

Monsanto

Anniston Plant

**TECHNICAL SERVICES DEPARTMENT
MONTHLY REPORT****EXHIBIT**
PLFN. 880

10-8-92

Anniston

C. K. Eastman
A. G. Hill
L. C. Lahman
J. C. Landwehr
G. W. Miller
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H. L. Williams

General Offices

H. S. Bergen
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W. A. Kuhn
J. A. Morgan
W. R. Robirds
J. E. Smith
J. A. Stephens
R. J. Stratmeyer
H. S. Trail

OTHER LOCATIONS

A. H. Forsten -
Alvin, Texas

D. W. Jackson -
WCK

T. M. Patrick -
So. 2nd St.

Summary

September, 1969

Cost Improvement Results

	Est. Act.	Target	% of Target
Month	\$63,120	\$66,285	95.2%
YTD	\$430,976	\$438,570	98.3%

Organic Division

The Solid Aroclor 5460 yield increase instrumentation has been installed. Calibration and start-up will begin when 5460 is produced in early October.

The Sandvik belt test on Montar 5 was successfully completed. Installation costs will be estimated in October.

Muriatic Acid - MIP was reviewed in plant on 9/10. Necessary revisions to be completed during October.

Agricultural Division

The Acetone Recovery project was verbally approved 9/29 for \$32,125 capital and \$28,600 expense. Expected savings are \$40,000/yr.

C.E.D. has suspended scoping and estimating activities on original Sulfur Recovery Project and will evaluate alternates to obtain the major yield savings at a lower capital cost.

Niran - Tentative Process Amendments are being prepared for plant trials of Freon-21 replacing Freon-11 as chlorinator coolant and HCl replacing nitrogen as chlorination sparge gas.

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TRAN 025165

Utilities

Evaluation of Central Air Compressor system started, with December report target.

Design & Drafting

Data being gathered for electrical protective device study which will lead to recommendations to improve reliability of overload protective devices in important feeders.

Construction drawings forwarded for Biphenyl Pilot Unit building and Parathion emergency generators.

Pollution Control

HCl neutralization pit continues to successfully treat all waste acid.

Construction 95% complete on test unit for removal of solids in Waste Treatment Plant effluent. Start-up targeted for early October.

Quality Control

The Plant Quality Score was 86.1, down 7.6 from August with a YTD score of 88.1 against a 1969 target of 95.0 minimum. Unfavorable trends continue in Aroclor 5460 solubility, Aroclor 1242 low distillation and TC Chlorides. Raw material benzol remain at low distillation level, with intermittent high toluene.


J. C. Landwehr

:kd

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TRAN 025166

HARTOLDMON0007532

ORGANIC DIVISION
1969 TSD COST IMPROVEMENT

		ANNUAL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Sol.Aro. Level	TAR					2250	2250	2250	2250	2250	2250	2250	2250	2250
Ind.& -Still SpC	EST					-	-	-	-	-	-			
AFE 3015	ACT					-	-	-	-	-	-			
Solid Aro.	TAR	2600	2600	2600	2600	2600	2600	2600	2600	2600	2600	-	-	-
Lower 5060	EST	1500	5490	4390	2150	4670	8000	4230	7730	3475				
Soft. Point	ACT	1500	5490	4890	2150	4670	8000	4230	7730					
Sol.Aro.-Still	TAR					160	170	160	170	160	170	160	170	160
Coolant temp.	EST					-	-	-	-	-	-			
AFE 3015	ACT					-	-	-	-	-	-			
Sol.Aro.-Chlortoc	TAR					390	390	390	390	390	390	390	390	390
Batch End	EST					-	-	-	-	-	-			
AFE 3015	ACT					-	-	-	-	-	-			
Sol.Aro. Yield	TAR						2750	2750	2750	2750	2750	2750	2750	2750
SW/R Composition	EST						-	-	-	-	-			
AFE 3016	ACT						-	-	-	-	-			
Solid Aro.	TAR						1080	1080	1080	1080	1080	1080	1080	1080
Montar 5 Flake	EST						-	-	-	-	-			
AFE 2949	ACT						-	-	-	-	-			
Sol.Aro.	TAR	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
Blend 4465	EST	1690	1920	1680	1490	710	1180	990	220	-				
	ACT	1690	1920	1680	1490	710	1180	990	220					
Sol.Aro.-Verti-	TAR	70	80	70	80	70								
cal Still Cond.	EST	70	90	90	90	90	-	-	-					
AFE 2324	ACT	70	90	90	90	90	-	-	-					
Sol.Aro.Cl ₂	TAR			940	940	950								
T/C Dock	EST			0	-	-								
AFE 2342	ACT			0	-	-								
Sol.Aro.-New Cl ₂	TAR						950	940	950	940	950	940	950	950
Unload - No Delay	EST					900	2330	2050	2320	1650				
CED 1831	ACT					900	2330	2050	2320					
Solid Aro.-Flake	TAR	3000	3000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
& Drum	EST	0	0	1000	2000	2000	2000	3000	3000	3000				
CED 1430	ACT	0	0	1000	2000	2000	3000	3000	3000					
Liq.Aro.	TAR	3000	3000	-	-	-	-	-	-	-	-	-	-	-
48-53 M #/yr.	EST	0	5500	-	-	-	-	-	-	-	-	-	-	-
AFE 2545	ACT	0	5500	-	-	-	-	-	-	-	-	-	-	-
Liq.Aro.-No.2	TAR											3000	3000	
Still Entrain Sep.	EST													
AFE 3093	ACT													
Liq.Aro.-Montar	TAR			1080	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080
Disposal	EST			0	0	0	0	0	0	0	-			
AFE 2952	ACT			0	0	0	0	0	0	-				
Warehouse	TAR	2000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Reduce Manpower	EST	2000	2000	2000	3000	3000	3000	3000	3000	3000	3000			
CEA 1452	ACT	2000	2000	2000	3000	3000	3000	3000	3000	3000				
Liq.Aro.New	TAR			1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Burners #3 Still	EST			0	0	1500	3000	900	0	-				
	ACT			0	0	1500	3000	900	-					
Biphenyl Relocate	TAR	500	500	500	500	500	500	500	500	500	500	500	500	500
No. 1 Preheat	EST	1500	0	1560	1870	0	0	1500	0	-				
CEA 1892	ACT	1500	0	610	1370	0	0	1500	-					
HB-40	TAR	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
2nd Autoclave	EST	2230	2580	0	600	9000	6000	5600	4200	500				
AFE 3102	ACT	3490	2420	0	600	10400	8600	7450	6950					

COMPAN... TRAN 025167
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HARTOLDMON0007533

ORGANIC DIVISION
1969 TSD COST IMPROVEMENT

	ANNUAL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Bio Improve Tower Treat. AFE 3155	TAR					450	450	450	450	450	450	450	450
	EST					0	0	0	584	645			
	ACT					0	0	0	585				
Improve Plt. Power Factor	TAR					900	900	900	900	900	900	900	900
	EST					0	500	900	900	900			
	ACT					0	500	830	990				
Central Air System	TAR									1000	1000	1000	1000
	EST									-			
	ACT												
Optimize Rx Time PNP	TAR		2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
	EST		0	3420	0	0	0	2940	1260	0			
	ACT		0	3420	0	0	0	2940	2370				
Reduce Mole Ratio NaOH/PNCB PNP	TAR				4000	4000	4000	4000	4000	4000	4000	4000	4000
	EST				0	0	0	0	0	0			
	ACT				0	0	0	0	0				
New Wash Water Pump - PNP AFE 2998	TAR					50	50	50	50	50	50	50	50
	EST		25	50	50	50	50	50	50	50			
	ACT		25	50	50	50	50	50	50				
Automatic pH Control PNP	TAR										500	500	500
	EST												
	ACT												
HCl Filter Pump	TAR	330	330	340									
	EST	330	330	340									
	ACT	330	330	340									
New Blow Tank HCl.	TAR	200	200	200	200	200	200						
	EST	200	200	200	200	500	200						
	ACT	200	200	200	200	200	200						
150,000 Gal.-HCl Storage Tank AFE 2468	TAR				1760	1760	1780	1760	1760	1780	1760	1760	1780
	EST				-	0	0	2640	3290	2990			
	ACT				-	-	0	2830	3430				
Produce Staley Grade Acid AFE 3076	TAR							780	780	790	780	780	790
	EST							-	-	-			
	ACT							-	-	-			
Cl ₂ Plt. Shutdown CEA 1831	TAR						8880	8880	8880	8880	8880	8880	8880
	EST					8880	6655	42835	9900	19900			
	ACT					2230	6655	42855	19900				
Hg Recover from Residue	TAR	250	250	250	250								
	EST	3910	0	0	0								
	ACT	3910	0	0	0								
Hg Wash Tank AFE 2802	TAR	250	250	250	250								
	EST	0	0	0	0								
	ACT	0	0	0	0								
Biphenyl Productivity	TAR	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600
	EST	0	9000	15,000	0	0	0	30780	2700	0			
	ACT	1800	5900	13,500	0	0	0	30780	2700				
Total Organic By Month M \$	TAR	23.3	26.3	29.3	37.5	42.3	51.1	51.6	51.6	51.6	52.7	53.5	50.6
	EST		27.1	30.2	11.5	36.3	39.65	107.4	53.84	49.410			
	ACT	16.5	23.8	27.3	11.4	25.75	45.9	110.2	258.165				
Total Organic YTD M \$	TAR	23.3	50.1	79.4	116.9	159.2	210.3	261.9	313.5	365.1	417.8	471.3	521.9
	EST		46.9	78.8	79.6	115.9	144.4	258.5	315.17	368.82			
	ACT	16.5	40.3	68.1	79.5	105.2	151.1	261.23	319.452				

* \$22955 adjustment included for May & June

** \$27,780 adjustment included for months
January thru June.

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TRAN 025168

HARTOLDMON0007534

AG DIVISION
1969 TSD COST IMPROVEMENT

	ANNUAL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Cooling Tower Repiping	TAR				420	420	410	410	420	420	410	420	420
AFE 2598	EST				0	0	0	0	0	0			
	ACT				0	0	0	0	0				
Optimize N ₂ & Cl ₂ Levels	TAR				6600	6700	6700	6600	6700	6700			
	EST				0	0	0	0	0	0			
	ACT				0	0	0	0	0				
Increase Waste Acid Sales	TAR				400	300	300	400	300	300	400	300	300
	EST				0	0	0	0	0	0			
	ACT				0	0	0	0	0				
Chlorinator R.I.	TAR							250	250	250	250	250	250
AFE 2244	EST							0	0	0			
	ACT							0	0				
EVOP Condensation Rx.	TAR	750	750	500							500	750	750
	EST	0	0	12,615									
	ACT	0	0	12,615									
Cl ₂ Unloading	TAR							5000	5000	5000	2000	2000	2000
	EST							0	0	1580			
CEA 1831	ACT							0	0				
Recycle Wash Water	TAR							290	290	290	290	290	290
	EST							0	0	0			
AFE 2960	ACT							0	0				
Parathion Recovery	TAR										5800	5800	5800
	EST												
AFE 2655	ACT												
Reduce Acetone Losses	TAR										4300	4300	4300
	EST												
	ACT												
Formulations	TAR				1600	1600	1600	1600	1600	1600			
	EST				3000	6600	10,000	4570	2000	3950			
AFE 2897	ACT				3000	10,400	9288	4570	1205				
Change Cooling H ₂ O Item 737	TAR				125	125	125	125	125	125	125	125	125
	EST				120	180	155	272	333	310			
AFE 3067	ACT				120	180	171	272	333				
Well H ₂ O to Jets	TAR										500	500	500
	EST												
	ACT												
Ag. Division by Month	TAR	750	750	500	9145	9145	9135	14675	14685	14685	14575	14485	14485
	EST			12,615	13,120	6,780	10,155	4842	4033	13,710			
	ACT	0	0	12,615	11,420	10,580	9459	4842	6488				
Ag. Division YTD	TAR	750	1500	2000	11145	20290	2945	44100	58785	73470	83045	102540	117015
	EST			12,615	15,735	23,315	37,720	41,926	45,949	62,114			
	ACT	0	0	12,615	17,035	27,615	37,074	41,926	48,404				
Ag. Division untargeted-R.M.	TAR								0				
Charges optimization	EST								1700	3690			
	ACT								1700				
Organic Div. Untargeted - HCl	TAR					0	0	0	0				
Catch Tank & Coalescer	EST					5000	6250	5960	4690	13300			
	ACT					0	9350	6817	4920				
Ag Div. -Untargeted	TAR												
	EST								-	4180			
#3 Cl ₂ Change out	ACT								3250				

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HARTOLDMON0007535

AROCLOR E. E. Bowles, C. R. McIlwain, J. W. Mattern, (V. R. Haupt)

Evaluate Quaterphenyl-

Polyphenyl Effects on	1969 Savings \$63,200	TSD Objective
Solid Aroclor Yields	NFC \$14,000	B - 8(a)

Radioactive source for level alarm installed. Representative from Ohmart Corp. conducted radiation survey and instrument checkout. Start-up delayed because of department downtime and producing Solid Aroclors other than 5460. Expect to start mid October.

Montar Use and Disposal	Savings \$13,000	TSD Objective
Project 2952	NFC \$10,000	B - 8(g)

Request to change route of piping to avoid going through the Chlorine plant has delayed installation of project. Necessary equipment delivery date is estimated at 4-6 weeks.

Sandvik Belt Cooler for	Solid Aroclor Expan-	TSD Objective
Montar 5 Solidification	sion Evaluation	B - 8(j)

The Pilot Unit Testing has been successfully completed with good results. Price and size estimations have not been finalized. However, preliminary "ball park" figures show that a belt to handle 8000#/hr. requires a cooling width of 4 ft. x 55 ft. long. The purchase price of this size unit is in the 35 M dollar range.

Porocel Columns	Assist	
CED 2132	Production	TSD Job No. 930

North Porocel columns to treat chlorobenzenes were started up on September 19, 1969. Results of first trial were inconclusive. Further quality improvement tests are planned.

The start-up of the South columns has been delayed by the Aroclor fire. Start-up is now planned for the week of October 6, 1969.

BIPHENYL-SANTOWAX W. G. Niemeyer, D. A. Self, J. M. Jones, (V. R. Haupt)

Debottleneck Biphenyl-

Santowax Distillation Area	Capacity	TSD Objective
to 87.6 M lbs./yr. Biphenyl	Increase	B - 7(a)

Installation of by-pass loops with blow-out connections for the two Santowax C flow meters was scheduled for 9/10/69. However, only about one fourth of the planned work was completed. The problem was that the operators were not able to unplug the recycle line and it was not safe to cut and weld on the line. Maintenance is now scheduled to unplug the line. A capacity/performance test run will be conducted on the Santowax distillation column after the meters are re-installed and calibrated.

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HARTOLDMON0007536

BIPHENYL-SANTOWAX - (continued)

Low Biphenyl Santowax for FDA 5460	Sales Support	TSD Objective B - 7(b)
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A tower water loop study is in progress to try to increase the cooling water flow to the Biphenyl/Santowax distillation area. Increased cooling water flow to the distillation area is required to produce low biphenyl Santowax.

Prediction and Control of
Dust Explosion Potential in
Biphenyl Flaker Packaging
System

Safety

TSD Job No. 931

At our last plant meeting on this problem, we decided to convert the biphenyl packer from fluidizing with air to fluidizing with nitrogen. However, the estimated operating expense for nitrogen is much higher than originally thought. The estimated operating cost for nitrogen will be \$13,000 to \$14,000 per year compared to \$1500 that was originally estimated. We plan to proceed with this conversion, in spite of the high cost, to eliminate a hazardous situation. Inert gas generation equipment will be evaluated to compare operating costs and most economical method used long term.

Designed Experiment Run on
No. 1 Biphenyl Furnace

Process
Study

TSD Objective
B - 7(e)

All the samples have been analyzed. Preparation of a progress report is in progress. Test results will be used to update math model of this process.

Install Knockout Tank on
Santowax Jet Vent

Safety

TSD Job No. 862

Complete design package was transmitted to Maintenance for construction on September 9, 1969.

Natural Gas Safety Shut-off
Interlock Switch

Safety

TSD Job No. 948

Complete design package was transmitted to Maintenance for construction on September 25, 1969.

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TRAN 025171

HARTOLDMON0007537

Company confidential

5.

HCl G. L. Moore, L. O. Chambers, K. G. Hale, (A. G. McCarty)

Production of Staley Grade Acid - AFE-3076	New Earnings \$288 M Potential Savings \$71,000	TSD Objective B - 10(c)
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Savings of \$13,300 resulted from the Coalescer and Catch Tank project during September. Spare elements of a modified design are being completed by the vendor.

Plant pilot carbon treatment studies are scheduled to be run in November. The objectives are; 1) Accumulate design data necessary to expand the carbon treatment area, and 2) determine the carbon treatment and conditions necessary to produce "Staley" acid. An experimental project for pilot test facilities is being issued (\$700 experimental expense).

<u>Issue HCl MIP</u>	<u>Planning</u>	TSD Objective B - 1(b)
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Plant review was held on 9/10/69. Revisions are being made to several sections as a result of plant review. Revised copies will be submitted for final review by 10/31.

<u>Reduce High Free Cl₂ in Muristic Acid</u>	<u>Quality</u>	TSD Job No. 950
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An expense project is being issued to install necessary piping to air blow a second storage tank and provide a temporary air supply until the cause and/or cure to the high Cl₂ problem can be found.

PNP L. O. Chambers, K. G. Hale, (A. G. McCarty)

<u>Debottleneck to 1.8 M</u>	<u>Capacity Savings \$27,500</u>	TSD Objective B - 9(a)
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Process changes targeted at reducing PNCB usage resulted in let-down problems during September. No savings resulted in September. Additional changes will be made and monitored by P. & Q.A. to attempt PNCB usage optimization.

NIRAN K. G. Hale, D. W. Dudley, T. W. Lawrence, (A. G. McCarty)

<u>Demonstrate Parathion Recovery</u>	<u>Savings \$17,400 10-15% Reduced COD</u>	TSD Objective B - 5(a)
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No change in status. Construction in progress on test facilities.

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IRAN 025172

HARTOLDMON0007538

NIRAN - (continued)

Acetone Recovery	Savings \$12,900 20% Reduced COD	TSD Objective B - 5(i)
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Recovery tests on #3 condensation reactor indicate a 30% reduction in acetone loss. Gross savings (ethyl and methyl) from increasing acetone recovery is \$40,000 per year plus a 20% reduction in COD load. Project 3340 was verbally approved 9/29 for \$32,125 capital and \$28,600 expense. Manpower evaluations are presently underway to determine what parts of the project will be installed during the '69 fall turn-around.

Central Chlorine Unloading for Niran	Savings \$21,000	TSD Objective B - 6(a)
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Evaluation of rebuilding 12 year old compressor vs. purchasing new compressor favors the new compressor. Compressor will not be purchased or installed until late winter to prove worth of air pad on "cold chlorine cars" during winter.

Sulfur Recovery from Residue	\$271,000/yr. Net Savings 53% Reduction in SO ₂	TSD Objective B - 5(d)
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C.E D. has suspended work on the Sulfur Recovery scope and will evaluate alternates to obtain yield savings at a lower capital cost.

The new objective would be to remove sulfur and recycle organics, but not clean-up sulfur for re-use.

Improve Chlorinator Cooling System	Profit New Sales and Productivity Savings \$48,000/mo. per 0.5 Hour Reduction in Chlorination Time	TSD Objective B - 5(g)
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A Tentative Process Amendment is being prepared to cover plant trial of Freon-21. If approval is given, expect to begin trial approximately one month prior to the end of the 1969-1970 Ethyl run and extend approximately one month into the 1970 Methyl run.

Improve Intermediate Distillation Capacity	Capacity	TSD Job No. 972
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Possibilities are remote for obtaining significant increases in intermediate distillation capacity with existing equipment. It is felt that thin-film or wiped-film equipment may be suitable for processing this type of material rapidly. Contacts will be made with thin-film vendors to explore the possibility of application to this problem.

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NIRAN - (continued)

Replace Nitrogen with HCl
for Chlorination Sparge

Savings \$60,000

TSD Job No. 603

Anniston PR&D has shown that HCl sparge produces no adverse effects during chlorination compared to nitrogen sparge. Since HCl is produced during chlorination, it could possibly be recovered for use as sparge gas replacing nitrogen. A tentative Process Amendment will be prepared covering a plant trial of sparging with cylinder HCl.

PROCESS AND QUALITY ANALYSIS

J. L. Murphree, Allen Hale, (W. B. Dunlap)

Process Surveillance

An 18 month downward trend in distillation level of raw material benzol was revealed, culminating in 6 tank cars out of specifications. Toluene in benzol was found to be out of spec. These factors may be related to a documented increase in Aroclor 1242 TC Chlorides over the last 5 months.

PNP-Identification of
Critical Variables

Potential Savings
\$60,000

TSD Objective C - 3
TSD Job No. 839

A final report on yield study was written. Reactor settings will be adjusted and controlled experimentally to verify the statistical prediction of the study.

Niran Still Control

Potential Savings
\$79,000

TSD Job No. 964

An AFE was approved to obtain and install control equipment. Design and drafting is scheduled for the 4th quarter. Installation EDC is 3/1/70.

ENGINEERING DESIGN AND SERVICESMechanical/Electrical/Instrument Design and Drafting

J. C. Price, J. A. Veazey,
J. O. House, G. W. Richey,
B. D. Morgan, R. V. Carlisle,
R. L. Brewer, J. K. Rennie,
(W. F. Taffee)

Design was completed on Project 3161 - \$3.8 M, Automatic Temperature Control of Thio Acid Reactors #1 & 2. Review drawings were transmitted with construction drawings to follow in October.

Design is in progress on Project 3118 - \$9.7 M, Modify Agitator Interlocks on all critical vessels in the Niran department. Transmittal is expected in October.

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ENGINEERING DESIGN AND SERVICES - (continued)

The following project safety reviews were held or attended: Fire Pump Capacity Check Equipment (AFE 3227 - \$4.1 M), Install Pressure Control Valves in Fire Protection System (AFE 3211 - \$5.7 M), Biphenyl Pilot Unit (AFE 3297 - \$13 M).

A program is underway to gather data necessary for preparation of a short circuit coordination study of the electrical portion of the Niran department. The results of this study will lead to the compilation of a program for testing switches, circuit breakers, protective relays and, in general, all major electrical equipment that could cause prolonged downtime due to its failure.

Training and supervisory time remained at a high level this month because of time necessary due to three recent manpower additions to the department. One E & I Technician is on loan to the Maintenance department to instruct maintenance employees in an electrical instrument course.

Premises were prepared and forwarded for the following projects: Niran Intermediate Tank-Car Cleaning, Building 27 Dismantling, Eliminate "Head Knocker" at Aroclor.

Drafting

Review drawings were completed for the following projects:

Install 4" Heat Exchanger in Biphenyl (AFE 3282 - \$1.4 M), Final Wash Tank-PNP (AFE 3342 - \$2.0 M), Automatic Temperature Control of Thio Acid Reactors (AFE 3161 - \$3.8 M), Dual Chlorine Relief Valves - Niran (AFE 3310 - \$3.5 M), Acetone Recovery (Electrical) (AFE 3340 - \$50.7 M).

Construction drawings were completed for the following projects:

Replacement of Water Loop-HCl (AFE 3240 - \$8.4 M), Biphenyl Pilot Unit (AFE 3297 - \$13 M), Debottleneck Solid Aroclor (AFE 2897 - \$20 M), Replace Niran Generators (AFE 3305 - \$41.9 M), Install Nash Compressor at Eimco Filter-Waste Treatment (AFE 2820 - \$4.6 M), Acetone Recovery - (Piping) (AFE 3340 - \$50.7 M).

UTILITIES ENGINEERING

J. C. Price, J. O. House, M. L. Marcum, (W. F. Taffee)

Transmitted review drawings for Test Heat Exchanger (AFE 3282 - \$1.4M) on Biphenyl Cooling Water. The design package will be transmitted in October. Started preparation of Utilities Improvement Items for inclusion in the Aroclor MIP. Started evaluations of projects to replace existing air compressors with a Central Plant Air Compressor (estimated gross savings \$12.0 M - 16.0 M per year) and to Improve Plant Power Factor (estimated gross savings \$5.0 M - \$9.0 M). The premise for the power factor project is expected to be forwarded in October and for the compressor project in late November or early December. Continued work on Steam Plant MIP with completion scheduled for December 15.

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PLANT IMPROVEMENT

G. C. Goodwin, (W. F. Taffee)

A premise was prepared and forwarded for Renovating Niran Control Room and Lunchroom. Design package was forwarded for: Up-grading Fire Protection System (AFE 3293 - \$7.1 M).

Messrs. K. B. Davis and J. Harrison of the Alabama State Highway Department visited the plant on September 26, to discuss the relocation of Highway 202 across Monsanto property. They presented two schemes for the connection of old Highway 202 to the new 202 on the southeast side of the plant.

POLLUTION CONTROL

E. G. Wright, (W. F. Taffee)

Air & H ₂ O Pollution Complaints	Community and Governmental Relations	TSD Objective B - 2
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No air or water pollution complaints were received at the Anniston Plant during September.

P.C.B. in Choccolocco Creek	Pollution Abatement	TSD Objective F - 3
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The first set of samples taken from Choccolocco Creek show levels of P.C.B. from 2 to 8 PPB. These levels will be checked at periodic intervals beginning in October with another set of samples from the creek.

HCl Neutralization Pit	Production Assistance	TSD Objective F - 4
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The pit continued to neutralize all of the acid sewerd this month. No un-neutralized HCl has left the plant since August 8. The pit is showing no signs of reaching a break-through point at the present time. Plans are to continue to extensively monitor the pit until it has reached the break-through point.

Choccolocco Creek Wildlife Studies	Pollution Abatement	TSD Objective F - 4
---------------------------------------	---------------------	------------------------

Requested Drs. Gunning and Suttks to da another study of Choccolecce during the fall season. This study will prebably ba cenducted during lata October. Samples of the fish and other wildlife from the creek will be collected, frozen, and sent to Organic Research for P.C.B. analysis. This will provide some base data fer evalueting the magnitude of the P.C.B. problem in Choccolocco.

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POLLUTION CONTROL - (continued)

Eimco Filter at		TSD Objective F - 4
Waste Treatment	Production Assistance	TSD Job No. 808

Construction is 95% complete. Start-up is scheduled for the first or second week in October.

Waste Treatment

All wastas were effectively treated during September. High solids continue to be a problem. Successful operation of the Eimco filter should eliminate the problem. Average daily values for Monsanto's effluent are as follows:

	Average daily	Specifications
PNP	1.0 PPM	5 PPM
COD	123 PPM	<200 PPM
Parathion	.17 PPM	< 1.0 PPM (max.)
BOD	4 PPM	<200 PPM

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PLANT LABORATORIES G. W. Miller

PROCESS RESEARCH AND DEVELOPMENT J. T. Bell

Of the 105 PR&D mandays available in September, 63 were expended on projects outlined in the 1969 PR&D Program. The use of the remaining mandays were divided among vacation, supervision, illness, and miscellaneous.

Blend Scavenger	Improved Aroclor	
<u>Refinement (Aroclor)</u>	<u>Electrical Properties</u>	<u>J. L. Brown</u>

Evaluation of Type 4A Molecular Sieve as an absorbant for column refinement of Aroclor-Scavenger mixes was begun on 9/24 with completion targeted for 10/15/69.

HB-40 Process	Determine Process	
<u>Studies</u>	<u>Variables</u>	<u>W. H. Howard</u>

Equipment failure has temporarily suspended attempts to prepare HB-40 via a continuous process. This aspect of the study is to be continued on 10/3. The effect of quaterphenyl level on reaction times and catalyst requirements has been determined by a batch process. Santowax C has been hydrogenated to HB-40 with an extended reaction period.

Biphenyl Tubular	Obtain Desired	
<u>Pilot Studies</u>	<u>Biphenyl/Terphenyl Ratio</u>	<u>J. L. Brown</u>

Plans for the Biphenyl Pilot Laboratory were completed on 9/9 and transmitted to maintenance. The plans were issued for bids on 9/10. A delay of 15 days caused by failure of contractors to bid promptly has been encountered with construction now targeted to begin on 10/15.

Low Color		
<u>Aroclor 5460</u>	<u>Develop Alternate Process</u>	<u>G. L. Arnett</u>

The distillation of Aroclor 5060 and 5460 over a combination of lime and NaOH is effective in reducing color. DTA studies indicate thermal stability of the combination of Aroclor 5060, NaOH, and lime up to 400°C. Samples have been forwarded to St. Louis for corrosion studies. A PR&D report is being prepared.

Parathion Isomer		
<u>Reduction</u>	<u>Increased Yields</u>	<u>G. L. Arnett</u>

This project has been delayed by illness but will resume by 10/6.

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PLANT LABORATORIES - (Cont'd)

PROCESS RESEARCH AND DEVELOPMENT - (Cont'd)

Parathion Condensation

Reaction Studies Increased Yields I. Rangaw

The project work plan has been interrupted to derive a method for determining the actual % conversion in the condensation reaction. The reliability of the method is to be determined by 10/3 with the study, as written in the work plan, to resume on 10/6.

Acetone Recovery
(Parathion)

Reduce COD Load G. L. Arnett

Sample analyses have been made to support a plant demonstration of increased acetone removal in the condensation step. This study has been terminated.

ANALYTICAL AND QUALITY CONTROL S. O. Kemp

Complaint Report

Quality

<u>Number</u>	<u>Material</u>	<u>Customer</u>	<u>Reason</u>
12-A-69	Aroclor 5460	Swift	Organic Matter
13-A-69	HB-40	Addyston Plant	Color
14-A-69	Aroclor 1268	Central Solvents	High Melt Point

YTD Quality Complaints/100 Shipments 0.24 Target 0.20

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COMMUNITY RELATIONS, PERSONNEL, RECRUITING, AND DEVELOPMENT

Community Relations

1. J. C. Landwehr, W. F. Taffee and E. G. Wright attended a talk by Dr. Roy Ledbetter, Alabama State Extension Entomologist, on the positive benefits of DDT at the September meeting of the Decatur, Ala. Kiwanis Club, September 11.

Personnel

1. Brode D. Morgan, BSCE from the University of Arkansas, reported to work on September 2 as Electrical-Instrument Engineer I.
2. Ralph Noel, D.O. student, Cobb High School, started to work in ED&S September 18, 1969.
3. G. L. Moore, Co-Op from Ga. Tech, has returned to school to complete studies to obtain degree in Chemical Engineering.
4. All members of TSD attended a seminar on Parathion Poisoning Symptoms conducted by Ishmeal Ransaw, September 16, 1969.
5. All members of TSD attended Job Holders meeting conducted by W. B. Papageorge, September 24, 1969.

Recruiting

1. Summer employees reported to school September 15: P. D. Kinnear to the University of Chicago, M. L. Marcum to the University of Tennessee, J. L. Gaines to Auburn University, and A. I. Hale to the University of Mississippi.

Development

1. J. C. Landwehr participated in Innovation Exchange Program at Bridgeview Plant (Chicago), September 25-26.
2. V. R. Haupt visited the Newport England Plant to assist with Biphenyl problems, September 4-20.
3. G. L. Arnett held a seminar at the Luling Plant, Luling, La., to train decontamination team, September 25.

Visitors

1. Bob McCutchan visited the laboratory September 17 concerning Aroclor.
2. W. A. Kuhn visited September 3-4 and was special guest at the seminar and barbecue for new employees.
3. George Hunt from S&PP section of CED visited the plant on September 30 concerning the electrical failure in the Aroclor department on September 27.

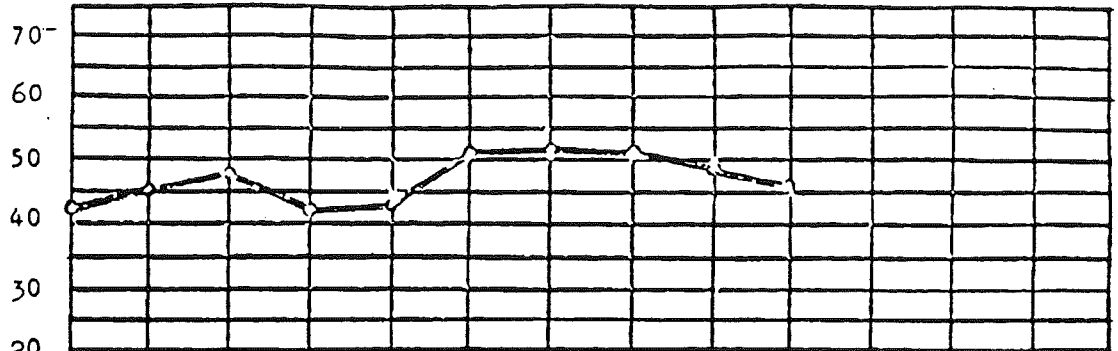
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DISTRIBUTION OF TIME BY TECHNICAL SERVICE

Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.

PROCESS
IMPROVEMENT

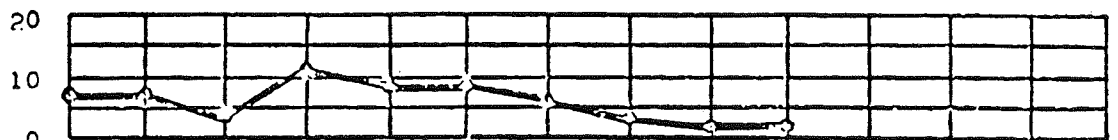


NEW PRODUCTS



PLANT
IMPROVEMENT

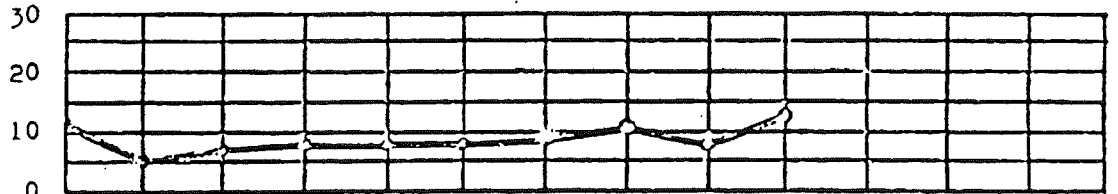
PER CENT OF TOTAL TIME



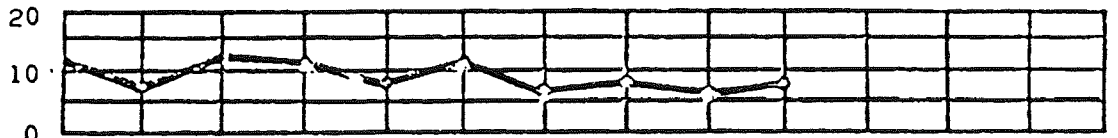
ASSIST
OPERATIONS



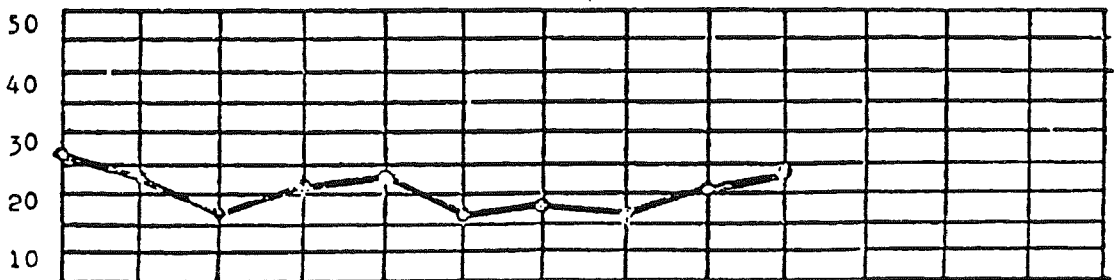
SPECIAL
ENGINEERING
SERVICES



TECHNICAL
MANPOWER



MISCELLANEOUS
ACTIVITIES
AND
ABSENCES



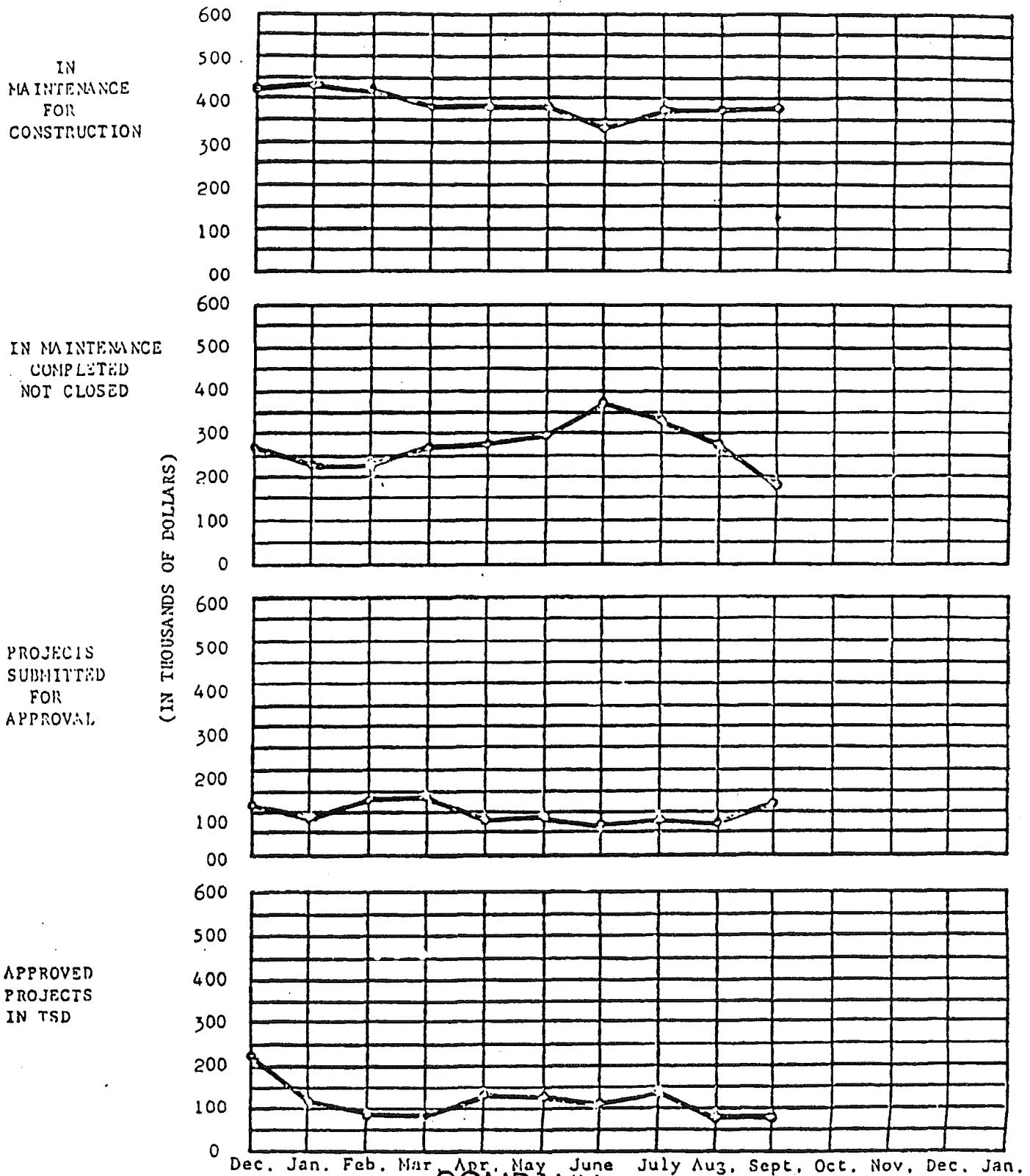
Jan. Feb. March Apr. May June July Aug. Sept. Oct. Nov. Dec.

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TSD PROJECT SUMMARY

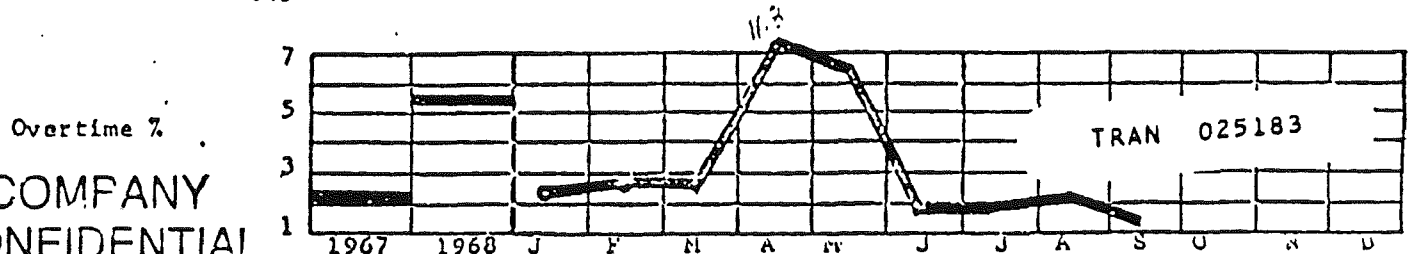
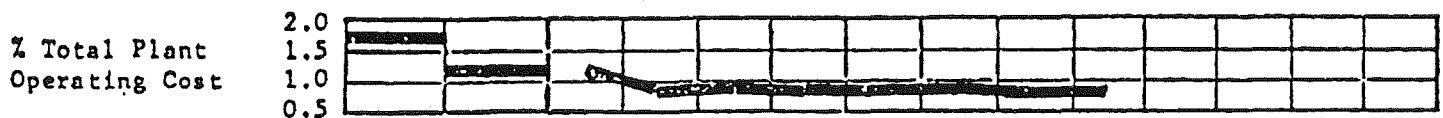
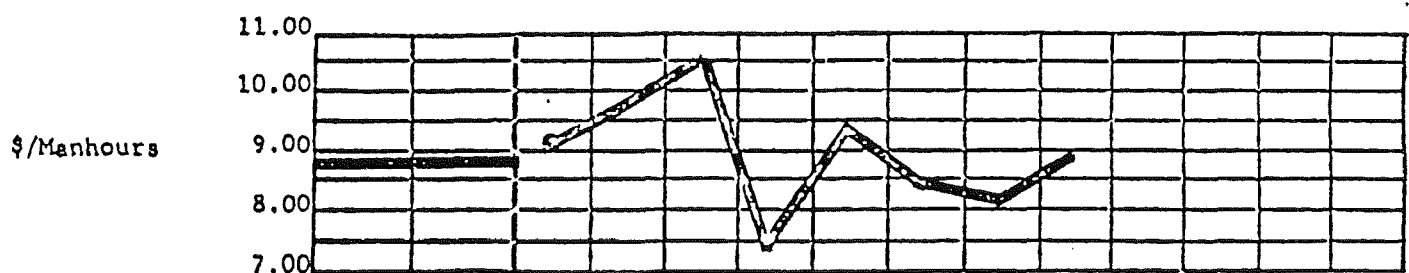
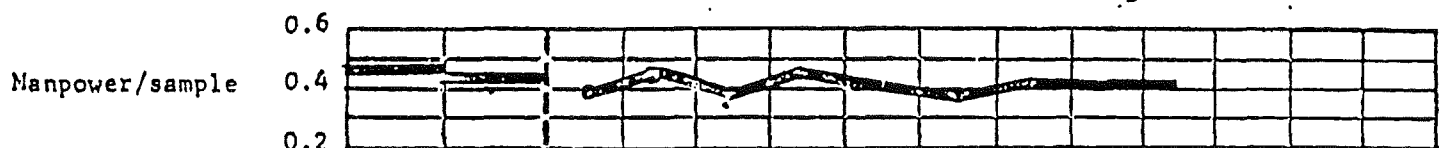
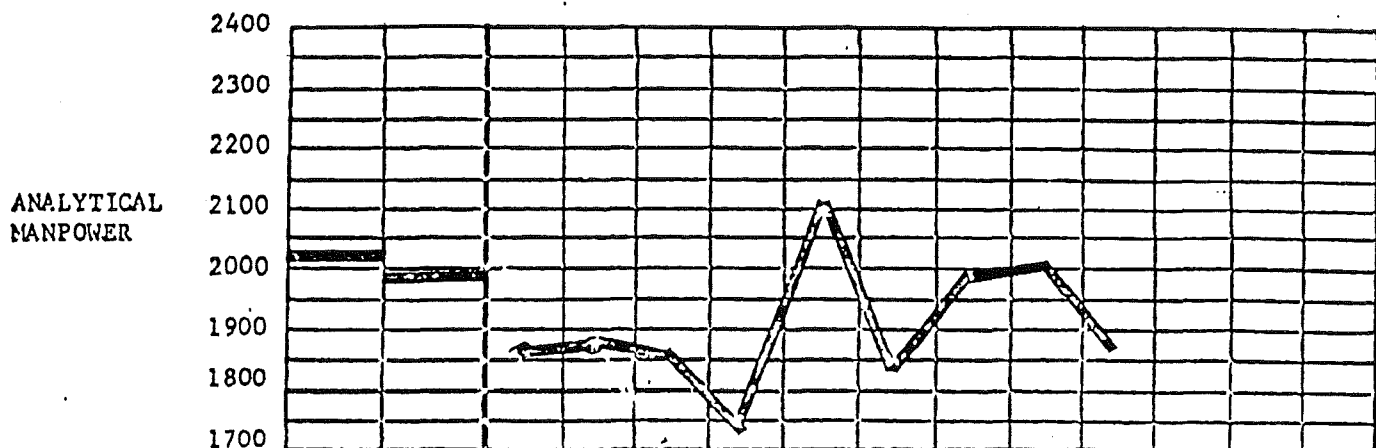
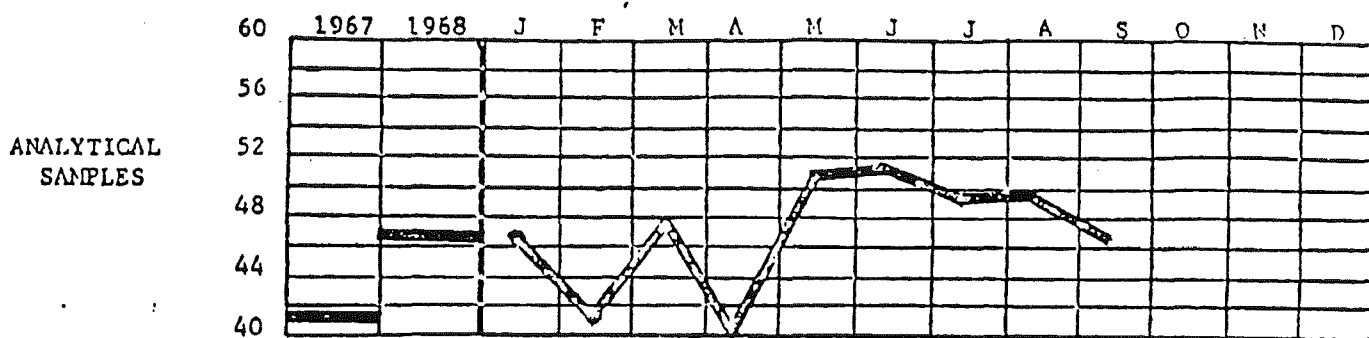


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LABORATORY ADMINISTRATION



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