

## Office Memorandum • UNITED STATES GOVERNMENT

TO : J. C. Clarke, Contract Coordinator

DATE: February 7, 1949

FROM : E. M. Velten, Production Division

SUBJECT: RECORD OF NEGOTIATIONS FOR DEFINITIVE SUPPLEMENTAL AGREEMENT  
NO. 32 TO CONTRACT W-7405 eng-276 - HARSHAW CHEMICAL COMPANY

REFER TO

SYMBOL: PU:EMV

These negotiations were undertaken with Harshaw from the period commencing October 1, 1948 through December 10, 1948 and during this period four or five meetings were held with the contractor. These negotiations cover the supplemental agreement to be written to Contract eng-276 for the production of uranium dioxide in the new batch brown oxide plant presently under construction, and are to cover the period of operation of this plant from January 1, 1949 through and including June 30, 1949. The following were present at some or all of these various meetings.

Harshaw Chemical Co.

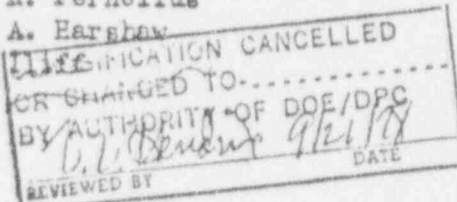
Mr. W. J. Harshaw, Pres.  
Mr. C. S. Parke, Vice Pres.  
Dr. W. C. Hovey, Vice Pres.  
Mr. J. W. Lerner, Vice Pres. &  
Comptroller  
Mr. K. E. Long  
Dr. W. D. Stillwell  
Dr. G. R. Fernelius  
Mr. W. A. Harshaw  
Mr. J.

AEC - NYOO

Mr. W. E. Kelley  
Dr. H. M. Chadwell  
Mr. F. M. Belmore  
Dr. J. P. Morgan  
Mr. J. C. Clarke  
Mr. C. H. Sullivan  
Mr. P. A. Tobin  
Mr. G. L. Ryan  
Mr. E. M. Velten

AEC - Cleveland

Mr. W. A. Taussig  
Mr. A. Neumann

History

In past operations under the AEC and prior to that under the Manhattan District, the Government operated brown oxide plants at Mallinckrodt Chemical Works, Linde Air Products Company, and du Pont, employing the batch ether extraction process. In early 1945, the batch brown oxide plant at Mallinckrodt ceased operations and was dismantled, being superseded by the present ore refinery which produces brown oxide by a continuous process from pitchblende ore. In 1944, the Linde batch brown oxide plant ceased operations and was placed in standby. Since the brown oxide requirements at that time necessitated that only two of the operating batch plants be continued in operation and since the Linde plant was the highest cost, it was placed into standby. Also,

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certain of the equipment used in the brown oxide plant at Linde was required for another series of operations then taking place at the Chandler Plant in connection with fabrication of barriers for the K-25 diffusion plant in Oak Ridge. On December 30, 1947 the batch brown oxide plant at du Pont ceased operation. This plant was operated at that location in conjunction with a recovery plant that also ceased operation on that same date. The work at du Pont ceased primarily because that company in line with their overall policy desired to get away from all atomic energy work. They had only continued in operation for this long a period at the expressed request of the AEC. Therefore, as of January 1, 1948 the Commission had no batch brown oxide plants in operation, the one in St. Louis having previously been dismantled and superseded by the refinery, the one at du Pont being prepared for dismantlement since that company desired to get out of atomic energy work, and the one at Linde in standby condition (although some equipment had been scavenged from this plant during the period of standby).

In the production of brown oxide from uranium raw materials the ether extraction process can be carried out in two manners, namely, continuously or batchwise. The continuous process as developed and used at the Mallinckrodt ore refinery is especially adapted to the extraction of uranium in the production of brown oxide from pitchblende ores. It can also be used for the production of brown oxide from the other available types of raw materials (black oxides, sodium uranates, calcium uranates, etc.), although under its present design it is not economically feasible to be used in the processing of such materials. The batchwise extraction process, however, is best fitted for handling the production of brown oxide from types of uranium raw materials other than pitchblende. The batch extraction plants, however, cannot process pitchblende ores. Since a certain portion of the total raw material feed to the Commission is in the form of materials other than pitchblende (Canadian, domestic and captured materials) this necessitates that a batch type brown oxide plant be used to process and purify the uranium from such types of raw materials.

In the early Fall of 1947 when it became apparent that the du Pont brown oxide plant would not continue in operation beyond the end of that year, an evaluation was made by the Commission as to where a batch type

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brown oxide plant could be placed into operation to best meet the overall requirements of the AEC as then known. It should be stated that at that time the Linde brown oxide plant was in standby. However, since brown oxide is used as a feed material to subsequent operations in the uranium processing chain (green salt to metal or green salt to  $UF_6$ ), it was decided that it would be logical to place the required batch brown oxide plant in such a location that it would tie in to subsequent processing operations. Although at that time the green salt operation at Linde and the metal operation at Electro Met were being reopened, future plans called for the shutdown of these operations by 1950 or 1951, at which time the increased requirements, which had necessitated their reopening, taper off. This being the case, it was decided not to reopen the brown oxide plant then in standby at Linde. The other uranium processing chain to  $UF_6$  was located at the Harshaw Chemical Company in Cleveland, and since feed schedules required that these plants (green salt and  $UF_6$ ) remain in operation indefinitely, it was decided that the most logical place for a batch brown oxide plant was at Harshaw. An operation of this type plant at that location would then give the Commission a complete chain of processing from raw material to  $UF_6$ . The metal chain at Mallinckrodt was already a complete processing operation starting from the raw material through to the final metal plant.

Consequently, Harshaw Chemical Company was approached with the idea of the construction and operation of a batch type brown oxide plant in conjunction with their other processing operations for the Commission. In the winter of 1947, Harshaw agreed to the installation of such a plant at their Harvard-Denison Plant in Cleveland, Ohio, and a lump sum construction contract was negotiated with Harshaw for the detailed design and installation of such a plant. Much of the equipment for this installation was procured from the du Pont and Linde batch plants and the design incorporated all the latest modifications that were obtained from the Commission's several years experience in the operation of this type of plant. The design also incorporated all the medical precautions that could be anticipated so as to make the plant safe from a health standpoint. The contract further provided for the training of technical personnel at the du Pont plant before it ceased operations. Construction of this plant started in early 1948 and is now essentially complete, and it is anticipated that operation of this plant will begin on or before January 1, 1949.

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Scope of Work

This contract is to provide for the initiation of operation and the production of uranium dioxide in the newly constructed brown oxide plant at Harshaw. Harshaw is to exert its best efforts to bring the plant up to design capacity as soon as possible. The design capacity of this plant is estimated to be 54 tons of uranium dioxide per month. This contract is to further provide for payment for this brown oxide at a unit price for the period January 1, 1949 through June 30, 1949 according to a price and rate scale hereinafter discussed.

The material produced under this contract is necessary to meet the operation requirements presented to this office in W. J. Williams' letter of June 10, 1948, subject "Schedule of Metal Requirements." The money for this production has been budgeted and is approved. Harshaw is already performing other operations for the Commission under the basic contract, and the purpose of this negotiation was to provide for the operation of the new brown oxide plant and to establish unit prices for this operation for the third and fourth quarters of fiscal year 1949.

The offices of the Harshaw Chemical Company are located at 1945 East 97th Street, Cleveland, Ohio. The brown oxide plant itself is located at 1000 Harvard Avenue in Cleveland, Ohio in the Harvard-Denison Plant of the Harshaw Chemical Company. The brown oxide plant, together with the uranium tetrafluoride and uranium hexafluoride plants, are referred to as Plant C of the Harvard-Denison Plant. The buildings and land upon which this ABC operation is located are entirely contractor owned. The  $UO_2$  plant equipment is Government owned and is the only one of its kind in existence in this country. This plant was built at Harshaw according to decisions previously given under History. Harshaw is the only company with the necessary know-how in a position to manufacture  $UO_2$  in this plant at lowest cost to the Government. Since the production of this material is performed by a classified process and the material itself is classified, and the plant is unique, it was not possible to fulfill our production requirements by formal advertising. Consequently, the contract for the operation of this plant was negotiated with the Harshaw Chemical Company.

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Under its past work with the Manhattan District and the AEC, the contractor has shown that they have necessary qualified personnel and know-how to perform these production operations for the Government in a satisfactory manner.

The contract document to be prepared is Supplemental Agreement #32 to Contract W-7405 eng-276, setting forth the definitive provisions for the operation of the batch brown oxide plant at Harshaw for the period 1/1/49 through 6/30/49. This supplement should merge and supersede letter supplement #32 which has been in effect since October 1, 1948. The supplement is to provide for the production of brown oxide during the period mentioned above. The contractor should exert its best efforts to bring the plant up to design capacity as soon as possible. The design capacity is estimated to be 54 tons of  $UO_2$  per month. As total consideration for this work, Harshaw is to be paid the unit prices hereinafter outlined. The supplement should further provide that the Government will have full access to the Harshaw Project ledgers that were set up for this work effective January 1, 1949. Further, legal details to be incorporated in this definitive supplement are developed in the following paragraphs.

Negotiations for the definitive agreement finally reached with Harshaw Chemical Company were initiated on October 1, 1948, at which time we requested the Harshaw Chemical Company to prepare a proposal covering their thoughts on the provisions to be incorporated into a contract for the operation of the brown oxide plant. On October 15, a preliminary meeting was held with the Harshaw Chemical Company for a mutual discussion of both parties' ideas on the type of contract to be employed. On October 12, members of this office held a preliminary meeting in which we discussed the pros and cons of the various types of contracts which may be applicable. Attached is Exhibit #1 of the minutes of this meeting, subject "Negotiations of Contract with Harshaw to Operate Brown Oxide Plant", dated October 13, 1948. On October 14, immediately prior to our meeting with Harshaw, another preliminary meeting was held by the various members of this office to review the effect that some additional information, which was presented by Mr. W. A. Taussig, would have on our plan of action which was devised in our meeting of October 12.

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Attached as Exhibit #2 are the minutes of our meeting of October 14, subject "Negotiation of Contract with Harshaw to Operate Brown Oxide Plant", dated October 15, 1948. In our meeting with Harshaw on October 15, we presented to that company our preferences for a cost reimbursement type of contract or a target price with a retroactive adjustment at the end of the first six months. At that time, Harshaw stated that they did not particularly care for either type of contract, but that they would consider our proposal in detail and we would resolve the questions in a later meeting.

On October 27, a meeting was held at the Harshaw Chemical Company in Cleveland. The minutes of this meeting are attached as Exhibit #3, subject, "Negotiation of Contract with Harshaw to Operate Brown Oxide Plant - W-7405 eng-276" dated October 28, 1948. The agreements reached in this meeting were essentially that we would probably go along with the Harshaw Chemical Company's proposal of operation on a unit price basis on a sliding scale, going up scale with low production and down scale with high production. Harshaw Chemical Company was to prepare a letter to this office outlining their proposal in detail with support for the unit cost so presented. In the meantime, Harshaw was to proceed with the preliminary work including procurement of material under the latter supplement which they then had in their hands.

In a letter of November 16, 1948 from Dr. Stillwell of Harshaw to the attention of Mr. F. M. Belmore (copy of this letter is attached as Exhibit #4), Harshaw Chemical Company proposed the detailed cost facts, rates, and practices which they proposed to establish so that that company could set up the atomic energy activities (of which the operation of the brown oxide plant are included) as a separate and administrative operating entity within Harshaw. At a meeting on November 17 with Dr. Stillwell and Dr. Fernelius of Harshaw, which was attended by various representatives of the Production Division and of the Finance Division, the understandings proposed in Exhibit #4 were accepted by this office. These understandings then became the basis upon which the books covering the operation of the separate Atomic Energy Project within the Harshaw Chemical Company will be set up. It is the writer's understanding that these administrative agreements embodied in Exhibit #4 will not necessarily

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be included in the operating supplement. The actual details of the cost accounting recommendation which will be set up operating within the broad provisions agreed to in their letter of November 16 have been worked out directly with the members of the Finance Division.

Attached as Exhibit #5 is a letter of November 16 from Dr. Stillwell of Harshaw to Mr. Belmore regarding Contract W-7405 eng-276, Brown Oxide Operations. This letter was re-written as of December 6, 1948. Exhibit #5 contains Harshaw's detailed proposal for the operation of the brown oxide plant for a period of the first six months. The proposal given as Exhibit #5 has been accepted by this office. The principal features of Exhibit #5 are as follows:

1. A sliding scale of unit prices versus production from 18 $\frac{1}{2}$ % of plant design capacity up to a 100% of plant design capacity.
2. A provision for a fixed amount of \$31,770 per month for the period of 6 months if production equals to or is less than 18 $\frac{1}{2}$ % of plant design capacity during this period.
3. The brown oxide prices applying to the first 6 months of operation covered by this definitive supplement are based upon estimated costs and do not include any elements of profit or G&A costs.
4. That the contract is to contain a provision that after 3 months of operation under the procedures outlined in this proposal, if the plant is operating at or near rate of capacity, Harshaw Chemical Company and the AEC may negotiate a unit price contract involving profit and G&A if it is mutually agreeable to both parties.

Harshaw's method of calculation of the costs is shown in detail as Exhibit #5 supporting the various unit costs obtained in their sliding scale of operation. These cost breakdowns are merely Harshaw's estimate of the actual costs that will be incurred in the operation of the plant for the various rates stated. The Production Division has made a study of these costs in comparison with the cost data available from the operation of the du Pont brown oxide plant on a cost-plus-fixed fee basis and MCW on a unit price basis. This study has revealed that the unit prices as

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proposed by Harshaw for the first six months without profit and G&A are in line with the costs experienced at du Pont and Mallinckrodt in past operation of a similar type plant. These data are on file in the Office of the Production Division.

In view of the information contained above, it is the recommendation of the Government negotiators that this office prepare a definitive supplemental agreement to Contract W-7405 eng-276 covering the operations of the batch brown oxide plant for the period 1/1/49 through 6/30/49 in accordance with the pricing provisions contained in Harshaw's detailed proposal which is attached as Exhibit #5.

## Attachments:

1. Exhibit 1 - Memo J.C. Clarke to F.M. Belmore dtd 10/13/48
2. " 2 - " " " " " " 10/15/48
3. " 3 - " " " " " " 10/28/48
4. " 4 - Ltr Dr. Stillwell to F. M. Belmore dtd 11/16/48
5. Exhibit 5 - Ltr Dr. Stillwell to F. M. Belmore dtd " rewritten 12/6/48

*Concurrence  
7/2/49*



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This document consists of 7 pages.  
No. 2 of 8 copies, Series A.

CONTRACT NO. W 7408-ENG-275

SUPPLEMENTAL AGREEMENT NO. 27

CONTRACTOR:

MARSHALL CHEMICAL COMPANY

SUPPLEMENTAL AGREEMENT FOR:

EXPANSION OF FACILITIES AND ADDITIONAL PRODUCTION OF MATERIALS

ESTIMATED COST:

\$639,634-00

PAYMENT To be made by:

Division of Disbursement, U. S.  
Treasury Department, New York,  
New York. Submit invoices to:  
United States Atomic Energy  
Commission, P. O. Box 42, Murray  
Hill Station, New York, New York.

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE BY A CROSS-REFERENCE TO AN AUTHORITY. DATE 11/17/01 BY SP-10/STW/STW

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1947

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Contract No. W-7405-Eng-276  
Supplemental Agreement No. 27

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 17th day of December 1947, effective as of November 21, 1947, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government") and MARSHALL CHEMICAL COMPANY (hereinafter called the "Contractor"),

WITNESSETH THAT:

WHEREAS, on the 27th day of May 1944, effective as of the 1st day of January 1944, the Government and the Contractor entered into Contract No. W-7405-Eng-276; and

WHEREAS, this contract was previously modified by Supplemental Agreements Nos. 1 through 26; and

WHEREAS, it is now desired to amend this contract to provide for the expansion of certain facilities and for the production of certain chemicals, all as hereinafter more fully set forth; and

WHEREAS, this contract is authorized by and negotiated under the Atomic Energy Act of 1946 and Executive Order No. 9816, dated December 31, 1946 in the interest of the common defense and security;

NOW, THEREFORE, Contract No. W-7405-Eng-276 as heretofore amended, hereby is amended further, but in the following particulars only:

1. Article I, Scope of This Contract, is modified by adding Section 21 thereto as follows:

"21. (a) Commencing November 21, 1947, the Contractor shall, in addition to the work set forth above, expand the facilities for the production of Chemical RT-12 to raise the maximum capacity of the Plant to 9,000 pounds per day without factor of safety. In performing said expansion of facilities the Contractor shall, subject to the approval or ratification of the Commission, furnish the necessary labor, materials, tools, machinery, equipment, facilities, designs, engineering, and shall procure and install the equipment

listed in Schedule "G" (attached hereto as Schedule "G" hereinafter referred to as "Schedule G") in this contract, captioned "GOVERNMENT-OWNED FACILITIES" in Contractor's Schedule "G" hereinafter referred to as "Schedule G") in accordance with Section 21 hereof, the Contractor shall receive the sum of One Hundred Eighty Thousand Six Hundred Seventy-Six Dollars (\$180,676.00).

(b) It is understood and agreed that the Contractor shall make an annual report to the Government at a price mutually agreeable to the Contractor and the Government. The amount of such report shall determine if surplus to the requirements of the Government."

2. Said Article I is further modified by adding Section 22 hereof as follows:

"22. (a) During the period commencing January 1, 1948 continuing up to and including March 31, 1948 the Contractor shall, in addition to the production of the materials previously called for hereunder, produce Chemical RT-12 at the established rate of 6,000 pounds per day and chemical HL-7 at the rate of 5,000 pounds per day. The meaning of the code symbols Chemical RT-12 and Chemical HL-7 shall be as defined in Modification No. 7 dated October 8, 1947 to Secret Letter dated January 9, 1948.

(b) The Contractor shall be paid at the rate of \$0.525 per pound of Chemical RT-12, and \$0.31 per pound of Chemical HL-7 delivered f.o.b., Contractor's Plant, Cleveland, Ohio.

(c) All known waste required to produce said Chemicals RT-12 and HL-7 will be supplied by the Government free of charge to the Contractor, f.o.b., Contractor's Plant. Title to all residues, by-products, waste or surplus resulting in the production of Chemicals RT-12 and HL-7 shall remain in the Government, and shall be delivered when and as requested by the Commission."

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3. Payments to the Contractor for services rendered under Article I, Section 21(a) shall be made as follows:

"(a) Partial payments for work performed will be made as the work progresses at the end of each calendar month, or as soon thereafter as practicable, on estimates made and approved by the Commission. In preparing estimates the materials delivered on the site and preparatory work done may be taken into consideration.

(b) In making such partial payment there shall be retained ten percent (10%) on the estimated amount until final completion and acceptance of all work under Article I, Section 21 (a) hereof; provided, however, that the Commission, at any time after fifty percent (50%) of the work has been completed, if it finds that satisfactory progress is being made, may make any of the remaining partial payments in full.

(c) All material and work covered by partial payments made shall thereupon become the sole property of the Government, but this provision shall not be construed as relieving the Contractor from the sole responsibility for all materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the Government to require the fulfillment of all of the terms of the contract.

(d) Upon completion and acceptance of all the work required under Article I, Section 21 (a), the amount due the Contractor under said Section will be paid upon the presentation of a properly executed and duly certified voucher therefor, or such other document the Commission may require, after the Contractor shall have furnished the Government with a release, if required by the Commission, of all claims against the Government arising under and by virtue of said Section 21(a), other than such claims, if any, as may be specifically excepted by the Contractor from the operation of the release in stated amounts to be set forth therein.

~~Secret~~

Contract No. W-7405 eng-276  
Supplemental Agreement No. 23

### SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 24th day of March, 1948, effective as of the 5th day of January, 1948, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government") and MARSHAW CHEMICAL COMPANY (hereinafter called the "Contractor");

#### WITNESSETH THAT:

WHEREAS, on the 27th day of May, 1944, effective as of the 5th day of January, 1944, the Government and the Contractor entered into Contract No. W-7405 eng-276; and

WHEREAS, this contract was previously modified by Supplemental Agreements Nos. 1 through 27; and

WHEREAS, it is now desired to amend this contract to provide for the expansion of certain facilities and for the production of certain chemicals, all as hereinafter more fully set forth; and

WHEREAS, this contract is authorized by and has been negotiated under the Atomic Energy Act of 1946 and Executive Order No. 9816, dated October 31, 1948, in the interest of the common defense and security,

NOW, THEREFORE, Contract No. W-7405 eng-276 as heretofore amended, hereby is amended further, but in the following particulars:

1. Article I, Scope of This Contract, is modified by adding Section 25 thereto as follows:

"25. (a) During the period commencing April 1, 1948 continuing up to and including June 30, 1949, the Contractor shall, in addition to the production of the materials previously called for hereunder, produce Chemical RT-12 at an average rate of 7,000 to 7,500 pounds per day and Chemical HL-7 at the plant capacity rate estimated to be 5,800 pounds per day, but in no event shall the Contractor produce more HL-7 under this contract than is required to maintain the desired maximum production rate of RT-12, which is estimated to be 7,000 pounds of HL-7 per day.

(b) The Contractor shall be paid at the rate of \$0.50 per pound of Chemical RT-12 and \$0.235 per pound of HL-7 delivered f.o.b. Contractor's Plant, Cleveland, Ohio.

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(c) All brown oxide required by the Contractor to produce said Chemicals RT-12 and HL-7 and any excess HL-7 above the plant capacity of same required by the Contractor in order to maintain the desired RT-12 production rate, will be supplied by the Government free of charge to the Contractor, f.o.b. Contractor's Plant. Title to said materials so furnished by the Government, including but not limited to, all scrap, wastage, by-products, finished products and work in process, shall remain in the Government at all times and shall be returned and/or delivered to the Government when and as requested by the Commission."

2. Delete paragraph 5 (b) of Article I, Scope of This Contract, and substitute the following new paragraph in lieu thereof:

"(b) Title to all such material, including but not limited to, all scrap, wastage, by-products, finished products and work in process, shall remain in the Government at all times and shall be returned and/or delivered to the Government when and as requested by the Commission."

3. In accordance with Articles XII (b) and XXVII (7) as they appear in Supplemental Agreement No. 25, the following facilities and items of equipment are hereby added to Schedule "B" of this contract, effective March 24, 1948:

IDENTIFICATION OF SCHEDULE B

DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
57 1/2" Grinding Machine Jenbacher Co.	1	\$6,000	\$6,000
42 1/2" Grinding Machine, Jenbacher Co. No. 1	1	\$1,400	\$1,400
Harder Machine, Jenbacher Co. (Grinding Machine) No. 1	1	\$1,200	\$1,200
200 1/2" Grinding Machine, Jenbacher Co. (Grinding Machine) No. 1 200 1/2" Grinding Machine, Jenbacher Co. (Grinding Machine) No. 1 200 1/2" Grinding Machine, Jenbacher Co. (Grinding Machine) No. 1 200 1/2" Grinding Machine, Jenbacher Co. (Grinding Machine) No. 1	4	\$2,000	\$8,000
Motor, 100 HP, Jenbacher Co. (Grinding Machine) No. 1	1	\$1,000	\$1,000

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Contract No. **W-7405** **276**

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*Folder Rec'd*  
*negotiations*  
*Contract # W-7405 eng-2*  
*Harshaw Chem Co*

Record of Negotiation

Name of Contractor

**HARSHAW CHEMICAL COMPANY**

Prepared by

*D. J. Hunter*

Name

**D. J. HUNTER**  
**ENGINEER (CHEMICAL)**

Title

**SPECIAL REREVIEW**  
**FINAL DETERMINATION**  
**UNCLASSIFIED**

By: *P. F. Brown*

Date: *5-9-84*

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FISCAL CLEARANCE

SUPPLEMENT NO. 21 DATE

DATE January 30, 1947

APPROVAL OR AWARD

Were competitive bids received? No.

January 9, 1947 Cleveland, Ohio & New York, NY Cleveland, Ohio  
Date of negotiations Place of negotiations Site of work

Barth Chemical Company 1945 East 97 Street, Cleveland 6, Ohio  
Contractor Address of Contractor

GOVERNMENT NEGOTIATIONS CONTRACTOR NEGOTIATIONS  
F. H. Nelson E. H. Long, Asst to the President  
DeKoven Benter

Proposed type of contract (Cost Plus, F.P., U.P., etc.)  
SCOPE OF WORK (INCLUDE ITEMS AND QUANTITIES OF PRODUCTS)

The supplement is to include the followings

1. Design, procurement and installation of equipment necessary for the recovery of valuable material from exhaust fumes of the g-516 plant and to prevent the discharge to the atmosphere of objectionable vapors and gases.

2. The Contractor will furnish the necessary buildings at his own expense.



SCOPE OF WORK (Continued)

- 3. The usual payment clauses for such "lump sum" contracts.
- 4. The estimated cost is \$57,722.00
- 5. The work to be performed by the Marshaw forces and/or lump sum sub-contractors, whichever will best serve the interests of the Government.
- 6. Work will be accomplished as expeditiously as possible and shall be completed by October 31, 1947.
- 7. No overtime is authorized.
- 8. Equipment listed in K. H. Long's letter of January 9, 1947 to be listed under Schedule F.

Recent complaints from the Bureau of Health of the City of Cleveland indicate that the fumes from the G-516 plant at Marshaw are objectionable. Although the character of the fumes were not known to the City Bureau, similar fumes exhausted at another location are the basis of a law suit by surrounding dwellers. It was deemed to be very desirable to construct a fume recovery system as soon as practical. Economically this was sound since it is estimated that approximately one-half ( $\frac{1}{2}$ ) of the present metal losses may be recovered. This recovery may be in the neighborhood of 1,000 pounds per month based on the losses during the latter half of 1946. This recovery should increase since the production of G-516 is being increased in February.

Marshaw has agreed to furnish any necessary building construction at their own cost and have submitted a bid of \$37,782.00 for the design, installation and procurement of the necessary equipment.

Necessary fiscal clearances required will have to be obtained.

No other bids were received other than Marshaw's. Marshaw in the past has always done the work well and reasonably. The present bid is deemed reasonable in view of the attached breakdown. The \$8,000.00 installation costs for the amount of equipment concerned is a reasonable figure in view of present labor costs. Marshaw's usual offer to construct the necessary buildings is a substantial saving. The materials and processes concerned are classified and if an outside contractor did the work, the trouble of necessary clearances would only be incidental since Marshaw would necessarily have to supply the design, engineering and supervision to prevent the dissemination of classified information. Furthermore, since the manufacturing process will continue during the

RECORD OF NEGOTIATIONS

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GENERAL AND  
OTHER PERTINENT DATA

construction, those working on this construction will be subjected to hazardous materials, the character of which is known only to the Contractor.

Attached to this Record of Negotiations is a copy of the cost estimate and equipment schedule submitted.

The bid by Marshaw to do the necessary work was submitted in a letter dated January 9, 1947. "Request for Approval of New Construction" was submitted to the District by this office in a letter dated January 22, 1947. Directive WIA-4-4 giving requested approval was dated January 30, 1947.

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WAR DEPARTMENT  
UNITED STATES ENGINEER OFFICE  
MADISON SQUARE AREA,  
P. O. BOX 42  
STATION F  
NEW YORK 16, N. Y.

5 January 1944

Letter Contract No. W-7405 eng-276  
New York, New York

Hangshaw Contracts

Hangshaw Chemical Company  
Cleveland, Ohio

Attention:

The United States of America, acting through the undersigned Contracting Officer, hereby places with you an order that you shall, at the shortest possible time, furnish the labor, materials, tools, machinery, equipment, facilities, supplies not furnished by the United States of America, and services, and do all things necessary for the design, procurement and installation of equipment, and the operation of a plant of a designed capacity of 3300 pounds of Product C616 daily. Said plant will be located in a building to be erected on your plant site in Cleveland, Ohio, and it is understood that said plant will be ready for operation by 1 June 1944. Said plant will be operated in accordance with the directions of the Contracting Officer, it being estimated that the normal output required will be 2200 pounds of Product C616 per day, seven (7) days per week. The specifications set forth in secret letter dated 5 January 1944, and the price per pound of Product C616 shall be as mutually agreed upon, and it is understood that the Government will furnish all the Product required in the production of Product C616.

It is estimated that the cost of the design, procurement and installation of the equipment will be One Hundred Seventy-Five Thousand (\$175,000), exclusive of the cost of cylinders to be supplied by the Contractor for which reimbursement will be made separately by the Government, but neither party guarantees the correctness of such estimate.

It is agreed that you hereby grant a license to the Contracting Officer or his duly authorized representative to have access to and use of all data at all times for any purpose in connection with the work to be performed hereunder.

Funds for carrying out this work have been appropriated and are available for use of the War Department under Procurement Order No. 8-25562 P110-10.

The Secretary of War finds that it is in the interest of the Government that this work be not delayed awaiting the negotiation of a contract.

04.4

FC-1  
EIDM A-43 MS

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update with you a satisfactory contract to supplement this contract  
p: to 15 March 1944, this contract will terminate and the United  
Ss of America will pay you in full settlement thereof a sum equal  
 reimbursement for all costs incurred by you in connection with the  
 performance of this contract plus such other sums as have actually been  
 ded by you, in good faith, in settlement of all obligations,  
 tments and claims which you may theretofore have incurred, less  
 reimbursements previously made, but in any event the total payments  
 not exceed the sum of One Hundred Thousand Dollars (\$100,000.00).

It is understood that in connection with your work under  
 contract, you shall acquire or manufacture for the Government's  
 unt certain facilities as agreed to by the Contracting Officer and  
 ed in Schedule "A" to be attached to the formal contract. As each  
 of said facilities is delivered to, or manufactured by you, for  
 Government's account, it shall become and remain the property of  
 Government and title thereto shall vest in the Government, which  
 by grants to you the right to use, without the payment of rental  
 efer, such facilities in connection with the work herein contracted for.

It is understood and agreed that the meaning of the code symbols,  
 act C613 and Product 306, shall be as set forth in a secret letter  
 the Government to you dated 5 January 1944, agreed to and accepted  
 u, a copy of which is on file in the Manhattan District Office.  
 contents of said letter are hereby made a part of this contract in  
 ame manner as though fully set forth herein.

If the foregoing is acceptable to you, it is desired that you  
 dicate hereon and on the inclosed two copies of this letter and  
 the original and one copy to this office as soon as practicable.  
 acceptance will constitute this order a contract and a notice to  
 d.

In procuring of critical materials required for performance  
 der, this letter contract bears a priority rating of AA-2L.

This instrument is authorized by and has been negotiated under  
 at War Powers Act, 1941, and Executive Order No. 9001.

Very truly yours,

UNITED STATES OF AMERICA

By John R. Ruhoff  
JOHN R. RUHOFF  
Lt. Col., Corps of Engineers,  
Contracting Officer.

this 5th  
Jan, 1944.

CHEMICAL COMPANY

Wilmington  
Wilmington, Ohio.

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...the ... the ...  
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... by law.

... of ...  
No. ... of ...

PROPRIATION: 212/60224

ORDER NO. 1470-07

TRACT:

HARSHAW CHEMICAL COMPANY

PLEMENTAL AGREEMENT FOR:

REVISION OF QUANTITIES OF MATERIAL

IMATED AMOUNT:

...

MENT TO BE MADE BY:

FINANCE OFFICE, U. S. ARMY,  
KNOXVILLE, TENNESSEE.

The supplies and services to be obtained by this instrument are  
authorized by, are for the purposes set forth in, and are chargeable to  
following procurement authority or authorities, the available balances  
which are sufficient to cover the cost of the same:

608-3222 1470-07

contract is authorized by the following laws:

Statutory Authority: This contract negotiated and executed under  
First War Powers Act, 1941, and Executive Order No. 9801.

...

...

SUPPLEMENTAL AGREEMENT NO. 14

THIS SUPPLEMENTAL AGREEMENT, entered into this 20th day of March 1946, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government") represented by the Contracting Officer executing this agreement, and HARSNAW CHEMICAL COMPANY (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, on the 27th day of May 1944, the parties hereto entered into Contract No. W-7405 eng-276 for certain services and production of material; and

WHEREAS, the Government desires the Contractor to modify the requirements for material contracted under Supplemental Agreement No. 10 for the period ending 31 March 1946 and to produce and furnish additional materials during the period 1 April 1946 to 30 June 1946, as hereinafter provided; and

WHEREAS, this modification is authorized by the First War Powers Act and Executive Order No. 9001 and will facilitate the prosecution of the war;

NOW, THEREFORE, the said contract, as amended, is further amended in the following particulars, but in no others:

1. Article I, section 15, paragraph a. is modified only to the extent of deleting so much thereof as has been added thereto by Supplemental Agreement No. 10 and substituting the following in lieu thereof:

"During the period commencing 16 October 1945 and ending 31 March 1946, the Contractor shall produce and deliver to the Government approximately 734,700 pounds of Product C-616 in cylinders at an average rate of approximately 4,500 pounds per day from 16 October 1945 through 4 February 1946 and 4,200 pounds per day from 4 February 1946 through 31 March 1946. (The quantity of 734,700 pounds of Product C-616 represents a reduction of 16,800 pounds of the same material previously contracted for under Supplemental Agreement No. 10.)

"During the period commencing 1 April 1946 and ending 30 June 1946, the Contractor shall produce and deliver to the Government approximately 4,200 pounds of Product C-616 in cylinders at an average rate of approximately 4,500 pounds per day from 1 April 1946 through 31 May 1946 and 4,500 pounds per day from 1 June 1946 through 30 June 1946."

2. Article I, section 15, paragraph b. is modified only to the extent of deleting so much thereof as has been added thereto by Supplemental Agreement No. 10 and substituting the following in lieu thereof:

"During the period commencing 16 October 1945 and ending 1 March 1946, the Contractor shall produce and deliver to the Government approximately 29,400 pounds of Product WE-61 at an average rate of approximately 17,000 pounds per week. The Contractor agrees to install in its plant at its expense, any additional facilities necessary for the production of the WE-61 to be furnished on and after 1 January 1946. (The quantity of 29,400 pounds of Product WE-61 represents a reduction of 128,600 pounds of the same material previously contracted for under Supplemental Agreement No. 10.)

"During the period commencing 1 April 1946 and ending 30 June 1946, the Contractor shall produce and deliver to the Government approximately 27,000 pounds of Product WE-61 at an average rate of approximately 3,000 pounds per week from 1 April 1946 through 31 May 1946 and 28,000 pounds per week from 1 June 1946 through 30 June 1946."

3. It is estimated that the cost of the additional work to be performed under this Supplemental Agreement for the period 1 April 1946 to 30 June 1946 is \$326,130.00. Payment to the Contractor for the work and services provided for hereunder shall be made upon the terms and at the rate set forth in the principal contract, as previously amended.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the day and year first above written.

THE UNITED STATES OF AMERICA

Witness:

Mildred F. Snull

Mildred F. Snull  
870 Garfield Road  
East Cleveland 12, Ohio

Marie E. Mueller  
Marie E. Mueller  
1010 Belmont  
East Cleveland, Ohio

By

G. W. Beeler

G. W. Beeler,  
Colonel, Corps of Engineers,  
Contracting Officer.

HARSHAW CHEMICAL COMPANY

By

W. J. Harshaw

W. J. Harshaw  
Cleveland, Ohio

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Contract No. W-7405-eng-276

SUPPLEMENTAL AGREEMENT NO. 15

To contract for design, procurement, and installation of equipment and operation of a plant for the production of Products C-616 and WE-61

CONTRACTOR: HARSHAW CHEMICAL COMPANY

LOCATION: CLEVELAND, OHIO

ESTIMATED COST OF THIS SUPPLEMENTAL AGREEMENT: \$739,680.00  
ESTIMATED COST 1 Jan. 1947 thru 30 June 1948: \$2,200,000.00

SUPPLEMENTAL AGREEMENT FOR: Additional quantities of Products C-616 and WE-61

PAYMENT: To be made by Finance Officer, U. S. Army at Oak Ridge, Tennessee. Submit invoices to the Area Engineer, U. S. Engineer Office, Madison Square Area, P. O. Box 42, Station F, New York, New York.

The supplies and services to be obtained by this instrument are authorized by, are for the purpose set forth in, and are chargeable to the following allotment, the available balances of which are sufficient to cover the cost of the same:

212/60905 608-3222-P470-08

This Supplemental Agreement is authorized by First War Powers Act, 1941, and Executive Order No. 9001.

This document contains information affecting the defense of the United States within the meaning of the Espionage Act 50 U.S.C., 21 and the transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

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Contract No. W-7405 eng-276

SUPPLEMENTAL AGREEMENT NO. 15

THIS SUPPLEMENTAL AGREEMENT, entered into this 4th day of June 1946 by and between the UNITED STATES OF AMERICA (hereinafter called the "Government") represented by the Contracting Officer executing this agreement and HARSHAW CHEMICAL COMPANY (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, on the 27th day of May 1944 the parties hereto entered into Contract No. W-7405 eng-276 for certain services and production of material; and

WHEREAS, the Government desires the Contractor to produce and deliver to the Government additional quantities of C-616 and WE-61; and

WHEREAS, this modification is authorized by the First War Powers and Executive Order No. 9001 and will facilitate the prosecution of the war;

NOW, THEREFORE, the said contract, as amended, is hereby further amended in the following particulars, but in no others:

1. The term of the contract, as set forth in Article I, Section 15, is modified as follows:

The term of this contract shall be for the period commencing the 5th day of January 1944 and ending at 11:59 P.M. on 31 December 1946. At the option of the Government, the term of this contract may be extended for an additional period or periods of time, but not beyond 31 June 1950; provided, however, that the Contracting Officer shall give the Contractor 30 days written notice prior to the expiration of such period or periods of its intention to exercise such option.

2. During the period 1 July 1946 through 31 December 1946, Contractor shall produce and deliver to the Government additional quantities of approximately 828,000 pounds of Product C-616 and approximately 48,000 pounds of Product WE-61, respectively.

Delivery of the additional quantity of Product C-616 shall be at the rate of 4,500 pounds per day, and the additional quantity of Product WE-61 shall be delivered at the rate of 28,000 pounds per week.

For the additional quantity of Product C-616 the Contractor shall be paid at the rate of \$0.60 per pound, f.o.b. Contractor's plant,

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Cleveland, Ohio.

For the additional quantity of Product WE-61 the Contractor shall be paid at the rate of \$0.33 per pound, f.o.b. Contractor's plant, Cleveland, Ohio.

3. The cost of the additional quantities of C-616 and WE-61, as above set forth, will be approximately \$739,680.00.

4. In the event the option set forth above is exercised, and the term of the contract is extended for an additional period or periods of time, the price or prices of the additional quantity or quantities of material shall be determined at the time of the exercise of such option. It is estimated that the total cost to the Government of exercising its option as aforesaid for continuing production during an additional period of time up to and including 30 June 1948 will be approximately \$2,200,000.00, and the total contract price, as modified, will not exceed \$5,994,151.75.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the day and year first above written.

THE UNITED STATES OF AMERICA

BY *J. D. Harshaw*  
Colonel, Corps of Engineers

HARSHAW CHEMICAL COMPANY

Witnesses:

*Mildred F. Shull*  
Mildred F. Shull  
1870 Garfield Rd. E. Cleveland, O.

BY *W. J. Harshaw*  
W. J. Harshaw

*Marie E. Muller*  
Marie E. Muller  
Hotel Boston Cleveland, O.

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SUPPLEMENTAL AGREEMENT NO. 24

THIS SUPPLEMENTAL AGREEMENT, entered into this 18th day of June 1947, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government") and PARSHA CHEMICAL COMPANY (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, on the 27th day of May 1944, effective as of the 5th day of January 1944, the Government and the Contractor entered into Contract No. D-7405 eng-276; and

WHEREAS, this contract has previously been modified by Supplemental Agreement Nos. 1 through 23 respectively; and

WHEREAS, the Government desires to revise and add certain articles and to further modify the quantity of material previously contracted for under Paragraph 3, Article I, Section 15, as set forth in Supplemental Agreement No. 19; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1946 and Executive Order No. 9816, in the interest of the common defense and security;

NOW, THEREFORE, Contract No. D-7405 eng-276, as heretofore amended, hereby is amended further, but in the following particulars only:

1. a. The option set forth in Section 1 of Supplemental Agreement No. 15 is hereby exercised in part and the term of this contract is extended from August 1, 1947 up to and including June 30, 1948. At the option of the Government, the term of this contract may be extended for an additional period or periods of time, up to and including June 30, 1950.

b. During the period August 1, 1947 up to and including December 31, 1947, the Contractor shall produce C-616 at the established rate of 6300 pounds per day and WE-61 at the rate of 5600 pounds per day.

c. The Contractor shall be paid at the rate of \$0.55 per pound of Product C-616 and 30.33 per pound of Product WE-61 delivered f.o.b. Contractor's plant, Cleveland, Ohio, subject, however, to the provisions of Article XXXIV, hereinafter set forth.

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Handwritten number 211 on the right margin.

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d. The prices to be paid the Contractor for the period subsequent to December 31, 1947 will be negotiated in accordance with Article XXXIV.

2. The estimated cost for the period August 1, 1947 up to and including June 30, 1948, is \$1,779,555.00, and the sum of \$2,500,000.00 set forth in Supplemental Agreement No. 15, Section 1, as an estimated amount for the period January 1, 1947 through June 30, 1948, which amount was then previously obligated to the extent of \$1,244,833.17, is hereby extended to total approximately \$3,024,378.17.

3. Article XXXIV - Price Revision, as set forth in Supplemental Agreement No. 9 of said contract is hereby deleted and the following substituted in lieu thereof:

ARTICLE XXXIV - PRICE REVISION

a. The prices fixed in this contract may be increased or decreased in accordance with this Article.

b. Price Periods - The Government and the Contractor agree to revise the contract prices under this contract periodically by written request of the Contractor and/or Commission, in accordance with this Article and agree that the performance of this contract will be divided into successive periods for that purpose. If no written request is made by either party, the prices then in effect will continue through the following period. The first period will extend from August 1, 1947 to December 31, 1947, in which case each succeeding period will extend for three months from the end of the preceding period. The first day of the second period hereinafter referred to as "the effective date of the price revision", it being understood that the rate of production and price of materials for the period from August 1, 1947 to December 31, 1947 inclusive, are established as hereinabove set forth. Fifteen days before the end of each period hereunder, except the last, or at such other time or times as the Commission may request, the Contractor shall furnish the statements and data referred to in Paragraph c. of this Article provided the Contractor is given due notice.

c. Submission of Data - At the time or each of the times specified for in Paragraph b. of this Article, the Contractor shall submit the following:

1. A statement of estimated and actual costs of production hereunder to date and to date they are available at the time of negotiation of such initial or adjustment prices.

2. A explanation of the price-costs between the original and the new, including material, and the new...

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 27th day of October 1947, effective as of the 15th day of August 1947, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government") and HARSHAY CHEMICAL COMPANY (hereinafter called the "Contractor"):

WITNESSETH THAT:

WHEREAS, on the 27th day of May 1944, effective as of the 5th day of January 1944, the Government and the Contractor entered into Contract No. W-7405-eng-276; and

WHEREAS, it is desired to amend this contract to provide for the performance of research services, and to further modify certain contract articles, as hereinafter set forth; and

WHEREAS, this Supplemental Agreement is authorized by and negotiated under the Atomic Energy Act of 1946 and Executive Order No. 9836, in the interest of the common defense and security.

NOW, THEREFORE, Contract No. W-7405-eng-276, as heretofore amended, hereby is amended further, but in the following particulars:

1. Article XXXVI, SAFETY AND ACCIDENT PREVENTION, is deleted and the following substituted in lieu thereof:

"ARTICLE XXXVI - SAFETY AND ACCIDENT PREVENTION

1. The Contractor agrees to establish a health and safety program, health and safety rules and procedures, organizational methods to implement these rules and procedures, and to install health and safety equipment consistent with generally accepted health and safety practices.
2. The Contractor agrees to establish a fire prevention program, fire prevention rules and procedures, organizational methods to implement these rules and procedures and to install fire prevention equipment consistent with generally accepted fire prevention practices, as specified in the applicable standard codes published by the organizations listed in the Appendix to Atomic Energy Commission Regulation, Safety No. 3.

3. The health and safety program will be designed to protect all those who may be exposed to hazard or injury as a result of the work covered by this contract.

4. Representatives of the Commission will be designated to make periodic studies and report on the adequacy of the protective program for the prevention of radiation injury and such occupational diseases as may be considered special problems of the Atomic Energy Commission. As a result of such inspections and studies, recommendations will be made in writing to the Contractor. It will be presumed that these recommendations are acceptable to the Contractor and will be implemented by him unless exception in writing is given to the Commission within fifteen (15) days after receipt of the recommendations.

5. Representatives of the Commission will be designated to make periodic analyses and inspections, of health and safety practices. As a result of such inspections, recommendations will be made in writing to the Contractor. It will be presumed that these recommendations are acceptable to the Contractor and will be implemented by the Contractor unless exception, in writing, is given to the Commission within fifteen (15) days after receipt of the recommendations.

6. The Contractor will, as soon as possible after the occurrence of each accident, submit the Individual Accident Report - AEC Form 12, and the Monthly Safety Summary Report - AEC Form 13, to the Commission. It is understood that fires and cases of occupational disease will be reported on the Individual Accident Report - AEC Form 12.

7. Reimbursement will be made for the cost of special equipment and structural changes or additions to the Contractor's plant and other extraordinary costs which may be required under the provisions of this Article when authorized in writing by the Commission and in amounts approved by the Commission.

8. If, in the opinion of the Commission, a serious health and safety hazard is found to exist, the Commission, without prejudice to any other rights of the Government, may issue an order stopping all or any part of the work. Thereafter, a start order for the resumption of work may be issued at the discretion of the Commission. If the stoppage is required through no fault of the Contractor, extra costs resulting therefrom will be reimbursed

1. The Contractor shall be separately reimbursed for the cost, estimated at \$3,500.00 of a preliminary health survey, and, in addition thereto, for the initial issue of protective clothing, special equipment and structural changes or additions to the plant which may be required under the provisions of this Article when authorized in writing by the Commission.

9. The Contractor shall be separately reimbursed for the cost, estimated at \$3,500.00 of a preliminary health survey, and, in addition thereto, for the initial issue of protective clothing, special equipment and structural changes or additions to the plant which may be required under the provisions of this Article when authorized in writing by the Commission."

10. The provisions of Article III (C) are deleted and the following is substituted:

10. The Contractor shall be separately reimbursed for the cost, estimated at \$3,500.00 of a preliminary health survey, and, in addition thereto, for the initial issue of protective clothing, special equipment and structural changes or additions to the plant which may be required under the provisions of this Article when authorized in writing by the Commission."

11. The Contractor shall be separately reimbursed for the cost, estimated at \$3,500.00 of a preliminary health survey, and, in addition thereto, for the initial issue of protective clothing, special equipment and structural changes or additions to the plant which may be required under the provisions of this Article when authorized in writing by the Commission."



contains information affecting the  
defense of the United States within the  
meaning of the Espionage Act, U.S.C., 31 and  
its transmission or the revelation of its  
contents in any manner to an unauthorized person  
is prohibited by law.

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This document consists of 19 pages  
No. 2 of 12 copies, Series A  
Contract No. W-105 eng-2  
Dated: 15 May 1944

SUPPLY CONTRACT

WAR DEPARTMENT

CONTRACTOR & ADDRESS:

HARSHAW CHEMICAL COMPANY  
1945 E. 97th St. Cleveland, Ohio

CONTRACT FOR:

Design, Preparation,  
Installation of Equipment,  
and Operation of a Plant  
for the Production of  
Product (61).

AMOUNT: (Estimated)

\$560,000.00

LOCATION:

Cleveland, Ohio

PAYMENT:

To be made by:  
Finance Officer  
U. S. Army  
Knowville, Tennessee

The supplies and services to be obtained by this instrument are authorized by, are for the purposes set forth in, and are chargeable to the following procurement authority or authorities, the available balances of which are sufficient to cover the cost of the same.

8-25562 W-110-07

This contract is authorized by the following laws:

Statutory Authority: This contract negotiated and executed under the First War Powers Act, 1941, and Executive Order No. 9001.

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THIS CONTRACT, entered into this 27th day of May 1944, effective as of the 5th day of January 1944, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented by the Contracting Officer executing this contract, and HARSHAW CHEMICAL COMPANY, a corporation organized and existing under the laws of the State of Ohio of the City of Cleveland in the State of Ohio (hereinafter called the "Contractor"),

WITNESSETH THAT:

WHEREAS, the Government desires to engage the services of a contractor to develop a process for the production of and to produce the supplies hereinafter set forth, and

WHEREAS, the accomplishment of such services entered into after negotiations approved by the Secretary of War, and without advertising for proposals, is authorized by law and will facilitate the prosecution of the war, and

WHEREAS, as a result of such negotiations the Secretary of War has directed that the Government enter into a contract with the Contractor for the accomplishment of the work hereinafter described:

NOW, THEREFORE, the parties hereto do mutually agree as follows:

ARTICLE I - Scope of This Contract.

1. The Contractor shall, with the utmost secrecy and dispatch, subject to the approval or ratification of the Contracting Officer, furnish the labor, materials, tools, machinery, equipment, facilities, supplies not furnished by the Government and services, and do all things necessary for the design, procurement, installation of equipment (including, but not limited to, that listed on Schedule A in accordance with the terms of Article XII hereof), and preparation of a plant for production of Product C616 from WE-61 and Product 306, including supplying the original charge of materials other than the Government supplied raw materials (WE-61) and (Product 306), and including research and development during the period 5 January 1944 to 1 May 1944 in connection with a process for the production of Product C616 from WE-61 and Product 306, in buildings and on land owned by the Contractor on its plant site in Cleveland, Ohio. The plant shall have a designed, estimated capacity of 3300 pounds of Product C616 daily, without factor of safety, and it is estimated that the said plant will be ready for operation by 15 June 1944. As consideration for its undertakings under this section 1, the Contractor shall receive the sum of \$159,672, which amount includes those facilities listed on Schedule A that will be purchased specifically for this contract, the use rent-free, in the performance of the work under this contract, of Contractor-owned facilities for the manufacture of WE-61, the cost of transportation to and installation thereof in the plant, and the original charge of material in preparation for the operation of the plant, but is exclusive of the cost of special laboratory equipment, and of any equipment required for the loading and unloading of shipping containers outside the plant in connection with the work to be performed under this contract. The laboratory and loading and unloading equipment listed in Schedule A to be attached hereto, shall be furnished by the Government, or if the Contracting Officer so directs, shall be procured by the Contractor in accordance with Article XII. In the event the Contracting Officer requests the Contractor to perform services under this section in addition to those set forth herein, the Contractor will receive payment for such services in an amount to be mutually agreed upon.

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2. (a) The Contractor shall do all things necessary to procure for the Government seven hundred and fifty (750) seamless nickel cylinders each having a water capacity of approximately one hundred and fifty (150) pounds tested at three hundred (300) pounds per square inch hydrostatic pressure, eleven hundred (1100) plain cylinder valves, eleven hundred (1100) cylinder valves with dip-pipes for the said cylinders, six thousand (6,000) D-29 rings (gaskets for cylinder valves), and in addition, furnish the necessary labor for conditioning and assembling the valves with the cylinders. The design for the cylinders, the valves and the attachments thereto shall be approved by the Contracting Officer and representatives of the Kellen Corporation. The cylinders will be subject to inspection at the point of manufacture. Any increase in the quantity of cylinders or valves furnished hereunder by the Contractor, not exceeding ten per cent (10%) of the quantities above set forth, will be accepted by the Contracting Officer in performance of the contract, and payment will be made in accordance with the prices hereinafter set forth. The Contractor will be paid for the supplies procured and the labor furnished hereunder as follows:

1. Cylinders, \$176 each, f.o.b. Milwaukee, Wisconsin.
2. Plain cylinder valves, \$1.39 each, delivered Contractor's plant.
3. Cylinder valves with dip-pipes, \$3.25 each, f.o.b. Pittsburgh, Pennsylvania.
4. D-29 rings (gaskets for cylinder valves), \$948.44.
5. Labor for conditioning and assembling valves with cylinders, \$1.00 per cylinder.

The contractor shall be reimbursed for expenditures made by it for the Government for freight charges in connection with items 1. and 2. herein from f.o.b. point to Contractor's plant.

(b) If the Contractor or any representative thereof shall be required to travel in connection with the work to be performed and/or the supplies to be procured under this section, the Government will reimburse the Contractor for the transportation, including Pullman where necessary, and will allow for such travel Six Dollars (\$6.00) per day in lieu of all other expenses. Transportation by automobile on such required travel shall be reimbursed at the rate of five cents (\$.05) per mile per vehicle as representing the actual cost of such transportation. All travel shall be either authorized or approved in writing by the Contracting Officer.

3. The Contractor shall, as soon as practicable, proceed to operate the plant on a limited scale during the period 15 March 1944 to 15 June 1944, and during such period, the Contractor shall train the necessary personnel, not, however, to exceed forty (40) people in the operation of said plant. In consideration for his services under this section, the Contractor shall receive the sum of Twelve Hundred and Thirty-two Dollars (\$1232.00) in full payment for the materials and

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