INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications	Inventory and Purchasing Control
Type of Industry	Manufacturer - Audio and Communications Systems
Name of User	DuKane Corp. St. Charles, Ill.

Equipment Used	IBM 1401 Data Processing System
	IBM 1405 Disc Storage Unit
	IBM 1403 Printer
	IBM 1407 Console Inquiry Station

Synopsis

Inventory and purchasing procedures are being controlled at the DuKane Corp. by an IBM 1401 data processing system. Once a week the system produces a stock status report, broken down by weeks to cover a 36-week forward period. The report shows the quantity of parts required for all orders, the quantities in stock, the quantities still available or needed and the parts on order.

The system is essentially a three-part integrated system that covers cost distribution, control of finished stock including machine preparation of sales orders, customer orders and sales reporting and a parts control system.

At the DuKane Corp. an IBM 1401 data processing system is being used to control inventory and purchasing procedures. The system includes an 8K 1401 processing unit, a 1405 disc storage unit (10 million characters); a 1403 printer and a 1407 console inquiry station. Weekly status reports include a 36-week projection to aid buyers in decision making. Stock picking methods have been substantially improved and actual production has been expedited through elimination of time lost through stock shortages. As in most companies that produce a diversified group of products and are committed to tight schedules, interruptions to production can become quite costly.

The DuKane Corp. has done away with part shortage scheduling problems by tying material requisitioning into purchasing and inventory control procedures on an IBM 1401 computer system. Previously, all parts needed to assemble an order were set aside in stock bins until production of the order was scheduled. To ensure the availability of these parts, they could not be used for other orders. As a result, production schedules were tied to the availability of stock.

Stock picking methods in the past followed the conventional procedures of picking parts in stock sequence and then moving them to the assembly area for sorting in assembly line sequence. This method took up valuable supervisory man-hours.

Electronic data processing for inventory control began at DuKane Corp. in 1959 when an IBM 305 was installed. Before that time, inventory was kept manually on cards. The expected problems in automating inventory control came with the initial conversion. All existing bills of material were duplicated on punched cards, all files and existing forms were organized to reflect the needs of the new system. Once setup was completed, Assistant Controller Harlan Lundgren reports that the system "ran rather smoothly," though the 305 was "somewhat cumbersome and slow printing." Its storage was felt to be adequate at that time.

A thorough evaluation of data processing was made later. All inventory was double-checked. "It was similar to a bloodletting or a purge," says Lundgren. In response to a need for a faster printout, the larger IBM 1401 was installed. The conversion was relatively uneventful, as most of the automation problems had been taken care of previously. The conversion was made with DuKane working with IBM systems personnel from the Chicago office.

At the present time, a team of four persons deals directly with automated inventory control. There are seven others in other phases of the company's EDP: payroll, accounts receivable, order processing and sales reporting functions.

Robert Watts, DuKane controller, in evaluating the ongoing operation of the present systems, states that the main troublesome elements are occasional accuracy flaws. "People are people," he says, "and of course, machines only give as good as they get."

The present system at DuKane Corp. is an integrated three-part system that controls cost distribution, control of finished stock, including machine preparation of sales orders, customer orders and sales reporting and a parts control system. All three systems were developed simultaneously.

THE SYSTEM

Inventory Control

When the assembly of an order is scheduled by production control, machine-printed material requisitions are sent to the stockroom. Each requisition lists the parts for an assembly in operation by part number, operator number, description, quantity required and quantity back-ordered. Parts that have been picked in operation sequence are loaded on separate carts and moved directly to the part of the assembly line where they are to be used. This way valuable assembly floor space is saved.

MATERIAL REQUISITION

MODEL NO. 707 6 F.S.O. NO. 40-6012 QTY. 100 PRODUCT CODE 43100
PAGE NO. 01 DEPARTMENT 08 DATE 09/07/67 SUB ON
COMBINED WITH

OPER.	PART NUMBER			DESCRIPTION	QUANTITY REQUIRED		QUANTITY ISSUED	QUANTITY CODE	QUANTITY BACK ORDER	REMARKS
							50			
	115 2992	00	M	ASSEMBLY	100	PC				
	115 2995		M	ASSEMBLY	100	PC				
	115 2997		M	ASSEMBLY	100	PC				

EACH MATERIAL REQUISITION LIST CONTAINS PART NUMBER, OPERATOR NUMBER, DESCRIPTION, QUANTITY ORDERED AND QUANTITY BACK-ORDERED.

Master bills of material for each of the end products are prepared and the information contained therein is transferred to punched cards -- one deck of cards for each sub-assembly within the product. (Sub-assemblies may be common to a number of end products or may be end products in themselves.) This information is used whenever inventory control notifies the data processing department of an order to produce a product for stock.

The IBM 1401 computer controls finished products and indicates stock conditions and availability.

SPEAKERS DRIVERS AND HORNS

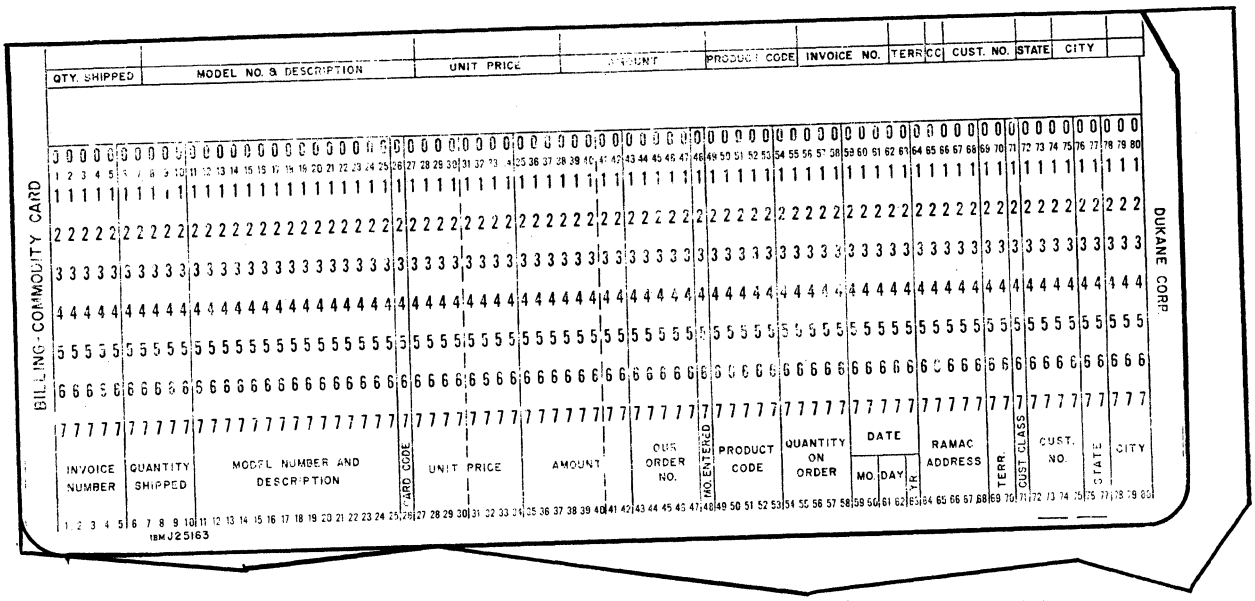
DAILY STOCK STATUS REPORT FOR 09/12/67

MODEL NO. DESCRIPTION	ACTUAL ON HAND	ALLOC. FOR SHIPMENT	AVAIL.	FSO QTY	RE-ORDER POINT	SHIPMENTS THIS MO.	SHIPMENTS YTD	ORDERS THIS MO.	ORDERS YTD	AVER.ORDERS/MONTH LAST YR.	AVER.ORDERS/MONTH THIS YR.	LEAD TIME	OTHER MODELS
645 9920 SPK	3547	904	2643	2999	1836	89	5535	147	5272	456		16	1000
9930 SPEAKER	647	12	635	201	304		573		545	61		16	
9935 SPEAKER	8854	4484	4370	7267	9168	1394	23288	1641	24874	2875		16	4002
9935A SPEAKER	9196	5004	4192	16896	10060	1361	16848	1994	18253	2491		16	19105
9945 SPEAKER	622	94	528	-	420	25	648	8	706	125		16	
5C25 HORN	665	739	74-	1013	596	39	1056	15	1384	165		16	43
5C35 HORN	1131	244	887	500	1252	51	1614	104	1703	265		16	
5A90 LOUD SPKR	324	169	155	499	320	136	693	45	771	84		16	
5A120 HORN	86	82	4	200	132	18	326	12	391	38		16	
5A255 DRIVER	44	66	22-	300	136	30	329	4	360	40		16	
5A260 PAG SPEAK	478	37	441	2	144	24	416	5	395	35		16	
5A270 MUSICAST	4	43	39-	175	64	7	188	4	182	15		16	
5A290 HORN	166	6	160		20	6	240	12	231	22		16	
5A295 HORN	1607	132	1475	1	116	46	1689	71	1622	292		16	
5B295 HORN	354	66	288	250	4	11	965	4-	948	73		16	
5A300 HORN	13	4	9	-			11		11				36
5A310 MULTI CEL	-	18	18-	130			4	2	22				27
5A315 MULTI CEL	-	15	15-	34			22	6	29	1		16	
5A320 MULTI CEL		33	33-	78			27	5	44	1		16	
5A325 MULTI CEL		43	43-	170			18	2	46	1		16	
5A330 MULTI CEL	-	5	5-	80			11		5	1		16	
MULTI CEL		15	15-	63			11		16			16	
	92		92				8		8				
	79	43	36			1	46	1	80	3		16	14
	[illegible]	[illegible]	[illegible]			3	52	4	[illegible]	[illegible]		16	

THE DAILY STOCK STATUS REPORT INDICATES MOVEMENTS INTO AND OUT OF STOCK FOR MODELS SOLD OR USED TO MAKE OTHER MODELS. THE REPORT MAKES POSSIBLE REORDERS OF FINISHED STOCK FOR SALES AND FOR DUKANE USE.

The computer is notified when parts information is required and a separate order card is punched for each product needed to fill the order. These order cards list end-product model number, order number, finished stock number, quantity to be manufactured and delivery date. At this point, there is complete information on current parts requirements either on punched cards or in the data storage unit of the computer. Information is then combined with stored data on new order cards to update the parts inventory records.

The 1401 reads the information on the order cards and multiplies the parts needed for each end product by the number of end products to be manufactured. Similar data, entered daily, is, at this point, already stored in the IBM 1405 disc storage unit. Information on parts in stock and on order is also stored.



WHEN PARTS INFORMATION IS REQUIRED, A SEPARATE ORDER CARD IS PUNCHED FOR EACH PRODUCT TO FILL THE ORDER.

Each week the data on the discs is read and machine-printed in the form of a stock status report used by the purchasing department. This report shows quantities of parts required for all orders, quantities in stock and the quantity still available, or quantity needed to fill requirements. The stock status report tells the buyer what to buy, when to buy them and how many are needed.

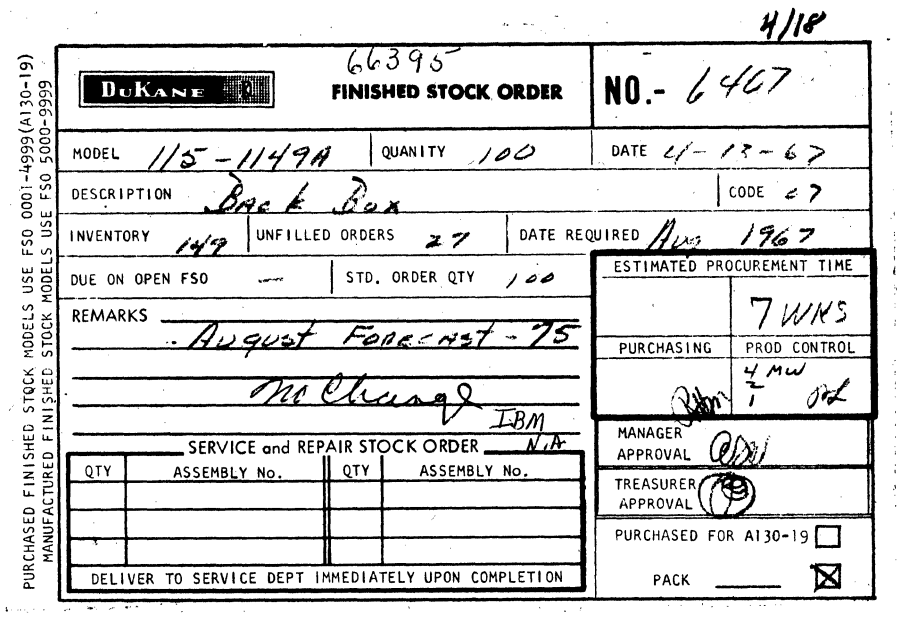
STOCK STATUS REPORT OF 09/09/67

PART NUMBER	REV#	INV.	REQD.	INSP.	D.M.	P.O.	B.O.	STD.COST	J-FACT.	TO. PAST RQ.	PAST PO.	M-PART AVAL.	
A 761 11 22000		40000	29755					000.005		62	5080		
36-48	REQD	8172	2666	975			450	5584		1458	450		6917
	P.O.												
	AVAL	31828	29162	28187	28187	28187	27737	22153	22153	20695	20245	20245	20245	13328
49-09	REQD	292	125			2666							
	P.O.												
	AVAL	13036	12911	12911	12911	10245	10245	10245	10245	10245	10245	10245	10245	10245
10-22	REQD												
	P.O.												
	AVAL	10245	10245	10245	10245	10245	10245	10245	10245	10245	10245	10245	10245	10245
23-35	REQD												
	P.O.												
	AVAL	10245	10245	10245	10245	10245	10245	10245	10245	10245	10245	10245	10245	10245
A 761 11 22004		20000	14353					000.006		34	688		
36-48	REQD	876	3000	475				1376		1875			2876
	P.O.												
	AVAL	19124	16124	15649	15649	15649	15649	14273	14273	12398	12398	12398	12398	9522
49-09	REQD	500	375			3000							
										5447	5647		

THIS STOCK STATUS REPORT, USED BY THE PURCHASING DEPT., SHOWS PART QUANTITIES REQUIRED FOR ALL ORDERS.

The computer also produces all the information used in material requisitions as it updates and stores stock status information on the disc file. This is accomplished by placing the computer on-line with the punched card units. Using the information transmitted from the computer, the unit record equipment prepares a requirement card for each part needed to fill an order. The punched requirement cards are sorted in order of finished stock number and filed until needed.

When the production control department releases a finished stock order, the requirement cards are again sorted and subdivided by assembly department number and operation sequence within the department. The sorted cards are then read and printed in order to prepare five-part material requisitions.



4/18

PURCHASED FINISHED STOCK MODELS USE FSO 0001-4999(A130-19)
MANUFACTURED FINISHED STOCK MODELS USE FSO 5000-9999

DuKane

66395

FINISHED STOCK ORDER

NO.- 6407

MODEL 1125-1149A | QUANITY 100 | DATE 4-13-67

DESCRIPTION Back Box | CODE 27

INVENTORY 149 | UNFILLED ORDERS 27 | DATE REQUIRED Aug 1967

DUE ON OPEN FSO — | STD. ORDER QTY 100

REMARKS August Forecast - 75
No Change IBM

ESTIMATED PROCUREMENT TIME: 7 WKS

PURCHASING | PROD CONTROL: 4 MW 1

MANAGER APPROVAL

TREASURER APPROVAL

PURCHASED FOR A130-19 ☐

PACK ____ ☒

SERVICE and REPAIR STOCK ORDER N.A.

QTY	ASSEMBLY No.	QTY	ASSEMBLY No.

DELIVER TO SERVICE DEPT IMMEDIATELY UPON COMPLETION

THE FINISHED STOCK ORDER IS RELEASED BY THE PRODUCTION CONTROL DEPT.

Material requisitions are normally printed twice a week. Since the stock called for on these requisitions is reflected in the weekly status reports, production control can allocate stocks on hand. Since the requisition indicates the items which are not available, pre-pulling of requisitions to determine parts availability has been eliminated.

The five-part material requisition enables DuKane personnel to maintain close control of parts flow. One part of the requisition is retained in the data processing department and a second copy is sent to production control to show what parts to look for in receiving, and what internally-manufactured parts to expedite through production. The other three copies of the material requisition are sent to the stockroom. When parts are issued, stockroom personnel merely enter the quantity issued and indicate back-orders on all three copies of the material requisition. One copy of the requisition is sent to production control to update information on parts available. Another part is sent to the data processing department for updating inventory.

The fifth part of the requisition accompanies deliveries from the stock room to the assembly area. Both the requisition and assembly instructions are reviewed by the assembly supervisor to ensure that all parts needed to produce a product are on hand.

Should a discrepancy occur, industrial engineering is notified so the material requisition for the next production run of the same product reflects parts changes.

Purchasing Control

Each time a purchase order is prepared, a corresponding punched card is also prepared and entered into the data processing system. The stock status report indicates all parts on order as well as the week in which specific quantities will be required. Suppliers can be contacted if deliveries are not made on due dates.

The stock status report shows transactions that will cause a minus condition for any part during the projected 36-week period. The report shows how many parts will be in the minus category and what week they will be required to meet production schedules.

If the report indicates that a part will be in a minus condition, it does not mean that the buyer must take immediate action. If action is not taken, the minus condition will continue to appear on the first of each month until corrective procedures have been completed. This enables the buyer to defer short-term purchases against the possibility that total requirements will increase enough to produce a quantity discount.

The report also allows the buyer to take advantage of price breaks and to anticipate requirements for months ahead. For example, an item that may be purchased in quantities of 10,000 at a time and one end-product will use several of these, another will use several more, etc. Unless the total of all projected parts requirements causes the parts level to go minus, the buyer need not take any action.

Since purchase order cards are constantly updated, parts in the house for inspection can be pinpointed as well as parts received and in inventory. The computer also maintains records of parts returned for replacement.

The system allows for coverage in determining parts requirements for future needs of the engineering and service departments. Through an agreement with these departments and purchasing, the amount of material that these departments can draw on at any one time has been fixed.

Stockroom personnel are kept informed of this amount by receiving an abstraction of the stock status report which contains a brief summary listing parts in stock and future parts requirements. If total parts on hand exceed production requirements, the stockroom is authorized to issue quantities directly without checking with purchasing or production control.

The 1401 also produces special reports needed by management. One of these, prepared quarterly, records the quantities of items purchased, total dollar amount spent for each item and the number of times during the quarter that orders have been placed. With this report the buyer's efficiency can be checked.

Another report lists monthly dollar expenditures to each of DuKane's suppliers. An analysis of this information is valuable in negotiating price and delivery times with suppliers.

RESULTS AND FUTURE PLANS

The system at DuKane has improved stock picking methods and has expedited production. In addition, parts shortage scheduling problems have been eliminated.

The stock status report enables the buyer to know at all times what parts are on hand and what parts are needed for future requirements. Other reports provide management with timely financial information.