C. E. Anagnostopoulos - 2nd Street
L. A. Cohn
J. Cresce
A. J. Eberle
N. E. Emge
R. C. Evans
F. J. Holzapfel - 2nd Street
R. W. Kaltenrieder (2) - 2nd Street
L. E. Klein
A. J. Koenig - Anniston
M. S. McCauley
J. R. McClain (4) - Anniston
R. D. McIntosh - Krummrich
~~H. L. Minckler~~/D. B. Hosmer
R. M. Morris
E. S. Robson (2)
N. L. Sample
J. R. Sayers
R. E. Soden (4) - Krummrich
R. S. Wobus

MONSANTO COMPANY
ORGANIC CHEMICALS DIVISION

STATUS OF SUBMITTED APPROPRIATION REQUESTS

Request No. 8849(K) and 1663(A) Location: W. G. Krummrich and Anniston

Title: EXPAND AROCLOR PRODUCTION AT W. G. KRUMMRICH AND ANNISTON PLANTS

Value: $750,000

Submitted for Final Approval to: Mr. C. H. Sommer, President

Date: May 14, 1964

mcm

DSW 182398

STLCOPCB4050783

MONSANTO COMPANY

APPROPRIATION REQUEST

TO: The Executive Committee
Messrs. C. H. Sommer, Chairman
J. L. Christian
J. L. Gillis
R. K. Mueller
E. A. O'Neal, Jr.
C. A. Thomas
F. N. Williams
C. O. Hoyer, Secretary (2)

Date: May 14, 1964

cc: Corporate Planning (4)
A. W. Lucas, Director
M. C. Covert, Controller
P. J. Dowd, Treasury
E. J. Putzell, Jr., Law

ORGANIC CHEMICALS DIVISION
W. G. Krummrich & Anniston Plants

Request No. 8849(K) and 1663(A)
Forecast No. 359A (Approved 3/31/64)
First Listed in Construction Program 12/31/62

TITLE: EXPAND AROCLOR PRODUCTION AT W. G. KRUMMRICH AND ANNISTON PLANTS
(Plasticizers & Functional Fluids Product Groups)

NEW FIXED CAPITAL REQUESTED	$750,000
RETURN ON INVESTMENT*	
Corporate Basis	16.8%
Year First Achieved	1967
PAYOUT PERIOD	1.6 years

* Straight-Line Depreciation

Originally Signed By R. M. MORRIS

General Manager

DSW 182399

STLCOPCB4050784

I. SUMMARY

This project includes modifications and additions to the Aroclor facilities at both the W. G. Krummrich and Anniston plants to provide the following capacity increases (M lbs/yr):

	Present Capacity	New Capacity
W. G. Krummrich	20.4	28.6
Anniston	27.6	48.6
Total	48.0	77.2

The increased capacity is urgently needed to meet the rapidly expanding demand for the proprietary family of Aroclor Plasticizer and Functional Fluid products. Provisions will also be made to recover the additional by-product muriatic acid for marketing purposes.

Monsanto enjoys a favorable position with the large diversified line of Aroclor products and formulations for a wide variety of applications. The objective of this project is to assure a continuous and dependable supply of products to satisfy the market needs.

The anticipated after-tax return (corporate basis) at normal operating level (91% of capacity) is 16.8% on total operating investment.

The project is directly related to the product group and divisional strategies of the long range plan and is essential to assure the continued growth and profitability as set forth in the long range goals. The average returns in the 1964 budget for the Plasticizer and Functional Fluids product groups are 18.1% and 14.7% (divisional basis) respectively. The average return for the family of products represented herein is 17.8% at normal operating level.

This project covers the next logical step for expansion at both plants. After operating performance has been demonstrated with the expanded facilities and a product distribution pattern for future years has been more firmly established, a subsequent expansion is indicated. Such expansion will probably be required in 1966-1967 to assure a safe margin of capacity over demand for these proprietary products. The nature and size of the next capital investment is not yet defined.

This current project is included in the Approved Construction Program for the Organic Division under Forecast No. LR-359-A.

DSW 182400

STLCOPCB4050785

II. PREMISES

Volume. The forecasted sales volumes shown in Section III are considered reliable and indicate that requirements are far in excess of the present combined capacity of the two plants. Continued growth of this family of products is anticipated on the basis of past history and the potential of numerous new products and applications now in the development stage.

Price. There is a wide range of prices in the Aroclor family of products and the price of 14.7¢/lb. shown in the earnings statement (Schedule I) is the average of the total product mix, including by-product muriatic acid. No significant price changes are anticipated that would adversely affect the total income from operations. The price of transformer Aroclors and formulations (Pyranols and Inerteen) is expected to drop below current levels in the next 6 to 12 months, but the Aroclor content in these fluids will increase sufficiently to raise the total profit from these products.

One development that could adversely affect the Aroclor price structure would be the entry of competitive production via the use of low-cost, by-product biphenyl. Schenectady Varnish is actively trying to find markets for their by-product material. This situation is being watched carefully.

A change in price of 1¢/lb. is equivalent to a 2.6% change in rate of return. The estimated return on investment at 80% utilization is 12.8% (corporate basis).

Raw Material Cost. The major raw materials used in the production of Aroclors are biphenyl, terphenyls, and chlorine. No significant price changes in these materials are anticipated over the life of this project.

III. MARKET

Demand. The Aroclor family of products has demonstrated rather steady growth in the past, and the prospects for continued increases are very favorable. Domestic markets have absorbed most of the production over the years and with the advent of many new applications and the expansion of existing product utilization, the demand trend continues upward. More aggressive introduction of these products into non-domestic markets is expected to result in significant additional volume requirements. The markets served are many and varied, thereby eliminating the dependence upon a single market or limited group of markets for stability and/or growth.

DSW 182401

STLCOPCB4050786

The following table shows the total sales of Aroclors for the past five years, the 1964 budget and the forecasted sales for the period 1965-1969. Since the family of products is so widely diversified and the number of products so numerous, we have simplified the table to show only the total volumes for the Plasticizer and Functional Fluids product groups.

M Pounds

	1961	1962	1963	1964	1965	1966	1967	1968	1969
	Actual			Budget	Forecast				
Total Sales Plasticizers	12027	14120	15498	16661	17858	19042	20197	21352	22642
Liquid	8878	9794	10571	10996	11852	12517	13157	13842	14622
Solid	3149	4326	4927	5665	6006	6525	7040	7510	8020
Total Functional Fluids	32934	32727	34102	36940	42063	44434	46963	48904	50112
Development Products	-----Included in Above------				500	2000	3000	5000	7000
Total Aroclor Demand	44961	46847	49600	53601	60421	65476	70160	75256	79754

Supply. Monsanto is currently the only supplier of Aroclor products in the U. S. Several competitors are located in Europe including MCL, Progil, Kaffaro, and Bayer as the major producers. A limited quantity is also manufactured in Japan by Kanegafuchi. The current supply for domestic markets is tight, but we have no direct knowledge of the demand vs supply situation in Europe and elsewhere.

Aroclors and Aroclor formulations compete with other products in various markets. However, the competing products and their producers are too numerous to mention here.

Price. Through the years, we have priced the Aroclor dielectric fluids on a realistic basis. This policy will be continued in the future and adjustments will be made as justified on the basis of manufacturing cost changes, quality modifications and cost/performance requirements.

The plasticizers, heat transfer fluids and hydraulic fluids are priced on a competitive basis with other products offered in the market. However, the special and unique qualities and performance of a number of our products give us a favorable position in a variety of end-use applications.

DSW 182402

STLCOPCB4050787

IV. TECHNOLOGY

The process technology covering the existing family of Aroclor products and formulations is well established after years of commercial production. Minor modifications in process control and heat exchange efficiency will be made to increase the throughput in existing facilities. Also, the production of solid Aroclors will be separated from the liquid Aroclors in the Anniston plant to eliminate changeovers from one type of product to the other.

V. PATENT SITUATION

The original patents on Aroclors have long expired. However, Monsanto and Douglas hold patents on various Pydraul hydraulic formulations in the U.S. and in several foreign countries. Patent applications are also being filed on new fluid formulations and end uses where such action is justified and where prospects of patentability are favorable.

No known patent infringement problems exist in the U.S. A foreign patent investigation has not been made to determine potential infringement problems abroad.

VI. EARNINGS

Labor and Payroll overhead at 1964 levels were escalated 3% per year thereafter.

Salaries at 1964 levels were escalated 4% per year.

SARE expense was developed from current estimated factors by product groups: Plasticizers ~~6.2%~~ 5.1%; Functional Fluids ~~14.1%~~ 10.2%; and Acids and Heavy Chemicals ~~4.3%~~ 4.2% (for muriatic acid).

Packing and Shipping expense was developed using the most recent experience factors.

Other elements of manufacturing cost were related to production rates with no escalation.

DSW 182403

STLCOPCB4050788

VII. CAPITAL

Scope of Project. This project provides for modifications and additions to the W. G. Krummrich and Anniston plant Aroclor facilities and includes provision for recovering the related by-product muriatic acid for sale. Present and new annual Aroclor capacities for each plant are given below in M's of pounds:

	Present	New
W. G. Krummrich	20.4	28.6
Anniston	27.6	48.6

At W. G. Krummrich, the capacity of the chlorinators will be increased by adding an external cooling system on each unit with provisions for controlling the rate of chlorine addition. Each unit will be equipped with instrumentation so that the course and end point of the reaction may be determined without the work and delay involved in the present system of analyzing samples every half hour.

The two stills at W. G. Krummrich will be modified to increase capacity to match that of the chlorinators.

At Anniston, a new chlorinator and still system for solid Aroclors will be installed releasing existing facilities for more liquid Aroclor production; the existing chlorinators will be equipped with external coolers and control of the chlorine feed rate; present and new instrumentation will be consolidated in a new control room; the existing stills will be modified to increase their capacity. At Anniston also the muriatic acid system capacity will be increased to handle the off gas from the expanded Aroclor plant.

Basis of New Fixed Capital Estimate. The capital cost estimates submitted are order-of-magnitude. Evaluation estimates were prepared for several cases for the Anniston Aroclor expansion and a combination case was selected as offering the best plan. For the expansion of muriatic acid at Anniston, the present estimate is based largely on a study by the plant TSD group in 1963.

For the W. G. Krummrich phase, the present estimate is based on a combination of TSD proposed projects.

DSW 182404

STLCOPCB4050789

We believe the total estimate of $750,000 is realistic; the breakdown into the Krummrich and the Anniston portions is not firm at present.

Retirements. A few miscellaneous retirements will occur at each plant, but these have not yet been defined.

Basis of Allocation of Existing Investment. All existing investment was allocated on the basis of assignment and/or occupancy time.

Basis of Working Capital. Working capital was estimated as follows:

Inventories -	Plasticizers	15.7% of Sales
	Functional Fluids	16.2% of Sales
	Acids & Heavy Chems.	7.7% of Sales
Receivables -	Plasticizers	10.6% of Sales
	Functional Fluids	10.5% of Sales
	Acids & Heavy Chems.	11.3% of Sales

Packing and Shipping investment was estimated using current investment factors for W. G. Krummrich and Anniston plants.

SARE investment was based on the Organic Division factor for 1964, i.e., 5.4% of Sales.

Status of Project. Detailed engineering has not been started. A definitive scope for each phase of the expansion -- Krummrich and Anniston Aroclors and Anniston muriatic acid -- is being prepared and a capital estimate will be made for each. Engineering will proceed with the Krummrich phase first, as this will yield increased capacity most quickly. This work will start immediately.

Estimated dates for completion of construction of each phase of the project are the following:

W. G. Krummrich - October 1964 (assuming engineering proceeds at once)

Anniston - June 1965

VIII. ALTERNATE COURSES

The only alternate course is not to expand production and to forego the additional sales and profits. This course is definitely not recommended since we are the only U.S. producers

DSW 182405

STLCOPCB4050790

of Aroclors and Aroclor formulations and numerous plasticizer and fluid applications rely on Monsanto for a continuing, dependable supply of these products.

IX. LEGAL

There are no known legal aspects of this project which require consultation with the Legal Department.

X. TREASURY

There are no apparent areas involving treasury functions which will require special handling. Forecast No. 359A has been included under planned projects in the Approved Construction Program for the Organic Division.

XI. PERSONNEL

No additional operating personnel will be required at either plant.

XII. FIRE OR EXPLOSION HAZARDS

No new fire or explosion hazards will result at either plant as the result of this project.

XIII. POLLUTION AND TOXICITY PROBLEMS

No change in pollution or toxicity levels is anticipated at either plant.

R. M. Morris

5/14/64 - mcm

DSW 182406

STLCOPCB4050791

SCHEDULE I

RETURN ON INVESTMENT AT NORMAL OPERATING LEVEL*
(Dollars in Thousands)

Annual Net Sales:	
Amount (95.5 M# X 14.7¢/lb.)	$ 14,039
Cost of Goods Sold	7,095
Gross Profit	$ 6,944
SARE Expense (Excluding Central Office)	1,674
Pre-tax Income	$ 5,270
Federal Income Taxes (48%)	2,530
Operating Income After Taxes	$ 2,740
New Property to be Installed	$ 750
Allocated Property to be Utilized	10,976
Total Fixed Capital Investment	$ 11,726
Working Capital	3,702
Total Operating Investment	$ 15,428
Return on New Property - Incremental	180.7%
Return on Investment:	
Divisional Basis	17.8%
Corporate Basis	16.8%

* Normal operating level indicated above is 91% of capacity.

DSW 182407

STLCOPCB4050792

SCHEDULE II

CASH FLOW STATEMENT TO PAYOUT YEAR
(Dollars in Thousands)

	1964	1965	1966
New Fixed Capital:	200	550	--
Project Expenses	--	--	--
Precommercial SARE	--	--	--
Startup & Correction Expense	10	70	--
Dismantling Expenses	--	--	--
Total Cash Requirements	210	620	--
Added Operating Profit*	--	600	998
Depreciation & Depletion	--	73	109
Retirement Tax Credit	--	--	--
Tax Credits on Expenses	5	34	--
Investment Credit	14	38	--
Total Cash Sources	19	745	1107
Net Cash Flow	(191)	125	1107
Cumulative Cash Flow	(191) (6 mos.)	(66)	1041

EFFECT OF PROJECT ON REPORTED CORPORATE NET INCOME
(Dollars in Thousands)

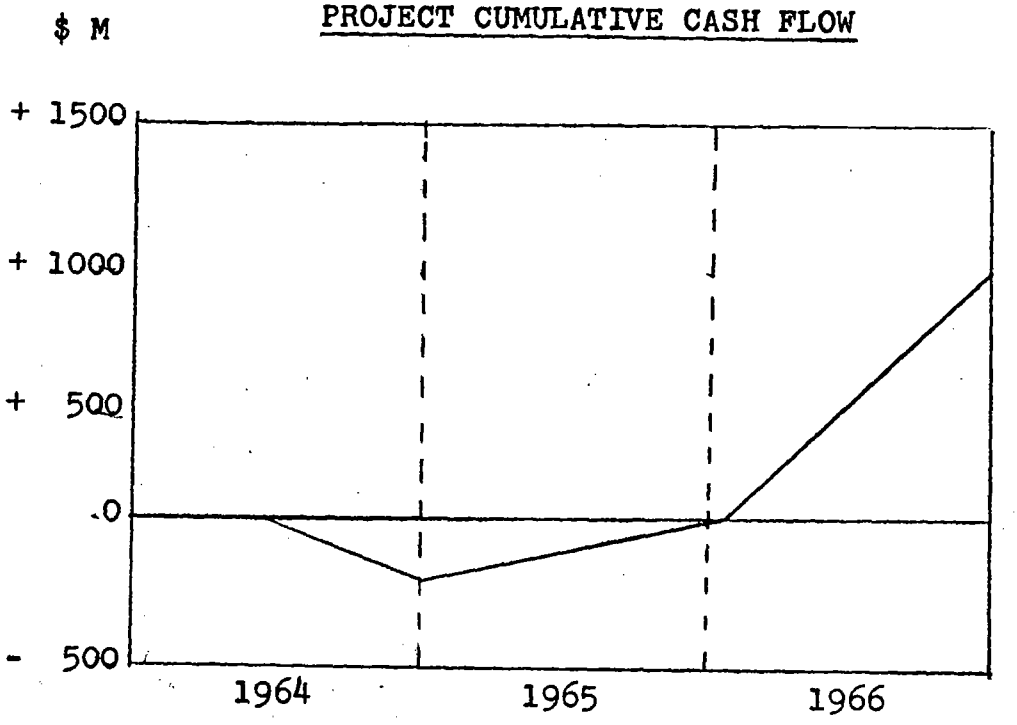
Added Operating Profit*	--	600	998
Expenses (After Taxes)	(5)	(36)	--
Writeoffs (After Taxes)	--	--	--
Investment Credit	14	38	--
Net Effect	9	602	998

* After SYD depreciation and taxes (50% 1964, 48% 1965 and subsequent).

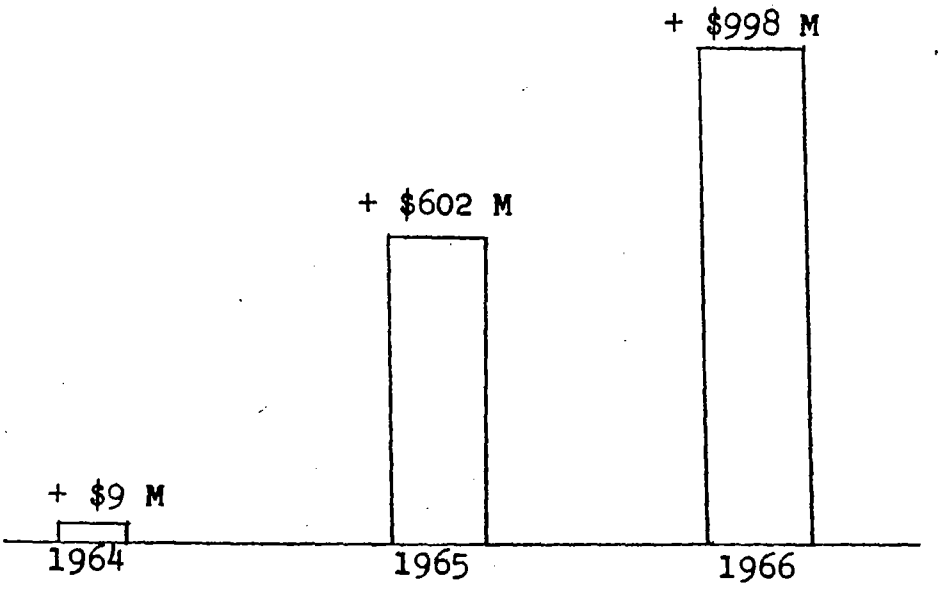
DSW 182408

STLCOPCB4050793

PROJECT CUMULATIVE CASH FLOW



EFFECT ON REPORTED NET INCOME



DSW 182409

STLCOPCB4050794