ESCAMBIA CHEMICAL CORPORATION

INTEROFFICE MEMORANDUM

To: Mr. H. L. Harwell

Date: February 6, 1968

Copies:

From: J. D. Kramer

Re: January Monthly Report - Amines and PVC

AMINES

Production for the month was:

	January		Month End Plant Inventory M lbs.		
	Actual M lbs.	Budget M lbs.	Actual	Planned*	Planned 3/1/68
Methylamines, total	149	2,249	2,826	4,648	4,454
Mono	149	750	311	1,333	800
Di	0	1,083	2,404	2,744	2,954
Tri	0	416	1,111	571	700
Ethylamines, total	1,999	1,353	3,974	3,766	4,583
MEA	1,929	1,083	3,283	3,016	3,783
DEA	38	208	625	700	700
TEA	32	62	66	50	100
Isopropylamines, total	3,593**	1,383	2,641	1,288	1,313
MIPA	3,593	1,333	2,528	1,238	1,200
DIPA	0	50	113	50	113
Isobutyronitrile	0	150	796	929	700
TOTAL	5,741**	5,135	10,237	10,631	11,050

* Last monthly forecast.

** New ALL time records!

Isopropylamines were produced in the number 1 plant until January 29, when the plant was switched to methylamines. The run on isopropyl was highly successful and resulted in a new record. The modified converter designed for use on MIPA was also an outstanding success in that temperature control was excellent and there was no apparent catalyst degradation for the entire run.

Ethylamines were produced the entire month in the number 2 plant. Ether yield was the same as for December, but is still below expectations.

The methylamines plant was devoted to isopropylamines production all this period and as a result, no methylamines were produced, except off-specification material reworked via the batch stills.

Amines variances for the month were:

Methyl	$ 2,355 unfavorable
Ethyl	$27,313 favorable
Isopropyl	$44,484 favorable

The unfavorable variance in methyl reflects the startup cost on the 30th and 31st.

The favorable variance in ethyl reflects continuous operation all month without a single outage. The process costs were also lower due to the lack of downtime.

The favorable variance in isopropyl reflects the very good yield and production rates in the new reactors. The plant was continued on isopropyl an extra week until the 29th due to the extra sales of MIPA. This extra week allowed an extra million pounds of production, which really helped the variance.

During February the variance should be near zero. The shorter month and the recycle of TMA will keep the variance down. Also, no isopropyl-amines will be made. Variance in March should be $20M favorable.

POLYVINYL CHLORIDE

January production was 3,368,000 pounds as compared to the budgeted 4,080,000 pounds. The below budget rate was due to the planned five day shut-down to install the new refrigeration machines.

Volume variance was an unfavorable $21,046 in January, as compared to the projected $10,800. The difference is due primarily to underestimating the maintenance costs expected for the plant shutdown repairs.

A scheduled plant shutdown was taken on January 22 - 27, to install the new higher capacity refrigeration machines. The machines have operated smoothly since they were put on line. Major maintenance work completed during the plant outage is summarized below:

a. Changed the reactor motor hydraulic drive oil.

b. Installed new stainless bottom in number 2 blend tank and relined numbers 1, 2 and 3 blend tanks.

c. Changed steam coils on both dryers.

d. Revised piping on high pressure water cleaning system.

Mr. D. Kell of Rockwell Manufacturing visited the plant on January 22 to discuss the reactor hydraulic oil system. Conditions were reviewed for obtaining the maximum horsepower and improving the speed control on the existing reactor motor drives. Reactor speed control has been excellent as compared to previous experience after changing to a higher viscosity oil and using refrigerated water on the hydraulic oil cooler. We plan to optimize the present operation and determine the horsepower actually being obtained at the reactor drives. Any further improvements needed in reactor drive motor horsepower rating will then be developed with Rockwell.

The high pressure water system was put in service near month end and reactor cleaning techniques are being developed.

One bulk car and two trucks were accepted by Phillips Film in January. The plant quality control chemist observed the sampling and test procedures on each of these shipments on the customer's site and rejections appear to be caused by sampling problems. The initial shipment was not satisfactory based on the normal sampling procedures, but was accepted after sampling methods were changed. The sampling thief was found to introduce a large amount of metal filing contamination and has now been replaced with one made from PVC. Standardization sampling procedures is needed with Phillips so that we can correctly and properly approve resin for shipment. We plan to propose a procedure to Phillips.

A quality problem at Filmco is believed to be caused by coarse size particles based on an investigation by the Polymer group at Wilton. Production of an experimental lot screened through a 70 mesh screen is planned for testing at the customer's plant in February.

Engineering is proceeding on the specialty resins project and the major equipment is on order.

February's cost variance is projected at $7,400 favorable with a production volume of 3,833 million pounds.

J. D. Kramer

J. D. Kramer

ESCAMBIA CHEMICAL CORPORATION

INTEROFFICE MEMORANDUM

To: Mr. A. K. McMillan

Date: February 5, 1968

Copies:

From: M. B. Rogers

Re: PVC Monthly Report
January, 1968

SUMMARY

January prime production was 3, 368, 000 lbs. against 3, 400, 000 lbs. projected. The monthly average budgeted production of 4, 080, 000 lbs. was not possible because of a five-day shutdown to install the new refrigeration machines.

The shutdown went on schedule and the new refrigeration machines are running smoothly.

Reactor agitator speed control appears markedly improved by changing to a higher viscosity hydraulic drive oil and putting refrigerated water on the oil cooler. A program for determining optimum mechanical clearances and operating conditions was developed with the hydraulic system manufacturer's representative.

The high pressure water system was put in service and reactor cleaning techniques are being developed.

Rejections by Phillips Films appear to be caused by sampling problems. A sample thief with a PVC liner to eliminate metal shavings proved successful at the customer's plant.

A truck rejection by Filmco appeared to be caused by larger size particles which do not fuse completely in their blown film application. A rescreening operation was unsuccessful. Finer screens will be used as the next production run is dried.

Variance for January was $22, 040 unfavorable due primarily to volume variance and major maintenance during the shutdown.

STATISTICS

	January		December	
	Actual	Budget	Actual	Budget
Prime Production, M lbs.				
Month	3,368	4,080	4,064	4,300
Year to Date	3,368	4,080	46,900	51,000
Off-Grade Production, % of Total				
Month	6.0	3.0	4.0	3.3
Year to Date	6.0	3.0	4.1	3.3
Bulk Production, % of Prime				
Month	47.2	57.5	44.4	62
Year to Date	47.2	57.5	55.0	62
Shipments, M lbs.				
Prime	3,759	-	4,256	-
Off-Grade	422	-	170	-
VCl Efficiency, %				
Month	94.8	94	96.2	94
Year to Date	94.8	94	94.2	94
Reactor Availability, % of Available Hours				
Month	*83.6	-	84.0	-
Year to Date	*83.6	-	81.7	-

* Based on operating time only and excludes 1,680 reactor hours lost during refrigeration installation shutdown.

Reactor Downtime, % of Available Hours				
Mixing Solutions in Reactor	1.1	-	0.6	-
Cleaning & Washing Reactor	7.2	-	5.3	-
Scheduling Charges	2.1	-	2.9	-
Changing Types	1.3	-	2.1	-
Copolymer Production	0.0	-	0.3	-
Slow Recovery	0.1	-	0.2	-

STATISTICS (continued)

	January Actual	January Budget	December Actual	December Budget
Reactor Downtime % of Available Hours (continued)				
Low Drying Rates & Dryer Line Cleanout	1.8	-	1.4	-
Hydraulic Motor Repairs	0.1	-	0.3	-
Misc. Reactor Maintenance	0.1	-	0.1	-
Dryer Maintenance	0.0	-	0	-
Electrical or Instr. Maint.	0.1	-	0.2	-
Miscellaneous	2.5	-	2.4	-
Experimental Batches	0	-	0.2	-
Total	16.4	-	16.0	-
Product Mix, M Lbs. Prime Resin				
Group I	1,886	2,154	1,759	2,786
Group II	1,210	1,010	1,080	975
Group III	272	603	255	539
Group IV	0	23	215	0
Group V	6	262	700	0
Group VI	0	32	55	0
Group VII	0	0	(170)*	(65)*
Total	3,368	4,084	4,064	4,300

* Ground resin not included in total.

	January Hours	January %	December Hours	December %
Payroll				
Regular	4,810	-	6,557	-
Unscheduled Overtime	314	6.1	405	5.8

PRODUCTION

1000 Series

Types produced: 1185, 1200, 1225, 1217, 1230, 1250, 1250X-2.

One shipment of 1250X-2 was rejected by the customer, Filmco, because of an unusual type of gel or "fisheye" believed to be caused by larger size particles. The gel level was made satisfactory experimentally by laboratory screening through a 60 mesh screen, but an attempt to rescreen in the plant was unsuccessful. A finer scalping screen will be used in drying the next production run. Attempts to control particle size by minor recipe variations were unsuccessful.

Extensive tests show that metal particles from the sampling probe is the major cause of apparent contamination and rejections of type 1250 by Phillips Films. The sampling problem was demonstrated by N. S. Barranco at the customer's plant January 13 when a load that would have been rejected by the customer's standard sampling procedure was accepted after sampling revisions. A rigid white PVC core in a stainless steel sheath appears to give minimum contamination, and this type sampler is to be fabricated for the customer. Other improvements in the production operation and in the loading equipment and procedures were continued to further reduce the base contamination in the resin.

2000 Series

Types produced: 2185, 2200, 2225, 2160, 2250, and 2170.

The low bulk density problem with type 2185 persisted through several recipe variations in the Pensacola plant and Wilton pilot plant. An earlier recipe using a different surface active agent produced satisfactory product.

Production of other types was normal.

3000 and 4000 Series

Types produced: 3185.

Type 3185 production was all prime grade, but none met the more stringent, hand picked "4185 SP" size distribution requirements through several recipe variations. Improved agitation with the newly charged higher viscosity hydraulic drive oil is expected to improve particle size control in future runs.

6000 Series Copolymers

No copolymers were produced in January.

8000 Series

Types produced: 8217.

Production was routine.

Ground Resins

Closer control and various minor operating improvements have reduced ground fusion rejections from over 25% to less than 5%. The major outstanding quality problem is a mottled or salt-and-pepper effect in 4185-2S fusion resin ground from type 3185 for one critical customer, G. S. Plastics. Standard type 2185 is difficult to grind and excessive tailings are produced by the screening required for a satisfactory product. Old 2185 produced in 1965 by an experimental recipe was ground into an excellent product acceptable to G. S. Plastics. It may be necessary to produce this type specifically for grinding feed.

Tailings and Off-Grade

Off-grade production was as follows:

Off-Grade	Reason Off-Grade	Quantity	% of Total Production
Type 2185	Low bulk density	42,200	1.2
Type 2225	High fisheyes	38,000	1.1
Tailings	--	95,200	2.6
Floor Sweeps	--	38,000	1.1
Total			6.0

MAINTENANCE

The PVC plant was shut down January 22-27 for installation of the two new refrigeration machines. Major maintenance performed during the shutdown was as follows:

1. Put stainless steel bottom in Number 2 blend tank and sandblasted and recoated the carbon steel sides and top in blend tanks 1, 2, and 3.

2. Changed the reactor motor hydraulic drive oil.

3. Installed new steam coils in the north dryer and replaced the south dryer coils with used coils that had been cleaned and pressure tested.

4. Exchanged reactor baffles between Number 2 and Number 4 reactors to have the worst baffle in Number 4 which is to be removed for reglassing.

5. Repaired all reactor relief valves and all malfunctioning hydraulic oil and vinyl chloride valves.

6. Repaired baffles in dryers.

7. Cleaned and checked weigh tank scales.

8. Repaired holes in the north stripper.

9. Revised the centrifuge slurry feed line to accommodate magnetic flow meters.

10. Revised the high pressure water cleaning system piping.

The shutdown went on schedule and the new refrigeration machines are operating well.

Mr. D. Kell of Rockwell Manufacturing visited the plant January 22 to discuss the reactor hydraulic drive system and oil changeout during the shutdown. A procedure for determining optimum oil viscosity and reducing pump clearances to increase power was developed.

GENERAL

Quality problems with Phillips type 1250 and Filmco 1250X-2 were discussed under PRODUCTION, 1000 Series, above.

Catalyst levels are being increased in about 4% increments to re-establish reaction cycle time limits with the new refrigeration machines. Reductions up to 1/2 hour have been achieved, but data is limited at month's end. A check with Research established that heat stability may be affected by too much catalyst, and heat stability checks will be included in the cycle time reduction program.

Piping revisions and control problems have slowed effective use of the high pressure water cleaning system. Various nozzle arrangements were constructed and the equipment is in service by operations. The manufacturer's representative is scheduled in the plant the second week in February to help with additional refinements in hardware and technique.

Engineering is proceeding on the specialties equipment modifications. The dust collection equipment is expected by March 1. The dryer filters and centrifuge discharge scroll may be delayed beyond March if expediting efforts are unsuccessful. The funds for the specialties air compressor may be combined in a central air supply system and a temporary compressor arrangement would be required initially.

VARIANCE

Variance analysis for January is as follows:

FAVORABLE		UNFAVORABLE	
By-product Credit	$ 6,360	Volume Variance	$24,360
VCL Monomer			
Price	13,200		
Efficiency	1,360		
Process Costs		Process Costs	
Elec.-Steam	380	Maintenance	12,010
Salaries	440	Payroll Overhead	713
Misc.	670	Laboratory	2,107
Packaging Vol. Variance	1,090	Packaging-Process Costs	2,260
		Other (by difference)	4,090
Subtotal	$23,500		$45,540

Net Unfavorable - $22,040

FEBRUARY PROJECTION

Production (29 days)	3,833,000 lbs.
Cost Variance	
Monomer Price	($14,300)
Volume	6,900
Net	(7,400) Favorable

M. B. Rogers

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