INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications

Inventory Control, Order Processing, Billing

Type of Industry

National Retail Drugstore Chain

Name of User

Walgreen Drug Stores

Chicago, Ill.

Equipment Used

IBM System/360 Model 30

IBM System/360 Model 40 (2)

IBM 1440 Computer System

NCR 315 Computer System

NCR 420-2 Optical Scanner (2)

Digitronics Data-Verters

Synopsis

The Chicago headquarters for the Walgreen Company processes and maintains records for approximately 520 Walgreen stores, 16 large Globe discount and 6 Danburg department stores in the southwest, and some 1,900 Walgreen Agency stores. Warehouse inventory control, order processing and billing for approximately 40,000 items in six warehouses is accomplished with the several data processing systems. Order processing throughout the U.S. is initiated at store level through the use of optical font adding machines which transcribe transaction data to tapes. The tapes are sent to Walgreen headquarters where the data is transferred to magnetic tape by an optical font character reader. The magnetic tape is processed by the computer which checks for out-of-stock items, creates invoices and warehouse picking copies, reduces inventories and updates sales history. Invoice information is transmitted to remote warehouses where orders are picked, packed and shipped to Walgreen, Globe, Danburg and Walgreen Agency stores.

The Walgreen Co., founded in 1902, has 549 units in operation, including drug stores, super centers, department stores, 307 restaurant units within or connected to company stores, prescription shops and Corkey's drive-ins. The company manufactures approximately 400 drug and toiletry products in its own laboratories in Chicago.

The System

The major portion of Walgreen's order processing, inventory control and billing is assigned to an IBM System/360 Model 40 with 256K characters of core storage capacity, a 2314 disc unit (8 drives) and 6 magnetic tape drives on-line. A second Model 40, currently a 128K machine with four 2311 disc drives and four magnetic tape drives plus two 1,100 lpm printers is being upgraded to 256K. Input/output devices, including disc drives comprising the 2314 and the magnetic tape drives, will be shared by coupling the two Model 40's through switching devices. The objective is backup for the system.

The 128K system supports a variety of applications including a large payroll system, sales and gross profit analysis systems, and a progressive and comprehensive retail accounting system. The Model 30 is a 32K system. This system is used for miscellaneous independent jobs and serves as an off-line slave to the larger computers for printing, punching, sorting, etc.

The Depletion Cycle

At each of the Walgreen Drug Stores, store orders are recorded on computer-produced pre-printed order forms, checked by store management, and then transferred to adding machine tape using an NCR 10-bank electric adding machine equipped with optical font. Once a week, each store sends its order to the data processing center at Chicago headquarters on a scheduled day. The adding machine tapes are collected by the Walgreen Company mail service or mailed in via the U.S. mail. In the data processing center, the tapes are registered (time stamped and logged), batched, spliced to decrease through-put time and processed through an NCR-420-2 optical scanner on-line to an NCR 315 computer. Scanning is accomplished at a rate of approximately 56 lines (items) per second. An average store order can be scanned in 30 to 40 seconds.

The computer validates the input, prints control messages on the console typewriter and writes each transaction onto magnetic tape. The magnetic tape, which consists of 100 to 140 store orders, is then sorted into item code sequence before being processed on the main system against the disc inventory master file. The purpose of this sort is to minimize the number of seeks, thus reducing processing and through-put time. Another optical scanner is on-line to the IBM 1440 to share the scanning load and to provide backup.

During processing, several activities are triggered. As each store header recorded on the tape is read, a "seek" is initiated by store number against the store address master file on disc. From this file is pulled the complete store address, an alternate costing factor to accommodate local taxing requirements where necessary, and the delivery handling charge rate, which is a component in the development of the extended cost of the merchandise.

As each detail (item ordered) record is read, a seek is initiated by item code against the inventory master file, extracting the corresponding warehouse item inventory record. Once this record is in core, all orders for that particular item are processed. For example, if 50 stores ordered a particular item, only one seek would be made. During processing, if a store has ordered quantities below the established minimum order quantities, the computer program automatically increases the order to the minimum or the next multiple of the minimum. Items ordered in quantities that equal or exceed the warehouse case pack quantities are converted to full cases and "splits" for billing and packing purposes.

Disc inventories and sales areas are updated and if an item is found to be out of stock, the lost or deferred sales are increased. The output from this operation is two reels of magnetic tape. One, the billing output tape, has all the information necessary to produce a complete extended line invoice and warehouse picking copy for each store. The second highlights all items that the system could not satisfy. From this tape, reorder notifications are printed and mailed directly to each store so that store personnel can take whatever immediate action is necessary to maintain proper "in stock" conditions.

(REV. 1-65)	01/28/		06-1	04 6		W ARC	WHSE	WAREH	SUGGES		(R)	(1:	MEMO CNLY	MDSE COS	4035	026201 or discoun
W4SE LOCATION	MDSE NUMBER	CODE	CASE	ONLY'S	CASE	ONLY'S	CASE PACK	ITEM DESCRIPTION	RETAI		F.R.	.T.	% H/C OR DISC.	UNIT		EXTENDED
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41104		740300		2.		2	72	SILK/SILV C/ROL SILV/SLATE			<u> </u>	_				
41105		740306		3		3	72	COL/LOT C/ROL L/CARE NAT/BLK		-	-					
41105		740307		6		6	72	COL/LOT C/ROL L/CARE D/BRN		-	-					
41105		740308		6		6	72	COL/LOT C/ROL L/CAR D/W/BR		-	+					
41107		740312		6		چ	72	COL/LOT C/ROL L/CAR L/A/BR		-	-					
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THE WAREHOUSE BILLINGS REPORT ARE THE PROCESSED ORDERS USED FOR PICKING WAREHOUSE ITEMS. A REPORT, PROCESSED AGAINST THE DISC FILE, IS PRODUCED FOR EACH WAREHOUSE.

The billing output tape is sorted by warehouse location within the store and prepared for transmission to respective warehouses. The order tape (billing output tape) is transmitted twice each day via WATS line using an IBM 7711 data communication device in data processing head-quarters and an IBM 1973-1980 automatic send-receive unit stationed at the remote Walgreen warehouses. The receiving equipment lists the incoming data on store invoice forms in warehouse location sequence (within each warehouse) for picking convenience. A warehouse employe may tear off one store order at a time for picking. Full case picks are separated from shelf picks (this separation is a function of the warehouse location sort) and these picking lists are channeled to each warehouse picking office. As an invoice is being worked--or picked--items that cannot be supplied as requested, are noted on the invoice. For example, the letter "F" placed by an item indicates that it is out of stock.

These adjustments are transferred to an adjustment worksheet in the warehouse office and then transmitted back to the data processing center. There, the data is keypunched into adjustment cards and fed back into the system to produce additional charge and/or credit invoices which will be mailed to the store to adjust disc inventory and sales records. This same procedure is followed for items added to the store order at the warehouse levels. Such a situation occurs if a store manager calls directly to the warehouse with additional items or larger quantities to be added to his order.

A copy of the original invoice with picking notations (for out of stock conditions, etc.) accompanies the merchandise to the store. At the store, merchandise is checked in against the accompanying invoice. Discrepancies must be checked against additional charge and/or credit invoices and after that, if there are remaining discrepancies, a claim is filed against the warehouse. At the present time, the newest Walgreen warehouse in Berkeley, Ill., has been able to fill approximately 95 percent of all orders with the inventory control system.

Globe stores' data entry

The Globe stores use a slightly different media for the entry of their orders into the system. Each of the Globe stores is equipped with a Digitronics' ten-key adding machine, magnetic tape recorder and transmitter. As orders are recorded through the adding machine, a small magnetic tape cartridge is written. At Walgreen computer headquarters, a Digitronics Data-Verter accepts data transmitted from the cartridges acoustically via telephone lines and creates punched paper tape. The paper tape is converted to magnetic tape and the data is submitted to the system along with the rest of the store orders.

The replenishment cycle

At the end of each week, a mathematical analysis is performed by the computer for each item record and for each warehouse. Through calculations involving quantities on order, quantities on hand, current movement, lead time, order interval and safety stock, etc., a forecast is developed for each warehoused item. If the inventory level for an item has reached an established reorder point, the program generates a purchase order requisition — a card. The requisition data — in card form — is then re-entered into the computer and a search is initiated for additional items supplied by the same vendor, which, while not at a critical order point, should, for economic reasons, be ordered at the same time. (See Stock Status Report, symbol column). Thus, both critical and semi-critical items are flagged and requisitioned. Printed requisitions are forwarded to warehouse inventory control personnel and corresponding decks of requisition cards are filed in the Ordering and Price Control Dept. at Walgreen headquarters.

Stock status reports reflecting complete vendor lines are also printed. These reports outline all items, those requisitioned and those not requisitioned. All components of the "forecast" calculations are displayed. (Quantities on order, on hand, sales, safety stock factors, vendor lead time, desired order intervals, etc.)

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THE STOCK STATUS REPORT BY VENDOR IS GENERATED WEEKLY. IT IS THE FIRST STEP IN THE INVENTORY REPLENISHMENT CYCLE AND IS A REVIEW OF ITEM DATA.

Requisitions and stock status reports are reviewed side by side by warehouse inventory control personnel. Any adjustments necessary are noted on the requisition. This includes additions, deletions and amendments. "Worked" requisitions are returned to the ordering and price control dept. where corresponding decks of cards are pulled. Card decks and requisitions are forwarded to data processing where corrected quantities are added to the inventory master disc records, thus updating inventory "On Order." Purchase orders are printed. One copy of the purchase order is mailed to the vendor, two copies (the receiving reports) are sent to the warehouse to be filed in the receiving office to await receipt of the merchandise. One copy is submitted to the buyer. The original card decks with purchase order quantities are once again filed in the ordering and price control dept. Since the success of the system is dependent upon accurate, current inventory disc records, it is necessary to update receipts often.

The Stock Status Report

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The stock status report is generated weekly. Information has been accumulated by the data processing dept. all week, and by Saturday, the stock status report may be compiled. A copy is sent to each warehouse by Monday morning. The report lists all items in the warehouse or ordered for the warehouse by buyer, by vendor within buyer, in code number sequence within vendor. RES is the number of items on hand, LEAD refers to the time necessary to receive an order from a vendor and INT stands for order interval: the number of weeks that may elapse between orders. In the "Back Order" column, UNITS is the quantity not shipped by the vendor on the original order, GDWA is the number of weeks' supply of goods in the warehouse, CODE is either Y or N. Y indicates the vendor does ship back order items and N indicates he does not. In the "On Order" column, UNITS show the quantity ordered from a vendor on one or more orders, NO. OF WEEKS is a figure showing the number of weeks supply of items in the warehouse. In the "On Hand" column: UNITS now indicates the quantity in the warehouse after store invoices have been picked. NO. OF WEEKS is the number of items on order in terms of the number of weeks' supply that that quantity represents.

The "Sales" columns include LAST WEEK, the units sold in the previous week; TWO WEEKS AGO, the units sold in the week previous to last; THREE WEEKS AGO, similar; and AVER. LAST 5 WEEKS, the total units sold in the last five weeks divided by five. The last section, labeled "Vendor Order," lists QUANTITY, a suggested amount calculated by computer to be ordered from the vendor; ORDER UNIT, case, box, dozen, only, etc.; QTY. PER ORDER UNIT, the amount in the unit; CASE PACK the amount in the case as packed by the vendor. In the SYMBOL column, one of five symbols may appear, all will indicate management action of one kind or another. "N" indicates new item, "D" indicates a discontinued item, "*" means the item needs attention, " "indicates that the item is critical and "%" means that the requisition has not been cleared. The attention items and the critical items are those for which the system produced requisition cards.

As merchandise is received at the warehouse, it is checked in against order quantities on the receiving reports. Exceptions, if any, are noted and the information is recorded on punched paper tape by means of a Teletype machine. Twice each day, each warehouse is polled by the order and price control dept. and transmissions are made over WATS lines to Chicago via high speed paper tape transmitters and receivers. Punched tape is converted to hard copy in the ordering and price control dept., and card decks are pulled and forwarded to data processing with the hard copy transmission.

Quantities received are punched into the cards and the decks are fed into the computer to update the master inventory disc, and produce extended receiving reports which will be matched against vendor invoices in the accounts payable department before the invoice is paid.

KEYS 2544 CHIC WALG 5300	VENDOR NO INC TONE MICWEST W PETERSON AGC ILL SHIPTO REEN DRUG CO ST. CHARLES ELEY, ILLING	AVE	PROCESSING		30 01,		REC. REPT. NO 11041 ENDED NG REPORT	BERKEL		1	2 77150 11	DJUSTMEN	
CURRENT DIS COUNT TERMS CURRENT FRT. TERMS &	2 30 DAYS PPD ON 10	CS A	2510	PI	RICE PER ORD	ER UNIT	EXTEN ORDERED	SIONS CURRENT OR	OPC MEM	0	FORM 233:	PLUS - BLACK ORDERED INVOICE PRICE EXTENSION	MINUS - REE CURRENT DEPT'L COST EXTENSION
QUANTITY RECEIVED	VENDOR ORDER UNIT	CASE PACK	ITEM DESCRIPTION	ORI	DERED	CURRENT OR DISTRIBUTION DEPT'L	INVOICE PRICE	DISTRIBUTION DEPT'L COST	CURRENT DISK INVOICE PRICE PER ORDER UNIT	M/U ACCT.	TEM M/I CODE ACC 814	X IN 24 IF RED	2532
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THE EXTENDED RECEIVING REPORT IS GENERATED DAILY. IT IS MATCHED AGAINST THE VENDOR INVOICE.

During this process the inventory master disc is updated by reducing 'quantities on order' portions of the disc and increasing 'quantities on hand' by the actual quantities received. Back ordered merchandise is transferred from 'on order' to 'back order' in the disc file. Back orders are examined periodically by inventory control personnel who are in a position to expedite or decide on other solutions.

TIEM DESCRIPTION 97 M/J DEXTRI MALT 3 65 SOLARCAINE PLAST/BOTL	•	DATE OF LAST ORDER	BACK ORDER	ON ORDER		NO OF WEEKS	STORE ORDER QIYS. NOT FILLED	EXTENDED DEPT'L COST	UASI WEEK	WEEKS AGO	SALES WEEKSAGO		WEEAS AGO
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	3 OZ	01056		144					36	16-	67		1.7
41 PERTUSSIN	8 DZ	01136		5760			141		298	736	407	24-	388
47 HEAR-HEAR EAR WAX REMOVE	ER	01136		48			6		44	53	31.	21-	6
28 COLGATE CREAM	GNT	12285		2880			192		_1140			264	417
38 CUE TOOTHPASTE KING		01076		432			24		12-	33	84	12	48
18 KLUTCH POWDER	2 UZ	01146	216	1152			31		129	293	209	31	161
64 AERO SHAVE REGULAR	11 OZ	01136		1188			27		150	257	180	144	492
	HEAR-HEAR EAR WAX REMOVE 28 COLGATE CREAM 38 CUE TOOTHPASTE KING 18 KLUICH POWDER	HEAR-HEAR FAR WAX REMOVER 28 COLGATE CREAM GNT 38 CUE TOOTHPASTE KING 18 KLUTCH POWDER 2 UZ 64 AFRO SHAVE REGULAR 11 UZ	47 HEAR-HEAR EAR WAX REMOVER 01136 28 COLGATE CREAM GNT 12285 38 CUE TOOTHPASTE KING 01076 18 KLUTCH POWDER 2 UZ 01146 64 AERO SHAVE REGULAR 11 UZ 01136	47 HEAR-HEAR EAR WAX REMOVER 01136 28 COLGATE CREAM GNT 12285 38 CUE TOOTHPASTE KING 01076 18 KLUTCH POWDER 2 UZ 01146 216 64 AERO SHAVE REGULAR 11 0Z 01136	47 HEAR-HEAR EAR WAX REMOVER 01136 48 28 COLGATE CREAM GNT 12285 2880 38 CUE TOOTHPASTE KING 01076 432 18 KLUTCH POWDER 2 UZ 01146 216 1152 64 AFRO SHAVE REGULAR 11 UZ 01136 1188	47 HEAR-HEAR FAR WAX REMOVER 01136 48 28 COLGATE CREAM GNT 12285 2880 38 CUE TROTHPASTE KING 01076 432 18 KLUTCH POWDER 2 07 01146 216 1152 64 AFRO SHAVE REGULAR 11 07 01136 1188	47 HEAR-HEAR EAR WAX REMOVER 01136 48 28 COLGATE CREAM GNT 12285 2880 38 CUE TOOTHPASTE KING 01076 432 18 KLUTCH POWDER 2 UZ 01146 216 1152 64 AERO SHAVE REGULAR 11 DZ 01136 1188	47 HEAR-HEAR EAR WAX REMOVER 01136 48 6 28 COLGATE CREAM GNT 12285 2880 192 38 CUE TOOTHPASTE KING 01076 432 24 18 KLUTCH POWDER 2 UZ 01146 216 1152 31 64 AERO SHAVE REGULAR 11 0Z 01136 1188 27	47 HEAR-HEAR EAR WAX REMOVER 01136 48 6 28 COLGATE CREAM GNT 12285 2880 192 38 CUE TOOTHPASTE KING 01076 432 24 18 KLUTCH POWDER 2 UZ 01146 216 1152 31 64 AERO SHAVE REGULAR 11 0Z 01136 1188 27	47 HEAR-HEAR EAR WAX REMOVER 01136 48 6 44 28 COLGATE CREAM GNT 12285 2880 192 1140 38 CUE TOOTHPASTE KING 01076 432 24 12- 18 KLUTCH POWDER 2 UZ 01146 216 115Z 31 129 64 AERO SHAVE REGULAR 11 UZ 01136 1188 27 150	47 HEAR-HEAR EAR WAX REMOVER 01136 48 6 44 53 28 COLGATE CREAM GNT 12285 2880 192 1140 38 CUE TOOTHPASTE KING 01076 432 74 12-33 18 KLUTCH POWDER 2 07 01146 216 1152 31 129 293 64 AERO SHAVE REGULAR 11 07 01136 1188 27 150 257	47 HEAR-HEAR EAR WAX REMOVER 01136 48 5 44 53 31 28 COLGATE CREAM GNT 12285 2880 192 1140 38 CUE TOOTHPASTE KING 01076 432 24 12-33 84 18 KLUTCH POWDER 2 UZ 01146 216 1152 31 129 293 209 64 AERO SHAVE REGULAR 11 0Z 01136 1188 27 150 257 180	47 HEAR-HEAR EAR WAX REMOVER 01136 48 6 44 53 31 21- 28 COLGATE CREAM GNT 12285 2880 192 1140 264- 38 CUE TOOTHPASTE KING 01076 432 24 12-33 84 12 18 KLUTCH POWDER 2 UZ 01146 216 1152 31 129 293 209 31 64 AERO SHAVE REGULAR 11 07 01136 1188 27 150 257 180 144

THE DAILY OUT-OF-STOCK REPORT GOES TO THE BUYER RESPONSIBLE FOR THOSE PARTICULAR PRODUCTS. IT IS GENERATED AT THE END OF THE DAY, AFTER ALL TRANSACTIONS HAVE BEEN MADE.

The cycle count program

A daily cycle count program is used in each warehouse to maintain accurate inventory records. It has been devised to reconcile actual warehouse quantity with inventory quantity on the disc. The two totals may vary in cases where inventory in the warehouse may be damaged and discarded. Since the disc has been updated during the replenishment cycle, changes in inventory occurring in the warehouse (items broken and discarded) change the actual replenishment quantity. It is important that these inventory changes be noted by the system for ordering purposes. Each day, a portion of the items are written onto magnetic tape and transmitted to warehouses where they are printed on cycle count forms. Counts are made of these items and the disc counts are reconciled. Walgreen management believes that the system will facilitate more accurate disc information and establish better audit controls. Plans have been outlined for the implementation of a more sophisticated and comprehensive system. The new system will facilitate more accurate disc information, establish better audit controls, and eventually eliminate giant end-of-year inventory counts.

	WHSE	47	700	WAL	GREEN R	D.JACKSONVILLE, FLA Q	UARTER	LY						D ENDED	10/01	700	AGE 2	4
ZO	VENDOR NO.	8 D + 11 6	MDSE	P D E E R P M T	ITEM CODE	ITEM DESCRIPTION		#651 #451 #651		OF QTR.	QTY, SHIP		EXTENDED 6	LLING SOFTOTAL	DTY SHIP		O DATE ECTENDED 311 AMOUNT	LING
			300			•		T							1	1		
8	07302	С	300	,	339237	WEBSTER FORUM FILTER	503	40		-	7:							Γ
8	07302	C	300	1	339252	WEBSTER QUEEN	50:	24	3	-	1.7	•2	115	-8	20	-2	136	T
8	30402	C	300	1	339610	WHITE OWL INVINCIBLE	50:	24	8	= .	4		14		5		18	T
8	30402	c	300	3	339648	WHITE OWL RANGER	50\$	24	9	• · · · ·	5		17	-1	11	-1	38	T
8	30402	С	300)	339658	WHITE ONL TIP	50:	5 40		-								
_	-0402	c	300	,	339673	WHT OUT SORE CIGAR 5	ios	24	20	-	3	1 -	10		10	-1	35	

THE QUARTERLY ITEM ANALYSIS REPORT IS A GROUPING OF LIKE ITEMS GENERATED FOUR TIMES DURING THE CALENDER YEAR. SINGLE ITEM MOVEMENT (AS ONE PARTICULAR BRAND OF TOOTHPASTE) IS COMPARED WITH THE GROUP TO DETERMINE WHAT PERCENTAGE OF SALES EACH REPRESENTS.

Other systems

Several other systems operate simultaneously in Walgreen's data processing center including a nationwide payroll system which is utilized to process all Walgreen store and office payrolls on a pay-by-check basis. Various city and state tax requirements, repetitive and non-repetitive deductions and, primarily, volume add to the system's complexity. Payroll registers and checks are printed on a biweekly basis for approximately 22,000 Walgreen employes. Earnings records are also maintained by the system which also compiles and prints quarterly Federal Government 941A reports and year-end W2 forms.

Extensive accounting operations by the data processing department provide comparative monthly operating statements for each Walgreen store. In another system, a complete retail ledger is being developed and maintained on disc. In this system, every type of input transaction will be balanced, processed and posted to disc and rebalanced.

''Heavy expansion is in the future for Walgreen,'' says E. L. Dickey, manager of systems planning and development. Dickey considers the Walgreen Co. to be a pioneer of optical scanning. ''And,'' he adds, ''we are constantly expanding this area of operations. Our data processing systems including warehouse inventory store billings, payroll applications and accounting procedures are, we feel, quite progressive. Management reports are timely, informative and are well accepted by all divisions of the company.''

INVENTORY CONTROL AND BILLING AT THE WALGREEN CO. WAL/8 VENDOR 8 Vendor Fills Purchase Order and WALGREEN Ships Goods WAREHOUSE To the Warehouse Requisitions Store Writes Warehouse 4 Are Ordered Order Using Purchase Transmits on, and Fed Receiving NCR Adding 0rders Back Into the Order is Picked, Machine 6 To O.P.C. ① Computer Packed and Sent to Store Warehouse Receipts With Invoice Are Fed Into The TAPE Inventories are Computer Prior to (43) INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT Machine Prints Pur-Reduced to Re-The Billing Runs chase Orders Uporder Level Thru Fildating the "On Order" ing Store Orders; Ma-Portion of the Disc chine Prints Requisitions On Order' is Reduced 'On Hand' is Increas-INVOICE ed by Quantities Receive Tape is Sent to ed--Extended Receiving Data Processing Reports Are Printed MERCHANDISE and Processed **(3)** through Optical Scanner EXTENDED RECEIVING REPORTS Extended Report Scanner Are Matched Against Converts Computer Checks Inventory For Vendor Invoice--Adding Machine For Out-of-Stock Items and Payment is Made Tapes to Magnet Inventory is Written on Magnetic To Vendor For OPTICAL SCANNER ic Tape Which Tape. Inventory is reduced by Merchandise Is Fed Into Quantities Billed Computer EXTENDED Tape is Transmitted via Tele-BILLING phone Lines to Receiving TAPE Equipment in the Warehouse