

This document consists of 11 pages.
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MODIFICATION NO. 4
SUPPLEMENTAL AGREEMENT to
CONTRACT NO. AT(30-1)-1335

MODIFICATION NO. 4

CONTRACTOR AND ADDRESS:

HORIZONS, INCORPORATED
Princeton, New Jersey

MODIFICATION TO:

AMEND SCOPE OF WORK, EXTEND TERM
AND OTHER CHANGES

INCREASE IN ESTIMATED
COST OF WORK:

\$431,144.00 (exclusive of fixed
fee of \$20,550.00)

TOTAL ESTIMATED COST OF WORK:

\$549,484.00 (exclusive of fixed
fee of \$27,950.00)

INCREASE IN COMMISSION
OBLIGATION:

\$150,000.00

NEW TOTAL COMMISSION
OBLIGATION:

\$275,740.00

PAYMENT TO BE MADE BY:

Division of Disbursement,
United States Treasury Department,
New York, New York.
Submit invoices to:
United States Atomic Energy Commission,
P. O. Box 30, Ansonia Station,
New York 23, New York

THIS SUPPLEMENTAL AGREEMENT, entered into the 17th day of May, 1954, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), as represented by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and HORIZONS, INCORPORATED (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the Commission and the Contractor entered into Contract No. AT(30-1)-1335 the 1st day of May, 1952, to have the Contractor perform certain research and development activities; and

WHEREAS, this contract has been modified previously and the parties desire to modify this contract further, as hereinafter provided; and

WHEREAS, this Supplemental Agreement is authorized by law, including the Atomic Energy Act of 1946;

NOW, THEREFORE, said Contract No. AT(30-1)-1335 is modified further, but only as follows:

1. Effective May 17, 1954, Article I, SCOPE OF THE CONTRACT, Article II, TERM OF CONTRACT, and Article III, CONSIDERATION, are changed to read as follows:

"ARTICLE I - SCOPE OF THE CONTRACT"

1. The Government agrees to furnish to the Contractor all necessary thorium nitrate for the performance of the work and services hereinafter set forth. Commencing May 17, 1954, the Contractor shall furnish all personnel, all facilities and equipment not furnished by the Government and all other materials, and shall do all things necessary (including the performance of overtime labor) calculated to perform the following; it being understood and agreed, however, that the Contractor does not guarantee the successful fulfillment thereof, but only that it will use its best efforts towards that goal:

PHASE I

The Contractor shall start Phase I work on May 17, 1954. Said work shall be as follows:

- a. On or before July 15, 1954, demonstrate to the Commission:
 1. The feasibility of producing thorium metal by means of the Contractor's electrolytic process.

- ii. A process for the preparation of cell feed material from thorium nitrate.
- b. Start at once to modify the Navy Mark VI electrolytic cell presently located in the Contractor's laboratory (as well as the laboratory itself) to an extent necessary to perform the demonstrations specified in a. i. and a. ii. above, and on or before August 1, 1954, demonstrate that large cathodes of high purity thorium metal can be made electrolytically in said modified cell.
- c. On or before August 1, 1954, prepare and submit to the Commission a written report which defines:
 - i. The process for the preparation of cell feed material referred to in a. ii. above; and
 - ii. the Contractor's electrolytic process adaptable to the continuous production of pure high grade thorium metal on a basis of minimum hazard to the health and safety of personnel and of minimum loss of product.

This report should be in such form and detail as to enable a competent architectural-engineering firm to begin the preparation of a design of, (including design criteria for), a unit capable of producing pure high grade thorium metal by the Contractor's electrolytic process.

- d. On or before August 1, 1954, convert thorium nitrate into anhydrous cell feed by means of the Contractor's 'Ammonia Complex Process' in quantities sufficient for the operation of the aforementioned modified cell.
- e. Investigate on a laboratory basis, new processes for the formation of cell feed material from thorium nitrate, (including the process of chlorination or its analogue in a fused salt bath) in an attempt to simplify the presently known techniques for producing cell feed material. This investigation should be completed on or before September 15, 1954. *simplify*

PHASE II

The Contractor shall start Phase II work only upon receipt from the Commission of a written notice to proceed (provided, however, that said notice is received by the Contractor on or before August 15, 1954), and shall complete such work within six months after the date of the receipt of said notice. Said work shall be as follows:

- a. Evaluate the contaminants contained in the thorium nitrate furnished by the Government to determine their effect on the purity of thorium metal produced by the Contractor by means of its electrolytic process.
- b. Produce high purity cell feed material on a semi-works basis.
- c. Produce high purity thorium metal on a semi-works basis by means of the Contractor's electrolytic process.

PHASE III

The Contractor shall start Phase III work only upon receipt from the Commission of a written notice to proceed (provided, however, that said notice is received by the Contractor on or before October 15, 1954), and shall complete such work within six months after the receipt of said notice. Said work shall be as follows:

- a. Investigate a method to form fused billets of thorium by arc melting in a controlled atmosphere and evaluate the thorium produced.

2. The final report to be submitted by the Contractor pursuant to Article B-XVI hereof (SUPERVISION, INSPECTION AND REPORTS), shall be furnished in writing within two weeks after the completion of all of the work it may be obligated to perform pursuant to paragraph 1 above. Said report shall be in two sections as follows:

Section 1. A summary of its activities, findings and conclusions with respect to all work performed by it under this contract prior to May 17, 1954.

Section 2. A similar report with respect to all work performed by it under this contract subsequent to May 17, 1954.

3. The work called for in this contract shall be subject to the general supervision of the Commission and to the Commission authorizations and approvals provided for in this contract. The Contractor shall place emphasis on various aspects of such work as and to the extent requested in writing by the Commission from time to time, and shall keep the Commission fully advised of its progress hereunder and of the difficulties, if any, which it experiences.

"ARTICLE II - TERM OF CONTRACT

The term of this contract shall commence on May 1, 1952, and shall expire on the date specified in paragraph 2 of Article I hereof, for the furnishing by the Contractor of its final report.

"ARTICLE III - CONSIDERATION

In full monetary consideration for the performance of its undertakings hereunder, the Contractor shall be reimbursed for its actual costs and expenses as provided for in Article IV hereof, and shall be paid (as provided for in paragraph 2 of said Article IV), the fixed fee of Twenty-Seven Thousand Nine Hundred Fifty Dollars (\$27,950.00). It is understood and agreed that of said amount, the sums of Nine Thousand Fifty Dollars (\$9,050.00), Ten Thousand Six Hundred Forty-Five Dollars (\$10,645.00), and Eight Hundred Fifty-Five Dollars (\$855.00) represent the portions of the said fixed fee for the work and services required pursuant to Phases I, II and III respectively, of Article I hereof."

2. In paragraph 1 d. of Article IV, REIMBURSEMENT, and in paragraph 3 b. of Article B-XIV, SUBCONTRACTS AND PURCHASE ORDERS, substitute the sum "\$1,000.00" for the sum "\$200.00".

3. Substitute a comma for the period at the end of paragraph 1 h. of said Article IV and add to said paragraph the following:

"including expenses for medical examinations of employees and expenses in decontaminating Contractor and Government-owned property at the Contractor's premises."

4. Add the following subparagraphs to paragraph 1 of said Article IV:

"j. Such bonds and insurance policies required by law and approved or required by the Commission.

k. Payments made by the Contractor under the Social Security Act (employer's contribution) and any disbursements which the Contractor may be required by law to make on account of this contract on or for any plant, equipment, process, organization, materials, supplies, services or personnel; and if approved by the Commission in advance, permit and license fees and royalties on patents used.

l. Rentals paid, at rates and on terms approved by the Commission, for the use of tools, equipment, machinery, other articles and facilities, repairs thereto not included in the rental.

m. If approved by the Commission in advance, alterations to the Contractor's premises including relocation of equipment contained therein; restoration of said premises and return of such relocated equipment upon the completion of the work called for under this contract.

n. Transportation (including reconsignment, switching, diversion and demurrage charges) loading, unloading, storage, crating, and packing."

5. Article V, COMMISSION OBLIGATION, is hereby changed to read as follows:

"ARTICLE V - ESTIMATED CONTRACT COST; COMMISSION OBLIGATION

1. Estimated Contract Cost - The presently estimated cost of the work under this contract, exclusive of the Contractor's fixed fee is Five Hundred Forty-Nine Thousand Four Hundred Eighty-Four Dollars (\$549,484.00). It is understood and agreed, however, that neither the Government nor the Contractor guarantees the correctness of this estimate and that there shall be no adjustment in the amount of the Contractor's fixed fee by reason of errors in the computation of said estimate or by reason of differences between such estimate and the actual cost for performance of the work.

2. Commission Obligation - The Commission, from obligational authority available to it, has obligated the sum of Two Hundred Seventy-Five Thousand Four Hundred Seventy Dollars (\$275,470.00). The Commission may increase said obligation in its discretion one or more times by written notice to the Contractor. Except as otherwise directed by the Commission, the Contractor shall promptly notify the Commission in writing whenever it appears that the current Commission obligation for this contract will be insufficient to defray all of the fixed fee earned hereunder, (whether or not paid), all of the Contractor's reimbursable costs and expenses hereunder, (whether or not reimbursed), and the actual or estimated amount unpaid by the Contractor and reimbursable hereunder, when paid, upon all subcontracts, purchase orders and other commitments made pursuant to this contract. Said notice shall contain in reasonable detail the Contractor's estimate of the amount of such insufficiency. Notwithstanding any other provision of this contract, the total liability of the Government under this contract shall be limited to the Commission obligation specified in this Article V, as the same may have been increased by the Commission from time to time, pursuant to the provisions of this Article V. The Contractor shall not be expected to perform further if and when the then current amount of the Commission's obligation is reached, unless the Commission revises the same upward, in writing."

6. Article B-XI, DISPUTES, is changed to read as follows:

"ARTICLE B-XI - DISPUTES

Except as otherwise specifically provided in this contract, any dispute concerning a question of fact which may arise under this contract and which is not disposed of by mutual agreement shall be decided by a representative of the Commission, duly authorized to administer performance of the undertakings hereunder, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. Within thirty (30) days from the date of receipt of such decision, the Contractor may appeal by mailing or otherwise furnishing to the aforementioned authorized representative of the Commission a written appeal addressed to the Commission, whose decision thereon or that of its representative, representatives or Board, duly authorized to determine such an appeal, (but not including the representative mentioned in the first sentence hereof) shall, unless determined by a court of competent jurisdiction to have been fraudulent, arbitrary, capricious, so grossly erroneous as to imply bad faith or not to have been supported by substantial evidence, be final and conclusive; provided, that, if no such appeal to the Commission is taken, the decision of the authorized representative of the Commission mentioned in the first sentence hereof shall be final and conclusive. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. In the event

a dispute arises during the performance of the contract, the Contractor shall proceed diligently with the performance of the contract and in accordance with the decision of the authorized representative of the Commission referred to in the first sentence hereof, pending final decision of the dispute hereunder."

PROPERTY: 7. Add the following paragraph to Article B-XV, GOVERNMENT

"7. With respect to any item of Government property which is structurally incorporated in a building owned by the Contractor, either directly or by means of its foundations, accessory piping or instrumentation, and which is not sold or otherwise disposed of by the Contractor or acquired by the Contractor pursuant to paragraph 6 above, the Government shall have the right to abandon or remove such property. If the Government elects to abandon any such item of property, the Contractor hereby agrees to accept said item and to relieve the Government of any obligation to restore or repair that portion of the Contractor's structure to which the said item of property is physically attached."

8. Add the following new Articles to this contract:

"ARTICLE B-XX - CHANGES

The Commission may at any time and without notice to the sureties, if any, issue written directions requiring changes in the scope of the work called for under this contract. If any such direction results in a material increase or decrease in said scope of work, an equitable adjustment in the fixed fee shall be made in accordance with the agreement of the parties and the contract shall be modified in writing accordingly. Any claim by the Contractor for an adjustment in this Article must be asserted in writing within thirty (30) days from the date of receipt by the Contractor of notification of changes unless the Commission grants a further period of time. A failure to agree upon an equitable adjustment in this Article shall be deemed to be a dispute concerning a question of fact within the meaning of Article B-XI, DISPUTES.

"ARTICLE B-XXI - LABOR

1. Davis-Bacon Act - To the extent that the Davis-Bacon Act, as amended, (40 U.S.C. 276a-a(7)) is applicable to this contract, the following provisions shall apply:

a. All mechanics and laborers employed or working directly upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Copeland Act (Anti-Kickback) Regulations (29 CFR, Part 3)) the full amounts due at time of payment, computed at wage rates not less than those contained in the wage determination decision of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor or subcontractor and such laborers and mechanics; and a copy of the wage determination decision shall be kept posted by the Contractor at the site of the work in a prominent place where it can be easily seen by the workers.

b. In the event it is found by the Commission that any laborer or mechanic employed by the Contractor or any subcontractor directly on the site of the work covered by this contract has been or is being paid at a rate of wages less than the rate of wages required by subparagraph a. of this clause, the Commission may (1) by written notice to the Government Prime Contractor terminate his right to proceed with the work, or such part of the work as to which there has been a failure to pay said required wages, and (2) prosecute the work to completion by contract or otherwise, whereupon such contractor and his sureties shall be liable to the Government for any excess costs occasioned the Government thereby.

c. Subparagraphs a. and b. of this clause shall apply to this contract to the extent that it is (1) a prime contract with the Government subject to the Davis-Bacon Act, or (2) a subcontract under such prime contract.

2. Nonrebate of Wages - Copeland Act - To the extent only that the Copeland (Anti-Kickback) Act, as amended, (18 U.S.C. 874 and 40 U.S.C. 276c) is applicable to this contract, the following provisions shall apply:

a. The regulations of the Secretary of Labor applicable to contractors and subcontractors (29 CFR, Part 3), made pursuant to the Copeland Act, as amended, (40 U.S.C. 276c) and to aid in the enforcement of the Anti-Kickback Act (18 U.S.C. 874) are made a part of this contract by reference. The Contractor will comply with these regulations and any amendments or modifications thereof and the Government Prime Contractor will be responsible for the submission of affidavits required of subcontractors thereunder. The foregoing shall apply except as the Secretary of Labor may specifically provide for reasonable limitations, variations, tolerances, and exemptions.

3. Walsh-Healey Act - To the extent only that the Walsh-Healey Public Contracts Act (41 U.S.C. 35-45) is applicable to this contract, the following provisions shall apply:

a. There are hereby incorporated by reference, the representations and stipulations required by said Act and regulations issued thereunder by the Secretary of Labor, such representations and stipulations being subject to all applicable rulings and interpretations of the Secretary of Labor which are now or may hereafter be in effect.

"ARTICLE B-XXII - SOURCE AND FISSIONABLE MATERIALS

The Contractor agrees to conform to all regulations and requirements of the Commission with respect to accounting for source and fissionable materials (defined in the Atomic Energy Act of 1946, as amended)."

8. The Letter Modification to Contract No. AT(30-1)-1335 dated May 13, 1954, and Supplement No. 1 thereto, dated June 3, 1954, from the Commission to the Contractor is hereby merged and superseded by this Modification No. 4 to Contract No. AT(30-1)-1335. Insofar as the provisions of this Modification No. 4 differ in any respect from the provisions in said Letter Modification and Supplement No. 1 thereto, the provisions of this Modification No. 4 shall govern.

IN WITNESS WHEREOF, the parties hereto have executed this Supplemental Agreement the day and year first above written.

UNITED STATES OF AMERICA

Witnesses:

Theresa P. Sell
Theresa P. Sell
20 Witherspoon St., Princeton, N.J.
(Address)

Dorothy E. Titus
Dorothy E. Titus
Box 84, Hopewell, N.J.
(Address)

By: UNITED STATES ATOMIC ENERGY COMMISSION

Merril Eisenbud
Merril Eisenbud
Manager
New York Operations Office

HORIZONS, INCORPORATED

By: Edwin T. Goodridge
Edwin T. Goodridge
Title: President

I, Robert G. McAllen, certify that I am the Secretary of the corporation named as Contractor herein; that Edwin T. Goodridge who signed this modification on behalf of the Contractor was then President of said corporation; that said modification was duly signed for and on behalf of said corporation by authority of its governing body and is within the scope of its corporate powers.

IN WITNESS WHEREOF, I have hereunto affixed my hand and the seal of said corporation.

(Corporate Seal)

Robert G. McAllen
Robert G. McAllen