indelible Pencil or in Carbon, and retained by the agent. RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Shipping Order.

CARRIER: ATL Carrier's No. 01-11339
Shipper's No. 24-0455

1 JAN 25, 1968 FROM BELKNAP HARDWARE & MANUFACTURING CO., INCORPORATED
 at Louisville 2, Ky.,

STRAIGHT BILL OF LADING — SHORT FORM — ORIGINAL — Not Negotiable Carrier's No. _____
 RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading.

CARRIER: ATL Carrier's No. 01-11339
Shipper's No. 24-0455

1 JAN 25, 1968 FROM BELKNAP HARDWARE & MANUFACTURING CO., INCORPORATED
 at Louisville 2, Ky.,

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western and Illinois' Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

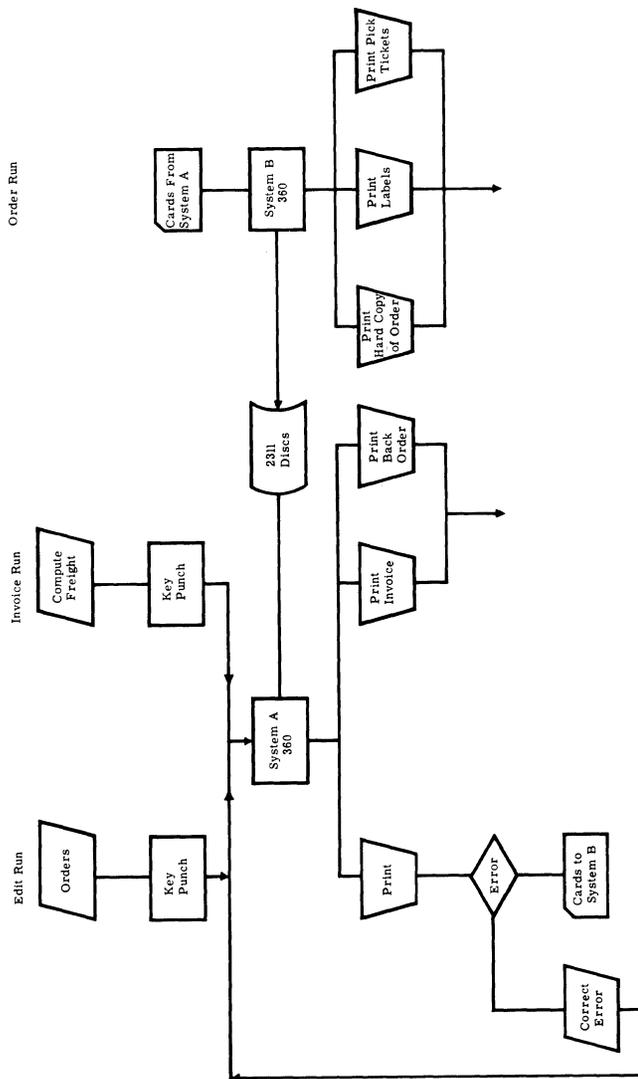
CONSIGNEE TO **FAY BARKER HDWE** SALESMAN NO. 465-41 CUST. NO. 508156
 ADDRESS **650 AUBURN AVE** IF CHARGES ARE PREPAID, PRINT "PREPAID" **PREPAID**
 DESTINATION **PONTIAC MICH**

No. Pkgs.	KIND OF PACKAGE, DESCRIPTION OF ARTICLES, SPECIAL MARKS, AND EXCEPTIONS	* (WEIGHT (Sub. to Cor.))	RATING
1	CART HYDROMETERS	1	1500
2	CART FILM OR SHEETING PLASTIC O/T CELL NOT PRINTED FLT	67	0550
1	CTN WOODENWARE NOIBN	1	1000
1	CTN PARTS ELECTRIC TOOL NOIBN		
1	CTN WIRE COPPER COVER		

THE BILL OF LADING INCLUDES A SHIPPING ORDER WHICH IS THE SECOND COPY AND TWO MEMORANDA, THE THIRD AND FOURTH COPIES.

At the moment, the computers don't do anything new -- they just handle all the jobs formerly processed, but in less time and at less cost, both in terms of rental and data processing personnel. One computer shift can now accomplish what formerly required a shift and a half, and still have capacity remaining to investigate other areas of data processing.

In the meantime, there are other, more-immediate refinements to develop. One for instance, is to produce invoices and bills-of-lading even faster and more frequently each day, through the increased speed and capacity of the new computer systems. This is expected to be accomplished soon, and it will be a valuable step toward that goal of every wholesaler: optimum service to keep the customer happy.



A CONDENSED FLOWCHART BASED ON BELKNAP'S SYSTEM SHOWS THE EDIT, INVOICE AND ORDER RUNS. INVOICING AND EDITING IS DONE SIMULTANEOUSLY. ARROWS AT THE FLOWCHART BOTTOM INDICATES MOVEMENT BACK INTO SYSTEM FOR UPDATING AND REPORTS. ALL BELKNAP'S FILES ARE ON DISC.