

INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications Dairy Route Control
Type of Industry Dairy
Name of User Any Dairy

Equipment Used NCR 500

Synopsis

Instead of the usual report about a specific user of data processing equipment, this report details a system for any user (in the dairy industry), developed by The National Cash Register Co. of Dayton, Ohio.

This computer system integrates most basic data handling, record and control jobs in a dairy into a single automated system.

Built around a "modified standard load" concept, the system is said to overcome most of the operational problems which so far have kept the dairy industry from making optimum use of computers and data processing systems.

The dairy route control system makes a computer-summarized projection of each day's delivery requirements to develop production run data, down to and including unit summaries by product and container or package reports (how many containers of what type and size, etc.); prepares daily route settlement statements; analyzes sales and returns on a daily, weekly, and monthly basis; and handles such related record-keeping as basic general ledger profit-and-loss accounting and fleet maintenance records.

The system reportedly eliminates 70 to 90 percent of the manual effort currently required to do these jobs in most dairies with 50 or more routes.

Moreover, the system cuts down on elapsed time required to develop reliable data; brings the speed and accuracy of computers to bear on all data extension and manipulation, thus reducing the opportunity for error; and improves and enlarges the quantity and quality of statistical management information a dairy can develop on a current basis. For example, it analyzes both sales and returns due to spoilage, etc., in units and in dollars by product, by driver, by branch, and by overall operation.

The system has been designed for operation on NCR's Series 500 Data Processing System.

MODIFIED STANDARD LOAD

The modified standard load concept works on an assumption that changes on any given route on any given day of the week will vary no more than 15 to 20 percent on the same day next week excepting holidays or such "social change" days as the day after school is out for the summer. Why, then, ask drivers to manually prepare a completely new order each day?

NCR's "Route Control Program Package" is so designed that a daily record of net actual deliveries on each route in each separate product line is captured on computer-readable punched paper tape, and at the same time, given to each driver on a two-part route settlement form developed at the end of each day.

To place his order for products he will deliver on Wednesday, a driver simply pulls out the "second" copy of his two-part route settlement report for the previous Wednesday. This represents his "standard load" by product. His job now is to modify it in accord with instructions from his customers and his own knowledge of changes in their requirements as well as analysis of units returned in each product line on the previous Wednesday. The "standard load" already is adjusted for ending inventory.

For the purpose of modifying the standard order, a "plus" column and a "minus" column is provided at the right of the form. The driver simply enters the number of units more or less which will be needed in each product line on his route this Wednesday than were ordered on the previous Wednesday.

Only the changes are punched into paper tape by a clerk using a tape-punching adding machine.

This tape is "read" into the computer by use of a "strip reader." At the same time, the computer reads from a second tape mounted on a standard paper tape reader. This second tape contains the record of the driver's "load" delivered on the previous Wednesday. Product-by-product and driver-by-driver the computer nets out products which are to be delivered this Wednesday on each route. In other words, it modifies the previous week's loads to reflect changes made by the drivers. From this data, accumulated and stored in the computer's memory, the load sheets and production summaries are printed under the computer's control. A separate load sheet is prepared for each truck.

In the case of the production summary, the computer automatically converts unit orders into total required in each product line for the day's deliveries. The production superintendent uses this to spot potential problems caused by over or under processing in any given product line.

ROUTE SETTLEMENT SHEET - COPY
ANY COMPANY U.S.A.

BRANCH ROUTE 03,101 DATE 06126-

R D NO	PRODUCT DESCRIPTION	S I E	SPECIAL ITEM DE- SCRIPTION	LOAD	RETURNS	NET UNITS	TOTAL AMOUNT	DRIVER CHANGES	
								+	-
001	DESCRIPTION			15		15	2.90		
002	DESCRIPTION			64	4	60	15.60		
003	DESCRIPTION								
004	DESCRIPTION								
005	DESCRIPTION								
006	DESCRIPTION								

ROUTE SETTLEMENT SHEET
ANY COMPANY U.S.A.

BRANCH ROUTE 03,101 DATE 06126-

R D NO	PRODUCT DESCRIPTION	S I E	SPECIAL ITEM DE- SCRIPTION	LOAD	RETURNS	NET UNITS	TOTAL AMOUNT	RETAIL		WHOLESALE		
								UNITS	AMOUNT	UNITS	AMOUNT	
001	DESCRIPTION			15		15	2.90	10	2.00	5	1.90	
002	DESCRIPTION			64	4	60	15.60	60	15.60			
003	DESCRIPTION											
004	DESCRIPTION											
005	DESCRIPTION			153	2	151	19.40	151	19.40			
006	DESCRIPTION											
007	DESCRIPTION			10	5	5	1.00			5	1.00	
008	DESCRIPTION											
009	DESCRIPTION											
010	DESCRIPTION			8	1	7	11.60	3	6.00	4	5.60	
011	DESCRIPTION											
012	DESCRIPTION											
013	DESCRIPTION											
014	SPECIAL		DESCR	12	2	10	3.00	10	3.00			
015	SPECIAL											
016	DESCRIPTION											
017	DESCRIPTION			46	3	43	10.60	40	10.00	3	6.60	
018	DESCRIPTION											
019	DESCRIPTION											
020	DESCRIPTION											
021	DESCRIPTION			26	1	25	7.45	23	6.67	2	7.8	
022	DESCRIPTION											
023	DESCRIPTION											
024	DESCRIPTION			18	2	16	7.68	16	7.68			
025	DESCRIPTION			2	1	1	.41	1	.41			
026	DESCRIPTION			66	6	60	19.84	64	16.64	16	3.20	
027	DESCRIPTION											
028	DESCRIPTION			18	4	14	1.36	14	1.36			
029	DESCRIPTION			48		48	2.88			48	2.88	
030	DESCRIPTION											
031	DESCRIPTION											
032	DESCRIPTION											
033	DESCRIPTION											
034	DESCRIPTION											
035	DESCRIPTION											
036	DESCRIPTION											
037	DESCRIPTION											
038	DESCRIPTION											
039	DESCRIPTION											
040	SPECIAL											
041	SPECIAL											
042	DESCRIPTION			72	6	66	6.04	48	4.60	18	1.44	
043	DESCRIPTION			9	2	7	1.56	7	1.56			
044	DESCRIPTION			18		18	1.74	6	.66	12	1.08	
045	DESCRIPTION			30	4	26	10.70	20	8.60	6	2.10	
046	DESCRIPTION											
047	DESCRIPTION											
048	DESCRIPTION											
049	DESCRIPTION			12		12	2.44	2	.44	10	2.00	
050	DESCRIPTION											
051	DESCRIPTION											
052	DESCRIPTION			8		8	4.80	8	4.80			
053	DESCRIPTION			18	3	15	9.30	15	9.30			
054	DESCRIPTION											
055	DESCRIPTION											
056	DESCRIPTION											
057	DESCRIPTION											
058	DESCRIPTION											
059	DESCRIPTION											
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096	DESCRIPTION											
097	DESCRIPTION											
098	DESCRIPTION											
099	DESCRIPTION											
100	DESCRIPTION											
							TOTAL	204.66	345	170.06	86	34.60

PREVIOUS BALANCE	DEBIT MEMO	CREDIT MEMO
190.61		
CONTAINERS	CASH RECEIVED	DELINQUENT ACCOUNTS
14.31 CR	60.18	
TRANSFERS IN	TRANSFERS OUT	DISCOUNTS
		10.56
BALANCE DUE		
310.22		

DF - 979

NCR 500 COMPUTER READS FROM TWO TAPE SOURCES AND TWO CARD SOURCES TO PREPARE DAILY ROUTE SETTLEMENT. COMPUTER BEGINS BY READING "LOAD" DATA FROM TAPE IT PUNCHED AS BY-PRODUCT OF PRINTING LOAD SHEETS. WITH THIS AS BASE, IT ADJUSTS FOR CHANGES AND LEDGER ITEMS (ENTERED BY CARD READERS) AND CASH AND CHARGE SALES AS REPORTED BY DRIVER. FROM A MASTER PRICE TAPE, IT EXTRACTS UNIT PRICES AND AUTOMATICALLY EXTENDS SALES TOTALS, BOTH AT RETAIL AND WHOLESALE, THUS CHECKING DRIVER'S ARITHMETIC. BY PROCESSING ALL TRANSACTIONS AGAINST PRODUCT TOTALS, IT FIGURES NET AMOUNT DRIVER IS SHORT OR LONG. SECOND COPY (SEE TOP) BECOMES "ORDER FORM" FOR SAME DAY NEXT WEEK. TO PREPARE ORDER, DRIVER SIMPLY ENTERS CHANGES ONLY IN "PLUS" AND "MINUS" COLUMNS AT RIGHT.

As trucks are loaded, using computer-prepared load sheets as a guide, shipping department personnel enter on copies of the load sheets any change made between what was ordered and what actually is loaded on each truck.

These shipping department changes are punched into tabulating cards during the day while drivers are out on the routes.

As each driver makes his deliveries, he writes a delivery ticket for each of the wholesale deliveries he makes and either makes a similar ticket or an entry in his route book for each retail delivery. In dairies where retail accounts receivable also is automated, the load sheets and "modified customer order" sheets produced in the same way may substitute for route books. In this case the driver enters only the exception to his normal delivery to that customer. Unless an exception is entered, the computer assumes the driver delivered the standard order for the customer. On a combination wholesale-retail route, it is necessary that the driver indicate which sales are at wholesale prices.

The driver also indicates each special concession or transaction that can affect his settlement, including samples provided customers free of charge, stale or spoiled goods for which he grants credit, price concessions, and such other "ledger items" as debit and credit memos, transfers, delinquent write offs, empty containers collected, etc.

All of this data is punched into cards when the driver returns at the end of the day, along with the driver's ending inventory.

Cards containing returns data and the ledger debit and credit items are placed in one card reader which operates under the computer's control. Cards containing change data supplied by the shipping department are placed in a second card reader. The "load tape" -- punched at the same time the load report was printed -- is placed on a tape reader.

From these separate sources, the computer has all the data required to determine exactly what product units were loaded on each driver's truck, what products he delivered, products returned on the route, ending inventory and transactions which would affect the amount of product and/or money the driver should be held accountable for.

From a "price tape" mounted on a second tape reader, the computer extracts product prices (a different price list can be used for each branch or even for each route) and extends amount of money which the driver should either have charged to accounts or collected.

As it does this, the system prints the complete two-part route settlement sheet for each driver. The system lists, by product, number of units loaded, number of units returned, net units delivered, and amount charged or collected for these units. It further breaks this down by number of units delivered at retail and amount involved and number of units delivered at wholesale and amount involved.

The computer summarizes as it prints, carrying forward the total of all products by driver. At the bottom of the form, it lists totals for debit and credit memo items, containers, cash received, delinquent accounts, transfers in and out, and discounts.

On the bottom line, it shows in dollars how much cash, other than that collected and turned in, is due the company to account for all products loaded and "balance out" each driver's activity for the day. In dairies where settlement is by week or month, the system will add the day's settlement amount to the "to date" total which it extracts from a "balance forward card." At the end of the run, the system carries a new balance forward with total updated to include today's figure. Regardless of when settlement is made, the control is daily.

A second copy of the settlement form, with the blank "plus" and "minus" columns, is retained by the driver for order input for the same day in the upcoming week.

SALES SUMMARY ANY COMPANY, U.S.A.								
BRANCH 03		DATE 06126-						
R C O	PRODUCT DESCRIPTION	S PECIAL ITEM DESCRIPTION	TOTAL		RETAIL		WHOLESALE	
			UNITS	AMOUNT	UNITS	AMOUNT	UNITS	AMOUNT
001	DESCRIPTION		25	4.90	20	4.00	5	.90
002	DESCRIPTION		225	58.65	150	40.15	75	18.50
003	DESCRIPTION		1550	326.50	1450	308.00	100	18.50
004	DESCRIPTION		251	75.26	230	69.59	21	5.67
005	DESCRIPTION		2265	291.00	2265	291.00		
006	DESCRIPTION		36	32.04	36	32.04		
007	DESCRIPTION		13	2.60			13	2.60
008	DESCRIPTION		1	5.00	1	5.00		
009	DESCRIPTION							
010	DESCRIPTION		166	204.36	156	194.36	10	10.00
011	DESCRIPTION							
012	DESCRIPTION		432	43.20			432	43.20
013	DESCRIPTION							
014	SPECIAL	DESCR	140	32.00	140	32.00		
015	SPECIAL							
016	DESCRIPTION		645	139.25	205	51.25	440	88.00
017	DESCRIPTION							
018	DESCRIPTION							
019	DESCRIPTION							
020	DESCRIPTION							
021	DESCRIPTION		375	111.15	345	100.05	30	11.10
022	DESCRIPTION							
023	DESCRIPTION							
024	DESCRIPTION		168	115.20	168	115.20		
025	DESCRIPTION		11	4.31	1	.41	10	3.90
026	DESCRIPTION		1080	197.60	920	165.60	160	32.00
027	DESCRIPTION							
028	DESCRIPTION		210	20.40	210	20.40		
029	DESCRIPTION		720	43.20			720	43.20
030	DESCRIPTION							
031	DESCRIPTION							
032	DESCRIPTION							
033	DESCRIPTION							
034	DESCRIPTION		720	144.00	720	144.00		
035	DESCRIPTION		1530	30.60	1530	30.60		
036	DESCRIPTION							
037	SPECIAL							
038	SPECIAL							
039	DESCRIPTION		990	90.60	720	69.00	270	21.60
040	DESCRIPTION		105	23.40	105	23.40		
041	DESCRIPTION		270	26.10	90	9.90	180	16.20
042	DESCRIPTION		390	160.50	300	129.00	90	31.50
043	DESCRIPTION							
044	DESCRIPTION							
045	DESCRIPTION							
046	DESCRIPTION							
047	DESCRIPTION							
048	DESCRIPTION		180	36.60	30	6.60	150	30.00
049	DESCRIPTION							
050	DESCRIPTION							
051	DESCRIPTION		120	72.00	120	72.00		
052	DESCRIPTION		225	139.50	225	139.50		
053	DESCRIPTION							
054	DESCRIPTION							
055	DESCRIPTION							
056	DESCRIPTION							
057	DESCRIPTION							
058	DESCRIPTION							
059	DESCRIPTION							
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096	DESCRIPTION							
097	DESCRIPTION							
098	DESCRIPTION							
099	DESCRIPTION							
100	DESCRIPTION							
TOTALS			3069.96		4416	2550.96	1290	519.00
PREVIOUS BALANCE								
CONTAINERS			2859.15					
TRANSFERS IN			214.68 CR		902.63			
BALANCE DUE			18.30		18.30		105.60	
			4706.20					

ANALYSIS OF PRODUCT SALES FOR A BRANCH.

PRODUCTION REPORT				
BRANCH NO 99		DATE 06126-		
R C O	PRODUCT DESCRIPTION	S PECIAL ITEM DESCRIPTION	LOAD	
001	DESCRIPTION		25	
002	DESCRIPTION		240	
003	DESCRIPTION		1600	
004	DESCRIPTION		288	
005	DESCRIPTION		2410	
006	DESCRIPTION		48	
007	DESCRIPTION		15	
008	DESCRIPTION		6	
009	DESCRIPTION			
010	DESCRIPTION		172	
011	DESCRIPTION			
012	DESCRIPTION			
013	DESCRIPTION			
014	SPECIAL	DESCR	144	
015	SPECIAL			
016	DESCRIPTION			
017	DESCRIPTION		660	
018	DESCRIPTION			
019	DESCRIPTION			
020	DESCRIPTION			
021	DESCRIPTION		400	
022	DESCRIPTION		2400	
023	DESCRIPTION		381	
024	DESCRIPTION		172	
025	DESCRIPTION		48	
026	DESCRIPTION			
027	DESCRIPTION			
028	DESCRIPTION			
029	DESCRIPTION		720	
030	DESCRIPTION			
031	DESCRIPTION			
032	DESCRIPTION			
033	DESCRIPTION			
034	DESCRIPTION			
035	DESCRIPTION			
036	DESCRIPTION			
037	DESCRIPTION			
038	DESCRIPTION			
039	DESCRIPTION			
040	DESCRIPTION			
041	DESCRIPTION		1000	
042	DESCRIPTION		120	
043	DESCRIPTION		284	
044	DESCRIPTION		438	
045	DESCRIPTION			
046	DESCRIPTION			
047	DESCRIPTION		180	
048	DESCRIPTION			
049	DESCRIPTION		120	
050	DESCRIPTION		252	
PREVIOUS BAL.				
CONTAINERS				
DELINQUENTS				
CASH REC'D				
TRANSFER IN				
TRANSFER OUT				
DEBIT MEMO				
CREDIT MEMO				
DISCOUNTS				

BY SUMMARIZING INDIVIDUAL LOAD SHEETS, THE COMPUTER PRODUCES PRODUCTION SUMMARY SHOWING DAY'S TOTAL PRODUCT REQUIREMENTS ON PRODUCTION REPORT FORM.

From these same daily tapes, the computer prepares analytical reports for management.

For example, the computer can list total units sold and dollar amounts, wholesale and retail, by branch, by product and by individual driver as well as develop dairy-wide totals. In the case of returns, it can break down spoiled items totals by the same categories and further compute the percentage of total product ordered which is returned. It can do this daily and use daily tapes to produce totals by week, by month, and in the year to date.

The NCR system is modular in concept, can be installed in steps, and expanded -- with certain equipment modification -- to embrace retail accounts receivable, producer's payrolls, accounts payable, general ledger accounting and financial reporting.