

To: T. H. Huffman

From: P. J. Kober
Date: August 18, 1988

Subject: ABERDEEN MONTHLY PROGRESS REPORT
JULY, 1988

VISTA

**Interoffice
Communication**

There was one medical treatment case and one first aid case reported during the month. As of July 31, 1988, the plant had operated 3,314 days or 4,320,340 manhours without a lost time injury. On July 5, 1988, the Aberdeen Plant surpassed nine years without a lost time injury.

On June 30, an Open House was held for the Aberdeen Terminal employees and their families as part of their annual picnic and to communicate SARA 313 information. Approximately 30 people participated.

Key Statistical Information

	<u>Month</u>	<u>Y.T.D.</u>
PVC Production, MM Lbs.	32.6	376.5
Reactor Stream Factor, %	81.7	89.1
Resin Quality, % Prime	99.5	
VCM Efficiency, Lbs./Lb	1.01759	1.01454
Compound Production, MM Lbs.	6.6	73.9
Compound Quality, % Prime	95.8	
Dry Blend Production, MM Lbs.	2.4	52.4
Dry Blend Quality, % Prime	99.6	
Plasticizer Production, MM Lbs.	1.7	18.1
Plasticizer Quality, % Prime	88.6	
Energy Use (CMA Reduction, %)	51.6	51.9
Fixed Cost Variance, \$M	(52.9)	228.7
Variable Cost Efficiency Variance, \$M	(60.8)	621.7
Variable Cost Price Variance, \$M	(2866.9)	(20,083.0)
Variable Cost Variance, \$M	(2927.7)	(19,461.3)

Downtime in the vinyl unit was due to the continued VCM shortage and miscellaneous maintenance downtime. Downtime due to VCM shortage was used for maintenance and RQIP tie ins.

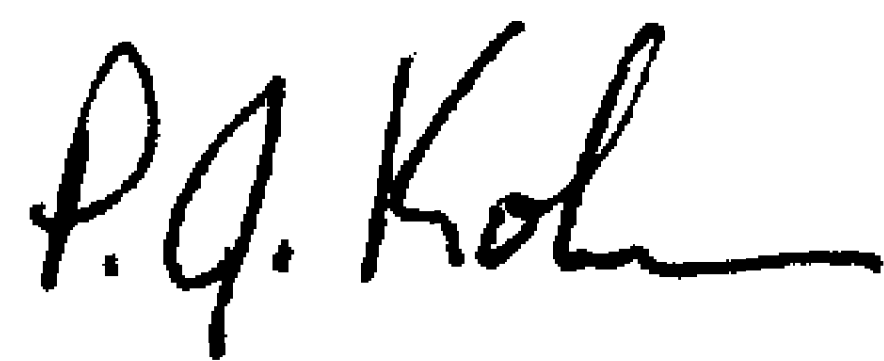
In the compound unit, Lines I and III operated thirty days and Line V operated 24.5 days. Dry Blend was down 14 days to install the new Univox control system.

Fixed costs were unfavorable due to completion of several extraordinary projects and staffing of Line V for a three shift operation.

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QMP

- Meetings were held with operations personnel to discuss calculating the cost of quality.
- All natural teams met at least once during the month.
- The Quality Coordinator participated in the company Quality Coordinators meeting in Galveston.
- The plant continued efforts to define the needs for a data acquisition system.
- The Railcar Cleaning Team received AFE approval to install a railcar cleaning system under the vinyl storage silos.



P. J. Kober
Operations Superintendent - Vinyl

tls

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<u>LAKE CHARLES VCM PLANT</u>	R. A. CONRAD		X	
<u>LAKE CHARLES CHEMICAL PLANT:</u>	J. FRIEND		Safety Section and X	
<u>LAKE CHARLES LAB PLANT:</u>	J. W. WARE	X		
<u>BALTIMORE:</u>	L. R. BAUER	X		
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<u>BLANE POLYMERS:</u>	C. R. MILLER		X	
<u>PREMIERE POLYMERS:</u>	P. L. FOOTE		X	
<u>ABERDEEN:</u>	RWS/DCS (FILE COPY), JEN, PJK, DWH, TFL, JEB, VEM, HGC, JEL, REP, RBN, SAFETY			

PLANT FIXED COSTS - P. J. Kober

<u>Major Category</u>	<u>Variance vs. Budget</u>	
	<u>July, 1988, \$M</u>	
	<u>July</u>	<u>YTD</u>
Payroll and Benefits	(29.5)	(204.0)
MM&C	(46.8)	140.9
T&I	14.6	100.8
Miscellaneous	8.8	190.9
	<u>(52.9)</u>	<u>228.6</u>

Payroll and Benefits - This variance was due to operating Line V on a three shift schedule versus the two shift schedule that was budgeted and also other plant overtime.

MM&C - This variance was due to completion of several extraordinary projects during the month. MM&C expenditures are forecast to be approximately \$80M favorable at year end.

Miscellaneous

- Outside Professional Services - \$7.7M unfavorable due to SARA 313 video production costs.
- Operating Supplies - \$13.9 unfavorable due to low value items, equipment cleaning supplies (caustic for chem wash) and sampling supplies.
- Shipping Costs - \$24.4 favorable due to late clearing invoices, reduced drayage charges and not weighing empty railcars.

SAFETY - J. V. Uptain

<u>Occupational Injuries</u>	<u>July</u>	<u>Fiscal Y.T.D. 1988</u>	<u>Fiscal Y.T.D 1987</u>
First Aid	1	9	12
OSHA Recordable	<u>1</u>	<u>4</u>	<u>7</u>
Total Injuries	2	13	19
Number of Restricted Workday Cases	0	0	2
Number of Lost Workday Cases	0	0	0

Injuries by Department

Vinyl Operations	1	3	4
Compound Operations	0	2	1
Maintenance	1	7	9
Laboratory	0	1	2
Receiving/Warehouse	0	0	2
Office	<u>0</u>	<u>0</u>	<u>1</u>
Totals	2	13	19

Injuries by Type

Cuts and Abrasions	2	6	10
Eye Injuries	0	0	3
Burns	0	4	2
Bruises	0	2	1
Strains/Sprains	0	0	3
Stings	0	0	0
Other	<u>0</u>	<u>1</u>	<u>0</u>
Totals	2	13	19

Non-Occupational Injuries

Lost Workday Cases	1	10	6
Days Lost	22	174	55

Safety Record

Last lost time injury 7/5/79
 Days since - 3,314
 Manhours since - 4,320,340

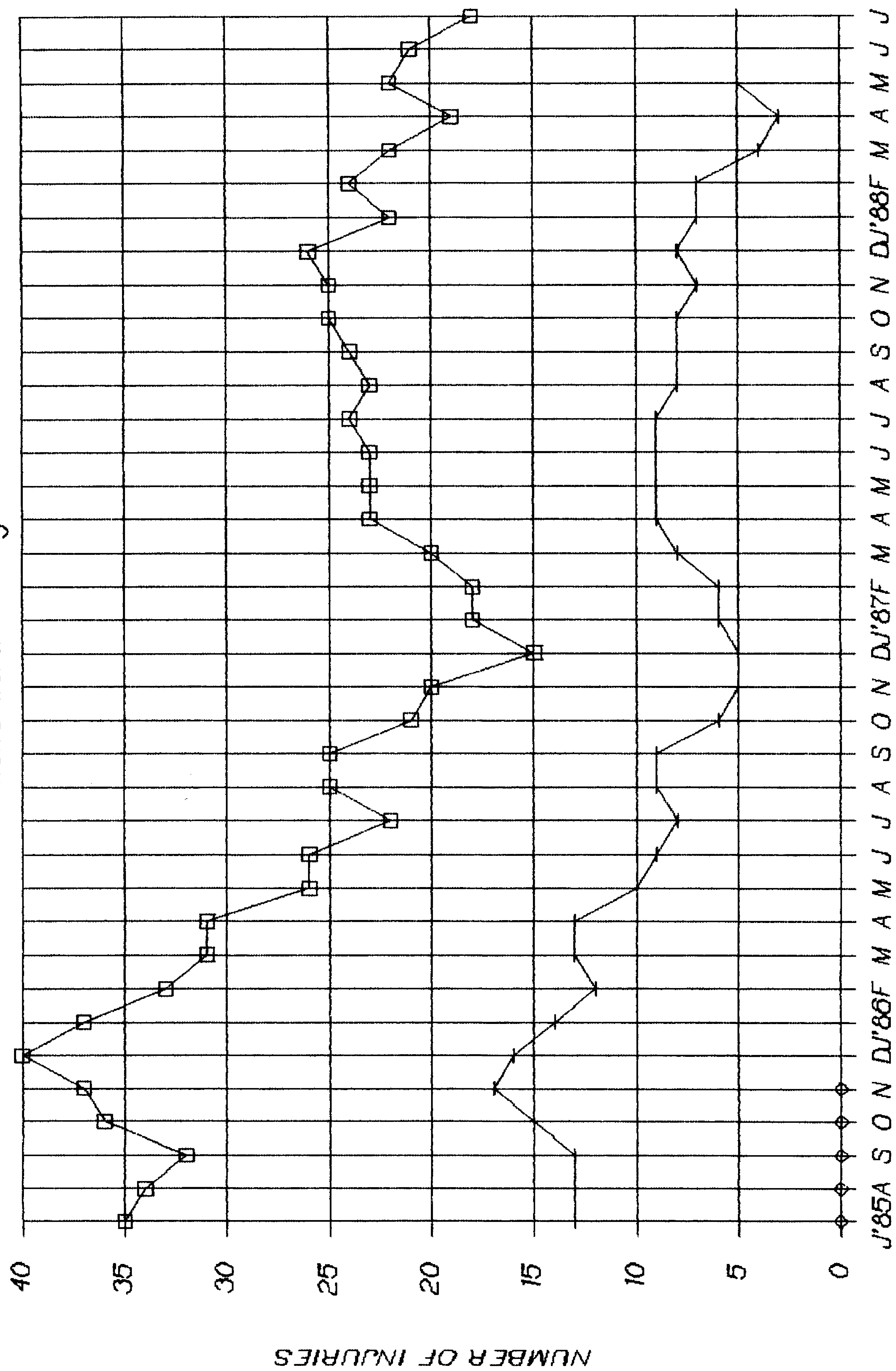
On July 30, 1988, the employees of the Aberdeen plant completed 3,314 days with no lost time injury.

A medical treatment injury occurred when an employee was struck in his eye by a railcar seal. An injury requiring only first aid happened when another employee tripped receiving minor abrasions and contusions.

Two people attended the Texas A&M Fire School.

ABERDEEN CHEMICAL PLANT INJURIES

(Twelve Month Running Totals)

☐ TOTAL INJURIES

+ OSHA RECORDABLE

QUALITY MANAGEMENT PROCESS - D. W. Hollis, R. B. Newton

- 1) A meeting was held to discuss data acquisition for the entire plant. This included planned distributed control systems and the lab data management system.
- 2) Attended a meeting with Operations Department Heads about how to implement cost of quality accounting in their area.
- 3) Administrative Services held a meeting with S&T personnel to develop a freight carrier evaluation program. Plans are to evaluate carrier performance on inbound and outbound shipments.
- 4) Rendell Newton attended Quality Coordinators meeting in Galveston.
- 5) Two natural team meetings were held in Administrative Services. The Plant Accountant Team and the Warehouse Supervisor Teams met to communicate the Quality Implementation Plans to their departments.
- 6) Administrative Services held a conference with AT&T representatives to discuss options for upgrading the quality of the phone system.

VINYL - P. J. Kober, C. J. McDonald

Safety

There was one medical treatment injury in vinyl this month. A Yard Operator suffered an eye injury while retrieving his safety glasses which had slipped off.

The monthly safety meeting topics were Burns and Vacation safety. A film on burns, "It Could Happen To You", was shown. Also, safety hazards of vacation travel and summer recreation were discussed.

Quality Management Process

The Department Natural Team met five times during July to coordinate daily activities and to continue the quality implementation process.

There are three active employee involvement teams in the department. A fourth, the Railcar Cleaning Team has received approval for an AFE to improve their process. The three active teams all met during the month. The V-11 Dust Team continues to test improved Vendor equipment and is designing sifter deck equipment modifications. The Plasticizer Unloading Team is preparing their formal presentation of recommendations to plant management. The 5265/5305 Contamination Team is being reorganized to include personnel from other parts of the company. R&D and PED will become part of this team.

<u>Production</u>	<u>July</u>	<u>Y.T.D. (Fiscal 88)</u>
1. Production, MM lbs	32.6	376.5
2. Daily production rate, M lbs/c.d.	1052.1	1234.3
3. Total charges	793	8923
4. Charges, reactor batches/c.d.	25.6	29.3
5. Reactor stream factor	81.7	89.1
6. Dryer rate, average lbs/hr	8160	9395
7. Dryer stream factor	67.2	68.6
8. Accounting days	31	305

Reactors

The reactor stream factor for July was 81.7%. Downtime in the reactor area occurred as follows:

1. Operational Downtime: Accounted for 20.3% of the total and was due to recovery scheduling conflicts, downtime to rinse the chem wash tank, waiting on particle size data before charging, new module rinse/charge conflicts, no place to recover to, no place to dump, inclement weather, reactor inspections, plugged recovery and dump lines and power outages (excluding blown transformers included in maintenance downtime).

Reactors - continued

2. Maintenance repair/revision downtime: Accounted for 61.0% of the total and was due to installation of a new condenser lid on D744, drilling the D741 condenser, repairs to D742 agitator gear box, repair and later replacement of transformer 7B, drilling the condenser and hydroblasting D745 to control low molecular weight contamination (it was hydroblasted twice), repairs to D300 emergency kill system, changing D744 agitator seal, repairs to reactor evacuation lines, and miscellaneous valve and instrumentation repairs.
3. Other downtime: Accounted for 18.7% of the total and was due to a shortage of VCM. When possible, downtime was used for maintenance.

Dryers

The dryer stream factor for July was 67.2%. Downtime in the dryers occurred as follows:

1. Reactor limited production: Accounted for 90.0% of the total. Dryers were shut down when possible for energy conservation.
2. Operational downtime: Accounted for 5.4% of the total and was due to centrifuge plugging, dryer cleaning, activator transfer problems, power failures, checking socks for leaks, checking screeners for leaks, and flame outs.
3. Maintenance repair/revision downtime: Accounted for 4.6% of the total and was due to repairs of leaking socks, activator repairs, centrifuge repairs on several dryers, maintenance on #7 dryer air sweep, screener maintenance, and repairs and replacement of transformer 7B.

Product Quality Summary

<u>Resin Type</u>	<u>Prime</u>	<u>"B"</u>	<u>"H"</u>	<u>% of Total Production</u>
5265	1,141,683			3.5
5305	3,487,390	-	-	10.7
5385	14,253,658	-	-	43.7
5415	12,272,933	-	-	37.6
5465	-	-	-	0.0
Debox	-	940,430	-	2.9
Off-Grade	-	-	-	0.0
Sifter Overflow	-	-	57,687	0.2
Pond Resin	-	-	462,500	1.4
Total	31,155,664	940,430	520,187	100.0

VINYL - ContinuedMonthly Variable Cost Performance

Variable costs for the month were unfavorable at \$2008.8M resulting from an unfavorable price variance of \$1909.8M and an unfavorable efficiency variance of \$99.0M. Resin variable cost for July, 1988, was 26.713 cents per pound versus the budget of 20.663 cents per pound.

The unfavorable price variance was due to VCM pricing at \$1936.6M unfavorable.

VCM efficiency for the month was 1.01759 pounds per pound of PVC produced versus the budget at 1.00756 pound per pound. This resulted in a unfavorable variance of \$59.8M. Possible causes for the poor efficiency are being studied and may be related to accounting of resin used by compound/dryblend. Alcotex had an unfavorable variance of \$13.6M. The variance is due to product mix and the quality of the alcotex caused it to be less efficient as a suspending agent. Polivic S-202 had a favorable variance of \$15.9M. The variance is due to reduction of low molecular weight resin production caused by downtime to hydroblast D700 and D745 reactors and the problems with transformer 7B.

Energy Performance

Plant energy performance for July, 1988, was 2876.3 BTU/pound.

General

The resin raw material in the 744 account was valued at \$356.2M

COMPOUND - J. E. Nickerson, S. C. Hillman

Safety

The Compound Department worked without injury in July.

The July monthly safety meeting topic concerned safely handling hot molten chemicals.

Quality Management Process

The Compound Department's Operations Superintendent Natural Team met in July. The meeting included all the compound shift supervisors. Topics included reduction of offgrade production and charting progress.

The compound Shift Supervisor Natural Teams all met in July.

<u>Compound Production</u>	<u>Operating Days</u>	<u>Production (M Pounds)</u>		
		<u>Month</u>	<u>Average Operating Day Rate</u>	<u>Fiscal Y.T.D.</u>
Line I	30	1973	66	22720
Line III	30	3503	117	38505
Line V	24.5	1159	47	12634
Total		6634		73859

All three compound lines were shutdown for the July 4th holiday.

Line I operated thirty days in July at an average rate of 66M pounds per day. Major items affecting production efficiency were: product changes, 69 hours; maintenance on Banbury seals, 11 hours; dicer problems and maintenance, 10 hours; plasticizer pump maintenance, 7 hours; quality problems, 5 hours; preblend feeder problems and maintenance, 5 hours; conveyor maintenance, 5 hours; and construction of new air wipes, 4 hours.

Line III operated thirty days in July at an average rate of 117M pounds per day. Major items affecting production were: product changes, 87 hours; quality problem, 6 hours; resin weighup problems, 5 hours; and conveyor maintenance, 4 hours.

Line V operated 24.5 days in July at an average rate of 47M pounds per day. Major items affecting production efficiency were: product changes, 13 hours; twin screw compounder problems and maintenance, 10 hours; Welex mixer maintenance, 7 hours; and quality problems 6 hours. Line 5 was scheduled down two days for twin screw compounder maintenance and 3.5 days for inventory control in July.

COMPOUND - continued

Quality performance for flexible compounds for July was 2.1% off-grade of which 93.9% was due to mill scrap. "BC" production was 1.1%.

The raw material requirement for flexible compounds was 1.01752 pounds of raw material per pound of compound versus a 1.01194 standard (YTD is 1.00888).

The variable cost variance for compound was \$522.3M unfavorable with \$546.9M unfavorable due to price and \$24.6M favorable due to efficiency. The efficiency variance due to product mix was \$175.5M favorable.

The major raw material efficiency variances were Jayflex 366 plasticizer at \$118.7M unfavorable and Uvasorb 3C at \$17.2M unfavorable. Both of these are new raw materials that were not budgeted in fiscal 1988.

Total compound inventory decreased 533M pounds in July to 9.04MM pounds.

<u>Dry Blend</u>	<u>Month</u>	<u>Average Operating-Day Rate</u>	<u>Fiscal Y.T.D.</u>
Production, M Pounds	2413	142	52381
Operating Days	17	-	291

Dry blend operated seventeen days in July at an average rate of 142M pounds per day. Production included 80273G WHT 110, 80172C WHT 110, 90172D WHT 110, RP421 WHT 110, RP440 WHT 110, 186-139 WHT 111, 317-91 WHT 110, and 317-104 WHT 110. Dry blend was shut down for 14 days to install the new Univox control system.

Dry Blend production was hindered by: Dry blend startup, 91 hours; product changes, 20 hours; Maintenance on masterbatch blower, 13 hours; waiting on blender transfers, 9 hours; quality control, 8 hours; waiting on resin transfer, 8 hours; and transfer line pluggage problems, 7 hours.

Quality performance for the month of July was 99.6% customer grade.

The raw material requirement for dry blend was 1.03026 pounds of raw material per pound of dry blend versus a standard of 1.00490 (YTD is 1.00607).

The variable cost variance for dry blend was \$186.1M unfavorable with \$217.2M unfavorable due to price and \$31.2M favorable due to efficiency. The efficiency variance due to product mix was \$53.6M favorable. There were no major dry blend raw material efficiency variances for dry blend in July.

COMPOUND - continued

<u>Plasticizer</u>	<u>Month</u>	<u>Average Operating-Day Rate</u>	<u>Fiscal Y.T.D.</u>
Production, M Pounds	1710	55	18052
Operating Days	31	-	302

Plasticizer operated thirty one days in July at an average rate of 55M pounds per day. Production included 108P and 610P.

VRP production totaled 202.5M pounds (11.4%).

The raw material requirement for plasticizer was 1.18309 pounds of raw materials per pound of plasticizer versus a 1.10156 standard (Y.T.D. is 1.10142).

The variable cost variance for plasticizer was \$210.6M unfavorable with \$193.1M unfavorable due to price and \$17.5M unfavorable due to efficiency. The only major raw material efficiency variance was Alfol 610 alcohol at \$18.4M unfavorable and phthalic anhydride at \$22.4M unfavorable.

The efficiency variance due to product mix was \$5.5M favorable.

Energy

	<u>Usage (BTU/Lb.)</u>	
	<u>Actual</u>	<u>Standard</u>
Compound	1877.2	1758.0
Dry Blend	804.8	720.0
Plasticizer	2836.3	1550.6

MECHANICAL DEPARTMENT - T. F. Lyon

MAINTENANCE - D. A. Miller

Safety

There was one first aid injury in the Mechanical Department during the month. A general mechanic bruised his hand while moving a relief valve on a boiler.

The topic of the monthly safety meeting was "Rigging and Lifting Equipment."

Quality Management Process

There are three active project teams in the mechanical department. The "Shop Utilization Team" met once during the month. The "Maintenance Training Team" completed a general mechanic skills inventory and the Valve Team began assembly of valves for stock.

Vinyl

There was one reactor agitator seal failure in July. The D-744 seal was changed due to an internal leak following a 10 month run.

There were two unscheduled power outages during the month due to failures of 15KV bushings on a 1500KVA, 12.47KV/480V transformer in substation 7. The transformer was removed from service and a rental unit installed. The damaged transformer will be refurbished and returned to service during a scheduled electrical outage in late September.

The condenser on D-500 reactor was replaced with a retubed spare and the chemwash and rinse piping, and control system modified.

D-745 reactor condenser was drilled and brushed, and the reactor shell hydroblasted.

The recovery system condensers in the new module were cleaned due to tube side fouling.

The fan and gearbox for the new module cooling tower west cell was overhauled.

The following mechanical seals were replaced during the month:

- new module north and south blowdown tank transfer pumps
- 903 recovery compressor outboard
- 706 emission recovery compressor
- old module east collect tank pump

The D-742 reactor main dump valve was replaced during the month.

MECHANICAL DEPARTMENT - continued

Dryer Area

A refurbished 9° centrifuge equipped with rinse nozzles was installed in the No. 8 location. A test run was conducted to evaluate centrifuge performance while rinsing.

A shell leak and several tube leaks were repaired in the centrate heat recovery trim heater. This exchanger is badly deteriorated and specifications are being prepared for replacement.

The two uninstalled fluid bed heating panels were modified to allow better resin movement between plates. The panels will be installed in late September for testing.

The south Kason Star Valve was replaced with a rebuilt spare during the month.

Compound, Dry Blend, Plasticizer

The following work was accomplished on Line V during the month:

- Rebuilt blades were installed in the Line V Welex
- A structural engineer was consulted on a Line V Welex deck vibration problem. Flexibility in the Welex support structure has resulted in a high amplitude low cycle vibration. Structural modifications will be required to resolve the problem.
- The compounder planetary gear reducer was overhauled due to excessive bearing noise. During this work, the compounder drive gearbox was inspected. Severe wear on the left hand pinion output splines was discovered. A major overhaul of the gearbox will be required to correct the problem. Parts requirements are being investigated.
- The tach generator on the compounder drive motor was replaced.

The following work was completed in the dry blend area during the outage for installation of the Univox control system:

- A new air lock was installed on the masterbatch blender
- A filter bag screen and gasket was installed on the Bin 2 dust collector
- A new star valve was installed on the Bin 1 discharge chute.
- The Titanium Dioxide star valve and aftercooler were removed and cleaned.

MECHANICAL DEPARTMENT - continued

- The dry blend cooling blenders were refurbished. New structural steel legs were installed, the blenders and drives were regouted and all cooling water piping replaced. The blender jackets were painted and reinsulated.

Only routine maintenance was required on Lines I & III, and the plasticizer unit during the month.

Utilities

Number 2 boiler was shutdown for inspection after discovering a hot spot on the burner front. Major refractory damage was noted. Temporary repairs were made by filling voids in the refractory with a pumpable grout. No. 2 boiler will be used in emergencies only, until permanent repairs can be made.

A new dewpoint chart recorder was installed on the Deltech Air Dryer.

The Pall Air Dryer purge air control valve was rebuilt and the purge air electric heater controls were replaced.

A test run to evaluate CO₂ for pH control at Pond 3 was completed during the month. Preliminary data indicates that CO₂ is not a good substitute for H₂ SO₄ in our system.

The Pond 5 east aerator was rebuilt during the month.

MECHANICAL ENGINEERING - R. E. PolkAFE F786/F557 - Resin Quality Improvement

Concrete work is 99% complete and in progress. Remaining items consist of fireproofing punchlist items. Mechanical work is complete except for final process tie-ins and punchlist items. I&E work is 81% complete and in progress. Completion of remaining items is scheduled for the week of 8-22. Project start-up is planned for mid-September.

AFE F587 - Laboratory Addition

This project is complete and operational. It will be closed to field charges in August.

AFE D707 - VCM Unloading Fire Protection

This project is complete and operational. It will be closed to field charges in August.

AFE A538 - Reactor Condenser Revisions

The retubed condenser for D-500 was successfully installed. Installation for D-400 is planned for completion by 9-9.

AFE D608 - Dryblend Orbitran Replacement

The Univox Control System was successfully installed and is operational. Punchlist items are in progress and scheduled for completion by 11/1.

AFE D638 - Boilerhouse MCC Replacement

Pre-shutdown work is in progress. The MCC will be energized during a plant steam outage scheduled for the week of 9-19. Project completion is planned for early November.

AFE F598 - Line I Screeners

Installation is approximately 75% complete and in progress. Completion has been delayed until late September due to unfavorable delivery of transfer piping.

AFE A678 - Dryblend Transfer System Improvements

Installation was completed in conjunction with the outage to install the Univox control system. The transfer system is complete and operational. Punchlist items are in progress and will be completed by 10-1.

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MECHANICAL ENGINEERING - continued

AFE D628 - Compound Resin Supply Valves

All original scope items are complete and operational. Punchlist items are in progress and scheduled for completion by 9-15. The project will be closed to field charges in September.

AFE D648 - 745 BME Addition System Modifications

Mechanical installation is complete and the system is operational. Punchlist items are in progress and will be complete by 10-1.

MISCELLANEOUS ITEMS

Development of a VCM/Chem wash piping spec for Aberdeen has been completed with the assistance of GED. It will be issued to the plant in August.

Capital expenditures (XRQIP) year to date are \$2.6MM, 122% of the total for fiscal 1987 and 88% of the fiscal 1988 goal of \$2.9MM.

PROCESS ENGINEERING - V. E. Messick

RQIP

Review of the operating manuals was completed with a meeting held in the plant to communicate comments. Commissioning plans are being developed by PED with plant input. Assistance is being given to the construction group as required.

Low Molecular Weight Resin Expansion

A kick-off meeting was held to discuss project scope and major issues. Assistance is being given to PED to outline work. A meeting was held to discuss problems with a relief valve simulation model used to determine relief valve requirements for the small reactors in low molecular weight resin production.

Dry Blend Orbitran Replacement

Ken Akins was on shift for startup of the new dry blend control system.

Dry Calcium Stearate System

Construction of the systems for the rotary dryers is underway with completion in September. A problem with the injection point into the fluid bed dryer was resolved. The system is operating on the fluid bed dryer on a trial basis. Problems with the stearate particle size and flowability are being investigated.

Boiler Safety Team

Work was begun on modifications to the boiler feedwater system to resolve a potential over-pressure situation.

BME Addition System

The new D745 chain transfer agent addition system was installed. Operators were trained in its use and the system started up. This new system replaced the old temporary system and provides a safer system that reduces operator exposure to foul BME odors. The operating manual was also issued. Installation of a pressure switch, its interlocks, and safety audit items are all that remains to be completed.

Rinse Water Test Run

A test was conducted to determine the feasibility of rinsing resin in the dryer centrifuges. Resin's ability to insulate wire is directly related to the quantity of ions (chiefly sodium) that the resin contains. Lab tests have shown that it is possible to rinse the ions from resin using deionized water. The purpose of this test was to determine if performing the resin rinse using regular process water as the rinse fluid in our centrifuges is possible. Results of the test were favorable and future testing using water with less ions is planned.

PROCESS ENGINEERING - continued

Recovery System Pressure Control Design

The class "A" design of the recovery system pressure control system was issued for plant-wide review. This design will improve recovery system performance and compressor life expectancy by reducing compressor cavitation. Compressor cavitation is one of the most significant causes of compressor deterioration that we have seen.

Rotary Dryer Debottlenecking

A letter was issued outlining the direction of dryer debottlenecking work. Included in this letter were action steps, estimated action step start date, and the range of expected dryer rate improvement. Historical dryer data was also presented graphically to show use trends and potential future problem areas.

Pond Aeration Optimization

A design was done to improve the aeration and mixing in pond #4, thus increasing our total BOD removal by up to 10%.

Inert Gas System

New hose connections were installed to prevent anyone from accidentally hooking up to an inert gas line.

Dryer Dust Collectors

Finished evaluating the different types of dust collectors that are on the market at this time. Plant personnel decided on DCE 5/8/15 model dust collector.

BHA (baghouse consultants) issued their findings and recommendations in a written report. BHA commented that "The system now in use is significantly undersized and, in our opinion, not adequate for this application".

A review of a design to implement new collectors was completed and has been sent to the Mechanical Department for estimating.

Alcohol Tanks Static Protection

Completed a review issue of a design. This design has been submitted to the Mechanical Department for estimation.

Propane System Revisions - Deluge System

A review issue of a design to install a fixed spray system on the storage tanks in the propane system was completed during July, 1988. This design will be submitted for budgeting in the second fiscal quarter of 1989.

PROCESS ENGINEERING - Continued

Old Module Charge Water Temperature Control Improvements

A review issue of a design to provide increased flow of cold water to the reactor charge pumps was completed in July, 1988. This design will be submitted for budgeting in the second fiscal quarter of 1989.

Plant Water System

Two iron treatment vendors were invited to the plant to present their respective iron treatment capabilities and methods of operation. PED, R&D, the hydrologist, and the plant met with each vendor to evaluate the iron treatment system proposed. Two local iron treatment facilities were visited during the month; Leau Claire at the Weyerhaeuser plant in Columbus and Infilco at the East Lowndes water treatment plant.

Boiler Water De-alkalization

Options were evaluated for de-alkalization. A letter giving findings was issued.

Pond #3 pH Control

A 48-hour carbon dioxide test run was completed. The results are being analyzed.

Chlorine Alternatives

Sodium hypochlorite was evaluated and recommendations were issued for review.

Plasticizer Improvements

Several test runs have been made and samples have been taken which has identified several areas for improvement to the plasticizer unit.

HUMAN RESOURCE REPORT

PERSONNEL - J. E. Beall

EMPLOYMENT

None

PROMOTIONS/TRANSFERS

Frank Jeanson from Process Engineer to Environmental Coordinator.
John E. Nickerson promoted from Senior Process Engineer to Compound Operations Superintendent.
Chris Turner promoted and transferred from Compound Operations Superintendent to Alcohol Superintendent, LCCP.

RETIREMENTS

None

TERMINATIONS/RESIGNATIONS

Ernest "Brett" Bass

TO/FROM LEAVE OF ABSENCE

None

Aberdeen, Mississippi

JULY, 1988
MONTHLY PERSONNEL REPORT

Salaried Employees	<u>76*</u>	Minority Employees	#, %
Hourly Employees	<u>171</u>	Salaried	<u>7</u> <u>9%</u>
Total Employees	<u>247</u>	Hourly	<u>68</u> <u>40%</u>
		Total	<u>75</u> <u>30%</u>

Employees (Hourly)

New Employees	<u>0</u>	Hourly Min. Hired	<u>0</u>
Terminations	<u>0</u>	% Min. Hired	<u>0</u>
		Hourly Min. Term.	<u>0</u>
		% Min. Term.	<u>0</u>

DEPARTMENTS	PAR	# EMPLOYEES	MIN. EMP.	% MIN.	NEW HIRES	YTD	TERM.	YTD	TURNOVER	YTD
Warehouse	<u>16</u>	<u>16</u>	<u>7</u>	<u>44</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Gen. Plant	<u>13</u>	<u>17</u>	<u>7</u>	<u>41</u>	<u>0</u>	<u>8</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Maintenance	<u>40</u>	<u>38</u>	<u>9</u>	<u>24</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Laboratory	<u>24</u>	<u>24</u>	<u>6</u>	<u>25</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Compound	<u>40</u>	<u>39</u>	<u>27</u>	<u>69</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Vinyl	<u>32</u>	<u>32</u>	<u>10</u>	<u>31</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Plasticizer	<u>5</u>	<u>5</u>	<u>2</u>	<u>40</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

Number of Applicants:

Month 12 Year to Date 35

APPLICANT BREAKDOWN:

Minority 4 % Minority 33
Female 2 % Female 16

Hires (Hourly):

Month 0 Year to Date 8

Terminations (Hourly):

Month 0 Year to Date 3

Overall Turnover 0

Projected Annual Turnover 3.0%

* Includes 1 temporary employee, 2 Co-op Engineers and 1 Summer Engineer.

OVERTIME AND ABSENTEEISM

<u>Department</u>	<u>Straight Time Hours Worked</u>	<u>Overtime Hours Worked</u>		<u>Overtime as a % Of Straight Time</u>	<u>Absence Hours Lost</u>	<u>Absence as a % of Straight Time</u>	
		<u>Controllable(1)</u>	<u>Non-Controllable(2)</u>			<u>Sickness</u>	<u>Other</u>
WAREHOUSE	1154.00	87.00	-----	7.54	9	.00	.78
YARD	1080.00	226.25	36.00	24.28	0	.00	.00
MAINTENANCE	4185.25	864.50	16.00	21.04	235	4.78	.83
LAB	2985.00	601.50	60.00	22.16	594	19.30	.60
COMPOUND	6643.75	941.50	48.00	14.89	223	3.07	.29
VINYL	5833.25	607.75	216.00	14.12	38	.21	.44
PLASTICIZER	742.25	22.75	20.00	5.76	1	.00	.13
UTILITY BOILER	660.00	67.50	24.00	13.86	0	.00	.00
GENERAL PLANT	656.00	19.50	-----	2.97	0	.00	.00
TOTAL	23939.50	3438.25	420.00	16.12	1100	4.14	.45
							4.59
							3.16

(1) Controllable Overtime - all overtime excluding overtime due to working regular hours on a holiday and working the sixth day in operations.

(2) Non-Controllable Overtime - that overtime due to working regular hours on a holiday and working regular hours on the sixth day in operations.

ENERGY CONSERVATION - D. A. Moore

I. Plant Operations

Total energy consumption for July was 111.511 MMM BTUs. Energy consumption decreased to 2570 BTU/lb. from 2608 BTU/lb. in June. An adjusted CMA reduction of 51.6% was obtained for the month. The adjusted CMA reduction for fiscal 1988 is 51.9%.

II. Plant Energy Conservation Program

Maintenance

There were twenty-nine energy related items completed in July. Twenty-seven of these items were steam leak repairs. The remaining two were steam trap repairs.

III. Boiler Operation

<u>Boilers</u>	<u>Combustion Efficiency %</u>	
	<u>July, 1988</u>	<u>July, 1987</u>
No. 1	83.4	83.4
No. 2	83.4	(1)
No. 3	83.3	83.2

Note: (1) Boiler number two was not used during the month.

ENERGY CONSERVATION DATA

	<u>1988</u>	<u>1987</u>
<u>Month</u>	<u>July</u>	<u>July</u>
<u>Production, MM Lbs.</u>		
Resin	32.6	37.9
Dry Blend	2.4	5.2
Compound	6.6	4.8
Plasticizer	1.8	1.8
TOTAL	43.4	49.7
<u>Natural Gas</u>		
Consumption, MSCF	55986	52205
Conversion, BTU/SCF	1020	1020
Energy Consumption, MMM BTU	57.106	53.250
Energy Consumption, BTU/lb.	1316	1071
<u>Electricity</u>		
Consumption, MM KWH	5.4405	5.9261
Conversion, BTU/KWH	10000	10000
Energy Consumption, MMM BTU	54.405	59.261
Energy Consumption, BTU/lb.	1254	1192
<u>Propane</u>		
Consumption, M Gal.	0	0
Conversion, BTU/Gal.	92000	92000
Energy Consumption, MMM BTU	0	0
Energy Consumption, BTU/lb.	0	0
<u>Total</u>		
Energy Consumption, BTU/lb.	2570	2263
Energy Consumption, MMM BTU		
Actual Unadjusted	111.511	112.511
Actual Adjusted	91.559	91.240
1972 Base Period	189.073	209.872
<u>OMA Reduction (%)</u>		
Adjusted	51.6	56.5
Unadjusted	41.0	46.4
Fiscal 1988 Year-to-Date	51.9% Adjusted	
Performance	42.2% Unadjusted	

ENVIRONMENTAL - F. G. Jeanson

Water

All wastewater discharge parameters were within NPDES limits in July.

Waste Management

One truckload of waste oil was shipped to Stauffer Chemical Company.

One truckload of reactor culls was shipped to Sun Polymers.

One truckload of floor sweepings was shipped to Chemical Waste Management.

One truckload of drummed waste was shipped to Chemical Waste Management.

TABLE I
WATER COMPLIANCE WITH
NPDES PERMIT PARAMETERS

		Flow	BOD		COD		Sus. Solids		Diss.	NH ₃	pH
		GPM	PPM	LB./DY.	PPM	LB./DY.	PPM	LB./DY.	O ₂	LB./DY.	
Oct. -	Ave.	1229	5	77	28	433	10	147	8.4	1.8	7.5
	Max.	1264	7	100	39	553	15	215	8.6	2.9	7.9
Nov. -	Ave.	1222	15	212	43	607	22	310	7.4	1.4	7.5
	Max.	1430	22	378	65	1117	25	370	7.9	1.7	7.8
Dec. -	Ave.	1083	8	106	35	468	14	191	7.6	9.5	7.6
	Max.	1146	12	155	51	659	20	264	8.2	17.6	7.8
Jan. -	Ave.	1326	19	311	68	1111	13	213	7.5	2.0	7.5
	Max.	1431	25	426	87	1476	18	307	7.7	2.8	7.7
Feb. -	Ave.	1521	11	201	45	818	12	228	8.4	3.3	7.5
	Max.	1562	14	262	51	955	16	295	8.8	5.6	7.7
Mar. -	Ave.	1208	12	179	55	824	23	342	7.8	7.2	7.5
	Max.	1507	15	211	75	1052	34	473	8.8	21.8	7.8
Apr. -	Ave.	1076	6	80	38	508	18	237	8.3	5.1	7.7
	Max.	1312	9	112	53	662	27	336	8.8	6.2	7.7
May -	Ave.	757	9	81	42	379	17	152	8.0	9.4	7.5
	Max.	882	11	116	52	550	18	175	8.7	15.9	7.7
June -	Ave.	611	7	56	33	263	15	122	7.9	1.2	7.6
	Max.	722	11	85	48	373	23	174	8.8	2.6	8.0
July -	Ave.	677	6	51	37	298	17	115	7.3	2.4	7.7
	Max.	733	10	82	48	394	14	150	7.7	5.2	7.8
Aug. -	Ave.										
	Max.										
Sept. -	Ave.										
	Max.										

NPDES Permit Limits - December 1 through April 30

Ave.	-	32	431	-	1462	-	674	7	6.0	13	6.0 - 9.0
Max.	-	43	800	-	2713	-	1396			28	

NPDES Permit Limits - May 1 through November 30

Ave.	-	26	357	-	1212	-	674	7	6.0	13	6.0 - 9.0
Max.	-	40	744	-	2523	-	1396			28	

LABORATORY - H. G. ColemanA. Safety

There were no safety incidents in the laboratory this month. The safety meeting topic was the safe operating procedures for the lab mill oil heaters, presented by B. J. Harrison.

B. Customer RelationsCustomer Contacts

7/21 - HGC visited Klockner to discuss quality problems with 5305 - contamination and graininess in thin film applications.

Requests for Corrective Action

<u>Date</u>	<u>Customer</u>	<u>Product</u>	<u>Reason</u>
7/11/88	Master Halco -Olney, IL	45541 Nat	Stringers

Customer Problem Reports

<u>Date</u>	<u>Customer</u>	<u>Product</u>	<u>Reason</u>
7/7/88	Times Fiber -Chatham, Va	39012 Blk	Spark failures

STATUS: Retested retains for 20 sec. hard particles - looked good; samples in Ponca City for analysis.

7/12/88	Southwire -Osceola, AR	1220-06X	Low on wire IRs.
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STATUS: R&D investigating; QC records indicate no problems.

7/15/88	Available Plastics -Huntsville, AL	80273G	Metal fragment
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STATUS: Metal does not appear to have come from our plant. RESOLVED

7/25/88	Vinyl Building Products -Oakland, NJ	290-61 Wht 121	Burning; yellow streaks.
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STATUS: All QC data and follow-up testing looks normal and consistent: BJH to visit them.

LABORATORY - ContinuedCustomer Problem Reports - continued

<u>Date</u>	<u>Customer</u>	<u>Product</u>	<u>Reason</u>
7/29/88	Corelmex -Mexico	38401 Orange 61	Light color

STATUS: Color rematched by B. J. Harrison. RESOLVED

Waivers Issued

<u>Customer</u>	<u>Product</u>	<u>Reason</u>	<u>No.</u>
Essex Group	5415	Bulk Density	3 RC

C. RVCM SummaryRVCM of In-Process Samples

The following is a summary of residual VCM results on in-process samples. None of the reactor daily averages exceeded 400 ppm during the month of July, 1988.

	<u>Reactor Slurries</u>	<u>Dryer</u>	
		<u>5265</u>	<u>5305</u>
Number of Samples	788	8	58
Average, RVCM	135	0.5	0.3

RVCM of Shipment Samples

The following is a summary of the residual VCM analysis of shipment samples for the month of July, 1988.

<u>Product</u>	<u>5265</u>	<u>5305</u>	<u>5385</u>	<u>5415</u>	<u>5465</u>	<u>Dry Blend</u>	<u>Pond</u>	<u>Debox</u>
No. of Samples	10	61	37	47	0	16	12	20
Average RVCM, ppm	0.1	0.1	0.1	0.0		0.0	0.9	0.3

D. Resin Process Capabilities

	<u>5265</u>	<u>5305</u>	<u>5385</u>	<u>5415</u>
Bulk Density	2.33	0.25	0.93	0.50
Inherent Viscosity	0.93	1.22	0.44	0.57
"L" Color Value	4.47	1.80	1.33	1.42
"A" Color Value	6.33	3.67	—	—
"B" Color Value	1.67	0.47	0.40	0.67
% on Pan (vs. 2% max.)	6.67	3.25	1.57	1.89 (0.22)

D. Resin Process Capabilities - continued

	<u>5265</u>	<u>5305</u>	<u>5385</u>	<u>5415</u>
% thru 140M	1.10	0.85	0.70	1.25
Drytime	—	—	0.11	0.33
Mets I.R. (vs. 95% of Control)	—	—	—	1.14 0.61
Hard Particles (% > 10)	—	—	16.7	2.0

E. Compound Quality Summary

	<u>Adjustments</u> <u>M Lbs. (%)</u>	<u>Rejections</u> <u>M Lbs. (%)</u>
Hardness	40.0 (0.60)	17.0 (0.26)
Color/Clarity	— —	7.5 (0.11)
Hard Particles	— —	55.6 (0.84)
Heat Stability	17.0 (0.26)	36.5 (0.55)
Contamination	— —	20.4 (0.31)
Dicing	— —	4.8 (0.07)
Cross Contamination	— —	7.5 (0.11)
Total	57.0 (0.86)	149.3 (2.25)

F. Dry Blend Quality Summary

	<u>Rejections</u> <u>M Lbs. (%)</u>
40 Mesh	9.0 (0.37)
Total	9.0 (0.37)

G. Quality Management Process

1. The QMP video was shown and Aberdeen's Quality Implementation Plan was explained to all Laboratory employees at department meeting this month.
2. Funds were approved for a new balance and an electronic durometer, which will improve the precision and accuracy of the I.V. and hardness tests, respectively. The equipment is expected in August.
3. Quarterly SPC charts on 1220-06X compound were issued to Southwire.
4. D. S. Cox completed a program to input, store and print our compound and dryblend QC data on an IBM PC. The data will be used for QMP purposes and quickly relayed to the control room. Project completion is expected in August.
5. 5415 Control Resin (Lot 04169) Testing:

LABORATORY - Continued

	<u>n</u>	<u>$\bar{X}$</u>	<u>$3\bar{\sigma}$</u>
Moisture	61	.168	.029
Dry Time	14	5.15	.38
Particle Size - 60M	39	1.97	1.14
- 80M	59	30.42	5.60
- 100M	60	33.13	1.75
- 120M	59	20.88	2.59
- 140M	61	7.34	1.65
- 200M	65	5.31	2.06
Pan	61	1.16	.68
Bulk Density	30	.514	.011
Color - L	19	100.62	.25
A	19	-0.05	.24
B	19	2.05	.60
Flow Time	31	7.71	1.11
Hard Particles, 7 Min.	55	4.51	3.72
Inherent Viscosity	26	1.007	.0136

H. Miscellaneous

1. D. S. Cox participated in an audit of the Exxon plasticizer plant in Baton Rouge, LA on 7/26.
2. Brian Harrison evaluated and recommended two replacements for Sunolite 160 ground wax - Sunolite 160 prill form and Rheolub 165-010.
3. Brian Harrison completed several color matches for NECO, Premier Polymers, Vytron, and Superior Rubber.

SAMPLE SHIPMENTS

JULY 1988

RESIN

<u>Ship Date</u>	<u>Product</u>	<u>Amount</u>	<u>Customer</u>
7/06/88	5265	2 lbs.	Witco Corporation
	5305	2 lbs.	
	5385	2 lbs.	

COMPOUND

<u>Ship Date</u>	<u>Product</u>	<u>Amount</u>	<u>Customer</u>
7/01/88	35852 NAT	1500 lbs.	Westwire
7/01/88	17121 WAT CL	100 lbs.	Vytron Corp.
	18031 WAT CL	100 lbs.	
7/01/88	38601 NAT	1500 lbs.	Gehr Industries Inc.
7/05/88	38551 WHI	300 lbs.	BRIntec Corp.
7/12/88	38601 NAT	50 lbs.	Advance Group
	34551 NAT	50 lbs.	
7/12/88	38601 NAT	100 lbs.	Storm Plastics
	34551 NAT	100 lbs.	
7/15/88	16851 CB 50	50 lbs.	Kasouni Mfg.
7/19/88	48451 BLK	1500 lbs.	Siegel Robert Inc.
7/20/88	16851 CB 50	50 lbs.	Plastics Techn. Inc.
7/25/88	34711 GRY 550	2 lbs.	REKO
	847 GRY 561	2 lbs.	
	18162 GRY 545	2 lbs.	
	34862 BGE 10 (BC)	5 lbs.	
7/26/88	46200-31 NAT	100 lbs.	Polychem (REKO)
7/28/88	17121 WAT CLR	50 lbs.	Proto Mold

SHIPMENTS BY PRODUCT - M LBS.	JULY 1988	FISCAL YEAR-TO-DATE
RESIN	26,262	291,552
PLASTICIZER	564	6,796
DRYBLEND	4,519	51,404
COMPOUND	7,021	69,688
TOTAL	38,366	419,440

NUMBER OF SHIPMENTS BY MODE:

	RAILCAR	VISTA BULK	TRUCK VAN	TRAILER ON A FLAT CAR	COMMON CARRIER	CUSTOMER PICK-UP	CONTAINER	TOTAL
RESIN-Bulk	117	52				103		272
Package			3	1	3	2		9
Export								
PLAST.-Bulk	2	5						7
Package					1			1
DRYBLEND-Bulk	20	5				7		32
Package			8		5	1		14
Export								
COMPOUND-Bulk	13	4						17
Package			35	2	38	41		116
Export					1		5	6
TOTAL - July	152	66	46	3	48	154	5	474
Oct 1987	182	62	56	2	51	145	1	499
Nov 1987	173	72	50	1	61	142		499
Dec 1987	154	88	38	1	85	161	1	528
Jan 1988	155	88	45	5	77	139	3	512
Feb 1988	178	97	50	2	68	168		563
Mar 1988	211	46	37	2	82	160		538
Apr 1988	170	63	44	1	58	141	6	483
May 1988	159	61	51		62	149	1	483
Jun 1988	141	65	50	2	71	134		463