

INDUSTRIAL DATA PROCESSING APPLICATIONS REPORT

Applications Inventory, Data Analysis, Quality Control,
Process Control

Type of Industry Chemical Processor

Name of User Organic Chemicals Group
SCM Corp. Glidden-Durkee Div.
Jacksonville, Fla.

Equipment Used IBM 1130
IBM 1800

Synopsis

A key to success in using computers is the degree of management's involvement. At SCM Corp.'s Glidden-Durkee Div. Organic Chemicals Group, Jacksonville, Fla., the computer has become a tool for the entire professional staff, and EDP serves as a training ground--for many of the individuals in management positions are graduates of the data processing group.

Two basic computer systems are used at OCG: a card-oriented 1130 to handle commercial and research applications including inventory, data analysis, and quality control. An 1800 system performs a process control function, providing instant analysis of the tall-oil plant operation at Port St. Joe, OCG's facility located 300 miles from the Jacksonville main plant site. The link between Jax and PSJ utilizes land lines and microwave signals.

SCM Corp. 's Glidden-Durkee Div. Organic Chemicals Group, Jacksonville, Fla., is in the processing business, and the Group's two plants (the main one in Jacksonville and a branch in Port St. Joe, located 300 miles away on the Gulf of Mexico) produce over 150 million pounds of chemicals annually. Products go into the making of items such as soaps, toiletries, cosmetics, flavors, pharmaceuticals, printing ink, insecticides, rubber, ore flotation, coatings, resins, adhesives, disinfectants and detergents.

The company refers to itself as "junkie of the trade," because it deals in materials that at one time were thrown away--such as sulphate turpentine, a by-product of pulp mills making kraft paper from Florida's pine trees. The Port St. Joe plant produces "oil of the pine" or tall oil (an anglicization of the Swedish word tallolja) derivatives from crude tall oil, another kraft mill product.

DATA PROCESSING AT OCG

Data processing at Glidden's OCG dates to early 1961 when an IBM 407 tab machine was installed as the hub of a system to ease routine accounting tasks. In 1964, an IBM 1620 replaced the 407, and the workload was increased to link OCG's Port St. Joe facility with Jacksonville in a process control application.

When the scope of computer usage expanded to include research and development work, OCG split its EDP operation into two parts, commercial and technical. The 1620 was replaced with an IBM 1130, which was put under the aegis of the commercial group, and with an 1800 to be directed by the technical unit.

THE 1130 SYSTEM

The 1130 in use is a punched card oriented system that, because of the relatively slow speed of its 1132 printer (80 to 110 lines per minute), is almost like a slowed down 407, according to Donald E. Weant, manager of commercial systems. Economics justified the slow printer speed.

The commercial dp configuration includes an 1131 central processing unit with 8K words and one disc, the 1132 printer, a 1442 card reader punch (400 cpm input, 160 columns per second output), a 7690 communications adapter which ties into a System/360 in the company's corporate headquarters in Cleveland, two 029 keypunch machines, one 059 verifier and one 082 sorter. Rental for the 1130 and the 1800 total less than the previous rental for the 1620 system.

The dp staff for the 1130 includes the manager, Weant, and one operator, two keypunch/operators and one programmer/operator. Running time on the system is about 250 hours a month.

The Jacksonville plant's 1130 is tied in with corporate headquarters, which will ultimately have about fifteen 1130's in a network linked to a System/360 Mods 30 and 40 back-to-back. The 1130's at each plant are used as low level computing centers. However, the tie-in with the Cleveland 360's--via communications adapters--gives each plant higher printing output in addition to providing the home office with a quick means of accumulating and analyzing input from its various plants.

The Jax unit, for example, will feed sales data, profit forecasts, etc., nightly to the 360's. Reports will be printed out on the 1403 printer which has a 640 line-per-minute capability. The data will be mailed back to Jacksonville in the form of management reports.

At present, the 1130 at OCG is used for various accounting applications, sales analysis reporting, inventory data, data analysis, quality control and assorted research-oriented uses such as linear programming. Sundry non-repetitive special analyses are also made--including a study on imports of essential oils.

SCM CORP. GLIDDEN-DURKEE DIV.

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:00	Prog. Test				
8:15	↓	↓	↓	↓	↓
8:30	Sales	Sales	Sales	Sales	Sales
8:45	↓	↓	↓	↓	↓
9:00	A/P Checks	Basic Inventory	Basic Inventory	Basic Inventory	Basic Inventory
9:15	↓	↓	↓	↓	↓
9:30	Basic Inventory	PSJ Inventory	PSJ Inventory	PSJ Inventory	PSJ Inventory
9:45	↓	↓	↓	↓	↓
10:00	Basic Inventory	P/R Jax Reg & Checks	↓	Preventive Maintenance	↓
10:15	↓	↓	↓	↓	↓
10:30	PSJ Inventory	PSJ P/R Edit	↓	↓	↓
10:45	↓	↓	↓	↓	↓
11:00	Fine Chemicals Inventory				
11:15	↓	↓	↓	↓	↓
11:30	Basic Inv. Part II	Basic II PSJ P/R	Basic Inv. Part II	Basic II A/P Checks	Basic Inv. Part II
11:45	↓	↓	↓	↓	↓
12:00	Open Shop				
12:15	↓	↓	↓	↓	↓
12:30	Fine Chemicals Detail	A/P Checks	↓	Essential Oils Inventory	↓
12:45	↓	↓	↓	↓	↓
1:00	P/R Edit List (Jax.)	↓	Fine Chemicals Detail	↓	Fine Chemicals Detail
1:15	↓	↓	↓	↓	↓
1:30	A/P Due List	↓	A/P Due List	Lab Time Report	A/P Due List
1:45	↓	↓	↓	↓	↓
2:00	Odor Panel				
2:15	↓	↓	↓	↓	↓
2:30	↓	↓	↓	↓	↓
2:45	↓	↓	↓	↓	↓
3:00	↓	↓	↓	↓	↓
3:15	↓	↓	↓	↓	↓
3:30	↓	↓	↓	↓	↓
3:45	↓	↓	↓	↓	↓
4:00	↓	↓	↓	↓	↓
4:15	↓	↓	↓	↓	↓
4:30	↓	↓	↓	↓	↓
4:45	↓	↓	↓	↓	↓
5:00	↓	↓	↓	↓	↓
5:15	↓	↓	↓	↓	↓
5:30	↓	↓	↓	↓	↓
5:45	↓	↓	↓	↓	↓
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6:15	↓	↓	↓	↓	↓
6:30	↓	↓	↓	↓	↓
6:45	↓	↓	↓	↓	↓
7:00	↓	↓	↓	↓	↓
7:15	↓	↓	↓	↓	↓
7:30	↓	↓	↓	↓	↓
7:45	↓	↓	↓	↓	↓
8:00	↓	↓	↓	↓	↓

SCHEDULE FOR DATA CENTER OPERATIONS ON 1130

APPLICATIONS

FREQUENCY

ESTIMATED COMPUTER HOURS (MONTHLY)

HOURLY PAYROLL

WEEKLY

15

Develop Gross Pay and Distribution, Tax Calculations and Register, Print Checks, Print Reconciliation, Print Credit Union and Bond Listing, Overtime Analysis.

<u>APPLICATIONS</u> (continued)	<u>FREQUENCY</u>	<u>ESTIMATED COMPUTER HOURS</u> <u>(MONTHLY)</u>
<u>ACCOUNTS PAYABLE</u> Balance Distribution and Pay Cards, Print Due List, Print Checks and Remittance Statements, Print Checks, Print and Punch Reconciliation.	TRI-WEEKLY	12
<u>SALES ANALYSIS</u> Daily Sales Report; Status of Sales Estimates (Weekly); Monthly Sales Analysis by Territory, Customer and Product; Monthly Key Accounts Report; Monthly Agents and Distributors Report; Most Recent 6 Months Sales by Products, by Customer; Monthly Analysis of Sales Revenue by Product; Monthly Sales Journal; Monthly Plant Unit Price Analysis.	DAILY/MONTHLY	21
<u>INVENTORIES</u> Basic Terpenes Inventory, Fine Terpenes Inventory, Port St. Joe Inventories, Essential Oils Inventory, (Each of the four include detailed reports on raw materials and finished products, production summary information, and inventory transactions), Essential Oils Blend Analysis.	DAILY	127
<u>DATA ANALYSIS</u> Simple Regression Analysis, Multiple Regression Analysis, "T"-Test Teardown Analysis, Heuristic Multiple Regression Analysis, Factor Analysis.	ON REQUEST	15
<u>ACCOUNTING</u> Balancing Accounts, Prepare Expense Distribution and General Ledger Data.	MONTHLY	12
<u>QUALITY CONTROL</u> Daily Performance of Odor Panel, Weekly Time Report for Lab Technicians, Monthly Efficiency Reports for Panelists, Technicians, and Type of Analysis.	DAILY/WEEKLY/MONTHLY	14
<u>MISCELLANEOUS</u> Raw Materials Supplier Analysis (Monthly), Commission Statements (Monthly), Linear Programing (On Request), Program Maintenance (On Request), Development Engineers Open Shop Work (On Request), Various Non-Repetitive Special Analysis (On Request).		22

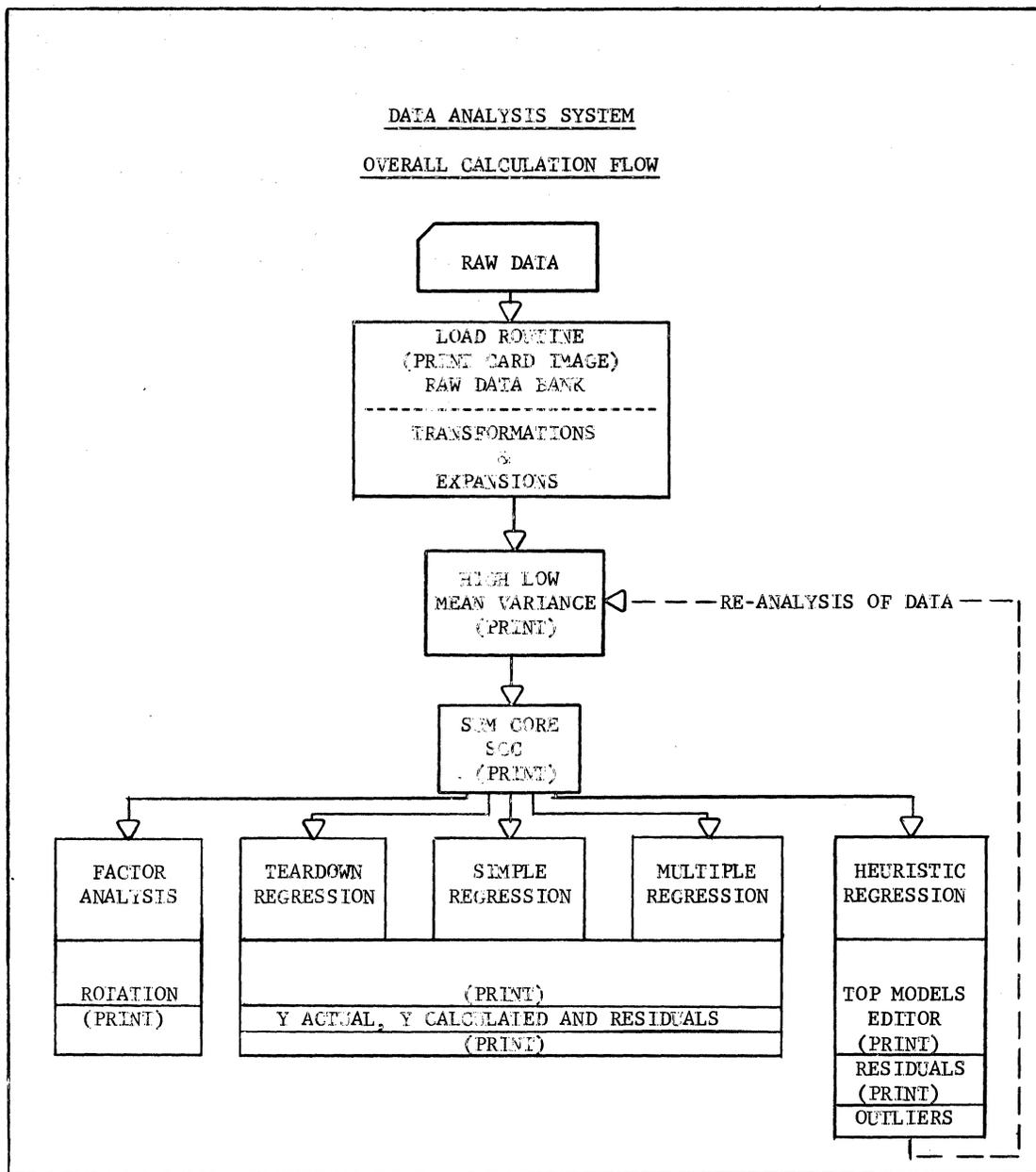
Some of the applications work is done on the night shift by young men who attend college during the day under a tuition refund program financed by OCG. "This is one way we are beating the personnel shortage which is plaguing the data processing industry today," Weant said. Upon graduation, the young men can go on to other positions in the division. "When you work in the systems department, you learn everything about the whole company's operations," he added. "We have sort of a dp alumni organization being built up."

In addition to this program, OCG runs an "open shop" for responsible professional employees who want to use the computer for their own needs. In one case, Conrad Haskell, manager of development, runs scientific programs, such as simulation of a chemical process. He writes his own programs and has an operator keypunch them. "I can use the computer almost at my leisure," he said.

Data Analysis

One application, data analysis, has expanded the value of the 1130. Basically, data analysis gives the company a powerful tool, according to Weant. "You go looking for data-- in government figures, from various professional associations, etc. Data analysis becomes intelligence that can be combined with sales inventory information and the like to help the company plan future profits and show possible areas of weakness.

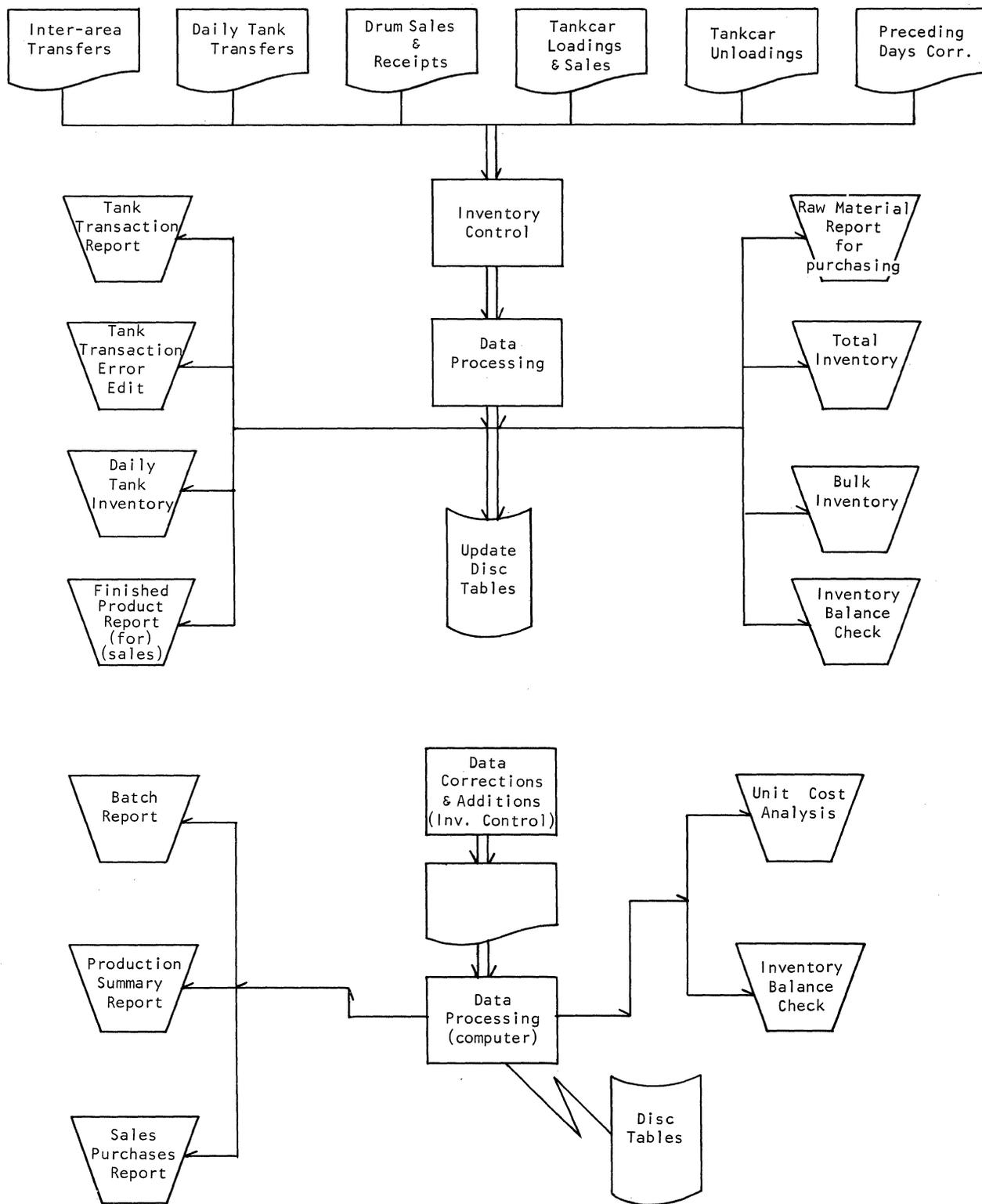
INPUT DATA FORM - DATA ANALYSIS SYSTEM		THE GLIDDEN COMPANY		Glidden Form 1224 Printed in U.S.A. 9/67																									
TITLE															USER					DATE									
TRANSFORMATION CODE															EXPANSION AND TRANSFORMATION CODES					NO. OF INDEPENDENT VARIABLES					NO. OF DEPENDENT RESPONSES				
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One of Floyd Miller's jobs--he is operations research analyst and reports directly to corporate headquarters in Cleveland--is to look for new uses for the computer. Thus, he has taken the data analysis capability of the 1130 and performed a traffic fatality study as a public service for the City of Jacksonville.

Miller, working on the computer during non-shift hours, put data on traffic fatalities during an 18-month period (supplied by the Jacksonville police) into punched card form. The information was compiled into approximately 50 variables, including driver's history, vehicle type, age and equipment, and accident location.

The study produced a number of conclusions. For example, fatalities in weekend night-time periods were not as common as expected, usually occurring during the late afternoons at speeds over 50 miles an hour.



BASIC TERPENES DATA REPORT FLOW.

REPORT TANK CAR INSPECTION

Jacksonville, Florida Date.....

Ref. S. O. No.

GLIDDEN REFERENCE			
ORDER NUMBER	PRODUCT CODE	T/O	GALLONS

Gentlemen:

We have today shipped you Tank Car No. loaded with

to full shell capacity and over, showing inches in the Dome.

Temp. of Air Capacity of Tank Car

INBOUND TANK CAR INSPECTION REPORT

No. 1178

Purchase Order No.

Received from Date

Measured and unloaded Tank Car No. to (FULL) (..... inches below) shell capacity and over, showing
(Crossout words not applicable.)

..... inches in the Dome.

Temp. of Contents: Top Center Bottom Measured and Unloaded By

TIME	PRODUCT CODE	TANK NUMBER	CAPACITY OF TANK CAR	Charge number if using tank

SOME OF BASIC TERPENES DATA FORMS USED: DAILY TANK TRANSFERS, DRUM SALES AND RECEIPTS, TANKCAR LOADINGS AND SHIPMENTS, AND TANKCAR UNLOADINGS.

(1) Inter-Area Transfers--This form is filled out by the area superintendent requesting the material transfer in triplicate. Inventory Control in the receiving area receives one copy, the releasing area Inventory Control receives the other. The forms are coded by the respective Inventory Control offices and submitted to Data Processing.

(2) Daily Tank Transfers--This form is filled out by the equipment operator following any type tank transaction. The form is picked up daily by the Inventory Control office, coded, and submitted to Data Processing. The operator retains one copy and the area superintendent receives the other for his records.

(3) Drum Sales and Receipts--This form is filled out by the Shipping and Receiving Dept. as shipments or receipts are made. The form is picked up by Inventory Control daily, coded, and submitted to Data Processing.

(4) Tankcar Loadings and Shipments--This form is filled out by the shift supervisor in charge of the loading. The form is picked up daily by Inventory Control with the Traffic Dept. getting one copy, and one copy going to the customer. Inventory Control codes its copy and submits it to Data Processing.

(5) Tankcar Unloadings--This form is filled out by the operator unloading the tankcar. Inventory Control receives one copy for coding for Data Processing. The Traffic Dept. receives one copy, and Accounting receives a copy as support for the Purchase Journal.

Tank-Bulk Transaction Error Edit--This report is a listing of errors detected while calculating the Daily Tank Transaction Report. The following errors are a sample:

- (1) Differences in product code on tank.
- (2) Error in readings greater than 1 in.
- (3) Improper batch identification number.
- (4) Improper produce code.
- (5) Improper tank number.
- (6) Improperly coded operation mnemonic.

Also, an edit of all incomplete operations is printed.

Daily Tank Inventory--This report is a listing of all tanks, giving product code, water level, reading, and gallons. This report is used primarily by Operations.

Finished Product Report--This report is a listing by product name of finished goods on inventory (eventually, sales estimates vs. schedule status and project inventory for sales will be added). This report is used by the Sales Dept.

Raw Material Report--This report is a listing by raw material name of raw materials on hand (eventually, schedule requirements vs. inventory and project orders will be added). This report is used by the Purchasing Dept.

Total Inventory--This report is a listing by product code of all inventories. It is primarily used by Production Management.

Bulk Inventories--This report is a listing by product code of products in the tankcar, drum, non-consumable inventory. It is used by Inventory Control for balancing inventory.

Inventory Cross-Check--This report is a listing by product code of all inventories out of balance. This report is used by Inventory Control for balancing.

Batch Sheet Report--This report is a summary by batch identification number of any batch operations completed in the previous 24 hours. This report is used by the production superintendent as operations support data.

Production-Summary Report--This report is a summary of all completed month-to-date operations, giving rates, yields, and raw material costs. This report is used by Production Management, Accounting, and Operations.

Sales-Purchase Report--This report is a listing by product code of all month-to-date sales and receipts used by Inventory Control for balancing inventories.

Unit Cost Analysis--This report is a listing by product code of all transactions affecting each inventory item and the associated dollar value. This report is used by Accounting for monthly accounting statements.

An all-purpose type data form also in use for basic terpenes is Data Corrections, which is filled out by Inventory Control for corrections of any errors or omitted data.

TANK - TRANSACTION CODES DIFFER					
1/25/68					
TIME	TANK	TK. CODE	TR. CODE	BATCH	GALLONS
545- 610	236- 1	20B 9	20B10	8APO- 24	1741
1010-1100	246- 6A	2B 4	2B 4R	BLND- 25	3247
300- 500	246- 6B	1B 6	1B 6T	8AC1- 9	9241
1820-2030	246- 7C	1B 5T	1B 5	- 0	4348

READING ERROR		
1/25/68		
TIME	TANK	ERROR
2030-2145	235- 4	1.00
1130-1430	238- 2	2.00
1800-2000	238- 2	94.00
1100-1230	239- 1	1.00
1100-1230	239- 2	1.00
1820-2030	246- 7C	1.00
1340-1530	246- 8A	1.00
2200- 700	246-13	1.50
900-1020	246-18A	1.00
1000-1210	246-22B	16.00
215- 500	246-24A	1.50
1000-1230	246-29	7.50
2030-2230	246-37	5.00
	248- 4	

PROCESS - STEP ERROR			
1/25/68			
TIME	CODE	NOT IN TREATMENT TABLE BATCH	GALLONS
2045-2100	1B 5	TRMT- 25	622
805- 835	1Y 1	TRMT- 25	231
1000-1025	1Y 1	TRMT- 25	1700

TANK 248- 7 1/25/68				
TIME	TRANSACTION	PRODUCT READING	1B 5T GALLONS	
		BEG.	END.	
	BEGINNING INVENTORY		59.00	1984
700-1015	PRODUCTION FROM 8AC6- 25	59.00	20.00	1911
1015-1115	TREATMENT	20.00	10.00	490
1215-1415	TANK TRANSFER TO 248- 5	10.00	101.00	4385
1800- 115	PRODUCTION FROM 8AC6- 25	101.00	20.00	3895
115- 215	TREATMENT	20.00	10.00	490
315- 515	TANK TRANSFER TO 248- 5	10.00	101.00	4385
	ENDING INVENTORY		101.00	0

DAILY TANK TRANSACTION AND TANK-BULK TRANSACTION ERROR EDIT REPORTS FOR BASIC TERPENES.

The Fine Chemicals and Essential Oils computer based Inventory Information System is a means of reporting to management, manufacturing, and accounting the various aspects of the inventory (such as costs, current inventory, production levels, rates and yields), minimizing the paperwork, duplication and inaccuracies which are often prevalent in complex inventory systems.

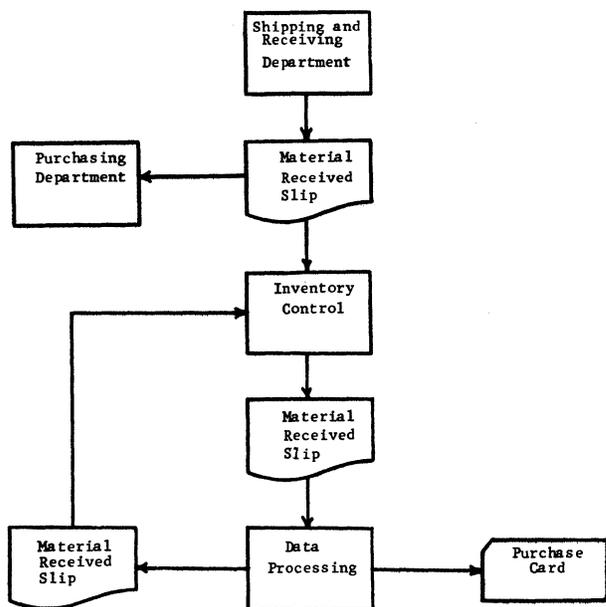
The system is designed so that report additions or deletions can be made with minimum effort.

Both the Fine Chemicals and the Essential Oils System have their own program monitor (FMON and EMON) which is called by the IBM 1130 disc monitor system. All jobs are called by control records which, for standardization, are the same format as the IBM Disc Utility Program (DUP) control records.

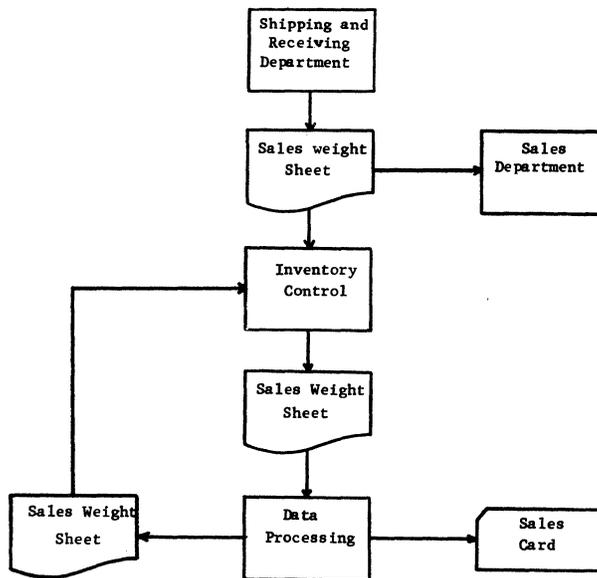
The inventory job monitor is called as a standard job and any number of control records may follow, providing a system which is free of operator intervention excepting printer setups or card reader/punch setups.

The Inventory Information System uses for input data the forms completed by the various departments in manufacturing. An emphasis has been placed on simplicity, non-duplication and minimum coding. Flow of the forms is as follows:

PURCHASE MATERIAL RECEIVED SLIP

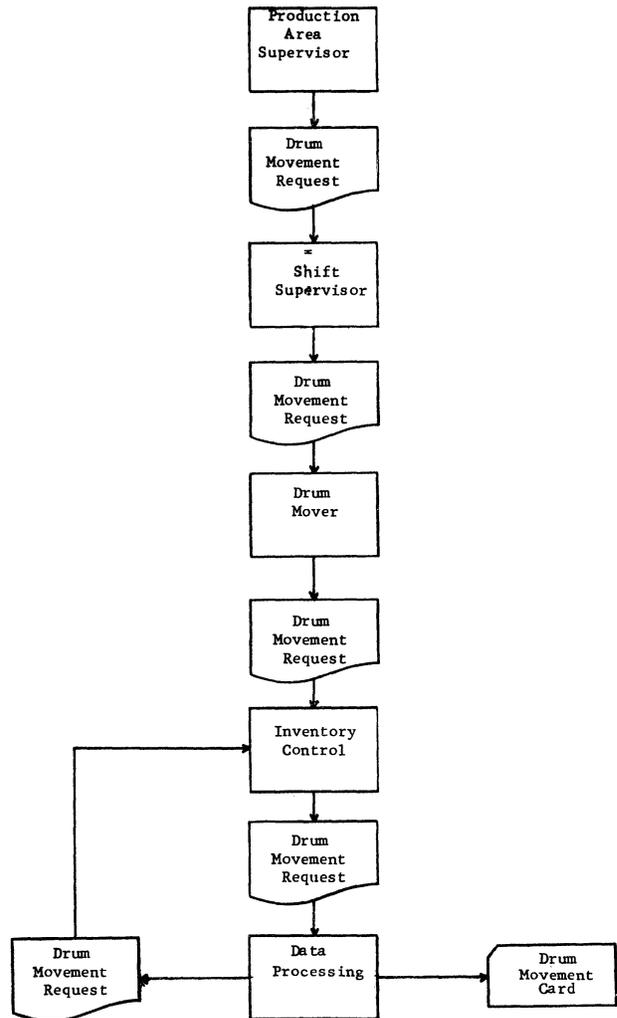
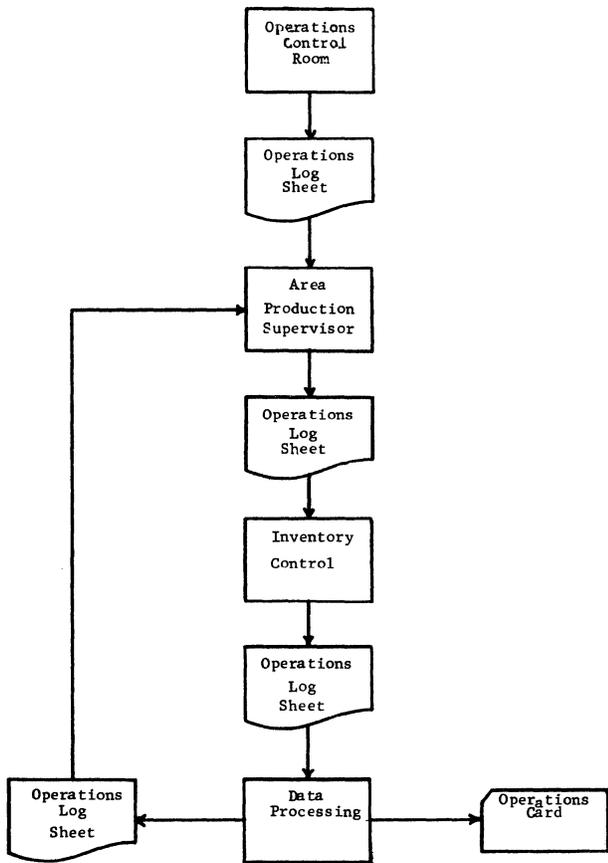


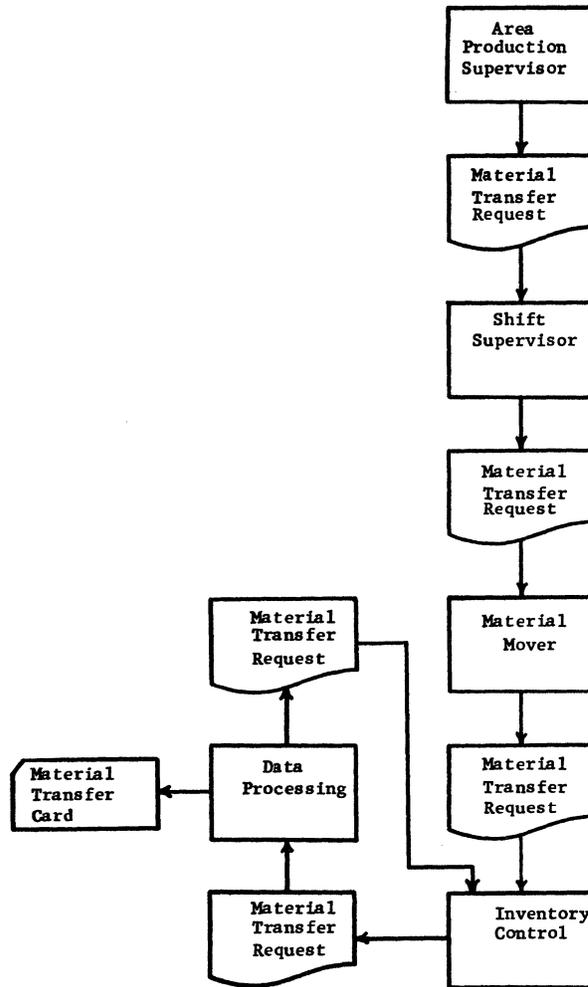
SALES WEIGHT SHEET



INTER-AREA TRANSFER REQUEST

PLANT OPERATIONS LOG



INTRA - AREA TRANSFER REQUEST

The Inventory Information System provides for manufacturing management, production management and accounting a complete picture of plant operations. Specialized reports are generated for the departments which do not require detailed information. The documentation on each report provides a report description, sample report and operation procedures.

Batch Sheet Report-- This report is a recap of usage and production by batch identification giving product yields. This report updates the Summary Report file and is used primarily as support of operations and log sheet summarization. This report is automatically printed following the Charge Sheet control record.

Finished Product Report-- This report is a finished goods inventory report by product name, primarily for the Sales Dept. A maximum of 100 products, each with a name no greater than 32 characters, is allowed.

Blend Report-- This report is designed specifically for the Essential Oils Dept. blend operation to provide Production Management and the Sales Dept. with availability, cost, and current inventory status.

Unit Cost Analysis Report--This report is a recap by product code of all transactions affecting the inventory and the cost associated with each type transaction. It is designed primarily for the Accounting Dept.

Transactions Report--This report is a detailed listing of month-to-date sales, purchases, inter-area transfers in, and inter-area transfers out. The primary purpose of this report is aiding Inventory Control in balancing inventories.

Total Inventory Report--This report is an inventory by product code and is primarily used by Production Management.

Summary Report--This report is a recap of usage and production by process, step and equipment; and associated costs, rates and yields. This report was designed to relieve both Production Management and Accounting of tedious record-keeping and calculations. The Unit Cost Tables production and usage are cleared and reloaded by the Summary Report.

Detailed Inventory Report--This report is a detailed listing of all inventory. All products not reported specifically by batch identification number are categorized in the Bulk inventory by product code. The drum inventory listing gives the product code, batch identification number, drum number, net weight, and storage location of each drum. The report is used by Inventory Control for inventory verification and by the Production Superintendents for ease in locating specific drums.

Raw Material Report--This report is a non-consumable goods inventory report for the Purchasing Dept. A maximum of 100 products, each with a name no greater than 32 characters, is allowed.

The Files Network in computer memory for the Inventory Information System is by necessity large and complex. A great deal of indexing and direct addressing is employed to facilitate output speed. The documentation provides a file description, purpose, and all reports and files using the file. Also, operation procedures, forms and output samples, are provided for files not maintained by the input data.

Finished Equipment File (FEQP)--The FEQP routine maintains the Finished Equipment File which determines which drums are allowed part-drum transactions. This most often applies to finished products which are reported by batch weight. Related Reports: Batch Sheet Report. Related Files: Equipment File, Detailed Inventory File. File Restrictions: 30 pieces of equipment.

FINE CHEMICALS	
FINISHED PRODUCT EQUIPMENT	
10-12-67	
EQUIPMENT	DESCRIPTION
FC	CITRAL DRUMMING
FI	5N4 DRUMMING
FT	TAN TANK
FB	BLUE TANK
FR	RED TANK
FY	YELLOW TANK
FS	SILVER TANK
FG	GREEN TANK
FK	FINISHED BLD.
FW	FINISHED BLD.
FX	FINISHED BLD.
FZ	FINISHED BLD.
FO	FINISHED BLD.
FV	FINISHED BLD.
FA	FINISHED BLD.

FINISHED EQUIPMENT
FILE (FEQP).

Month File (MO)--The routine MO maintains the Month File which contains the Month/Mnemonic Index. The Month Mnemonic Index is used for indexing the Detailed Inventory File and the Batch Sheet File. Related Reports: Batch Sheet Report, Detailed Inventory Report, Error Report. Related Files: Batch Sheet File, Detailed Inventory File, Error File. File Restrictions: 15 months; a 1 character alpha-mnemonic per month.

Equipment File (EQP)--The EQP routine maintains the Equipment File which contains the Equipment Name Index and the Equipment Name Identification Table. The Equipment Name Index is used for indexing the Detailed Inventory File, the Summary File, and the Batch Sheet File. Also, a two-digit storage location number is defined which specifies the initial storage of a drum production (see STO). The Equipment Name Identification Table is used to name the equipment on the Summary Report. Related Reports: Summary Report, Batch Sheet Report, Detailed Inventory Report, Error Report. Related Files: Detailed Inventory File, Summary File, Batch Sheet File, Error File. File Restrictions: 160 pieces of equipment, 20 characters per equipment name.

FINE CHEMICALS EQUIPMENT FILE 10-12-67		
EQUIPMENT	DEFINITION	
RC	VESSEL 30	BLD. 107
RD	VESSEL 31	BLD. 107
RE	VESSEL 32	BLD. 107
RF	VESSEL 33	BLD. 107
RG	VESSEL 34	BLD. 107
RH	VESSEL 35	BLD. 107
RI	VESSEL 36	BLD. 107
RJ	VESSEL 37	BLD. 107
RK	VESSEL 38	BLD. 107
RL	VESSEL 39	BLD. 107
RM	VESSEL 40	BLD. 107
RN	VESSEL 41	BLD. 107
Q3	CRYSTALLIZER 43	BLD. 107
Q4	CRYSTALLIZER 44	BLD. 107
Q5	CRYSTALLIZER 45	BLD. 107
HA	500-GAL. AUTOCLAVE	A/C PAD
TB	BLEND	TCP
TD	DOG COLUMN	TCP
TE	EASY COLUMN	TCP
TG	GLADYS COLUMN	TCP
TF	FOX COLUMN	TCP
TM	MARY COLUMN	TCP
TN	NANCY COLUMN	TCP
TO	O COLUMN	TCP
HX	X BLENDER	A/C PAD
TV	V BLENDER	TCP
TX	W BLENDER	TCP
TY	Y BLENDER	TCP
TZ	Z BLENDER	TCP
FC	CITRAL DRUMMING	BLD. 107
FI	5N4 DRUMMING	BLD. 107
HE	1000 GAL. AUTOCLAVE	A/C PAD
RA	SODIUM ACETATE UNIT	BLD. 107
PM	PYROLYSIS UNITS	
CE	CITRAL UNIT	
CW	CITRAL UNIT	
RP	VESSEL 308	CARVONE UNIT
RS	VESSEL 309	CARVONE UNIT
FT	TAN TANK	BLD. 1
FB	BLUE TANK	BLD. 1
FR	RED TANK	BLD. 1
FY	YELLOW TANK	BLD. 1
FS	SILVER TANK	BLD. 1

EQUIPMENT
FILE (EQP).

Finished Product File (FRPT)--The FRPT routine maintains the Finished Product File which contains the Finished Product Code Index and the Finished Product Name Table. The Finished Product Code Index indexes the product codes with the Unit Cost Files. The Finished Product Name Table retains the name of up to 100 products. Related Reports: Finished Product Report. Related Files: Unit Cost Files. File Restrictions: 100 products; a product name no greater than 32 characters. File Maintenance: If it is necessary to change or add a product, see the Finished Product Report.

Storage Identification File (STO)--The STO routine maintains the Storage Identification File which retains the names of 30 storage locations which are used in the Detailed Inventory Report. Record 1 references storage location 1, and so on. The initial storage location of a drum is determined by the equipment where it is produced (see EQP) and is changed as the drum is relocated (see Intra-Area Transfer Request). Related Reports: Detailed Inventory Report. Related Files: Detailed Inventory File, Equipment File. File Restrictions: 30 storage locations; storage name no longer than 16 characters.

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                F I N I S H E D C H E M I C A L S
                S T O R A G E I D E N T I F I C A T I O N F I L E
                10-12-67

S.F. RAILS
T.E. L. RAILS
C.F. P. RAILS
.F. RAILS
S.E. RAILS
TCP
W. BLD. 124
N. BLD. 124
S. A/C
A/C PAD
F. A/C
N.E. PAD
C.E. PAD
S.F. PAD
BLD. 1
PLD. 107
CARVONE UNIT

```

STORAGE
IDENTIFICATION
FILE (STO).

Summary Files (SUMM)--The CHGSH routine maintains the Summary Files which contains the Summary Index File and Summary Tables. The Summary Tables are a summation of all Batch Sheet Reports for the accounting period, by process-step, and equipment number. The Unit Cost Files month-to-date production and usage figures are calculated from the Summary Tables. Related Reports: Summary Report, Unit Cost Analysis Report. Related Files: Unit Cost Files, Batch Sheet Files, Equipment Files, Process-Step Files. File Maintenance: The files repack automatically.

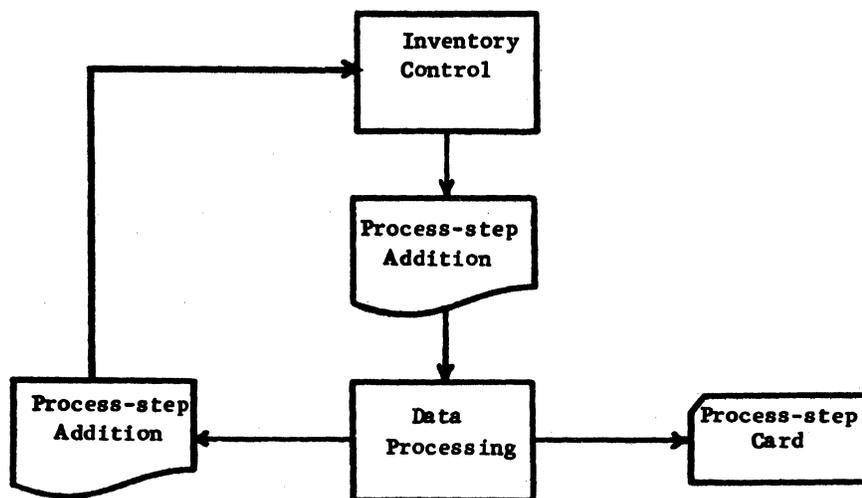
Transactions File (TRANS)--The TRANS routine maintains the Transactions File and the CHGSH routine updates the file. The Transactions File retains all month-to-date Sales, Purchases, Intra-area Transfers In, and Intra-area Transfers Out. Related Reports: Transactions Report, Batch Sheet Report. Related Files: Unit Cost Files. File Restrictions: 192 transactions per category. File Maintenance: It is necessary at the closing of the period to clear the Transactions File for the coming period (see Transactions Report).

Report Distribution File (DIST)--The routine DIST maintains the Report Distribution File which retains the distribution of 10 reports which will be printed as the first line of the respective report. Related Reports: None. Related Files: None. File Restrictions: Distribution for 10 reports; no more than 40 characters per distribution line. File Maintenance: It is necessary to reload or add only the distribution line needed.

Detailed Inventory File (DET)--The CHGSH routine maintains the Detailed Inventory File which contains the Bulk Inventory File and the Detailed Drum File. The Bulk Inventory File retains the non-detailed inventory by product code. Weight 1 references product 1 in the Unit Cost Index File. The Detailed Drum File retains all drums by Batch Identification Number, Product Code, Drum Number, Storage Location, and Net Weight. Related Reports: Detailed Inventory Report, Total Inventory Report, Batch Sheet Reports. Related Files: Unit Cost Index File, Batch Sheet File, Summary File. File Restrictions: Bulk Inventory - 468 bulk items; Drum File - 6,000 drums; Drum number must be less than 100. File Maintenance: The files automatically repack themselves.

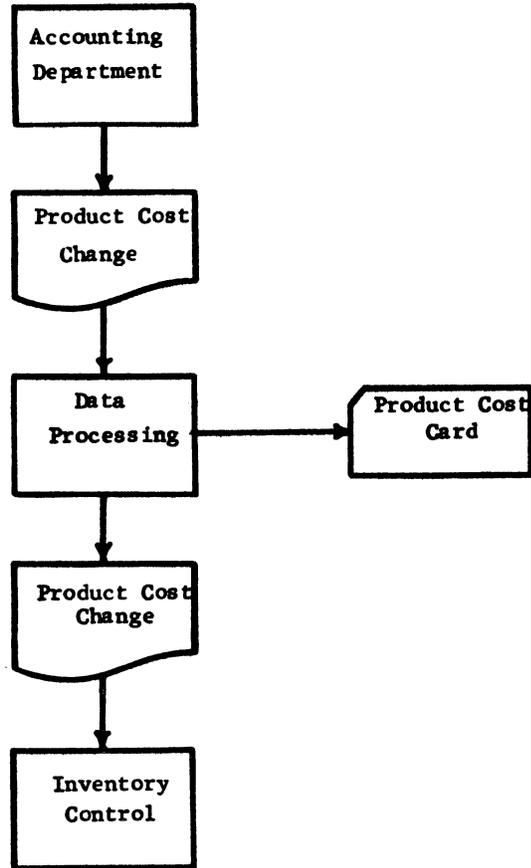
Raw Material File (RAWM)--The RAWM routine maintains the Raw Material File which contains the Raw Material Code Index and the Raw Material Name Table. The Raw Material Code Index indexes the product codes with the Unit Cost Files. The Raw Material Name Table retains the name of up to 100 raw materials. Related Reports: Raw Material Report. Related Files: Unit Cost Files. File Restrictions: 100 raw materials; a raw material name no greater than 32 characters. File Maintenance: If it is necessary to change, add or delete a raw material from the file, see the Raw Material Report.

Process-Step Files (PSTEP)--The PSTEP routine maintains the Process-Step Files which contains the Usage Process-Step File; Production Process-Step File and Usage-Production Process-Step File. The Process-Step File is used to assign the process-step number to the batch sheets which is used in indexing the Summary File (see Process-Step Form). Related Reports: Batch Sheet Report. Related Files: Unit Cost File. File Restrictions: Usage Process-Step File - 213 process-steps; Production Process-Step File - 213 process-steps; Usage-Production Process-Step File - 160 process-steps. File Maintenance: It will be necessary to change, add or delete process-step parameters as the plant operations change.



PROCESS STEP ADDITION.

Unit Cost Files (UV)--The UV routine maintains the Unit Cost Files which contains the Product Code Index. The Product Code Index is used for indexing all reports and files which use product codes. The Product Files retain the product cost tables and provide a recap by product code of all transactions which affect the inventory. Related Reports: Detailed Inventory Report, Total Inventory Report, Finished Product Report, Raw Material Report, Summary Report, Unit Cost Analysis, Transactions Report, Batch Sheet Report, Error Status Report. Related Files: Detailed Inventory Files, Summary File, Transactions File, Finished Report File, Raw Material File, Batch Sheet File, Process-Step File, Error Table. File Restrictions: 480 product codes. File Maintenance: It will be necessary to change or add product costs, or at file load time to define the beginning inventory.



PRODUCT COST CHANGE.

Formula Files (FORM)--The FORM routine maintains the Formula Files which contains the Formula File, Raw Material File and Finished Product File. The Formula File defines the blend formula for each Essential Oils blend product. The Raw Material Table File is used to index the formula product codes. The Finished Blend Product File is used to index the finished product codes to be used in the Blend Report. Related Reports: Blend Report. Related Files: Unit Cost File, Finished Product File. File Maintenance: It will be necessary to change, add or delete formula parameters.

A problem, according to Warren R. Shepherd, manager of inventories, was getting people to believe in the reliability of data produced by the 1620 originally, and then by the 1130. "We used the personal approach," he said, "by explaining reports individually to anyone who had anything to do with them. When we converted to the 1130, we asked people involved in the inventory operation what changes they wanted, and we adopted many of their ideas when the system was implemented on the new computer."

Development of internal forms for use with the applications was another problem faced by OCG. "We developed our own forms over the years," explained Shepherd. "Those on the outside don't always know and understand your needs. To build an effective inventory system with proper forms you have to come out and actually do the operations."

Quality Control

Another 1130 application--quality control--includes the accumulation of punched card data provided by a blind panel, an OCG innovation.

The panel was begun as an experiment, utilizing the theory that blind people are about twice as effective as sighted individuals in sensitivity to smell and taste. The experiment proved correct, and today a sealed-off room houses the blind panelists who check samples from every batch of perfumery and essential oils for minute deviations from pre-established standards.

The room in the Research Laboratory Building is kept warm and moist as an aid to olfactory abilities; it is designed for an air flow that will quickly carry off lingering odors, without any noticeable draft.

Ten blind panelists are involved in the operation, working in four-hour shifts of five each. A panelist makes his independent decision on every sample passed through the test procedure, recording these decisions on a hand punched card machine.

Thus, each sample has several cards recording the panel's judgment. The cards identify the particular panelist, his or her decision, and also how hard it was for the panelist to tell the difference between the standard and the product. These cards are then run through the 1130, which computes the scores of each panelist and arrives at an average panel score on every sample tested.

That the blind panel has been a success can be attested to by one incident when every panelist diagnosed one sample batch incorrectly. Further check disclosed that the samples used had been mislabeled by sighted personnel.

THE 1800 SYSTEM

The 1800, located in another area of the Jacksonville plant, performs process control and chromatography applications.

Process Control

Initially, this application was on the 1620 and was converted to the 1800 when the latter machine was installed. In effect, the 1800 provides instant analysis of the tall oil plant operation at Port St. Joe, utilizing land lines and microwave signals to communicate between Jacksonville and Gulf Coast site terminals.

When such a link was first suggested, OCG people deemed connecting an analyzing computer to the tall oil plant feasible because (1) the plant is continuous flow--a type of operation calling for constant "steam" control; (2) the Port St. Joe operation is a compact and singular "unit" function (unlike the Jacksonville plant's spread out and diverse batch step functions).

The 1800, which acts as the engineer for Port St. Joe, amassing, analyzing and storing the data transmitted and directing operations at PSJ, has a capacity of over 1 million words of storage thanks to twin 1311 disc drives hooked to an 16K word memory in the basic central processing unit.

Some of the data sent to and accumulated in the 1800 includes pressure, flow and temperature readings. The Jacksonville system polls Port St. Joe every 30 seconds, reads in approximately 100 inputs in 10 seconds and processes the data. Instructions are sent back to the PSJ operator every two hours and might include such directions as: raise temperature in instrument No. 15; it should be 40 degrees.

Chromatography

Another application on the 1800 is chromatography. A vapor phase chromatograph (VPC)-- a machine which gives a quantitative analysis of product material--is linked to the 1800. A printout tells supervisory personnel and equipment operators exactly what kind of product they are getting.

21 3100

PANELISTS 4 5 6 7 8

A* A* A* A A*

SCORE 1.0

AVERAGE SCORE 1.0

.95 CONFIDENCE INTERVAL 0.0

CRITICAL AVERAGE SCORE 1.0

.95 CONFIDENCE INTERVAL 0.0

SUMMARY DECEMBER, 1966

PANELIST NO. 9

ODOR EVALUATION OF SPEARMINT 630 R33-1127A C. S.

221-22 2/ 5/68 40N22 8

SAMPLE	1	2	3	4	5	6	7	8	SCORE
RA	D	C	C	C	A	B	B	B	5.7
RB					P	B	C		8.5
					B	B	D		9.5

AVERAGE SCORE 7.9

.95 CONFIDENCE INTERVAL 2.2

CRITICAL AVERAGE SCORE 8.2

.95 CONFIDENCE INTERVAL 2.2

PRODUCT	DETERMINATIONS	PENALTIES	SCORE	
			MONTH	CUM.
BERGAMOT OIL	0.	0.0	0.0	83.3
CITRONELLOL	18.	0.0	100.0	81.7
ESSENTIAL OIL RAW MATERIALS-ODOR	24.	6.5	72.9	83.9
GERANIOL	39.	6.5	83.3	76.0
HYDROXYCITRONELLAL	0.	0.0	0.0	75.0
LEMON OIL-ODOR	15.	3.0	80.0	88.0
LEMON OIL-TASTE	5.	0.0	100.0	80.0
LIME OIL-ODOR	12.	0.0	100.0	95.0
LIME OIL-TASTE	4.	.5	87.5	84.3
LINALOOL	45.	3.0	93.3	90.2
LINALYL ACETATE	29.	.5	98.2	74.2
NEROL B	0.	0.0	0.0	66.6
PEPPERMINT OIL-ODOR	12.	16.0	-33.3	77.5
PEPPERMINT OIL-TASTE	4.	0.0	100.0	89.8
PINE OIL	6.	1.0	83.3	97.6
SPEARMINT OIL-ODOR	27.	2.0	92.5	84.9
SPEARMINT OIL-TASTE	9.	2.0	77.7	67.3
TERPINEOL	30.	0.0	100.0	99.1
TERPINYL ACETATE	30.	0.0	100.0	90.3
MISCELLANEOUS	6.	2.0	66.6	85.5

2/ 5/68 SCORES		
PANELIST	TODAY'S SCORES	total M-T-D SCORES
1	55.5	53.5
2	66.6	77.7
3	72.2	75.0
4	90.7	77.7
5	12.9	24.7
6	20.3	33.0
7	74.0	74.1
8	77.7	80.1
	58.7	61.4

SAMPLE REPORTS BASED ON SCORES OF BLIND PANELISTS.

RESULTS AND FUTURE PLANS

The management aspect inherent in OCG's computer operations has broadened the results of the Group's EDP operation. In the process side of the operation, OCG will attempt to close some of the loops in its operation. "We will let the computer make some decisions," said Ronald W. Wingate, manager of technical systems, "such as closing valves. And eventually we may need another process computer because we are approaching the capacity of the 1800 now."

Summing up the approach to EDP at OCG, the division's general manager, R.P.T. Young, said: "In this football game of business, you've got to put a winning team on the field year after year. One of the best ways to assure a winning team is to provide the finest equipment available. A computer is just one more piece of equipment. If we learn how to use this tool sooner and better than our competitors, we'll stay ahead."