INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications   Order Processing, Billing, Inventory Control,
                               Accounts Receivable

Type of Industry   Manufacturer of luggage, furniture and plastic toys

Name of User   Samsonite Corp.
                               Denver, Colo.

Equipment Used   IBM System 360 Models 30 and 40

                               Bell System and IBM Data Communications Terminals

Synopsis

The primary application at Samsonite is the order-billing procedure which
involves inventory and customer records stored on magnetic discs as well
as the original input documents. Customer and inventory files are updated
each day prior to the order-billing run. Output from the order-billing run
consists of invoices and shipping notices. Orders to be shipped from the
Denver plant trigger output of paper shipping notices. Those to be shipped
from other locations trigger output of punched tape which is transmitted to
the appropriate shipping location and used there to create the paper documents.

Numerous by-products are obtained in the order-billing run including data
used for sales analysis, accounting, merchandise style statistics, stock
control and accounts receivable. Some of the data also is used in production
scheduling, an application presently being refined and extended.

Most applications are run interchangeably on the System/360 Models 30 and 40,
although a few are too large for the Mod 30. IBM 2260 data display devices
are used by the accounts receivable and credit departments to access the disc
file containing accounts receivable information.

Samsonite Corporation was founded in Denver in 1910 as The Shwayder Trunk Manufacturing Company by Jesse Shwayder who is chairman of the board. The founder's four brothers joined the organization in the next two years and in the early 1930's the firm changed its name to Shwayder Brothers Inc. The name change came at about the same time that card tables were added to the product line, representing the first diversification from trunk and suitcase manufacturing.

The name Samson was given to the card table line. A new type of luggage was introduced in 1939 and it carried the name Samsonite Streamlite. In 1965, the corporate name was changed to Samsonite Corp.

Expansion beyond the Denver facility came in 1926 when sales reached $1 million for the first time. A manufacturing facility was set up in the eastern United States. After World War II, two divisions were established: luggage manufacturing in Denver, furniture production in Detroit. The latter operation has since been moved to Murfreesboro, Tenn. In 1956, an Export Sales Dept. was established and Samsonite of Canada Ltd. was put into operation. In 1964, an international division was formed. Samsonite now sells its products in over 100 countries.

The plastic toy line was added early in 1960. This product is manufactured at Loveland, Colo.

Except for two brief slumps, during the depression years of the 1930's and the middle 1950's, sales have been climbing upward on a fairly consistent basis. In a recent four-year period, revenue increased from $51.9 million to $82.7 million. With accelerated growth, the company required a new headquarters and manufacturing facility. The Samsonite Industrial Campus, consisting of six buildings, was erected on a 150 acre site in Denver.

BACKGROUND TO EDP

Samsonite began using punched card equipment in the 1930's at both the Denver headquarters and luggage production facility and the Detroit furniture production plant. At that time the two operations were run virtually as two separate companies. When IBM announced its first generation computers, Samsonite installed one at each location. In the early 1960's, IBM 1401's were installed both at Denver and Detroit. The furniture operation at Detroit subsequently was moved to Murfreesboro, Tenn. When IBM announced its System/360, Samsonite ordered the 360/30 and 360/40 which are presently installed in Denver. Shortly thereafter, Model 20's were ordered for installation at Murfreesboro, Tenn. and Samsonite of Canada. The Model 30 was installed at Denver in August of 1966, the 40 in October of 1967, with the 20's being installed during this same period. Coinciding with the installation of third generation computers was a move toward centralization of three applications - order entry, accounts payable and accounts receivable - in Denver. Murfreesboro's DP installation continues to handle hourly payroll and inventory for that plant.

The Mod 30 has storage capacity of 65K characters and the Mod 40, 128K. Twelve IBM 2311 disc drives, using both Memorex and IBM disc packs with storage capacity of 7.2 million characters per pack, are included in the configuration.

The company has used IBM hardware since the 1930's, citing excellent service and the availability of training courses as prime reasons for preferring that manufacturer.
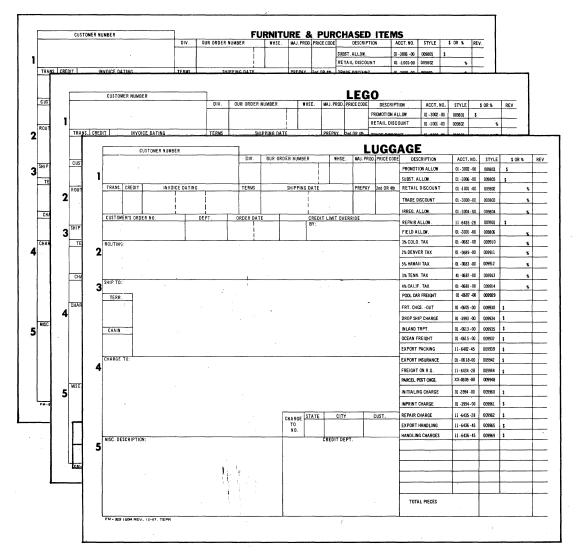
ORDER-BILLING SYSTEM

Order Input

Orders come into Denver headquarters either from salesmen or directly from customers throughout the U.S. Most arrive by mail. In the mail room, orders are separated and batched:
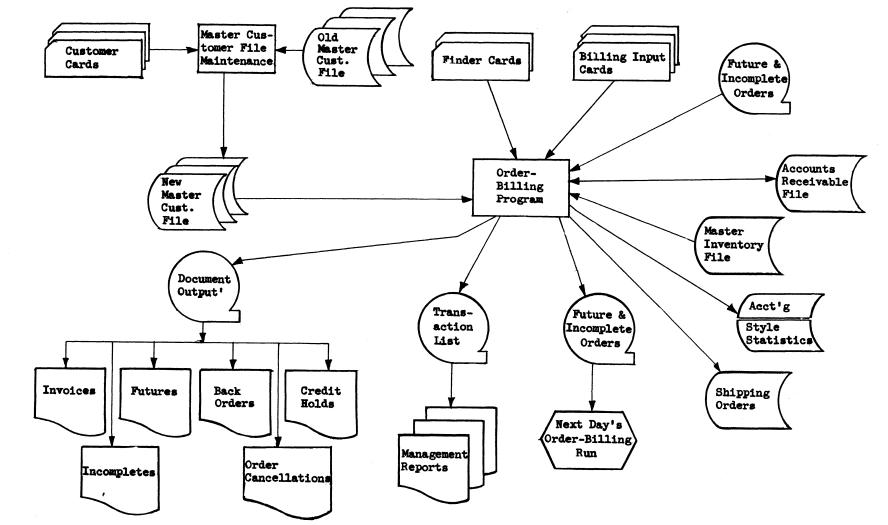
those for furniture go to the furniture sales department, those for Lego plastic toys are sent to the Lego sales department, and those for luggage are routed to the order-billing department. After the furniture and Lego sales departments have reviewed orders for current pricing and packaging instructions, they send the orders to the order-billing department.

Five order editors determine which warehouse will ship products, check orders for pricing and generally ensure that information on the order is valid. Then, order writers attach a cover form to the original document and on the form write in customer account numbers - obtained from a tub file of customer account cards - and any type of exception information required to process the order, e.g., if pricing varies from the norm because of promotions or other reasons.

FURNITURE & PURCHASED ITEMS

DESCRIPTION	ACCT.NO.	STYLE	$ OR %	REV.
SUBST. ALLOW.	01 -3006 -00	009805	$	
RETAIL DISCOUNT	01 -1001-00	009802	%	

LEGO

DESCRIPTION	ACCT. NO.	STYLE	$ OR %	REV
PROMOTION ALLOW	01 -3002 -00	009801	$	
RETAIL DISCOUNT	01 -1001 -00	009802	%	

LUGGAGE

DESCRIPTION	ACCT. NO.	STYLE	$ OR %	REV
PROMOTION ALLOW	01 -3002 -00	009801	$	
SUBST. ALLOW.	01 -3006 -00	009805	$	
RETAIL DISCOUNT	01 -1001 -00	009802	%	
TRADE DISCOUNT	01 -3000 -00	009803	%	
IRREG. ALLOW.	01 -3004 -00	009804	%	
REPAIR ALLOW.	11 -6435 -28	009901	$	
FIELD ALLOW.	01 -3001 -00	009806	%	
3% COLO. TAX	01 -0682 -00	009910	%	
2% DENVER TAX	01 -0689 -00	009911	%	
5% HAWAII TAX	01 -0683 -00	009912	%	
3% TENN. TAX	41 -0687 -00	009913	%	
4% CALIF. TAX	01 -0681 -00	009914	%	
POOL CAR FREIGHT	01 -0607 -00	009929		
FRT. CHGS. -OUT	01 -0605 -00	009930	$	
DROP SHIP CHARGE	01 -3993 -00	009934	$	
INLAND TRPT.	01 -0613 -00	009935	$	
OCEAN FREIGHT	01 -0615 -00	009937	$	
EXPORT PACKING	11 -6402 -45	009939	$	
EXPORT INSURANCE	01 -0618 -00	009942	$	
FREIGHT ON R.G.	11 -6434 -28	009944	$	
PARCEL POST CHGS.	XX -0609 -00	009948		
INITIALING CHARGE	01 -3994 -00	009960	$	
IMPRINT CHARGE	01 -3994 -00	009961	$	
REPAIR CHARGE	11 -6435 -28	009962	$	
EXPORT HANDLING	11 -6436 -45	009965	$	
HANDLING CHARGES	11 -6436 -45	009969	$	

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COVER FORMS ARE ATTACHED TO INCOMING ORDER DOCUMENTS AND FILLED IN BY ORDER WRITERS. ORDER NUMBER BLANK IS FILLED IN BY THE DATA CONTROL DEPARTMENT THEN THE ORDER DATA IS KEYPUNCHED.

After the cover form is completed, orders are routed to one of three places: the data control department, if all data is valid and the order is ready for entry to the system; to the traffic department, if the order is to be shipped prepaid (traffic computes and adds freight charges to the cover document); to the credit department, if the order exceeds a maximum credit level (this is determined when the order writer checks the tub file of customer accounts).

Customer Cards

Master Customer File Maintenance

Old Master Cust. File

Finder Cards

Billing Input Cards

Future & Incomplete Orders

New Master Cust. File

Order-Billing Program

Accounts Receivable File

Master Inventory File

Document Output'

Trans-action List

Future & Incomplete Orders

Acct'g Style Statistics

Shipping Orders

Invoices

Futures

Back Orders

Credit Holds

Incompletes

Order Cancellations

Management Reports

Next Day's Order-Billing Run

FINDER CARDS CALL IN DATA FOR FUTURE AND INCOMPLETE ORDERS. BILLING INPUT CARDS ARE FOR NEW ORDERS. MASTER CUSTOMER FILE AND MASTER INVENTORY FILE, BOTH ON DISCS, ARE PRIMARY RECORDS USED IN ORDER-BILLING. THREE MAGNETIC TAPE RECORDS ARE OUTPUT: DOCUMENT TAPE IS USED LATER TO PRODUCE INVOICES, ACKNOWLEDGMENTS AND REPORTS USED INTERNALLY; TRANS-ACTION TAPE IS INPUT FOR OTHER PROCESSING RUNS AND SOURCE FOR DATA USED IN NUMEROUS MANAGEMENT REPORTS; FUTURE AND INCOMPLETE ORDERS TAPE IS USED IN THE NEXT DAY'S ORDER-BILLING RUN. DATA USED TO CREATE SHIPPING ORDERS (HARD COPY IN DENVER AND PUNCHED TAPE FOR TRANSMISSION OF DATA TO DISTRIBUTION CENTERS) IS OUTPUT TO DISCS AND THE ACCOUNTING-STYLE STATISTICS DISC FILE IS UPDATED ALONG WITH ACCOUNTS RECEIVABLE.

In the data control department, one person is responsible for assigning order numbers and imprinting them on the cover form. The order number contains six digits; a seventh digit is added during computer processing to indicate that the order has been handled by the system. The order is then sent to keypunching and then to the computer. If an order is cleared through the programed editing procedures and results in creation of an invoice, the seventh digit is a 0. If the order cannot be processed for some reason, the seventh digit is a 1.

Rush orders are assigned lower order numbers than routine orders and are input to the system first. Then the punched cards for future and incomplete orders (those which did not pass the editing programs on first entry) are entered and finally the new orders.

Master Customer and Inventory Files

Two key files used in the order-billing run are the Master Customer Records and Master Inventory File, both are on magnetic disc packs. Samsonite has 12 IBM 2311 disc drives and uses both IBM and Memorex disc packs. The Master Customer File requires 2-1/2 packs; each pack holds 7.2 million characters.

For each customer, there are at least three basic records within his file: (1) Primary record containing account number, name and address, (2) Universal record that includes billing address, metropolitan trade area, chain number (if the customer is part of a chain of stores), market indicator (e.g. retailing, catalog house, government), vendor number (some customers sell to as well as buy from Samsonite), (3) division record (products are classified by division number). The division record includes: district, territory and warehouse in which the customer's transaction normally is handled, type of post office which services the customer, whether or not a bill of lading is required, terms under which the customer buys products, whether or not a sales commission is involved, standard routing information, date the customer record was established, last date on which the record was used.

Besides the three basic records in the Master Customer File, four others are possible: a secondary record that simply is an enlargement of the primary record field to accommodate names and addresses that exceed 69 characters, and four other division records.

The master inventory file contains:

(1) A 12-digit number for each product indicating which of the three major products - luggage, Lego or furniture - that it is, which line within the product, size (used mainly for furniture items), color and - where applicable - part numbers (e.g., a lock for a suitcase).

(2) Numbers of the warehouses in which the product is stored.

(3) Description of each product, e.g. two-suiter suitcase. Also, descriptions used by customers which differ from Samsonite's. In addition, for each product: price code, division number, whether it is a new product, size, weight, freight class, whether the product is part of a promotion set (e.g., if price is based on purchase of a set of a luggage).

(4) Inventory of each warehouse, listing products by division stored in each warehouse, products in transit to the warehouse, orders received by the warehouse, sales by product division, returned goods by product division, back order items scheduled for shipment to the warehouse, unshipped orders, stock capacity of the warehouse, reorder point for the warehouse, sales of each product by market (e.g. retailing, catalog house, govt.). For all applicable categories, month-to-date and year-to-date totals are kept.

Both the Master Customer File and Master Inventory File are updated prior to the order-billing run.
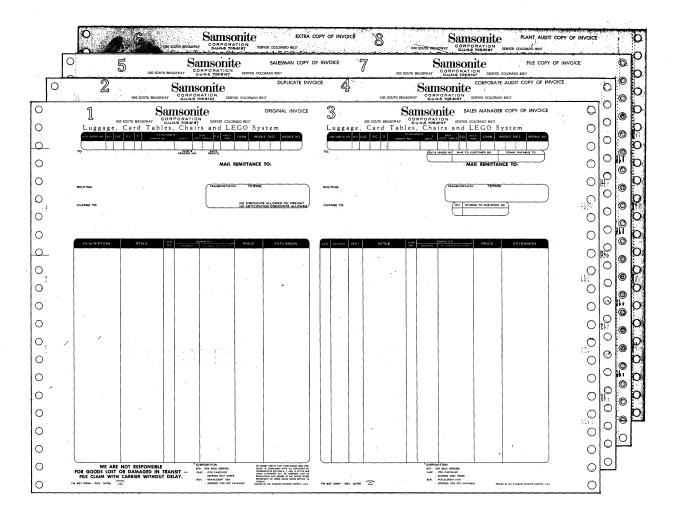
Order-Billing Run

During the order-billing run, data input by "finder" cards accesses a magnetic tape file of future and incomplete orders (output during the previous order-billing run). Data from the Master Customer and Master Inventory Files is called into the system and both files are adjusted to reflect transactions. Output is to either magnetic tape or discs. Both the System/ 360 Model 30 and 40 are used interchangeably for most programs, although there are a few programs too large for the Mod 30.

Magnetic tapes created as the result of order processing include: a document printing tape, containing data for invoices and various reports; a transaction tape that is the key to almost all sales, statistical and accounts receivable reports; and a new future and incomplete order tape for use during the next order-billing run.

Output to discs includes data on shipping order transactions, data used in accounting and style statistics, e.g. how many items of a particular style were ordered.

From the document tape, the following documents are printed: invoices on complete orders and on those orders that can be shipped in part, with back orders for some items; acknowledgments for future orders (those designated for shipment at some date beyond the usual shipping date) and back ordered items; and three reports used internally - listings of rejected orders, cancelled orders and those held for credit checking.

The invoice is a four-part form consisting of eight sections. Copies go to the customer and to various internal departments such as sales.
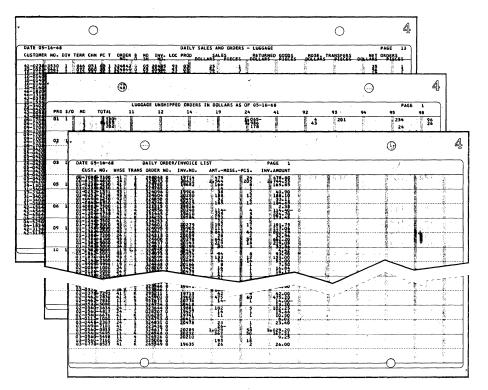
Acknowledgments are printed out on two-part forms with two sections to each part. One section is mailed to the customer, the others are used internally.
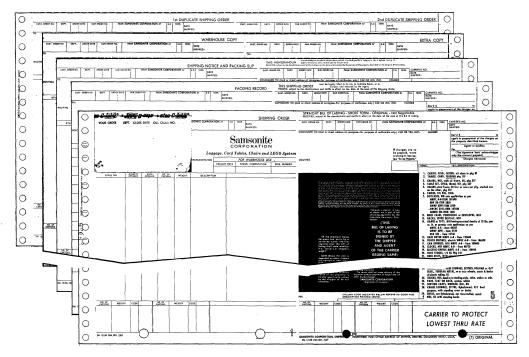

The transaction tape is used in compiling numerous reports. There are five types of records on the tape: (1) an order-invoice record for each order that results in an invoice, (2) a commission record for each style to which commission payments are applicable, (3) accounts receivable record for each order that produces an invoice, (4) a sales and order record for each product line, e.g. Silhouette luggage, on each invoice, and (5) a component transfer record, used when billing of a promotion set must be based on the inventory of the components of the set. Each of the five types of records is used in many reports and also is input for other programs. Some of the reports produced from these records are: a daily order invoice list, a monthly commission list, accounts receivable list, daily sales and order reports and daily lists of unshipped orders.

Shipping Orders

Shipping orders are handled in two different ways. For those shipments from Denver, a five-part form is printed out. A unique "extra" on this form is a small Sten-C-Label which covers the portion of the form where the name, address and routing information is printed. Printing is done through the label and onto the shipping order: In the shipping department, the label becomes a stencil for imprinting name, address and routing onto the container.

THREE OF THE REPORTS FROM THE TRANSACTION TAPE ARE THE DAILY ORDER/
INVOICE LIST, DAILY LIST OF LUGGAGE SALES AND ORDERS, AND LIST OF UNSHIPPED
ORDERS FOR LUGGAGE. NUMEROUS OTHER REPORTS ALSO ARE PREPARED FROM
DATA ON THE TRANSACTION TAPE.

THE MULTI-PART SHIPPING ORDER FOR SHIPMENTS FROM DENVER IS PRINTED OUT
IN DENVER. ORDERS FOR SHIPMENTS FROM OTHER POINTS ARE PRINTED OUT AT THE
DISTRIBUTION CENTERS FROM PUNCHED TAPE. THE PUNCHED TAPE IS CREATED
DURING THE NIGHT WHEN ORDER DATA IS TRANSMITTED FROM DENVER TO DISTRI-
BUTION CENTERS. THE STEN-C-LABEL IN UPPER LEFT CORNER OF SHIPPING ORDER
IS USED IN THE SHIPPING DEPARTMENT TO TRANSFER NAME AND ADDRESS TO THE
CARTONS TO BE SHIPPED.

For those orders to be shipped from locations other than Denver, single forms and punched tape are output simultaneously. An IBM 1012 punch is linked to the Mod 30 for this application. The hard copy is retained in Denver until shipment from the distant warehouse is acknowledged. The punched tape is transmitted to the distant warehouses at night, using a Bell System Dataspeed transmitter. At the appropriate warehouse, the transmitted data is recorded on punched tape which is subsequently fed into a Teletype terminal to create imprinted paper shipping orders.

Master Customer File Maintenance

Each day, prior to the order-billing run, the master customer file is updated. In effect, data from the previous day's file - on discs - is read into the computer system, merged with updating information entered via punched cards and output to another disc unit. Updating information may include change of addresses, change of billing address, addition of a division record and any alteration of the data stored on the master record.

STYLE AND INVENTORY FILE UPDATING

Four types of input data are used to update the style file, and, subsequently, the inventory file. These are:

(1) Master style and price cards which are keypunched from source documents originating in the sales department.
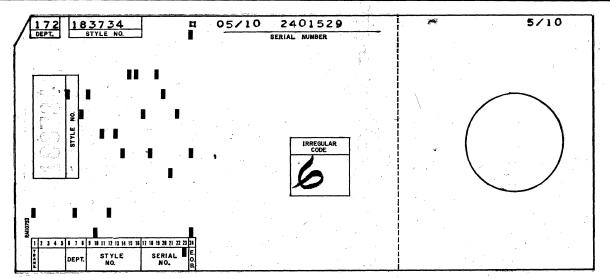
(2) Warehouse transfers. The production inventory control section decides which transfers will be made and issues authorizations which are keypunched and fed into the system. The transfers include moving products from production to inventory. During processing of authorizations, the computer records the transfer as an in-transit item and prints out a three-part form; one part of the form goes to the receiving warehouse which returns it to Denver when the shipment is received. Receipt data is entered into the computer and the products are deducted from in-transit status and added to inventory.

(3) Furniture and Lego production totals are sent in each day from the plants at Murfreesboro and Loveland. This data is keypunched and cards are fed into the system. During processing of this data, a finished goods production report is printed out and used by management.

(4) Luggage production figures from the Denver plant. Collection of this data involves the use of "drop count cards" -- punched cards with a circular hole about the size of a half-dollar. These cards, produced during processing of data used in the production schedule, are sent out to assembly lines. There is one card for each item to be produced. When the item comes off the assembly line, the appropriate drop count card is attached and the item is put on a conveyor system. Along the conveyor line, a clerk detaches the card and feeds it into an IBM 1030 data gathering system. The data is transmitted to an output terminal in the data processing department where one punched card is created for every three drop count cards fed into the transmitting unit. The output cards are used for input to the computer to update style and inventory files and to produce a printed report showing what has been produced and what is still in production.

Stock Control Report

After all production figures are in, a stock control report - actually two reports - are printed out. One report lists products by style with totals for each warehouse, the other lists warehouses with style totals in each. These reports are used by various departments and executives within the company, including those with responsibility for production control and sales.

| 172 | 183734 | | ◻ 05/10 2401529 | | | 5/10 |
| DEPT. | STYLE NO. | | SERIAL NUMBER | | | |

IRREGULAR CODE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| T R A N. | | | | | DEPT. | | | STYLE NO. | | | | | | | | SERIAL NO. | | | | | | | E O R |

DROP COUNT CARD IS ATTACHED TO LUGGAGE DURING PRODUCTION. AS LUGGAGE COMES OFF PRODUCTION LINE, DROP COUNT CARD IS ENTERED INTO DATA COLLECTION SYSTEM WHICH OUTPUTS PUNCHED CARDS USED TO UPDATE INVENTORY FILE.

Accounting and Style Statistics File

For EDP purposes, these files are considered one because they are kept on one magnetic disc pack. The accounting file, updated during the order-billing run, contains data used to prepare the general ledger, such as account numbers, debits or credits, date of order entry.

The style statistics file has three basic types of records indicating (1) if the customer reorders a particular style, (2) which styles the larger chain stores reorder and (3) the number of items of a particular style on each order. This data is used in preparation of monthly and bi-monthly reports used primarily by sales executives.

Accounts Receivable

The accounts receivable system represents a blending of manual and automated systems. For each invoice produced during the order-billing run, a punched card is output and the accounts receivable disc file is updated. Thus, there are duplicate accounts receivable files, one on punched cards and one on discs.

Punched cards are routed to the accounts receivable department and inserted in bins. When payment is received, those cards are pulled which match the invoices being paid. These cards are first edited against the disc file to insure compatibility, and finally credited against the customer's account as a cash payment, deleting that detail from the disc file and writing a new historical record on a separate disc.

The disc file, in addition to the information also on the cards, contains an invoice-by-invoice transaction list plus credit control information. Two IBM 2260 inquiry-display terminals are used by the accounts receivable and credit departments to access this data which is used for numerous purposes including handling of customer inquiries and checking current account status prior to sending out reminder notices. To access the control data in the disc file the operator keys in the customer account number. To access the invoice-by-invoice detail listing (that which is also on the punched cards) for that customer account, she keys in a second code number. If a printed version of the data is desired, the operator keys in another code which causes the system to print out the data on an IBM 1053 printer next to the 2260 terminals.

Results and Future Plans

The by-products available with the system represent the major benefits gained when the company upgraded from an IBM 1401 to System 360. With the transaction tape now produced during the order-billing run, more information is available throughout the company where and when it is needed. This is particularly beneficial to those involved in sales analysis, forecasting and production control.

Along with the changeover to third generation computers, the company centralized some applications previously handled separately in Denver and Murfreesboro. These include order entry, accounts payable and accounts receivable. Errors that previously cropped up in order entry have been virtually eliminated. Orders formerly were sent directly to warehouses where personnel not trained to do clerical work typed documents and simultaneously cut paper tapes for transmission to Denver.

Time required for certain operations also has been reduced with the third generation system. For example, it is now much easier and quicker for the accounts receivable and credit departments to obtain data they need by using data display terminals than it was by using computer printout.

Perhaps the greatest benefit occuring from the present system is the capability it provides to the data processing department to cope with the increasing volume of work resulting from increased sales. At the same time, the present system provides a basis for future enhancement and addition of other applications.

Samsonite is emphasizing development of a Manufacturing, Engineering and Product System (MEPS) that will serve all the areas mentioned in the title. This system, partially implemented, represents an extension and substantial improvement over the present methods used to schedule parts production (Samsonite makes almost all of its own parts), control parts inventory, ascertain costs in building each part and assembling each product, initiate purchase orders and develop a manufacturing plan from projections arrived at by management working with the data the present system produces.