Anniston

C. K. Eastman
W. H. Hunter
J. C. Landwehr
A. E. Leisy
W. B. Papageorge
W. F. Taffee
H. L. Williams
G. W. Miller
TSD Engineers

General Offices

J. O. Bright
H. C. Carder
D. Danna (3)
D. E. Cayard
H. O. Hehner
D. B. Hosmer
R. E. Howard
C. F. Luecke
H. L. Payton
W. R. Richard
N. L. Sample
A. J. Speziale
J. A. Stephens
R. J. Stratmeyer
H. S. Trail
J. H. Zwemer
C. E. Anagnostopoulos

South Second St.

M. E. Gibbs
O. DeGarmo
J. F. Quinn
J. R. Savage - JFQ

Other Locations

D. B. Edwards - DR
J. W. Graves - Luling
W. R. Kellogg - Nitro
G. F. Knollmeyer - Seattle
J. F. White - Everett
R. F. Wiesenborn -CB
W. J. Wilson - WGK

Monsanto

Anniston Plant

TECHNICAL SERVICES DEPARTMENT

MONTHLY REPORT

Summary

December 1967

1968 Cost Improvement Target for TSD is $495,600.

Aroclor Porocel Column resistivities down 5 M to 15 M level. Bed nearly exhausted after successfully treating 716,000 gallons, will be changed in January. Target date for issuing Aroclor Manufacturing Improvement Plan is now March 1968.

Design to increase capacity of No. 1 Polyphenyl Unit underway in CED on CEA 1892. Anniston TSD will provide liaison. Installation of increased fuel gas supply to Polyphenyl Furnaces completed 12/18/67. Improved process temperature control has been achieved.

Project to add a stripping section to the Santowax R Flash Still (Authority No. 2648, $18,500 NFC, $20,000 savings) forwarded to St. Louis for approval on schedule.

PNP debottlenecking equipment modifications completed. Demonstration of 1.75 M pounds per month rate planned in January.

Sulfur treatment of Cell Room floors unsuccessful in significantly reducing mercury vapor levels. Maintaining water film on concrete floors appears to have helped, although Cell House levels are still above desired limits.

Waste Heat Recovery Unit operation resumed following installation of York demister pad. Therminol losses from stack significantly reduced.

Negotiations underway to do pilot plant scale testing of Sulfur Recovery from Niran Still Residue at Bird Machinery Company facilities in Boston, Massachusetts. This approach could reduce time required to develop and evaluate process by six months.

Evaluation of Malathion production reported 12/13/67. No further work planned pending CED evaluation.

EVOP of Niran Condensation Reaction resulted in $5200 yield savings in December. ($0.232/cwt). Further optimization work is planned for January.

Investigation of feasibility of formulating 200,000 gallons of Parathion Blends underway. Evaluation report to be issued by mid-January.

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The January Engineering Planning Meeting will be held January 16.

A Scope review for CEA 1892 - Upgrade No. 1 Tube - will be held with Messrs. Carder, Stevens and Anthony at Anniston, January 17.

An Engineering Review Meeting will be held with Mr. H. C. Carder January 18 and 19.

The December Safety Meeting for the Technical Services Department was conducted by R. L. Brewer on December 14. The subject was "Holiday Safety."

W. F. Taffee
Assistant Technical Services Supt.

WFT:kd

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DETAILS

AROCLOR J. MacPherson, C. R. McIlwain, W. B. Dunlap

Job No. 456 - Fixed Bed Refining (Quality)

To date 716,000 gallons of Aroclor 1242 have been treated in the fixed bed refining unit. The bed is declining in treatment ability, resistivities are now in the 15 M range and the pressure drop through the bed has risen to 65 psig. A fresh Bauxite change is planned for the week of January 1, 1968. Of interest is the operator time that would have been spent treating the gallons passed through the column, estimated operator time available for other activities as a result of the column capabilities was 120 hours.

Job No. 778 - Aroclor Manufacturing Improvement Plan (Long Range Planning)

The review of the rough draft has been re-scheduled for January 4, 1968; the plan should be ready for distribution by March.

Job No. 455 - Chlorinator Study (Quality)

This job absorbs the study planned in Job 797 (Effect of Still Chain-Feed on Aroclor 1242 Quality) and includes a catalyst/temperature evaluation based on W.G.K. Laboratory studies; the latter phase is necessary to answer C.E.D. design question. Timing of the study will depend upon (1) the operating condition of the Bauxite refining column, (2) approval of a Tentative Amendment B to the Aroclor Standard Manufacturing Process, and (3) a sales commitment for the material produced in the catalyst/temperature phase.

BIPHENYL-SANTOWAX W. G. Niemeyer

Job No. 744 - Upgrading of No. 1 Tubular Unit

Preliminary Scope and estimate prepared by CED under CEA No. 1892. E. F. Anthony is the CED project manager. A preliminary safety review meeting was held at the General Offices on December 19. General Manager's approval for detailed engineering has been obtained. Project completion is targeted for January 1969. TSD will provide liaison.

Job No. 731 - Post Start-Up Assistance to Santowax R Still

Project Authority For Expenditure No. 2684 covering installation of a stripping section on the Santowax Flash Still was forwarded to St. Louis on December 13, 1967.

Job No. 769 - Install 6" Gas Line to Tubular Area

Installation was completed during week of 12/18/67. Increased production has been achieved by a shorter start-up period. Also, better process temperature control is possible.

TOWOLDMON0044335

Job No. 412 - Terphenyl Suppression Tests

Organic Research is active on this project. They have completed 15 out of 26 planned test runs. Organic Research progress report No. 2 received on January 2, 1968.

Job No. 763 - Install Sojourn Pot on B Pass of No. 1 Tubular Unit

A spare sojourn pot was installed in November 1967, to replace the sojourn coil. The pot allows additional reaction at high gas temperature. However, this particular pot is producing a high noise level. TSD will investigate this noise problem and recommend corrective action.

CHLORINE D. W. Dudley, J. M. Jones

Job No. 46 - Mercury Losses - (Potential Savings - $71,000/yr.)

Progress report with plant program for reducing mercury losses was not published in December Program - will be published after plant approval in January. Program consists of a six step plan to reduce mercury losses to 0.75 lbs. Hg/Ton Cl_2.

Results from Radioactive inventory expected to be published in January.

Job No. 391 - Single Stage Decomposers - (Savings $18,100/yr.)

Twelve graphite conversions were made in December. Two more conversions from double to single stage and one graphite conversion to be completed by 1/15/68. This will complete all cell house conversions, both stage and graphite.

Job No. 411 - Steel Bottom Cells - (Savings Undetermined)

CED's preliminary report reviewed with Production and Maintenance. Comments were forwarded to CED. Final report to be issued in early January.

Job No. 418 - Brine Dechlorination (Savings $27,500/yr.)

Problem with unsteady vacuum continues. Vendor for titanium ejector indicates that nozzles must be rebored or replaced to satisfactorily operate on existing steam pressure. Recommendations expected from manufacturer's representative in early January.

Job No. 704 - Cell Room Ventilation

Plant Improvement Test Program complete. Tests show sulfur treating will not sufficiently reduce mercury levels. Continuous film of water over floor helps in lowering mercury levels in cell house. Progress report with planned program for reducing levels to safe level to be published in January 1968.

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CHLORINE - continued

Job No. 1000 - MIP (Savings Undetermined)

Two reviews have been held with Production and Maintenance. Revisions in progress. Publication will not be in 1967. EDC is now 2/1/68.

HCl — K. J. Buturla, J. C. Price

Job No. 497 - Muriatic Acid Storage

A clearance problem exists between the South Chlorine Tank Car Unloading spot and the proposed tank. A cost estimate is being prepared to relocate the tank. A recommendation for a new location will be submitted to the Safety Review Committee by 1/15/68. An additional Safety Review meeting will be required.

Job No. 746 - HCl Efficiency Studies

Material balance to determine the actul absorption efficiency of the HCl plant were completed in December. Results from the tests revealed that at design gas flow rate the efficiency of the unit is greater than 95%, compared to 70% recovery at 50% of design flow. A Progress Report will be issued the week of January 1.

Job No. 801 - Staley Grade Acid

A job request was issued by Production to develop a way to routinely produce Staley Grade Acid. Preliminary evaluation is underway to determine necessary equipment and capital needed. Work to continue.

PNP — K. J. Buturla, J. A. Veazey

Job No. 450 - PNP Debottlenecking

PNP is scheduled to run at 1.75 $\bar{M}$ lb./month rate in January to meet Niran demand. Necessary debottlenecking changes are nearly complete. An additional airline was installed to the control valves in the new charge line. Previous setup did not close valves fast enough to allow automatic stepping from charge to reactor. Problem is now eliminated.

To decrease time required to cool the acidifier, a 10°C. differential must be maintained between batch and coil temperature. The present steam valve is undersized, resulting in a coating of coils with PNP and, an increase in acidifier cooling time. A larger valve will be installed to eliminate this problem.

NIRAN — D. C. Malm, O. J. Norris, K. G. Hale

Job No. 600 - Sulfur Recovery (Annual Savings $400,000, plus a 31% Reduction in SO_2 Load to Air)

Preparations are underway to Pilot Plant Test Sulfur Recovery from Niran Still Residue. At Bird Machinery Company facilities in Boston, Massachusetts, pending final approval of Bird Company Officials. Assuming arrangements are completed to make tests, testing will Begin sometime in the period January 22 to February 26, 1968. The move to

TOWOLDMON0044337

Job No. 600 - Sulfur Recovery

Tests at Bird Company facilities is a change from the previous plan to Pilot Plant Test at Anniston. Reason for the change is that a Screen Bowl Centrifugal would not be available for use at Anniston until late Spring, 1968. Testing at Bird Company will cut six months from the time needed to develop and evaluate Sulfur Recovery Process.

Job No. 712 - Parathion Recovery (Annual Savings $70,000 plus a 10-15% Reduction in C.O.D. Loading)

Design complete. Installation target date remains March, 1968.

Job No. 475 - Fume System (Improved Working Conditions and Reduced Corrosion)

Design complete on new Fume Removal System. Work plan on dismantling of old Niran incinerator equipment will be completed in mid-January, 1968.

Job No. 339 - Refractometer Pump (Experimental Project)

Pump installed in #3 chlorinator. Refractive Index control tests will begin as soon as piping and electrical modifications are completed. (Expect to begin tests in late January).

Job No. 792 - Evaluate Malathion Production

Evaluation Report issued 12/13/67. No further work will be done at Anniston, pending final evaluation by C.E.D.

Job No. 499 - Condensation EVOP (Annual Savings - $39,000 plus a 3% Reduction in C.O.D. Loading)

EVOP tests resumed on Niran condensation reaction with PNP/Intermediate mole ratio set at 1.085/1 vs. standard ratio of 1.14/1. Tests in February 1967, indicated yield savings of $0.168/CWT. At this lower ratio. December yield results will be used to verify savings indicated during February tests. Tentative plans are to reduce mole ratio to 1.07/1, pending December yield results.

Job No. 354 - Optimize Still Performance

Laboratory testing completed in December indicates a 10% condensation reaction yield gain potential, plus improved Niran quality via use of high assay (99% by GLC) Ethyl Intermediate in condensation reaction. Future work plans include a similar Lab study on effects of using high assay Methyl Intermediate. Evaluation of techniques to upgrade Intermediate Assay is included in 1968 TSD work plans.

TOWOLDMON0044338

Evaluation Formulation of Parathion Blends at Anniston

Investigation underway to determine feasibility of formulating 200,000 gallons of Parathion Blends starting 4/1/68. Long delivery equipment items needed will be determined by 1/4/68. Evaluation Report will be issued mid-January.

General TSD Items

1968 TSD Cost Improvement Plan finalized with target savings of $495,600. (Category III)

Twenty-Three persons attended a Seminar on Design Safety presented by Dr. W. B. Howard, C.E.D., on 12/12/67.

Six TSD people participated in Plant Safety Reviews conducted by Dr. W. B. Howard and E. G. Volz the week of December 11, 1967.

QUALITY CONTROL W. B. Dunlap, G. W. Miller, J. MacPherson

The Right First Time Index for December was 97.9 with 11 lots rejected out of 532; 10 out of 477 from the Organic Division. The December Quality Score was 89.0, down 3.6 from November.

Quality Control surveillance has revealed a significant improvement in Aroclor 5460 Color, starting late in March 1967. Correlation studies have related this improvement to reduced temperature and lower liquid level in the Santowax flash still.

Job No. 794 - Aroclor 5460 Color

All waxes required for the United Resins "Adhesiveness Test" have been received. The laboratory will endeavor to reproduce the Customers' test. Approval for direct contact with United Resins has been granted. The quartz cell required for color scanning has not been received.

Job No. 797 - Effect of Chain Feed on 1242 Quality

All equipment changes have been made. Execution of the experiment has been assigned to J. MacPherson, and is awaiting opportunity to be scheduled with Production.

POLLUTION CONTROL ACTIVITIES E. G. Wright

Initiated plans for SO_2 sampling program. Samplers being repaired, reviewing types of equipment suitable for removing solids from our treatment plant effluent to the city.

There were no water complaints received in December. One air emission (HCl vapors) on 12/7/67, resulted in damage to aluminum trim on cars in salaried parking lot. Approximately 80 cars were damaged. The damage complaints will be handled by the insurance carrier.

TOWOLDMON0044339

Job No. 707 - Install Trebler Sampler on Parshall Flume (Pollution Control)

Design package transmitted to Maintenance. Equipment is on order.

MECHANICAL & ELECTRICAL INSTRUMENT DESIGN J. C. Price, J. A. Veazey

Job No. 413 - Winterization of Safety Showers

(Plant Improvement estimated Capital $24,000. Estimated Dismantling Expense $6,000)

AFE has been prepared and justification is being written. AFE will be forwarded for approval in January.

AFE 2468 - HCl - Install Safety Devices on HCl Elevator

(Plant Improvement. Estimated Capital $6,300. Estimated Expense $2,200).

AFE 2694 - Install Enlarger and Miscellaneous Darkroom Equipment

Plant Improvement Estimated Capital $3,800. Estimated Expense $3,900. AFE was forwarded for approval on 12/21/67.

AFE 2649 - TSD Purchase New Ozalid Machine (Savings $950. Estimated Capital $2,900)

The project proposes to replace the existing Ozalid Machine with a faster machine and increase Draftsmen efficiency and reduce maintenance costs. AFE was forwarded for approval on 12/26/67.

AFE 2710 - Plant-Install Permanent Bench Marks. Plant Improvement. Estimated Capital $1,400

The project proposes to install four Bench Marks at intersections of existing and proposed plant roadways. AFE was approved and Design Package is being prepared.

AFE 2560 - KCl Overflow (Estimated Savings $40,000. Estimated Capital $4,000)

Difficulties in obtaining automatic valve operators have held up transmittal of this project. These difficulties are expected to be overcome in January.

AFE 2575 - Plant - Simplify and Extend Plant Fire Alarm System Plant Improvement - Estimate Capital $3,000

AFE approved 12/11/67.

TOWOLDMON0044340

AFE 2468 - Aroclor - Improve Lighting (Plant Improvement - Estimated Capital $2,500)

AFE approved 12/11/67.

Provide Safety Shelters (Plant Improvement - Estimated Capital $1400-$1500 per Shelter)

This project proposes to install several shelters containing gas masks, first aid supplies and a fire extinguisher at strategic locations in the Plant. Preliminary estimate for one shelter has been completed and locations and number of shelters required will be determined in January and an AFE forwarded for approval in February.

DRAFTING G. C. Goodwin, R. L. Brewer, E. A. Brown

Completed in December

1. Niran Revised Parathion Recovery
2. Niran Fume Collection System
3. Aroclor Electrical Instruments on C1@ Railroad Spur
4. Aroclor Liaison with CED on New Tank Farm Project
5. Plant Investigate Plant Property Lines for New Railroad

Scheduled for January

1. P_2S_5 Fume Removal System
2. Niran Dismantling old Incinerator
3. Aroclor Drum Washing
4. Plant Permanent Bench Marks in Plant
5. HCl Tubular Conveyor

LIAISON AND PLANT IMPROVEMENT M. E. Twigg, J. McGee, (W. F. Taffee)

General

M. E. Twigg returned to the Analytical Laboratory after a two month assignment in Plant Improvement.

J. W. McGee (Co-Op, Auburn) returned to work and was assigned to Plant Improvement.

Liaison activity level high in both Warehouse and Aroclor areas.

TOWOLDMON0044341

CEA 1232 - Utilities

Constant power supply not put on line in December because shutdown of both #7 and #8 boiler required for electrical tie-in. This was not anticipated in original design by CED. Tie-in now scheduled for March Niran turnaround.

CEA 1430 - Aroclor Expansion

CED Construction Engineer arrived on site December 18. Field work started on installation of sewer lift station and electric feeder relocation. CED also supervising plant approved project to repair 36 inch diameter storm sewer which runs under Warehouse location. Field work underway to direct streams now entering sewer prior to actual Gunnite repairs.

Agreement reached on tank farm layout, railroad track usage and loading spot locations and use. Number of loading docks increased from 2 to 3. Relocation of salaried parking lot to east side of present "new" lot negotiated. Tentative schedule of necessary electrical changes outlined. Shutdown of HB-40 will be required - probably 8 to 10 hours duration. Office area outage of 8-10 hours also required, tentatively planned for a week end. All other electrical work will be handled with circuits energized. A final schedule will be issued a week in advance of the first shutdown.

Awaiting CED proposal on revised shelter around relocated blend tank now that we have re-defined space needs. Layout of flaking-drumming area expected in January.

Charles McIlwain was temporarily assigned to assist in this work effective December 26.

CEA 1452 - Warehouse

Warehouse office layout finalized. Negotiating for sufficient clearance in this project to permit installation of second railroad track when it can be justified. Hourly parking lot relocation, railroad layout and tie-in point, plus property ownership in area of railroad spur tie-in are under investigation.

Architectural study of Warehouse exterior prepared. Since dimensions of building are those of a football field with the long side in full view of a main highway, careful consideration of exterior appearance is mandatory.

Basic building out for bids as is grading contract. Several thousand cubic yards of grade and fill are involved.

Building 28

Revision essentially complete. Will move into new offices in January.

TOWOLDMON0044342

Fire Break

Project ($4550 NFC, $10,500 total) approved and Design Package forwarded to Maintenance in December.

Property Survey

Project to install plant Bench Marks approved in December. Design Package will be forwarded in January.

Dikes

Benzene Dike project approved in December. Work on Design Package underway with January target.

Alcohol and Xylene tank dikes estimate being prepared with January target for completion.

WASTE HEAT RECOVERY J. F. Benson, C. E. Woodward, (W. F. Taffee)

The test unit was restarted at full rate with a York mesh composite pad entrainment eliminator in the water spray tower. Therminol stack losses were greatly reduced with the 6" knock-out pad. Present plan is to complete evaluation of gas phase recovery with the single pad by mid-January and to complete testing with knock-out pads in both towers by the end of January.

Sampling procedure and equipment, used to determine Therminol content in discharge stack gas, were reviewed with G. Arnett and G. W. Miller. As a result, the sample collection equipment has been re-worked and two follow-up tests indicate that we now have an operable system to collect stack gas samples for Therminol determinations in the microgram range.

ENGINEERING MANPOWER DISTRIBUTION G. C. Goodwin, (W. F. Taffee)

% of Total TSD Time

	Category	December %	Year-to-date Through December	November%	Year-to-date Through Nov.
1.	Process Improvement	34.7	45.9	36.8	46.9
2.	New Products	6.2	5.7	11.2	5.7
3.	Plant Improvement	5.9	6.5	4.5	6.5
4.	Assist Operations	2.9	2.7	1.3	2.7
5.	Special Engineering Services	15.9	8.9	7.1	8.3
6.	Technical Manpower	9.0	8.9	10.8	8.9
7.	Miscellaneous	25.4	21.3	28.2	20.9

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Remarks

Major change in December was reflected in Category 5 as liaison activity for the Aroclor, Warehouse and Santowax Still projects increased. Plant Improvement shows a slight increase over last month since two men were assigned during one a week overlap period.

PERSONNEL

1. Twenty-Three persons attended a seminar on Design Safety, presented by Dr. W. B. Howard - CED, S & P P on 12/12/67.

2. Twenty TSD members attended an in-house course on CPM/PERT conducted by J. MacPherson.

3. W. F. Taffee completed participation in instruction of Senior Chemical Engineering Design Course for Fall Quarter at Auburn University.

4. Six TSD Engineers participated in Plant Safety Audit by Dr. W. B. Howard and E. G. Volz.

5. W. B. Burkett visited the plant 12/4/67 to initiate work on Warehouse and Aroclor project.

6. L. R. Burchfield and Harold Dygert visited the plant 12/18 and 19, to initiate contracts for portions of the Aroclor and Warehouse projects.

7. D. W. Dudley and Jim Chism visited the Diamond Alkali Chlorine Plant at Muscle Shoals, December 5.

TRANSFERS	DATE
L. L. Faulkner to P_2S_5 Supervisor	12/15/67
M. E. Twigg, Jr. from (temporarily assigned to TSD) back to Laboratory	12/29/67
E. A. Brown (temporarily assigned to Drafting) back to Laboratory	12/18/67

TERMINATIONS

John Jones - Co-Op returned to Georgia Tech	12/22/67

ADDITIONS

G. L. Moore, Co-Op returned from Georgia Tech	12/28/67
J. W. McGee, Co-Op returned from Auburn University	12/14/67

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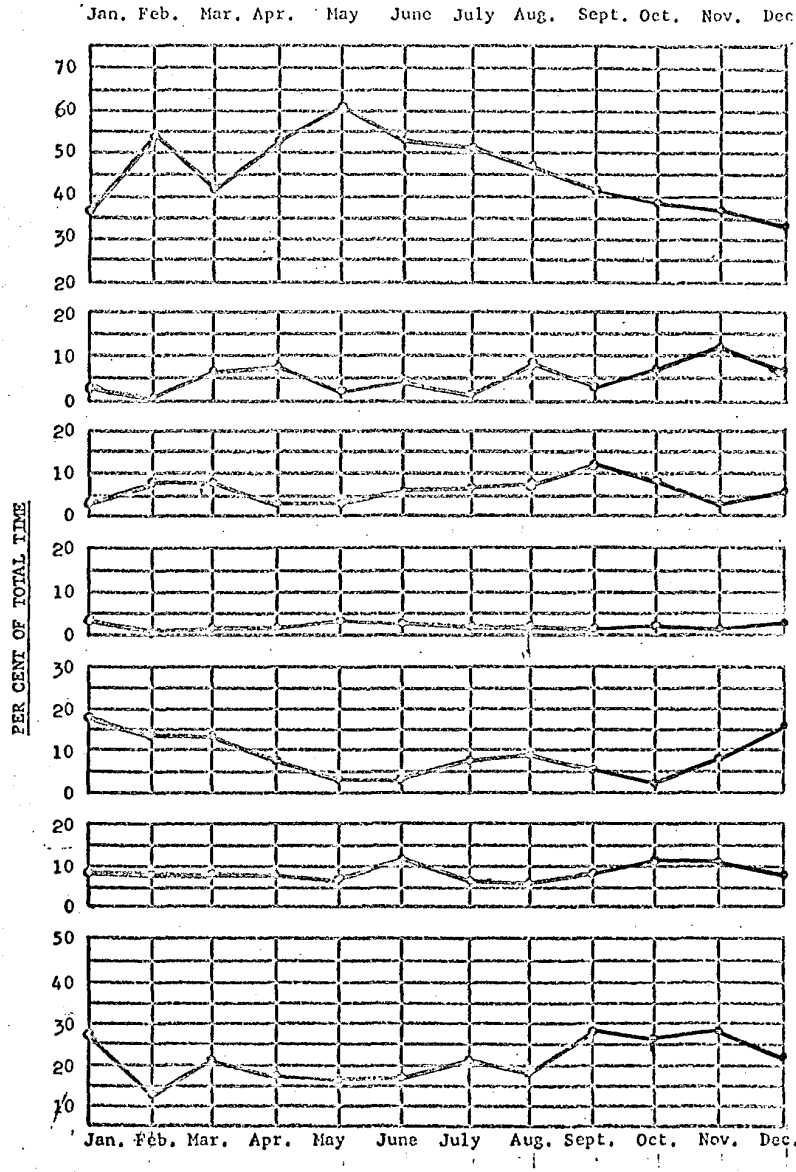
DISTRIBUTION OF TIME BY TECHNICAL SERVICE



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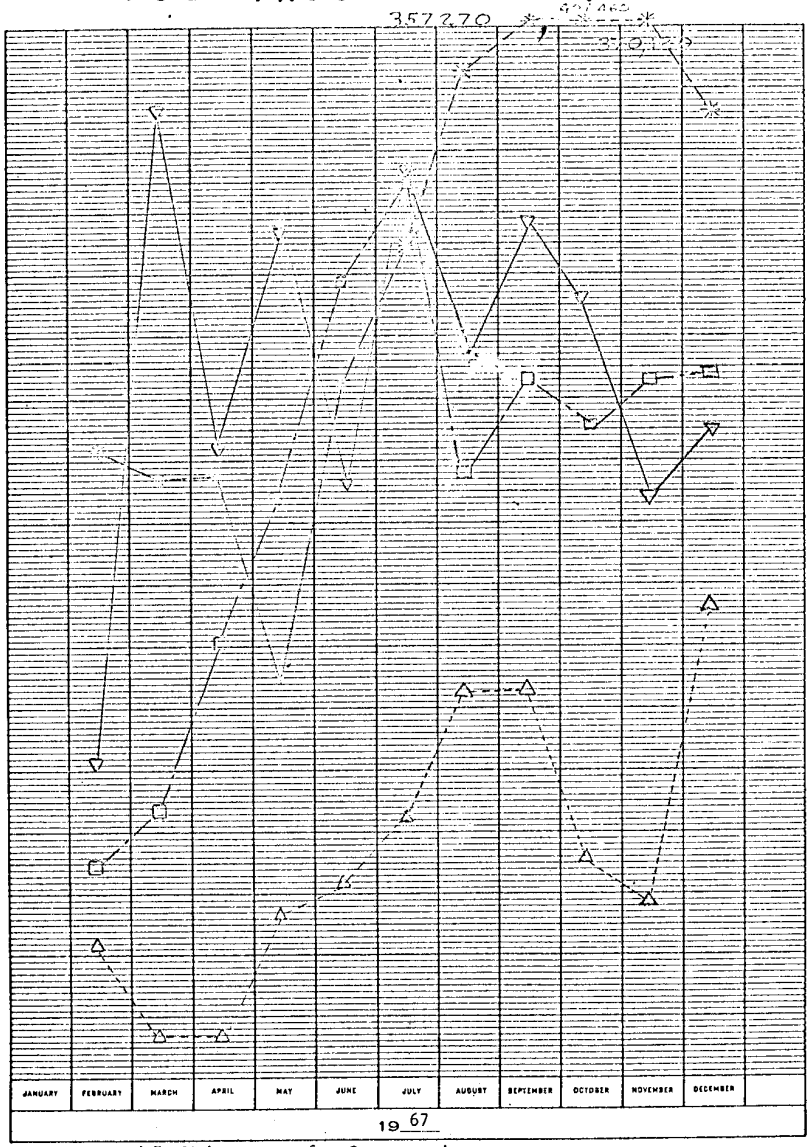
TSD PROJECT SUMMARY



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