UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

ORO

November 9, 1973

6263

File

PRIVATE CONVERSION OF AEC CONCENTRATES TO UF_6

Pursuant to letters of October 25, 1973 to the Allied Chemical Corp. and the Kerr-McGee Corp., and to discussions held between Allied Chemical representatives and Commissioner Larson on November 2, Mr. James Kelley of Allied telephoned me on November 5 to state that Allied was prepared to enter into arrangements with AEC for conversion of AEC concentrates (the situation described in Table III of the attachment to the October 25 letter) as soon as practicable. Kelley explained that although the economics of the operation under the AEC pricing policy were not favorable to Allied, he felt a social responsibility to the local community and was willing to incur the economic penalties rather than shut the Metropolis plant down for a year. Kelley indicated that he hoped AEC would be able to enter into an agreement as soon as possible and in the interest of timing suggested a preliminary letter-type agreement which could be executed more quickly pending the negotiations of a more definitive contract. I advised Kelley that the AEC would proceed as rapidly as feasible, but that we were unable to specify quantities until we had a response from Kerr-McGee.

I telephoned Mr. George Parks of Kerr-McGee on November 6 and inquired as to whether Kerr-McGee intended to propose to convert AEC feed material. Parks expressed the same type of dissatisfaction with the pricing policy as he had in the past and stated that he planned to visit Washington on November 9 to discuss the matter further with Commissioner Larson.

G. P. Quinn
Assistant General Manager
for Production and Management
of Nuclear Materials

cc: J. P. Abbadessa, AGMC
H. A. Rowden, GC
F. P. Baranowski, DPM
R. W. Ritzman, IR

DOOO28323

This document consists of 16 pages No. 24 of 30 copies, Series A.

SECRET RD

MONTHLY PROGRESS REPORT (U)

PRODUCTION DIVISION - DECEMBER 1962

Redacted version

Highlights

The production of Mark VII-A slugs was phased out at National Lead and Bylcor, and the total normal production for Savannah River is now on Mark V-B.

P reactor was shut down on December 7 for the removal of a ruptured Mark V-B fuel element; this was the first production reactor fuel failure since August 1961. The average daily reactor production at Savannah River during December was the fourth highest to date.

This month, the U-235 and Brandywine facilities at Savannah River experienced the highest production rates to date.

An explosion and fire at Paducah caused approximately two million dollars in damages to plant and equipment and approximately 4% loss in output.

At Oak Ridge, start-up of Cascade 3 for lithium 7 production was initiated on December 13.

Distribution:

1. AGMPP:Quinn	8. PR:Schwennesen	17-24. Oak Ridge
2. P:Baranowski	9. PHR:Lindsey	25-27. Savannah River
3. P:Stetson	10. PRC:Schwartz	28. Shepherd, OC
4. P:Miller	11. PA:Yablonchick	29. Baker, MIC
5. PP:Dowling	12. PAR:Green	30. PD Files
6. PPF:Devine	13. Derry, Construction	
7. PPI:Grabowski	14-16. Richland Operations	

PAR:HPG:151
1/23/63

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OR0117410

Production Operations. Feed materials production activities during December 1962 are summarized as follows:

	Tons Uranium		
	Schedule	Actual	Difference
Raw Materials receipts (2)	1858	1864	+ 12
Slug deliveries to Richland (1)	560	502	- 58
Slug deliveries to Savannah River (1)	300	262	- 38
Normal uranium deliveries to cascades (2)	462	466	+ 4
Feed delivered to Allied	164	164	0
UF_6 received from Allied	222	283	+ 61
UO_3 returns from Richland	550	692	+ 142
UO_3 returns from Richland (slightly enriched)	0	0	0
UO_3 returns from Savannah River	0	0	0
Slightly enriched I&E deliveries to Richland (1)	186	130	- 56
Slightly enriched NPR billets to Richland	25	17	- 8

(1) Performance measured against delivery schedule.
(2) Includes 290 TU (42 more than scheduled) as UO_3 from Canada.

General. Mallinckrodt personnel visited Fernald to review scrap materials on the National Lead inventory for recovery considerations by Weldon Spring; as a result of this review various categories of scrap were requested for immediate shipment to Weldon Spring, and samples of the remaining categories were requested for evaluation.

Fernald. Reduction of Richland recycle orange oxide was limited to the first week of the month because of limited receipts from Richland. The plant emphasis was therefore placed on outgassing 0.9% I&E "O"-type slugs for three weeks and special alloy Mark V-B pieces for one week.

The Acme Gridley fast cycle test for drilling "O"-type slugs was successful and a 33% improvement in production was achieved during the last week of the month.

The remelt area completed the transition from 7-inch to 8-inch ingots. The 8-inch ingots are produced from 1400-pound casting charges and indicate reduced costs, increased throughput and better metal quality.

Weldon Spring. Meetings were held with Grand Junction, Oak Ridge, and Division of Raw Materials personnel to discuss the transfer of sampling and analysis of ore to Mallinckrodt. Plans were also formulated for comparative sampling and analytical programs, some of which are now in progress.

The refinery established a new record high UO_3 production rate of 70 tons U/day average for the past week.

The first part of the order for 9000 Mark V-B outer cores was completed and shipped to Savannah River as scheduled. The second part of the order, which consists of the extrusion at Bridgeport Brass of those billets which cannot be extruded at Mallinckrodt, is scheduled for shipment in late February 1963.

[redacted]

Waste Management. Savannah River has evaluated a number of alternatives for additional waste tanks in the H-Area, including high level acidic storage, lower level alkaline storage, waste evaporator facilities and inter-area transfer lines between the H and F areas. Such a transfer line between the H and F area waste storage tank farms may permit more economic over-all utilization of the waste storage tanks. A report covering this inter-area transfer line is scheduled for completion by March 31, 1963.

A substantial reduction in the volume of waste from the enriched uranium processing at the Savannah River 221-H canyon would be achieved if the aluminum in this waste could be separated from the fission products and decontaminated sufficiently to be discarded. The Savannah River Laboratory is investigating aluminum removal by crystallizing aluminum nitrate from concentrated nitric acid solutions. Preliminary tests indicated that five successive crystallizations of aluminum nitrate, from 60% nitric acid solution at 0 to 10°C, will remove approximately 90 to 95% of the aluminum from the waste. The removed aluminum was found to have decontamination factors in excess of 10^{10} for strontium, cesium and plutonium. However, niobium decontamination was poor and it may be necessary to remove the niobium by filtration prior to the crystallization process. Similar studies are under way at Idaho which has constructed a small countercurrent multistage crystalliser concept for evaluation.

At Savannah River the following programs are under way to assist in an evaluation of methods for long-term waste disposal:

1. Determining the permeability of soils which underlie the waste tank areas and burial grounds.

2. Evaluating the use of synthetic absorbent soils (such as mixed bentonitic clays or limestone) as a method for improving the ion exchange properties of a waste tank environment.

3. Evaluating the hazards of waste storage in bedrock under the Savannah River site.

Chemical Technology Development - Savannah River. Work continues in connection with the advanced shipment date (June 1963) of the americium-curium-rare earth solution to Oak Ridge. Present plans are to ship this material either in liquid form, probably as a nitrate, using a modified SRP 190 Area Equipment Cask, or as a solid in a HAPO cask.

The cold runs being conducted in the semiworks laboratory to better define the chemistry of the double sulfate precipitation method (to be used to separate the Am-Cm-rare earths fraction from aluminum) were completed during December. Plans now are being formulated to conduct hot runs in the 221-H canyon plant equipment the latter part of February. Results of these scale-up demonstrations essentially confirmed laboratory experiments which had obtained americium-curium recovery rates in the order of 96%.

During December, tests were conducted with the five-stage plant-scale centrifugal separator using the last stage as a decanter to remove all traces of solvent from the aqueous product stream. This method of operation, if successful, would eliminate the need for decanters that are now used between the present plant mixer-settlers and the evaporators.

RHTG-18417

SECRET

SCHEDULE OF FEED SHIPMENTS
FOR MONTH OF January

THIS DOCUMENT CONSISTS OF 1 PAGES.
NO. 1 OF 18 COPIES, SERIES "A"

DOE-OR QA
W. J. Lemmon wjl
EASI 10/6/99
Date

UNCLASSIFIED

Schedule No. I-62-I
Date: January 12, 1962

(All figures in tons contained U)

	From	To	Consolidated ORO SCHEDULE FOR: January	DELIVERY STATUS OVERAGES (+) UNDERAGES (-)	AEC-101 NUMBERS SHIPMENTS FOR: December	NEW SCHEDULE FOR: January
GREEN SALT (UF_4): 1/						
1.	MCW	PORTS.	0	0	None	0
2.	NLO	PORTS.	112	+10	NLO-GAT 366-372	102
3.						
	TOTAL		112			102
ORANGE OXIDE (UO_3):						
4.	MCW	PAD.	933	+54	MCW-CKY 2253-2322	879
5.	NLO	PAD.	60	+ 3	NLO-CKY 1097	57
6.	HOO	PAD.	400	+46	HGE-CKY 994-1003	354
7.	SROO	PAD.	200 2/	0	None	200
8.	HOO SL. ENR.	PAD.	94	-39	HOE-CKY 11E-12E	133
9.	PORT HOPE	PAD.	280	+12	EMA-CKY 267-272	268
10.						
11.						
	TOTAL		1967	+76		1891
12.	GEN. CHEM.	PAD.	399 3/	0	GCD-CKY 2269-2309	399

COMMENTS: 1/ The MCW green salt overage was dropped since no more deliveries are scheduled. The November-December NLO green salt schedule was increased 37 tons.

2/ Modified per teletype Hagelston to Keller dated December 20, 1961.

3/ Revised per Allied Contract Modification 8.

APPROVED BY: Russell E... for
DIRECTOR, PRODUCTION DIVISION, OROO

APPROVED BY: B M Robinson for
DIRECTOR, FEED MATERIALS DIVISION, OROO

DISTRIBUTION:
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Classification Changed to UNCLASSIFIED
By Authority of DOE-1 & PA-2
Classification Authority
By R. B. Martin, Analyses Corp. 4-25-90
Date
R. Andrews 5-2-90

SECRET

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OR0113088

CA Keller

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NORMAL URANIUM PRODUCTION STATISTICS
IN TONS CONTAINED URANIUM FOR MONTH ENDING DECEMBER 31, 1963

I. DELIVERIES:	NOVEMBER	DECEMBER	STATUS (1) DECEMBER	FY-64-TO-DATE
A. Cores				
1. Hanford - I&E	401	358	+ 2	2538
2. Savannah River - V-B	150	187	+ 3	1042
B. Deliveries to Cascade Feed Plants				
1. UO_3 - WS to Paducah	319	725	-61	3115
2. UF_6 from Allied Chemical Co. (2)	363	399	+183	2338
C. Uranium Conc. to Allied Chemical Co.				
- from Weldon Spring	209	210		1385
- from Grand Junction	133	160		840
Total - - - - - - - - - - - - - - - - - -	342	370		2225
TOTAL DELIVERIES - - - - - - - - - - - - - - -	1212	1640		8920

(1) Scheduled slug deliveries based on TT, Gifford to Ruch, dated November 1, 1963, re RLO requirements for the period October 1963 through June 1965, symbol OF:ONG, MSG NBR 9362, and TT, Hobbs to Ruch, dated December 19, 1963, re Uranium requirements for SRP and Sylcor for December 1963 through June 1966.

(2) GCD Material Balance Sheet December 31, 1963. Not included in Total Deliveries.

UNCLASSIFIED

Feed Materials Division
December 31, 1963

~~SECRET~~

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NORMAL URANIUM PRODUCTION STATISTICS

IN TONS CONTAINED URANIUM FOR MONTH ENDING MARCH 31, 1964

I. DELIVERIES:	FEBRUARY	MARCH	STATUS (1) MARCH	FY-64-TO-DATE
A. Cores				
1. Hanford - I&E	357	476	-145 (3)	3643
2. Savannah River - V-B	146	101	- 4	1451
B. Deliveries to Cascade Feed Plants				
1. UO_3 - WS to Paducah	733	796	+114	5238
2. UF_6 from Allied Chemical Co. (2)	252	262	0	3248
C. Uranium Conc. to Allied Chemical				
- from Weldon Spring	348	419		2584
- from Grand Junction	0	0		869
TOTAL	348	419		3453
TOTAL DELIVERIES	1584	1792		13785

(1) Scheduled slug deliveries based on TT, Gifford to Ruch dated March 13, 1964, re RLO I&E Uranium requirements, (normal and .94 enriched), for the period January 1964 through June 1969, symbol OF:OWR, MSG NBR 9528, and TT Gifford to Ruch dated March 20, 1964, re RLO I&E requirements, (normal and .94 enriched), for the period January 1964 through June 1966, symbol OF:OWR, MSG NBR 9539, and TT Hobbs to Ruch, dated March 27, 1964, re Uranium requirements for SRP and Sylcor for the period March 1964 through June 1966, symbol TP:JFS, MSG NBR SR-TM 10566.

(2) GCD Material Balance Sheet March 31, 1964. Not included in Total Deliveries.

(3) This deficit is due to an after-the-fact increase in Jan., Feb., and March Hanford requirements, per TT Gifford to Ruch March 20, 1964.

Feed Materials Division
March 31, 1964

1. DELIVERIES:	MARCH	APRIL	APRIL	FY-TO-DATE
A. Cores				
1. Hanford - I&E	594	604	+24	5300
2. Savannah River - VII-A	0	0	0	774
- V-B	228	191	+4	1278
Total	228	191	+4	2052
B. Deliveries to Cascade Feed Plants				
1. UO_3 - MCW to Paducah	454	457	+69	5460
2. UF_6 from Allied Chemical Co. (2)	311	318	-17	3560
C. Uranium Conc. to Allied Chemical Co.				
- from Weldon Spring	126	416		2136
- from Grand Junction	60	62		1382
Total	186	478		3518
TOTAL DELIVERIES	1462	1730		16330

(1) Scheduled slug deliveries based on TT, Gifford to Ruch, dated May 3, 1963, "RLO requirements for the period April 1963 through December 1965," symbol OP:OWR, Msg. NBR-9134, and TT, Hobbs to Karl, dated March 6, 1963, uranium requirements for SRP and Sylcor for March 1963 through FY 1964, TM:JFS.

(2) OCD Material Balance Sheet April 30, 1963. Not included in Total Deliveries.

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II. RECEIPTS:	MARCH	APRIL	STATUS APRIL	FY-TO-DATE
A. Concentrates to MCW & Allied Chem.				
1. South African	399	337		3104
2. Canadian	135	159		2181
3. Australian	16	16		93
4. Domestic - to MCW	923	1048		10008
- to Allied Chem.	60	62		1382
Total Concentrate Receipts	1473	1622	+257	16768
B. Canadian UO_3 to NLO	289	289	+1	2687
Total Virgin Feed Receipts 1/	1762	1911		19455
C. Reactor Returns				
1. Hanford	21	15		247
2. Savannah River	50	65		499
TOTAL RECEIPTS	1833	1991		20201

1/ Schedule taken from memo, Faulkner to Baranowski, "Raw Materials Delivery Forecast," dated April 8, 1963.

Feed Materials Division
April 30, 1963

~~SECRET~~

~~SECRET~~

UNCLASSIFIED

DOE-ORO QA
Dirk D. Holt
Date 3/29/2013

RHTG #24,698
BOX #1663

AFI:WAH

Oak Ridge, Tennessee
SEP 21 1962

DOE-OR QA
W.J. Lemmon
7/2/01
Date

Classification Changed to UNCLASSIFIED
By Authority of DAR-1
Classification Authority
By R. V. Anderson, Analysas Corp. 9-5-90
Date
T. Davis 9-6-96

Union Carbide Nuclear Company
Post Office Box P
Oak Ridge, Tennessee

Attention: Dr. C. E. Larson, Vice President

Subject: EXERCISE OF OPTION, CONTRACT AT-(40-1)-1798, ALLIED CHEMICAL CORPORATION

Gentlemen:

Under the provisions of Article VII of the subject contract with the General Chemical Division, Allied Chemical Corporation, the Commission has an option to negotiate with Allied for the delivery of any part or all of 4,240 T. contained uranium as UF_6 during each of the five years succeeding the initial contract term. Both parties must agree on the price for such additional quantities and the charges to be made for Government-furnished concentrates one year before the end of the initial contract term, or about March 31, 1963.

In preliminary discussions with Allied representatives, we understand that they will submit an offer soon after October 1, proposing prices they will charge for processing annual tonnages of 10,000, 6,000, 5,000, 4,240, 2,500, and 1,200 T. contained uranium as UF_6. We will want to include in our evaluation of the proposal a comparison of the costs if processed by Allied with costs which would be incurred in the Weldon Spring refinery and in the Paducah Feed Plant. Therefore, it will be appreciated if you will furnish a tabulation of your estimated processing costs for each of the three years following March 31, 1964, at the following production levels for Feed Plant conversion from UO_3 to UF_6:

~~Fiscal Year Ending~~ Contract Year	Tons Contained Uranium
March 31, 1965	13,793
March 31, 1966	10,892
March 31, 1967	6,860

Then, please furnish the additional cost that would be incurred each year if each of the following additional quantities were processed: 1,740,

OFFICE ▶
SURNAME ▶
DATE ▶

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[illegible] DATA

Form AEC-318 (Rev. 9-53)

U. S. GOVERNMENT PRINTING OFFICE

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117-62 G-442

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This document consists of 8 pages.
No. 2 of 10 copies, Series A

MALLINCKRODT CHEMICAL WORKS

URANIUM DIVISION
POST OFFICE BOX 472
SAINT CHARLES, MISSOURI
PLANT SITE: WELDON SPRING, MO. TELEPHONES: ST. LOUIS AND ST. CHARLES, MO. TELETYPE: WELDON SPRING, MO.

DOE-ORO QA
Dirk D. Holt
DDH
Date: 3/25/2013

RHTG # 24,704
BOX # 6363

DOE-OR QA
W.J. Lemmon WJL
2/6/01
Date

October 16, 1962

Classification Changed to UNCLASSIFIED
By Authority of DAR-1, Adm
Classification Authority
By R. V. Anderson, Analysas Corp. 9-5-90
T. Davis 9-6-90
Date

Mr. F. H. Belcher, Area Manager
U. S. Atomic Energy Commission
Post Office Box 470
St. Charles, Missouri

SUBJECT:: Exercise of Option, Contract AT-(40-1)-1798, Allied Chemical Corporation

Dear Mr. Belcher:

Accompanying this letter are tables which provide the data requested in your September 26th letter on this same subject.

Basic assumptions in our cost calculations included holding direct charges to all functions other than refining at the same levels as in the FY 64 and Post-64 Budget Submissions. Incurred levels of overhead expenses were the same except for those increments or decrements of costs resulting from changes to the Refinery level. It follows, of course, that unit costs or total dollars costed to these other products would vary as a result of the re-distribution of indirect costs due to changes in refining levels.

We have prepared a tabular total cost format which includes all the areas where incurred costs will vary, as in Refinery production, and have segregated those costs from the allocated costs.

The cost categories presented do not correspond exactly to our normal procedure (i.e., direct versus indirect), but rather present our understanding of the intent of your request. The costs presented were developed by arranging the varying Refinery requirements in descending order and making detailed built-up cost estimates on these bases. Usual tests of reasonableness were applied to this summary rather than depend on an inspection of the erratic Refinery load pattern provided by your cases.

Tables I, II, and III, present the projections for fiscal years ending March 31, 1965-1966-1967, utilizing the fluid bed denitration facilities with no other major change in technology or equipment.

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ORO 163345
SL-4942

[redacted]T

Mr. F. H. Belcher
October 16, 1962

Tables IA, IIA, and IIIA, present cost projections based upon the installation of a project now under consideration. An equipment expenditure estimated at $100,000 would move digestion facilities into position in the Sampling Plant to permit emptying concentrate drums directly into the digesters. The resultant slurry would be pumped to the Refinery for subsequent processing. The resulting savings in operators, fork truck hopper-handling, etc., are the only difference between the cases you requested and the "A" cases.

In both sets of projections, the Refinery direct costs are totaled, and an increment or decrement of cost from the base case is calculated for each alternate. The direct cost data is followed by a total-overhead-incurred figure to provide a basis for showing incremental or decremental overhead for the alternates. The total of the direct and overhead incremental or decremental costs are added to provide a total additional or reduced cost for each alternate to the base case.

There are no recycle scraps produced by the Weldon Spring Refinery. Under the present rules, we have called the raffinate stream (.08%) unrecoverable and costed it at $10.52/# U.

Gross Book Value of Plant and Equipment for the Refinery process is estimated to be some $15,750,000 with the installation of the Fluid Bed Denitration Process (Tables I, II, and III), and approximately $15,850,000 with the installation of the Digest Area Revisions (Tables IA, IIA, and IIIA). The allocation of Capital Investment in supporting facilities is shown on each table.

If there are questions or additional information needed, please advise us.

Very truly yours,

MALLINCKRODT CHEMICAL WORKS
URANIUM DIVISION

W. J. Shelley
Manager

WJS:DS:lhk

Attachments (6)

[redacted]

H-56

This document consists of 3 pages.
No. 2 of 8 copies, Series B

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MALLINCKRODT CHEMICAL WORKS

URANIUM DIVISION

POST OFFICE BOX 472
SAINT CHARLES, MISSOURI

PLANT SITE: WELDON SPRING, MO. TELEPHONES: ST. LOUIS AND ST. CHARLES, MO. TELETYPE: WELDON SPRING, MO.

RHTG # 24,705
BOX # 6303

DOE-OK QA
W.I. Lemmon WIL
7/5/01
Date

Classification Changed to UNCLASSIF.
By Authority of DAR-1, Adm
Classification Authority
By R. V. Anderson, Analysas Corp. 9-5-90
Date
T. Davis 9-6-90

DOE-ORO QA
Dirk D. Holt
BJOD
Date 8/29/2013

January 5, 1963

Mr. F. H. Belcher, Area Manager
U. S. Atomic Energy Commission
St. Louis Area Office
Post Office Box 470
St. Charles, Missouri

SUBJECT: Exercise of Option, Contract AT-(40-1)-1798, Allied Chemical Corporation

Dear Mr. Belcher:

Please refer to our letter to you on this subject dated October 16, 1962.

We were provided alternate Refinery levels by your Office for computation on the same basis as in the original submission. The calculations are attached. Please let us know if there are questions or additional information required.

Very truly yours,

MALLINCKRODT CHEMICAL WORKS
URANIUM DIVISION

W. J. Shelley

W. J. Shelley
Manager

WJS:DS:lhk

Attachments (6)

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- 1 -

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SL-5017

CONTRACTOR FOR THE UNITED STATES ATOMIC ENERGY COMMISSION

0001178B

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RHTG 24,708
BOX # 2603

Sept 26, 1962

DOE-OK QA
W.J. Lennon w/l
7/6/01
Date

APIsWAH

Post Office Box 470
St. Charles, Missouri

DOE-ORO QA
Dirk D. Holt
3/25/2013
Date 3/25/2013

Classification Changed to UNCLASSIFIED
By Authority of DAR-1, Adm
Classification Authority
By R. V. Anderson, Analysas Corp. 9-5-90
Date
T. Davis 9-6-90

Mr. W. J. Shelley, Manager
Mallinckrodt Chemical Works
Uranium Division
Post Office Box 472
St. Charles, Missouri

Subject: EXERCISE OF OPTION, CONTRACT AT-(40-1)-1798, ALLIED CHEMICAL CORPORATION

Dear Mr. Shelley:

Under the provisions of Article VII of the subject contract with the General Chemical Division, Allied Chemical Corporation, the Commission has an option to negotiate with Allied for the delivery of any part or all of 4,240 T. contained uranium as UF_6 during each of the five years succeeding the initial contract term. Both parties must agree on the price for such additional quantities and the charges to be made for Government-furnished concentrates one year before the end of the initial contract term, or about March 31, 1963.

In preliminary discussions with Allied representatives, we understand that they will submit an offer in early October, proposing prices they will charge for processing annual tonnages of 10,000, 6,000, 5,000, 4,240, 2,500, and 1,200 T. contained uranium as UF_6. We will want to include in our evaluation of the proposal a comparison of the costs if processed by Allied with costs which would be incurred in the Weldon Spring refinery and in the Paducah Feed Plant. Therefore, it will be appreciated if you will furnish a tabulation of your estimated processing costs for each of the three years following March 31, 1964, under the assumption that the refinery workload will consist of:

	Tons Contained Uranium	
Fiscal year ending March 31, 1965	13,955	+ 1384
March 31, 1966	13,233	+ 190
March 31, 1967	9,723	

SL-4916

OFFICE ▶		UNCLASSIFIED			
SURNAME ▶					ORO1155
DATE ▶		~~SECRET~~			is prohibited

Form AEC-318 (Rev. 9-53) U. S. GOVERNMENT PRINTING OFFICE: 16—58701-0

Hanford and Savannah River normal uranium slug fabrication was as follows:

	Tons Uranium			
	HW I&E	HW Solid	SRP & SCW I&E	Total
NLO	624	4	119	747
MCW	0	0	0	0
SYLCOR	0	0	75	75
	624	4	194	822

In the Fernald special products plant, the production of slightly enriched material (in tons of uranium) amounted to 108 tons reduced to green salt, 113 tons of derby ingots, 139 tons recast into metal and 165 tons rolled into rods; 79 tons of Hanford I&E slugs was fabricated.

Arc melting of uranium as a method of casting ingots was investigated at Battelle Memorial Institute; evaluation of these results at Fernald indicates that further study is justified.

A method of heat-treating Mark V-B outer and inner fuel cores has been developed at Fernald. The cores are heat-treated and oil quenched in an identical manner, except that the inner core is immersed in the salt furnace two minutes longer than the outer core. The resulting structures conform to SRO specifications.

Ten carloads of drummed slag residues from Destrehan Street and four carloads of bulk C-701 from the Airport Site were shipped to Fernald for recovery. Approximately five carloads of drummed slag residues remain at Destrehan Street; these will be shipped in July.

In response to public interest, bids are being solicited during June 10-August 10 for sale of the remaining residues at the St. Louis Airport storage area. If an acceptable bid is received, all residues on the site will be removed. Some steel and scrap metal alloys are in the process of being sold, and the approximate 13,000 tons of C-Liner slag and Interim Residue Plant tailings are being sent to Fernald for recovery of the contained uranium.

Allied Chemical Company delivered to the cascades 506 TU as UF_6. During the fourth quarter of FY 1960 Allied deliveried a total of 1374 tons of uranium as UF_6 against a contract schedule of 1060 TU. The 314 TU in excess of the contract amount was credited to the 1261 TU deficit accrued during plant startup. The deficit is now 947 TU.

The Allied contract has been amended to spread the production of the 947 tons deficit between July 1, 1961 and the remainder of the contract. Accordingly, the current schedule for the Allied plant calls for 353 TU as UF_6 per month in FY 1961 and 382 tons per month for the remaining 2 3/4 years of the contract.

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3% (within 1 to 2 percent of the predicted level), with an associated pay off time in value of additional product of 1.2 years.

Testing of a compressor equipped with the NASA modification in the A-suction nozzle indicates the value of this modification to be approximately $750 per stage year. This modification also increased the operating range of the compressor, permitting operation at wider variations of barrier permeability.

A test program has been initiated at Portsmouth to study the plugging rate of SD barrier in a cascade environment. This study will utilize two experimental test converters each containing sixteen barrier tubes.

Process Improvement, Y-12. The Aerotec dust collection unit mentioned last month is now operating. Samples of beryllium chips and dust were inspected visually and with X-ray and found to contain a significant amount of foreign material. Methods of separating this foreign material are being investigated. Investigations are continuing on the feasibility of reducing beryllium chips to powder and the hot pressing of hemispheres using beryllium powder.

ADP Production. The production of lithium-6 and the finishing and fabrication of lithium deuteride during the past two months are summarized as follows: The indexes are based on the average daily rate of production during FY 1959. (Average daily rate, FY 1959 = 100.)

Activity	May	April
Li-6 Withdrawals		
Equivalent Top Product	46.0	46.1
LiD Finishing and Fabrication		
Top Product	302.2	302.5

Production of deuterium gas was approximately 49% of the monthly capacity. The plant was operated a total of only 18 days in order to keep the storage facilities filled.

CHEMICAL SEPARATIONS

ICPP. The solvent extraction systems at the Idaho Chemical Processing Plant are being decontaminated prior to their being placed in stand-by. It is expected that spent fuels will be stockpiled for about nine months before there is enough on hand to justify starting up the plant for a 3-4 month processing campaign.

SRP. The HF-HNO_3 dissolution of Zr clad fuels is being tried in the Savannah River semiworks. Preliminary results support the laboratory findings on both process and corrosion aspects. By using this approach some Zr clad fuels could be dissolved in the present type (stainless steel) production dissolvers at the expense of modestly accelerating the corrosion rates. The possibly shortened potential life of these dissolvers would be more than compensated by the over-all costs savings in not having to supply special dissolvers (and space for them).

[redacted]

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December 26, 1963

AEC 194/47

COPY NO. 41

(U) ATOMIC ENERGY COMMISSION

RENEWAL OF THE ALLIED CONTRACT (U)

Note by the Acting Secretary

The General Manager has requested that the attached report by the Director of Production be circulated for consideration by the Commission at an early date.

F. T. Hobbs
Acting Secretary

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(U) ATOMIC ENERGY COMMISSION

RENEWAL OF THE ALLIED CONTRACT

Report to the General Manager by the
Director of Production

THE PROBLEM

1. To consider exercising the option in the Allied contract to obtain additional quantities of UF_6 from Allied.

SUMMARY

2. At Meeting 1967 on September 14, 1963, the Commission agreed to exercise the option in the Allied contract to obtain 1060 tons U as UF_6 from concentrates from Allied during the period April 1 - June 30, 1964. At that time, the option for additional quantities of UF_6 after June 30, 1964 was extended to December 31, 1963. Further, Allied officials have previously advised that about six months' notice is required to shut down the operation in an orderly manner and provide the appropriate advance notice to the affected personnel. Hence, Allied should be informed by year-end of the Commission's intentions relative to any additional quantities of UF_6 after June 30, 1964.

3. In a memorandum to the Commissioners dated November 29, 1963, the planning of diffusion plant operations through 1965 was discussed. It was noted that the continued operation of the U-235

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cascades for maximum top product could result in overproduction of top product. Accordingly, a plan of stockpiling natural uranium equivalent and/or slightly enriched uranium was being developed and would be proposed about January 1, 1964. It now seems clear that the natural uranium available beyond current production reactor requirements and the commitment with Allied would be stockpiled and used at a later date, when raw material deliveries are lower, in supplying the production reactors. Further, to reduce current expenditures it is contemplated that operation of the Paducah feed plant would be curtailed during 1964. The analysis of AEC UF_6 conversion needs, as discussed in Appendix "H" of AEC 580/197, showed that conversion could be suspended for an extended period and, thus, that steps could be taken to schedule complete shutdown of the Paducah UF_6 conversion operation.

4. The November 29 memorandum also noted that the additional cost of continuing Allied beyond June 30, 1964 was not included in the FY 1965 Budget. Because there is no need for Allied services and there is need to conserve budget dollars during FY 1965, it is concluded that the Allied contract should not be extended beyond FY 1964.

5. The magnitude of the added cost to the AEC for continued participation by Allied would be dependent on the total annual quantity of uranium approved for conversion. Under all cases studied, the annual budgetary increases were never less than about $2.0 million. The analysis included complete stockpiling except Allied conversion, partial stockpiling and no stockpiling of uranium.

6. In addition to the increased budgetary cost and the probably limited volume of uranium for toll enriching over the next number of years, other factors (noted in AEC 194/46) which also support termination of the Allied contract are: the interest of other companies (both foreign and domestic) in providing conversion

services; the problems of supplying equivalent base loads to other companies; the promotion of a monopoly by supporting one company; and no AEC need for UF_6 conversion for some years after FY 1964.

DISCUSSION

7. The cost studies on conversion of uranium to UF_6 are summarized below:

a. Stockpiling except for Conversion by Allied - Under such a circumstance, the cost to the AEC would be the cost of obtaining the services at the contract price. The Allied proposed prices for converting concentrates or UO_3 from the production reactor sites to UF_6 are as follows:

	Annual Quantities				
Tons of U	1200	2500	4240	5000	6000
Prices for Concentrates to UF_6 ($ million)	2.8	3.6	4.6	4.9	5.6
Price for UO_3 to UF_6 ($ million)	2.6	3.4	4.2	4.5	4.9

b. Limited conversion by Allied or Paducah - If a program were approved for conversion of limited quantities of UO_3 to UF_6 (1200 to 6000 tons U), there would be increased budgetary costs of 1.9 to 2.4 million dollars by having the services performed by Allied. The concentrates under this case were assumed to be stockpiled for use in production reactors. The increased budgetary costs were shown in AEC 194/46 and are repeated below:

	Annual Quantities				
Tons of U	1200	2500	4240	5000	6000
Allied Proposed Price ($ Millions)	2.6	3.4	4.2	4.5	4.9
Paducah Est. Budget Costs ($ Million)	0.7	1.4	2.0	2.2	2.5
Increased Budgetary Costs ($ Million)	1.9	2.0	2.2	2.3	2.4

c. No Uranium stockpiling - converting 12,965 tons U in FY 1965 - The increased FY 1965 budget costs assuming no stockpiling have been determined from AEC 194/46, and the results are presented below:

For Concentrate to UF_6

Tons of U to Allied	1200	2500	4240	5000	6000
Increased budget costs ($ Million)	2.3	2.6	2.9	2.9	3.2

Although the increased budget costs to be expected if Allied converted UO_3 to UF_6 have not been calculated, it is estimated that it would very nearly approximate the increased budget cost with concentrate.

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As noted in the November 29, 1963 memorandum to the Commissioners the budget for FY 1965 assumes no Commission support of Allied.

8. Toll Enriching. One reason advanced for keeping the Metropolis plant in operation has been the interest in having a private facility available to process concentrates to UF_6 for toll enriching in the Government-owned cascades when such a service is offered. It has been particularly difficult to forecast the quantity of concentrates which potential users of the enrichment service would wish to have processed to UF_6. It is the general consensus that, domestically, an enrichment service may have little or not advantage over lease. The major interest would more likely be with foreign customers. Hence, it would be the latter part of the FY 64-72 period, at the earliest, before a sustained toll enriching rate for both domestic and foreign users approximating 1,000 tons U/year is attained.

9. Along with the likelihood that toll enriching will have little volume in the next few years, even these small receipts will not necessarily require conversion from U_3O_8 to UF_6 in the U.S., particularly since the large segment of the requirement may be for foreign reactors. The uranium for foreign reactor operations could very easily be shipped as UF_4, and possibly as UF_6, and thereby may deprive U.S. industry of a large share of the UF_6 conversion load. We know that the Canadians are interested in processing ore to UF_4 or UF_6, and the UK may offer to perform conversion services.

10. As indicated in AEC 194/43, it has been estimated that the Metropolis plant could be kept in standby at an annual cost of approximately $125,000 if Allied were to maintain the plant for restartup when toll enriching and or increased private load conversion of uranium justify the plant's operation.

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conversion to UF_6 of 21,000 tons U annually. There is no foreseeable need for the Oak Ridge and Portsmouth feed plants which are now in standby.

CONCLUSIONS

16. The continued participation by Allied in providing UF_6 for the AEC after June 30, 1964 would increase the AEC budget costs. In view of this increased cost, the expected limited volume of toll enriching, the interest of other companies in providing the same conversion service, the attendant problems of supplying equivalent base loads, the lack of a requirement for conversion service from Allied or from AEC plants in FY 1965 and probably for some period thereafter, the AEC contract with Allied should not be extended beyond June 30, 1964.

STAFF JUDGMENTS

17. The Division of Contracts and the Offices of the Controller and General Counsel concur in the conclusions and recommendation of this paper. The Division of Public Information concurs in recommendation 18d. The Division of Industrial Participation recommends: (1) that in the absence of substantive programmatic changes since September 1963, when the Commission extended the Allied contract 3 months from April 1, 1964 to June 30, 1964, the contract with Allied be extended three additional months until September 30, 1964; (2) that the Commission discontinue UF_6 conversion in the Allied plant at Metropolis at the same time that Commission UF plant operations are shut down at Paducah; (3) following shut-down of UF_6 conversion services, the Allied plant be utilized for processing requirements for UF_6 that may develop after FY 1964; (4) any Commission decision await evaluation of relative costs and savings for UF_6 conversion in light of the actual quantity of uranium to be converted to UF_6 in FY 1965.

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

10-25-73

Mr. James W. Kelley, President
Specialty Chemicals Division
Allied Chemical Corporation
P. O. Box 1087R
Morristown, New Jersey 07960

Dear Mr. Kelley:

Pursuant to discussions concerning the possibility of Allied Chemical's converting AEC concentrates to UF_6 in FY 1974 and FY 1975, we are providing herewith tabulations prepared by our accounting staff which indicate the variable cost breakdowns for the two operations employed by AEC in converting U_3O_8 in concentrates to UF_6. Data are provided for three different production levels at the two facilities for the final eight months of fiscal year 1974 and for the entire fiscal year 1975. Another case which treats the full shutdown of the Paducah UF_6 plant and sale of anhydrous hydrofluoric acid from the UF_6 to UF_4 plant in FY's 1974 and 1975 will be provided later.

The amount of net uranium, in short tons, that we could release for commercial conversion in each fiscal year is the decremental production from the Paducah facility. The quantities and dollars shown for fiscal year 1974 are firm, but those for fiscal year 1975 are somewhat uncertain in that the budget for FY 1975 has not yet been approved and therefore still is subject to change. We are currently experiencing an overall yield in the Fernald refinery and Paducah UF_6 plants that is higher than the 99.5 percent Allied Chemical normally uses in conversion contracts with toll enrichers. To the extent that this yield differs from that in your Metropolis plant, an adjustment may be required.

As you know, our offer to purchase commercial UF_6 conversion services, to the extent that AEC budget expenditures would not thereby be increased, extends to all domestic converters. Accordingly, we are also providing the updated decremental costs to the Kerr-McGee Corporation.

ALLIED CHEMICAL CORPORATION
P.O. Box 1057R, Morristown, New Jersey 07960

January 9, 1974

238

Mr. Charles Keller
U.S. Atomic Energy Commission
Oak Ridge Operations Office
Oak Ridge, Tennessee 37830

Dear Mr. Keller:

In reply to your telephone request, this will confirm that Allied Chemical does not intend to file any requests for adjustment of its pending contract with the Atomic Energy Commission (covering conversion of U_3O_8 concentrates to UF_6) pursuant to Public Law 85-804 (50 USC 1431-1435).

Very truly yours,

J. W. Kelley
Vice President

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

November 21, 1973

Paul Hayes, Chief, Equal Opportunity Branch
Oak Ridge Operations Office

ALLIED CHEMICAL COMPANY, METROPOLIS, ILLINOIS

This is in response to your request for an EEO evaluation of subject facility in connection with a proposed AEC contract.

A compliance review was completed in September 1972 by our North Central Area Contract Compliance Office. Based on that review and subsequent progress reports, we find the facility to be in compliance with 41 CFR 60. In addition, there is no other facility of Allied Chemical reviewed by AEC whose EEO performance is considered unsatisfactory at this time.

Armin Behr

Armin Behr, Assistant Director
for Contract Compliance
Office of Civil Rights Compliance

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NORMAL URANIUM PRODUCTION STATISTICS
IN TONS CONTAINED URANIUM FOR MONTH ENDING JUNE 30, 1964

I. DELIVERIES	MAY	JUNE	STATUS (1) JUNE	FY-TO-DATE
A. Cores				
1. Hanford - I&E	410	487	+ 30	5193
2. Savannah River - V-B	134	21	+ 58	1714
B. Deliveries to Cascade Feed Plants				
1. UO_3 - WS to Paducah	529	-		6577
2. UF_6 from Allied Chemical Co. (2)	301	335	-	4309
C. Uranium Conc. to Allied Chemical				
- from Weldon Spring	325	-		3214
- from Grand Junction	-	-		869
Total	325	-		4083
TOTAL DELIVERIES	1398	508		17567

(1) Scheduled slug deliveries based on Consolidated ORO Schedule, May 1964 through December 1964 dated June 12, 1964, and TT Hobbs to Ruch, dated May 8, 1964, re uranium requirements for SRP and Sylcor for the period May 1964 through June 1966, MSG NBR SR-TM 10693.

(2) GCO Materials Balance Sheet June 1964. Not included in Total Deliveries.

Feed Materials Division
June 30, 1964

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(2) GCD Materials Balance Sheet June 1964. Not included in Total Deliveries.

Feed Materials Division
June 30, 1964

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II. RECEIPTS:	MAY	JUNE	STATUS (1) JUNE	FY-TO-DATE
A. Concentrates				
1. South African	254	337		3248
2. Canadian	0	75		1011
3. Domestic - to Weldon Spring	706	874		10578
- to Allied Chem.	0	0		869
Total Concentrate Receipts	960	1286	+ 357	15704
B. Canadian UO_3 to FMPC	43	85	0	914
Total Virgin Feed Receipts 1/	1003	1371		16618
C. Reactor Returns				
1. Hanford	42	21		257
2. Savannah River	21	19		588
TOTAL RECEIPTS	1066	1411		17463

1/ Schedule taken from letter, Faulkner to Baranowski, dated June 5, 1964, "Raw Materials Delivery Forecast," June through September.

Feed Materials Division
June 30, 1964

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