

Ed Bowles

Monsanto

Anniston Plant

TECHNICAL SERVICES DEPARTMENT

MONTHLY REPORT

Anniston

C. K. Eastman
A. J. Koenig
J. C. Landwehr
L. J. Boesch
G. W. Miller
W. B. Papageorge
W. F. Taffee
H. L. Williams

Summary

February, 1969

Cost Improvement Results

	Est.	Act.	Target	% of Target
Month	27,135		21,960	123.5
YTD	46,975		40,410	116.2

General Offices

H. C. Carder
W. R. Robirds
Danna (5)
B. Hodges
D. B. Hosmer (2)
W. A. Kuhn
C. F. Luecke
N. L. Sample
J. E. Smith
R. J. Stratmeyer
H. S. Trail

Organic Division

Manufacturing cost estimate to be made by March 15, 1969 on low color Solid Aroclor 5460 by sodium treatment of Santowax R. Marketing estimates 1 M lbs/yr. sales at start.

Debottlenecking the Biphenyl stills and upgrading No. 1 Tubular Unit project mechanically complete. Insulation, painting and dismantling phases remain for final completion.

Staley Grade and water-white HCl project continues to receive top priority. Aroclor off-gas catch tank installation being expedited for 3/15 completion, and this will give an immediate increase in recovery. Total project completion still scheduled in June.

PNP reactor cycle time controlling variables are under intense study by TSD process and statistical groups. If current batch size of 8,000# and cycle time of 151 minutes/batch can be maintained, rate will improve to 1.78 M #/mo.

Construction underway on central chlorine unloading facility. Revised completion date is May 26, 1969.

OTHER LOCATIONS

D. W. Jackson - WCK
T. M. Patrick -
So.2nd St.
A. H. Forsten -
Alvin, Texas

Agricultural Division

Tentative amendment "A" to Niran process to Recover Acetone was approved 2/17/69.

The Sulfur Recovery - Liquid Residue Recycle Process was reviewed with CED and Ag Division. CED has begun work on a preliminary project scope and evaluation grade estimate.

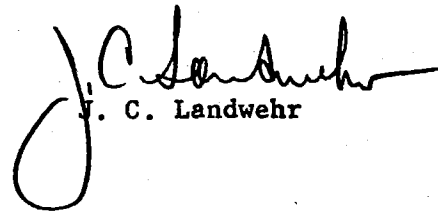
DSW 377684

Design and Drafting

Installation of emergency radio communications equipment started with mid-March completion targeted. Solid Aroclor instrumentation (Phase II) drawings forwarded for review.

Process and Quality Analysis

The Plant Quality Score was 94.9, up 5.4 from January, with YTD score of 92.0 against a target of 95.0 minimum.


J. C. Landwehr

jw

DSW 377685

STLCOPCB4099418

ORGANIC DIVISION
1969 TSD COST IMPROVEMENT

	ANNUAL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Sol.Aro. LI-Still SpG. AFE 3015	TAR EST ACT				2250	2250	2250	2250	2250	2250	2250	2250	2250
Sp.Solid Aro. Lower 5060	TAR EST ACT	2600 1500 1500	2600 5490	2600	2600	2600	2600	2600	2600	2600	-	-	-
Sol.Aro.-Still Coolout temp. AFE 3015	TAR EST ACT				160	170	160	170	160	170	160	170	160
Sol.Aro.-Chlortox Batch End AFE 3015	TAR EST ACT				390	390	390	390	390	390	390	390	390
SW/R Composition AFE 3016	TAR EST ACT					2750	2750	2750	2750	2750	2750	2750	2750
Solid Aro. Montar 5 Flake AFE 2949	TAR EST ACT					1080	1080	1080	1080	1080	1080	1080	1080
Sol.Aro. Blend 4465	TAR EST ACT	2500 1690 1690	2500 1920	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
Sol.Aro.-Verti- cal Still Cond. AFE 2324	TAR EST ACT	70 70 70	80 90	70	80	70							
Sol.Aro.Cl ₂ T/C Dock AFE 2342	TAR EST ACT			940	940	950							
Cl ₂ Plt.Down No Unload CED 1831	TAR EST ACT						950	940	950	940	950	940	950
Solid Aro.-Flake & Drum CED 1430	TAR EST ACT	3000 0 0	3000 0	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Liq.Aro. 48-53 M #/yr. AFE 2545	TAR EST ACT	3000 0 0	3000 5500	-	-	-	-	-	-	-	-	-	-
Liq.Aro.-No.2 Still Entrain Sep. AFE 3093	TAR EST ACT										3000	3000	
Liq.Aro.-Montar Disposal AFE 2952	TAR EST ACT			1080	1080	1080	1080	1080	1080	1080	1080	1080	1080
Warehouse CEA 1452	TAR EST ACT	2000 2000 2000	3000 2000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Liq.Aro.New Burners #3 Still	TAR EST ACT			1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Biphenyl Relocate No. 1 Preheat CEA 1892	TAR EST ACT	500 1500 1500	500	500	500	500	500	500	500	500	500	500	500
HB-40 2 A/C's AFE 3102	TAR EST ACT	3000 2230 3490	3000 2580	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000

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STLCOPCB4099419

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												
	ACT												
Improve Plt. Power Factor	TAR					900	900	900	900	900	900	900	900
	EST												
	ACT												
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										
	ACT												
Reduce Mole Ratio NaOH/PNCB PNP	TAR				4000	4000	4000	4000	4000	4000	4000	4000	4000
	EST												
	ACT												
New Wash Water Pump - PNP AFE 2998	TAR					50	50	50	50	50	50	50	50
	EST		25										
	ACT												
Automatic pH Control PNP	TAR										500	500	500
	EST												
	ACT												
HCl Filter Pump	TAR	330	330	340									
	EST	330	330										
	ACT	330											
New Blow Tank HCl	TAR	200	200	200	200	200	200						
	EST	200	200										
	ACT	200											
150,000 Gal.-HCl Storage Tank AFE 2468	TAR				1760	1760	1780	1760	1760	1780	1760	1760	1780
	EST												
	ACT												
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												
	ACT												
Hg Recover from Residue	TAR	250	250	250	250								
	EST	3910	0										
	ACT	3910											
Hg Wash Tank AFE 2802	TAR	250	250	250	250								
	EST	0	0										
	ACT	0											
Biphenyl Productivity	TAR												
	EST	0	9000										
	ACT	5150											
Total Organic By Month M \$	TAR	17.7	21.2	23.7	31.9	36.7	45.5	46.0	46.0	46.0	47.1	47.9	45.0
	EST		27.1										
	ACT	19.8											
Total Organic YTD M \$	TAR	17.7	38.9	62.6	94.6	131.3	176.8	222.9	268.9	316.0	364.0	412.0	457.0
	EST		46.9										
	ACT	19.8											

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STLCOPCB4099420

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												
	ACT												
Optimize N ₂ & Cl ₂ Levels	TAR				6600	6700	6700	6600	6700	6700			
	EST												
	ACT												
Increase Waste Acid Sales	TAR				400	300	300	400	300	300	400	300	300
	EST												
	ACT												
Chlorinator R.I. AFE 2244	TAR							250	250	250	250	250	250
	EST												
	ACT												
EVOP Condensation Rx.	TAR	750	750	500							500	750	750
	EST	0	0										
	ACT	0											
Cl ₂ Unloading CEA 1831	TAR							5000	5000	5000	2000	2000	2000
	EST												
	ACT												
Recycle Wash Water AFE 2960	TAR							290	290	290	290	290	290
	EST												
	ACT												
Parathion Recovery AFE 2655	TAR										5800	5800	5800
	EST												
	ACT												
Reduce Acetone Losses	TAR										4300	4300	4300
	EST												
	ACT												
Formulations AFE 2897	TAR				1600	1600	1600	1600	1600	1600			
	EST												
	ACT												
Change Cooling H ₂ O Item 737 AFE 3067	TAR				125	125	125	125	125	125	125	125	125
	EST												
	ACT												
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												
	ACT	0	0										
Ag. Division YTD	TAR	750	1500	2000	11145	20290	29405	44100	58785	73470	88045	102530	117015
	EST												
	ACT	0	0										
	TAR												
	EST												
	ACT												

DSW 377688

STLCOPCB4099421

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

Evaluate Quaterphenyl- Polyphenyl Effects on Solid Aroclor Yields	1969 Savings \$63,200 NFC \$14,000	TSD Objective B-8 (a)
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Nuclear gage instrument installation scheduled to begin week of March 3. Awaiting receipt of radioactive materials license from State Health Department before radioactive source for level alarm can be shipped.

Drawings for second part of project, Still Condenser Coolant Control, returned from plant review with minor changes.

Make Solid Aroclor in Liquid Aroclor System	Meet 1969 Forecast of 15 M lbs.	TSD Objective B-8 (b)
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Project completed in early February. Produced 280 M lbs. of Aroclor 5460 in Liquid Aroclor system during February.

Montar 5 Flaking	Savings \$11,500/yr. NFC \$12,000	TSD Objective B-8 (c)
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Montar 5 flaking project will be transmitted in March and installed by May 1. Pump delivery prevents earlier EDC.

Low Color Aroclor 5460	Quality NFC - to be estimated	TSD Objective B-8 (e)
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Presently estimating capital investment required to produce low color Aroclor 5460 by sodium treatment of Santowax. Marketing estimates sales of up to 3 M lbs. yearly of low color Aroclor 5460. Manufacturing cost estimate to be completed by 3/15/69.

Therminol System	Evaluation	TSD Objective B-8 (h)
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The Therminol distribution problem was discussed at the Solid Aroclor Expansion Scope Review February 4, 1969 with CED. CED will provide a new surge tank plus the pump and lines for the expansion Therminol needs. TSD will provide pump and lines to effectively distribute the Therminol in the existing system. Distribution in the existing system is poor and does not supply heat where needed without re-adjusting most of the 22 branches from the main header.

DSW 377689

STLCOPCB4099422

AROCLOR (Cont'd)

Montar Use and Disposal Project 2952	Savings \$13,000 NFC \$10,000	TSD Objective B-8 (g)
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Installation is scheduled for March to provide a line for pumping Liquid Aroclor Montar to Montar disposal pond.

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

Debottleneck Biphenyl Stills to 87.6 M lbs/yr.	Capacity Increase	TSD Objective B-7 (a)
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CED's work in this area was mechanically complete on February 28. The plant plans to put the Santowax C surge tank and column feed pump into service on March 15, 1969 after replacement of damaged Leveltrol instrument.

No. 1 Furnace Upgrade Liaison (CEA-1892)	Capacity Increase	TSD Objective B-7 (c)
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This project was mechanically complete on February 28. Remaining work includes: piping and tank insulation, dismantling of tanks and piping, tank painting, and access road work.

Improve Santowax R Quality with New Distillation Column	Quality	TSD Objective B-7 (d)
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All instruments to be received in March. Installation of this project may be delayed due to maintenance manpower drain for the Niran turnaround.

CHLORINE D. W. Dudley (A. G. McCarty)

Central Chlorine Unloading	CED 1831 Liaison Savings \$53,300	TSD Objective B-6 (a)
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Elevation grading for installation of new railroad tracks underway. Final design to be completed in March. Construction completion date is now targeted at May 1, 1969.

DSW 377690

STLCOPCB4099423

HC1 O. J. Norris, G. L. Moore (A. G. McCarty)

Production of Staley Grade Acid - Project 3076	New Earnings \$28.8 M Potential Savings \$71 M	TSD Objective B-10 (c)
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The catch tank portion of project 3076 continues to be expedited. Shop prefabrication essentially complete. Bad weather held up pouring the concrete pad. Schedule for week of 3/3 includes completion of concrete pad and walls and painting of pipe and tank. Field installation set for week of 3/10.

A meeting was held with Production and PR&D to outline program to define Staley Grade acid in terms of organic contamination level.

Muriatic Acid Storage	Savings \$21,200	TSD Job No. 497
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Rubber lining 85% complete. Piping work scheduled to begin by mid-March.

PNP O. J. Norris, G. L. Moore (A. G. McCarty)

Debottleneck to 1.8 M #/mo.	Capacity Savings \$27,500	TSD Objective B-9 (a)
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Production rate continues to improve. Reaction time remains at targeted 66 min./batch with letdown continuing in 30-35 minute range. Batch size continuing to be increased, now back to 8,000 #/batch. PR&D has completed their study of charge tank contents changes, and intensive study of process variables is leading to much better understanding of the causes of reactor letdown problems. Solid phase build up (measure of % solids) observed in sample bottles is attributed to NaPNP. This level build up is a better "before the fact" indication of letdown trouble than the old method of observing an increasing "hump" in the cooling curve. Letdown problem is strongly indicated to be phase-related phenomena. A progress report on developments to date will be issued by 4/1/69.

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

Demonstrate Parathion Recovery	Savings \$17,500 10-15% Reduced C.O.D. Load	TSD Objective B-5 (a)
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Coalescer was inspected for cause of pluggage by representative of RPC corporation (coalescer manufacturer) and TSD February 6. Vendor reported that pluggage may have been caused by breakdown of wire elements since solids on elements were "high" in iron. Laboratory filtration of process stream and subsequent qualitative analysis indicates filter and coalescer pluggages were caused by gelatinous ferric hydroxide. Steps being taken to test sequestering of iron before filtration. Laboratory test to be run in early March.

NIRAN (Cont'd)

Parathion	Savings \$10,000	TSD Objective
Formulations		B-5 (f)

Preliminary design for expanded facilities has been completed and drawings are out for review. Justification for the project is marginal and depends on a significant formulations volume increase over last years Anniston production. Doubt now exist that this increased requirement will be forthcoming. In the event that an AFE is not submitted the design package will still be completed and held for future use.

Acetone	Savings \$12,900	TSD Objective
Recovery	40-50% Reduction in C.O.D.	B-5 (i)

Tentative amendment to Niran Process for recovery of acetone was approved 2/17. Gathering of background data on percent acetone presently remaining in batches is underway. Plant tests will begin on the number 3 condensation reactor in March.

Recycle Wash	Savings \$3,500	TSD Objective
Water		B-5 (g)

Project 2960 to make washing operation counter current flow is scheduled for construction during March turn-a round. Plant tests will begin on one washing system in April.

Sulfur Recovery	\$500,000/yr. Savings	TSD Objective
From Residue	40% Reduction in SO ₂	B-5 (d)

A sulfur recovery meeting was held in St. Louis on 2/20 with Representatives from Ag Research, CED Engineering, Utilities Planning, Ag Manufacturing, Anniston PR&D and TSD. The purpose of the meeting was to review the proposed process, justification, waste disposal, scale-up problems and other engineering aspects.

Jim Lakemeyer, Project Manager for Sulfur Recovery, is preparing scope. Anniston TSD and PR&D will assist where possible on scope and follow-up design problems.

Submerged Pump for	Savings \$1,500	TSD Objective
Refractive Index	(potential automation)	B-5 (c)
Control of Chlorination		

The pump has been re-installed. Refractometer tests have been delayed because of sandblasting and painting operations in immediate area. Production will run pump during each batch and begin collecting samples from circulating line. Refractometer will be started-up in March to gain background data during ethyl run.

NIRAN (Cont'd)

Fume Collection System
in Parathion Department

Reduce Atmosphere
Corrosion

TSD Objective
F-10

New fan still on order. Transmittal for new foundation and transition pieces was completed during February.

ENGINEERING DESIGN AND SERVICES

Mechanical/Electrical/Instrument Design and Drafting

J. C. Price, J. A. Veazey,
R. L. Brewer, J. K. Rennie,
(W. F. Taffee)

Installation of emergency communications radio system (AFE 2951-\$14 M) underway. Completion targeted for mid-March.

Design packages forwarded to Maintenance for Handrail and Lighting at Niran Limestone Pit (AFE 3061 - \$2500), Staley Grade HCl, switch Heat Exchanger to Tower Water.

Review drawings completed for Niran Formulation, P₂S₅ Vent Alarm (AFE 3181 - \$838 - Recommendation of safety investigation), Solid Aroclor Instrumentation (Phase II).

Corrosion inspection services provided for Thio Acid and Condensation Reactors, Aroclor Blow Tanks and Roof Tank. Test panels of DuPont exterior finish for rigid frame structures installed as start of five year test exposure. Construction of rubber lined HCl storage tank observed - testing scheduled for early March.

UTILITIES ENGINEERING

J. C. Price (W. F. Taffee)

Transmitted design package to P&S for Project 2988 - Biphenyl Gas Meter and Project 3067 - Cooling Water on Item 737 (savings \$1500/yr.). Forwarded AFE 3184 - Relocate 1800 KVAR Capacitors (savings \$10,800/yr.) for approval. Reviewed proposed improved treatment for Biphenyl Cooling Tower with John Bufo and O. W. Siebert. Met with W. E. Chandler and discussed Utilities Cost Improvement.

PLANT IMPROVEMENT

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

1968 Plant Improvement 4th quarter Progress Report was published. 1969 Plant Improvement Program was reviewed with W. E. Chandler.

DSW 377693

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

Contact With Regulatory Agencies	Community and Govt. Relations	TSD Objective F-2
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One visit to city treatment plant during February. Solids continue to be their major problem.

Waste Audits	Pollution Abatement	TSD Objective F-3
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Planning underway for waste audits. Report will be issued in March.

Waste Treatment

All wastes were effectively treated during February. High solids concentrations continue to be the major problem. Average daily values for Monsanto's effluent are as follows:

	Average Daily	Specifications
PNP	1.4 ppm	5
COD	52.6 ppm	<200
Parathion	.12 ppm	1.0
BOD	4 ppm	<200

PROCESS AND QUALITY ANALYSIS W. B. Dunlap

Quality

The Plant Quality Score was 94.9, up 5.4 from January, with YTD score of 92.0 against a target of 95.0 minimum. Cost optimization experiments in Niran condensation, and a deliberate reduction in Aroclor 1242 gravity have made these products deviate from established averages. Statistical standards will be recalculated when equilibrium is reached.

Parathions - Correlate Intermediate and Parathion Isomers	Potential Savings \$88,000	TSD Objective C-2 Job 878
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Laboratory tests for intermediate isomers have wide discrepancies which must be reconciled in order to correlate intermediate with parathion isomers. Routine surveillance of parathion isomers is continuing.

DSW 377694

PROCESS AND QUALITY ANALYSIS (Cont'd)PNP - Monitor Critical
Process VariablesPotential Savings
\$60,000TSD Objective
C-3
Job 879

Extensive analysis of operating data was carried out with collaboration of the Process Engineer. This work is reported under TSD Job 482. There is strong evidence that extended reactor cooling cycles involve a phase change (crystallization of NaPNP) with liberation of heat. If this occurs at the boiling point, levitation of the reactor mass into the condenser and receiver results in loss of pressure drop and longer cooling cycles. This also recycles solids into the next batch, with continuing build-up of solids and increasingly severe "bumping" of the reactor during depressurization.

Manpower

Interviewing and testing of candidates for Process and Quality Analysis Technician was completed. A selection will be made early in March.

DSW 377695

PLANT LABORATORIES G. W. MillerPROCESS RESEARCH AND DEVELOPMENT J. T. Bell

Out of the scheduled 95 working days, 68 days were directed toward projects in the 1969 PR&D Program with 17 days expended on a nonscheduled project. The Blend Scavenger Refinement (Aroclor) study has been delayed approximately 3 weeks for a preliminary investigation of Montar 9 conversion to biphenyl or terphenyls. The program to establish possible Montar Utilization is approximately 8 days behind the published work plan.

p-NitrophenolReduce Cycle TimesW. H. Howard
J. T. Bell

Analysis of charge tank and 216 recycle water samples under normal and upset (prolonged cool-down) conditions has been completed. The only significant difference observed was an increased sodium paranitrophenate level in the charge tank under upset conditions. The laboratory reactor studies will be initiated according to the work plan with other studies included as may appear feasible.

Aroclor 1272Sample Preparation
for Sales

G. L. Arnett

The program has been concluded and a report issued on the laboratory investigation.

Sulfur RecoverySulfur Refinement
for Reuse

I. Ransaw

A report entitled "Proposed Process for Purification of Sulfur" has been issued. A 40% or greater reduction in the COD level may be reached by chlorination of wash effluent. A technique for the quantitative determination of off-gases generated in the wash step has yet to be developed. A corrosion study to establish the feasibility of utilizing a nickel centrifuge as a substitute for the final filtration has been initiated.

Blend Scavenger
Refinement (Aroclor)Improved Aroclor
Electrical Properties

J. L. Brown

The project was delayed to permit a preliminary investigation of Montar 9 conversion to lower polyphenyls. A work plan is to be issued and effort resumed by 3/3/69. The work will be directed toward establishing if phenyl glycidyl ether is incapable of yielding excellent resistance values by virtue of molecular dipoles.

DSW 377696

STLCOPCB4099429

PROCESS RESEARCH AND DEVELOPMENT (Continued)

Quaterphenyl Conversion Possible Montar 9 Utilization J. L. Brown

Preliminary data indicates probable biphenyl and terphenyl production by Montar 9 reaction with AlCl_3 . Low yields and high catalyst requirements have been observed. Sodium-aluminum trichloride reaction with Montar 9 has produced an unidentified white crystalline material. This initial study is to be completed and terminated.

Solid Aroclor Color Improvement Meet Color of Competitive Material G. L. Arnett

A chlorinated competitive material, KC-100 (Kanagefuchi) has been found to have lower color than Aroclor 5460. A sample of Kanagefuchi Santowax was chlorinated in the laboratory and found only equivalent in color to Aroclor 5460. This indicates an unknown color improvement step presumably relating to the terphenyl starting material. This project has been concluded.

Montar Utilization Recover Aroclor Value G. L. Arnett

The project work plan has been issued. Initial efforts to determine the maximum number of distillations that may be made prior to still bottoms removal has been initiated. Aroclor 1142 is being employed as material under investigation.

ANALYTICAL AND QUALITY CONTROL S. O. Kemp

Complaint Report

Quality

<u>Number</u>	<u>Material</u>	<u>Customer</u>	<u>Reason</u>
2-A-69	HB-40	General Cable	Color

YTD Quality Complaints/100 Shipments 0.16 Target 0.20

Service

None

YTD Quality Complaints/100 Shipments 0.0 Target 0.25

DSW 377697

COMMUNITY RELATIONS, PERSONNEL, RECRUITING, AND DEVELOPMENTPersonnel

1. D. A. Self, B.S. Ch.E. University of South Carolina and 1968 summer employee, joined TSD permanently 2/10/69.
2. A. G. McCarty, K. G. Hale, and Ish Ransaw made presentation to Ag Division Management & CED on Sulfur Recovery Project 2/20/69.

Development

1. R. L. Brewer attended glass lined equipment training course at Pfaudler Co., Rochester, N. Y., February 3-7.
2. E. G. Wright attended a training course "Biological Treatment of Waste Waters & Sludges" at Taft Sanitary Engineering Institute, Cincinnati, Ohio, February 10-21.
3. J. A. Veazey attended a seminar on control valves, sponsored by Fisher Governor, in Birmingham, Alabama, February 3, 1969.
4. Four people from Engineering Design and Services attended a demonstration seminar on Armstrong steam traps 2/17.
5. J. L. Brown attended an Instrumentation Seminar at Central Research on 2/13/69.
6. A. G. McCarty attended Kepner-Tregoe in St. Louis week of February 10th.
7. J. C. Landwehr attended Capsule Process Control Course at Delaware River Plant 2/17 & 2/18 and Comprehensive Interviewing Course in St. Louis week of 2/29.

Visitors

1. B. B. Hedleston visited the plant to discuss railroad repairs and relocations on CEA 1831.

DSW 377698

DISTRIBUTION OF TIME BY TECHNICAL SERVICE

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

PROCESS
IMPROVEMENT

70
60
50
40
30
20



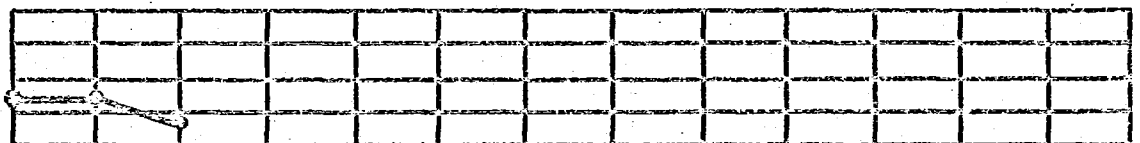
NEW PRODUCTS

20
10
0



PLANT
IMPROVEMENT

20
10
0



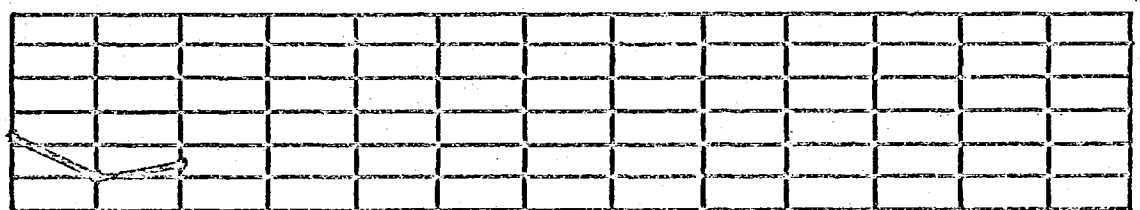
ASSIST
OPERATIONS

20
10
0



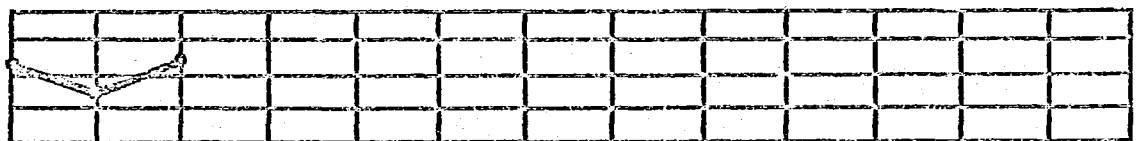
SPECIAL
ENGINEERING
SERVICES

30
20
10
0



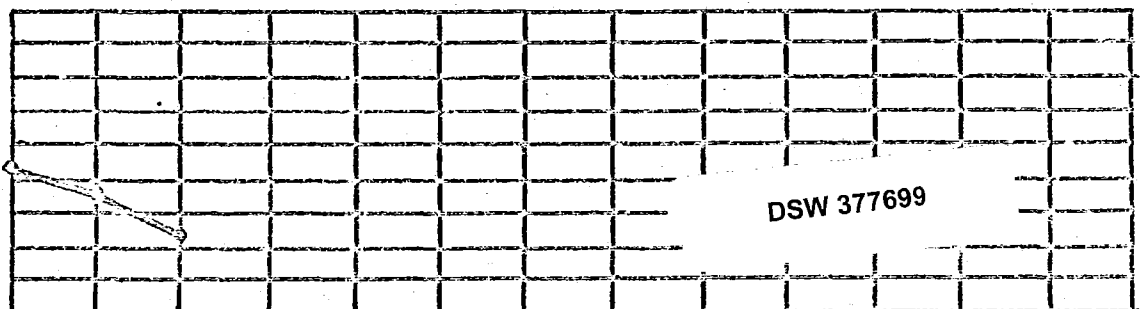
TECHNICAL
MANPOWER

20
10
0



MISCELLANEOUS
ACTIVITIES
AND
ABSENCES

50
40
30
20
10

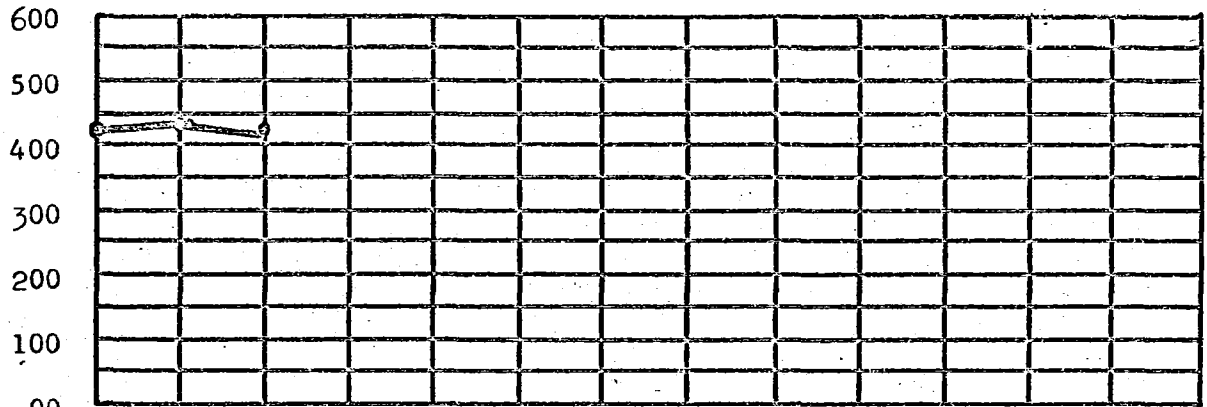


DSW 377699

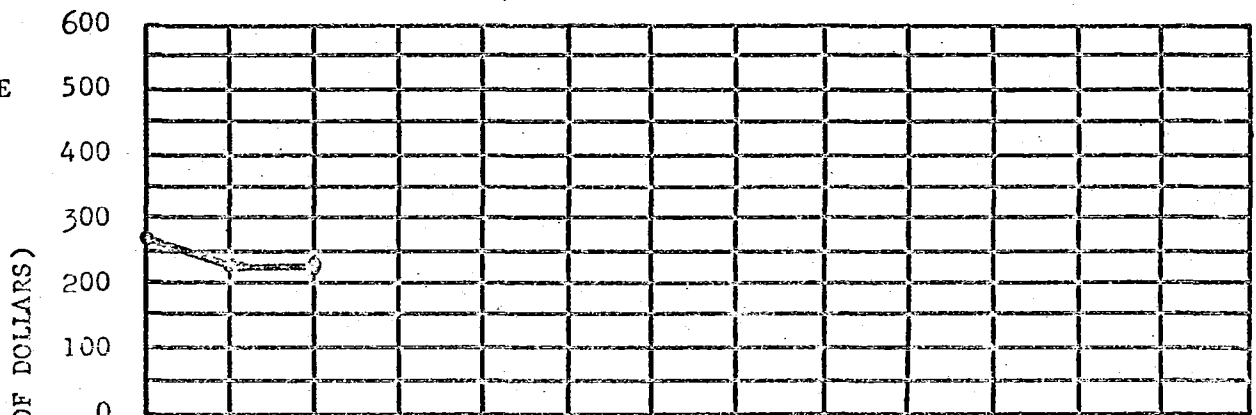
Jan. Feb. March Apr. May June July Aug. Sept. Oct. Nov. Dec.

TSD PROJECT SUMMARY

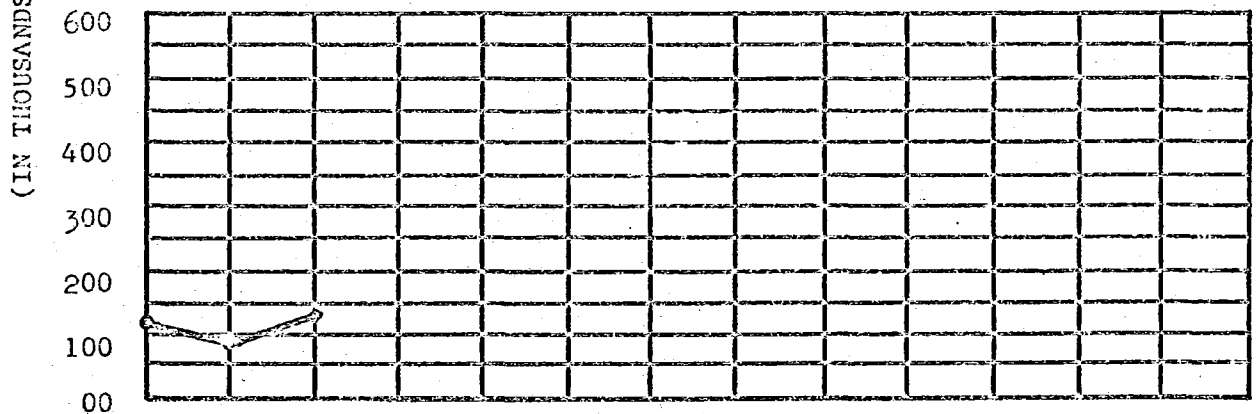
IN
MAINTENANCE
FOR
CONSTRUCTION



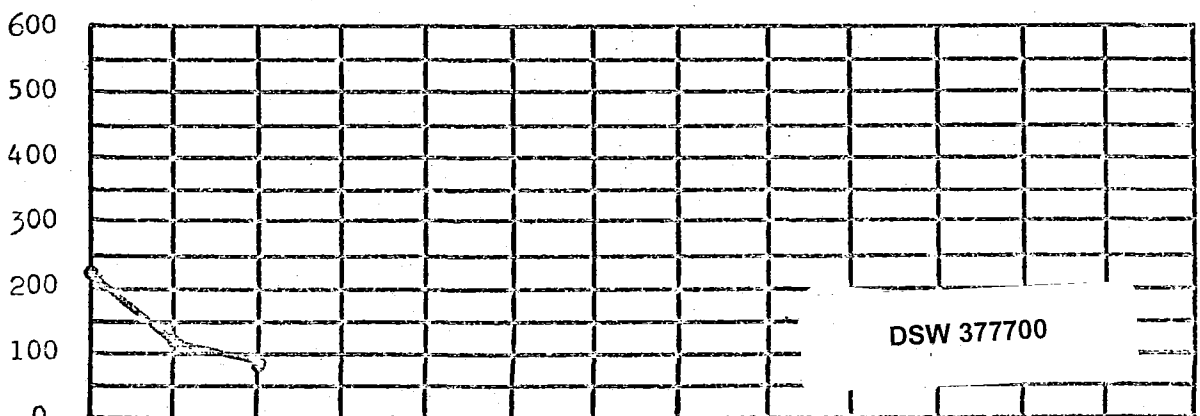
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COMPLETED
NOT CLOSED



PROJECTS
SUBMITTED
FOR
APPROVAL



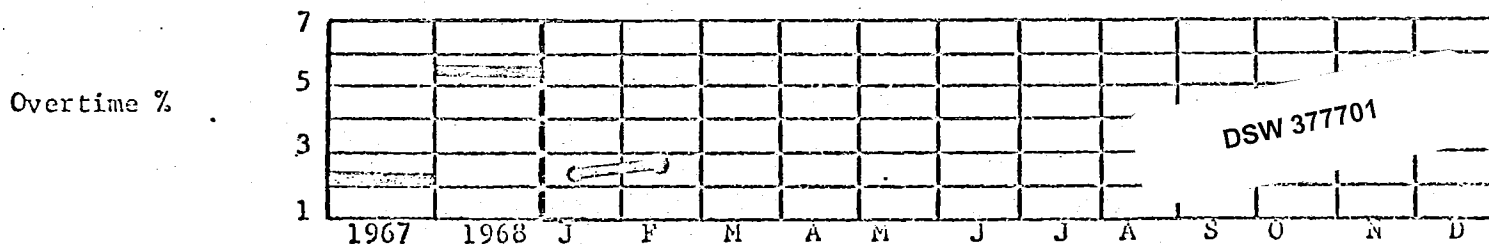
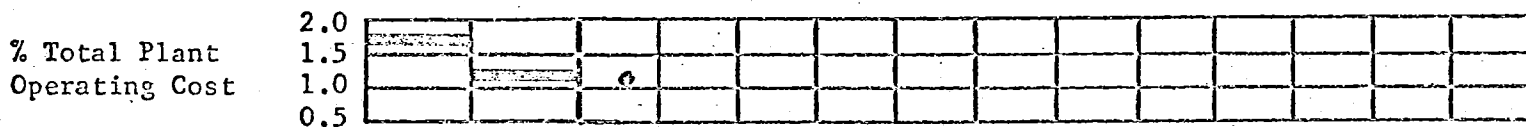
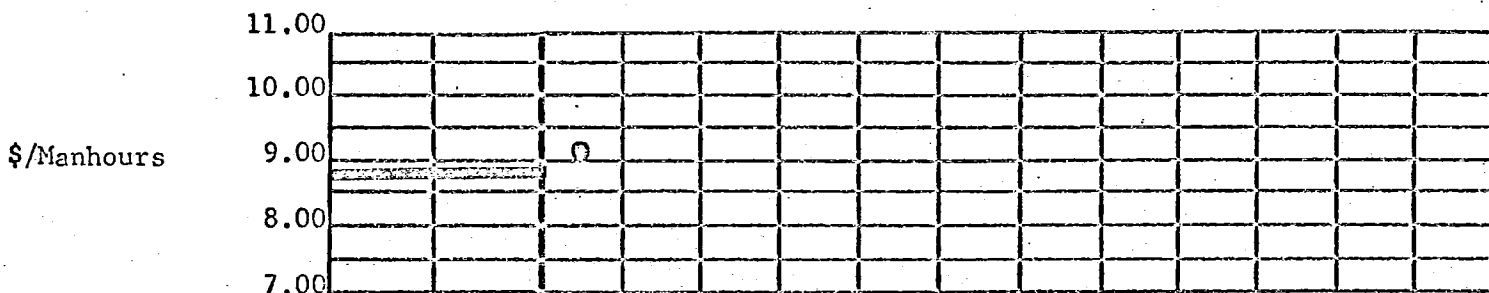
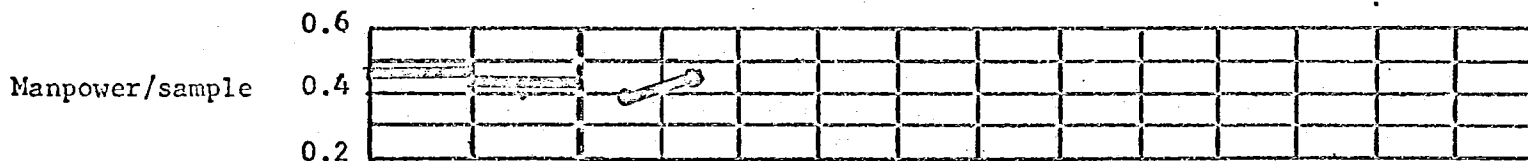
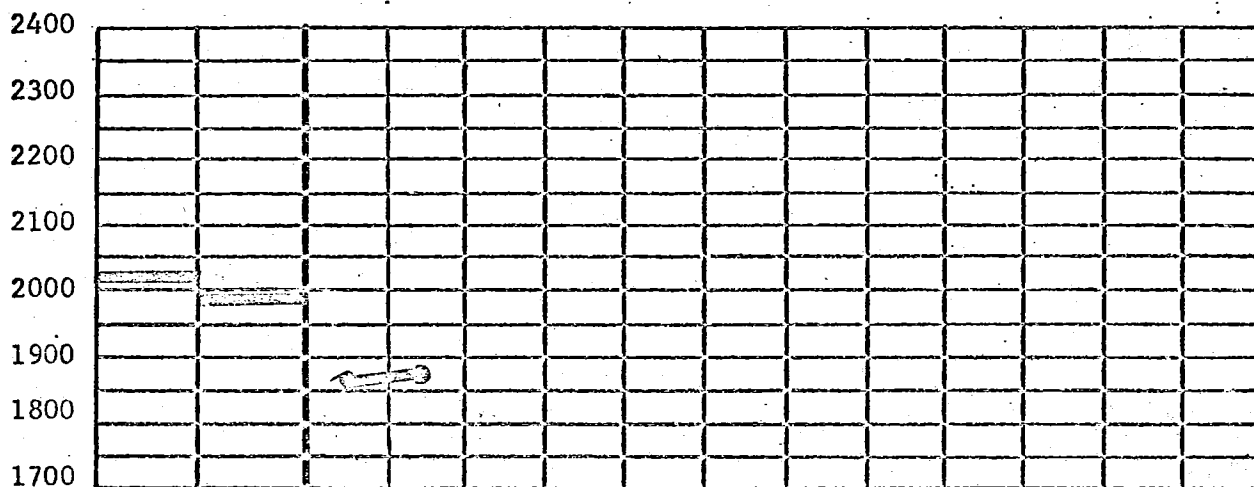
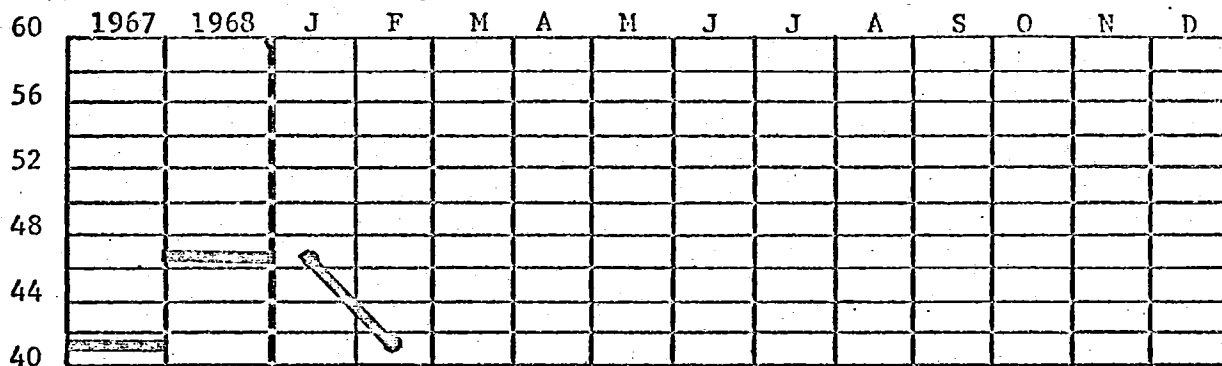
APPROVED
PROJECTS
IN TSD



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

DSW 377700

LABORATORY ADMINISTRATION



DSW 377701