



E. I. DU PONT DE NEMOURS & COMPANY
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1980 COST IMPROVEMENT ACCOMPLISHMENTS

Attached is subject report detailing 1980 cost reductions for Colored Pigments R&D groups at Newark and Newport. Variances greater than 20% from forecast have been explained.

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Attachments

NEWPORT R&D COST IMPROVEMENT ACCOMPLISHMENT REPORT - QA - 1980

Year	Firm (Accomplished)					Goal (Accomplished)					Goal			
	1980					1980					1981	1982	1983	1984
	I	II	III	IV	Yr.	I	II	III	IV	Yr.	Carryover	New		
Quarter	0	0	15	0	15						124	40	0	
Sodium Methylate	23	0	0	0	23								0	
Methanol														
Low Cost Gamma QA														
Non-Cr QAQ					0									
Dowtherm						88	88	51	64	291		70	0	
Yield						81	81	80	62	305		100	0	
Beta Crude						5	0	0	0	5		-		
Reduce Substd.**						0	0	17	18	35		128	0	
RT-899						5	0	0	0	5				
QA Low Cost Beta												0		
Alt. QA Ingredients											265			
Membrane Press												0		
Water Conservation												0		
Alcohol Recovery													0	
Micro Processor													0	
XYT-959												0	0	
XRT-256													0	
QA Spray Dryer												0		
Low Cost Trans. Red.												0		
Low Cost DQA Oxidation													0	
Energy					(215)							80		
Site Total***.														
Current	21	0	15	0	38	179	169	148	144	641		616	415	
Original	38	39	40	62	179	22	23	139	186	370		1479	1010	
Site E Total														
Current					(215)							80		
Original	-	-	-	-	0							0		

*** - - - - - will show at Newport

1980 COST REDUCTION ACCOMPLISHMENTS

PROGRAMS WITH VARIANCES GREATER THAN 20%

QA

- o Sodium Methylate (\$17M vs. \$50M Fc.; \$139 vs. \$50 1980-84).
Only claimed additional savings for 1981 rather than 1979 carryover on forecast; will claim in 1981; additional savings potential refined.
- o Low Cost Gamma QA \$0 vs. \$54M; \$0 vs. \$225 (1980-84).
Program not active at Newport; Premilling for RT-796 at Jackson Lab.; original trials did not achieve quality.
- o Non-Cr QAQ \$0 vs. \$50M Fc.; \$70 vs. \$169M in 1980-84).
Introduction of technology delayed due to environmental problems; process successfully demonstrated 1/81; savings will accrue in 1981; no basis for savings beyond 1982.
- o Dowtherm (\$291M vs. \$180M goal; \$391 vs. \$180M in 1980-84).
Improved utilization using "isolated" Dowtherm concept which eliminates solvent recovery processing for 35% of stream.
- o Yield (\$305M vs. \$30M goal; \$379 vs. \$30M in 1980-84).
Improved yields (~10%) by eliminating pyrolysis Dowtherm from SSE reaction (Isolated Dowtherm).
- o QA - Low Cost Beta (\$0 vs. \$25M goal; \$0 vs. \$143M in 1980-81).
Program not active at Newport; dropped at Jackson Lab.
- o Membrane Press \$0 vs. \$110M in 1981).
Program terminated following basic data; need for press evaporated. May re-examine at later date.
- o Water Conservation (\$0 vs. \$23M in 1981).
Program terminated in favor of energy.
- o Alcohol Recovery (\$0 vs. \$100M in 1983).
Program terminated as unattractive following laboratory work.
- o Microprocessor (\$0 vs. \$70M in 1983).
Program terminated as economically unattractive.
- o XRT-959 (\$0 vs. \$560M in 1981-83).
Product commercialized in 1980 with 3 yr. PTE of \$1MM; this does not constitute cost reduction by current rules.
- o XRT-256 (\$0 vs. \$750M in 1981)
Process demonstrated; customer response lacking; may have future potential as resale product; product does not constitute cost reduction by current rules.

Why so many \$0's?

QA (cont'd.)

- o Reduce Substandard (\$128 vs. \$48M in 1981-84).
Additional opportunities identified.
- o QA Spray Drier (\$0 vs. \$100M in 1981).
Work to increase capacity does not qualify as cost reduction; energy savings will be reported under different line item.
- o Low Cost Transparent Red (\$0 vs. \$785M in 1981).
Program not active at Jackson Lab.; RT-273 commercialized; does not qualify as cost reduction.
- o Low Cost DQA Oxidation (\$0 vs. \$399M in 1982-84).
Program terminated at Jackson Lab.

NEWPORT R&D COST IMPROVEMENT ACCOMPLISHMENT REPORT - CPC - 1980

Year	Firm (Accomplished)				Goal (Accomplished)				1981		1982		1983		1984	
	1980				1980				Carry Over		1981		1982		1983	
	I	II	III	IV	Yr.	I	II	III	IV	Yr.	Carry Over	New	I	II	III	IV
Quarter	28	29	25	9	91											
Pigment Losses												88				
Crude Consold.	82	246	247	575	310							0	0	0	0	0
Presscake Facil.				0								59				
Low Cost Alpha Proc.				0								0	0	0	0	0
Low Cost Beta CPC				0								0	300	0	0	0
Kerosene Red.										0		70	75	75		
Green Y										0		0	0	0	0	0
Membrane Press										0		59				
Reduce Substd.**	0	0	20	20	40							54	15	15	15	15
Automate Blue/Green													0			
Water Conservation												0				
Molten Phthalic Anhyd.												0				
HSO ₃ Cl Green CPC															0	
Impr. GE Quality													0			
Energy					(76)							30	75	75	0	
Site Total -																
Current	28	111	291	276	706	310	0	0	0	0	0	532	585	165	15	15
Original	0	16	333	334	683	563	47	48	187	238	174	686	743	953	117	117
Site E Total																
Current					(76)							30	75	75	0	0
Original					0							20	0	0	0	0

** Newport R&D work; will show at Newark

1980 COST REDUCTION ACCOMPLISHMENTS

PROGRAM WITH VARIANCES GREATER THAN 20%

CPC

- o Crude Consolidation (\$575M vs. \$310M Fc.).
7 months vs. 6 months operation; improved manpower efficiencies achieved. *how many?*
- o Presscake Facilities (\$0 vs. \$70M Fc.).
Installation of the membrane press was delayed (delivery); startup occurred 1/81 with \$118M savings forecasted for 1981; including second press (see below).
- o Low Cost Alpha Process (\$0 vs. \$48M Fc.; \$0 vs. \$17M in 1981).
Program not active at Newport; will review breaching vs. solvent milling BT-284 for merits.
- o Low Cost Beta CPC (\$0 vs. \$158M Fc.; \$300 vs. \$625M in 1980-84).
WHAT DOES THIS MEAN? Satisfactory technology not developed per Jackson Lab. forecast; BT-487 partially demonstrated; BT-417 to be demonstrated IQ/81; total savings limited by limited technology and lower forecast.
- o Kerosene Reduction (\$0 vs. \$50M goal; \$220 vs. \$130M in 1980-84).
No manpower; improvements to decanter will be implemented IQ/81 with resulting increased savings.
- o Manufacture Green Y (\$0 vs. \$190M goal; \$0 vs. \$809M in 1980-84).
Satisfactory quality to allow elimination of shading component never plant demonstrated; program terminated due to impending business decision.
- o Membrane Press (\$0 vs. \$100M goal; \$0 vs. \$50M in 1981).
Installation delayed (delivery); installed 1/81 with \$118M savings forecasted for 1981; 2nd. press to be installed IIQ/81. Total savings forecasted use of 2 presses (\$370M); reduced due to decreased sales volume.
- o Flash Distillation (\$0 vs. \$60M in 1981).
Program associated with Green; terminated per business plans.
- o Automate Blue/Green (\$0 vs. \$40M in 1982)
Program terminated in 1980.
- o Water Conservation (\$0 vs. \$23M in 1981).
REACTIVATES? Program terminated in favor of energy.
- o Molten Phthalic Anhydride (\$0 vs. \$80M in 1981)
Program terminated in 1980; poor economics.

CPC (Cont'd.)

- o Reduce Substandard (\$99 vs. \$60M in 1981-84).
Identified increased savings in 1981.
- o HSO₃Cl Green CPC (\$0 vs. \$800M in 1983).
Program terminated by Jackson Lab. due to Green Business Decision.
- o Improved GE Quality (\$0 vs. \$260M in 1982).
Program terminated due to Green Business Decision.

INORGANICS
R+D COST IMPROVEMENT ACCOMPLISHMENT REPORT

PLANT - NEWARK

DATE - 2/81

(All values in thousands of dollars)

Year	FIRM (accomplished)					1981 Carry Over	GOAL (accomplished)				GOAL (forecast)					
	I	II	III	IV	Yr.		1980	I	II	III	IV	Yr.	1981 Carry Over	1982	1983	1984
Quarter																
Computer Color Reading	4	5	5	7	21	36							57	57		57
Ingredient Savings												18				
E-Tray Dryer	2	2	2	2	8											
E-Flocculation																
Liquid Alum						28						28				
Zinc Chloride													56	56		56
Continuous YE-698-D													72	144		144
NOx Scrubber	2	2	1	1	6	6							240	240		240
Eliminate Component Mfg.																
Dust Control - Krolor®	7	7	7	7	28		20	20	22	20	82		25	75	100	100
Reduce Blending							7	7	7	8	29					
Improve Moly Orange												13	42	22	24	27
Improve Krolor® Quality													59	39	44	49
Flow Control													43	87	130	130
Improve Cont. Unit Quality													72	72		
Not Forecasted-Tech Asst.							2	2	3	3	10		7			
Sodium Molybdate Yield							1	2	2	2	7					
Sodium Bifluoride Savings							2	1	2	2	7					
E-Steam Trap Inspection																
SITE TOTAL																
- Current	15	16	15	17	63	70	32	32	36	35	135	41	578	720	795	803
- Original Fcst	(17)	(17)	(32)	(76)	(142)	(184)	(42)	(42)	(64)	(116)	(264)	(465)	(411)	(1349)	(1492)	
SITE E TOTAL																
- Current	2	2	2	2	8	0	2	1	2	2	7					
- Original Fcst	(8)	(8)	(8)	(9)	(34)	(0)	(0)	(0)	(0)	(0)	(0)					

INORGANICS

VARIANCE EXPLANATION - COST REDUCTION ACCOMPLISHMENT REPORT
(ALL VALUES IN \$M)

<u>PROGRAM</u>	<u>FIRM</u>	<u>GOAL</u>	<u>ACTUAL</u>	<u>EXPLANATION</u>
Flocculation	25	0	0	Not feasible to use chemical flocculation instead of steam flocculation for Cont. Unit codes - quality suffers.
Liquid Alum	28	28	0	Project to use liquid alum instead of dry form not install. Higher priority maintenance and design manpower limitations early in the year.
Silica for Titanium	33	33	0	Use silica in place of titanium for lightfastness for Cont. unit yellows - plant trials run inferior product produced.
Continuous YE-698-D	0	82	0	Plant trials run technology needs fine tuning to obtain quality product. Revised production schedule, because of economic situation, delayed further trial.
NOx Scrubber	12	0	6	Recover nitric acid for use in making lead nitrate - system not in full operation until mid year.
Sodium Molybdate Yield	0	0	10	Technical assistance provided to improve material conversion.
Sodium Bifluoride Savings	0	0	7	Reduction in use of this raw material in inorganic yellows.
E-Steam Trap Savings	0	0	7	Savings realized from program to routinely inspect steam traps.

Not many successes?

PHTHALOCYANINE
R+D COST IMPROVEMENT ACCOMPLISHMENT REPORT
PLANT - NEWARK
DATE - 2/81
 (All values in thousands of dollars)

YEAR	FIRM (accomplished)				GOAL (accomplished)				GOAL (forecast)			
	1980				1980				1981 1982 1983 1984			
QUARTER	I	II	III	IV	Yr.	I	II	III	IV	Yr.	Carry Over	New
E-Tray Dryer	2	2	2	2	8							
Pigment Recovery						2	2	3	3	10		
Cycled Washing											90	109
Reduce Mixing						6	6	7	7	26	53	71
Not Forecasted - Tech. Asst.												
Ingredient Savings						1	2	2	2	7		
from Inerting												

SITE TOTAL												
- Current	2	2	2	2	8	9	10	12	12	43	53	180
- Original Fcst	(2)	(2)	(2)	(2)	(8)	(10)	(28)	(28)	(28)	(94)	(65)	(192)
SITE E TOTAL												
- Current	2	2	2	2	8	0				0		197
- Original Fcst	(2)	(2)	(2)	(2)	(8)	(0)				(0)		(209)

PHTHALOCYANINE

VARIANCE EXPLANATIONS - COST REDUCTION ACCOMPLISHMENT REPORT

<u>PROGRAM</u>	<u>FIRM</u>	<u>GOAL</u>	<u>ACTUAL</u>	<u>EXPLANATION</u>
Pigment Recovery	0	54	10	Excess membrane press capacity not used for CPC codes as originally forecasted. Membrane press problems.
Reduce Mixing	0	40	26	Did not reduce slow moving inventory as expected. Forecast pounds down CPC quality.
Ingredient Savings from Inerting	0	0	7	CO ₂ inerting during finishing reduced pigment loss caused by smoldering from hot embers.

DATE - 2/81
(All values in thousands of dollars)

SITE TOTAL																	
- Current	2	2	2	2	2	8	0	14	14	15	16	60	60	184	349	385	419
- Original Fcst	(2)	(2)	(2)	(2)	(7)	(13)	(33)	(9)	(9)	(9)	(10)	(37)	(0)	(256)	(22)	(351)	(397)
SITE E TOTAL																	
- Current	2	2	2	2	2	8	0					0	0				
- Original Fcst	(2)	(2)	(2)	(2)	(2)	(2)	(0)					(0)	(0)				

QUINACRIDONE

VARIANCE EXPLANATION - COST REDUCTION ACCOMPLISHMENT REPORT

<u>PROGRAM</u>	<u>FIRM</u>	<u>GOAL</u>	<u>ACTUAL</u>	<u>EXPLANATION</u>
Extend QA	5	0	0	Product quality suffers - drop program.
Ingredient savings from inerting	0	0	9	CO ₂ inerting during finishing reduced pigment loss caused by smoldering pigment from hot embers.

OTHER ORGANICS

VARIANCE EXPLANATION - COST REDUCTION ACCOMPLISHMENT REPORT

<u>PROGRAM</u>	<u>FIRM</u>	<u>GOAL</u>	<u>ACTUAL</u>	<u>EXPLANATION</u>
High Solids Press	69	35	4	Lower than expected production forecast, membrane press problems.
Drum Cleaner	40	0	0	Manpower limitations to characterize cleaning unit. Installation delays.
Reduce Mixing	0	21	50	Better progress made on liquidating slow moving inventory in Dalamar® and Watchung line.
Diazo Press	0	5	0	Tested alternate devices for diazo clarification. Manpower limitations to resume testing because of other higher priority tech. assistance programs.
Ingredient Savings from Inerting	0	0	9	CO ₂ inerting during finishing reduced pigment loss caused by smoldering pigment from hot embers.
Blend Formulations	0	0	35	Strong product standardized within shipping limits to avoid giving away product.
E-Steam Trap Inspection	0	0	1	Savings realized by routine inspection of steam traps.

NEWPORT PLANT

COST REDUCTION FORECAST/ACCOMPLISHMENT

THIRD QUARTER 1981 - SUMMARY

	<u>Realized Year to Date</u>	<u>SAVING FORECAST</u>			<u>Current Estimate</u>
		<u>Committed</u>	<u>Goal</u>		
Ingredients	479	286	626		653
Labor and Salaries	1398	755	1054		1708
Maintenance Material	247	127	355		323
Energy	21	75	135		78
Other	<u>419</u>	<u>179</u>	<u>416</u>		<u>526</u>
GRAND TOTAL	2564	1422	2586		3288
1981 Cost Reduction Index	7.4	3.3	5.7		9.3

10-23-81

NEWPORT PLANT
COST REDUCTION FORECAST/ACCOMPLISHMENT
THIRD QUARTER 1981

QA Category/Program	Responsibility	Realized Year to Date	Savings Forecast			Notes
			Committed	Goal Total	Current Estimates	
<u>INGREDIENTS</u>						
Reduced "Dowtherm" from .30 to .25	QA	(11)	-	100	--	1
New Process to Produce High Purity, Non-Bichrome QAQ	QA/R&D	18	50	70	28	6
Reduce Utilities Vs. 1980 Consumption	QA	6	60	80	12	1
Yield Increase Substitute by 2.7% and Gamma/Beta by 1.0%	QA	75	18	74	100	
Reduce Sodium Methylate	R&D	21	-	124	26	
Reduce Acetic Acid Excess by Re- ducing Methylate Excess	QA	<u>5</u>	<u>-</u>	<u>20</u>	<u>7</u>	
SUBTOTAL		114	128	468	173	
<u>LABOR AND SALARIES</u>						
Reduce Std. Crew Size from 7 to 5 People	QA	180	108	216	240	
Reduce Technical Assistance	QA	315	-	-	420	
Reduce 5 days 1 person		<u>-</u>	<u>-</u>	<u>-</u>	<u>8</u>	
SUBTOTAL		495	108	216	668	
<u>ENERGY</u>						
Reduce Steam Consumption	QA	(64)	50	80	(50)	1
<u>OTHER</u>						
Packout S/F QA Total Bins Vs.' Drums	QA	28	63	63	40	2
Reduce Sulfuric Acid	QA	4	-	-	4	
Alcohol Recovery	QA	-	-	40	-	
Reduce Substandard	R&D	106	-	128	141	
Recovery Press	QA	<u>13</u>	<u>60</u>	<u>75</u>	<u>19</u>	3
SUBTOTAL		151	123	306	204	
QA TOTAL		696	409	1070	995	

NEWPORT PLANT
COST REDUCTION FORECAST/ACCOMPLISHMENT
THIRD QUARTER 1981

CPC Category/Program	Responsibility	Realized Year to Date	Savings Forecast			Notes
			Committed	Goal Total	Current Estimates	
<u>INGREDIENTS</u>						
Raw Matls. Consumption Reduction	CPC	113	-	-	150	
Overall Yield Increase by 3%	CPC	252	88	88	330	
Kerosene Reduction from .56 to .30	CPC	-	70	70	-	4
SUBTOTAL		365	158	158	480	
<u>LABOR AND SALARIES</u>						
Consolidation - 16 Wage Roll	CPC	410	310	310	410	
Staff Reorganization - 3 Exempt 1 N/E	CPC	30	30	30	30	
Finishing Consolidation - 4 Operators	CPC	-	-	25	-	
Reduce Technical Assistance	CPC	115	-	-	150	
Reduction in Green - 8 W/R, 1 N/E	CPC	-	81	81	-	5
Membrane Press - 4 Operators	CPC	-	-	118	-	
Accounting	Control	9	-	-	12	
Reduce Salary-CPC Green-4 People		-	-	-	30	
SUBTOTAL		564	421	564	632	
<u>ENERGY</u>						
Minimized "Dowtherm" Boiler Use	CPC	21	-	-	28	
Double LC Filtration	CPC	-	25	25	-	5
Energy Conservation	CPC	64	-	30	100	
SUBTOTAL		85	25	55	128	
<u>OTHER</u>						
Press Plate from \$3.5M/Mo. to .26M/Mo.	CPC	49	40	40	56	
Reduce Maintenance	CPC	106	-	-	140	
Gloves	CPC	-	4	4	-	
Reduce Product Services Assistance	CPC	34	-	-	45	
Filter Cloths	CPC	24	12	12	24	
Reduce Substandard	R&D	48	-	54	48	
Chlorine New Contract	Control	7	-	-	9	
SUBTOTAL		268	56	110	322	
CPC TOTAL		1282	660	887	1562	

10-23-81

NEWPORT PLANT
COST REDUCTION FORECAST/ACCOMPLISHMENT
THIRD QUARTER 1981

<u>MECHANICAL DEPARTMENT</u>	<u>Category/Program</u>	<u>Responsibility</u>	<u>Year to Date</u>	<u>Savings Forecast</u>			<u>Notes</u>
				<u>Committed</u>	<u>Goal Total</u>	<u>Current Estimates</u>	
<u>LABOR</u> CPC	QA General Facilities	Mechanical	172	95	116	200	
		Mechanical	135	87	102	172	
		Mechanical	25	23	31	30	
		Mechanical	7	21	25	6	
	SUBTOTAL		339	226	274	408	
<u>MATERIAL</u> CPC	QA General Facilities	Mechanical	110	41	120	125	
		Mechanical	56	41	120	80	
		Mechanical	69	33	83	96	
		Mechanical	12	12	32	22	
	SUBTOTAL		247	127	355	323	
	MECHANICAL TOTAL		586	353	629	731	
	GRAND TOTAL		2564	1422	2586	3288	

10-23-81

NEWPORT PLANT
COST REDUCTION FORECAST/ACCOMPLISHMENT
THIRD QUARTER 1981
NOTES

1. Decreased savings due to reduced production demand.
2. Newark requests presscake shipments in drums due to water shortage.
3. Semifinished presscake packout requested by Newark due to water shortage.
4. Scheduled for the second half of 1981.
5. Dealyed from forecast.
- 6 QAQ startup delayed due to Cl₂ stack modifications.

10-23-81