



ESCAMBIA PLANT
INTEROFFICE MEMORANDUM

To: E. A. Primeau Date: 15 August 1975
From: D. H. Francke Copies: J. T. Barr
J. M. Diamond
Re: PVC Monthly Report, R. E. Jones
July, 1975

Summary:

Production for July, 1975 was 4.79MM lbs. of prime or 72.9% of budget. Production was below budget primarily because of stripper limitations (1.4MM lbs.) and tests on PVC 2250 resin (.3MM lbs.).

Work on OSHA Projects continued with progress being seen on the Washout System and the Access Control System. Personnel monitoring for the month showed 75.5% of the 8 hr. TWA samples to be below 1.0 ppm with 53.3% being below 0.5 ppm. Of the 15 minute TWA samples, 93.6% were below 5.0 ppm and 53.1% were below 1.0 ppm.

System variance for the month was \$43.3M favorable. The variance was primarily due to favorable variances of \$15.0M in spending, \$8.4M in raw material efficiency and \$92.8M favorable price variances in monomer and utility costs. They were offset in part by unfavorable variances of (\$44.8M) processing efficiency, (\$10.5M) volume variance and (\$11.8M) sales variance.

AP00041508

EXPLANATION OF MAJOR VARIANCES

Escambia PVC Plant, July, 1975

	<u>Non-Controllable</u>	<u>Controllable</u>	<u>Total</u>	<u>Explanation of Major Contributors</u>	
1. <u>Manufacturing Variance</u>	\$64.7M	(\$21.4M)	\$43.3M		
<u>from Budget</u>					
a. Spending	\$ 8.7M	\$.5M	\$ 9.2M		
				(\$1,750)	Salary premium pay high primarily due to coverage for vacations & illness and from high purchased labor.
				(\$2,400)	Utility usages higher than budgeted.
				(\$1,285)	Bagging costs high due to maintenance & materials.
				\$6,751	Chemical cleaning favorable due to good DMF efficiency.
				\$17,607	Favorable depreciation, \$18.0M, taxes \$1.8M and Plant O/H, \$4.9M offset by unfavorable insurance, (\$4.9M) and amortization (\$2.2M).
				(\$1,953)	Unfavorable professional services due to OSHA-VCI physicals.
				\$1,618	Favorable process chemicals of \$1,276 and effluent chemicals of \$342.
				(\$3,513)	Unfavorable laboratory (\$585), effluent control, (\$1,085) and materials and supplies, (\$1,843)
				(\$58,000)	Utility and overhead variance
b. Raw Material Efficiency	0	\$ 8.4M	\$ 8.4M	\$9,114	VCI efficiency at 95.3% vs. 94.5% budget.

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EXPLANATION OF MAJOR VARIANCES

Escambia PVC Plant, July, 1975

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	<u>Non-Controllable</u>	<u>Controllable</u>	<u>Total</u>	<u>Explanation of Major Contributors</u>
b. R.M. Efficiency (continued)			\$1,276 (\$2,633)	Good process chemicals usage Offgrade credit
c. Process Efficiency n.a.		(\$44,8M)	(\$44,8M)	
			(\$29,503)	Low PVC 2200 rates due to increased cleaning frequency needed to maintain quality
			(\$15,417)	Low PVC 1230 rates caused by excess reactor time not requiring minimum cycles.
2. <u>Volume Variance</u>	(\$10.5M)		(\$10.5M)	
			(\$10,500)	Low production rates due to extended stripping requirements for low monomer content.
3. <u>Sales Variance</u>	(\$11.8M)		(\$11.8M)	
			(\$5,024)	Low bagging volume due to low sales of bagged material.
			(\$6,785)	PVC2250 test runs alleviate GS & Plastics supply problems caused several reactors to be out of service.

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EXPLANATION OF MAJOR VARIANCES

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Escambia PVC Plant, July, 1975

	<u>Non-Controllable</u>	<u>Controllable</u>	<u>Total</u>	<u>Explanation of Major Contributors</u>	
4. <u>Price Variance</u>	\$81,171	n.a.	\$81,171	\$76,171	VCM price variance
				\$16,600	Utility price variance due to ethane/methane usage.

AP00041511

July

Production for July consisted of PVC 1225, PVC 1230, PVC 1250, PVC 2200 and PVC 2250. Except for an early contamination problem, all resin types were basically without quality problems during the month. Early contamination problems were traced to a buildup primarily in one of the weigh tanks. Cleaning the weigh tanks eliminated the problem.

PVC 1230 production was normal throughout the month with very few problems. There was one batch of PVC 1230 which was mischarged and resulted in about 1,500 lbs. of BBs and chunks. This appeared to be caused by a slow agitator setting. One railcar of PVC 1230 was produced using a Methocel K-35 recipe. This material was within a specification and was shipped for evaluation. If there are no processing problems at customer locations, a longer run of PVC 1230 using a Methocel K-35 recipe is anticipated. Use of Methocel K-35 in place of a PVC-Tween suspension system is desirable for several reasons. These include having only one type of solution for general purpose resin suspensions, reducing the number of raw materials, and having the capability to filter solutions when both PVC 1230 and PVC 1225 are made at the same time.

Several batches of special PVC 2250 runs were made during July using a Geon Latex 450X3 additive. These tests involved using both full and reduced space charges and were limited to one stainless and one glass reactor to help limit the number of variables. Both lots of material made were tested by the customer and this material was accepted as good material. Future plans for production include the use of a latex additive. Which latex will be decided after laboratory testing of different latex additives since Geon 450X3 has such a short shelf life. These tests resulted in a loss of 300M lbs. of production due to out of service reactors.

The residual monomer levels for lot and shipment composites dropped significantly for the PVC 1230 resin made during the month. No particular changes in operation were instituted. Following is a table of the monomer content, by type, for all shipments and lots during the month:

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	PVC 1225	PVC 1230	PVC 1250	PVC 2200	PVC 2250
Average VCM					
Lot Composites	29.2	36.6	22.4	14.7	30.5
Shipment Composites	14.8	20.9	12.3	4.7	No shipments

There were no major maintenance problems during July which caused production outages. Work on the weigh tanks for cleaning and other work resulted in the loss of about 65M lbs. of production or 7.6 batches. To eliminate the reoccurrence of the problems due to buildup, the use of a standpipe in the recovered monomer tanks was started. This will permit the separation of a water layer which can be removed prior to charging to the weigh system. In addition, a filter and caustic bed are planned for the charge system.

The Nash Compressor continued causing problems during the month. The Nash representatives visited the plant and recommended a reduction in the seal water flow rate be made to stop the noisy operation. This was done along with a revision to the separator system and the noise problem ended. Shortly after that, a noticeable reduction in capacity was observed. After a full check of the control systems, a compressor test was made which indicated compressor problems. The compressor was removed and torn down revealing a worn outlet core. The part is in transit as of this writing. There is no positive cause for the worn part.

The new steam generator was installed during the month replacing the old condensate hold tank. Along with the elimination of a three horsepower motor for condensate transfer, there should be an increase in the condensate credit to PVC.

During July, 1975 sodium nitrite was used almost exclusively as short stop. There were no problems encountered with this material and it was found to be on good shortstop. No deterioration of the inhibiting effect was seen even in reactors held for extended periods of time. Further use is planned to determine whether it will replace AMS as our shortstop.

AP00041513

VCI Exposure Programs

a. Personnel Monitoring

The personnel monitoring during July continued with the frequency being twice/month per man entering the PVC area. The sampling schedule is set up to monitor each person entering the PVC area during the month on an 8 hour TWA and a 15 minute TWA sample. The result for July showed that on 8 hours only one sample was over 3 ppm. Of a total on 45 - 8 hr. TWA samples, 53.3% were below 0.5 ppm, 75.5% were below 1.0 ppm and 97.7% were below 3.0 ppm. Of a total of 47 - 15 minute TWA samples, 34.0% were below 0.5 ppm, 53.1% were below 1.0 ppm, 89.3% were below 3.0 ppm and 93.6% were below 5.0 ppm.

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8 HOUR SAMPLES

<u>PPM</u>	<u><.5</u>	<u>.5-1</u>	<u>1-3</u>	<u>3-5</u>	<u>5-10</u>	<u>10-15</u>	<u>>15</u>
Supervisor	5	0	2	0	0	0	0
Senior	2	0	1	1	0	0	0
Reactor	2	1	2	0	0	0	0
Solution	1	2	1	0	0	0	0
Recovery	3	0	1	0	0	0	0
Finishing	3	1	0	0	0	0	0
Utility	2	1	2	0	0	0	0
Artisan	2	1	0	0	0	0	0
Maintenance	4	4	1	0	0	0	0
Subtotals	24	10	10	1	0	0	0
% of Totals (45)	53.3	22.2	22.2	2.2	0	0	0

15 MINUTE SAMPLES

Supervisor	5	1	1	0	0	0	0
Senior	3	1	1	0	0	0	0
Reactor	0	0	3	0	0	0	0
Solution	2	1	2	0	0	0	0
Recovery	0	0	4	0	0	0	0
Finishing	1	1	0	1	0	0	0
Utility	0	2	3	0	0	1	1
Artisan	1	1	1	0	0	1	0
Maintenance	4	2	2	1	0	0	0
Subtotals	16	9	17	2	0	2	1
% of Total (47)	34.0	19.1	36.2	4.3	0	4.3	2.1

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VCl Exposure Programs (cont'd)

b. Area Monitoring System

The area monitoring system operated throughout the month with only a portion of the sample points giving good analysis. On about the seventh of the month it was discovered that all of the sample tubing from the reactor building had degraded to the point of cracking open. When this problem was found, it was possible to make repairs to only some of the sample points due to tubing availability. The repairs were made and the plant ran on area monitoring for the second and third floors only during the rest of the month. The problem seemed to be at least two fold. First, it was found that a lower priced poly-propylene tubing had been used originally since it was available. This was clear (unpigmented) tubing and it was discovered, after the bad tubing was found, that unpigmented poly-propylene tubing has poor sunlight resistance. This is being corrected by replacement with black tubing. The second problem was the close proximity of one group of sample lines to a steam traced line. The added heat factor seemed to increase the degree of degradation. Further investigation indicated that all of the pigmented tubing inside the building was good and there should be no problem with pigmented poly-propylene tubing outside. The alarming sequence was quickly reprogrammed to alarm and light based only on the good sample points and adequate coverage was maintained.

c. OSHA Projects

Work continues on the OSHA Projects CEA. Delivery of the access control turnstiles is expected at the end of August and installation will follow. The washout header system installation continues and it should be in use by the end of August.

AP00041516

VCl Exposure Programs (cont'd)

d. Breathing Air System

Two vessels were located in July for use as carbon beds and the drawings should be issued in the first part of August. These tanks require only slight modification and they can be piped up for use.

e. Second South Stripper

Approval for the second south stripper was received and the vessel has been purchased. Engineering has begun on the foundation drawings and layout.

AUGUST

Production for August, 1975 is projected at 5.3MM lbs. or 80.6% of budget. This will result in a volume variance of (\$60.8M) unfavorable. Maintenance should be at budget. Favorable variances from VCl efficiency and non-controllables should account for \$16.6M and \$17.6M favorable respectively. Total system variance is projected at (\$26.0M) unfavorable.

Future Plans

The future plans for the Escambia PVC Plant include the following items:

1. Complete debugging of the Bristol/Bendix System to improve reliability and to simplify programming will begin in August. This will give more credibility to all of the analysis including the material balance numbers and will make debugging of the access control system easier when it is set into operation.
2. Plans for setting up data summary programs using the data generated by the OSHA related functions are being made. This data, if summarized correctly, can probably lead to the identification of some problem areas but will, at least, tell us how we are operating with respect to government regulations.

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3. A series of tests on PVC 1230 using a Methocel K-35 suspending system will be made during August to see if a switch to this system is practical.
4. The use of a latex additive is to be tested in PVC 2200 production in August to determine if it is useful in reduction in fouling and/or fisheyes. Production of PVC 2250 for customers is already planned for a latex system.

DH F
D. H. Francke

DHF/cd

Attachments

AP00041518

EXHIBIT I

Statistics

	<u>July, 1975</u>		<u>Year to Date</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
Prime Production, M lbs.	4,790	6,381	52,993	61,058
% of Budget	75.1		86.8	
<u>Off Grade</u>				
Homopolymer	88	37.5		
Tails	84	96.7		
Sweeps & PTS	8	28.1		
Total Production	4,970	6,543	55,400	62,641
% of Budget	76.0		88.4	
Off Grade, % of Total	3.6		4.3	
Bulk Production, % Prime	96.5		82.3	
VCM Efficiency	95.3	94.5	96.0	94.5
VCM Accountability	97.4		98.6	
Reactor Availability	68.6		72.6	

Production Sequence, July, 1975

Type	<u>North Line</u>		Type	<u>South Line</u>	
	<u>Hours</u>	<u>Batches</u>		<u>Hours</u>	<u>Batches</u>
1250	37	5	1225	525	49
2250	58	4	1230	2,608	219
1230	60	5	1225	562	45
1225	237	19	1250	522	43
1230	429	36			
2350	87	6			
2200	2,607	203			
	3,515	276			

Production Summary - Prime

Type	<u>M LBS.</u>		<u>LBS. / HOUR</u>			<u>Lb. / Annual Gallon</u>	
	<u>July</u>	<u>YTD</u>	<u>July</u>	<u>Budget</u>	<u>% Budget</u>	<u>Actual</u>	<u>Budget</u>
1225	890	6,552	672	646	104.1	1,364	1,311
1230	2,217	28,366	716	822	87.1	1,543	1,669
1250	321	557	574	-	-	1,165	-
2160	-	946	-	663	-	-	1,425
2200	1,295	14,386	497	685	72.5	1,069	1,473
2250	67	2,190	462	400	115.5	993	860

AP00041519

MATERIAL BALANCE

PMB015

ESCAMBIA PVC PLANT

MONTH ENDING 31 JULY 1975

	LBS SUB-TOTAL	LBS TOTAL	% OF VCL CHARGED SUB-TOTAL TOTAL
A VCL USED BASED ON BILLING WEIGHTS		5,213,433	100.00
B PVC OUT TO PRODUCT		4,970,000	95.33
1. PVC PRIME	4,790,000		91.88
2. PVC OFF-GRADE	180,000		3.45
C PVC LOSSES		26,497	.51
1. PVC TO DUMP AS SCRAP	22,640		.43
2. DRYER DISCHARGE	533		.01
SOUTH LINE	452		
NORTH LINE	81		
3. PVC IN EFFLUENT WATER	3,324		.06
D VCL LOSSES		79,901	1.53
1. DRYER DISCHARGE	1,643		.03
SOUTH LINE	843		
NORTH LINE	800		
2. STRIPPER EVACUATION	10,533		.20
NORTH	4,736		
SOUTH	5,797		
3. VCL IN EFFLUENT WATER	344		.01
4. VCL FROM OPEN REACTORS	25,136		.48
5. VCL FROM BLEND TANK VENT	75		.00
6. VCL FROM CONDENSER VENT	13,274		.25
7. VCL FROM REACTORS VENT			.00
8. VCL FROM PURIFICATION COLUMN			.00
9. VCL WEIGHT DIFFERENCE	28,896		.55
TOTAL ACCOUNTED FOR OUT		5,076,398	97.37
TOTAL UNACCOUNTED FOR		137,035	2.53

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MATERIAL BALANCE

P48015

ESCAMBIA PVC PLANT

Y T D ENDING 31 JULY 1975

	LBS SUB-TOTAL	LBS TOTAL	% OF VCL CHARGED SUB-TOTAL TOTAL
A VCL USED BASED ON BILLING WEIGHTS		57,702,103	100.00
B PVC OUT TO PRODUCT		55,401,600	96.01
1. PVC PRIME	52,993,100		91.84
2. PVC OFF-GRADE	2,408,500		4.17
C PVC LOSSES		595,562	1.03
1. PVC TO DUMP AS SCRAP	424,344		.74
2. DRYER DISCHARGE	122,357		.21
SOUTH LINE	104,515		
NORTH LINE	17,842		
3. PVC IN EFFLUENT WATER	48,861		.08
D VCL LOSSES		897,504	1.56
1. DRYER DISCHARGE	190,444		.33
SOUTH LINE	96,762		
NORTH LINE	93,682		
2. STRIPPER EVACUATION	59,489		.10
NORTH	26,200		
SOUTH	33,289		
3. VCL IN EFFLUENT WATER	12,998		.02
4. VCL FROM OPEN REACTORS	178,503		.31
5. VCL FROM BLEND TANK VENT	44,811		.08
6. VCL FROM CONDENSER VENT	68,430		.12
7. VCL FROM REACTORS VENT	39,000		.07
8. VCL FROM PURIFICATION COLUMN			.00
9. VCL WEIGHT DIFFERENCE	303,829		.53
TOTAL ACCOUNTED FOR OUT		56,894,666	98.60
TOTAL UNACCOUNTED FOR		807,437	1.40

AP00041521