COMPANY CONFIDENTIAL

Monsanto

Anniston Plant

TECHNICAL SERVICES DEPARTMENT

MONTHLY REPORT

Anniston

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General Offices

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~~W. R. Robirds~~
J. E. Smith
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OTHER LOCATIONS

A. H. Forsten - Alvin, Texas

D. W. Jackson - WGK

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

Summary

December 1969

Cost Improvement Results

	Est. Act.	Target	% of Target
Month	$57,515	$65,085	88.4%
YTD	$591,846	$638,915	92.6%

Organic Division

Combined Production and TSD efforts to improve yields in the PNP Department have resulted in the best PNCB usage for any 1969 month.

Agricultural Division

Parathion recovery pilot test facilities were installed and checked out. Field tests are scheduled to begin January 7.

Plant Improvement

Solid Incinerator Project (AFE 3094 - $20.0M) was approved. Corrosion proof channel in plant drainage to Snow's Creek (AFE 3088 - $8.7M) to protect City Water Main was completed and put in service.

DSW 551194

COMPANY CONFIDENTIAL INFORMATION

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STLCOPCB4089611

Utilities

Actual savings in 1969 for Utilities Cost Improvement will reach $10.8M ($20.2M/yearly rate).

Design & Drafting

The old 175 KVA Niran Emergency Generator was rebuilt and returned to Plant. Installation is scheduled to be completed in January.

Pollution Control

KemTech Labs Inc. conducted a three day Air Pollution Survey in areas in and around the Anniston Plant.

Quality Control

The Plant Quality Score was 80.2, up 2.2 from November, with a YTD score of 86.6 against a 1969 target of 95.0. A Process Capability Audit was completed, revealing restrictive specifications in 19 out of 44 finished product control tests.

J. C. Landwehr

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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 SpG	EST				-	-	-	-	-	-	-	-	
AFE 3015	ACT				-	-	-	-	-	-	-		
Solid Aro.	TAR	2600	2600	2600	2600	2600	2600	2600	2600	2600	-	-	-
Lower 5060	EST	1500	5490	4890	2150	4670	8000	4230	7730	3475			
Soft. Point	ACT	1500	5490	4890	2150	4670	8000	4230	7730	3475			
Sol.Aro.-Still	TAR				160	170	160	170	160	170	160	170	160
Coolant temp.	EST				-	-	-	-	-	-	-	-	
AFE 3015	ACT				-	-	-	-	-	-	-		
Sol.Aro.-Chlorter	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
Blend 4465	EST	1690	1920	1680	1490	710	1180	990	220	-	10	710	350
	ACT	1690	1920	1680	1490	710	1180	990	220	-	10	710	
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
Unload - No Delay	EST					900	2330	2050	2320	1650	2360	1640	2180
CED 1831	ACT					900	2330	2050	2320	1650	2360	1640	
Solid Aro.-Flake	TAR	3000	3000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
& Drum	EST	0	0	1000	2000	2000	2000	3000	3000	3000	3000	3000	3000
CED 1430	ACT	0	0	1000	2000	2000	3000	3000	3000	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
Disposal	EST			0	0	0	0	0	0	-	-	-	-
AFE 2952	ACT			0	0	0	0	0	-	-	-	-	
Warehouse	TAR	2000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Reduce Manpower	EST	2000	2000	2000	3000	3000	3000	3000	3000	3000	3000	3000	3000
CEA 1452	ACT	2000	2000	2000	3000	3000	3000	3000	3000	3000	3000	3000	
Liq.Aro.New	TAR			1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Burners #3 Still	EST			0	0	1500	3000	900	0	-	0	0	-
	ACT			0	0	1500	3000	900	-	-	0	-	
Biphenyl Relocate	TAR	500	500	500	500	500	500	500	500	500	500	500	500
No. 1 Preheat	EST	1500	0	1560	1870	0	0	1500	0	-	0	1780	1780
CEA 1892	ACT	1500	0	610	1870	0	0	1500	-	-	-	1780	
HB-40	TAR	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
2nd Autoclave	EST	2230	2580	0	600	9000	6000	5600	4200	500	1000	4800	6000
AFE 3102	ACT	3490	2420	0	600	10,400	8600	7450	6950	750	1400	4800	

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ORGANIC DIVISION
1969 TSD COST IMPROVEMENT

	ANNUAL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
BiØ Improve	TAR					450	450	450	450	450	450	450	450
Tower Treat.	EST					0	0	0	584	645	50	725	700
AFE 3155	ACT					0	0	0	585	645	50	725	
Improve Plt.	TAR					900	900	900	900	900	900	900	900
Power Factor	EST					0	500	900	900	900	950	955	950
	ACT					0	500	830	990	980	940	955	
Central Air	TAR									1000	1000	1000	1000
System	EST									-	-	-	-
	ACT									-	-	-	
Optimize Rx Time	TAR		2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
	EST		0	3420	0	0	0	2940	1260	0	0	0	4130
PNP	ACT		0	3420	0	0	0	2940	2370	0	0	0	
Reduce Mole	TAR				4000	4000	4000	4000	4000	4000	4000	4000	4000
Ratio NaOH/PNCB	EST				0	0	0	0	0	0	0	0	0
PNP	ACT				0	0	0	0	0	0	0	0	
New Wash Water	TAR					50	50	50	50	50	50	50	50
Pump - PNP	EST		25	50	50	50	50	50	50	50	50	50	50
AFE 2998	ACT		25	50	50	50	50	50	50	50	50	50	
Automatic pH	TAR										500	500	500
Control	EST										0	0	0
PNP	ACT										0	0	
HCl Filter	TAR	330	330	340									
Pump	EST	330	330	340									
	ACT	330	330	340									
New Blow Tank	TAR	200	200	200	200	200	200						
	EST	200	200	200	200	500	200						
HCl.	ACT	200	200	200	200	200	200						
150,000 Gal.-HCl	TAR				1760	1760	1780	1760	1760	1780	1760	1760	1780
Storage Tank	EST				-	0	0	2640	3290	2990	3500	3500	3500
AFE 2468	ACT				-	-	0	2830	3430	3125	3200	3700	
Produce Staley	TAR							780	780	790	780	780	790
Grade Acid	EST							-	-	-	-	-	-
AFE 3076	ACT							-	-	-	-	-	
Cl_2 Plt. Shutdown	TAR						8880	8880	8880	8880	8880	8880	8880
	EST					8880	6655	42835	19900	19900	19900	19900	19900
CEA 1831	ACT					2230	6655	42855	19900	19900	19900	19900	
Hg Recover from	TAR	250	250	250	250								
Residue	EST	3910	0	0	0								
	ACT	3910	0	0	0								
Hg Wash Tank	TAR	250	250	250	250								
	EST	0	0	0	0								
AFE 2802	ACT	0	0	0	0								
Biphenyl	TAR	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600
Productivity	EST	0	9000	15,000	0	0	0	30780	2700	0	0	0	0
	ACT	1800	5900	13,500	0	0	0	30780	2700	0	0	0	
Total Organic By	TAR	23.3	26.8	29.3	37.5	42.3	51.1	51.6	51.6	51.6	52.7	53.5	50.6
Month M $	EST		27.1	30.2	11.5	36.3	39.165	107.4	53.844	49.410	40820	46560	50280
	ACT	16.5	23.8	27.8	11.4	25.75	45.9	110.22	258.16	51930	40410	47340	
Total Organic	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
YTD M $	EST		46.9	78.8	79.6	115.9	1444	258.5	315.13	368.84	41220	458.35	509412
	ACT	16.5	40.3	68.1	79.5	105.2	151.1	261.28	319.45	371.38	411.79	459132	

* $22955 adjustment included for May & June.

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

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AG DIVISION
1969 TSD COST IMPROVEMENT

		ANNUAL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Cooling Tower Repiping AFE 2598	TAR					420	420	410	410	420	420	410	420	420
	EST					0	0	0	0	0	0	0	0	0
	ACT					0	0	0	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	0			
Increase Waste Acid Sales	TAR					400	300	300	400	300	300	400	300	300
	EST					0	0	0	0	0	0	0	0	0
	ACT					0	0	0	0	0	0	0	0	
Chlorinator R.I.	TAR								250	250	250	250	250	250
	EST								0	0	0	0	0	0
AFE 2244	ACT								0	0	0	0	0	
EVOP Condensation Rx.	TAR		750	750	500							500	750	750
	EST		0	0	12,615							0	0	2165
	ACT		0	0	12,615							0	0	
Cl_2 Unloading	TAR								5000	5000	5000	2000	2000	2000
	EST								0	0	1580	730	4150	3800
CEA 1831	ACT								0	0	1580	730	4150	
Recycle Wash Water AFE 2960	TAR								290	290	290	290	290	290
	EST								0	0	0	0	0	0
	ACT								0	0	0	0	0	
Parathion Recovery	TAR											5800	5800	5800
	EST											0	0	0
AFE 2655	ACT											0	0	
Reduce Acetone Losses	TAR											4300	4300	4300
	EST											0	0	1050
	ACT											0	0	
Formulations	TAR					1600	1600	1600	1600	1600	1600			
	EST					3000	6600	10,000	4570	2000	3950	1000	-	
AFE 2897	ACT					4300	10,400	9288	4570	1205	2675	950		
Change Cooling H_2O Item 737 AFE 3067	TAR					125	125	125	125	125	125	125	125	125
	EST					120	180	155	272	333	310	218	240	220
	ACT					120	180	171	272	333	310	220	300	
Well H_2O to Jets	TAR											500	500	500
	EST											0	0	0
	ACT											0	0	
Ag. Division by Month	TAR		750	750	500	9145	9145	9135	14675	14685	14685	14575	14485	14485
	EST				12,615	3,120	6,780	10,155	4842	4033	13,710	8873	4920	7235
	ACT		0	0	12,615	4,420	10,580	9459	4842	6488	12435	8825	5535	
Ag. Division YTD	TAR		750	1500	2000	11145	20290	29425	44100	58785	73470	88045	102530	117015
	EST				12,615	15,735	23,815	37,770	41,915	45,949	62,114	69,712	74584	82434
	ACT		0	0	12,615	17,035	27,615	37,074	41,915	48,404	60839	69664	75199	
Ag. Division untargeted-R.M. Charges optimization	TAR									0				
	EST									1700	3690	2870	530	
	ACT									1700	3690	2870	530	
Organic Div. Untargeted - HCl Catch Tank & Coalese	TAR						0	0	0	0				
	EST						5000	6250	5960	4690	13300	7000	6500	2000
	ACT						0	9350	6817	4920	15355	6500	7080	
Ag Div.-Untargeted	TAR													
	EST									-	4180	4055	-	
#3 Cl_2 Change out	ACT									3250	4180	4055	555	
Organic Division Untargeted -Optimize Reactor Variables	TAR													
	EST													2740
	ACT													

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STLCOPCB4089615

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

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

The #9 chlorinator - #4 still system will be used primarily for Aroclor 1268 in 1970. Data on specific gravity of 1168 and 1268 will be obtained on the next production run to calibrate the nuclear specific gravity - quality instrumentation to these materials.

This type of instrumentation has been incorporated in the Solid Aroclor expansion project CEA 2080 and will be calibrated during the start-up.

Porocel Columns CED 2132	Technical Assistance	TSD Job No. 930

This CED project will be closed during the month of January 1970. Several small items will be completed by plant forces.

Production is still experiencing problems with the power factor instrument. Tests thus far have not found the source. Further testing is continuing.

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

Biphenyl-Santowax MIP	Planning	TSD Objective B-7(a)

The Manufacturing Improvement Plan for Biphenyl-Santowax is 50% complete. MIP will be completed in January 1970.

Eliminate Safety Hazards at No. 1 Benzene Feed Tank	Safety	TSD Job No. 976

AFE No. 3373 was issued on December 3, 1969, to eliminate the safety hazards at No. 1 Benzene Feed Tank.

Customer Assistance to Constellation Finishes, Dalton, Georgia	Sales Support	TSD Job No. 904

Provided cost information on conversion from flaked biphenyl to molten bulk biphenyl storage. TSD supplied this service to meet competition from Geneva Chemicals.

BIPHENYL-SANTOWAX - continued

Santowax R - Solid Aroclor
Yield Test Run | Yield Savings | TSD Job No. 984

A test run was planned to determine how high and low quaterphenyl content of Santowax R affects Solid Aroclor yield. At least 10 Solid Aroclor still batches will be run on both high and low quaterphenyl Santowax R raw material. The Solid Aroclor still yield will be measured directly by sticking the still receiver. This type of test run will require cooperation of both Aroclor and Santowax production personnel. TSD will monitor the test and collect test data.

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

Production of Staley Grade Acid - AFE 3076 | New Earnings - $288M Potential Savings $71,000 | TSD Objective B-10(c)

Carbon treatment studies were delayed until an adequate analytical procedure can be developed. Attempts at using a Jacksonville University instrument (Beckman DBG) failed. The instrument had poor resolution and would not separate the contaminants absorbed at different wave lengths.

Initial results of a Perkin Elmer - Model 124 Scanning UV instrument demonstrated in the plant looks good. The PR&D group will continue evaluation for purchase of the instrument (estimated cost $3-4M).

HCl MIP | Planning | TSD Objective B-1(b)

All review comments returned. Final plan will be issued in January 1970.

Muriatic Acid
Reduced High Chlorine | Quality | TSD Job No. 950

Rotameter has been delivered to permit maintenance to complete installation to air blow #7 storage tank to reduce free chlorine. This is an interim measure until process data can be collected to identify cause of intermittent high chlorine.

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

PNP Dust Flammability | Safety (S&PP Audit) | TSD Job No. 814

Final report has been written and is now being circulated in plant for comments prior to typing.

STLCOPCB4089617

PNP - continued

PNP-Sulfuric Acid Unloading Pump	Safety (S&PP Audit)	TSD Job No. 979

Project premise for pump unloading was not approved by Production because of potential problems with pump as compared to present trouble - free air unloading. Alternate means of minimizing safety hazards (flange guards) will be initiated by Production. TSD report is out for comments, and will be issued by mid-January.

PNP - Debottleneck	Capacity	TSD Job No. 482

The actual present capacity is being evaluated in the different process steps. Alternates for expanding to 2.0M and 2.4M #PNP/month are being developed. Summary of alternates, expected capital required, and present capacities is targeted by mid-January.

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

Demonstrate Parathion Recovery		TSD Objective B-5(a)

Parathion recovery test facilities completely installed. Initial tests will begin in early January and are expected to last approximately two months.

Acetone Recovery	Savings $25,200 20% Reduced COD	TSD Objective B-5(i)

Acetone recovery project is operating near design conditions. No pump out problems have occurred through 677 batches. Acetone yield for December was 6.18 lb./cwt compared to a 7.25 lb./cwt standard. After a piping modification in early December, acetone usage fell to 5.88 lb./cwt, close to the target of 5.18 lb./cwt. Optimization of ejector performance and repairing vacuum leaks allow 100 mm Hg abs. will further improve acetone usage toward the targeted 5.18 lb./cwt.

Improve Chlorinator Cooling System	Potential savings $50,000 per 0.5 hour reduction in chlorination time	TSD Objective B-5(g)

A Tentative Process Amendment has been approved in th e plant and is awaiting Division approval. A project premise, based on the use of Freon 21 in place of Freon 11, and an experimental expense AFE have been approved. Mechanical design is in progress for temporary cylinder racks and piping. A spare vacuum pump, for use during the test, is available in the plant. Field tests are targeted to begin in late February and to last through May.

STLCOPCB4089618

NIRAN - continued

Chlorinator Off-Gas System Modification	Safety	TSD Job No. 980

Investigation is continuing on means to completely eliminate violent decompositions and subsequent damage to equipment in the chlorinator off-gas systems. Evaluation of an entrainment separator to preclude unstable material from catch-pots and piping showed this concept to be of questionable value. Efforts are now being directed toward preventing the mixing of steam and water from the jets and direct contact after-condensers with the unstable material accumulated in the catch pots. Alternates have been developed and will be discussed with Manufacturing in January.

Replace Nitrogen with HCl for Chlorination Sparge	Potential Savings $20,000	TSD Job No. 603

A Tentative Process Amendment has been prepared and is circulating for approval in the plant. Plans are to test the concept in the early part of the upcoming methyl run.

PROCESS AND QUALITY ANALYSIS — J. L. Murphree, (W. B. Dunlap)

Process Surveillance

The first Process Capability Report was completed, revealing restrictive specifications in 19 out of 44 quality specifications. A process correlation study was begun in Aroclors to determine critical operating variables.

PNP - Identification of Critical Variables	Potential Savings $60,000	TSD Objective C-3 TSD Job No. 839

Experimental operation of the PNP reactor was carried out through December at one optimization setting indicated by process analysis study of summer 1969. PNCB usage, calculated from batch weights, dropped from 117.6 to 115.3. A cost improvement target of $46,000 has been set for this job in 1970.

Niran Still Control	Potential Savings $79,000	TSD Job No. 964

Installation of control instruments is underway. Target dates have been advanced for installation (1/15/70) and completion of the still control study (8/1/70). A review of the study was held with Production personnel.

ENGINEERING DESIGN AND SERVICES

Mechanical/Electrical/Instrument Design & Drafting	J. C. Price, G. W. Richey, R. V. Carlisle, J. K. Rennie, (W. F. Taffee)	J. A. Veazey B. D. Morgan R. L. Brewer

The rebuilding of the existing 175 KW Niran Generator was completed and the unit was returned on 12/22/69. Installation is about 50% complete with

STLCOPCB4089619

ENGINEERING DESIGN AND SERVICES - continued

Start-up scheduled for spring turnaround.

Three projects covering the purchase and installation of additional Emergency Radios (AFE's 3389, 3390, 3391 - $0.8M each) were forwarded and approvedso as to extend emergency radio coverage to P_2S_5, Biphenyl and Shipping.

Two projects were scoped and estimated. Replace Sight Glasses (AFE 3362 - $2.5M), OMP Dismantling (AFE 3359 - $27M).

Significant department effort was expended in compilation and review of material necessary for inclusion in the Anniston "L" Manual. Specific areas reviewed included: Electrical, Material Handling, Piping and Protective Linings.

All long delivery items are on order and installations are tentatively scheduled for spring turnaround (Niran) on the following projects: Modify Agitator Interlocks (AFE 3118 - $9.7M), Automatic Alcohol Feed to Thio Acid Reactors (AFE 3161 - $3.9M).

Drafting

In progress:

Eliminate Safety Hazards #1 Benzene Tank (AFE 3373 - $9.0M), Update Plant Single-Line Diagram.

Review drawings were completed for the following projects: Formulation Revision - Niran (AFE 2754 - $22.8M).

Construction drawings were completed for the following projects: Niran Soda Ash Deluge System (AFE 3149 - $1.4M), Aroclor - Eliminate Head-Knocker (AFE 3364 - $1.1M), Niran Agitator Interlocks (AFE 3118 - $9.7M), Niran Automatic Still Control Test (AFE 3347 - $2.2M).

UTILITIES ENGINEERING J. C. Price, (W. F. Taffee)

Completed first draft of progress report on Utilities Cost Improvement Results for 1969 and Plans for 1970. This report was discussed with W. E. Chandler and is being revised and will be published in January. Utilities Cost Improvement Actual Savings for 1969 will reach $10.8M ($20.2M/year). Furnished CED with operating data for Aroclor PNP cooling tower for use in design of HB-40 Expansion.

STLCOPCB4089620

PLANT IMPROVEMENT — G. C. Goodwin, (W. F. Taffee)

A project to Install Solids Incinerator at Plant Dump (AFE 3094 - $20M) was approved during December. Transmittal of design package is scheduled for mid-February with equipment delivery expected in February.

Construction of Corrosion-Proof Channel to Protect City Water Main (AFE 3088 - $8.7M) was completed and put into service during December.

Design packages for Renovating Niran Control Room (AFE 3369 - $19.5M) and Automatic Fail-Safe Valves on Storage Tanks - Niran (AFE 3326 - $9.0M) were deferred by the Agricultural Division due to limited capital money.

The final design package for Grating Over Niran Process Trench (AFE 3367 - $3.1M) was transmitted during the month.

POLLUTION CONTROL — E. G. Wright, (W. F. Taffee)

Air and H_2O Pollution Complaints	Community and Governmental Relations	TSD Objective B-2

No H_2O pollution complaints were received during December. Four (4) air pollution complaints were received during the month.

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

The Eimco representative visited the plant during December to aid in resolving the problem of cloth "blinding." As a result of his recommendation, the feed slurry was "thickened" and the unit's performance improved a significant amount. Addition of the Betz polyelectrolyte also increased the unit's efficiency. During January, further tests are scheduled in order to optimize the process. It is tentatively scheduled to release the unit to Production by February 1.

Air Sampling Slurry	Pollution Abatement	TSD Objective C-2

On December 15, 16, 17 a representative from Kem-Tech Laboratories conducted an air survey around the plant perimeter using their mobile laboratory. We should be in receipt of their report during early January.

HCl Neutralization Pit	Pollution Abatement	TSD Objective F-4

Since repairs of the Niran H_3PO_4 pit have still not been completed, it remains impossible to determine if the HCl pit has "broken through" due to the excess H_3PO_4 present. As soon as repairs to the Niran pit are completed a test will be run to determine the present effectiveness of the HCl pit.

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POLLUTION CONTROL - continued

Waste Treatment

All wastes were effectively treated during December. Average daily values for Monsanto's effluent are as follows:

	Average daily	Specifications
PNP	1.0	5 ppm
COD	94	200 ppm
Parathion	.70	1.0 ppm
BOD	6.0	200 ppm

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PLANT LABORATORIES G. W. Miller

PROCESS RESEARCH AND DEVELOPMENT J. T. Bell

Of the 110 mandays available to PR&D in December, 67 mandays were expended on projects included in the 1969 PR&D Program. Vacation, supervision, miscellaneous, and special projects (Aroclor 5460 Acetone Insolubles, preparation of special Aroclor samples) account for the remaining time.

Blend Scavenger Refinement (Aroclor)	Improved Aroclor Electrical Properties	J. L. Brown

Upon receipt of a special order of Type 4A Molecular Sieve, a work plan will be issued outlining a final study for evaluation of this material as an absorbant for refining electrical properties of Aroclor 1242-Phenyl Glycidyl Ether blends.

HB-40 Process Studies	Determine Process Variables	W. H. Howard

The study to develop a continuous HB-40 process has been terminated. The inability to overcome equipment difficulties prevented reaching the original project objectives. A report has been prepared for issuance.

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

The PR&D Polyphenyl Laboratory is now 98% complete. Installation of the control panels and process line will start 1/2/70 with a tentative installation EDC of 4/1/70.

Low Color Aroclor 5460	Develop Alternate Process	G. L. Arnett

Laboratory work and corrosion studies have been completed. Support will be given for a plant demonstration.

Parathion Condensation Reaction Studies	Increased Yields	I. Ransaw

The evaluation of different catalysts in the condensation reaction has been delayed by difficulties in obtaining the necessary chemicals. The study of solvent effects has been initiated and as a result the overall program is essentially on schedule as indicated by the work plan.

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PLANT LABORATORIES (Cont'd)

PROCESS RESEARCH AND DEVELOPMENT (Cont'd)

Aroclor 5460
Acetone Insolubles — Quality — G. L. Arnett

The investigation to determine the process controls necessary to prevent the formation of over-chlorinated terphenyls is approximately 90% complete. Additionally, Aroclors 5420, 5425, and 5430 have been prepared in the laboratory for Organic Research.

Muriatic Acid — Quality — I. Ransaw

The development of a quantitative method for the analysis of trace organics in Muriatic Acid is concentrated on two techniques: scanning UV and gas chromatography. A UV instrument is to be made available by the vendor by January 19 with a critical evaluation scheduled for completion by that date. The completion of the evaluation of the chromatographic method is tentatively set for March 13, based on an assumption of the return of that instrument from the factory in operating condition by February 15.

ANALYTICAL AND QUALITY CONTROL S. O. Kemp

Complaint Report

Quality

Number	Material	Customer	Reason
17-A-69	Aroclor 5460	Canada Colors to Swift & Co.	Dark Yellow
18-A-69	Aroclor 5460	Plasti-Kote	Development of a gel in their formulation.
19-A-69	Aroclor 5460	Thomas Chemicals	Whitish Yellow Powder

YTD Quality Complaints/100 Shipments 0.275 Target 0.20

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COMMUNITY RELATIONS, PERSONNEL, RECRUITING, AND DEVELOPMENT

Community Relations

1. J. C. Landwehr, A. G. Hill and J. C. Price attended the annual meeting of the Coosa-Alabama River Improvement Association, December 17.

2. E. G. Wright attended AIA Air and Water Resources committee meeting in Birmingham, December 11.

3. W. F. Taffee attended AIA Education committee meeting in Birmingham.

4. W. F. Taffee attended hearing on establishment of Birmingham Air Quality Control Region, December 17.

Personnel

1. David Dixon, Chemical Engineering Co-Op from Georgia Tech, will start his first quarter of work on January 5 and will report to W. B. Dunlap.

2. George Jeffrey, Chemical Engineering Co-Op from Georgia Tech, will start his first quarter of work on January 5 and will report to J. C. Price.

3. Elton Allen, Drafting Co-Op from Alabama A&M, will start his first quarter of work on January 26 and will report to R. L. Brewer.

Development

1. R. L. Brewer and G. C. Goodwin completed a short course on "Reinforced Concrete Design" taught by J. C. Price. Others completing the course from outside the department were J. O. House and M. D. Blair.

2. G. L. Arnett, G. C. Goodwin, W. H. Howard, B. D. Morgan, and G. W. Richey attended Safety Seminar at Holiday Inn, December 9-10 sponsored by Liberty Mutual.

3. J. T. Bell and J. L. Brown visited St. Louis December 11-12 to discuss plans for the Polyphenyl pilot test program.

4. TSD and Lab personnel attended TSD Safety Seminar on Design Safety, December 16, 1969 held at Alabama Power Company auditorium.

5. Lamar Murphree completed another Olivetti Underwood computer training course in December. TSD graduates were D. A. Self and J. A. Veazey.

Visitors

1. R. S. Yates visited concerning HB-40 Process, December 9-11.

2. D. B. Hosmer visited December 11-12 to review Organic Division product MIPs and TSD-Lab programs for 1970.

3. W. E. Chandler visited the plant December 4-5 to discuss the 1970 Plant Improvement and Utilities budgets and the 1970 Utilities Cost Improvement Program.

4. V. W. Lepard, Kem-Tech Laboratories - Baton Rouge, La., visited E. G. Wright December 16.

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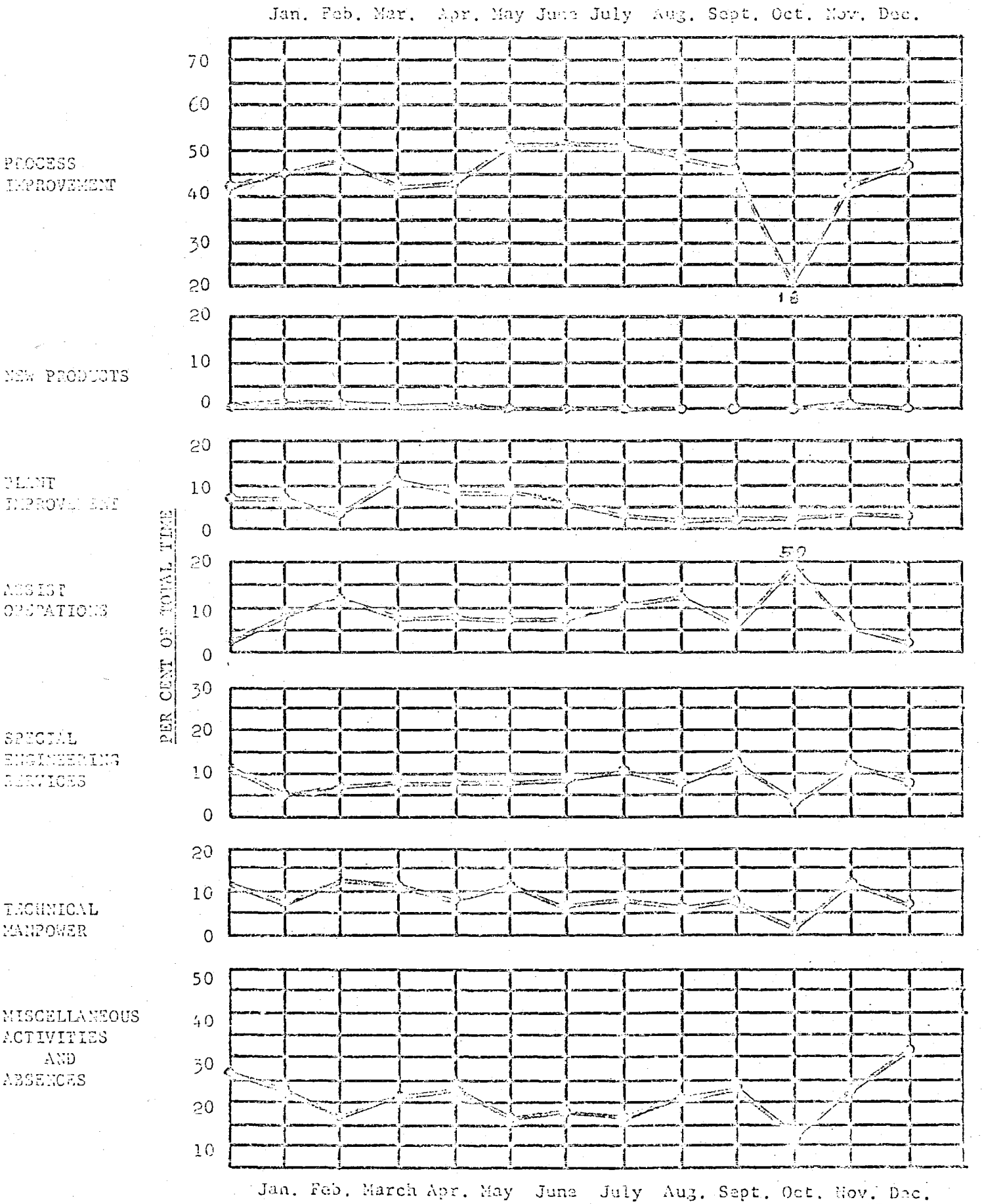
DISTRIBUTION OF TIME BY TECHNICAL SERVICE



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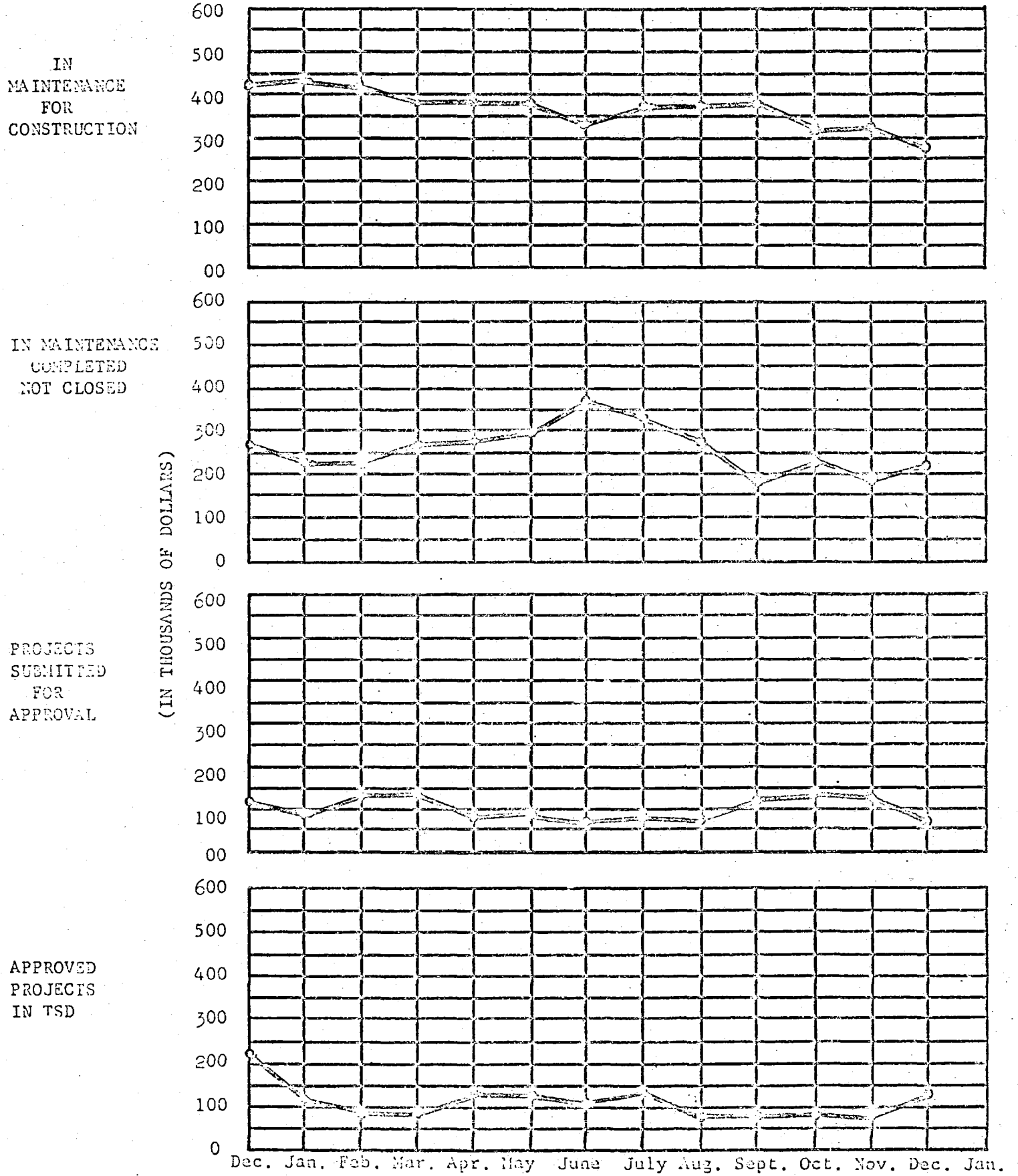
TSD PROJECT SUMMARY



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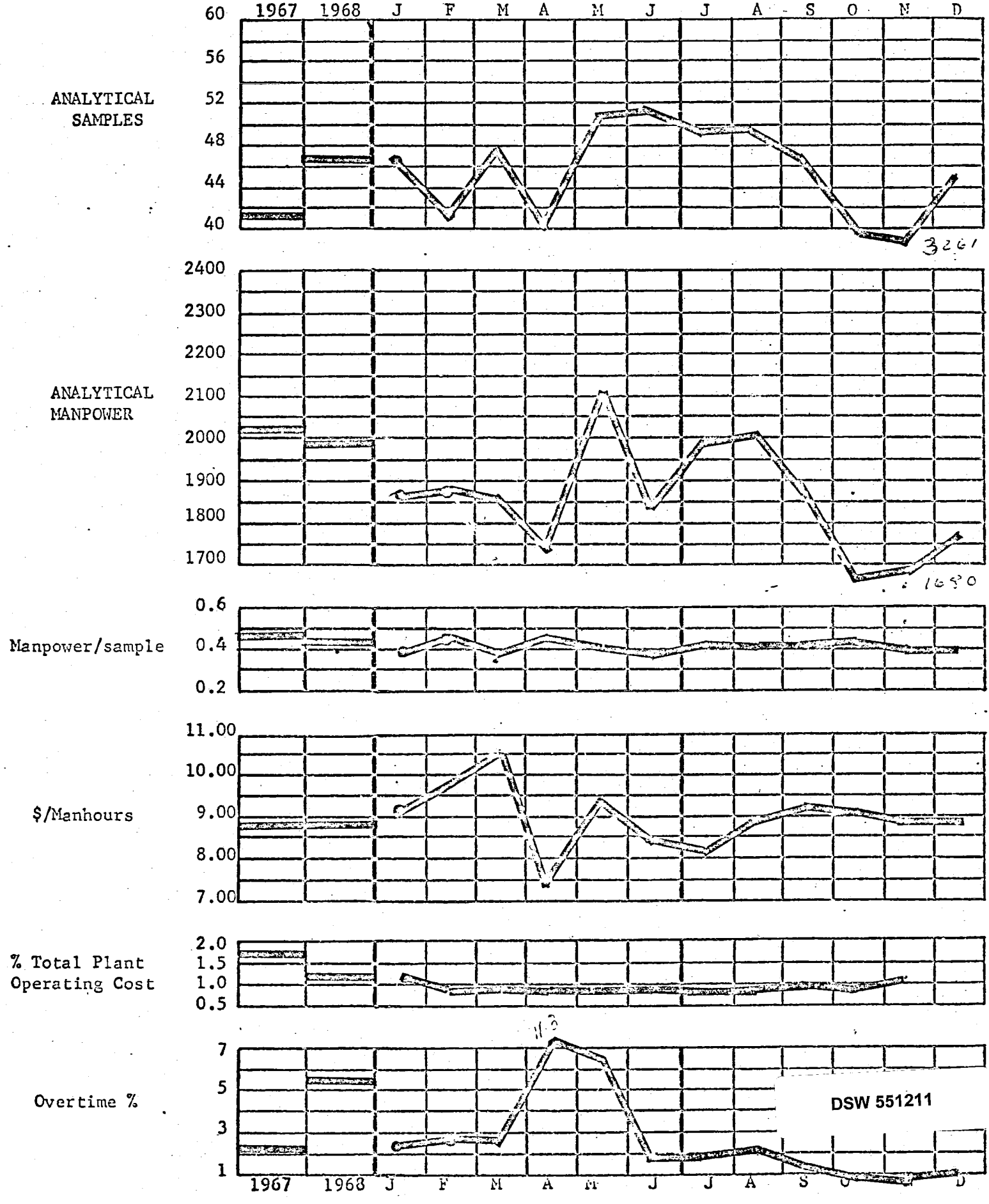
LABORATORY ADMINISTRATION



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