Monsanto

Anniston Plant

TECHNICAL SERVICES DEPARTMENT

MONTHLY REPORT

Anniston

A. G. Hill
G. L. Jessee
L. C. Lahman
J. C. Landwehr
G. W. Miller
H. E. Schulte
W. F. Taffee
H. L. Williams

General Offices

H. S. Bergen
H. C. Carder
D. Danna (5)
F. B. Elliott
P. B. Hodges
F. J. Holzapfel
D. B. Hosmer (2)
W. A. Kuhn
C. F. Luecke
J. A. Morgan
J. E. Smith
J. A. Stephens

OTHER LOCATIONS

A. H. Forsten - Alvin, Texas

D. W. Jackson - WGK

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

Summary

January 1970

Cost Improvement Results

	Est. Act.	Target	% of Target
Month	$42,191	$46,350	91%
YTD	$42,191	$46,350	91%

Organic Division

The project to install an improved entrainment separator on the No. 2 Liquid Aroclor still will be canceled as the increased surge capacity justification is no longer valid.

The Biphenyl-Santowax MIP shows an anticipated savings of one million dollars in the next ten years primarily based on PR&D work in 1970-72.

Muriatic Acid MIP was issued.

A proposal for an incremental capacity increase to enable the PNP department to supply the total Parathion requirement was prepared. A detailed Project Description was transmitted to CED.

Ag Division

Parathion Recovery Filter-Coalescer Pilot Test began January 5, and continued throughout the month.

DSW 551533

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Plant Improvement

Preliminary estimates have been received and initial design completed on a project to enclose the neutralization pit effluent ditch for a distance of approximately 450 feet after it leaves the plant.

Design & Drafting

The H_2S monitor, intended for use in the Niran department as a safety device, has successfully completed a two-month test run. No problems in either operation or maintenance of the unit were encountered.

Quality Control

The Plant Quality Score was 80.7, up 0.5 from December. Product quality surveillance revealed continuing deviation of Liquid Aroclor composition from normal.

Cause of Free Cl_2 in Muriatic Acid: High free chlorine for the last eight months has required tank and tank-car blowing in order to meet specification. Sales have been lost and costs increased. A sampling testing study is underway to isolate the source and to define the cause of high chlorine. A report is targeted for 2/15/70.

Pollution Control

Final report from Kem-Tech Labs Inc. received during January. Report is being circulated.

1970 Pollution Control Objectives have been prepared and will be published first week in February.

J. C. Landwehr

:kd

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ORGANIC DIVISION
1970 TSD COST IMPROVEMENT

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
LIQUID AROCLORS	TAR												
	EST												
	ACT												
Disposal of Liquid Montar	TAR			1080	1080	1080	1080	1080	1080	1080	1080	1080	1080
	EST												
	ACT												
#3 Aroclor Still New Burners	TAR		1500		1500								
	EST												
	ACT												
#2 Still Entrainment Separator	TAR							3000			3000		
	EST												
	ACT												
1242 Distillation - Productivity	TAR			1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
	EST												
	ACT												
Flaking & Drumming Facility-Headcount	TAR	3000	3000	2000	1000	1000							
	EST	3000											
	ACT												
Aroclor Warehouse -Reduced Headcount	TAR	1000	1000	1000									
	EST	1000											
	ACT												
	TAR												
	EST												
	ACT												
SOLID AROCLORS	TAR												
	EST												
	ACT												
Solid Aroclor Instrumentation	TAR				3750	3750	3750	3750	3750	3750	3750	3750	3750
	EST												
	ACT												
Sandvik Belt	TAR							2250	2250	2250	2250	2250	2250
	EST												
	ACT												
Add Tray Stripping Sections to Santowax	TAR				4580	4580	4580	4580	4580	4580	4580	4580	4580
	EST												
	ACT												
Cl_2 Bulk Handling Facilities	TAR	2000	2000	2000	2000								
	EST	3500											
	ACT												
Solid Aroclor Expansion	TAR		30000	50000							30000		
	EST												
	ACT												
Chlorinator Back Pressure	TAR									360	360	360	360
	EST												
	ACT												
	TAR												
	EST												
	ACT												
	TAR												
	EST												
	ACT												
	TAR												
	EST												
	ACT												

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ORGANIC DIVISION
1970 TSD COST IMPROVEMENT

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
BIPHENYL	TAR												
	EST												
	ACT												
Improved Santowax C Yield	TAR			4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
	EST												
	ACT												
Biphenyl Cooling Water Treatment	TAR	600	600	600	600	600	600	600					
	EST	670											
	ACT												
	TAR												
	EST												
	ACT												
HB-40	TAR												
	EST												
	ACT												
Reduce Nickel Catalyst Usage	TAR			700	700	700	700	700	700	700			
	EST												
	ACT												
Substitution of Santowax C for Santowax R	TAR											20000	20000
	EST												
	ACT												
	TAR												
	EST												
	ACT												
PNP	TAR												
	EST												
	ACT												
Modify Acidifier Dump Valve System	TAR							625	625	625	625	625	625
	EST												
	ACT												
Install Entrainment Separator - Productivity	TAR							5500	5500	5500	5500	5500	5500
	EST												
	ACT												
Optimize Reactor Variables - PNP	TAR	3150	3150	3150	4630	4630	4630	4630	4630	4630	4630	4630	4630
	EST	520											
	ACT												
Re-use Well Water	TAR										500	500	500
	EST												
	ACT												
	TAR												
	EST												
	ACT												
HCl	TAR												
	EST												
	ACT												
150 M Gal. Storage Tank	TAR	4300	4300	4300	4300	4300	4300						
	EST	4300											
	ACT												
HCl Catch Tank and Coalescer	TAR	5700	5700	5700	5700	5700							
	EST	2500											
	ACT												
HCl Instrumentation	TAR				1875	1875	1875	1875	1875	1875	1875	1875	1875
	EST												
	ACT												

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ORGANIC DIVISION
1970 TSD COST IMPROVEMENT

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	TAR												
	EST												
	ACT												
	TAR												
MISCELLANEOUS	EST												
	ACT												
Improve Plant	TAR	950	950	950	950	950	950						
Power Factor	EST	900											
	ACT												
Central Air	TAR										1000	1000	1000
Compressor	EST												
	ACT												
	TAR	19900	19900	19900	19900	9950							
Chlorine Plant	EST	19900											
Shutdown	ACT												
RTN Cooling	TAR							25	25	25	25	25	25
Water to Tower	EST												
Cooling Conveyor - P_2S_5	ACT												
	TAR												
	EST												
	ACT												
	TAR												
	EST												
	ACT												
Total Organic	TAR	40.6	72.1	96.88	58.07	44.62	27.97	34.12	30.52	30.88	64.68	51.68	51.68
Month - M $	EST												
	ACT												
Total Organic	TAR	40.6	112.7	209.6	267.6	312.3	340.2	374.3	404.9	435.7	500.4	552.1	603.8
YTD - M $	EST	36.29											
	ACT												

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AG DIVISION
1970 TSD COST IMPROVEMENT

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PARATHIONS	TAR												
	EST												
	ACT												
Replace #3 Chlorinator	TAR					3500	3500	3500	3500				
	EST												
	ACT												
Improve Cl_2- Still Yields	TAR					3000	3000	3000	3000	3000	3000		
	EST												
	ACT												
Increase Chlor- inator Coolings	TAR								8500	8500	8500		
	EST												
	ACT												
Acetone Recovery	TAR	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	
	EST	1957											
	ACT												
Chlorine Unloading	TAR	2250	2250	2250	3200	3200	3200	3200	3200				
	EST	3634											
	ACT												
Optimize Methyl PNP/PCT Ratio	TAR					3000	3000	3000	1500				
	EST												
	ACT												
Optimize Ethyl PNP/PCT Ratio	TAR	500	750	750								500	500
	EST	0											
	ACT												
Change Cooling H_2O - Item 737	TAR	200	200	200									
	EST	310											
	ACT												
	TAR												
	EST												
	ACT												
	TAR												
	EST												
	ACT												
Total AG - Month M $	TAR	5.75	6.0	6.0	6.0	15.5	15.5	15.5	22.5	14.3	14.3	3.3	.5
	EST	5.90											
	ACT												
Total AG YTD M $	TAR	5.75	11.75	17.75	23.75	39.25	54.75	70.25	92.75	107.1	121.4	124.7	125.2
	EST	5.90											
	ACT												
	TAR												
	EST												
	ACT												
Total Plant Month M $	TAR	46.35	78.1	102.9	64.07	60.12	43.47	49.62	53.02	45.18	78.98	54.98	52.18
	EST	42.19											
	ACT												
Total Plant YTD M $	TAR	46.34	124.5	227.3	291.4	351.5	395.0	444.6	497.6	542.8	621.8	676.7	728.9
	EST	42.19											
	ACT												

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AROCLOR E. E. Bowles, (V. R. Haupt

Entrainment Separator No. 2 Aroclor Still	NFC $4500	TSD Job No. 868

Project No. 3093, to provide an entrainment separator for No. 2 Aroclor still will be canceled. Recent changes in the demand forecast for liquid Aroclors have eliminated justification for this expenditure. This means of increasing production will be placed in the planning backlog for use when justified.

Therminol System	Potential Lost Sales	TSD Objective B-8(h)

New Therminol system is installed and running. CED construction installed the system in conjunction with the Solid Aroclor Expansion.

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

The MIP is 95% complete. There is a potential savings of $4 $\bar{M}$/yr. based on ideal costs including the effects on the products using biphenyl and Santowax. It is estimated that during the next ten years one million dollars will be saved resulting from PR&D's work in 1970-72.

HCl K. G. Hale, (A. G. McCarty)

Carbon Treatment Studies	$5,000 Savings + Quality	TSD Job No. 963

Pilot carbon treatment studies are targeted to begin in late February. PR&D evaluations of Perkin Elmer - Scanning UV instrument indicate the instrument is adequate for proposed studies. The Lab wi ll purchase the instrument to replace the old inoperative UV instrument.

HCl MIP	Planning	TSD Objective C-1 - 1a - 1a1

Complete HCl MIP was issued on 1/16/70.

PNP K. G. Hale, (A. G. McCarty)

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

Progress report "PNP Dust Flammability" 370:983(1) was issued mid-January. An inert (N_2) blanketing system will be included in the scope for PNP Debottlenecking (TSD Job No. 482).

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PNP - continued

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

Progress report "H_2SO_4 Unloading for PNP" 370:979(1) was issued mid-January. No future actions planned by TSD.

PNP - Debottleneck	Capacity	TSD Job No. 482

A preliminary project description describing objectives and equipment changes to expand PNP to an average production of 1.85 M #/month was issued to CED on 1/31/70. A capacity increase increment of 330 M #/month is targeted based on 1969 average production of 1.52 M #/month.

Additional information concerning justifications, locations, and design requirements will be collected for developing the final scope.

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

Demonstrate Parathion Recovery		TSD Objective B-5(a)

Tests of filtration techniques and coalescer elements began January 5. Preliminary filtration results indicate chelation does not extend filter life, and may decrease life. Test will continue through February.

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

Acetone yield again improved during January. Acetone usage for January was 5.61 lb./cwt. versus a targeted 5.18 lb./cwt. COD load to waste treatment has been reduced 12% based on COD value of Acetone. Progress report on results of project was forwarded to typing during January.

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

The Tentative Process Amendment has been approved. The design package covering the plant trial on No. 1 chlorinator has been transmitted to Maintenance. Installation

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

Removing the chlorinator steam jets will be a major step in eliminating the possibility of water mixing with organics which collect in the catchpots. This will require installation of a transfer pump to charge thio acid, a

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NIRAN - continued

vacuum pump to dry chlorinators after inspection, and a method of chlorinator sampling. The latter is made difficult by the corrosive nature of the chlorinated thio acid and its vapor. Possible approaches that will be considered are: a small circulating sample pump and vacuum pump sampling.

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

A combination of the high cost of an in-plant test, plus the probability that HCl sparge would not be feasible without HCl recovery for sales from chlorinator off-gas, scheduled to begin in the third quarter, may justify the HCl sparge test cost.

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

Process Surveillance

Raw material quality deterioration in acetone and improved biphenyl quality were reported. A general trend toward greater variability is developing in finished product quality.

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

The improvement documented throughout December was lost in the second week of January with occurrence of coldest temperatures of the winter. Deviations in pressure and temperature calibrations have been observed. Scales were check-weighed and proved to be correct.

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

Control instruments were installed ahead of schedule. Control variables were observed through the month and will be evaluated. The existing level instrument has not been repaired.

Cause of Free Cl_2 in Muriatic Acid — TSD Job No. 001-1004

High free chlorine for the last eight months has required tank and tank-car blowing in order to meet specification. Sales have been lost, and costs increased. A sampling-testing study was designed to isolate the source and to define the cause of high chlorine. This study is being carried out with a report targeted for 2/15/70.

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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

All material has been received for Automatic Alcohol Feed to Thio Acid Reactors (AFE 3161 - $3.9 M). Approximately 80% of the material necessary for construction has been received for a project to Modify Agitator Interlocks (AFE 3118 - $9.7 M). Both projects are scheduled for start-up during the spring turnaround at Niran.

Initial design has begun on a project to Prevent Steam Sparging of the Condensation Reactors in the Niran department. This work is being done as a part of Acetone Recovery (AFE 3340 - $60.7 M) and is undertaken in the interest of safety.

Two premises issued in January, 1) Provide Ventilation and Eliminate Atmospheric Contamination of the Aroclor Motor Control Center, (Estimate $4.7 M) is a direct result of recommendation #7 of Near-Miss Accident #5-69. 2) Replace Glass Rotameters in Hazardous Service at Niran, (AFE #3154 - $8.3M) complies with an S&PP recommendation.

The structural design of a truck ramp to the proposed Solids Incinerator at the plant dump (AFE 3094 - $20M) was completed.

Significant group effort was expended again in January to provide additional information for inclusion in the Anniston "L" Manual. C. A. Buehler, Standards Specialist spent two days at Anniston. First draft is expected within two months.

A two-month test of an H_2S Monitor, intended for use in the Niran department, was completed during the month. While not in the class of an accurate quantitative analyzer, the unit has performed well in the detection of abnormal levels (0-50 ppm) of hydrogen sulfide gas.

Drafting

In progress:

Prevent Steam Sparging of Condensation Reactors (Niran) - portion of Acetone Recovery AFE 3340, $60.7M, Install Solids Incinerator (AFE 3094 - $20M).

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Drafting - continued

Review drawings were forwarded for the following projects:

Eliminate Safety Hazards #1 Benzene Feed Tank (AFE 3373 - $8.1 M), Replace #3 Aroclor Jet (AFE 3384 - $3.2 M).

Construction drawings were completed for the following projects:

Install Barricades Around Aroclor Still Heaters (AFE 3363 - $3.2 M), Modify Niran Formulation Facilities (AFE 2754 - $22.8 M).

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

Final draft of progress report on Utilities Cost Improvement Results for 1969 and Plans for 1970 75% complete and will be published in February. Completed preliminary survey of plant instrument air usage and 1969 repair costs and downtime losses and portable compressor rentals to be about $25,000 per year, average air usage about 800 SCFM and peak air usage about 1100 SCFM out of an installed capacity of 1160 SCFM. Average and peak usage is expected to increase after startup of the solid Aroclor Expansion early in February. Evaluation report will be published in February.

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

East Side Sewer (AFE 3408 - $14 M)

This project provides for the enclosure of the east side sewer at the point of its exit from the plant to a point approximately 450 feet NE of Highway 202.

Install Solids Incinerator at Plant Dump (AFE 3094 - $20 M)

Transmittal of design package has been delayed because of higher priority item (east side sewer). Transmittal now scheduled for late February.

Fire Water System Leak

A routine check of the plant's fire water meter by the Anniston City Water Department disclosed an abnormally high usage. A subsequent check of the system revealed leaks in three sections of the system amounting to approximately 75% of the total leak (17,000 gal./day). The three leaks are scheduled to be repaired by the Maintenance department before further testing of the system is attempted.

New Plant Waste Disposal

Montar 9 (quaterphenyls and above from the Santowax distillation) is being utilized to create a new solids waste disposal area close to the existing land fill operation. This new area will be large enough for at least 5 years at our present disposal rate. It is formed by damming a ravine with Montar (covered with 3 feet of earth). This double play solves an immediate problem of Montar 9 disposal at a savings of $5M over other proposals, and creates a new waste disposal area at a time when the existing area has a predicted life of 1 to 2 years.

POLLUTION CONTROL E. G. Wright, (G. W. Miller)

Air and H_2O Pollution Complaints	Community and Governmental Relations	PCE Objective B-3-a.

Two air pollution complaints were received during January. Both of these complaints were from the R.E.A. Express office. There were no water pollution complaints received during January.

Eimco Filter Unit at Waste Treatment	Production Assistance	TSD Job No. 808

Problems were encountered with this unit during January due to the extremely cold weather. A pump was obtained which will allow precise regulation of the polyelectrolyte flow to the unit. Plant tests will continue during February to determine the capacity of the unit, also, some mechanical changes will be made.

Air Sampling Survey	Pollution Abatement	TSD Objective C-2

The complete report from Kem-Tech Laboratories was received during early January. Copies of this report have been sent to the appropriate people.

HCl Neutralization Pit	Pollution Abatement	TSD Objective F-4

The H_3PO_4 neutralization pit is still not in operating condition, therefore, it is still impossible to evaluate the HCl pit at this time.

Waste Treatment

All wastes were effectively treated during January. There was one complaint from the city due to high solids in the treatment plant effluent. Average daily values for Monsanto's effluent are as follows:

	Average Daily (ppm)	Specifications (ppm)
PNP	1.0	5
COD	127.5	200
Parathion	.13	1.0
BOD	6.30	200

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PLANT LABORATORIES G. W. Miller

PROCESS RESEARCH AND DEVELOPMENT J. T. Bell

Of the 105 mandays available to PR&D for the month of January, 82 were expended on projects included in the 1970 PR&D Program. The remaining days were utilized in the conclusion of the Aroclor 5460 Acetone Insolubles project along with supervision, vacation and miscellaneous.

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

The special order of type 4A Molecular Sieve has been received for a column evaluation of this material as a means to improve the electrical properties of Aroclor 1242-Phenyl Glycidyl Ether blends. This work will be initiated as progress in the construction of the biphenyl tube unit permits.

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

Polyphenyl pilot studies are on schedule as per PR&D work plan of 1/2/70. Final inspection of the Polyphenyl Laboratory is scheduled for 2/2/70. Construction of the reactor section is 60% complete and is progressing to an EDC of 2/13/70. Installation of the control system will begin at that time.

Parathion Condensation Reaction Studies — Increased Yields — I. Ransaw

The evaluation of different catalysts on reaction yields has been completed. The study of solvent effects is approximately 75% complete. This study will be resumed according to the 1970 PR&D Program.

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

The study to eliminate acetone insolubles in Aroclor 5460 caused by the presence of over-chlorinated terphenyls has been completed. Final PR&D report was issued 1/12/70.

Muriatic Acid — Quality — I. Ransaw

A Perkin-Elmer model 124 UV Spectrophotometer is being evaluated as a means to quantitate the organic impurities found in plant HCl. Completion of the evaluation is targeted for 2/6/70. Al alternate to the UV method of analysis (Gas Chromatography) will be investigated should the UV method prove insufficient.

PNP Process Improvements — Increased Reaction Rate — W. H. Howard

Rate studies with varying caustic molar ratios, % caustic, and initial sodium PNP content have been completed. The washing studies and color stability investigation will be completed 2/9/70 with PR&D report to follow.

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PLANT LABORATORIES - continued

PROCESS RESEARCH AND DEVELOPMENT - continued

Continuous Alcohol Distillation From Thio Acid	Determine Feasibility of Process	J. T. Bell

Investigation completed as scheduled on the project work plan with data on flow rate, temperature and vacuum obtained. A PR&D report has been prepared for issuance.

ANALYTICAL AND QUALITY CONTROL S. O. Kemp

Complaint Report

Quality

Number	Material	Customer	Reason
1-A-70	Aroclor 4465	Sidney Cook Chemical Co.	Solubility

YTD Quality Complaints/100 Shipments 0.18 Target 0.20

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COMMUNITY RELATIONS, PERSONNEL, RECRUITING, AND DEVELOPMENT

Personnel

1. C. W. Humphrey, Design and Drafting Co-Op from Alabama A&M, started work on January 27 reporting to R. L. Brewer.

2. Effective February 2, W. G. Niemeyer transferred to CED's Process Design - Project Management group responsible for Organic Division plants.

Recruiting

1. Thomas J. Ward, Process Engineer - Mississippi State, reported to work February 1, for one month prior to induction in Armed Forces.

Development

1. G. W. Miller visited St. Louis January 22 and 23 to finalize analytical methods transferred from Organic Research to Anniston plant.

Visitors

1. R. S. Yates visited for Solid Aroclor start-up.

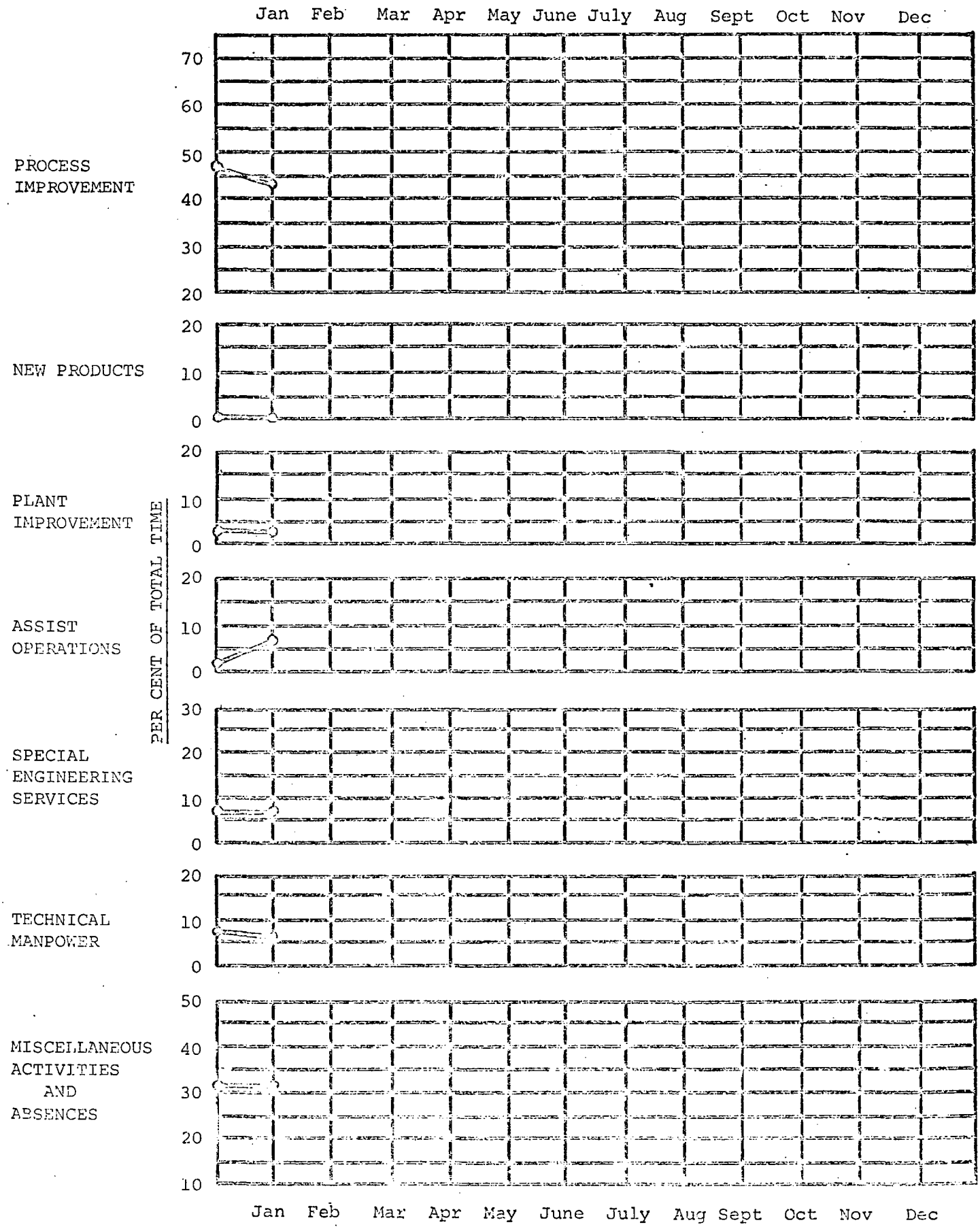
2. Miss Judy Johnson, Anniston Star reporter, visited January 19 concerning feature article on industrial pollution in our area.

3. C. A. Buehler from W. G. Krummrich Plant visited on January 20-22 to obtain material necessary for inclusion in the Anniston "L" manual.

4. J. F. Gaskill and R. F. Bennett of J. F. Gaskill Company of Birmingham (Fisher Controls representative) presented a demonstration of the new Fisher ac^2 instruments on January 21.

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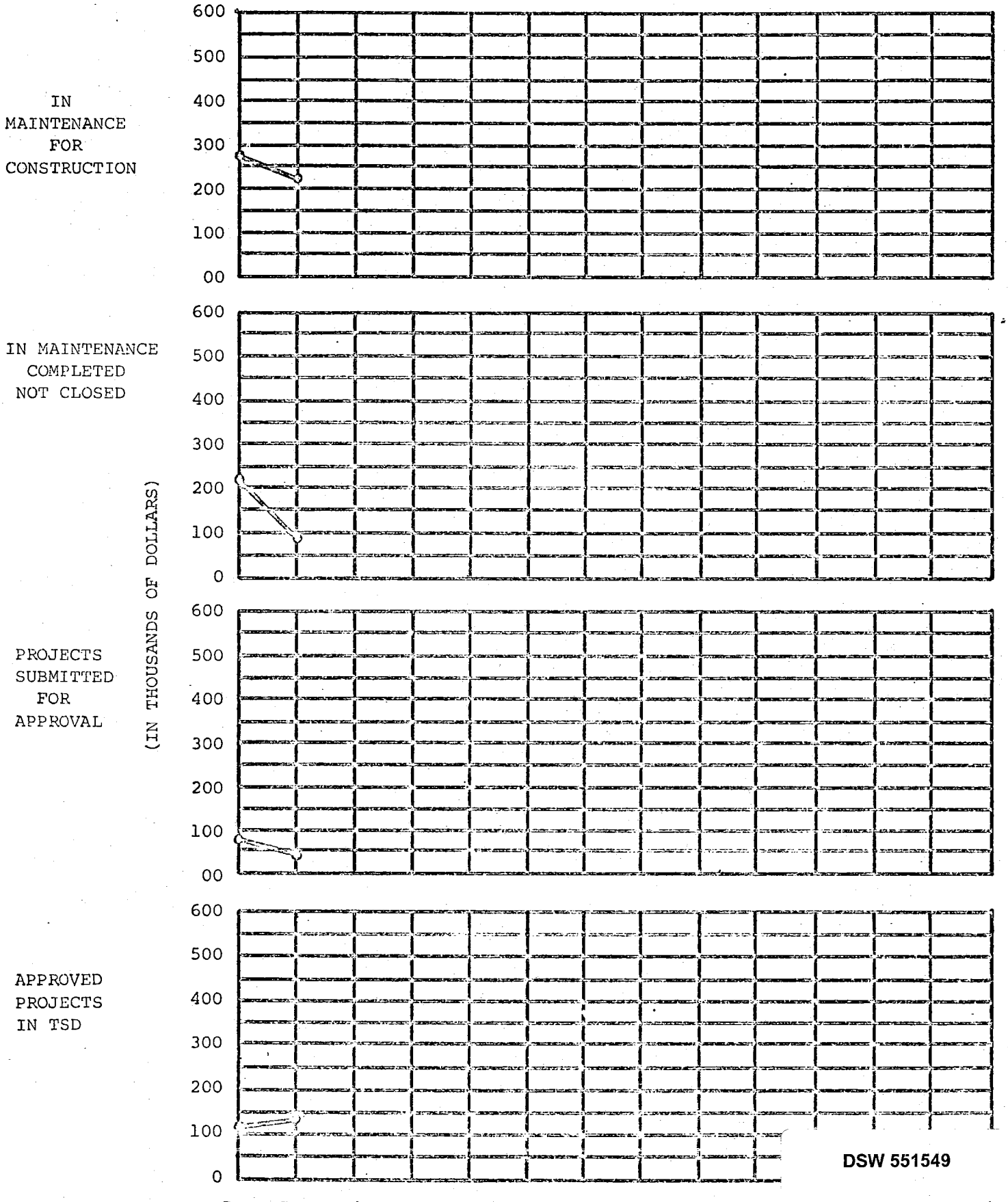
DISTRIBUTION OF TIME BY TECHNICAL SERVICE



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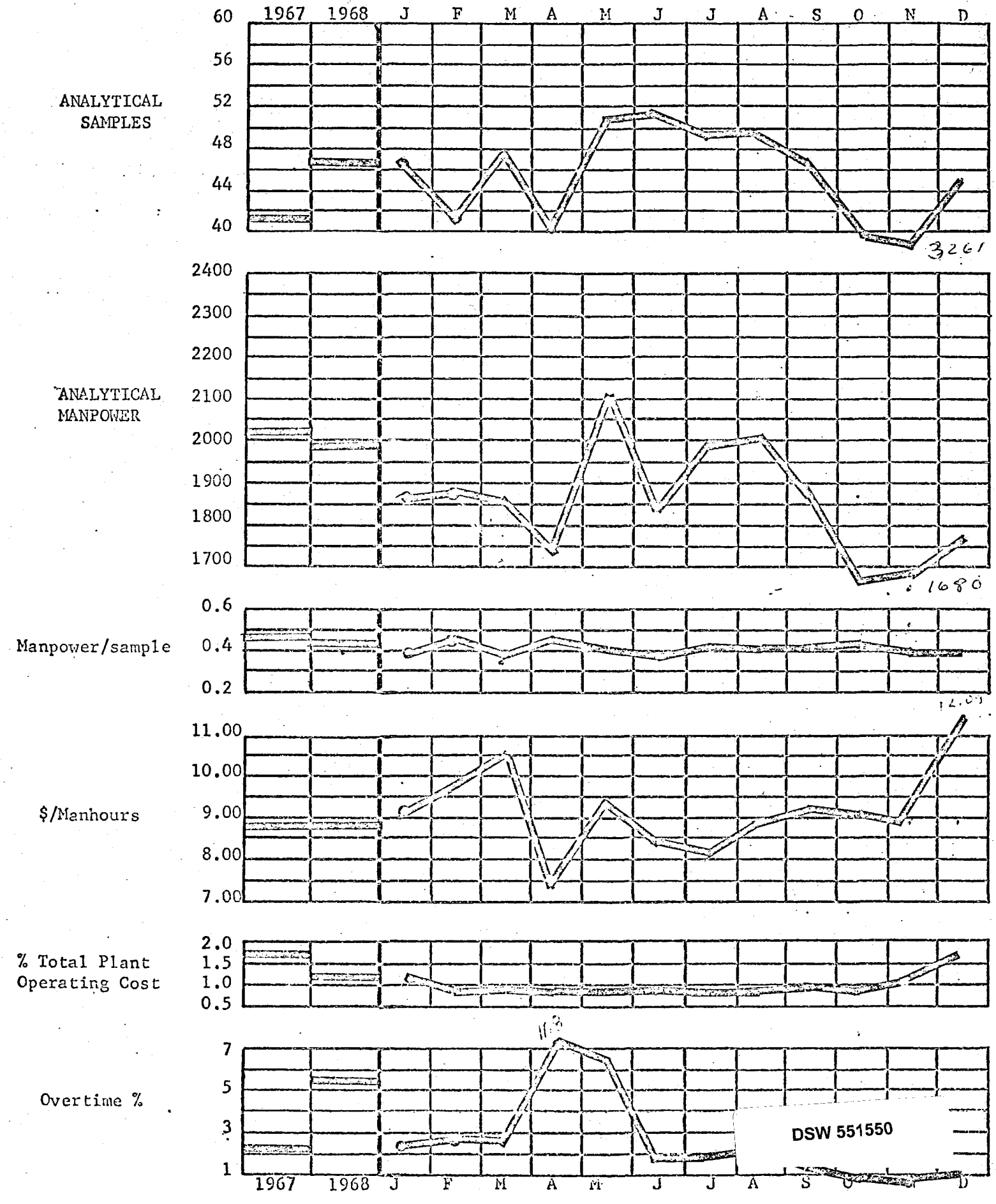
TSD PROJECT SUMMARY



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LABORATORY ADMINISTRATION

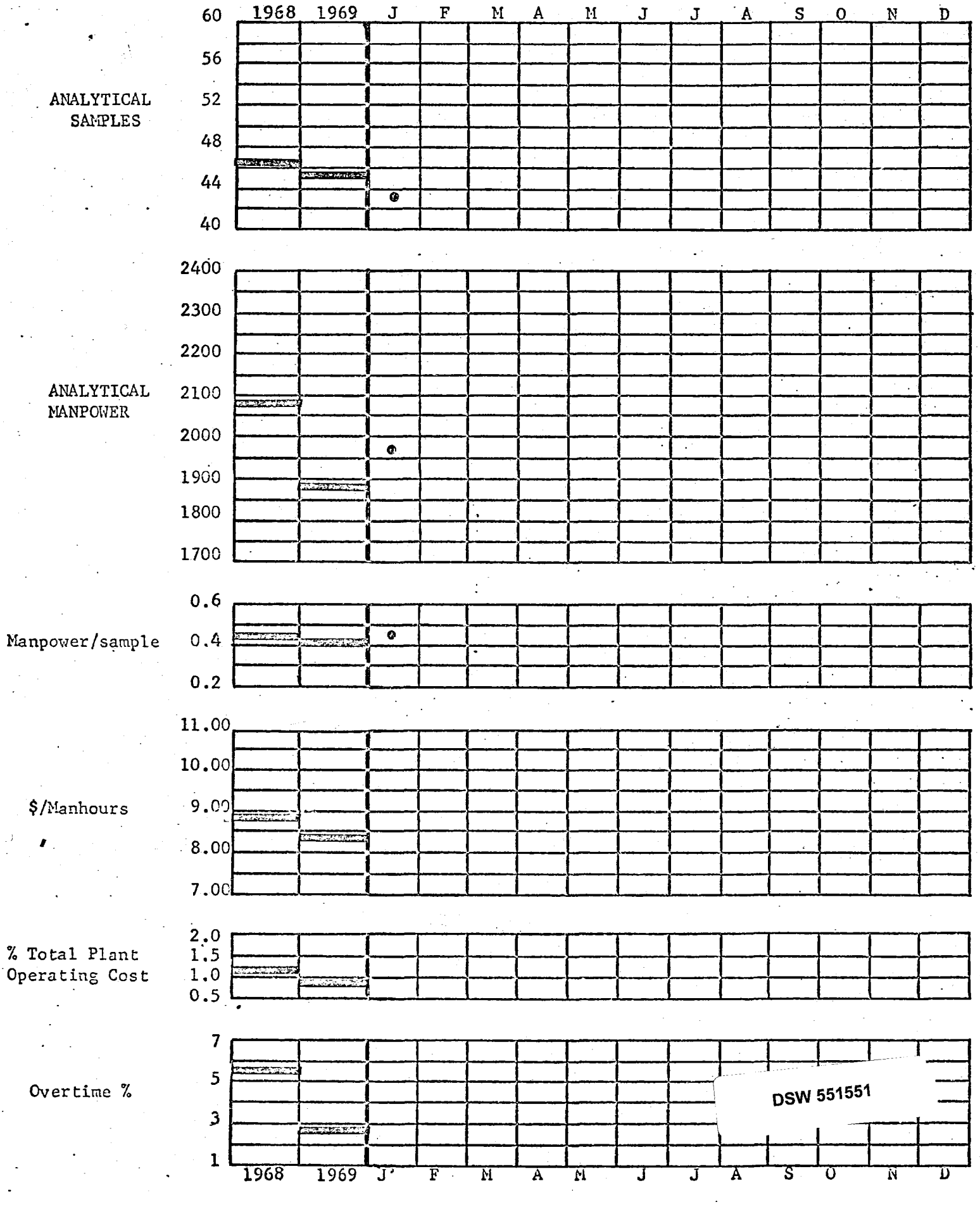


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LABORATORY ADMINISTRATION



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