

UNITED STATES
ATOMIC ENERGY COMMISSION

OAK RIDGE OPERATIONS

P.O. BOX 5

OAK RIDGE, TENNESSEE 37831

718371

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JUN 20 1972

University of Tennessee
ATTN: Dr. Edward J. Boling
President
Knoxville, Tennessee 37916

REPOSITORY Oak Ridge Operations
Records Holding Area
COLLECTION Doc. 1248-94
BOX No. A-30-9 1024 Bldg. 2714-H
Contract No. AT-(40-1)-1637
FOLDER Univ. of Tenn.

REASSIGNMENT OF CONTRACT FOR ADMINISTRATION

Gentlemen:

Effective June 15, 1972, the following listed AEC contracts with your organization have been reassigned from the Laboratory and University Division to the Research Contracts, Procedures and Reports Branch, Contract Division, for administration:

AT-(40-1)-2598	AT-(40-1)-3956	<u>Memphis</u>
AT-(40-1)-3191	AT-(40-1)-4180	AT-(40-1)-1643
AT-(40-1)-3518	AT-(40-1)-4202	AT-(40-1)-2790
AT-(40-1)-3616	AT-(40-1)-4330	

All future correspondence and other documents pertaining to the above contract(s) should be addressed as follows:

A. H. Frost, Jr., Chief
Research Contracts, Procedures and Reports Branch
Contract Division
U. S. Atomic Energy Commission
Post Office Box 5
Oak Ridge, Tennessee 37831

Requests for funding changes, renewal of contracts, and term extension must be in writing and be endorsed by the appropriate administrative official(s) before submission to the AEC for approval. All Financial reports should also be endorsed by the appropriate administrative official of your organization.

Please advise appropriate personnel within your organization, accordingly.

Sincerely,

Ralph Elson, Director

Contract Division
Oak Ridge Operations

ACR:AHF

CC: Office of Chief Counsel
Finance Division

COPY

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Contract No. AT-(40-1)-1637
UNIVERSITY OF TENNESSEE
Modification No. 15

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into the 14th day of June, 1971, effective the 1st day of March, 1971, 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 UNIVERSITY OF TENNESSEE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and Modifications thereto numbered 1 through 17 providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to amend the contract further to provide for the continuance of this research and for the performance of additional research; and

WHEREAS, this agreement is made pursuant to the Atomic Energy Act of 1954, as amended, and Section 302(c)(15) of the Federal Property and Administrative Services Act of 1949, as amended;

NOW, THEREFORE, the parties do mutually agree that the contract, as amended, is hereby further amended as follows:

1. In ARTICLE II - THE PERIOD FOR PERFORMANCE, the date February 28, 1971, is changed to February 29, 1972.
2. In ARTICLE III - CONSIDERATION, the amount \$22,000 is increased to \$35,000.
3. Appendix "A", attached hereto, shall constitute the Contract Appendix "A" applicable to the period indicated thereon.
4. In ARTICLE IV - ADDITIONAL CONTRACT PROVISIONS, the Appendix "B" attached hereto is made applicable to the contract effective as of the effective date of this modification.

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IN WITNESS WHEREOF, the parties have executed this Supplemental Agreement.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY
COMMISSION

BY: Herman M. Roth

Herman M. Roth

TITLE: Director
Laboratory and University Division

UNIVERSITY OF TENNESSEE

BY: W. H. Read

TITLE: Vice President

John C. Baugh

certify that I am the

contract; that W. H. Read who signed this contract
in behalf of said Contractor was then Vice President of
said Contractor; that said contract was duly signed for and on behalf
of said Contractor by authority of its governing body and is within
the scope of its legal powers.

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

[Seal]

John C. Baugh

Contractor: THE UNIVERSITY OF TENNESSEE

Contract No.: AT-(40-1)-1637

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APPENDIX "A"

For the Contract Period March 1, 1971 through February 29, 1972.

ARTICLE A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

The Contractor will continue studies on the origin and fate of the thiocyanate group in metabolism, especially to study the mechanisms by which thiocyanate arises endogenously and the means for metabolizing, with physiological implications of these processes on body chemistry in relation to radiation damage and carcinogenesis. Studies will continue on mercaptopyruvate sulfur transferase. Functions of peroxidase in the thyroid and studies on the cyanolysis of disulfide bonds will continue.

The Principal Investigator, Dr. J. L. Wood, expects to devote approximately 25% of his time or effort to the project.

ARTICLE A-II WAYS AND MEANS OF PERFORMANCE(a) Items Included in Total Estimated Cost:

- | | |
|---|-------------|
| (1) <u>Salaries and Wages:</u> | \$15,042.00 |
| Principal Investigator | |
| Research Associate | |
| Secretary | |
| (2) <u>Employee Benefits:</u> | 632.00 |
| (3) <u>Supplies, Materials, and Services:</u> | 1,923.00 |
| Isotopes, animals, animal care, hardware, books, and services. | |
| (4) <u>Equipment to be Purchased or Fabricated by the Contractor:</u> | 0 |
| <u>a</u> Equipment Estimated to Cost Less than \$1,000: | |
| None | |
| <u>b</u> Equipment Estimated to Cost in Excess of \$1,000: | |
| None | |
| (5) <u>Travel:</u> | 450.00 |
| (6) <u>Publications:</u> | 200.00 |

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(7) Indirect Costs(Fixed at 69% of Salaries & Wages): \$10,379.00

(b) Items, if any, Significant to the Performance of this Contract, but Excluded from Computation of Support Cost and from Consideration in Proportioning Costs:

(1) Items to be Contributed by the Contractor:

None

(2) Items to be Contributed by the Government:

None

(c) Time or Effort of Principal Investigator(s) Contributed by Contractor, but Excluded from Computation of Support Cost and from Consideration in Proportioning Costs:

None under this paragraph

ARTICLE A-III The total estimated cost of items under A-II (a) above for the contract period stated in this Appendix "A" is \$28,676; the Commission will pay 47% of the actual costs of these items incurred during the contract period stated in this Appendix "A", subject to the provisions of Article III and Article B-XXVII. The estimated AEC Support Cost for the contract period stated in this Appendix "A" is \$13,200.

SPECIAL RESEARCH SUPPORT AGREEMENT

APPENDIX "B"

ARTICLE B-I - DEFINITIONS

(a) The term "Commission" means the U. S. Atomic Energy Commission or any duly authorized representative thereof, including the contracting officer, except for the purpose of deciding an appeal under the article entitled "Disputes."

(b) The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successors or any duly authorized representative of any such person.

(c) Except as otherwise provided in this contract, the term "sub-contracts" includes purchase orders under this contract.

ARTICLE B-II - INSPECTION, REPORTS, RECORDS, AND ACCOUNTS

(a) The Commission shall have the right to inspect, in such manner and at all reasonable times as it deems appropriate, all activities of the Contractor arising in the course of its undertakings under this contract.

(b) The Contractor shall make progress and other reports in such manner and at such times as may be required by Article B-IV. The Contractor shall also make such other reports to the Commission, with respect to its activities under this contract, as the Commission may reasonably require from time to time.

(c) The Contractor agrees to keep records and books of account, in accordance with generally accepted accounting principles and practices, and consistent with the requirements of BoB Circular No. A-21 as constituted on the effective commencement date of the contract period, covering its costs and expenditures for items included under Article A-II(a) of Appendix "A" and which are in furtherance of the research work under this contract. In the event a contractor contribution is listed in Article A-II(b), the Contractor shall maintain records adequate to permit the Commission to determine the extent of the contribution. If professional staff members are included under Article A-II(b), the Contractor shall maintain records on such personnel in accordance with the payroll distribution procedure of section J.7.b. of BoB Circular No. A-21.

(d) The Commission shall at all reasonable times be afforded access to the premises and to these books and records and to related correspondence, receipts, vouchers, memoranda, and other data of the Contractor; and the Contractor shall preserve such books and papers, without additional compensation therefor, for a period of three (3) years after completion of this contract.

ARTICLE B-III - Publication of Results

(a) Research results obtained under this contract shall be made available to all through normal and accepted channels without restriction except that no Restricted Data as defined in the Atomic Energy Act of 1954, as amended, or other classified information shall be disclosed to unauthorized persons. Published results shall indicate that the research was supported by the Commission. A copy of each article submitted by the Contractor for publication shall be promptly sent to the Commission. The Contractor shall also inform the Commission when the article is published and furnish six (6) copies of the article as finally published.

(b) It is recognized that during the course of the work hereunder or subsequent thereto, the Contractor, its employees, or its subcontractors may from time to time desire to publish, within the limit of security requirements, information regarding technical or scientific developments arising in the course of the contract. In order that public disclosure of such information will not adversely affect the patent interest of the Commission, such information shall be withheld from public disclosure until it has been approved by the Commission, which shall be promptly reported to the Commission, and in such case, it shall be withheld for a period of four (4) months after submission of the information unless the Commission approves earlier release.

In addition, in the clause entitled "Alterations" of this contract, the following sentence shall be added to govern in lieu of the last sentence of Article B-III:

"In order that public disclosure of such information will not adversely affect the patent interest of the Commission, patent approval of release shall be obtained from the Commission prior to any such publication."

ARTICLE C - Contract Termination

(a) It is understood that the activities under this contract will not involve Restricted Data or other classified information or material. It is understood, however, that if in the opinion of either party this expectation changes prior to the expiration or termination of all activities under this contract, said party shall notify the other party accordingly in writing without delay. In any event, the Contractor shall classify, safeguard, and otherwise act with respect to all Restricted Data and other classified information and material, in accordance with applicable law, the requirements of the Commission, and shall promptly inform the Commission in writing if and when Restricted Data or other classified information or material

becomes involved. If and when Restricted Data or other classified information or material becomes involved, or in the mutual judgment of the parties it appears likely that Restricted Data or other classified information or material may become involved, the Contractor shall have the right to terminate performance of the work under this contract and in such event the provisions of this contract respecting termination for the convenience of the Government shall apply.

(b) The Contractor shall not permit any individual to have access to Restricted Data, or other classified information, except in accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations or requirements.

(c) The term "Restricted Data" as used in this article means all data concerning the design, manufacture, or utilization of atomic weapons, the production of special nuclear material or the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142 of the Atomic Energy Act of 1954, as amended.

ARTICLE B-V - RESPONSIBILITY FOR THE WORK

(a) The Contractor is solely responsible for the conduct of the work.

(b) In instances where the carrying out of the contract work involves the performance of the Contractor or its personnel, the provisions of the contract shall prevail over any inconsistent provisions of this contract.

ARTICLE B-VI - FELLOWSHIPS

The Contractor agrees that, unless the Commission shall give its prior written approval, the Contractor shall not use any of the funds provided by the Commission under this contract to pay the stipend of any appointment for which commensurate services are not rendered under this contract or to pay any part of the stipend of a fellowship of any kind.

ARTICLE B-VII - ROYALTY PAYMENTS

(a) The Contractor hereby grants to the Government a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use and dispose of, and to authorize others to do so, all copyrightable material produced or composed or delivered to the Government or its designees under this contract, including work not first produced or composed by the Contractor in the course of performance under this contract but incorporated in the material produced or composed or delivered under this contract (but only to the extent that the Contractor now has, or prior to final settlement of the contract may have, any

right to make such license to such or vicariously provided or imposed work without becoming liable to pay compensation to others solely because of such grant.

(b) The Contractor agrees that, except as the Commission may otherwise specifically authorize in writing, the Contractor will not include in any report or other material delivered under this contract, or in any published material relating to the work under this contract, any copyrighted material owned by others which such owners have not consented to have so included.

(c) The Commission will not publish in advance of the Contractor's publication without prior consultation with the Contractor.

ARTICLE B-VIII - PATENTS

(a) Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of or under this contract, the Contractor shall promptly furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights in and to any invention or discovery and any patent application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, shall do all things necessary or proper to carry out the judgment of the Commission.

(b) No claim for pecuniary award or compensation under the provisions of the Atomic Energy Act of 1954, as amended, shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of or under this contract.

(c) Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs (a) and (b) of this article from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.

(d) Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts and purchase orders, other than purchase orders for standard commercial items, provisions making this article applicable to the subcontract or purchase order. Except as otherwise authorized in writing by the Commission, the Contractor will insert in purchase orders for standard commercial items a provision indemnifying the Government against liability for use of any invention or discovery and for the infringement of any Letters

Beant, arising by reason of the purchase, use, or disposal by or for the Government of items manufactured or supplied under the purchase order.

e. With respect to any U. S. Patent Application filed by the Contractor on any contract invention or discovery made or conceived in the course of the contract, the Contractor will incorporate in the first paragraph of the U. S. Patent Application the following statement:

"The invention described herein was made in the course of, or under, a contract (if desired, may substitute contract with identifying number) with the U. S. Atomic Energy Commission."

ARTICLE B-IX - PROPERTY ITEMS

(a) Except as otherwise provided in this paragraph (a) and paragraph (b) of this Article B-IX, title to all materials, supplies, and equipment purchased or otherwise acquired by the Contractor in the performance of its research activities shall be and remain in the Contractor. Said materials, supplies, and equipment shall be used for the benefit of research under this contract and any extensions or successor contracts hereto: And, provided, There is no interference with said research, shall be available for other investigations and on any Federal research agreement at the same location. Subject to these priorities, the materials, supplies, and equipment may be used as the Contractor may determine. Items of property listed elsewhere in this contract as Government property shall pass directly to the Government; such property shall be subject to paragraphs (b), (c), (d), (e), and (f) of this Article B-IX.

(b) Subject to the mutual agreement of the Commission and the Contractor, the Government may furnish the Contractor items of equipment, materials, supplies, or facilities for use by the Contractor in the performance of the contract work. Title to these items shall remain in the Government unless otherwise agreed in writing. Such items of property and the items of property listed elsewhere in this contract as Government property are hereinafter referred to as "Government property." Title to Government property shall not be affected by the incorporation or attachment thereof to any property not owned by the Government nor shall any such property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty.

(c) To the extent practicable, the Contractor shall cause all items of Government property to be suitably marked with an identifying mark or symbol indicating that the items are the property of the Government. The Contractor shall maintain at all times and in a manner satisfactory to the Commission records showing the use and disposition of

Government property. Such records shall be subject to Commission inspection at all reasonable times and the Commission shall at all reasonable times have access to the premises wherein any items of Government property are located. Unless otherwise authorized in writing by the Commission, the Contractor shall use Government property only for the purposes of this contract: Provided, however, That the Contractor is hereby authorized to use items of equipment constituting Government property for other Federal research agreements to the extent such use (1) does not interfere with its work under this contract, (2) is not prohibited by provisions of the other Federal agreements, and (3) is promptly reported by the Contractor to the Commission under this contract.

(d) The Contractor shall promptly notify the Commission of any loss or destruction of or damage to Government property. It is understood that the Contractor shall not be liable for any such loss, destruction, or damage, unless same results from willful misconduct or lack of good faith on the part of any corporate officer of the Contractor, or of one or more of the Contractor's representatives having supervision or direction of all or substantially all of the activities under this contract. If the Contractor is liable for any such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission and if the Contractor is not so liable therefor, and is indemnified, reimbursed, or otherwise compensated for such loss, destruction, or damage, it shall promptly account therefor to the

(e) With the written approval of the Commission, the Contractor may sell, transfer, or otherwise dispose of items of Government property to such parties and upon such terms as so approved, or itself acquire title to items of Government property upon such terms as may be mutually agreed upon in writing by the Contractor and the Commission. The proceeds of any such disposition, and any agreed price of any such Contractor acquisition, shall be paid by the Contractor to the Government, or credited on account of Commission payments to be made under this contract, as the Commission may direct. Subject to the other provisions of this contract, the Contractor shall deliver Government property to the Commission upon request (suitably packed and shipped at the Government's expense).

(f) The Contractor shall utilize for the benefit of the work under this contract such items of property available to the Contractor by reason of its activities under other Federal research agreements as are appropriate for utilization under this contract pursuant to the provisions of the pertinent Federal agreements.

any time the Contracting Officer shall determine that such termination is in the best interest of the Government. Termination of work hereunder shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated and the date upon which such termination becomes effective.

(c) After receipt of the Notice of Termination the Contractor shall cancel its outstanding commitments hereunder covering the procurement of materials, supplies, equipment, and miscellaneous items. In addition, the Contractor shall exercise all reasonable diligence to accomplish the cancellation or diversion of its outstanding commitments covering personal services and extending beyond the date of such termination to the extent that they relate to the performance of any work terminated by the notice. With respect to such canceled commitments the Contractor agrees to assume all outstanding liabilities and all claims arising out of such cancellation of commitments, with the exception of those which are the responsibility of the Government.

The orders are subject to the terms and conditions of the Government
contract, and the Government is not responsible for the payment of any
costs incurred by the contractor in the execution of the contract.

to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

Subject to the provisions of paragraph (c), above, and subject to any review required by the Commission's procedures in effect as of the date of execution of this contract, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the termination under this article, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Contractor and any reasonable loss upon outstanding commitments for personal services which it is unable to cancel: Provided, however, That in connection with any outstanding commitments for personal services which the Contractor is unable to cancel, the Contractor shall have exercised reasonable diligence to divert such commitments to its other activities and operations. Any such agreement shall be embodied in an amendment to this contract and the Contractor shall be paid the agreed amount.

(f) The Government may from time to time, under such terms and conditions as it may prescribe, make partial payments against costs incurred by the Contractor in connection with the terminated portion of this contract, whenever, in the opinion of the Contracting Officer, the aggregate of such payments is within the amount to which the Contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this article, such excess shall be payable by the Contractor to the Government upon demand: Provided, That if such excess is not so paid upon demand, interest thereon shall be payable by the Contractor to the Government at the rate of 6 percent per annum, beginning 30 days from the date of such demand.

(g) The Contractor agrees to transfer title to the Government and deliver in the manner, at the times, and to the extent, if any, directed by the Contracting Officer, such information and items which, if the contract had been completed, would have been required to be furnished to the Government, including:

(1) Completed or partially completed plans, drawings, and information; and

(2) Materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the notice.

Other than the above, any termination inventory resulting from the termination of the contract may, with the written approval of the Contracting Officer, be sold or acquired by the Contractor under the conditions prescribed by and at a price or prices approved by the Contracting Officer. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the Government to the Contractor under this contract or shall otherwise be credited to

and property of work covered by this contract or paid in any other manner as the Contracting Officer may direct. Pending final disposition of property arising from the termination, the Contractor agrees to take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the Contractor and in which the Government has or may acquire an interest.

(h) Any disputes as to questions of fact which may arise hereunder shall be subject to the "Disputes" article of this contract.

ARTICLE B-XI - PAYMENTS

(a) The Commission shall make payments to the Contractor with respect to the amount of consideration prescribed in Article III of this contract as follows:

(1) A maximum of 45 percent of the estimated AEC Support Cost as set forth in Article A-III of this contract following execution of this contract (and following the effectuation of each extended period).

(2) A maximum of an additional 45 percent of the estimated AEC Support Cost as set forth in Article A-III of this contract upon receipt of a request for extension of the contract, evidencing that the amount requested is then required in connection with the work under the contract.

(3) If, following submission of an annual progress report, the contract is to be extended for an additional period of performance, an additional payment may be made at the time of execution of the extension which, when added to the payments already made under (1) and (2) above for the expiring period, will not exceed the currently estimated AEC Support Cost for the expiring period; a concluding payment for the pertinent period, if appropriate, may be made following submission of a certified statement showing the AEC Support Cost and evidencing the Contractor's performance under the contract.

(4) If the contract is not to be extended, the final payment of the consideration provided for in Article III of this contract shall be made following submission by the Contractor of a final report required by Article B-XXI, in form and content satisfactory to the Commission, and Submission of a certified statement showing the AEC Support Cost and evidencing the Contractor's performance under the contract.

to be taken pursuant to paragraph 10 of this article. The issuance and use of a letter of credit and receipt of funds pursuant thereto shall not prejudice or otherwise adversely affect any of the Government's rights under the contract.

ARTICLE B-XII - EQUAL OPPORTUNITY

(The following clause is applicable unless this contract is exempt under the rules, regulations, and relevant orders of the Secretary of Labor (41 CFR, ch. 60).)

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: application, hiring, promotion, transfer, training, assignment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Equal Opportunity clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement a copy of this contract, and a copy of the notice of the Contracting Officer, advising the labor union or workers' representative of the Contractor's commitments under the Equal Opportunity clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the

shall be subject to the jurisdiction of the Secretary of Labor, or his authorized representative, and shall permit access to its books, records, and accounts by the Commission and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the Equal Opportunity clause of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Commission may direct as a means of enforcing such provisions, including suspending and terminating subcontracts or orders; however, That in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result

of the Contractor's failure to comply with such provisions, the Contractor shall be authorized to enter into such litigation to protect the interests of the United States.

ARTICLE B-XIII - CONVICT LABOR

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

ARTICLE B-XIV - CONTRACT WORK HOURS STANDARDS ACT--OVERTIME COMPENSATION

This contract, to the extent that it is of a character specified in the Contract Work Hours Standards Act (40 U.S.C. 267-269), is subject to the following provisions and to all other applicable provisions and exceptions of such Act and the regulations of the Secretary of Labor thereunder:

(a) Overtime requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any

laborer or mechanic employed by the Contractor shall be compensated for all such hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours, at a rate not less than one and one-half times his basic rate of pay for all such hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours.

(b) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions of paragraph (a), the Contractor and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of the provisions of paragraph (a) in the sum of \$10 for each calendar day on which such employee was required or permitted to be employed on such work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by paragraph (a).

Contracting Officer may withhold from the Government Prime Contractor, from any moneys payable on account of work performed by the Contractor as necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions of paragraph (a).

Subcontracts. The Contractor shall insert paragraphs (a) through (d) of this article in all subcontracts, and shall require their inclusion in all subcontracts of any order.

Records. The Contractor shall maintain payroll records containing the information specified in 29 CFR 16.2(a). Such records shall be preserved for three years from the completion of the contract.

ARTICLE B-W - DISPUTES

(a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless within 30 days from the date of receipt of such copy the Contractor mails or otherwise furnishes

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to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or its duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this article, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

(b) This "Disputes" article does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above: Provided, That nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

ARTICLE B-XVI - OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE B-XVII - COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE B-XVIII - EXAMINATION OF RECORDS

(a) The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract.

(b) The Contractor further agrees to include in all its subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this article excludes (1) purchase orders not exceeding \$2,500 and (2) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

(c) Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE B-XIX - BUY AMERICAN ACT

(a) In acquiring end products, the Buy American Act (41 U.S. Code 10a-d) provides that the Government give preference to domestic source end products. For the purpose of this article:

(i) "Components" means those articles, materials, and supplies which are directly incorporated in the end products;

(ii) "End products" means those articles, materials, and supplies which are to be acquired under this contract for public use;

(iii) A "domestic source end product" means (A) an unmanufactured end product which has been mined or produced in the United States and (B) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. For the purposes of this (a)(iii)(B), components of foreign origin of the same type or kind as the products referred to in (b)(i) or (ii) of this article shall be treated as components mined, produced, or manufactured in the United States.

(b) The Contractor agrees that there will be delivered under this contract only domestic source end products, except end products:

(i) Which are for use outside the United States;

(ii) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;

(iii) As to which the Commission determines the domestic personnel to be employed by the Contractor.

(iv) As to which the Commission determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954.)

ARTICLE B-XX - ASSIGNMENT: SUBCONTRACTING

Neither this contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor, except as expressly authorized in writing by the Commission. The Contractor shall not subcontract any research or development work under this contract, except as expressly authorized in writing by the Commission.

ARTICLE B-XXI - REPORTS AND RENEWAL PROPOSALS

The Contractor shall furnish six (6) copies of the following reports and renewal proposals, if any, addressed to the Laboratory and University Division, U. S. Atomic Energy Commission, Oak Ridge Operations Office, Post Office Box 1, Oak Ridge, Tennessee 37831.

(a) Progress Report. The progress report shall briefly describe the scope of investigations undertaken and the significant results obtained. It shall also include a summary of the Contractor's progress in meeting the requirements and any failures to comply. The report shall indicate the approximate percentage of time or effort which the principal investigator(s) has devoted to the project since the beginning of the current term of the agreement and indicate the amount of effort which is expected to be devoted during the remainder of the current term. Technical reports, preprints, and articles prepared for publication shall be listed with bibliographic references. Preprints of all such material not previously submitted shall be appended and material contained therein need not be duplicated in the report. Progress reports shall be submitted approximately three months in advance of the expiration of the current contract term and shall give the Contractor's best estimate of the probable events and occurrences in regard to the remainder of the current contract term. Except as the Commission may otherwise request, no further progress report shall be required for any contract year unless there has been a significant change in scientific results or contract compliance between the latest progress report by the Contractor and its actual experience; this shall be reported promptly.

(b) Final Report. Upon termination or expiration of the total period of performance, the Contractor shall submit, promptly, a summary of its activities for the entire period, including a list of publications

issued during the life of the contract. The report of any separate not previously submitted, as well as a comprehensive evaluation of progress in the area of research supported by the contract.

(c) Renewal Proposals. A renewal proposal, if any, shall be submitted along with the technical progress report, and each of the two documents shall be separately bound.

(d) Report of Equipment Purchased or Fabricated. The Contractor shall itemize equipment having a useful life expectancy in excess of one year and an acquisition cost in excess of \$100 purchased or fabricated by the Contractor when title to such equipment is vested in the Contractor pursuant to the Grant Act (Public Law 85-934)--omit any items appearing in Article V--and submit a report thereof within three months after the expiration of the contract year specified in Article II. Where the cost of individual pieces of equipment exceeds \$1,000, they will be listed individually. Where individual items cost \$100 to \$1,000, they will also be individually listed to the extent practical or grouped in general categories, such as "electronic equipment" or "six motors," with the total dollar amount of such category. The cost of purchased items shall be determined by the actual invoice cost of such items, but the cost of fabricated items may be established by engineering estimates. This report may be submitted in conjunction with the certified statement required by Article B-XXVII of this contract.

Foreign travel shall be subject to the prior approval of the Contracting Officer.

ARTICLE B-XXIII - PRIORITIES, ALLOCATIONS, AND ALLOTMENTS

The Contractor shall follow the provisions of DMS Regulation 1 and all other applicable regulations and orders of the Business and Defense Services Administration in obtaining controlled materials and other products and materials needed to fill this order. This contract carries rating: EC-F-1 certified for national defense under DMS Regulation 1.

ARTICLE B-XXIV - AVAILABILITY OF CONCERNS IN LABOR SURPLUS AREAS

(The following clause is applicable if this contract exceeds \$5,000.)

(a) It is the policy of the Government to award contracts to labor surplus area concerns that (1) have been certified by the Secretary of Labor (hereafter referred to as certified-eligible concerns with first or second preferences) regarding the employment of a proportionate number of disadvantaged individuals and have agreed to perform substantially (i) in or near sections of concentrated unemployment or underemployment or in persistent or substantial labor surplus areas or (ii) in

other concerns which have agreed to perform substantially in persistent or substantial labor surplus areas, where this can be done consistent with the efficient performance of this contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts in accordance with this policy.

(b) In complying with paragraph (a) of this article and with paragraph (b) of the article of this contract entitled "Utilization of Small Business Concerns" the Contractor in placing its subcontracts shall observe the following order of preference: (1) Certified-eligible concerns with a first preference which are also small business concerns; (2) other certified-eligible concerns with a first preference; (3) certified-eligible concerns with a second preference which are also small business concerns; (4) other certified-eligible concerns with a second preference; (5) persistent or substantial labor surplus area concerns which are also small business concerns; (6) other persistent or substantial labor surplus area concerns; and (7) small business concerns which are not labor surplus area concerns.

ARTICLE B-XIV - UTILIZATION OF SMALL BUSINESS CONCERNS

a. It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

(b) The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

ARTICLE B-XV - SOVIET-BLOC CONTROLS

In execution of the contract under this article, the Contractor agrees to comply with the requirements set forth in Appendix "D" of this contract relating to the countries listed therein. From time to time, by written notice to the Contractor, the Commission shall have the right to change the listing of countries in Appendix "D" upon a determination of the Commission that such change is in conformance with national policy. The Contractor shall have the right to terminate its performance under this contract upon at least sixty (60) days' prior written notice to the Commission if the Contractor determines that it is unable, without substantially interfering with its policies as an educational institution or without adversely affecting its performance, to continue performance of the work under this contract as a result of a change in Appendix "D" made by the Commission pursuant to the preceding sentence. If the Contractor elects to terminate performance, the provisions of this contract respecting termination for the convenience of the Government shall apply.

ARTICLE B-III - ~~TERMINATION OF CONTRACT COSTS~~

(a) The term "Support Cost" as used in this contract means the Commission's share~~n~~ of the sum of costs incurred by the Contractor for items included under Article A-II(a) of Appendix "A" which are in furtherance of the work hereunder, which are incurred in accordance with the provisions of this contract, and which are reported to the AEC in accordance with (b) below. The term "Cumulative Support Cost" as used in this contract means the total of the Support Cost incurred during the initial contract period plus any extension periods of the contract.

(b) Within three months after the end of each contract period set forth in Appendix "A", and within three months after the termination or expiration of the total period of performance, the Contractor shall furnish a certified statement, executed by an official of the Contractor and also signed by the principal investigator, showing the Contractor's cost, and evidencing its performance under the contract, during the contract term just completed. The statement shall show all costs incurred during the pertinent contract term set forth in Appendix "A" for items under Article A-II(a) of Appendix "A", including the Contractor's share, if any, of the costs, and show the extent of the Contractor's contribution of items listed under Article A-II(b)(1) of Appendix "A". Costs included in the certified statement may include ~~the amount due the Contractor for indirect costs in accordance with the contract or factors shown in Appendix "A" of the contract for the pertinent contract period.~~ ^{the amount due the Contractor for indirect costs in accordance with the contract or factors shown in Appendix "A" of the contract for the pertinent contract period.} The costs for the pertinent contract period shall be consistent with the principles of the Bureau of the Budget Circular A-21, as constituted on the effective commencement date of said period. The certified statement shall be in the form set forth in Appendix "C".

(c) The Contractor understands that the Commission expects to rely on this certified statement for determining the Support Cost for the pertinent contract period. With respect to any period in which

1/ In those cases in which there is no proportionate sharing of costs, the Commission's "share" will be 100 percent. With respect to any period in which proportionate cost-sharing is applicable pursuant to Article A-III, it is understood that the Support Cost for that specified period will equal the stipulated percent of the sum of costs incurred by the Contractor during the stated period for items under A-II(a) of Appendix "A", not to exceed 110 percent of the estimated Support Cost set forth in Article A-III for that contract period except as otherwise approved by the AEC.

proportionate share of the total cost of items included in the pertinent contract period. The total cost of items included in the pertinent contract period shall be the certified cost of items included under Article A-II as incurred during the pertinent contract period. All invoices to the AFI shall be subject to the approval requirements of this contract. The Contractor is expected to maintain adequate records as contemplated by Article B-II(c) to substantiate the costs incurred for items under Article A-II(a) and to show the extent of the Contractor's contribution of items listed under Article A-II(c).

ARTICLE B-XXVIII - ADDITIONAL APPROVALS

(a) In addition to such approvals as are specifically required by other provisions of this contract, the Contractor shall obtain the Commission's approval for:

(1) Acquisition of

(i) equipment of equipment as itemized in Appendix "A" of this contract, the cost of which exceeds the cost of equipment of similar type specified in Article A-II of Appendix "A", whichever is greater, unless such equipment is of a type commonly used in the military service;

(ii) equipment of equipment as itemized in Appendix "A" of this contract, the cost of which exceeds the cost of equipment of similar type specified in Article A-II of Appendix "A", whichever is greater, unless such equipment is of a type commonly used in the military service; and

(iii) equipment of equipment as itemized in Appendix "A" of this contract, the cost of which exceeds the cost of equipment of similar type specified in Article A-II of Appendix "A", whichever is greater, unless such equipment is of a type commonly used in the military service; and

(2) Purchase of any general-purpose equipment, such as office furniture or other equipment not specifically provided for in Appendix "A", the cost of which exceeds the cost of such equipment as itemized in Appendix "A" of this contract.

(3) In addition to the requirements of this contract period set forth in Appendix "A", for items set forth in Article A-II(a), an excess of the cost of such items over the cost of such items as itemized in Article A-II of Appendix "A" shall be subject to the approval of the Commission for any such items incurred during the contract period. The Commission shall also be notified of the requirements of Article A-II.

... change in the principal investigator, or continuation of the research work without direction by an approved principal investigator. The principal investigator may increase or decrease the amount of effort which he devotes to the project without obtaining Commission approval; however, the principal investigator shall consult with the appropriate AEC Headquarters program representative if he plans to, or becomes aware that he will, devote substantially less effort to the work than anticipated in Article A-I. The purpose of such consultation will be to determine what effect, if any, the anticipated change will have on the research work.

(b) No change in the phenomenon or phenomena under study; i.e., broad category of the research under this contract, shall be made without the specific written approval of the Commission; ordinarily, such changes, if approved by the Commission, will be accomplished through a new contract or a mutually agreed-to modification. The Contractor may change the specific objectives in the research work described in this contract, provided it gives the Commission prompt notification of such changes; and the Contractor may continue to follow the new objectives while the Commission determines whether it wishes to continue the contract under the changed conditions.

APPENDIX "D"

REQUIREMENTS RELATING TO EXCHANGES OF INFORMATION

1. The requirements set forth herein relate to the dissemination by the Contractor of the information developed under this contract and/or under other Commission programs to countries by or through exchange activities, including but not limited to employment, work participation, visits and correspondence. The term "countries" (including where used in the term "Soviet-Bloc Countries"), as used in this Appendix "D", includes all nations (other than the United States, its territories and possessions), the embassies, consulates, and agencies of such nations, and individuals and organizations of such nations.
2. For the purpose of these requirements the Soviet-Bloc Countries consist of:

Group A

Albania
 Bulgaria
 Czechoslovakia
 Estonia
 Hungary
 Latvia
 Lithuania
 Poland and Danzig
 Rumania
 Union of Soviet Socialist Republics

Group B

China, including Manchuria (includes Inner Mongolia; the provinces of Tsinghai and Sikang, Tibet; the former Kwantung Leased Territory, the present Port Arthur Naval Base Area and Liaoning Province) and excluding Taiwan (Formosa)
 Communist-controlled area of Viet Nam
 East Germany (Soviet Zone of Germany and the Soviet Sector of Berlin)
 North Korea
 Outer Mongolia
 Cuba

3. The following exchange activities between the Contractor and any of the Soviet-Bloc Countries shall be subject to the prior written approval of the Commission on an individual case basis:

- a. Employment of, or participation in activities of the Contractor by, nationals of any of the Soviet-Bloc Countries where such employment, travel or activity is financially supported by the Commission.
 - b. Employment of, or participation in activities of the Contractor by, nationals of any of the Soviet-Bloc Countries in furtherance of or in connection with work under this contract.
 - c. Participation of nationals of any of the Soviet-Bloc Countries at U. S. conferences, meetings and symposia which are supported by Commission funds or are organized and directed by persons receiving financial support for such activities from the Commission and acting in the name of the Commission or the Contractor.
4. Unofficial travel to any of the Soviet-Bloc Countries by employees of the Contractor who hold a Commission security clearance will be subject to the prior approval of the Commission on an individual case basis.
 5. The Contractor shall inform all of its employees who formerly held a Commission security clearance of the Commission's desire to be advised of their proposed unofficial travel to any of the Soviet-Bloc Countries. The Contractor shall notify the Commission of all such travel. The Contractor shall ensure that all employees are aware pursuant to the notification given in accordance with the provisions herein.
 6. The Contractor, if the contract herein is a cost-type rather than a fixed-price type, shall inform the Commission, in advance whenever feasible, of all proposed visits by nationals of any of the Soviet-Bloc Countries to the Contractor and report thereof in accordance with directions furnished by the Contracting Officer.
 7. All correspondence and other communications relative to the exchange of information whether with Soviet-Bloc Countries or other countries shall be subject to the review and policy and procedures:
 - a. Transmittal of published information relating to the peaceful uses of atomic energy is permitted and encouraged provided the transmittals to countries listed in Group B of Section 2, above, are made in the name of the Contractor or the individual scientist and not in the name of the Commission;
 - b. Transmittal of unpublished information relating to the peaceful uses of atomic energy is permitted and encouraged provided:

- (1) The information transmitted is made available to requesters in the United States. In order to insure availability to requesters in the United States, one copy of all such unpublished information (with the exception of personal correspondence covering informal scientific or technical opinion) shall be forwarded to the Contracting Officer;
 - (2) The transmittals to countries listed in Section 2, above, are accompanied by a request for appropriate equally valuable material in return; and
 - (3) The transmittals to countries listed in Group B of Section 2, above, are made in the name of the Contractor or the individual scientist and not in the name of the Commission.
- c. Requests for information not falling within the scope of the above-stated policy and any unusual requests for published and unpublished information shall be forwarded to the Contracting Officer. Examples of unusual requests for published and unpublished information include: (1) Requests for collections of published documents or for unpublished information which are not readily available to the recipient of the request; (2) Requests for complete and detailed unpublished design information and unpublished development information on major equipment, such as reactors, chemical processing plants, and accelerators; and (3) Official correspondence from any government other than the United States, its territories and possessions.

As used in this Section 7:

- a. The term "published information" means all unclassified scientific and technical documents; internal and informal reports; reprints; preprints; page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions; etc., originated within Commission programs, and available either from the Division of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or other sources from which the public may obtain the above types of information by purchase or without cost.
- b. The term "unpublished information" means all unclassified scientific and technical documents; internal and informal reports; reprints; preprints; page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions; etc., originating within Commission programs but

which are not available from the Division of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or from other sources from which the public may normally obtain the information by purchase or without cost.

8. In all exchanges of information, care should be taken that the release of the information does not result in the disclosures of Restricted Data or other classified information, or privileged information, in violation of applicable law and/or the provisions of this contract; or the disclosure of any information that would adversely affect the patent interest of the Commission in violation of the provisions of this contract.

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 8th day of April, 1970, 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 UNIVERSITY OF TENNESSEE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and Modifications thereto numbered 1 through 16 providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to amend the contract further to provide for the continuance of this research without additional funds and to provide for certain other changes; and

WHEREAS, This Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended, and Section 302(c)(15) of the Federal Property and Administrative Services Act of 1949, as amended;

NOW, THEREFORE, the parties do mutually agree that said contract, as amended, is hereby further amended in the following particulars, but in no

1. The date "August 31, 1970," as such appears in ARTICLE II - THE PERIOD FOR PERFORMANCE, in Paragraph (a) of ARTICLE III - TERMINATION, and in the portion of Appendix "A" which states the contract period, is deleted and the date "February 28, 1971," is substituted therefor.

IN WITNESS WHEREOF, the parties have executed this Supplemental Agreement.

UNITED STATES OF AMERICA

COMMISSION

BY: Herman M. Roth
Herman M. Roth

TITLE: Director
Laboratory and University Division

UNIVERSITY OF TENNESSEE

BY: M. H. Read

TITLE: Vice President

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Contract No. AT-(40-1)-1637
UNIVERSITY OF TENNESSEE
Modification No. 16

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into the 5th day of December, 1969, effective the 1st day of September, 1969, 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 UNIVERSITY OF TENNESSEE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and Modifications thereto numbered 1 through 15 providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to amend the contract further to provide for: (a) the continuance of this research and/or the performance of additional research; and (b) the restatement of the contract in its entirety, with the revisions and/or additions of certain provisions thereof in accordance with current applicable rules and regulations of the Commission; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended, and Section 302(c)(15) of the Federal Property and Administrative Services Act of 1949, as amended;

NOW, THEREFORE, the parties do mutually agree that the contract (including its Appendices), as amended, is hereby further amended to read in its entirety, effective as of the effective date of this modification, as follows:

ARTICLE I - THE RESEARCH TO BE PERFORMED

(a) The Contractor shall, to the best of its ability, furnish personnel, facilities, equipment, materials, supplies, and services, except such as are furnished by the Government, necessary for the performance of the research provided for in Appendix "A" hereto, and shall perform the research and report thereon pursuant to the provisions of this contract. It is understood that Appendix "A", a guide to the performance of this contract, may be deviated from by the Contractor subject to the specific requirements of this contract.

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(b) This work shall be conducted under the direction of Dr. J. L. Wood or such other member of the Contractor's staff as may be mutually satisfactory to the parties.

ARTICLE II - THE PERIOD FOR PERFORMANCE

The period of performance under this contract shall commence on September 1, 1969, and expire on August 31, 1970. Performance may be extended for additional periods by the mutual written agreement of the parties.

ARTICLE III - CONSIDERATION

(a) In full consideration of the Contractor's performance hereunder, the Commission shall furnish the equipment, supplies, materials, and services, if any, listed in Article A-II(b)(2) and pay the Contractor the sum of \$22,000.00, hereinafter called the "Support Ceiling," which sum shall be subject to adjustment as hereinafter provided.

(b) Payments to the Contractor shall equal the "Cumulative Support Cost" of performance of this contract, as the term "Cumulative Support Cost" is defined in Article B-XXVII^{1/}; Provided, however, and notwithstanding any other provision of this contract, that the Government's monetary liability under this contract shall not exceed the Support Ceiling specified in (a) above. The Commission shall not pay more than the Support Ceiling or an amount equal to the Cumulative Support Cost, whichever is less. The Contractor shall be obligated to perform under this contract throughout the agreed-upon period of performance, and to bear all costs which the Commission has not agreed to pay; Provided, however, that the Contractor shall have the right to cease to perform the research provided for in this contract, upon written notice to the Commission to that effect, at any time when or after the Cumulative Support Cost equals or exceeds the Support Ceiling.

(c) The Support Ceiling specified in (a) above may be revised as the parties may mutually agree in writing. In the event the stated period of contract performance is extended, the Support Ceiling will be revised to reflect any increased Commission support for the extended period or periods.

(d) Upon termination, or expiration of the total period of performance, the Contractor shall promptly refund to the Commission any sums paid by the Commission to the Contractor under this contract,

^{1/} See NOTE on page 4.

through direct payment or under letter of credit, in excess of the Cumulative Support Cost incurred in performance under the contract.

ARTICLE IV - ADDITIONAL CONTRACT PROVISIONS

Appendix "B", attached hereto and made a part hereof, sets forth additional general provisions of this contract.

ARTICLE V - GOVERNMENT PROPERTY

The following items of property procured or fabricated by the Contractor are hereby listed as "Government Property": None.

IN WITNESS WHEREOF, the parties have executed this Supplemental Agreement.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY
COMMISSION

BY: Herman McBeth

TITLE: Director, University Division

UNIVERSITY OF TENNESSEE

BY: J. H. H. H. H.

TITLE: Vice President

I, John C. Baugh, certify that I am the Secretary of the corporation named as the Contractor herein; that W. H. Head who signed this contract on behalf of the Contractor was then Vice President of said corporation; that said contract 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)

Contractor: THE UNIVERSITY OF TENNESSEE

Contract No.: AT-(40-1)-1637

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11b: The term "Cumulative Support Cost" refers to the cost of items under A-II(a) of Appendix "A", for the initial contract period plus any extension periods, that may be properly chargeable to the AEC. If proportionate cost-sharing is involved, the Support Cost is the AEC's share of such costs, and it does not include the cost of items excluded from Article A-II(a), such as items to be contributed solely by the Contractor or property to be furnished by the Government. Charges to the AEC will be reported after the conclusion of each contract period set forth in Appendix "A" (generally an annual period); in addition to the limitations on charges to the AEC provided for by this Article III, charges to the AEC for a specified contract period may not exceed 110 percent of the estimated Support Cost for that contract period except as approved by the AEC (see Article B-XXVII). The estimated Support Cost for each pertinent period of contract performance will be set forth in Article A-III. If Article A-III of Appendix "A" provides that the cost of the items listed under Article A-II(a) is to be proportionately shared by the parties, the charges to the AEC shall be determined by applying the AEC's sharing percentages set forth in Article A-III to the cost for items under Article A-II(a) included during the specified contract period; such charges to the AEC shall also be subject to the 110 percent limitation mentioned above as well

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APPENDIX "A"

For the Contract Period September 1, 1969, through August 31, 1970.

A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

The Contractor will continue studies of the formation and fate of the thiocyanate chemical grouping as it applies to medicine, particularly with regard to the mechanisms by which thiocyanate arises endogenously, the chemical modifications which the thiocyanate groups undergo in vivo, and the physiological implications related to the general problem of induced resistance to radiation damage and carcinogenesis. Enzyme studies, radioisotope labelling where appropriate, and studies of intermediary metabolism, will be involved.

The Principal Investigator expects to devote approximately 30% of his time or effort to the work.

A-II WAYS AND MEANS OF PERFORMANCE

(a) Items Included in Total Estimated Cost:

- | | |
|--|-------------|
| (1) <u>Salaries and Wages:</u> | \$21,550.00 |
| Dr. J. L. Wood, Principal Investigator (30%) | |
| Research Associate (100% of time) | |
| Technician (100% of time) | |
| Secretary (As needed) | |
| Consultation and Services (70 hours) | |
| (2) <u>Employee Benefits:</u> | 1,112.00 |
| (3) <u>Materials and Supplies:</u> | 1,132.00 |
| Chemicals, isotopes, animals, and glassware | |
| (4) <u>Equipment:</u> | 1,000.00 |
| Hardware, and small equipment items | |
| (5) <u>Publication:</u> | 200.00 |
| (6) <u>Travel:</u> | 600.00 |
| (7) <u>Indirect Charges</u> (35.3% of Salaries and Wages): | 7,607.00 |

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- (b) Items Significant to the Performance of this Contract, but Excluded from Computation of Total Cost and from Consideration in Proportioning Costs:

None

- (c) Time or Effort of Principal Investigator to be Contributed by Contractor:

None under this paragraph

A-III The total estimated cost of items under A-II (a) above for the contract period stated in this Appendix "A" is \$33,531.00; the Commission will pay 66% of the actual costs of these items incurred during the contract period stated in this Appendix "A", subject to the provisions of Article III and Article B-XXVII. The estimated AEC support cost for the contract period stated in this Appendix "A" is \$22,000.00

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UNITED STATES ATOMIC ENERGY COMMISSION

APPENDIX "B"

ARTICLE B-I - DEFINITIONS

(a) The term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer, except for the purpose of deciding an appeal under the article entitled, "Disputes."

(b) The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successors or any duly authorized representative of any such person.

(c) Except as otherwise provided in this contract, the term "subcontracts" includes purchase orders under this contract.

ARTICLE B-II - INSPECTION, REPORTS, RECORDS AND ACCOUNTS

(a) The Commission shall have the right to inspect, in such manner and at all reasonable times as it deems appropriate, all activities of the Contractor during in the course of its undertakings under this contract.

(b) The Contractor shall make progress and other reports in such shall also make such other reports to the Commission, with respect to the work under this contract, as the Commission may reasonably require from time to time.

(c) The Contractor agrees to keep records and books of account, in accordance with generally accepted accounting principles and practices, and consistent with the requirements of EOP Circular No. A-71, as constituted on the effective commencement date of the contract (a) covering its costs and expenditures for items included under Article A-II(a) of Appendix "A" and which are in furtherance of the research work under this contract. In the event a contract contribution is made under this contract, the Contractor shall maintain records adequate to permit the Commission to determine the extent of the contribution. If professional staff members are included under Article A-II (b), the Contractor shall maintain records on such personnel in accordance with the payroll distribution procedure of Section J.7.b. of EOD Circular No. A-71.

(d) The Commission shall at all reasonable times be afforded access to the premises and to these books and records and to related correspondence, receipts, vouchers, memoranda, and other data of the Contractor; and the Contractor shall preserve such books and papers, without additional compensation therefor, for a period of three (3) years after completion of this contract.

ARTICLE B-III - DISCLOSURE OF INFORMATION

(a) Research results obtained under this contract shall be made available to all through normal and accepted channels without restriction except that no Restricted Data as defined in the Atomic Energy Act of 1954 or other classified information shall be disclosed to unauthorized persons. Published results shall indicate that the research was supported by the Commission. Seven (7) copies of each article submitted by the Contractor for publication shall be promptly sent to the Commission. The Contractor shall also inform the Commission when the article is published and furnish seven (7) copies of the article as finally published.

(b) It is recognized that during the course of the work hereunder or subsequent thereto, the Contractor, its employees, or its subcontractors may from time to time desire to publish, within the limit of security requirements, information regarding technical or scientific developments arising in the course of the contract. In order that public disclosure of such information will not adversely affect the patent interest of the Commission, such information shall be withheld from public disclosure if it discloses an invention or discovery which shall be promptly reported to the Commission, and in such case, it shall be withheld for a period of four (4) months after submission of the information to the Commission for patent review and possible patent application, unless the Commission otherwise directs.

If so indicated in the article entitled "Alterations" of this contract, the following sentence shall be deemed to govern in lieu of the last sentence of Article B-III:

"In order that public disclosure of such information will not adversely affect the patent interest of the Commission, patent approval for release shall be secured from the Commission prior to any such publication."

ARTICLE B-IV - DISCLOSURE OF INFORMATION

(a) It is mutually expected that the activities under this contract will not involve Restricted Data or other classified information or material. It is understood, however, that if in the opinion of either party this expectation changes prior to the expiration or termination of all activities under this contract, said party shall notify the other party accordingly in writing without delay. In any event, the Contractor shall classify, safeguard, and otherwise act with respect to all Restricted Data and other classified information and material, in accordance with applicable law and the requirements of the Commission, and shall promptly inform the Commission in writing if and when Restricted Data or other classified information or material

becomes involved. If and when Restricted Data or other classified information or material becomes involved, or in the mutual judgment of the parties it appears likely that Restricted Data or other classified information or material may become involved, the Contractor shall have the right to terminate performance of the work under this contract and in such event the provisions of this contract respecting termination for the convenience of the Government shall apply.

(b) The Contractor shall not permit any individual to have access to Restricted Data, or other classified information, except in accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations or requirements.

(c) The term "Restricted Data" as used in this article means all data concerning the design, manufacture, or utilization of atomic weapons, the production of special nuclear material, or the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to Section 142 of the Atomic Energy Act of 1954, as amended.

ARTICLE B-V - RESPONSIBILITY FOR THE WORK

(a) The Contractor is solely responsible for the conduct of the work.

If the work involves a Commission license, the provisions of the pertinent license shall prevail over any inconsistent provisions of this contract.

ARTICLE B-VI - FELLOWSHIPS

The Contractor agrees that, unless the Commission shall give its prior written approval, the Contractor shall not use any of the funds provided by the Commission under this contract to pay the stipend of any appointment for which commensurate services are not rendered under this contract or to pay any part of the stipend of a fellowship of any kind.

ARTICLE B-VII - WRITTEN MATERIAL

(a) The Contractor hereby grants to the Government a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use and dispose of, and to authorize others to do so, all copyrightable material produced or composed or delivered to the Government or its designees under this contract, including work not first produced or composed by the Contractor in the course of

performance under this contract but incorporated in the material produced or composed or delivered under this contract (but only to the extent that the Contractor now has, or prior to final settlement of the contract may have, the right to grant such license to such previously produced or composed work without becoming liable to pay compensation to others solely because of such grant).

(b) The Contractor agrees that, except as the Commission may otherwise specifically authorize in writing, the Contractor will not include in any report or other material delivered under this contract, or in any published material relating to the work under this contract, any copyrighted material owned by others which such owners have not consented to have so included.

(c) The Commission will not publish in advance of the Contractor's publication without prior consultation with the Contractor.

ARTICLE B-VIII - PATENTS

(a) Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of or under this contract, the Contractor shall promptly furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights in and to any invention or discovery and any patent application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

(b) No claim for pecuniary award or compensation under the provisions of the Atomic Energy Act of 1954, as amended, shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of or under this contract.

(c) Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs (a) and (b) of this article from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.

(d) Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts and purchase orders other than purchase orders for standard commercial items, provisions making this article applicable to the subcontract or purchase order. Except as otherwise authorized in writing by the Commission, the

Contractor will insert in purchase order for standard commercial items a provision indemnifying the Government against liability for use of any invention or discovery and for the infringement of any Letters Patent arising by reason of the purchase, use, or disposal by or for the account of the Government of items manufactured or supplied under the purchase order.

(e) With respect to any U. S. Patent Application filed by the Contractor on any contract invention or discovery made or conceived in the course of the contract, the Contractor will incorporate in the first paragraph of the U. S. Patent Application the following statement:

"The invention described herein was made in the course of, or under, a contract (if desired, may substitute contract with identifying number) with the U. S. Atomic Energy Commission."

ARTICLE B-IX - PROPERTY ITEMS

(a) Except as otherwise provided in this paragraph (a) and paragraph (b) of this Article B-IX, title to all materials, supplies, and equipment purchased or otherwise acquired by the Contractor in the performance of its research activities shall be and remain in the Contractor. Said materials, supplies, and equipment shall be used for the performance of the research activities contemplated by the contract under contracts hereto and, provided there is no interference with said research, shall be made available for use by investigators working on any Federal research agreement at the same location. Subject to these priorities, the materials, supplies, and equipment may be used as the Contractor wishes. Except as otherwise agreed in writing, title to any items of property listed as "Government Property" shall pass directly to the Government; such property shall be subject to paragraphs (b), (c), (d), (e), and (f) of this Article B-IX.

(b) Subject to the mutual agreement of the Commission and the Contractor, the Government may furnish the Contractor items of equipment, materials, supplies, or other property to be used by the Contractor in the performance of the contract work; title to these items shall remain in the Government unless otherwise agreed in writing. Such items of property and the items of property listed elsewhere in this contract as Government property are hereinafter referred to as "Government property." Title to Government property shall not be affected by the Government nor shall any such property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty.

...the Contractor shall cause all items of Government property to be suitably marked with identifying marks or signals indicating that the items are the property of the Government. The Contractor shall maintain at all times and in a manner satisfactory to the Commission records showing the use and disposition of Government property. Such records shall be subject to Commission inspection at all reasonable times and the Commission shall at all reasonable times have access to the premises wherein any items of Government property are located. Unless otherwise authorized in writing by the Commission, the Contractor shall use Government property only for the purposes of this contract; provided, however, that the Contractor is hereby authorized to use items of equipment constituting Government property for other Federal research agreements to the extent such use (1) does not interfere with its work under this contract, (2) is not prohibited by provisions of the other Federal agreements, and (3) is promptly reported by the Contractor to the Commission under this contract.

(d) The Contractor shall promptly notify the Commission of any loss or destruction of or damage to Government property. It is understood that the Contractor shall not be liable for any such loss, destruction, or damage, unless same results from willful misconduct or lack of good faith on the part of any corporate officer of the Contractor, or of one or more of the Contractor's representatives having supervision or direction of all or substantially all of the activities under this contract. In the event of loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission. The Contractor shall, in such event, be indemnified, reimbursed, or otherwise compensated for such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission.

(e) With the written approval of the Commission, the Contractor may sell, transfer, or otherwise dispose of items of Government property to such parties and upon such terms as are approved, or itself acquire title to items of Government property upon such terms as may be mutually agreed upon in writing by the Contractor and the Commission. The proceeds of any sale, disposition, or transfer of items of Government property acquired, shall be paid by the Contractor to the Government, or credited in account of Commission payments to be made under this contract, as the Commission may direct. Subject to the other provisions of this contract, the Contractor shall deliver Government property to the Commission upon request suitably packed and shipped at the Government's expense.

(f) The Contractor shall utilize for the benefit of the work under this contract such items of property available to the Contractor by reason of its activities under other Federal research agreements as are

appropriate for utilization under this contract, pursuant to the provisions of the pertinent Federal agreements.

ARTICLE B-X - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT

(a) The performance of work under this contract may be terminated in whole or from time to time in part, by the Government whenever for any reason the Contracting Officer shall determine that such termination is in the best interest of the Government. Termination of work hereunder shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated and the date upon which such termination becomes effective.

(b) After receipt of the Notice of Termination the Contractor shall cancel its outstanding commitments hereunder covering the procurement of materials, supplies, equipment, and miscellaneous items. In addition, the Contractor shall exercise all reasonable diligence to accomplish the cancellation or diversion of its outstanding commitments covering personal services and extending beyond the date of such termination to the extent that they relate to the performance of any work terminated by the notice. With respect to such cancelled commitments the Contractor agrees to (1) settle all outstanding liabilities and all claims arising out of such cancellation of commitments, with the approval

which approval or ratification shall be final for all purposes of this article, and (2) assign to the Government, in its entirety, at the time, and to the extent directed by the Contracting Officer, all of the right, title and interest of the Contractor under the contract and subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

(c) The Contractor shall submit its termination claim to the Contracting Officer promptly after receipt of a Notice of Termination, but in no event later than one year from the effective date thereof, unless the Contracting Officer shall grant an extension of time to the Contractor upon written request of the Contractor within such one-year period or authorized extension thereof. Upon failure of the Contractor to submit its termination claim within the time allowed, the Contracting Officer may, subject to any review required by the Commission's procedures in effect as of the date of execution of this contract, determine on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

9-1-67

(d) Any determination of costs under Paragraph (c) shall be governed by the cost principles set forth in Subpart 1-15.3 of the Federal Procurement Regulations (41 CFR 1-15.3), as in effect on the date of this contract, except that if the Contractor is not an educational institution the determination shall be governed by AECPR 9-15.50 (41 CFR 9-15.50).

(e) Subject to the provisions of paragraph (c) above, and subject to any review required by the Commission's procedures in effect as of the date of execution of this contract, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the termination under this article, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Contractor and any reasonable loss upon outstanding commitments for personal services which it is unable to cancel: Provided, however, That in connection with any outstanding commitments for personal services which the Contractor is unable to cancel, the Contractor shall have exercised reasonable diligence to divert such commitments to its other activities and operations. Any such agreement shall be embodied in an amendment to this contract and the Contractor shall be paid the agreed amount.

(f) The Government may from time to time, under such terms and conditions as it may determine, make payments to the Contractor for losses incurred by the Contractor in connection with the terminated portion of this contract, whenever, in the opinion of the Contracting Officer, the aggregate of such payments is within the amount to which the Contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this article, such excess shall be payable by the Contractor to the Government upon demand: Provided, That if such excess is not so paid upon demand, interest thereon shall be payable by the Contractor to the Government at the rate of 6 percent per annum, beginning 30 days from the date of such demand.

(g) The Contractor agrees to transfer title to the Government and deliver in the manner, at the times, and to the extent, if any, directed by the Contracting Officer, such information and items which, if the contract had been completed, would have been required to be furnished to the Government, including:

(1) Completed or partially completed plans, drawings, and information; and

(2) Materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the notice.

Other than the above, any termination inventory resulting from the termination of the contract may, with the written approval of the Contracting Officer, be sold or acquired by the Government under the conditions prescribed by and at a price or prices approved by the Contracting Officer. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the Government to the Contractor under this contract or shall otherwise be credited to the price or cost of work covered by this contract or paid in such other manner as the Contracting Officer may direct. Pending final disposition of property arising from the termination, the Contractor agrees to take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the Contractor and in which the Government has or may acquire an interest.

(h) Any dispute as to questions of fact which may arise hereunder shall be subject to the "Disputes" article of this contract.

ARTICLE B-XI - PAYMENTS

(a) The Commission shall make payment to the Contractor with respect to the amount of consideration prescribed in Article III of this contract as follows:

(1) A maximum of twenty-five percent of the estimated AEC Support Cost as set forth in Article A-III of this contract following execution of this contract (and following the effectuation of each extended period).

(2) A maximum of an additional forty-five percent of the estimated AEC Support Cost as set forth in Article A-III of this contract upon receipt of a request or requests from the Contractor evidencing that the amount requested is then required in connection with the work under the contract.

(3) If, following submission of an annual progress report, the contract is to be extended for an additional period of performance, an additional payment may be made at the time of execution of the extension which, when added to the payments already made under (1) and (2) above for the entire period, shall not exceed the currently estimated AEC Support Cost for the expiring period; a concluding payment for the pertinent period, if appropriate, may be made following submission of a certified statement showing the AEC Support Cost and evidencing the Contractor's performance under the contract.

(4) If the contract is not to be extended, the final payment of the consideration provided for in Article III of this contract shall be made following submission by the Contractor of a final report

required by Article B-XXI, in form and content satisfactory to the Commission, and submission of a certified statement showing the AEC Support Cost for the period of performance under the contract.

(b) The payments made pursuant to paragraph (a) above shall not prejudice or otherwise affect adversely any of the Government's rights under the contract. For purposes of settlement in the event of termination pursuant to Article B-X hereof, these payments shall not be construed as evidentiary, and any excess payment in the light of Article B-X shall be promptly returned to the Commission.

(c) The Commission, at its option, may invoke the following with respect to any amount of the contract consideration remaining to be paid at any given time:

(1) The Commission shall issue a letter of credit as provided for by Treasury Department Circular No. 1075, Revised, of February 13, 1967, under which payments to the Contractor with respect to the amount of consideration provided for in Article III of this contract will be made. The Contractor agrees that the first ninety (90) percent of the estimated AEC Support Cost as set forth in Article A-III of the contract will be under the letter of credit. The Contractor shall submit to the Commission by the Contractor of a Payment Voucher on Letter of Credit (TUS-5401), in accordance with procedures based upon Treasury Department Circular No. 1075, Revised, of February 13, 1967, and approved by the parties. Following submission by the Contractor of a final report provided for by Article B-XXI, in form and content satisfactory to the Commission, and submission of a certified statement showing the total expenditures and evidencing the Contractor's performance under the contract, and upon submission by the Contractor to the Commission of such invoices or vouchers as are satisfactory to the Commission, the Commission shall pay the Contractor the concluding payment of the consideration provided for in Article III of this contract, or said concluding payment will be included under the letter of credit and will be subject to submission by the Contractor of a Payment Voucher on Letter of Credit, in accordance with the procedure provided for in T.D. Following submission of an annual report, the contract is extended for an additional period of performance, an additional payment may similarly be made at the time of execution of the extension which, when added to the payments already made for the expiring period, will not exceed the currently estimated AEC Support Cost for the expiring period; a concluding payment for the pertinent period, if appropriate, may be made following submission of a certified statement showing the AEC Support Cost for the pertinent period and evidencing the Contractor's performance under the contract.

(2) The Commission reserves the right to increase, decrease, or cancel the amount of the letter of credit, provided that such action is required because of a change in the amount of consideration provided for in Article III or is taken pursuant to subparagraph (c)(1) of this article. The issuance and use of a letter of credit and receipt of funds pursuant thereto shall not prejudice or otherwise adversely affect any of the Government's rights under the contract.

ARTICLE B-XII - EQUAL OPPORTUNITY

(The following clause is applicable unless this contract is exempt under the rules, regulations, and relevant orders of the Secretary of Labor (41 CFR, ch. 60).)

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and fringe benefits. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Equal Opportunity clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the labor union or workers' representative of the Contractor's commitments under this Equal Opportunity clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 107 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be necessary to give effect to the provisions, including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may elect in the United States to enter into such litigation to protect the interests of the United States.

ARTICLE B-XIII - CONVICT LABOR

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

ARTICLE B-XIV - CONTRACT WORK HOURS STANDARDS ACT - OVERTIME COMPENSATION

This contract, to the extent that it is of a character specified in the Contract Work Hours Standards Act (40 U.S.C. 327-330), is subject to the following provisions and to all other applicable provisions and exceptions of such Act and the regulations of the Secretary of Labor thereunder:

(a) Overtime requirements. The Contractor or subcontractor contracting for a part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any workweek in which he is employed on such work to work in excess of eight hours in any calendar day or in excess of forty hours in such workweek on work subject to the provisions of the Contract Work Hours Standards Act unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all such hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours.

(b) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions of paragraph (a), the Contractor and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of the provisions of paragraph (a) in the sum of \$10 for each calendar day on which such employee was required or permitted to be employed on such work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by paragraph (a).

Contracting Officer may withhold from the Government Prime Contractor, from any moneys payable on account of work performed by the Contractor or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions of paragraph (b).

(d) Subcontracts. The Contractor shall insert paragraphs (a) through (d) of this article in all subcontracts, and shall require their inclusion in all subcontracts of any tier.

(e) Records. The Contractor shall maintain payroll records containing the information specified in 29 CFR 516.2(a). Such records shall be preserved for three years from the completion of the contract.

ARTICLE B-XV - DISPUTES

(a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish

a copy thereof to the Contracting Officer. The decision of the Contracting Officer shall be final and conclusive and so within 30 days from the date of receipt of such copy the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or its duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this article, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

(b) This "Disputes" article does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above: Provided, That nothing in this contract shall be construed as making final the decision of any contracting officer, representative, or court on a question of law.

ARTICLE B-VIII - CONTRACT NOT TO BENEFIT

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise herefrom: and no provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE B-IX - WARRANTY AGAINST CONTINGENT FEE

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE B-XVIII - EXAMINATION OF RECORDS

(a) The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract.

(b) The Contractor further agrees to include in all its subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this article excludes (i) purchase orders not exceeding \$2,500 and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

(c) Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE B-XIX - BUY AMERICAN ACT

(a) In acquiring end products, the Buy American Act (41 U.S. Code 101 a-d) provides that the Government give preference to domestic source end products. For the purpose of this article:

(i) "Components" means those articles, materials, and supplies which are directly incorporated in the end products;

(ii) "End products" means those articles, materials, and supplies which are to be acquired under this contract for public use; and

(iii) A "domestic source end product" means (A) an unmanufactured end product which has been mined or produced in the United States and (B) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. For the purpose of this (a)(iii)(B), components of foreign origin of the same type or kind as the products referred to in (b)(ii) or (iii) of this article shall be treated as components mined, produced, or manufactured in the United States.

(b) The Contractor agrees that there will be delivered under this contract only domestic source end products, except end products:

- (i) Which are for use outside the United States;
- (ii) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;
- (iii) As to which the Commission determines the domestic preference to be inconsistent with the public interest; or
- (iv) As to which the Commission determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954.)

ARTICLE B-XX - ASSIGNMENT; SUBCONTRACTING

Neither this contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor, except as expressly authorized in writing by the Commission. The Contractor shall not subcontract any research or development work under this contract, except as expressly authorized in writing by the Commission.

ARTICLE B-XXI - REPORTS AND RENEWAL PROPOSALS

The Contractor shall furnish seven (7) copies of the following reports and renewal proposals, if any, addressed to the Laboratory and University Division, U. S. Atomic Energy Commission, Oak Ridge Operations Office, Post Office Box E, Oak Ridge, Tennessee 37830:

- (a) Progress Report. The progress report shall briefly describe the scope of investigations undertaken and the significant results obtained. It shall also indicate compliance with the contract requirements and any failures to comply. The report shall indicate the approximate percentage of time or effort which the principal investigator(s) has devoted to the project since the beginning of the current term of the agreement and indicate the amount of effort which is expected to be devoted during the remainder of the current term. Technical reports and articles prepared for publication shall be listed with bibliographic references. Reprints or preprints of all such material shall be appended and material contained therein need not be duplicated in the report. Progress reports shall be submitted approximately three months in advance of the expiration of the current contract term and

shall give the Contractor's best estimate of the probable events and occurrences in regard to the remainder of the current contract term. Except as the Commission may otherwise request, no further progress report will be required for any contract year unless there has been a significant change in scientific results or contract compliance between the latest progress report by the Contractor and its actual experience; this shall be reported promptly.

(b) Final Report. Upon termination or expiration of the total period of performance, the Contractor shall submit, promptly, a summary of its activities for the entire period, including a list of publications issued during the total term of the contract and copies of any reprints not previously submitted, as well as a comprehensive evaluation of progress in the area of research supported by the contract.

(c) Renewal Proposals. A renewal proposal, if any, shall be submitted along with the technical progress report, and each of the two documents shall be separately bound.

(d) Report of Equipment Purchased or Fabricated. The Contractor shall itemize equipment having a useful life expectancy in excess of one year and an acquisition cost in excess of \$100 purchased or fabricated by the Contractor when title to such equipment is vested in the Contractor. The Contractor shall submit a report thereof within three months after the expiration of the contract year specified in Article II. Where the cost of individual pieces of equipment exceeds \$1,000, they will be listed individually. Where individual items cost \$100 to \$1,000, they will also be individually listed to the extent practical or grouped in general categories, such as "electronic equipment" or "six motors," with the total dollar amount of such category. The cost of purchased items shall be determined by the actual invoice cost of such items, but the cost of fabricated items may be established by engineering estimates. This report may be submitted in conjunction with the certified statement required by Article B-XXVII of this contract.

ARTICLE B-XXII - FOREIGN TRAVEL

Foreign travel shall be subject to the prior approval of the Contracting Officer.

ARTICLE B-XXIII - PRIORITIES, ALLOCATIONS, AND ALLOTMENTS

The Contractor shall follow the provisions of DMS Regulation 1 and all other applicable regulations and orders of the Business and Defense Services Administration in obtaining controlled materials and other products and materials needed to fill this order. This contract carries rating: DC-E-2 certified for national defense under DMS Regulation 1.

ARTICLE B-XXIV - UTILIZATION OF SMALL BUSINESS CONCERNS

It is the policy of the Government to place contracts with concerns which will perform such contracts substantially in or near concentrated unemployment or underemployment sections of States or in areas of persistent or substantial labor surplus, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts in accordance with this policy. In complying with the foregoing and with paragraph (b) of the clause of this contract entitled "Utilization of Small Business Concerns," the Contractor in placing its subcontracts shall observe the following order of preference: (a) Certified-eligible concerns which are also small business concerns; (b) other certified-eligible concerns; (c) persistent labor surplus area concerns which are also small business concerns; (d) other persistent labor surplus area concerns; (e) substantial labor surplus area concerns which are also small business concerns; (f) other substantial labor surplus area concerns; and (g) small business concerns which are not labor surplus area concerns.

ARTICLE B-XXV - UTILIZATION OF SMALL BUSINESS CONCERNS

(a) It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

(b) The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

ARTICLE B-XXVI - SOVIET-BLOC CONTROLS

In connection with the contract activities, the Contractor agrees to comply with the requirements set forth in Appendix "I" of this contract relating to the countries listed therein. From time to time, by written notice to the Contractor, the Commission shall have the right to change the listing of countries in Appendix "D" upon a determination by the Commission that such change is in accordance with national policy. The Contractor shall have the right to terminate its performance under this contract upon at least sixty (60) days' prior written notice to the Commission if the Contractor determines that it is unable, without substantially interfering with its policies as an educational institution or without adversely affecting its performance, to continue performance of the work under this contract as a result of a change in Appendix "D" made by the Commission pursuant to the preceding sentence. If the Contractor elects to terminate performance, the provisions of this contract respecting termination for the convenience of the Government shall apply.

ARTICLE B-XIVII - DETERMINATION OF SUPPORT COST

(a) The term "Support Cost" as used in this contract means the Commission's share^{1/} of the sum of costs incurred by the Contractor for items included under Article A-II(a) of Appendix "A" which are in furtherance of the work hereunder, which are incurred in accordance with the provisions of this contract, and which are reported to the AEC in accordance with (b) below. The term "Cumulative Support Cost" as used in this contract means the total of the Support Cost incurred during the initial contract period plus any extension periods of the contract.

(b) Within three months after the end of each contract period set forth in Appendix "A", and within three months after the termination or expiration of the total period of performance, the Contractor shall furnish a certified statement, executed by an official of the Contractor and also signed by the principal investigator, showing the Contractor's cost, and evidencing its performance under the contract, during the contract term just completed. The statement shall show all costs incurred during the pertinent contract term set forth in Appendix "A" for items under Article A-II(a) of Appendix "A", including the Contractor's share, if any, of such costs, and show the extent of the Contractor's contribution of items listed under Article A-II(b)(1) of Appendix "A". Costs included in the certified statement may include the following: Expenditures of cash; the cost of material and supplies transferred from stores inventory; and the amount due the Contractor for indirect costs in

the contract for the pertinent contract period. The costs for the pertinent contract period shall be consistent with the principles of the Bureau of the Budget Circular A-21, as constituted on the effective commencement date of said period. The certified statement shall be in the form set forth in Appendix "C".

(c) The Contractor understands that the Commission expects to rely on this certified statement for determining the Support Cost for the pertinent contract period. With respect to any period in which proportionate cost-sharing is applicable, the Support Cost for the pertinent period will be determined by applying the percentage figure included in

1/ In those cases in which there is no proportionate sharing of costs, the Commission's "share" will be 100%. With respect to any period in which proportionate cost-sharing is applicable pursuant to Article A-III, it is understood that the Support Cost for that specified period will equal the stipulated percent of the sum of costs incurred by the Contractor during the stated period for items under A-II(a) of Appendix "A", not to exceed 110% of the estimated Support Cost set forth in Article A-III for that contract period except as otherwise approved by the AEC.

Article A-III for the pertinent contract, shall contain a list of items included under Article A-II(a) incurred during the pertinent contract period. All charges to the AEC shall be subject to the approval requirements of this contract. The Contractor is expected to maintain auditable records as contemplated by Article B-II(c) to substantiate the costs incurred for items under Article A-II(a) and to show the extent of the Contractor's contribution of items listed under Article A-II(b)(1).

ARTICLE B-XXVIII - ADDITIONAL APPROVALS

(a) In addition to such approvals as are specifically required by other provisions of this contract, the Contractor shall obtain the Commission's approval for:

(1) Acquisition of:

(i) An item of equipment, not itemized in Appendix "A", involving an acquisition cost in excess of \$1,000 or 2 percent of the total estimated cost specified in A-III of Appendix "A", whichever is greater, unless such equipment is merely a different model of an item listed in Appendix "A". [When plant and equipment funds are provided for the acquisition of Government property, the Headquarters Program Divisions may require, in specific cases, that such funds be used only for acquiring the equipment designated in Article V, unless prior AEC approval is obtained.]

(ii) Any equipment not itemized in Appendix "A", the acquisition cost of which will cause the equipment dollar level shown in Article A-II(a) of Appendix "A" to be increased by \$500 or more. (If plant and equipment funds are provided for the acquisition of equipment, with title to be vested in the Government, the total cost of such equipment acquisitions shall not exceed the amount budgeted for such equipment unless prior AEC approval has been obtained.)

(2) Purchase of any general-purpose equipment, such as office furniture, etc., not specifically provided for in Appendix "A", except that purchased without cost to the Commission.

(3) Incurring costs during the pertinent contract period set forth in Appendix "A", for items set forth in Article A-II(a), in excess of 110% of the estimated cost specified in Article A-III for the pertinent contract period; charges to the Commission for any such costs incurred with the approval of the Commission shall also be subject to the limitations of Article III.

(4) A change of the principal investigator, or continuation of the research work without direction by an approved principal investigator. The principal investigator may increase or decrease the amount of effort which he devotes to the project without obtaining Commission approval; however, the principal investigator shall consult with the appropriate AEC Headquarters program representative if he plans to, or becomes aware that he will, devote substantially less effort to the work than anticipated in Article A-I. The purpose of such consultation will be to determine what effect, if any, the anticipated change will have on the research work.

(b) No change in the phenomenon or phenomena under study; i.e., broad category of the research under this contract, shall be made without the specific written approval of the Commission; ordinarily, such changes, if approved by the Commission, will be accomplished through a new contract or a mutually agreed-to modification. The Contractor may change the specific objectives in the research work described in this contract, provided it gives the Commission prompt notification of such changes; and the Contractor may continue to follow the new objectives while the Commission determines whether it wishes to continue the program under the changed approach.

APPENDIX "A"

U. S. ATOMIC ENERGY COMMISSION

STATEMENT OF COSTS

1. Name and address of Contractor: _____
2. Contract number: _____
3. Beginning and ending date of pertinent contract period: _____
4. Costs incurred during the pertinent contract period. (List only those costs which are to be reimbursed by the AEC or proportionately shared by the parties in accordance with Article A-II(a) and Article A-III.)

<u>Cost categories</u> ^{1/}	<u>Amount</u>
a. <u>Salaries and wages</u> _____	_____
(List personnel included in Article A-II(a) of Appendix "A" in same detail as shown in the contract or for which separate approval was obtained from AEC, attendance records)	
b. <u>Supplies and materials</u> _____	_____
(Show in same detail as in Appendix "A".)	
c. <u>Equipment</u> _____	_____
(List separately the cost of each piece of equipment separately listed in Appendix "A" to the contract or for which separate approval was obtained from AEC.)	
d. <u>Publications</u> _____	_____
e. <u>Travel</u> _____	_____

^{1/} The listing of categories should be consistent with the itemization in Appendix "A"

- | <u>Cost Categories</u> | <u>Amount</u> |
|--|---------------|
| 2. <u>Other</u> _____ | _____ |
| (List separately each type of cost included in this category.) | |
| g. <u>Total Direct Expenditures</u> _____ | _____ |
| h. <u>Indirect Charges</u> _____ | _____ |
| (Indicate percent and expenditures to which percent is applied.) | |
| 5. <u>Total Costs</u> for items under Article A-II(a) for pertinent contract period. | _____ |
| 6. <u>Support Cost</u> for the pertinent contract period set forth in Appendix "A", as defined in Article B-XXVII of the contract, chargeable to AEC for the pertinent contract period (percent of Total Costs using percent shown in Article A-III of Appendix "A" for pertinent period of contract). | _____ |
| 7. <u>Cumulative Support Cost</u> (Support Cost under this contract plus support cost for previous periods of the contract). | _____ |
| 8. <u>Accumulated Support Ceiling</u> in Article III of the contract. | _____ |
| 9. Provide information regarding contributions by the Contractor of items listed in Article A-II(b) of Appendix "A" during pertinent contract period. State the extent of the Contractor's actual contribution; the measure of such contributions should be in the same terms as the Contractor's commitment under Article A-II(b); e.g., time, dollar, etc. | _____ |

I hereby certify that this report is true and correct to the best of my knowledge and belief and that the costs listed herein were incurred in

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connection with the performance of the research provided for under
this contract and in accordance with the terms and conditions set
forth therein.

Name and title of principal investigator

Signature

Date

Name and title of business officer

Signature

Date

APPENDIX "D"

REQUIREMENTS RELATING TO EXCHANGES OF INFORMATION

1. The requirements set forth herein relate to the dissemination by the Contractor of the information developed under this contract and/or under other Commission programs to countries by or through exchange activities, including but not limited to employment, work participation, visits and correspondence. The term "countries" (including where used in the term "Soviet-Bloc Countries"), as used in this Appendix "D", includes all nations (other than the United States, its territories and possessions), the embassies, consulates, and agencies of such nations, and individuals and organizations of such nations.
2. For the purpose of these requirements the Soviet-Bloc Countries consist of:

Group A

Albania
 Bulgaria
 Czechoslovakia
 Estonia
 Hungary
 Latvia
 Lithuania
 Poland (and Poland)
 Rumania
 Union of Soviet Socialist Republics

Group B

China, including Manchuria (includes Inner Mongolia; the provinces of Tsinghai and Szechwan, Tibet; the former Kwantung Leased Territory, the present Port Arthur Naval Base Area and Liaoning Province) and excluding Taiwan, Formosa,
 Communist-controlled area of Viet Nam
 East Germany (Soviet Zone of Germany and the Soviet Sector of Berlin)
 North Korea
 Outer Mongolia
 Cuba

3. The following exchange activities between the Contractor and any of the Soviet-Bloc Countries shall be subject to the prior written approval of the Commission on an individual case basis:

- a. Employees of the Contractor engaging in employment by activities of, or travel to, any of the Soviet-Bloc Countries where such employees' travel is in whole or in part financially supported by the Commission.
 - b. Employment of, or participation in activities of the Contractor by, nationals of any of the Soviet-Bloc Countries in furtherance
 - c. of or in connection with work under this contract.
 - c. Participation of nationals of any of the Soviet-Bloc Countries at U. S. conferences, meetings and symposia which are supported by Commission funds or are organized and directed by persons receiving financial support for such activities from the Commission and acting in the name of the Commission or the Contractor.
4. Unofficial travel to any of the Soviet-Bloc Countries by employees of the Contractor who hold a Commission security clearance will be subject to the prior approval of the Commission on an individual case basis.
 5. The Contractor shall inform all of its employees who formerly held a Commission security clearance of the Commission's desire to be advised of their proposed unofficial travel to any of the Soviet-Bloc Countries. The Contractor shall notify the Commission of all such proposed unofficial travel by its employees of whom it becomes aware pursuant to the notification given in accordance with the provisions hereof.
 6. The Contractor, if it is a contractor of the Commission, shall, on a fixed-price type, shall submit to the Commission, in advance whenever feasible, of all proposed visits by nationals of any of the Soviet-Bloc Countries and shall furnish a report thereof in accordance with directions furnished by the Contracting Officer.
 7. All correspondence and other communications relative to the exchange of information whether with Soviet-Bloc Countries or other countries shall be subject to the following policy and procedure:
 - a. Transmittal of published information relating to the peaceful uses of atomic energy is permitted and encouraged provided the transmittals are made in the name of the Contractor or the individual scientist and not in the name of the Commission;
 - b. Transmittal of unpublished information relating to the peaceful uses of atomic energy is permitted and encouraged provided:
 - (1) The information transmitted is made available to requesters in the United States. In order to insure availability to requesters in the United States, one copy of all such unpublished information (with the exception of personal correspondence covering informal scientific or technical opinion) shall be forwarded to the Contracting Officer;

- (2) The transmittals to countries listed in Group A of Section 2, above, are accompanied by a request for appropriate reciprocal material in the same form.
- (3) The transmittals to countries listed in Group B of Section 2, above, are made in the name of the Contractor or the individual scientist and not in the name of the Commission.
- c. Requests for information not falling within the scope of the above-stated policy and any unusual requests for published and unpublished information shall be forwarded to the Contracting Officer. Examples of unusual requests for published and unpublished information include: (1) Requests for collections of published documents or for unpublished information which are not readily available to the recipient of the request; (2) Requests for comprehensive and detailed unpublished design information and unpublished development information on major equipment, such as reactors, chemical processing plants, and accelerators; and (3) Official correspondence from any government other than the United States, its territories and possessions.

As used in this Section 7:

- a. The term "published information" means all unclassified scientific and technical documents, including but not limited to: journal articles; preprints; page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions; etc., originating within Commission programs, and available either from the Division of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or from other sources from which the public may obtain the above types of information by purchase or without cost.
- b. The term "unpublished information" means all unclassified scientific and technical documents, including but not limited to: internal and informal reports; reprints; preprints; page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions; etc., originating within Commission programs, and available either from the Division of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or from other sources from which the public may normally obtain the information by purchase or without cost.
8. In all exchanges of information, care should be taken that the release of the information does not result in the disclosures of Restricted Data or other classified information, or privileged information, in violation of applicable law and/or the provisions of this contract; or the disclosure of any information that would adversely affect the patent interest of the Commission in violation of the provisions of this contract.

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into the 22nd day of November, 1968, effective the 1st day of September, 1968, 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 UNIVERSITY OF TENNESSEE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and Modifications thereto numbered 1 through 14 providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to amend the contract further to provide for: (a) the continuance of this research and/or the performance of additional research; and (b) the revisions and/or additions of certain provisions thereof in accordance with current applicable rules and regulations of the Commission; and

WHEREAS, the parties desire to amend the contract further to provide for: (a) the continuance of this research and/or the performance of additional research; and (b) the revisions and/or additions of certain provisions thereof in accordance with current applicable rules and regulations of the Commission; and

NOW, THEREFORE, the parties do mutually agree that the contract (including its Appendices), as amended, is hereby further amended as follows:

1. The date "August 31, 1968," as such appears in ARTICLE II - THE PERIOD FOR PERFORMANCE, is deleted and the date "August 31, 1969" is substituted therefor.

2. In ARTICLE III - CONSIDERATION, the following restatement of Paragraph (a) and establishment of a percentage of support for use in Paragraphs (b), (c), and (d) apply to the period September 1, 1968, through August 31, 1969:

"(a) In full consideration of the Contractor's performance for the period commencing September 1, 1968, and expiring on August 31, 1969, the Commission shall pay to the Contractor the sum of \$21,479.00, hereinafter called the 'Support Ceiling,' which sum shall be subject to adjustment as hereinafter provided."

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The percentage for use in Paragraphs (b), (c), and (d) is 51%.

3. Appendix "A" attached hereto shall constitute the Contract Appendix "A" applicable to the period indicated thereon.

4. In ARTICLE IV - ADDITIONAL CONTRACT PROVISIONS, the Appendix "B" attached hereto is made applicable to the Contract effective as of the effective date of this modification.

5. The following items of property procured or fabricated by the Contractor during the additional period covered by this modification are hereby listed as "Government Property": None.

IN WITNESS WHEREOF, the parties have executed this Supplemental Agreement.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY
COMMISSION

BY: Herman M. Kahn

TITLE: Director

UNIVERSITY OF TENNESSEE

BY: M. H. Read

TITLE: Vice President

I, John C. Baugh, certify that I am the
Secretary of the corporation named as the Contractor
herein; that M. H. Read who signed this contract on
behalf of the Contractor was then Vice President of said
corporation; that said contract 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)

Contractor: THE UNIVERSITY OF TENNESSEE

Contract No.: AT-(40-1)-1637

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For the Contract Period September 1, 1968 through August 31, 1969.

A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

The Contractor will continue studies of the formation and the fate of the thiocyanate group in mammalian metabolism to include studies of origin, the chemical modifications which thiocyanate groups undergo, and their physiological implications. Studies will continue on the nature of the sulfur pool producing thiocyanate and iminothiazolidinecarboxylic acid by cyanide detoxication, utilizing radioisotope labeling with ^{35}S or ^{14}C as appropriate to the investigation. Enzyme substrates as intermediates produced in vivo will be sought; trisulfides related to cystamine and cystine will be prepared for testing as precursors of thiocyanate and as anti-radiation agents and their properties will be studied.

The Principal Investigator expects to devote approximately 30% of his time or effort to the work.

A-II WAYS AND MEANS OF PERFORMANCE

(a) Items Included in Total Estimated Cost:

(1) <u>Salaries and Wages:</u>	\$22,200.00
Dr. J. L. Wood, Principal Investigator (30% of time)	
Research Associate (100% of time)	
Research Assistant (25% of time)	
Technician (Approx. 55% of time)	
Secretarial Assistance and Bookkeeping (100 hours)	
Consultation Services (70 hours)	
(2) <u>Employee Benefits:</u>	1,220.00
(3) <u>Equipment:</u>	200.00
Hardware, Hot Plates, and Buffer Pump	
(4) <u>Materials and Supplies:</u>	1,180.00
Isotopes, Chemicals, and Glassware	
(5) <u>Travel:</u>	600.00

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(6) Publications, Analysis and Communications: \$ 300.00

(7) Indirect Costs (Based on space occupied, utilities and custodial services. AEC's portion is calculated at 8% of AEC's agreed support to the above six expense items): 17,600.00

(b) Items Significant to the Performance of This Contract, But Excluded From Computation of Total Cost and From Consideration in Proportioning Costs:

None

(c) Time or Effort of Principal Investigator Contributed by Contractor:

None under this paragraph.

A-III The total estimated project cost of A-II (a) above for the contract period stated above is \$43,300.00.

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SPECIAL RESEARCH SUPPORT AGREEMENT

APPENDIX "B"

ARTICLE B-I - DEFINITIONS

(a) The term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer, except for the purpose of deciding an appeal under the article entitled, "Disputes."

(b) The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successors or any duly authorized representative of any such person.

(c) Except as otherwise provided in this contract, the term "subcontracts" includes purchase orders under this contract.

ARTICLE B-II - INSPECTION, REPORTS, RECORDS AND ACCOUNTS

(a) The Commission shall have the right to inspect, in such manner and at all reasonable times as it deems appropriate, all activities of the Contractor arising in the course of its undertakings under this contract.

(b) The Contractor shall make progress and other reports in such manner and at such times as may be required by the Commission. The Contractor shall also make such other reports to the Commission, with respect to its activities under this contract, as the Commission may reasonably require from time to time.

(c) The Contractor agrees to keep records and books of account, in accordance with generally accepted accounting principles and practices, and consistent with the requirements of BOB Circular No. A-21 as constituted on the effective commencement date of the contract period, covering its costs and expenditures for items included under Article A-II(a) of Appendix "A" and which are in furtherance of the research work under this contract. In the event a contractor contribution is listed in Article A-II(b), the Contractor shall maintain records adequate to permit the Commission to determine the extent of the contribution. If professional staff members are included under Article A-II(b), the Contractor shall maintain records on such personnel in accordance with the payroll distribution procedure of Section J.7.b. of BOB Circular No. A-21.

(d) The Commission shall at all reasonable times be afforded access to the premises and to these books and records and to related correspondence, receipts, vouchers, memoranda, and other data of the Contractor; and the Contractor shall preserve such books and papers, without additional compensation therefor, for a period of three (3) years after completion of this contract.

ARTICLE B-III - PUBLICATION OF RESULTS

(a) Research results obtained under this contract shall be made available to all through normal and accepted channels without restriction except that no Restricted Data as defined in the Atomic Energy Act of 1954 or other classified information shall be disclosed to unauthorized persons. Published results shall indicate that the research was supported by the Commission. Seven (7) copies of each article submitted by the Contractor for publication shall be promptly sent to the Commission. The Contractor shall also inform the Commission when the article is published and furnish seven (7) copies of the article as finally published.

(b) It is recognized that during the course of the work hereunder or subsequent thereto, the Contractor, its employees, or its subcontractors may from time to time desire to publish, within the limit of security requirements, information regarding technical or scientific developments arising in the course of the contract. In order that public disclosure of such information will not adversely affect the patent interest of the Commission, such information shall be withheld from public disclosure if it discloses an invention or discovery which shall be promptly reported to the Commission, and in such case, it shall be withheld for a period of four (4) months after submission of the information to the Commission for patent review and possible patent application, unless the Commission approves earlier release.

If an Amendment to the contract contains "Alterations" of this contract, the following sentence shall be deemed to govern in lieu of the last sentence of Article B-III:

"In order that public disclosure of such information will not adversely affect the patent interest of the Commission, patent approval for release shall be secured from the Commission prior to any such publication."

ARTICLE B-IV - DISCLOSURE OF INFORMATION

(a) It is mutually expected that the activities under this contract will not involve Restricted Data or other classified information or material. It is understood, however, that if in the opinion of either party this expectation changes prior to the expiration or termination of all activities under this contract, said party shall notify the other party accordingly in writing without delay. In any event, the Contractor shall classify, safeguard, and otherwise act with respect to all Restricted Data and other classified information and material, in accordance with applicable law and the requirements of the Commission, and shall promptly inform the Commission in writing if and when Restricted Data or other classified information or material

becomes involved. If and when Restricted Data or other classified information or material becomes involved, or in the mutual judgment of the parties it appears likely that Restricted Data or other classified information or material may become involved, the Contractor shall have the right to terminate performance of the work under this contract and in such event the provisions of this contract respecting termination for the convenience of the Government shall apply.

(b) The Contractor shall not permit any individual to have access to Restricted Data, or other classified information, except in accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations or requirements.

(c) The term "Restricted Data" as used in this article means all data concerning the design, manufacture, or utilization of atomic weapons, the production of special nuclear material, or the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to Section 142 of the Atomic Energy Act of 1954, as amended.

ARTICLE B-V - RESPONSIBILITY FOR THE WORK

(a) The Contractor is solely responsible for the conduct of the work.

(b) In instances where the carrying out of the contract work involves a Commission license, the provisions of the pertinent license shall prevail over any inconsistent provisions of this contract.

ARTICLE B-VI - FELLOWSHIPS

The Contractor agrees that, unless the Commission shall give its prior written approval, the Contractor shall not use any of the funds provided by the Commission under this contract to pay the stipend of any appointment for which commensurate services are not rendered under this contract or to pay any part of the stipend of a fellowship of any kind.

ARTICLE B-VII - WRITTEN MATERIAL

(a) The Contractor hereby grants to the Government a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use and dispose of, and to authorize others to do so, all copyrightable material produced or composed or delivered to the Government or its designees under this contract, including work not first produced or composed by the Contractor in the course of

performance under this contract but incorporated in the material produced or composed or delivered under this contract (but only to the extent that the Contractor now has, or prior to final settlement of the contract may have, the right to grant such license to such previously produced or composed work without becoming liable to pay compensation to others solely because of such grant).

(b) The Contractor agrees that, except as the Commission may otherwise specifically authorize in writing, the Contractor will not include in any report or other material delivered under this contract, or in any published material relating to the work under this contract, any copyrighted material owned by others which such owners have not consented to have so included.

(c) The Commission will not publish in advance of the Contractor's publication without prior consultation with the Contractor.

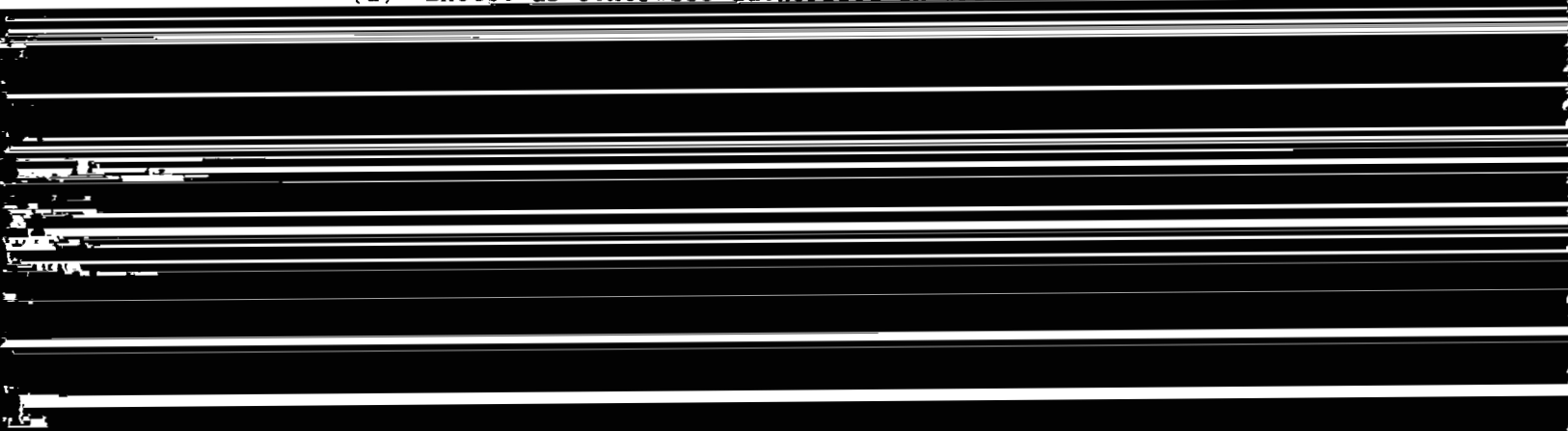
ARTICLE B-VIII - PATENTS

(a) Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of or under this contract, the Contractor shall promptly furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the propriety of the title to and rights in and to any invention or discovery and any patent application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

(b) No claim for pecuniary award or compensation under the provisions of the Atomic Energy Act of 1954, as amended, shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of or under this contract.

(c) Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs (a) and (b) of this article from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.

(d) Except as otherwise authorized in writing by the Commission



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Contractor will insert in purchase orders for standard commercial items a provision indemnifying the Government against liability for use of any invention or discovery and for the infringement of any Letters Patent arising by reason of the purchase, use, or disposal by or for the account of the Government of items manufactured or supplied under the purchase order.

(e) With respect to any U. S. Patent Application filed by the Contractor on any contract invention or discovery made or conceived in the course of the contract, the Contractor will incorporate in the first paragraph of the U. S. Patent Application the following statement:

"The invention described herein was made in the course of, or under, a contract (if desired, may substitute contract with identifying number) with the U. S. Atomic Energy Commission."

ARTICLE B-IX - PROPERTY ITEMS

(a) Except as otherwise provided in this paragraph (a) and paragraph (b) of this Article B-IX, title to all materials, supplies, and equipment purchased or otherwise acquired by the Contractor in the performance of its research activities shall be and remain in the Contractor. Said materials, supplies, and equipment shall be available for use by the Contractor during this contract and any extensions or successor contracts hereto and, provided there is no interference with said research, shall be made available for use by investigators working on any Federal research agreement at the same location. Subject to these priorities, the materials, supplies, and equipment may be used as the Contractor wishes. Except as otherwise agreed in writing, title to any items of property listed as "Government Property" shall pass directly to the Government; such property shall be subject to paragraphs (b), (c), (d), (e), and (f) of this Article B-IX.

(b) Subject to the mutual agreement of the Commission and the Contractor, the Government may furnish the Contractor items of equipment, materials, supplies, or facilities for use by the Contractor in the performance of the contract work; title to these items shall remain in the Government unless otherwise agreed in writing. Such items of property and the items of property listed elsewhere in this contract as Government property are hereinafter referred to as "Government property." Title to Government property shall not be affected by the Government nor shall any such property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty.

(c) To the extent practicable, the Contractor shall cause all items of Government property to be suitably marked with an identifying mark or symbol indicating that the items are the property of the Government. The Contractor shall maintain at all times and in a manner satisfactory to the Commission records showing the use and disposition of Government property. Such records shall be subject to Commission inspection at all reasonable times and the Commission shall at all reasonable times have access to the premises wherein any items of Government property are located. Unless otherwise authorized in writing by the Commission, the Contractor shall use Government property only for the purposes of this contract; provided, however, that the Contractor is hereby authorized to use items of equipment constituting Government property for other Federal research agreements to the extent such use (1) does not interfere with its work under this contract, (2) is not prohibited by provisions of the other Federal agreements, and (3) is promptly reported by the Contractor to the Commission under this contract.

(d) The Contractor shall promptly notify the Commission of any loss or destruction of or damage to Government property. It is understood that the Contractor shall not be liable for any such loss, destruction, or damage, unless same results from willful misconduct or lack of good faith on the part of any corporate officer of the Contractor or any other officer or representative having supervision or direction of all or substantially all of the activities under this contract. If the Contractor is liable for any such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission; if the Contractor is not liable therefor, and is indemnified, reimbursed, or otherwise compensated for such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission.

(e) With the written approval of the Commission, the Contractor may sell, transfer, or otherwise dispose of items of Government property to such parties and upon such terms as so approved, or itself acquire title to items of Government property upon such terms as may be mutually agreed upon in writing by the Contractor and the Commission. The proceeds of any such disposition, and any agreed price of any such Contractor acquisition, shall be paid by the Contractor to the Government, or credited on account of Commission payments to be made under this contract, as the Commission may direct. Subject to the other provisions of this contract, the Contractor shall deliver Government property to the Commission upon request (suitably packed and shipped at the Government's expense).

(f) The Contractor shall utilize for the benefit of the work under this contract such items of property available to the Contractor by reason of its activities under other Federal research agreements as are

appropriate for utilization under this contract pursuant to the provisions of the pertinent Federal agreements.

ARTICLE B-X - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT

(a) The performance of work under this contract may be terminated, in whole or from time to time in part, by the Government whenever for any reason the Contracting Officer shall determine that such termination is in the best interest of the Government. Termination of work hereunder shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated and the date upon which such termination becomes effective.

(b) After receipt of the Notice of Termination the Contractor shall cancel its outstanding commitments hereunder covering the procurement of materials, supplies, equipment, and miscellaneous items. In addition, the Contractor shall exercise all reasonable diligence to accomplish the cancellation or diversion of its outstanding commitments covering personal services and extending beyond the date of such termination to the extent that they relate to the performance of any work terminated by the notice. With respect to such canceled commitments the Contractor agrees to (1) settle all outstanding liabilities and all claims arising out of such cancellation of commitments, with the approval or ratification of the Contracting Officer, to the extent he may require, which approval or ratification shall be final for all purposes of this article, and (2) assign to the Government, in the manner, at the time, and to the extent directed by the Contracting Officer, all of the right, title and interest of the Contractor under the orders and subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

(c) The Contractor shall submit its termination claim to the Contracting Officer promptly after receipt of a Notice of Termination, but in no event later than one year from the effective date thereof, unless one or more extensions in writing are granted by the Contracting Officer upon written request of the Contractor within such one-year period or authorized extension thereof. Upon failure of the Contractor to submit its termination claim within the time allowed, the Contracting Officer may, subject to any review required by the Commission's procedures in effect as of the date of execution of this contract, determine on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

(d) Any determination of costs under paragraph (c) shall be governed by the cost principles set forth in Subpart 1-15.3 of the Federal Procurement Regulations (41 CFR 1-15.3), as in effect on the date of this contract, except that if the Contractor is not an educational institution the determination shall be governed by AECPR 9-15.50 (41 CFR 9-15.50).

(e) Subject to the provisions of paragraph (c) above, and subject to any review required by the Commission's procedures in effect as of the date of execution of this contract, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the termination under this article, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Contractor and any reasonable loss upon outstanding commitments for personal services which it is unable to cancel: Provided, however, That in connection with any outstanding commitments for personal services which the Contractor is unable to cancel, the Contractor shall have exercised reasonable diligence to divert such commitments to its other activities and operations. Any such agreement shall be embodied in an amendment to this contract and the Contractor shall be paid the agreed amount.

(f) The Government may from time to time, under such terms and conditions as may be agreed upon, make payments to the Contractor against costs incurred by the Contractor in connection with the terminated portion of this contract, whenever, in the opinion of the Contracting Officer, the aggregate of such payments is within the amount to which the Contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this article, such excess shall be payable by the Contractor to the Government upon demand: Provided, That if such excess is not so paid upon demand, interest thereon shall be payable by the Contractor to the Government at the rate of 6 percent per annum, beginning 30 days from the date of such demand.

(g) The Contractor agrees to transfer title to the Government and deliver in the manner, at the times, and to the extent, if any, directed by the Contracting Officer, such information and items which, if the contract had been completed, would have been required to be furnished to the Government, including:

(1) Completed or partially completed plans, drawings, and information; and

(2) Materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the notice.

Other than the above, any termination inventory resulting from the termination of the contract may, with the written approval of the Contracting Officer, be sold or acquired by the Contractor under the conditions prescribed by and at a price or prices approved by the Contracting Officer. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the Government to the Contractor under this contract or shall otherwise be credited to the price or cost of work covered by this contract or paid in such other manner as the Contracting Officer may direct. Pending final disposition of property arising from the termination, the Contractor agrees to take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the Contractor and in which the Government has or may acquire an interest.

(h) Any dispute as to questions of fact which may arise hereunder shall be subject to the "Disputes" article of this contract.

ARTICLE B-XI - PAYMENTS

(a) The Commission shall make payments to the Contractor with respect to the amount of consideration prescribed in paragraph (a) of Article III of this contract as follows:

(1) Forty-five percent following execution of this contract (and following the execution of each extended period).

(2) A maximum of an additional forty-five percent upon receipt of a written request or requests from the Contractor evidencing that the amount requested is then required in connection with the work under the contract.

(3) If, following submission of an annual progress report, the contract is to be extended for an additional period of performance, an additional payment may be made at the time of execution of the extension which, when added to the payments already made under (1) and (2) above for the expiring period, will not exceed the AEC support ceiling or AEC's share of currently estimated total project costs for the expiring period, whichever is less; a concluding payment for the pertinent period, if appropriate, will be made following submission of a certified statement showing the total expenditures and evidencing the Contractor's performance under the contract.

(4) If the contract is not to be extended, the final payment of the consideration provided for in Article III of this contract shall be made following submission by the Contractor of a final

report required by Article B-XXI, in form and content satisfactory to the Commission, and submission of a certified statement showing the total expenditures and evidencing the Contractor's performance under the contract.

(b) The payments made pursuant to paragraph (a) above shall not prejudice or otherwise affect adversely any of the Government's rights under the contract. For purposes of settlement in the event of termination pursuant to Article B-X hereof, these payments shall not be construed as evidentiary, and any excess payment in the light of Article B-X shall be promptly returned to the Commission.

(c) All payments under this contract, except the first payment provided in (a) above, will be subject to the submission by the Contractor to the Commission of such invoices or vouchers as are satisfactory to the Commission.

(d) The Commission, at its option, may invoke the following with respect to any amount of the contract consideration remaining to be paid at any given time:

(1) The Commission shall issue a letter of credit as provided for by Treasury Department Circular No. 1075, Revised, of February 13, 1967, under which payments to the Contractor with respect to the amount of consideration provided for in paragraph (a) of Article III of this contract will be made. The Contractor agrees that the first ninety (90) percent of the amount of consideration provided for in said paragraph (a) of Article III will be under the letter of credit and will be subject to the submission by the Contractor of a Payment Voucher on Letter of Credit (TDS 5-01), in accordance with procedures based upon Treasury Department Circular No. 1075, Revised, of February 13, 1967, which are agreed to by the parties. Following submission by the Contractor of a final report provided for in Article B-XXI, in form and content satisfactory to the Commission, and submission of a certified statement showing the total expenditures and evidencing the Contractor's performance under the contract, and upon submission by the Contractor to the Commission of such invoices or vouchers as are satisfactory to the Commission, the Commission shall pay the Contractor the concluding payment of the consideration provided for in Article III of this contract, or said concluding payment will be included under the letter of credit and will be subject to submission by the Contractor of a Payment Voucher on Letter of Credit, in accordance with the procedure described above. If, following an annual report, the contract is extended for an additional period of performance, said concluding payment will similarly be paid for the expired period, and ten (10) percent will be retained with respect to the added period of performance.

(2) The Commission reserves the right to increase, decrease, or cancel the amount covered by the letter of credit, provided that such action is required because of a change in the amount of consideration provided for in Article III or is taken pursuant to subparagraph (d) (1) of this article. The issuance and use of a letter of credit and receipt of funds pursuant thereto shall not prejudice or otherwise adversely affect any of the Government's rights under the contract.

ARTICLE B-XII - EQUAL OPPORTUNITY

(The following clause is applicable unless this contract is exempt under the rules and regulations of the Secretary of Labor (41 CFR, Ch. 60). Exemptions include contracts and subcontracts (i) not exceeding \$10,000, (ii) not exceeding \$100,000 for standard commercial supplies or raw materials, and (iii) under which work is performed outside the United States and no recruitment of workers within the United States is involved.)

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the Contracting Officer, advising the labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Commission and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the non-discrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (f) of this contract in all subcontracts or purchase orders issued by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, That in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE B-XIII - CONTRACT WORK

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

ARTICLE B-XIV - CONTRACT WORK HOURS STANDARDS ACT - OVERTIME COMPENSATION

This contract, to the extent that it is of a character specified in the Contract Work Hours Standards Act (40 U.S.C. 327-330), is subject to the following provisions and to all other applicable provisions and exceptions of such Act and the regulations of the Secretary of Labor thereunder:

(a) Overtime requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any workweek in which he is employed on such work to work in excess of eight hours in any calendar day or in excess of forty hours in such workweek on work subject to the provisions of the Contract Work Hours Standards Act unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all such hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours.

(b) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions of paragraph (a), the Contractor and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of the provisions of paragraph (a) in the sum of \$10 for each calendar day on which such employee was required or permitted to be employed on such work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by paragraph (a).

(c) Withholding for unpaid wages and liquidated damages. The Contracting Officer may withhold from the Government Prime Contractor, from any moneys payable on account of work performed by the Contractor or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions of paragraph (b).

(d) Subcontracts. The Contractor shall insert paragraphs (a) through (d) of this article in all subcontracts, and shall require their inclusion in all subcontracts of any tier.

(e) Records. The Contractor shall maintain payroll records containing the information specified in 29 CFR 516.2(a). Such records shall be preserved for three years from the completion of the contract.

ARTICLE B-XV - DISPUTES

(a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish

a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless within 30 days from the date of receipt of such copy the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or its duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this article, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

(b) This "Disputes" article does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above: Provided, That nothing in this contract shall be construed as making final the decision of any administrative official, representative, or court in a question of law.

ARTICLE B-XVI - OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE B-XVII - COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE B-XVIII - EXAMINATION OF RECORDS

(a) The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract.

(b) The Contractor further agrees to include in all its subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this article excludes (i) purchase orders not exceeding \$2,500 and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

(c) Nothing in this contract shall be deemed to preclude an audit of the Contractor's records by the Comptroller General of the United States or any of his duly authorized representatives.

ARTICLE B-XIX - BUY AMERICAN ACT

(a) In acquiring end products, the Buy American Act (41 U.S. Code 10 a-d) provides that the Government give preference to domestic source end products. For the purpose of this article:

(i) "Components" means those articles, materials, and supplies which are directly incorporated in the end products;

(ii) "End products" means those articles, materials, and supplies which are to be acquired under this contract for public use; and

(iii) A "domestic source end product" means (A) an unmanufactured end product which has been mined or produced in the United States and (B) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. For the purpose of this (a)(iii)(B), components of foreign origin of the same type or kind as the products referred to in (b)(ii) or (iii) of this article shall be treated as components mined, produced, or manufactured in the United States.

(b) The Contractor agrees that there will be delivered under this contract only domestic source end products, except end products:

- (i) Which are for use outside the United States;
- (ii) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;
- (iii) As to which the Commission determines the domestic preference to be inconsistent with the public interest; or
- (iv) As to which the Commission determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954.)

ARTICLE B-XX - ASSIGNMENT; SUBCONTRACTING

Neither this contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor, except as expressly authorized in writing by the Commission. The Contractor shall not subcontract any part of the work under this contract, except as expressly authorized in writing by the Commission.

ARTICLE B-XXI - REPORTS AND RENEWAL PROPOSALS

The Contractor shall furnish seven (7) copies of the following reports and renewal proposals, if any, addressed to the Laboratory and University Division, U. S. Atomic Energy Commission, Oak Ridge Operations Office, Post Office Box E, Oak Ridge, Tennessee 37830:

(a) Progress Report. The progress report shall briefly describe the scope of investigations undertaken and the significant results obtained. It shall also indicate compliance with the contract requirements and any failures to comply. The report shall indicate the approximate percentage of time or effort which the principal investigator(s) has devoted to the project since the beginning of the current term of the agreement and indicate the amount of effort which is expected to be devoted during the remainder of the current term. Technical reports and articles prepared for publication shall be listed with bibliographic references. Reprints or preprints of all such material shall be appended and material contained therein need not be duplicated in the report. Progress reports shall be submitted approximately three months in advance of the expiration of the current contract term and

shall give the Contractor's best estimate of the probable events and occurrences in regard to the remainder of the current contract term. Except as the Commission may otherwise request, no further progress report will be required for any contract year unless there has been a significant change in scientific results or contract compliance between the latest progress report by the Contractor and its actual experience; this shall be reported promptly.

(b) Final Report. Upon termination or expiration of the total period of performance, the Contractor shall submit, promptly, a summary of its activities for the entire period, including a list of publications issued during the total term of the contract and copies of any reprints not previously submitted, as well as a comprehensive evaluation of progress in the area of research supported by the contract.

(c) Renewal Proposals. A renewal proposal, if any, shall be submitted along with the technical progress report, and each of the two documents shall be separately bound.

(d) Report of Equipment Purchased or Fabricated. The Contractor shall itemize equipment having a useful life expectancy in excess of one year and an acquisition cost in excess of \$100 purchased or fabricated by the Contractor when title to such equipment is vested in the Contractor pursuant to the Department of Defense Acquisition Regulation appearing in Article V--and submit a report thereof within three months after the expiration of the contract year specified in Article II. Where the cost of individual pieces of equipment exceeds \$1,000, they will be listed individually. Where individual items cost \$100 to \$1,000, they will also be individually listed to the extent practical or grouped in general categories, such as "electronic equipment" or "six motors," with the total dollar amount of such category. The cost of purchased items shall be determined by the actual invoice cost of such items, but the cost of fabricated items may be established by engineering estimates. This report may be submitted in conjunction with the certified statement required by Article B-XXVII of this contract.

ARTICLE B-XXII - FOREIGN TRAVEL

Foreign travel shall be subject to the prior approval of the Contracting Officer.

ARTICLE B-XXIII - PRIORITIES, ALLOCATIONS, AND ALLOTMENTS

The Contractor shall follow the provisions of DMS Regulation 1 and all other applicable regulations and orders of the Business and Defense Services Administration in obtaining controlled materials and other products and materials needed to fill this order. This contract carries rating: DC-E-2 certified for national defense under DMS Regulation 1.

ARTICLE B-XXIV - UTILIZATION OF CONCERNS IN LABOR SURPLUS AREAS

It is the policy of the Government to place contracts with concerns which will perform such contracts substantially in areas of persistent or substantial labor surplus, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts in accordance with this policy. In complying with the foregoing and with paragraph (b) of the article of this contract entitled, "Utilization of Small Business Concerns," the Contractor in placing its subcontracts shall observe the following order of preference: (1) persistent labor surplus area concerns which are also small business concerns; (2) other persistent labor surplus area concerns; (3) substantial labor surplus area concerns which are also small business concerns; (4) other substantial labor surplus area concerns; and (5) small business concerns which are not labor surplus area concerns.

ARTICLE B-XXV - UTILIZATION OF SMALL BUSINESS CONCERNS

(a) It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

(b) The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

ARTICLE B-XXVI - SOVIET-BLOC CONTROLS

In connection with the contract activities, the Contractor agrees to comply with the requirements set forth in Appendix "D" of this contract relating to the countries listed therein. From time to time, by written notice to the Contractor, the Commission shall have the right to change the listing of countries in Appendix "D" upon a determination by the Commission that such change is in the national interest. The Contractor shall have the right to terminate its performance under this contract upon at least sixty (60) days' prior written notice to the Commission if the Contractor determines that it is unable, without substantially interfering with its policies as an educational institution or without adversely affecting its performance, to continue performance of the work under this contract as a result of a change in Appendix "D" made by the Commission pursuant to the preceding sentence. If the Contractor elects to terminate performance, the provisions of this contract respecting termination for the convenience of the Government shall apply.

ARTICLE B-XXVII - DETERMINATION OF TOTAL COSTS

(a) The term "total cost" as used in this contract means the sum of costs incurred by the Contractor for items included under Article A-II (a) of Appendix "A", which are in furtherance of the work hereunder, and may include the following: expenditures of cash, exclusive of cash payments relating to items included in the total cost of a prior period; the cost of material and supplies transferred from stores inventory; unpaid delivered orders for services, supplies, and equipment; unpaid undelivered orders (commitments) for items of equipment; unpaid delivered orders (commitments) for materials and supplies purchased in normal and reasonable quantities; and the amount due the Contractor for indirect costs in accordance with the rate and factor or factors shown in Appendix "A" of this contract. Except as the parties may otherwise specifically agree in writing, total cost will apply separately to each annual (or lesser) period of performance. Total cost for a contract period shall be determined consistent with the principles of the Bureau of the Budget Circular A-21, as constituted on the effective commencement date of said period.

(b) Within three months after the end of each contract period and within three months after the expiration or termination of the contract, the Contractor shall furnish its certified statement, executed by an official of the Contractor, and signed by a principal investigator, showing the Contractor's total cost and evidencing its performance under the contract. The statement shall be in the form set forth in Appendix "C". The Contractor understands that the Commission expects to rely on this certified statement. The Contractor is expected to maintain auditable records as contemplated by Paragraph (c) of Article B-II to substantiate the total costs incurred under this contract.

ARTICLE B-XXVIII - ADDITIONAL APPROVALS

(a) In addition to such approvals as are specifically required by other provisions of this contract, the Contractor shall obtain the Commission's approval for:

(1) Acquisition of:

(i) An item of equipment, not itemized in Appendix "A", involving an acquisition cost in excess of \$1,000 or 2 percent of the total estimated project cost specified in A-III of Appendix "A", whichever is greater, unless such equipment is merely a different model of an item itemized in Appendix "A". (When plant and equipment funds are provided for the acquisition of Government property, the Headquarters Program

Divisions may require, in specific cases, that such funds be used only for acquiring the equipment designated in Article V, unless prior AEC approval has been obtained.)

(ii) Any equipment not itemized in Appendix "A", the acquisition cost of which will cause the equipment dollar level shown in Appendix "A" to be increased by \$500 or more. (If plant and equipment funds are provided for the acquisition of equipment, with title to be vested in the Government, the total cost of such equipment acquisitions shall not exceed the amount budgeted for such equipment unless prior AEC approval has been obtained.)

(2) Purchase of any general-purpose equipment, such as office furniture or air conditioning, not specifically provided for in Appendix "A".

(3) Reserved.

(4) A change of the principal investigator, or continuation of the research work without direction by an approved principal investigator. The principal investigator may increase or decrease the amount of effort which he devotes to the project without obtaining Commission approval; however, the principal investigator shall consult with the appropriate AEC Headquarters program representative if he plans to, or becomes aware that he will, devote substantially less effort to the work than anticipated in Article A-1. The purpose of such consultation will be to determine what effect, if any, the anticipated change will have on the research work.

(b) No change in the phenomenon or phenomena under study; i.e., broad category of the research under this contract, shall be made without the specific written approval of the Commission; ordinarily, such changes, if approved by the Commission, will be accomplished through a new contract or a mutually agreed-to modification. The Contractor may change the specific objectives in the research work described in this contract, provided it gives the Commission prompt notification of such changes; and the Contractor may continue to follow the new objectives while the Commission determines whether it wishes to continue the program under the changed approach.

5-22-68

APPENDIX "C"

U. S. ATOMIC ENERGY COMMISSION

Statement of Annual Costs

1. Name and address of Contractor: _____
2. Contract Number: _____
3. Beginning and ending date of pertinent contract period: _____
4. Support ceiling for the pertinent contract period: _____
5. Costs incurred during the pertinent contract period. (List only those costs which are to be reimbursed by the AEC or proportionately shared by the parties in accordance with Article A-II (a).):

<u>Cost Categories</u>	<u>Amount</u>
a. <u>Salaries and Wages</u> (List principal investigator and other personnel in same detail as shown in Article A-II (a) of	\$ _____
b. <u>Supplies and Materials</u> (Show in same detail as in Appendix "A".)	\$ _____
c. <u>Equipment</u> (List cost of each piece of equipment separately listed in Appendix "A" to the contract or for which separate approval was obtained from AEC.)	\$ _____
d. <u>Publications</u>	\$ _____
e. <u>Travel</u>	\$ _____
f. <u>Other</u> (List separately each type of cost included in this category.)	\$ _____
Total Direct Expenditures	\$ _____

1/ Appendix "C" is a sample statement. The actual statement furnished by the Contractor should be consistent with the itemization in Appendix "A".

5-22-68

<u>Cost Categories</u>	<u>Amount</u>
g. <u>Indirect Charges</u> (Indicate percent and expenditures to which percent is applied.)	\$ _____
h. <u>Orders delivered but not paid for</u> (Break down, by types of cost, items delivered or services provided that were not paid for at the close of the contract period.)	\$ _____
i. <u>Unpaid undelivered orders for equipment, supplies, and materials</u> (Break down, by types of costs, items ordered but not delivered at the close of the contract period.)	\$ _____
j. <u>Items of equipment specifically authorized by AEC for purchase in prior contract period and for inclusion in the total costs for this contract period</u>	\$ _____
Total Costs	\$ _____
_____ of the contract chargeable to AEC (% of total using _____ shown in contract)	\$ _____
6. Information regarding prior period costs (identify amounts of undelivered orders in prior periods where the cost claimed was not incurred and any other differences in costs incurred from those claimed)	\$ _____
7. Provide information regarding contributions by the Contractor of items listed in Article A-II (b) of Appendix "A". State the extent of the Contractor's actual contribution; the measure of such contributions should be in the same terms as the Contractor's commitment under Article A-II (b); e.g., time, dollars, etc.	

I hereby certify that this report is true and correct to the best of my knowledge and belief and that the costs and commitments listed herein were incurred, except as provided in j. above, during the period indicated, in connection

5-22-68

with the performance of the research provided for under this contract and in accordance with the terms and conditions set forth therein.

Name and title of Principal Investigator

Signature

Date

Name and title of business officer

Signature

Date

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APPENDIX "D"

REQUIREMENTS REGARDING EXCHANGES OF INFORMATION

1. The requirements set forth herein relate to the dissemination by the Contractor of the information developed under this contract and/or under other Commission programs to countries by or through exchange activities, including but not limited to employment, work participation, visits and correspondence. The term "countries" (including where used in the term "Soviet-Bloc Countries"), as used in this Appendix "D", includes all nations (other than the United States, its territories and possessions), the embassies, consulates, and agencies of such nations, and individuals and organizations of such nations.
2. For the purpose of these requirements the Soviet-Bloc Countries consist of:

Group A

Albania
Bulgaria
Czechoslovakia
Estonia
Hungary
Lithuania
Poland and Poland
Rumania
Union of Soviet Socialist Republics

Group B

China, including Manchuria (includes Inner Mongolia; the provinces of Tsinghai and Szechuan, Tibet; the former Kwantung Leased Territory, the present Port Arthur Naval Base Area and Liaoning Province) and excluding Taiwan, Formosa
Communist-controlled area of Viet Nam
East Germany, Soviet Zone of Germany and the Soviet Sector of Berlin)
North Korea
Outer Mongolia
Cuba

3. The following exchange activities between the Contractor and any of the Soviet-Bloc Countries shall be subject to the prior written approval of the Commission on an individual case basis:

- a. Employees of the Contractor engaging in employment by activities of the Commission in any of the Soviet-Bloc Countries where such activities are being supported by Commission funds.
 - b. Employees of the Contractor by, nationals of any of the Soviet-Bloc Countries in furtherance of or in connection with work under this contract.
 - c. Participation of nationals of any of the Soviet-Bloc Countries at U.S. conferences, meetings and symposia which are supported by Commission funds or are organized and directed by persons receiving financial support for such activities from the Commission and acting in the name of the Commission or the Contractor.
4. Unofficial travel to any of the Soviet-Bloc Countries by employees of the Contractor who hold a Commission security clearance will be subject to the prior approval of the Commission on an individual case basis.
 5. The Contractor shall inform all of its employees who formerly held a Commission security clearance of the Commission's desire to be advised of their proposed unofficial travel to any of the Soviet-Bloc Countries. The Contractor shall notify the Commission of all such proposed travel, and shall submit a report thereon in accordance with the notification given in accordance with the provisions hereof.
 6. The Contractor, if the contract herein is a cost-type rather than a fixed-price type, shall inform the Commission in advance whenever feasible, of all proposed travels by nationals of any of the Soviet-Bloc Countries and shall furnish a report thereon in accordance with instructions issued by the Contracting Officer.
 7. All correspondence and other communications relative to the exchange of information whether with Soviet-Bloc or other countries shall be subject to the following procedures:
 - a. Transmittal of published information relating to the peaceful uses of atomic energy is permitted and encouraged provided the transmittals to countries listed in Group B of Section 2., above, are made in the name of the Contractor or the individual scientist and not in the name of the Commission;
 - b. Transmittal of unpublished information relating to the peaceful uses of atomic energy is permitted and encouraged provided:
 - (1) The information transmitted is made available to requesters in the United States. In order to insure availability to requesters in the United States, one copy of all such unpublished information (with the exception of personal correspondence covering informal scientific or technical opinion) shall be forwarded to the Contracting Officer;

- (2) The transmittals to countries listed in Section 2., above, are to be made by the Commission in appropriate equally valuable form.
- (3) The transmittals to countries listed in Group B of Section 2., above, are to be made in the name of the Director or the individual scientist and not in the name of the Commission.
- c. Requests for information not falling within the scope of the above-stated policy and any unusual requests for published and unpublished information shall be forwarded to the Contracting Officer. Examples of unusual requests for published and unpublished information include: (1) Requests for collections of published documents or for unpublished information which are not readily available to the recipient of the request; (2) Requests for comprehensive and detailed unpublished design information and unpublished development information on major equipment, such as reactors, chemical processing plants, and accelerators; and (3) Official correspondence from any government other than the United States, its territories and possessions.

As used in this Section 7:

- a. The term "published information" means all unclassified scientific and technical documents; internal and informal reports; reprints; preprints; page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions; etc., originated or technical information extension, Oak Ridge, Tennessee, AEC depository, or from other sources from which the public may obtain the above types of information, with or without cost.
- b. The term "unpublished information" means all unclassified scientific and technical documents; internal and informal reports; reprints; preprints; page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions; etc., originating within Commission programs but which are not available from the Division of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or from other sources from which the public may obtain the above types of information, with or without cost.
- c. In all exchanges of information, care should be taken that the release of the information does not result in the disclosures of Restricted Data or other classified information, or privileged information, in violation of applicable law and/or the provisions of this contract; or the disclosure of any information that would adversely affect the patent interest of the Commission in violation of the provisions of this contract.

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into the 14th day of November, 1967, effective the 1st day of September, 1967, 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 UNIVERSITY OF TENNESSEE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and Modifications thereto numbered 1 through 13 providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to amend the contract further to provide for: (a) the continuance of this research and/or the performance of additional research; (b) the revisions and/or additions of certain provisions thereof in accordance with current applicable rules and regulations of the Commission; and (c) as a result thereof, restate the provisions of this contract as of the effective date of this Supplemental Agreement; and

WHEREAS, this Supplemental Agreement is authorized by the Atomic Energy Act of 1954, as amended, and Section 302(c)(15) of the Federal Property and Administrative Services Act of 1949, as amended;

NOW, THEREFORE, the parties do mutually agree that the contract (including its Appendices), as amended, is hereby revised to read as follows:

ARTICLE I - THE RESEARCH TO BE PERFORMED

(a) The Contractor shall furnish the personnel, facilities, equipment, materials, and supplies as indicated in Appendix "A", endeavor to procure or fabricate the items specified in A-II of Appendix "A", and therewith perform to the best of its ability the research provided for in Appendix "A" and report thereon pursuant to the provisions of this contract. It is understood that Appendix "A", a guide to the performance of this contract, may be deviated from by the Contractor subject to the specific requirements of this contract.

(b) This work shall be conducted under the direction of Dr. John L. Wood or such other member of the Contractor's staff as may be mutually satisfactory to the parties.

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ARTICLE II - THE PERIOD FOR PERFORMANCE

The period of performance under this contract shall commence on September 1, 1967, and expire on August 31, 1968. Performance may be extended for additional periods by the mutual written agreement of the parties.

ARTICLE III - CONSIDERATION

(a) In full consideration of the Contractor's performance hereunder for the period commencing on September 1, 1967, and expiring on August 31, 1968, the Commission shall pay the Contractor the sum of \$20,675.00. The total of such sum plus \$3,519.00 (agreed to be remaining from previous periods under the contract) is hereinafter called the "Support Ceiling," which sum shall be subject to adjustment as hereinafter provided.

(b) Payments to the Contractor shall equal 56% of the total cost of performance of this contract, as the term "total cost" is defined in Article B-XXVII; provided, however, and notwithstanding any other provision of this contract, that the Government's monetary liability under this contract shall not exceed the Support Ceiling specified in (a) above. The Commission shall not pay more than the Support Ceiling, or 56% of the total cost, whichever is less. The Contractor shall be obligated to perform under this contract throughout the pertinent annual period of performance, and to bear all costs which the Commission has not agreed to pay; provided, however, that the Contractor shall have the right to cease to perform the research provided for in this contract, upon written notice to the Commission to that effect, at any time when or after the Support Ceiling on the Commission's liability for any pertinent annual period of performance is reached.

(c) At any time during an annual period of performance subsequent to the initial annual period of performance,* the Commission, in its sole discretion, may increase the Support Ceiling for the pertinent annual period of performance by written notice to that effect to the Contractor; provided, however, that the Commission may not unilaterally increase the Support Ceiling to an amount greater than 56% of the total estimated project cost specified in the pertinent Appendix "A", for said period. No such increase

*For the purpose of this contract provision, the period covered by this Modification No. 14 shall be considered to be subsequent to the "initial annual period of performance."

in the Support Ceiling shall be deemed to increase or affect the percentage of total cost which the Commission has agreed to pay for the pertinent period.

(d) Except as provided in (e) below, at the end of each contract period, the Contractor will refund to the Commission, or make such disposition as the Commission may, in writing, otherwise direct, any sums advanced by the Commission to the Contractor under this contract through direct payment or under letter of credit in excess of 56% of the total cost of performance, as the term "total cost" is defined in Article B-XXVII.

(e) If the total amount the Commission is required to pay during an annual period of performance is less than the Support Ceiling established for said period, the difference between said total and the Support Ceiling will be added by the Commission to the Support Ceiling established for the next succeeding contract, period if any; provided that such addition does not raise the level of the Support Ceiling for the succeeding period above that percentage of the total estimated project cost which the Commission has agreed to pay during said period.

(f) After receipt of an annual certified statement pursuant to Article B-XXVII, which statement shall be submitted to the Commission above, and upon subsequent determination of any amounts the Commission wants to add pursuant to (e), above, the Commission will send a letter notification to the Contractor stating the increased Support Ceiling for the pertinent period. For the purpose only of formalizing the increased Support Ceiling, said letter shall be considered a contractual document. In the same letter the Commission will endeavor to state, for convenient reference, the total amount which the Commission has obligated under the contract from the beginning of the first annual period to date, as adjusted in accordance with this article, but said statement shall have no evidentiary or contractual effect.

ARTICLE IV - ADDITIONAL CONTRACT PROVISIONS

Appendix "B", attached hereto and made a part hereof, sets forth additional general provisions of this contract.

ARTICLE V - GOVERNMENT PROPERTY

The following items of property procured or fabricated by the Contractor are hereby listed as "Government Property": None.

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IN WITNESS WHEREOF, the parties have executed this Supplemental Agreement.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY
COMMISSION

BY: Robert B. Martin

TITLE: Acting Director
Laboratory and University Division

UNIVERSITY OF TENNESSEE

BY: W. H. Read

TITLE: Vice President

I, John C. Baugh, Secretary of the Corporation named as the Contractor herein; that W. H. Read who signed this contract on behalf of the Contractor was then Vice President of said corporation; that said contract 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)

Contractor: THE UNIVERSITY OF TENNESSEE

Contract No.: AT-(40-1)-1637

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APPENDIX "A"

For the Contract Period September 1, 1967 through August 31, 1968.

A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

The Contractor will continue to conduct research on the metabolism of thiocyanate groups in animals. This work will include such approaches as study of (1) the nature of the sulfur pool which produces thiocyanate and iminothiazolidine carboxylic acid by cyanide detoxication, (2) the role of trisulfides as sulfur donors, (3) the metabolism of labeled thiocystine, (4) reaction of cyanide with proteins in vitro, (5) the oxidation of thiocyanate to sulfates and cyanide by peroxidases, (6) preparation of representative trisulfides for tests as radioprotective agents in collaboration with the Biology Division, Oak Ridge National Laboratory, and (7) isolation and purification of the transsulfurase enzyme in E. coli.

A-II WAYS AND MEANS OF PERFORMANCE(a) Items Included in Total Estimated Cost:

(1) <u>Salaries and Wages:</u>	\$22,600.00
Research Associate (100% of time)	
Research Assistant (25% of time)	
Technician (100% of time)	
Administrative Assistant (50 hours)	
Secretarial Assistance and Bookkeeping (100 hours)	
Consultation and Services (70 hours)	
(2) <u>Employee Benefits:</u>	1,302.00
(3) <u>Equipment:</u>	300.00
Hardware, Unit Plates and Miscellaneous Small Items	
(4) <u>Supplies and Materials:</u>	2,000.00
Isotopes, Chemicals and Glassware	
(5) <u>Travel:</u>	600.00

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- (6) Publications, Analyses and Communication: 400.00
- (7) Indirect Costs (Based on Space Occupied,
Utilities and Custodial Services. AEC's
Portion is Calculated at 8% of AEC's
Agreed Support to the Above Six Expense
Items): 16,622.00
- (b) Items Significant to the Performance of This Contract,
But Excluded From Computation of Total Cost and From
Consideration in Proportioning Costs:
- None

A-III The total estimated project cost of A-II (a) above for the contract period stated above is \$43,724.

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SPECIAL RESEARCH SUPPORT AGREEMENT

APPENDIX "B"

ARTICLE B-I - DEFINITIONS

(a) The term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer except for the purpose of deciding an appeal under the article entitled "Disputes."

(b) The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successors or any duly authorized representative of any such person.

(c) Except as otherwise provided in this contract, the term "subcontracts" includes purchase orders under this contract.

ARTICLE B-II - INSPECTION, REPORTS, RECORDS AND ACCOUNTS

(a) The Commission shall have the right to inspect, in such manner and at all reasonable times as it deems appropriate, all activities of the Contractor arising in the course of its undertakings under this contract.

(b) The Contractor shall make progress and other reports in such manner and at such times as specified in Article B-III. The Contractor shall also make such other reports to the Commission, with respect to its activities under this contract, as the Commission may reasonably require from time to time.

(c) The Contractor agrees to keep records and books of account, in accordance with generally accepted accounting principles and practices, covering its costs and expenditures for the research work under this contract.

(d) The Commission shall at all reasonable times be afforded access to the premises and to these books and records and to related correspondence, receipts, vouchers, memoranda, and other data of the Contractor; and the Contractor shall preserve such books and papers, without additional compensation therefor, for a period of three (3) years after completion of this contract.

ARTICLE B-III - PUBLICATION OF RESULTS

1. Research results obtained under this contract shall be made available to all through normal and accepted channels without restriction except that no Restricted Data as defined in the Atomic Energy Act of 1954 or other classified information shall be disclosed to unauthorized persons. Published results shall indicate that the research was supported by the Commission. Seven (7) copies of each article submitted by the Contractor for publication shall be promptly sent to the Commission. The Contractor shall also inform the Commission when the article is published and furnish seven (7) copies of the article as finally published.

(b) It is recognized that during the course of the work hereunder or subsequent thereto, the Contractor, its employees, or its subcontractors may from time to time desire to publish, within the limit of security requirements, information regarding technical or scientific developments arising in the course of the contract. In order that public disclosure of such information will not adversely affect the patent interest of the Commission, such information shall be withheld from public disclosure if it discloses an invention or discovery which shall be promptly reported to the Commission, and in such case, it shall be withheld for a period of 90 days after submission of the information to the Commission for patent review and possible patent application, unless the Commission approves earlier release.

As indicated in the article entitled "Alterations" of this contract, the following sentence shall be deemed to govern in lieu of the last sentence in Article B-III:

"In order that public disclosure of such information will not adversely affect the patent interest of the Commission, patent approval for release shall be secured from the Commission prior to any such publication."

ARTICLE B-IV - DISCLOSURE OF INFORMATION

1. It is mutually expected that the activities under this contract will not involve Restricted Data or other classified information or material. It is understood, however, that if in the opinion of either party this expectation changes prior to the expiration or termination of all activities under this contract, said party shall notify the other party accordingly in writing without delay. In any event, the Contractor shall classify, safeguard, and otherwise act with respect to all Restricted Data and other classified information and material, in accordance with applicable law and the requirements of the Commission, and shall promptly inform the Commission in writing if and when Restricted Data or other classified information or material

becomes involved. If and when Restricted Data or other classified information or material becomes involved, or in the mutual judgment of the parties it appears likely that Restricted Data or other classified information or material may become involved, the Contractor shall have the right to terminate performance of the work under this contract and in such event the provisions of this contract respecting termination for the convenience of the Government shall apply.

(b) The Contractor shall not permit any individual to have access to Restricted Data, or other classified information, except in accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations or requirements.

(c) The term "Restricted Data" as used in this article means all data concerning the design, manufacture, or utilization of atomic weapons, the production of special nuclear material, or the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to Section 142 of the Atomic Energy Act of 1954, as amended.

ARTICLE B-V - RESPONSIBILITY FOR THE WORK

(a) The Contractor is solely responsible for the conduct of the work.

Where the work involves a Commission license, the provisions of the pertinent license shall prevail over any inconsistent provisions of this contract.

ARTICLE B-VI - FELLOWSHIPS

The Contractor agrees that, unless the Commission shall give its prior written approval, the Contractor shall not use any of the funds provided by the Commission under this contract to pay the stipend of any appointment for which commensurate services are not rendered under this contract or to pay any part of the stipend of a fellowship of any kind.

ARTICLE B-VII - WRITTEN MATERIAL

(a) The Contractor hereby grants to the Government a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use and dispose of, and to authorize others to do so, all copyrightable material produced or composed or delivered to the Government or its designees under this contract, including work not first produced or composed by the Contractor in the course of

performance under this contract but incorporated in the material produced or composed or delivered under this contract, not only to the extent that the Contractor now has, or prior to final settlement of the contract may have, the right to grant such license to such previously produced or composed work without becoming liable to pay compensation to others solely because of such grant).

(b) The Contractor agrees that, except as the Commission may otherwise specifically authorize in writing, the Contractor will not include in any report or other material delivered under this contract, or in any published material relating to the work under this contract, any copyrighted material owned by others which such owners have not consented to have so included.

(c) The Commission will not publish in advance of the Contractor's publication without prior consultation with the Contractor.

ARTICLE B-VIII - PATENTS

(a) Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of or under this contract, the Contractor shall promptly furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights in any patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

(b) No claim for pecuniary award or compensation under the provisions of the Atomic Energy Act of 1954, as amended, shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of or under this contract.

Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs (a) and (b) of this article from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.

(d) Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts and purchase orders other than purchase orders for standard commercial items, provisions

making this article applicable to the subcontract or purchase order. Except as otherwise authorized in writing by the Commission, the Contractor will insert in purchase orders for standard commercial items a provision indemnifying the Government against liability for use of any invention or discovery and for the infringement of any Letters Patent arising by reason of the purchase, use, or disposal by or for the account of the Government of items manufactured or supplied under the purchase order.

(e) With respect to any U. S. Patent Application filed by the Contractor on any contract invention or discovery made or conceived in the course of the contract, the Contractor will incorporate in the first paragraph of the U. S. Patent Application the following statement:

"The invention described herein was made in the course of, or under, a contract (if desired, may substitute contract with identifying number) with the U. S. Atomic Energy Commission."

ARTICLE B-IX - PROPERTY ITEMS

(a) Except as otherwise provided in this paragraph (a) and paragraph (b) of this Article B-IX, title to all materials, supplies, and equipment purchased or otherwise acquired by the Contractor in the performance of its research activities shall be and remain in the Contractor. Said materials, supplies, and equipment shall be used for the performance of the contract and for any continuation or successor contracts hereto and, provided there is no interference with said research, shall be made available for use by investigators working on any Federal research agreement at the same location. Subject to these priorities, the materials, supplies, and equipment may be used as the Contractor wishes. Except as otherwise agreed in writing, title to any items of property listed as "Government property" shall pass directly to the Government; such property shall be subject to paragraphs (b), (c), (d), (e), and (f) of this Article B-IX.

(b) Subject to the mutual agreement of the Commission and the Contractor, the Government may furnish the Contractor items of equipment, materials, supplies, or facilities for use by the Contractor in the performance of the contract work; title to these items shall remain in the Government unless otherwise agreed in writing. Such items of property and the items of property listed elsewhere in this contract as Government property are hereinafter referred to as "Government property." Title to Government property shall not be affected by the incorporation or attachment thereof to any property not owned by the Government nor shall any such property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty.

(c) To the extent practicable, the Contractor shall cause all items of Government property to be suitably marked with an identifying mark or sign indicating that the items are the property of the Government. The Contractor shall maintain at all times and in a manner satisfactory to the Commission records showing the use and disposition of Government property. Such records shall be subject to Commission inspection at all reasonable times and the Commission shall at all reasonable times have access to the premises wherein any items of Government property are located. Unless otherwise authorized in writing by the Commission, the Contractor shall use Government property only for the purposes of this contract; provided, however, that the Contractor is hereby authorized to use items of equipment constituting Government property for other Federal research agreements to the extent such use (1) does not interfere with its work under this contract, (2) is not prohibited by provisions of the other Federal agreements, and (3) is promptly reported by the Contractor to the Commission under this contract.

(d) The Contractor shall promptly notify the Commission of any loss or destruction of or damage to Government property. It is understood that the Contractor shall not be liable for any such loss, destruction, or damage, unless same results from wilful misconduct or lack of good faith on the part of any corporate officer of the Contractor, or of one or more of the Contractor's representatives having supervision or direction of all or substantially all of the activities under this contract. If the Contractor is liable for any such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission; if the Contractor is not liable therefor, and is indemnified, reimbursed, or otherwise compensated for such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission.

(e) With the written approval of the Commission, the Contractor may sell, transfer, or otherwise dispose of items of Government property to such parties and upon such terms as so approved, or itself acquire title to items of Government property upon such terms as may be mutually agreed upon in writing by the Contractor and the Commission. The proceeds of any such disposition, and any agreed price of any such Contractor acquisition, shall be paid by the Contractor to the Government, or credited on account of Commission payments to be made under this contract, as the Commission may direct. Subject to the other provisions of this contract, the Contractor shall deliver Government property to the Commission upon request (suitably packed and shipped at the Government's expense).

(f) The Contractor shall utilize for the benefit of the work under this contract such items of property available to the Contractor by

reason of its activities under other Government procurement agreements as are appropriate for the situation and to the extent of the provisions of the contract hereunder.

ARTICLE B-X - TERMINATION OF CONTRACT

(a) The performance of work under this contract may be terminated, in whole or from time to time in part, by the Government whenever for any reason the Contracting Officer shall determine that such termination is in the best interest of the Government. Termination of work hereunder shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated and the date upon which such termination becomes effective.

(b) After receipt of the Notice of Termination the Contractor shall cancel its outstanding commitments hereunder covering the procurement of materials, supplies, equipment, and miscellaneous items. In addition, the Contractor shall exercise all reasonable diligence to accomplish the cancellation or diversion of its outstanding commitments covering personal services and extending beyond the date of such termination to the extent that they relate to the performance of any work terminated by the notice. With respect to such canceled commitments the Contractor agrees to (1) settle all outstanding liabilities and claims arising out of such cancellation of commitments, with the approval or ratification of the Contracting Officer, to the extent he may require, which approval or ratification shall be in writing; (2) assign to the Government, in the manner, at the time, and to the extent directed by the Contracting Officer, all of the right, title and interest of the Contractor under the orders and subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

(c) The Contractor shall submit its termination claim to the Contracting Officer promptly after receipt of a Notice of Termination, but in no event later than one year from the effective date thereof, unless one or more extensions in writing are granted by the Contracting Officer upon written request of the Contractor. In any case, the Contractor shall be authorized extension thereof. Upon failure of the Contractor to submit its termination claim within the time allowed, the Contracting Officer may, subject to any review required by the Commission's procedures in effect as of the date of execution of this contract, determine on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

(d) Any determination of costs under paragraph (c) shall be governed by the cost principles set forth in Subpart 1-15.3 of the Federal Procurement Regulations (41 CFR 1-15.3), as in effect on the date of this contract, except that if the Contractor is not an educational institution the determination shall be governed by AECPR 9-15.50 (41 CFR 9-15.50).

(e) Subject to the provisions of paragraph (c) above, and subject to any review required by the Commission's procedures in effect as of the date of execution of this contract, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the termination under this article, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Contractor and any reasonable loss upon outstanding commitments for personal services which it is unable to cancel: Provided, however, That in connection with any outstanding commitments for personal services which the Contractor is unable to cancel, the Contractor shall have exercised reasonable diligence to divert such commitments to its other activities and operations. Any such agreement shall be embodied in an amendment to this contract and the Contractor shall be paid the agreed amount.

(f) The Government may from time to time, under such terms and conditions as it may prescribe, make partial payments against costs incurred by the Contractor in connection with the terminated portion of this contract, whenever, in the opinion of the Contracting Officer, the Government is obligated to make such payments. The amount to which the Contractor will be entitled hereunder. If the total of such payments is in excess of the amount actually agreed or determined to be due under this article, such excess shall be payable by the Contractor to the Government upon demand: Provided, That if such excess is not so paid upon demand, interest thereon shall be payable by the Contractor to the Government at the rate of 6 percent per annum, beginning 30 days from the date of such demand.

(g) The Contractor agrees to transfer title to the Government and deliver in the manner, at the times, and to the extent, if any, directed by the Contracting Officer, such information and items which, if the contract had been completed, would have been required to be furnished to the Government, including:

(1) Completed or partially completed plans, drawings, and information; and

(2) Materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the notice.

later than the above, any termination inventory resulting from the termination of the contract may, with the written approval of the Contracting Officer, be sold or acquired by the Contractor under the conditions prescribed by and at a price or prices approved by the Contracting Officer. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the Government to the Contractor under this contract or shall otherwise be credited to the price or cost of work covered by this contract or paid in such other manner as the Contracting Officer may direct. Pending final disposition of property arising from the termination, the Contractor agrees to take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the Contractor and in which the Government has or may acquire an interest.

(h) Any disputes as to questions of fact which may arise hereunder shall be subject to the "Disputes" article of this contract.

ARTICLE B-XI - PAYMENTS

(a) The Commission shall make payments to the Contractor with respect to the amount of consideration prescribed in paragraph (a), of Article III of this contract as follows:

tract (and following the effectuation of each extended period).

(2) A maximum of an additional forty-five percent upon receipt of a written request or requests from the Contractor evidencing that the amount requested is then required in connection with the work under the contract.

(3) A concluding payment for the pertinent period, if necessary, following submission by the Contractor of the annual Progress Report or final report, provided for in Article B-XXI, in form and content satisfactory to the Commission and submission of a certified statement showing the total cost for the contract period and evidencing the Contractor's performance under the contract.

(b) The payments made pursuant to paragraph (a) above shall not prejudice or otherwise affect adversely any of the Government's rights under the contract. For purposes of settlement in the event of termination pursuant to Article B-X hereof, these payments shall not be construed as evidentiary, and any excess payment in the light of Article B-X shall be promptly returned to the Commission.

(c) The Commission shall issue a letter of credit as provided in paragraph (a) of Article III of this contract, subject to the submission by the Contractor to the Commission of such invoices or vouchers as are satisfactory to the Commission.

(d) The Commission, at its option, may invoke the following with respect to any amount of the contract consideration remaining to be paid at any given time:

(1) The Commission shall issue a letter of credit as provided for by Treasury Department Circular No. 1075, Revised, of February 13, 1967, under which payment to the Contractor with respect to the amount of consideration provided for in paragraph (a) of Article III of this contract will be made. The Contractor agrees that the first ninety (90) percent of the amount of consideration provided for in said paragraph (a) of Article III will be under the letter of credit and will be subject to the submission by the Contractor of a Payment Voucher on Letter of Credit (Standard Form 218), in accordance with procedures based upon Treasury Department Circular No. 1075, Revised, of February 13, 1967, which are agreed to by the parties. Following submission by the Contractor of an annual report provided for in Article I-4(a), in form and content satisfactory to the Commission, and submission of a certified statement showing the total expenditures and evidencing the Contractor's performance under the contract, such invoices or vouchers as are satisfactory to the Commission, the Commission shall pay the Contractor the concluding payment of the consideration provided for in Article III of this contract, or said concluding payment will be included under the letter of credit and will be subject to submission by the Contractor of a Payment Voucher on Letter of Credit, in accordance with the procedure described above. If, following an annual report, the contract is extended for an additional period of performance, said concluding payment will similarly be paid for the expired period, and ten (10) percent will be retained with respect to the added period of performance.

(2) The Commission reserves the right to increase, decrease, or cancel the amount covered by the letter of credit, provided that such action is required because of a change in the amount of consideration provided for in Article III or is taken pursuant to subparagraph (d) (1) of this article. The issuance and use of a letter of credit and receipt of funds pursuant thereto shall not prejudice or otherwise adversely affect any of the Government's rights under the contract.

ARTICLE B-XII - NON DISCRIMINATION

(The following clause is applicable unless this contract is exempt under the rules and regulations of the Secretary of Labor (41 CFR, Ch. 60). Exemptions include contracts and subcontracts (i) not exceeding \$10,000, (ii) not exceeding \$100,000 for standard commercial supplies or raw materials, and (iii) under which work is performed outside the United States and no recruitment of workers within the United States is involved.)

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the Contracting Officer, advising the labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and orders of the Secretary of Labor. Copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or

pursuant thereto, and will permit access to its books, records, and accounts by the Commission and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, if threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE B-XIII - CONVICT LABOR

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

ARTICLE B-IV - CONTRACT WORK HOURS STANDARDS ACT - OVERTIME COMPENSATION

This contract, to the extent that it is of a character specified in the Contract Work Hours Standards Act (40 U.S.C. 327-330), is subject to the following provisions and to all other applicable provisions and exceptions of such Act and the regulations of the Secretary of Labor thereunder:

(a) Overtime requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve

the employment of laborers or mechanics shall not permit any laborer or mechanic in any workweek in which he is employed on such work to work in excess of eight hours in any calendar day or in excess of forty hours in such workweek on work subject to the provisions of the Contract Work Hours Standards Act unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all such hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours.

(b) Violation; liability for unpaid wages; liquidated damages.

In the event of any violation of the provisions of paragraph (a), the Contractor and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of the provisions of paragraph (a) in the sum of \$10 for each calendar day on which such employee was required or permitted to be employed on such work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by paragraph (a).

Contracting Officer may withhold from the Government Prime Contractor, from any moneys payable on account of work performed by the Contractor or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions of paragraph (b).

(c) Subcontracts. The Contractor shall insert paragraphs (a) through (c) of this article in all subcontracts, and shall require their inclusion in all subcontracts of any tier.

(d) Records. The Contractor shall maintain payroll records containing the information specified in 29 CFR 516.2 (a). Such records shall be preserved for one year after the completion of the contract.

ARTICLE B-XV - DISPUTES

(a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish

a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless within 30 days from the date of receipt of such copy the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or its duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this article, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

(b) This "Disputes" article does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above: Provided, That nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

ARTICLE B-XVI - OFFICIALS NOT TO BENEFIT

No officer or employee of the Government, or Assistant Commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE B-XVII - COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees and bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE 10. AUDIT AND ACCESS TO RECORDS

(a) The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract.

(b) The Contractor further agrees to include in all its subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this article excludes (i) purchase orders not exceeding \$2,500 and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

(c) Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

(a) In acquiring end products, the Buy American Act (41 U. S. Code 101 a-d) provides that the Government give preference to domestic source end products. For the purpose of this article:

(i) "Components" means those articles, materials, and supplies which are directly incorporated in the end products;

(ii) "End products" means those articles, materials, and supplies which are to be acquired under this contract for public use; and

(iii) A "domestic source end product" means (A) an unmanufactured end product which has been mined or produced in the United States and (B) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. For the purposes of this (a) (iii) (B), components of foreign origin of the same type or kind as the products referred to in (b) (ii) or (iii) of this article shall be treated as components mined, produced, or manufactured in the United States.

(b) The Contractor agrees that there will be delivered under this contract only domestic source end products, except end products:

- (i) Which are for use outside the United States;
- (ii) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;
- (iii) As to which the Commission determines the domestic preference to be inconsistent with the public interest; or
- (iv) As to which the Commission determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954.)

ARTICLE B-XX - ASSIGNMENT; SUBCONTRACTING

Neither this contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor, except as expressly authorized in writing by the Commission. The Contractor shall not subcontract any research or development work under this contract, except as expressly authorized in writing by the Commission.

The Contractor shall furnish seven (7) copies of the following reports and renewal proposals, if any, addressed to U. S. Atomic Energy Commission, Oak Ridge Operations Office, P. O. Box E, Oak Ridge, Tennessee, 37830:

(a) Progress Report. The progress report shall briefly describe the scope of investigations undertaken and the significant results obtained. It shall also indicate compliance with the contract requirements and any failures to comply. Technical reports and articles prepared for publication shall be listed with bibliographic references. Reprints or preprints of all such material shall be appended and material contained therein need not be duplicated in the report. Progress reports shall be submitted approximately three months in advance of the expiration of the current contract term and shall give the Contractor's best estimate of the probable events and occurrences in regard to the remainder of the current contract term. Except as the Commission may otherwise request, no further progress report will be required for any contract year unless there has been a significant change in scientific results or contract compliance between the latest progress report by the Contractor and its actual experience; this shall be reported promptly.

(b) Final Report. Upon termination or expiration of the total period of performance, the Contractor shall submit, promptly, a summary of its activities for the entire period, including a list of publications issued during the total term of the contract and copies of any reprints not previously submitted, as well as a comprehensive evaluation of progress in the area of research supported by the contract.

(c) Renewal Proposals. A renewal proposal, if any, shall be submitted along with the technical progress report, and each of the two documents shall be separately bound.

(d) Report of Equipment Purchased or Fabricated. The Contractor shall itemize equipment having a useful life expectancy in excess of one year and an acquisition cost in excess of \$100 purchased or fabricated (omit any items appearing in Article V) and submit a report thereof immediately following the expiration of the contract year specified in Article II. Where the cost of individual pieces of equipment exceeds \$1,000, they will be listed individually. Where individual items cost \$100 to \$1,000, they will also be individually listed to the extent practical or grouped in general categories, such as "electronic equipment" or "6 motors," with the total dollar amount of such category. The cost of purchased items shall be determined by the actual invoice cost of such items, but the cost of fabricated items may be established by engineering estimates.

ARTICLE B-XXII - FOREIGN TRAVEL

Foreign travel shall be subject to the prior approval of the Contracting Officer.

ARTICLE B-XXIII - PRIORITIES, ALLOCATIONS, AND ALLOTMENTS

The Contractor shall follow the provisions of DMS Regulation 1 and all other applicable regulations and orders of the Business and Defense Services Administration in obtaining controlled materials and other products and materials needed to fill this order. This contract carries rating: DO-E-2 certified for national defense under DMS Regulation 1.

ARTICLE B-XXIV - UTILIZATION OF CONCERNS IN LABOR SURPLUS AREAS

It is the policy of the Government to place contracts with concerns which will perform such contracts substantially in areas of persistent or substantial labor surplus, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts in accordance with this policy. In complying with the foregoing and with

...shall reserve the following order of preference: (1) persistent labor surplus area concerns which are also small business concerns; (2) other persistent labor surplus area concerns; (3) substantial labor surplus area concerns which are also small business concerns; (4) other substantial labor surplus area concerns; and (5) small business concerns which are not labor surplus area concerns.

ARTICLE B-XXV - UTILIZATION OF SMALL BUSINESS CONCERNS

(a) It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

(b) The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

ARTICLE B-XXVI - SOVIET-BLOC CONTROLS

In connection with the contract activities, the Contractor agrees to comply with the requirements set forth in Appendix "D" of this contract relating to the countries listed therein. From time to time,

right to change the listing of countries in Appendix "D" upon a determination of the Commission.

national policy. The Contractor shall have the right to terminate its performance under this contract upon at least sixty (60) days' prior written notice to the Commission if the Contractor determines that it is unable, without substantially interfering with its policies as an educational institution or without adversely affecting its performance, to continue performance of the work under this contract as a result of a change in Appendix "D" made by the Commission pursuant to the preceding sentence. If the Contractor elects to terminate performance, the provisions of this contract respecting termination shall apply.

ARTICLE B-XXVII - DEFINITION OF TOTAL COST

(a) The term "total cost" as used in this contract means the sum of costs incurred by the Contractor in furtherance of the work hereunder and may include the following: expenditures of cash, exclusive of cash payments relating to items included in the total cost of a prior period; the cost of material and supplies transferred

from stores inventory; repair and maintenance of tools, supplies, and equipment; repair and delivery charges; and the cost for items of equipment; unpaid undelivered orders commitments for materials and supplies purchased in normal and reasonable quantities; and the amount due the Contractor for indirect costs. Except as the parties may otherwise specifically agree in writing, total cost will apply separately to each annual (or lesser) period of performance. Total cost for a contract period shall be determined consistent with the principles of the Bureau of the Budget Circular A-21, as constituted on the effective commencement date of said period.

(b) Within three months after the end of each contract period and within three months after the expiration or termination of the contract, the Contractor shall furnish its certified statement, executed by an official of the Contractor and also signed by the principal investigator, showing the Contractor's total cost and evidencing its performance under the contract. The statement shall be in the form set forth in Appendix "C". The Contractor understands that the Commission expects to rely on this certified statement. The Contractor is expected to maintain auditable records as contemplated by the Commission for the purpose of certifying total costs incurred under this contract.

ARTICLE IV. APPROVALS AND APPROVED CONTRACTS

(a) In addition to such approvals as are specifically required by other provisions of this contract, the Contractor shall obtain the Commission's approval for:

(1) Acquisition of:

(i) An item of equipment, not itemized in Appendix "A", involving an acquisition cost in excess of \$1,000 or 2 percent of the total estimated project cost specified in A-III of Appendix "A", whichever is greater, unless such equipment is specifically designated as being itemized in Appendix "A". (When plant and equipment funds are provided for the acquisition of Government property, the Headquarters Program Divisions may require, in specific cases, that such funds be used only for acquiring the equipment designated in Article V, unless prior AEC approval has been obtained.)

(ii) Any equipment not itemized in Appendix "A", the acquisition cost of which will cause the equipment dollar level shown in Appendix "A" to be increased by

15 percent or \$500, whichever is less. If plant and equipment funds are provided for the acquisition of equipment, with title to be vested in the Government, the total cost of such equipment acquisitions shall not exceed the amount budgeted for such equipment unless prior AEC approval has been obtained.)

(2) Purchase of any general-purpose equipment, such as office furniture or air conditioning, not specifically provided for in Appendix "A".

(3) Transfer of:

(i) Funds from the equipment category to the travel category.

(ii) Funds for support of junior investigator category to the equipment category.

(When plant and equipment funds are provided for the acquisition of Government property, such funds shall not be transferred to other budget categories, and, conversely, funds from other budget categories shall not be used to acquire such equipment.)

15 percent or more in the amount of time and effort the principal investigator will devote to the work.

"b" No change in the phenomenon or phenomena under study; i.e., broad category of the research under this contract, shall be made without the specific written approval of the Commission; ordinarily, such changes, if approved by the Commission, will be accomplished through a new contract or a mutually agreed-to modification. The Contractor may change the specific objectives in the research work described in this contract, provided it gives the Commission prompt notification of such changes; and the Contractor may continue to follow the new objectives while the Commission determines whether it wishes to continue the program under the changed approach.

APPENDIX "C"¹

U. S. ATOMIC ENERGY COMMISSION

Statement of Annual Costs

1. Name and address of Contractor: _____
2. Contract number: _____
3. Beginning and ending date of pertinent contract period: _____
4. Support ceiling for the pertinent contract period: _____
5. Costs incurred during the pertinent contract period:

Cost CategoriesAmounta. Salaries and Wages

(List principal investigator and other personnel in same detail as shown in Appendix "A" to the contract and indicate the related cost for each; and, in addition, indicate the approximate percentage of time spent on contract work by principal investigator.)

\$ _____

b. Supplies and Materials

(Show in same detail as in Appendix "A")

\$ _____

c. Equipment

(List cost of each piece of equipment separately listed in Appendix "A" to the contract or for which separate approval was obtained from AEC.)

\$ _____

d. Publications

\$ _____

e. Travel

\$ _____

f. Other

(List separately each type of cost included in this category)

\$ _____

Total Direct expenditures

\$ _____

^{1/} Appendix "C" is a sample statement. The actual statement furnished by the Contractor should be consistent with the itemization in Appendix "A".

<u>Item Description</u>	<u>Amount</u>
g. <u>Indirect charges</u> (Indicate percent and expenditures to which percent is applied.)	\$ _____
h. <u>Orders delivered but not paid for</u> (Break down, by types of cost, items delivered or services provided that were not paid for at the close of the contract period.)	\$ _____
i. <u>Unpaid undelivered orders for equipment, supplies, and materials</u> (Break down, by types of costs, items ordered but not delivered at the close of the contract period.)	\$ _____
j. <u>Items of equipment specifically authorized in prior contract</u> <u>which were included in the total costs for this contract period</u>	\$ _____
	\$ _____
<u>Total costs as defined in Article 1-10.1 of the contract attributable to work of total using \$ shown in contract)</u>	\$ _____
k. <u>Information regarding prior period costs</u> <u>including items of work and orders</u> <u>in prior periods where the cost claimed</u> <u>was not incurred and any other differences</u> <u>in the work of this contract period.</u>	\$ _____

I hereby certify that this report is true and correct to the best of my knowledge and belief and that the costs and commitments listed herein were incurred, except as provided in j. above, during the period indicated,

9-1-67

in connection with the performance of the research provided for under this contract and in accordance with the terms and conditions set forth therein.

Name and title of principal investigator

Signature

Date

Name and title of business officer

Signature

Date

APPENDIX "D"

REQUIREMENTS RELATING TO EXCHANGES OF INFORMATION

1. The requirements set forth herein relate to the dissemination by the Contractor of the information developed under this contract and/or under other Commission programs to Countries by or through exchange activities, including but not limited to employment, work participation, visits and correspondence. The term "Countries" (including where used in the term "Soviet-Bloc Countries"), as used in this Appendix "D", includes all nations (other than the United States, its territories and possessions), the embassies, consulates, and agencies of such nations, and individuals and organizations of such nations.
2. For the purpose of these requirements the Soviet-Bloc Countries consist of:

Group A

Albania
Bulgaria
Czechoslovakia
Estonia
Hungary
Latvia
Lithuania
Poland and Danzig
Rumania
Union of Soviet Socialist Republics

Group B

China, including Manchuria (includes Inner Mongolia; the provinces of Tsinghai and Sikang, Tibet; the former Kwantung Leased Territory, the present Port Arthur Naval Base Area and Liaoning Province) and excluding Taiwan (Formosa)
Communist-controlled area of Viet Nam
East Germany (Soviet Zone of Germany and the Soviet Sector of Berlin)
North Korea
Outer Mongolia
Cuba

3. The following exchange activities between the Contractor and any of the Soviet-Bloc Countries shall be subject to the prior written approval of the Commission on an individual case basis:

- a. Employees of the Contractor engaging in employment by activities of, or travel to, any of the Soviet-Bloc Countries where such employment or other activity is financially supported by the Commission.
 - b. Employment of, or participation in activities of the Contractor by, nationals of any of the Soviet-Bloc Countries in furtherance of or in connection with work under this contract.
 - c. Participation of nationals of any of the Soviet-Bloc Countries at U. S. conferences, meetings and symposia which are supported by Commission funds or are organized and directed by persons receiving financial support for such activities from the Commission and acting in the name of the Commission or the Contractor.
4. Unofficial travel to any of the Soviet-Bloc Countries by employees of the Contractor who hold a Commission security clearance will be subject to the prior approval of the Commission on an individual case basis.
 5. The Contractor shall inform all of its employees who formerly held a Commission security clearance of the Commission's desire to be advised of their proposed unofficial travel to any of the Soviet-Bloc Countries. The Contractor shall notify the Commission of all such proposed unofficial travel by its employees of which it becomes aware pursuant to the notification given in accordance with the provisions aforesaid.
 6. The Contractor, if the contract herein is a cost-type rather than a feasible, of all proposed visits by nationals of any of the Soviet-Bloc Countries and shall furnish a report thereof in accordance with directions furnished by the Contracting Officer.
 7. All correspondence and other communications relative to the exchange of information whether with Soviet-Bloc or other Countries shall be subject to the following policy and procedure:
 - a. Transmittal of published information relating to the peaceful uses of atomic energy is permitted and encouraged provided the transmittals to Countries listed in Group 2 of Section 2., above, are made in the name of the Contractor, its subsidiaries, or its employees and not in the name of the Commission;
 - b. Transmittal of unpublished information relating to the peaceful uses of atomic energy is permitted and encouraged provided:
 - (1) The information transmitted is made available to requesters in the United States. In order to insure availability to requesters in the United States, one copy of all such unpublished information (with the exception of personal correspondence covering informal scientific or technical opinion) shall be forwarded to the Contracting Officer;

(2) The transmittals to Countries listed in Section 3., above, are accompanied by a request for appropriate equally valuable material in return.

3. The transmittals to Countries listed in Section 3. of Article I., above, are made in the name of the Director or the individual scientist and not in the name of the Commission.

c. Requests for information not falling within the scope of the above stated policy and any unusual requests for published and unpublished information shall be forwarded to the Contracting Officer. Examples of unusual requests for published and unpublished information include: (1) Requests for collections of published documents or for unpublished information which are not readily available to the recipient of the request; (2) Requests for comprehensive and detailed unpublished design information and unpublished development information on major equipment, such as reactors, chemical processing plants, and accelerators; and (3) Official correspondence from any government other than the United States, its territories and possessions.

As used in this Section 7:

a. The term "published information" means all unclassified scientific and technical documents; internal and informal reports; reprints; preprints; page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions; etc., originated

of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or other sources from which the public may obtain the above types of information by purchase or without cost.

c. The term "unpublished information" means all unclassified scientific and technical documents; internal and informal reports; reprints; preprints; page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions; etc., originating within Commission programs but which are not available from the Division of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or from other sources from which the public may normally obtain the information by purchase or without cost.

8. In all exchanges of information, care should be taken that the release of the information does not result in the disclosure of Restricted data or other classified information, or privileged information, in violation of applicable law and/or the provisions of this contract; or the disclosure of any information that would adversely affect the patent interest of the Commission in violation of the provisions of this contract.

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 1st day of December, 1966, effective as of the 1st day of September, 1966, 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 UNIVERSITY OF TENNESSEE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and Modifications thereto numbered 1 through 12 providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to amend the contract further to provide for: (a) the continuance of this research and/or the performance of additional research; (b) the revisions and/or additions of certain provisions thereof in accordance with current applicable rules and regulations of the Commission; and (c) as a result thereof, restate the provisions of this contract as of the effective date of this Supplemental Agreement; and

WHEREAS, this Supplemental Agreement is authorized by law, including the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties do mutually agree that the contract (including its Appendices), as amended, is hereby revised to read as follows:

ARTICLE I - THE RESEARCH TO BE PERFORMED

(a) The Contractor shall furnish personnel, facilities, equipment, materials, and supplies substantially to the extent set forth in Appendix "A", attached hereto and made a part hereof, endeavor to procure or fabricate the items specified in A-III of said Appendix "A", and therewith perform to the best of its ability the research provided for in Appendix "A" and report thereon pursuant to the provisions of this contract. Substantial deviations from the foregoing shall be discussed with and subject to the written approval of the Commission.

(b) This work shall be conducted under the direction of Dr. John L. Wood or such other member of the Contractor's staff as may be mutually satisfactory to the parties.

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ARTICLE II - THE PERIOD FOR PERFORMANCE

The period for performance under this contract shall expire on August 31, 1967; provided, however, that this period may be extended for additional periods by the mutual written agreement of the parties.

ARTICLE III - CONSIDERATION

(a) In full consideration of the Contractor's performance hereunder for the period commencing on September 1, 1966, and expiring on August 31, 1967, the Commission shall pay the Contractor the sum of \$19,500.00.

ARTICLE IV - ADDITIONAL CONTRACT PROVISIONS

Appendix "B", attached hereto and made a part hereof, sets forth additional general provisions of this contract.

ARTICLE V - GOVERNMENT PROPERTY

a. The following items of property to be procured or fabricated by the Contractor are hereby listed as "Government property": None.

IN WITNESS WHEREOF, the United States Atomic Energy Commission has caused this Agreement to be signed by its duly authorized representative.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY
COMMISSION

BY: Herman M. Roth
HERMAN M. ROTH
DIRECTOR
~~RESEARCH AND DEVELOPMENT DIVISION~~
(Contracting Officer)

UNIVERSITY OF TENNESSEE

BY: W. A. R. [Signature]
TITLE: Vice President

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APPENDIX "A"

For the Contract Period September 1, 1966 through August 31, 1967.

A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

The Contractor will continue to conduct research on the formation and fate of the thiocyanate group in metabolism. This work will include such approaches as (1) continuation of studies on the nature of the sulfur pool which produces thiocyanate, iminothiazolidine carboxylic acid by cyanide detoxication, (2) investigation of the role of trisulfides as sulfur donors, (3) continuation of the study of the reaction of cyanide with protein in vitro in order to assess the contributions of this reaction to in vivo thiocyanate and iminothiazolidine formation, and (4) continuation of attempts to isolate and purify the enzyme transsulfurase from E. coli.

A-II APPROXIMATE LEVEL OF RESEARCH EFFORT

(a) Contractor Personnel:

Approx.
% of time

Dr. J. L. Wood, Principal Investigator
Research Associate
Technician

25%
80%
90%

Secretarial Assistance
Consultation and Services

100 hours
90 hours

(b) Premises, Facilities, and Materials to be
Furnished by the Contractor:

Adequate facilities and equipment will be available to conduct the proposed research on the origin and fate of thiocyanate in metabolism.

A-III ITEMS OF EQUIPMENT TO BE PURCHASED OR FABRICATED
BY CONTRACTOR EXCEEDING \$500.00 EACH

ESTIMATED
COST

Chromatogram Scanner with Integrator Tricarb
or equal

\$5,000.00

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APPENDIX "B"

ARTICLE B-I - DEFINITIONS

(a) The term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer except for the purpose of deciding an appeal under the article entitled "Disputes."

(b) The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successors or any duly authorized representative of any such person.

(c) Except as otherwise provided in this contract the term "subcontracts" includes purchase orders under this contract.

ARTICLE B-II - INSPECTION, REPORTS, RECORDS AND ACCOUNTS

(a) The Commission shall have the right to inspect, in such manner and at all reasonable times as it deems appropriate, all activities of the Contractor arising in the course of its activities under this contract.

(b) The Contractor shall make progress and other reports in such manner and at such times as may be required by the Commission. The Contractor shall also make such other reports to the Commission, with respect to its activities under this contract, as the Commission may reasonably require from time to time.

(c) The Contractor agrees to keep records and books of account, in accordance with generally accepted accounting principles and practices, covering its costs and expenditures for the research work under this contract.

(d) The Commission shall at all reasonable times be afforded access to the premises and to these books and records and to related correspondence, receipts, vouchers, memoranda, and other data of the Contractor; and the Contractor shall preserve such books and papers, without additional compensation therefor, for a period of three (3) years after completion of this contract.

ARTICLE B-III - PUBLICATION OF RESULTS

(a) Research results obtained under this contract shall be made available to all through normal and accepted channels without restriction except that no Restricted Data as defined in the Atomic Energy Act

of 1954 or other classified information shall be disclosed to unauthorized persons. Such publication shall indicate that the research was supported by the Commission. Seven (7) copies of each article submitted by the Contractor for publication shall be promptly sent to the Commission. The Contractor shall also inform the Commission when the article is published and furnish seven (7) copies of the article as finally published.

(b) It is recognized that during the course of the work hereunder or subsequent thereto, the Contractor, its employees, or its subcontractors may, from time to time, desire to publish, within the limit of security requirements, information regarding technical or scientific developments arising in the course of the contract. In order that public disclosure of such information will not adversely affect the patent interest of the Commission, such information shall be withheld from public disclosure if it discloses an invention or discovery, which shall be promptly reported to the Commission, and in such case, it shall be withheld for a period of four (4) months after submission of the information to the Commission for patent review and possible patent application, unless the Commission approves earlier release.

ARTICLE B-IV - DISCLOSURE OF INFORMATION

(a) It is mutually expected that the activities under this contract will not involve Restricted Data or other classified information or material. If it is anticipated, however, that such information or other material will be involved, or if this expectation changes prior to the expiration or termination of all activities under this contract, said party shall notify the other party accordingly in writing without delay. In any event, the Contractor shall classify, safeguard, and otherwise act with respect to all Restricted Data and other classified information and material, in accordance with applicable law and the requirements of the Commission, and shall promptly inform the Commission in writing if and when Restricted Data or other classified information or material becomes involved. If and when Restricted Data or other classified information or material becomes involved, or in the mutual judgment of the parties it appears likely that Restricted Data or other classified information or material may become involved, the Contractor shall have the right to terminate performance of the work under this contract and in such event the provisions of this contract respecting termination for the convenience of the Government shall apply.

(b) The Contractor shall not permit any individual to have access to Restricted Data, or other classified information, except in accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations or requirements.

(c) The term "Restricted Data" as used in this article means all data concerning the design, manufacture, or utilization of atomic weapons, the production of special nuclear material, or the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142 of the Atomic Energy Act of 1954, as amended.

ARTICLE B-V - RESPONSIBILITY FOR THE WORK

(a) The Contractor is solely responsible for the conduct of the work.

(b) In instances where the carrying out of the contract work involves a Commission license the provisions of the pertinent license shall prevail over any inconsistent provisions of this contract.

ARTICLE B-VI - FELLOWSHIPS

The Contractor agrees that, unless the Commission shall give its prior written approval, the Contractor shall not use any of the funds provided by the Commission under this contract to pay the stipend of any appointment for which commensurate services are not rendered under this contract or to pay any part of the stipend of a fellowship of any kind.

ARTICLE B-VII - WRITTEN MATERIAL

(a) The Contractor hereby grants to the Government a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use and dispose of, and to authorize others to do so, all copyrightable material produced or composed or delivered to the Government or its designees under this contract, including work not first produced or composed by the Contractor in the course of performance under this contract but incorporated in the material produced or composed or delivered under this contract (but only to the extent that the Contractor now has, or prior to final settlement of the contract may have, the right to grant such license to such previously produced or composed work without becoming liable to pay compensation to others solely because of such grant).

(b) The Contractor agrees that, except as the Commission may otherwise specifically authorize in writing, the Contractor will not include in any report or other material delivered under this contract, or in any published material relating to the work under this contract, any copyrighted material owned by others which such owners have not consented to have so included.

(c) The Commission will not publish in advance of the Contractor's publication without prior consultation with the Contractor.

ARTICLE B - VIII - INVENTIONS

(a) Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of or under this contract, the Contractor shall promptly furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights in and to any invention or discovery and any patent application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

(b) No claim for pecuniary award or compensation under the provisions of the Atomic Energy Act of 1954, as amended, shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of or under this contract.

(c) Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs (a) and (b) of this article from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.

Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts and purchase orders, other than purchase orders for standard commercial items, provisions making this article applicable to the subcontract or purchase order. Except as otherwise authorized in writing by the Commission, the Contractor will insert in purchase orders for standard commercial items a provision indemnifying the Government against liability for use of any invention or discovery and for the infringement of any Letters Patent arising by reason of the purchase, use, or disposal by or for the account of the Government of items manufactured or supplied under the purchase order.

ARTICLE B - IX - PROPERTY ITEMS

(a) Except as otherwise provided in this paragraph (a) and paragraph (b) of this Article B-IX, title to all materials, supplies, and equipment purchased or otherwise acquired by the Contractor in the performance of its research activities shall be and remain in the Contractor. Except as otherwise agreed in writing, title to any items of property listed as "Government property" shall pass directly to the Government; such property shall be subject to paragraphs (b), (c), (d), and (e) of this Article B-IX.

(b) Subject to the mutual agreement of the Commission and the Contractor, the Government may furnish the Contractor items of equipment, materials, supplies, or facilities for use by the Contractor in the performance of the contract work; title to these items shall remain in the Government unless otherwise agreed in writing. Such items of property and the items of property listed elsewhere in this contract as Government property are hereinafter referred to as "Government property." Title to Government property shall not be affected by the incorporation or attachment thereof to any property not owned by the Government nor shall any such property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty.

(c) To the extent practicable, the Contractor shall cause all items of Government property to be suitably marked with an identifying mark or symbol indicating that the items are the property of the Government. The Contractor shall maintain at all times and in a manner satisfactory to the Commission records showing the use and disposition of Government property, and unless otherwise authorized in writing by the Commission, shall use Government property only for the purposes of this contract. Such records shall be subject to Commission inspection at all reasonable times and the Commission shall at all reasonable times have access to the premises wherein any items of Government property are located.

(d) The Contractor shall promptly notify the Commission of any loss or destruction of or damage to Government property. It is understood that the Contractor shall not be liable for any such loss, destruction, or damage, or for any compensation therefor, if such loss, destruction, or damage is caused by the negligence of the Government, or by the fault or fault on the part of any corporate officer or the Contractor, or of one or more of the Contractor's representatives having supervision or direction of all or substantially all of the activities under this contract. If the Contractor is liable for any such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission; if the Contractor is not liable therefor, and is indemnified, reimbursed, or otherwise compensated for such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission.

(e) With the written approval of the Commission, the Contractor may sell, transfer, or otherwise dispose of items of Government property to such parties and upon such terms as so approved, or itself acquire title to items of Government property upon such terms as may be mutually agreed upon in writing by the Contractor and the Commission. The proceeds of any such disposition, and any agreed price of any such Contractor acquisition, shall be paid by the Contractor to the Government, or credited on account of Commission payments to be made under this contract, as the Commission may direct. Subject to the other provisions of this contract, the Contractor shall deliver Government property to the Commission upon request (suitably packed and shipped at the Government's expense).

ARTICLE B-X - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT

(a) The performance of work under this contract may be terminated, in whole or from time to time in part, by the Government whenever for any reason the Contracting Officer shall determine that such termination is in the best interest of the Government. Termination of work hereunder shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated and the date upon which such termination becomes effective.

(b) After receipt of the Notice of Termination the Contractor shall cancel its outstanding commitments hereunder covering the procurement of materials, supplies, equipment, and miscellaneous items. In addition, the Contractor shall exercise all reasonable diligence to accomplish the cancellation or diversion of its outstanding commitments covering personal services and extending beyond the date of such termination to the extent that they relate to the performance of any work terminated by the notice. With respect to such canceled commitments, the Contractor agrees to (1) settle all outstanding liabilities and all claims arising out of such cancellation of commitments, with the approval or ratification of the Contracting Officer, to the extent he may require, which approval or ratification shall be final for all purposes of this clause, and (2) assign to the Government, in the manner, at the time, and to the extent directed by the Contracting Officer, all of the right, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

(c) The Contractor shall submit its termination claim to the Contracting Officer promptly after receipt of a Notice of Termination, but in no event later than one year from the effective date thereof, unless one or more extensions in writing are granted by the Contracting Officer upon written request of the Contractor within such one-year period or authorized extension thereof. Upon failure of the Contractor to submit its termination claim within the time allowed, the Contracting Officer may, subject to any review required by the contracting agency's procedures in effect as of the date of execution of this contract, determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

(d) Any determination of costs under paragraph (c) shall be governed by the cost principles set forth in Subpart 1-15.3 of the Federal Procurement Regulations (41 CFR 1-15.3), as in effect on the date of this contract, except that if the Contractor is not an educational institution the determination shall be governed by the cost principles set forth in Subpart 9-15.50 of the Atomic Energy Commission Procurement Regulations (41 CFR 9-15.50).

to any review required by the Contracting Agency's procedures in effect as of the date of execution of this contract, the Contractor and the Contracting Officer shall agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the termination under this clause, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Contractor and any reasonable loss upon outstanding commitments for personal services which it is unable to cancel: Provided, however, That in connection with any outstanding commitments for personal services which the Contractor is unable to cancel, the Contractor shall have exercised reasonable diligence to divert such commitments to its other activities and operations. Any such agreement shall be embodied in an amendment to this contract and the Contractor shall be paid the agreed amount.

(f) The Government may from time to time, under such terms and conditions as it may prescribe, make partial payments against costs incurred by the Contractor in connection with the terminated portion of this contract, wherever, in the opinion of the Contracting Officer, the aggregate of such payments is within the amount to which the Contractor will be entitled hereunder. If the total of such payments is in excess of the amount to which the Contractor is entitled under this clause, such excess shall be payable by the Contractor to the Government upon demand: Provided, That if such excess is not so paid upon demand, it shall be payable by the Contractor to the Government, beginning 30 days from the date of such demand.

(g) The Contractor agrees to transfer title to the Government and deliver in the manner and to the extent, if any, directed by the Contracting Officer, such information and items which, if the contract had been completed would have been required to be furnished to the Government, including:

(1) Completed or partially completed plans, drawings, and information; and

(2) Materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the notice.

Other than the above, any termination inventory resulting from the termination of the contract may, with the written approval of the Contracting Officer, be sold or acquired by the Contractor under the conditions prescribed by and at a price or prices approved by the Contracting Officer. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the Government to the

Contractor under this contract or shall otherwise be entitled to the price or cost of work covered by this contract or paid in any other manner as the Contracting Officer may direct. Following final disposition of property arising from the termination, the Contractor agrees to take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the Contractor and in which the Government has or may acquire an interest.

(h) Any disputes as to questions of fact which may arise hereunder shall be subject to the "Disputes" clause of this contract.

ARTICLE B-XI - PAYMENTS

(a) The Commission shall make payments to the Contractor with respect to the amount of consideration for each period as provided for in Article III of this contract as follows:

45% - following execution of this contract (and following the effectuation of each extended period).

45% - upon subsequent receipt of written request from the Contractor when the Contractor determines the amount requested is then required in connection with work under the contract.

10% - upon receipt of the Contractor's progress report or final report provided for in Article B-XVI, in form and content satisfactory to the Commission, within a reasonable period of time following the expiration of an annual contract period.

(b) The payments made pursuant to paragraph (a) above shall not prejudice or otherwise affect adversely any of the Government's rights under the contract. For purposes of settlement in the event of termination pursuant to Article B-X hereof, these payments shall not be construed as evidentiary or otherwise indicative of the amount or proportion of the work actually performed by the Contractor, and any excess payment in the light of Article B-X shall be promptly returned to the Government.

(c) All payments under this contract, except the first payment provided in (a) above, will be subject to the submission by the Contractor to the Commission of such invoices or vouchers as are satisfactory to the Commission.

(d) With respect to any portion of the first ninety percent of the amount of consideration provided for in Article III of this contract not

previously paid to the Contractor by the Commission under paragraph (a) above, it is understood and agreed that the Commission shall have the right exercisable at any time during the term of this contract, to issue a Letter of Credit as provided for by Treasury Department Circular No. 1075 of May 28, 1964, under which payments of the balance of the first ninety percent of the amount of said consideration will be made. The Contractor agrees that such payments will be under the Letter of Credit, and will be subject to the submission by the Contractor of Payment Vouchers on Letter of Credit (Standard Form 218), in accord with procedures based upon Treasury Department Circular No. 1075 of May 28, 1964, and instructions issued by the Commission which are agreed to by the parties. The final ten percent of the consideration provided for in Article III of this contract will be paid to the Contractor by the Commission in accordance with paragraphs (a) - (c) above. The Commission reserves the right to cancel or modify, increase or decrease the amount covered by the Letter of Credit, if such action is required because of a change in the amount of consideration provided for in Article III of this contract. The issuance and use of a Letter of Credit and receipt of funds pursuant thereto shall not prejudice or otherwise affect adversely any of the Government's rights under this contract.

ARTICLE B-XII - EQUAL OPPORTUNITY

(The following clause is applicable unless this contract is exempt under the rules and regulations of the Secretary of Labor (41 CFR, Ch. 60). Exemptions include contracts and subcontracts (i) not exceeding \$100,000, (ii) for the purchase of supplies, equipment, or raw materials, and (iii) under which work is performed outside the United States and no recruitment of workers within the United States is involved.)

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to the following: employment; upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified persons will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Commission and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the non-discrimination clauses of this contract or with any of such rules, regulations, or orders of the Secretary of Labor, or with any of such executive orders, the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (f) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that all persons performing the work under the contract of the Contractor will take such action with respect to any subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, That in the event the Contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

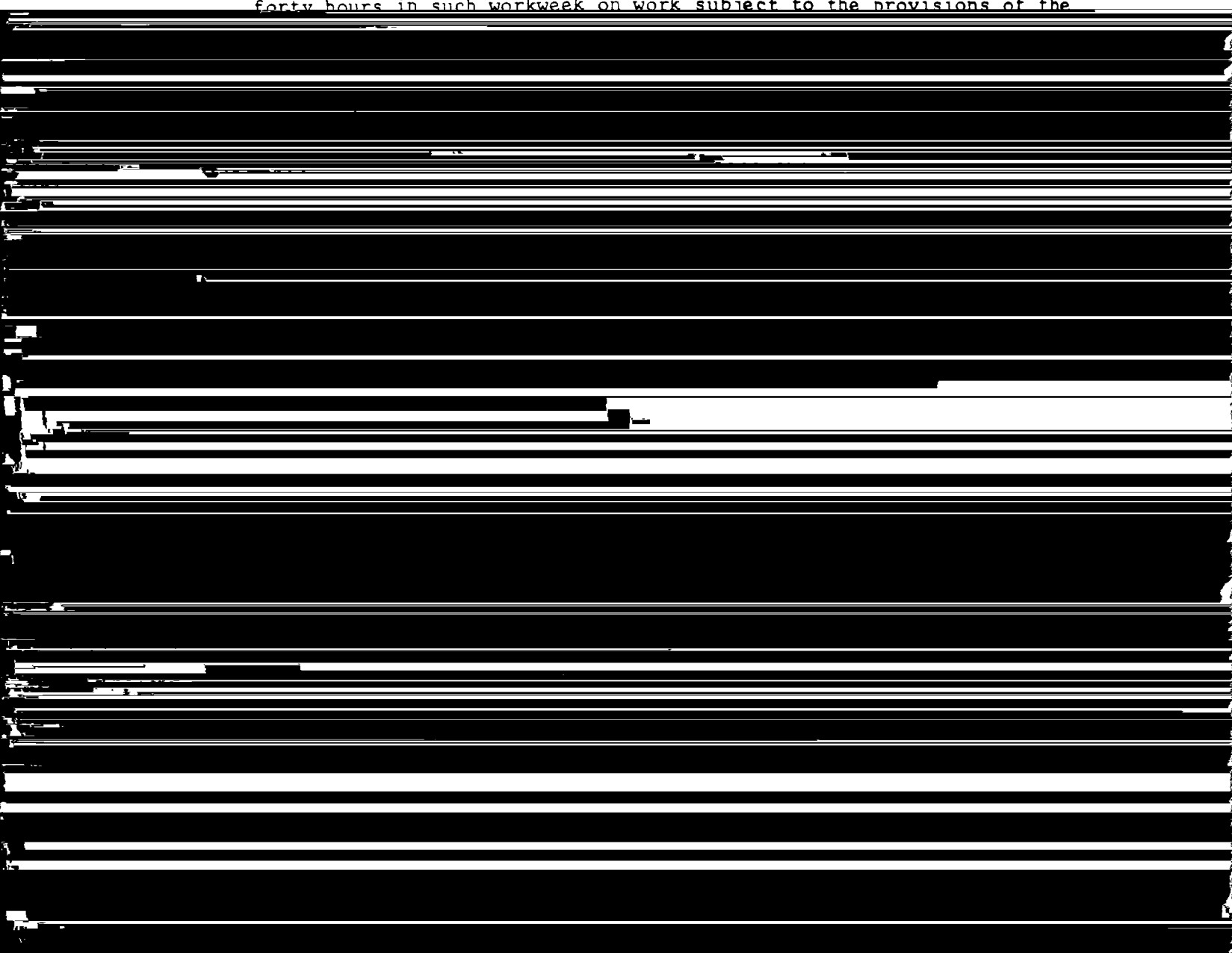
ARTICLE B-XIII - CONVICT LABOR

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

ARTICLE B-XIV - CONTRACT WORK HOURS STANDARDS ACT - OVERTIME
COMPENSATION

This contract, to the extent that it is of a character specified in the Contract Work Hours Standards Act (40 U.S.C. 327-330), is subject to the following provisions and to all other applicable provisions and exceptions of such Act and the regulations of the Secretary of Labor thereunder.

(a) Overtime requirements. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any workweek in which he is employed on such work to work in excess of eight hours in any calendar day or in excess of forty hours in such workweek on work subject to the provisions of the



(d) Subcontracts. The Contractor shall insert paragraphs (a) through (d) of this clause in all subcontracts, and shall require their inclusion in all subcontracts of any tier.

(e) Records. The Contractor shall maintain payroll records containing the information specified in 29 CFR 516.2(a). Such records shall be preserved for three years from the completion of the contract.

ARTICLE B-XV - DISPUTES

(a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless within 30 days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or its duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. 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. Pending final decision of a dispute hereunder, the Contractor shall perform its obligations under the contract in accordance with the Contracting Officer's decision.

(b) This "Disputes" clause does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above: Provided, That nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

ARTICLE B-XVI - OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE B-XVII - COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established

commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE B-XVIII - EXAMINATION OF RECORDS

(a) The Contractor agrees that the Commission and the Comptroller General of the United States or any of their duly authorized representatives shall have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract until the expiration of three years after final payment under this contract unless the Commission authorizes their prior disposition.

(b) The Contractor further agrees to include in all its subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract unless the Commission authorizes their prior disposition. The term "subcontract" as used in this clause excludes (i) purchase orders not exceeding \$2500 and (ii) subcontracts or purchase orders for public utility services or rates established for uniform applicability to the general public.

(c) Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE B-XIX - BUY AMERICAN ACT

(a) In acquiring end products, the Buy American Act (41 U. S. Code 10 a-d) provides that the Government give preference to domestic source end products. For the purpose of this clause:

(i) "Components" means those articles, materials, and supplies, which are directly incorporated in the end products:

(ii) "End products" means those articles, materials, and supplies, which are to be acquired under this contract for public use; and

(iii) A "domestic source end product" means (A) an unmanufactured end product which has been mined or produced in the United States

and (B) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. For the purposes of this (a) (iii), (B), components of foreign origin of the same type or kind as the products referred to in (b) (ii) or (iii) of this clause shall be treated as components mined, produced, or manufactured in the United States.

(b) The Contractor agrees that there will be delivered under this contract only domestic source end products, except end products:

(i) Which are for use outside the United States;

(ii) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;

(iii) As to which the Commission determines the domestic preference to be inconsistent with the public interest; or

(iv) As to which the Commission determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10502, dated December 17, 1954.)

ARTICLE B-XX - ASSIGNMENT; SUBCONTRACTING

Neither this contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor, except as expressly authorized in writing by the Commission. The Contractor shall not subcontract any research or development work under this contract, except as expressly authorized in writing by the Commission.

ARTICLE B-XXI - REPORTS AND RENEWAL PROPOSALS

The Contractor shall furnish seven (7) copies of the following reports and renewal proposals, if any, addressed to:

Research and Development Division
Oak Ridge Operations Office
U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee 37830

(a) Technical Progress Report. The technical progress report shall briefly describe the scope of investigations undertaken and the significant results obtained. It shall also explain any significant differences between

the actual level of effort and that contemplated in the contract (see Article II). Technical reports and articles prepared for publication shall be filed with the Contracting Officer. Reprints or preprints of all such material shall be appended and material contained therein need not be duplicated in the report. Progress reports shall be submitted approximately three months in advance of the expiration of the current contract term and shall give the Contractor's best estimate of the probable course and level of effort of the remainder of the current contract term. Except as the Commission may otherwise request, no further progress report will be required for any contract year unless there has been a significant change in level of effort or scientific results between the latest progress report by the Contractor and its actual experience; this shall be reported promptly.

(b) Final Report. Upon termination or expiration of the total period of performance, the Contractor shall submit, promptly, a summary of its activities for the entire period, including a list of publications issued during the total term of the contract and copies of any reprints not previously submitted, as well as a comprehensive evaluation of progress in the area of research supported by the contract.

(c) Renewal Proposals. A renewal proposal, if any, shall be submitted along with the technical progress report, and each of the two documents shall be separately bound.

(d) Report of equipment purchased or fabricated. The Contractor shall itemize equipment having a useful life expectancy in excess of one year and items appearing in Article V) and submit a report thereof immediately following the expiration of the contract year specified in Article II. Where the cost of individual pieces of equipment exceeds \$500, they will be listed individually. Where individual items cost \$100 to \$500, they will also be individually listed to the extent practical or grouped in general categories, such as "electronic equipment" or "6 motors," with the total dollar amount of such category. The cost of purchased items shall be determined by the actual invoice cost of such items, but the cost of fabricated items may be established by engineering estimates.

ARTICLE B-XXII - FOREIGN TRAVEL

Foreign travel shall be subject to the prior approval of the Contracting Officer.

ARTICLE B-XXIII - PRIORITIES, ALLOCATIONS, AND ALLOTMENTS

The Contractor shall follow the provisions of DMS Regulation 1 and all other applicable regulations and orders of the Business and Defense Service Administration in obtaining controlled materials and other

products and materials needed to fill this order. This contract carries rating D-400, certified for national defense under DMS Regulation 1.

ARTICLE B-XXIV - UTILIZATION OF CONCERNS IN LABOR SURPLUS AREAS

It is the policy of the Government to place contracts with concerns which will perform such contracts substantially in areas of persistent or substantial labor surplus, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts in accordance with this policy. In complying with the foregoing and with paragraph (b) of the clause of this contract entitled "Utilization of Small Business Concerns," the Contractor in placing its subcontracts shall observe the following order of preference: (a) persistent labor surplus area concerns which are also small business concerns; (b) other persistent labor surplus area concerns; (c) substantial labor surplus area concerns which are also small business concerns; (d) other substantial labor surplus area concerns; and (e) small business concerns which are not labor surplus area concerns.

ARTICLE B-XXV - UTILIZATION OF SMALL BUSINESS CONCERNS

(a) It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

contracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

ARTICLE B-XXVI - SOVIET-BLOC CONTROLS

In connection with the contract activities, the Contractor agrees to comply with the requirements set forth in Appendix "D", attached hereto and made a part of this contract, relating to the countries listed herein. From time to time, by written notice to the Contractor, the Commission shall have the right to change the listing of countries in Appendix "D" upon a determination by the Commission that such change is in conformance with national policy. The Contractor shall have the right to terminate its performance under this contract upon at least sixty (60) days' prior written notice to the Commission if the Contractor determines that it is unable, without substantially interfering with its policies as an educational institution or without adversely affecting its performance, to continue performance of the work under this contract as a result of a change in Appendix "D" made by the Commission pursuant to the preceding sentence. If the Contractor elects to terminate performance the provisions of this contract respecting termination for the convenience of the Government shall apply.

APPENDIX "D"

REQUIREMENTS RELATING TO EXCHANGES OF INFORMATION

1. The requirements set forth herein relate to the dissemination by the Contractor of the information developed under this contract and/or under other Commission programs to Countries by or through exchange activities, including but not limited to employment, work participation, visits and correspondence. The term "Countries" (including where used in the term "Soviet-Bloc Countries"), as used in this Appendix "D", includes all nations (other than the United States, its territories and possessions), the embassies, consulates, and agencies of such nations, and individuals and organizations of such nations.
2. For the purpose of these requirements the Soviet-Bloc Countries consist of:

Group A

Albania
Bulgaria
Czechoslovakia
Estonia
Hungary
Latvia
Lithuania
Poland and Danzig
Rumania
Union of Soviet Socialist Republics

Group B

China, including Manchuria (includes Inner Mongolia; the provinces of Tsinghai and Sikang. Tibet; the former Kwantung Leased Territory, the present Port Arthur Naval Base Area and Liaoning Province) and excluding Taiwan (Formosa)
Communist-controlled area of Viet Nam
East Germany (Soviet Zone of Germany and the Soviet Sector of Berlin)
North Korea
Outer Mongolia
Cuba

3. The following exchange activities between the Contractor and any of the Soviet-Bloc Countries shall be subject to the prior written approval of the Commission on an individual case basis:

- a. Employees of the Contractor engaging in employment by activities of, or travel to, any of the Soviet-Bloc Countries where such employees' travel, or other activity is financially supported by the Commission.
 - b. Employment of, or participation in activities of the Contractor by, nationals of any of the Soviet-Bloc Countries in furtherance of or in connection with work under this contract.
 - c. Participation of nationals of any of the Soviet-Bloc Countries at U. S. conferences, meetings and symposia which are supported by Commission funds or are organized and directed by persons receiving financial support for such activities from the Commission and acting in the name of the Commission or the Contractor.
4. Unofficial travel to any of the Soviet-Bloc Countries by employees of the Contractor who hold a Commission security clearance will be subject to the prior approval of the Commission on an individual case basis.
 5. The Contractor shall inform all of its employees who formerly held a Commission security clearance of the Commission's desire to be advised of their proposed unofficial travel to any of the Soviet-Bloc Countries. The Contractor shall notify the Commission of all such proposed unofficial travel by its employees of which it becomes aware pursuant to the notification given in accordance with the provisions hereof.
 6. The Contractor, if the contract herein is a cost-type rather than a fixed-price type, shall inform the Commission, in advance whenever feasible, of all proposed visits by nationals of any of the Soviet-Bloc Countries and shall furnish a report thereof in accordance with directions furnished by the Contracting Officer.
 7. All correspondence and other communications relative to the exchange of information whether with Soviet-Bloc or other Countries shall be subject to the following policy and procedure:
 - a. Transmittal of published information relating to the peaceful uses of atomic energy is permitted and encouraged provided the transmittals to Countries listed in Group B of Section 1, above, are made in the name of the Contractor or the individual scientist and not in the name of the Commission;
 - b. Transmittal of unpublished information relating to the peaceful uses of atomic energy is permitted and encouraged provided:
 - (1) The information transmitted is made available to requesters in the United States. In order to insure availability to requesters in the United States, one copy of all such unpublished information (with the exception of personal correspondence covering informal scientific or technical opinion) shall be forwarded to the Contracting Officer;

- (2) The transmittals to Countries listed in Section 2., above, are accompanied by a request for appropriate equally valuable material in return; and
 - (3) The transmittals to Countries listed in Group B of Section 2., above, are made in the name of the Contractor or the individual scientist and not in the name of the Commission.
- c. Requests for information not falling within the scope of the above stated policy and any unusual requests for published and unpublished information shall be forwarded to the Contracting Officer. Examples of unusual requests for published and unpublished information include: (1) Requests for collections of published documents or for unpublished information which are not readily available to the recipient of the request; (2) Requests for comprehensive and detailed unpublished design information and unpublished development information on major equipment, such as reactors, chemical processing plants, and accelerators; and (3) Official correspondence from any government other than the United States, its territories and possessions.

As used in this Section 7:

- a. The term "published information" means all unclassified scientific and technical documents; internal and informal reports; reprints; preprints; page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions, etc., originating within Commission programs, and available either from the Division of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or other sources from which the public may obtain the above types of information by purchase or without cost.
 - b. The term "unpublished information" means all unclassified scientific and technical documents; internal and informal reports; reprints, preprints, page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions, etc., originating within Commission programs, but which are not available from the Division of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or from other sources from which the public may normally obtain the information by purchase or without cost.
8. In all exchanges of information, care should be taken that the release of the information does not result in the disclosure of Restricted Data or other classified information, or privileged information, in violation of applicable law and/or the provisions of this contract; or the disclosure of any information that would adversely affect the patent interest of the Commission in violation of the provisions of this contract.

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 9th day of September, 1965, 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 UNIVERSITY OF TENNESSEE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and Modifications thereto numbered 1 through 11 providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to amend the contract further to provide for the continuance of this research and/or the performance of additional research without additional funds and to provide for certain other changes; and

WHEREAS, this Supplemental Agreement is authorized by law, including the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties do mutually agree that said contract, as amended, is hereby further amended in the following particulars, but in no others:

1. The date "August 31, 1965", as such appears in ARTICLE II - THE PERIOD FOR PERFORMANCE, in Paragraph (a) of ARTICLE III - CONSIDERATION, and in the portion of Appendix "A" which states the contract period, is deleted and the date "August 31, 1966", is substituted therefor.

2. ARTICLE B-XXVII - CIVIL RIGHTS ACT OF 1964 of Appendix "B" is deleted in its entirety.

IN WITNESS WHEREOF, the parties have executed this Supplemental Agreement.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Herman M. Roth
HERMAN M. ROTH
DIRECTOR
~~RESEARCH AND DEVELOPMENT DIVISION~~
(Contracting Officer)

UNIVERSITY OF TENNESSEE

BY: W. M. R. Mott

TITLE: President

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SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 10th day of October, 1964, effective as of the 1st day of September, 1964, 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 UNIVERSITY OF TENNESSEE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and modifications thereto numbered 1 through 10 providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to amend the contract further to provide for the continuance of this research and/or the performance of additional research and to provide for certain other changes; and

WHEREAS, this Supplemental Agreement is authorized by law, including the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties do mutually agree that said contract, as amended, is hereby further amended in the following particulars, but in no other way:

1. The date "August 31, 1964", as such appears in ARTICLE II - THE PERIOD FOR PERFORMANCE, in Paragraph (a) of ARTICLE III - CONSIDERATION, and in the portion of Appendix "A" which states the Contract Period, is deleted and the date "August 31, 1965" is substituted therefor.

2. Paragraph (a) of ARTICLE III - CONSIDERATION is revised to read as follows:

"(a) In full consideration of the Contractor's performance hereunder for the period commencing on September 1, 1964, and expiring on August 31, 1965, the Commission shall pay the Contractor the sum of \$18,000.00."

3. The provisions of Appendix "A" to the contract are deleted and the provisions of the revised Appendix "A", attached hereto and made a part hereof, are substituted therefor.

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4. The following ARTICLE B-XXVII is added to Appendix "B":

"ARTICLE B-XXVII - CIVIL RIGHTS ACT OF 1964

"It is agreed that when implementing rules, regulations or orders are issued and made effective pursuant to Sec. 602 of Title VI of the Civil Rights Act of 1964, the Contractor shall, to the extent a grant or program or activity under the contract is covered by such rules, regulations or orders, promptly notify the Commission in writing that it will comply therewith or, alternatively, that it elects not to accept them as conditions of the contract or grant, as the case may be. Should the choice be the latter, the Commission may terminate the contract pursuant to the provisions of this contract respecting the right to terminate for the convenience of the Government or may terminate the grant; in the latter regard, the Commission may require that the Contractor revert in the Government title to any items of equipment, in the Contractor's possession or custody, vested in the Contractor by grant from the Commission between July 9, 1964, and the date of termination."

IN WITNESS WHEREOF, the parties have executed this Supplemental

~~UNITED STATES OF AMERICA~~

THE UNIVERSITY OF TENNESSEE

BY: ~~UNITED STATES ATOMIC ENERGY~~
~~COMMISSION~~

BY: 

President

~~(Contracting Officer)~~

~~UNIVERSITY OF TENNESSEE~~

~~XXXXXXXXXXXXXXXXXXXX~~

~~XXXXXXXXXXXXXXXXXXXX~~

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: 

R. G. Humphries

Director, Contract Division, CRC
Contracting Officer

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APPENDIX "A"

For the Contract Period September 1, 1964 through August 31, 1965.

A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

The Contractor will continue to conduct research on the formation and metabolism of the thiocyanate group in animal tissues. This work will include such approaches as (1) study of the relative contributions of protein sulfur, glutathione and cysteine sulfur, thiosulfate sulfur and mercaptopyruvate sulfur to thiocyanate formation, (2) study of the conditions under which proteins yield thiocyanate upon reaction with cyanide and the nature of the other products formed, (3) study of the chemical and physiological implications of the reaction of cyanide with disulfide linkages and with the dipeptide linkage between the cystine amino group and other amino acids, (4) further study of the transsulfurase enzymes, (5) study of the metabolism of thiocyanate in the thyroid gland with attention being given to its relationship to iodine metabolism in thyroid tissue, and (6) attempts at the chemical synthesis and characterization of the compound resulting from the substitution of a thiocyanate group on the phenolic ring of the tyrosine residue.

A-II APPROXIMATE LEVEL OF RESEARCH EFFORT**(a) Contractor Personnel:**

Approx.
% of time

Dr. J. L. Wood	Academic	20%
Principal Investigator	2 mos. summer	50%
Research Associate		100%
Research Assistant		75%
Technician		100%
Administrative Assistant		50 hours
Secretary and Bookkeeper		100 hours
Consultation and Services		90 hours

**(b) Premises, Facilities, and Materials to be
Furnished by the Contractor:**

Adequately equipped laboratory, office shop and library facilities are available to conduct the proposed research on the origin and fate of thiocyanate ion in metabolism.

**A-III ITEMS OF EQUIPMENT TO BE PURCHASED OR FABRICATED BY CONTRACTOR
COSTING \$500 OR MORE**

None

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SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 15th day of October, 1963, effective as of the 1st day of September, 1963, 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 the UNIVERSITY OF TENNESSEE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and Modifications thereto numbered 1 through 9 providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to amend the contract further to provide for: (a) the continuance of this research and/or the performance of additional research; (b) the revisions and/or additions of certain provisions thereof in accordance with current applicable rules and regulations of the Commission; and (c) as a result thereof, restate the provisions of this contract as of the effective date of this Supplemental Agreement; and

WHEREAS, this Supplemental Agreement is authorized by law, including the Atomic Energy Act of 1954.

NOW, THEREFORE the parties do mutually agree that the contract (including its Appendices), as amended, is hereby revised to read as follows:

ARTICLE I - THE RESEARCH TO BE PERFORMED

(a) The Contractor shall furnish personnel, facilities, equipment, materials, and supplies substantially to the extent set forth in Appendix "A", attached hereto and made a part hereof, endeavor to procure or fabricate the items specified in A-III of said Appendix "A", and therewith perform to the best of its ability the research provided for in Appendix "A" and report thereon pursuant to the provisions of this contract. Substantial deviations from the foregoing shall be discussed with and subject to the written approval of the Commission.

(b) This work shall be conducted under the direction of Dr. John L. Wood or such other member of the Contractor's staff as may be mutually satisfactory to the parties.

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ARTICLE II - THE PERIOD FOR PERFORMANCE

The period for performance under this contract shall expire on August 31, 1964; provided, however, that this period may be extended for additional periods by the mutual written agreement of the parties.

ARTICLE III - CONSIDERATION

(a) In full consideration of the Contractor's performance hereunder for the period commencing on September 1, 1963, and expiring on August 31, 1964, the Commission shall pay the Contractor the sum of \$11,635.00.

ARTICLE IV - ADDITIONAL CONTRACT PROVISIONS

Appendix "B", attached hereto and made a part hereof, sets forth additional general contract provisions of this contract.

ARTICLE V - GOVERNMENT PROPERTY

(a) The following items of property to be procured or fabricated by the Contractor are hereby listed as "Government property": None.

Agreement.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Hermann K. M.

RESEARCH AND DEVELOPMENT DIVISION
(Contracting Officer)

UNIVERSITY OF TENNESSEE

BY: [Signature]

TITLE: President

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APPENDIX "A"

For the Contract Period September 1, 1963 through August 31, 1964.

A-1 RESEARCH TO BE PERFORMED BY CONTRACTOR

The Contractor will continue to conduct research on the fate of the thiocyanate ion in animal metabolism and the origin of the thiocyanate ion in the body, the mechanism of its physiological action, and the nature of its metabolic products. This research will include such studies as (1) investigation of transsulfurases enzymes, (2) the kinetics of the reactions of cyanide with proteins and other disulfide-containing compounds, (3) detoxication of cyanide and reactions related to generation of sulfhydryl groups, and (4) the mechanism of the cleavage of the peptide link on the cysteine amino group of peptides and proteins.

A-II APPROXIMATE LEVEL OF RESEARCH EFFORT**(a) Contractor Personnel:**

Approx.
% of time

Dr. J. L. Wood - Principal Investigator	15%
Research Associate	92%
Research Assistant	17%
Technician	100%
Technical Assistant	25%
Administrative Assistant	50 hours
Secretarial and Bookkeeping Assistance	100 hours
Consultation and Services	97 hours

**(b) Premises, Facilities, and Materials to be
Furnished by the Contractor:**

Adequately equipped facilities including laboratories; machine, wood, and glass shop; cold room; constant temperature room; and dark rooms will be furnished for use in conducting research on the project. Among the equipment items available are **spectrophotometers, ultracentrifuges, amino acid analyzers, scintillation counter, scalars, high voltage electrophoresis, polarimeter, countercurrent extractors, and gas chromatograph.**

**A-III ITEMS OF EQUIPMENT TO BE PURCHASED OR FABRICATED BY CONTRACTOR
COSTING \$500 OR MORE**

None

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APPENDIX "B"

ARTICLE B-I - DEFINITIONS

(a) The term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer except for the purpose of deciding an appeal under the article entitled "Disputes."

(b) The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successors or any duly authorized representative of any such person.

(c) Except as otherwise provided in this contract the term "subcontracts" includes purchase orders under this contract.

ARTICLE B-II - INSPECTION, REPORTS, RECORDS AND ACCOUNTS

(a) The Commission shall have the right to inspect, in such manner and at all reasonable times as it deems appropriate, all activities of the Contractor arising in the course of its activities under this contract.

(b) The Contractor shall make progress and other reports in such manner and at such times as specified in Article B-XXI. The Contractor shall also make such other reports to the Commission, with respect to its activities under this contract, as the Commission may reasonably require from time to time.

(c) The Contractor agrees to keep records and books of account, in accordance with generally accepted accounting principles and practices, covering its costs and expenditures for the research work under this contract.

(d) The Commission shall at all reasonable times be afforded access to the premises and to these books and records and to related correspondence, receipts, vouchers, memoranda, and other data of the Contractor; and the Contractor shall preserve such books and papers, without additional compensation therefor, for a period of three (3) years after completion of this contract.

ARTICLE B-III - PUBLICATION OF RESULTS

(a) Research results obtained under this contract shall be made available to all through normal and accepted channels without restriction except that no Restricted Data as defined in the

Atomic Energy Act of 1954 or other classified information shall be disclosed to unauthorized persons. Such publication shall indicate that the research was supported by the Commission. A copy of each article submitted by the Contractor for publication shall be promptly sent to the Commission. The Contractor shall also inform the Commission when the article is published and furnish a copy of the article as finally published.

(b) It is recognized that during the course of the work hereunder or subsequent thereto, the Contractor, its employees, or its subcontractors, may from time to time, desire to publish, within the limit of security requirements, information regarding technical or scientific developments arising in the course of the contract. In order that public disclosure of such information will not adversely affect the patent interest of the Commission, such information shall be withheld from public disclosure if it discloses an invention or discovery, which shall be promptly reported to the Commission, and in such case, it shall be withheld for a period of four (4) months after submission of the information to the Commission for patent review and possible patent application, unless the Commission approves earlier release.

ARTICLE B-IV - DISCLOSURE OF INFORMATION

(a) It is mutually expected that the activities under this contract will not involve Restricted Data or other classified information or material. It is understood, however, that if in the opinion of either party this expectation changes prior to the expiration or termination of all activities under this contract, said party shall notify the other party accordingly in writing without delay. In any event, the Contractor shall classify, safeguard, and otherwise act with respect to all Restricted Data and other classified information and material, in accordance with applicable law and the requirements of the Commission, and shall promptly inform the Commission in writing if and when Restricted Data or other classified information or material becomes involved. If and when Restricted Data or other classified information or material becomes involved, or in the mutual judgment of the parties it appears likely that Restricted Data or other classified information or material may become involved, the Contractor shall have the right to terminate performance of the work under this contract and in such event the provisions of this contract respecting termination for the convenience of the Government shall apply.

(b) The Contractor shall not permit any individual to have access to Restricted Data, or other classified information, except in accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations or requirements.

(c) The term "Restricted Data" as used in this article means all data concerning the design, manufacture, or utilization of atomic weapons, the production of special nuclear material, or the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142 of the Atomic Energy Act of 1954, as amended.

ARTICLE B-V - RESPONSIBILITY FOR THE WORK

(a) The Contractor is solely responsible for the conduct of the work.

(b) In instances where the carrying out of the contract work involves a Commission license the provisions of the pertinent license shall prevail over any inconsistent provisions of this contract.

ARTICLE B-VI - FELLOWSHIPS

The Contractor agrees that, unless the Commission shall give its prior written approval, the Contractor shall not use any of the funds provided by the Commission under this contract to pay the stipend of any appointment for which commensurate services are not rendered under this contract or to pay any part of the stipend of a fellowship of any kind.

ARTICLE B-VII - WRITTEN MATERIAL

(a) The Contractor hereby grants to the Government a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use and dispose of, and to authorize others to do so, all copyrightable material produced or composed or delivered to the Government or its designees under this contract, including work not first produced or composed by the Contractor in the course of performance under this contract but incorporated in the material produced or composed or delivered under this contract (but only to the extent that the Contractor now has, or prior to final settlement of the contract may have, the right to grant such license to such previously produced or composed work without becoming liable to pay compensation to others solely because of such grant).

(b) The Contractor agrees that, except as the Commission may otherwise specifically authorize in writing, the Contractor will not include in any report or other material delivered under this contract, or in any published material relating to the work under this contract, any copyrighted material owned by others which such owners have not consented to have so included.

(c) The Commission will not publish in advance of the Contractor's publication without prior consultation with the Contractor.

ARTICLE B-VIII - PATENTS

(a) Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of or under this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

(b) No claim for pecuniary award or compensation under the provisions of the Atomic Energy Acts of 1946 and 1954 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of or under this contract.

(c) Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs (a) and (b) of this article from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.

(d) Except as otherwise authorized in writing by the Commission the Contractor will insert in all subcontracts and purchase orders other than purchase orders for standard commercial items, provisions making this article applicable to the subcontract or purchase order. Except as otherwise authorized in writing by the Commission, the Contractor will insert in purchase orders for standard commercial items a provision indemnifying the Government against liability for use of any invention or discovery and for the infringement of any Letters Patent arising by reason of the purchase, use, or disposal by or for the account of the Government of items manufactured or supplied under the purchase order.

ARTICLE B-IX - PROPERTY ITEMS

(a) Except as otherwise provided in this paragraph (a) and paragraph (b) of this Article B-IX, title to all materials,

supplies, and equipment purchased or otherwise acquired by the Contractor in the performance of its research activities shall be and remain in the Contractor. Except as otherwise agreed in writing, title to any items of property listed as "Government property" shall pass directly to the Government; such property shall be subject to paragraphs (b), (c), (d), and (e) of this Article B-IX.

(b) Subject to the mutual agreement of the Commission and the Contractor, the Government may furnish the Contractor items of equipment, materials, supplies, or facilities for use by the Contractor in the performance of the contract work; title to these items shall remain in the Government unless otherwise agreed in writing. Such items of property and the items of property listed elsewhere in this contract as Government property are hereinafter referred to as "Government Property." Title to Government property shall not be affected by the incorporation or attachment thereof to any property not owned by the Government nor shall any such property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty.

(c) To the extent practicable, the Contractor shall cause all items of Government property to be suitably marked with an identifying mark or symbol indicating that the items are the property of the Government. The Contractor shall maintain at all times and in a manner satisfactory to the Commission records showing the use and disposition of Government property, and unless otherwise authorized in writing by the Commission, shall use Government property only for the purposes of this contract. Such records shall be subject to Commission inspection at all reasonable times and the Commission shall at all reasonable times have access to the premises wherein any items of Government property are located.

(d) The Contractor shall promptly notify the Commission of any loss or destruction of or damage to Government property. It is understood that the Contractor shall not be liable for any such loss, destruction, or damage, unless same results from wilful misconduct or lack of good faith on the part of any corporate officer of the Contractor, or of one or more of the Contractor's representatives having supervision or direction of all or substantially all of the activities under this contract. If the Contractor is liable for any such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission; if the Contractor is not liable therefor, and is indemnified, reimbursed, or otherwise compensated for such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission.

(e) With the written approval of the Commission, the Contractor may sell, transfer or otherwise dispose of items of Government property to such parties and upon such terms as so approved, or itself acquire title to items of Government property upon such terms as may be mutually agreed upon in writing by the Contractor and the Commission. The proceeds of any such disposition, and any agreed price of any such Contractor acquisition, shall be paid by the Contractor to the Government, or credited on account of Commission payments to be made under this contract, as the Commission may direct. Subject to the other provisions of this contract, the Contractor shall deliver Government property to the Commission upon request (suitably packed and shipped at the Government's expense).

ARTICLE B-X - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT

(a) The performance of work under this contract may be terminated, in whole or from time to time in part, by the Government whenever for any reason the Contracting Officer shall determine that such termination is in the best interest of the Government. Termination of work hereunder shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated and the date upon which such termination becomes effective.

(b) After receipt of the Notice of Termination the Contractor shall cancel its outstanding commitments hereunder covering the procurement of materials, supplies, equipment, and miscellaneous items. In addition, the Contractor shall exercise all reasonable diligence to accomplish the cancellation or diversion of its outstanding commitments covering personal services and extending beyond the date of such termination to the extent that they relate to the performance of any work terminated by the notice. With respect to such canceled commitments the Contractor agrees to (1) settle all outstanding liabilities and all claims arising out of such cancellation of commitments, with the approval or ratification of the Contracting Officer, to the extent he may require, which approval or ratification shall be final for all purposes of this clause, and (2) assign to the Government, in the manner, at the time, and to the extent directed by the Contracting Officer, all of the right, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

(c) The Contractor shall submit its termination claim to the Contracting Officer promptly after receipt of a Notice of

Termination, but in no event later than one year from the effective date thereof, unless one or more extensions in writing are granted by the Contracting Officer upon written request of the Contractor within such one-year period or authorized extension thereof. Upon failure of the Contractor to submit its termination claim within the time allowed, the Contracting Officer may, subject to any review required by the contracting agency's procedures in effect as of the date of execution of this contract, determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

(d) Any determination of costs under paragraph (c) shall be governed by the cost principles set forth in Subpart 1-15.3 of the Federal Procurement Regulations (41 CFR 1-15.3), as in effect on the date of this contract, except that if the Contractor is not an educational institution the determination shall be governed by the cost principles set forth in Subpart 9-15.50 of the Atomic Energy Procurement Regulations (41 CFR 9-15.50).

(e) Subject to the provisions of paragraph (c) above, and subject to any review required by the contracting agency's procedures in effect as of the date of execution of this contract, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the termination under this clause, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Contractor and any reasonable loss upon outstanding commitments for personal services which it is unable to cancel: Provided, however, That in connection with any outstanding commitments for personal services which the Contractor is unable to cancel, the Contractor shall have exercised reasonable diligence to divert such commitments to its other activities and operations. Any such agreement shall be embodied in an amendment to this contract and the Contractor shall be paid the agreed amount.

(f) The Government may from time to time, under such terms and conditions as it may prescribe, make partial payments against costs incurred by the Contractor in connection with the terminated portion of this contract, whenever, in the opinion of the Contracting Officer, the aggregate of such payments is within the amount to which the Contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this clause, such excess shall be payable by the Contractor to the Government upon demand: Provided, That if such excess is not so paid upon demand, interest thereon shall be payable by the Contractor to the Government at the rate

of 6 percent per annum, beginning 30 days from the date of such demand.

(g) The Contractor agrees to transfer title to the Government and deliver in the manner, at the times, and to the extent, if any, directed by the Contracting Officer, such information and items which, if the contract had been completed, would have been required to be furnished to the Government, including:

(1) Completed or partially completed plans, drawings, and information; and

(2) Materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the notice.

Other than the above, any termination inventory resulting from the termination of the contract may, with the written approval of the Contracting Officer, be sold or acquired by the Contractor under the conditions prescribed by and at a price or prices approved by the Contracting Officer. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the Government to the Contractor under this contract or shall otherwise be credited to the price or cost of work covered by this contract or paid in such other manner as the Contracting Officer may direct. In the event of any disposition of property arising from the termination, the Contractor agrees to take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the Contractor and in which the Government has or may acquire an interest.

(h) Any disputes as to questions of fact which may arise hereunder shall be subject to the "Disputes" clause of this contract.

ARTICLE B-XI - PAYMENTS

(a) The Commission shall make payments to the Contractor with respect to the amount of consideration for each period as provided for in Article A-III of this contract as follows:

45% - following execution of this contract (and following the effectuation of each extended period).

45% - upon subsequent receipt of written request from the Contractor when the Contractor determines the amount requested is then required in connection with work under the contract.

10% - following submission by the Contractor of the annual progress report or final report provided for in Article B-XXI, in form and content satisfactory to the Commission, within a reasonable period of time following the expiration of an annual contract period.

(b) The payments made pursuant to paragraph (a) above shall not prejudice or otherwise affect adversely any of the Government's rights under the contract. For purposes of settlement in the event of termination pursuant to Article B-X hereof, these payments shall not be construed as evidentiary or otherwise indicative of the amount or proportion of the work actually performed by the Contractor, and any excess payment in the light of Article B-X shall be promptly returned to the Commission.

(c) All payments under this contract, except the first payment provided in (a) above, will be subject to the submission by the Contractor to the Commission of such invoices or vouchers as are satisfactory to the Commission.

ARTICLE B-XII - NONDISCRIMINATION IN EMPLOYMENT

(The following clause is applicable unless this contract is exempt under the rules and regulations of the President's Committee on Equal Employment Opportunity (issued pursuant to Executive Order No. 10925 of March 6, 1961 (26 F.R. 1977).)

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under this clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.

(e) The Contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, as amended, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to its books, records, and accounts by the contracting agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, as amended, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order No. 10925 of March 6, 1961, as amended, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE B-XIII - CONVICT LABOR

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

ARTICLE B-XIV - WORK HOURS ACT OF 1962 - OVERTIME
COMPENSATION

This contract, to the extent that it is of a character specified in the Work Hours Act of 1962 (Public Law 87-581, 76 Stat. 357-360) and is not covered by the Walsh-Healey Public Contracts Act (41 U.S.C. 35-45), is subject to the following provisions and to all other provisions and exceptions of said Work Hours Act of 1962.

(a) No contractor or subcontractor contracting for any part of the contract work shall require or permit any laborer or mechanic to be employed on such work in excess of eight hours in any calendar day or in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours.

(b) In the event of any violation of the provisions of paragraph (a), the Contractor and any subcontractor responsible for such violation shall be liable to any affected employee for his unpaid wages. In addition, such contractor or subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed, with respect to each individual laborer or mechanic employed in violation of the provisions of paragraph (a), in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of eight hours or in excess of forty hours in a workweek without payment of the required overtime wages.

(c) The Contracting Officer may withhold, or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor, the full amount of wages required by this contract and such sums as may administratively be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for liquidated damages as provided in paragraph (b).

(d) The Contractor agrees to insert the foregoing paragraphs (a), (b), and (c), and this paragraph (d) in all sub-contracts.

ARTICLE B-XV - DISPUTES

(a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless within 30 days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or its duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. 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. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

(b) This "Disputes" clause does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above. Provided, That nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

ARTICLE B-XVI - OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE B-XVII - COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE B-XVIII - EXAMINATION OF RECORDS

(a) The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract.

(b) The Contractor further agrees to include in all its subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this clause excludes (i) purchase orders not exceeding \$2,500 and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

(c) Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE B-XIX - BUY AMERICAN ACT

(a) In acquiring end products, the Buy American Act (41 U.S. Code 10a-d) provides that the Government give preference to domestic source end products. For the purpose of this clause:

(i) "Components" means those articles, materials, and supplies, which are directly incorporated in the end products;

(ii) "End products" means those articles, materials, and supplies, which are to be acquired under this contract for public use and

(iii) A "domestic source end product" means (A) an unmanufactured end product which has been mined or produced in the United States and (B) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the costs of all its components. For the purposes of this (a) (iii) (B), components of foreign origin of the same type or kind as the products referred to in (b) (ii) or (iii) of this clause shall be treated as components mined, produced, or manufactured in the United States.

(b) The Contractor agrees that there will be delivered under this contract only domestic source end products, except end products:

(i) Which are for use outside the United States;

(ii) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;

(iii) As to which the Commission determines the domestic preference to be inconsistent with the public interest; or

(iv) As to which the Commission determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954.)

ARTICLE B-XX - ASSIGNMENT: SUBCONTRACTING

Neither this contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor, except as expressly authorized in writing by the Commission. The Contractor shall not subcontract any research or development work under this contract, except as expressly authorized in writing by the Commission.

ARTICLE B-XXI - REPORTS AND RENEWAL PROPOSALS

The Contractor shall furnish six (6) copies of the following reports and renewal proposals, if any, addressed to:

Research and Development Division
Oak Ridge Operations Office
U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee (37831)

(a) Progress Report

The progress report shall briefly describe the scope of investigations undertaken and the significant results obtained. It shall also explain any significant differences between the actual level of effort and that contemplated in the contract (see Article I). Technical reports and articles prepared for publication shall be listed with bibliographic references. Reprints or preprints of all such material shall be appended and material contained therein need not be duplicated in the

report. Progress reports shall be submitted approximately three months in advance of the expiration of the current contract term and shall give the Contractor's best estimate of the probable course and level of effort of the remainder of the current contract term. Except as the Commission may otherwise request, no further progress report will be required for any contract year unless there has been a significant change in level of effort or scientific results between the latest progress report by the Contractor and its actual experience; this shall be reported promptly.

(b) Final Report

Upon termination or expiration of the total period of performance, the Contractor shall submit, promptly, a summary of its activities for the entire period, including a list of publications issued during the total term of the contract and copies of any reprints not previously submitted, as well as a comprehensive evaluation of progress in the area of research supported by the contract.

(c) Renewal Proposals

A renewal proposal, if any, shall accompany the progress report.

(d) Report of Equipment Purchased or Fabricated

The Contractor shall itemize equipment having a useful life expectancy in excess of one year and an acquisition cost in excess of \$100.00, purchased or fabricated (omit any items appearing in Article V) and submit a report thereof immediately following the expiration of the contract year specified in Article II. This report shall show the actual invoice cost of each item purchased and an engineering estimate of the cost of each item fabricated.

ARTICLE B-XXII - FOREIGN TRAVEL

Foreign travel shall be subject to the prior approval of the Contracting Officer.

ARTICLE B-XXIII - PRIORITIES, ALLOCATIONS, AND ALLOTMENTS

The Contractor shall follow the provisions of DMS Regulation 1 and all other applicable regulations and orders of the Business and Defense Service Administration in obtaining controlled materials and other products and materials needed to fill this order. This contract carries rating: DC-E-2, certified for national defense under DMS Regulation 1.

ARTICLE B-XXIV - UTILIZATION OF CONCERNS IN LABOR SURPLUS AREAS

It is the policy of the Government to place contracts with concerns which will perform such contracts substantially in areas of persistent or substantial labor surplus, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts in accordance with this policy. In complying with the foregoing and with paragraph (b) of the clause of this contract entitled "Utilization of Small Business Concerns," the Contractor in placing its subcontracts shall observe the following order of preference: (a) persistent labor surplus area concerns which are also small business concerns; (b) other persistent labor surplus area concerns; (c) substantial labor surplus area concerns which are also small business concerns; (d) other substantial labor surplus area concerns; and (e) small business concerns which are not labor surplus area concerns.

ARTICLE B-XXV - UTILIZATION OF SMALL BUSINESS CONCERNS

(a) It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

(b) The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

ARTICLE B-XXVI - SOVIET-BLOC CONTROLS

In connection with the contract activities, the Contractor agrees to comply with the requirements set forth in Appendix "D", attached hereto and made a part of this contract, relating to the countries listed herein. From time to time, by written notice to the Contractor, the Commission shall have the right to change the listing of countries in Appendix "D" upon a determination by the Commission that such change is in conformance with national policy. The Contractor shall have the right to terminate its performance under this contract upon at least sixty (60) days prior written notice to the Commission if the Contractor determines that it is unable, without substantially interfering with its policies as an educational institution or without adversely affecting its performance, to continue performance of the work under this contract as a result of a change in Appendix "D" made by the Commission pursuant to the preceding sentence. If the Contractor

elects to terminate performance the provisions of this contract
respecting termination for the convenience of the Government
shall apply.

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APPENDIX "D"

REQUIREMENTS RELATING TO EXCHANGES OF INFORMATION

1. The requirements set forth herein relate to the dissemination by the Contractor of the information developed under this contract and/or under other Commission programs to Countries by or through exchange activities, including but not limited to employment, work participation, visits and correspondence. The term "Countries" (including where used in the term "Soviet-Bloc Countries"), as used in this Appendix "D", includes all nations (other than the United States, its territories and possessions), the embassies, consulates, and agencies of such nations, and individuals and organizations of such nations.
2. For the purpose of these requirements the Soviet-Bloc Countries consist of:

Group A

Albania
Bulgaria
Czechoslovakia
Estonia
Hungary
Latvia
Lithuania
Poland and Danzig
Rumania
Union of Soviet Socialist Republics

Group B

China, including Manchuria (includes Inner Mongolia; the provinces of Tsinghai and Sikang; Tibet; the former Kwantung Leased Territory, the present Fort Arthur Naval Base Area and Liaoning Province) and excluding Taiwan (Formosa).
Communist-controlled area of Viet Nam
East Germany (Soviet Zone of Germany and the Soviet Sector of Berlin)
North Korea
Outer Mongolia

3. The following exchange activities between the Contractor and any of the Soviet-Bloc Countries shall be subject to the prior written approval of the Commission on an individual case basis:

- a. Employees of the Contractor engaging in employment by, activities of, or travel to, any of the Soviet-Bloc Countries where such employees' travel or other activity is financially supported by the Commission.
 - b. Employment of, or participation in activities of the Contractor by, nationals of any of the Soviet-Bloc Countries in furtherance of or in connection with work under this contract.
 - c. Participation of nationals of any of the Soviet-Bloc Countries at U. S. conferences, meetings and symposia which are supported by Commission funds or are organized and directed by persons receiving financial support for such activities from the Commission and acting in the name of the Commission or the Contractor.
4. Unofficial travel to any of the Soviet-Bloc Countries by employees of the Contractor who hold a Commission security clearance will be subject to the prior approval of the Commission on an individual case basis.
 5. The Contractor shall inform all of its employees who formerly held a Commission security clearance of the Commission's desire to be advised of their proposed unofficial travel to any of the Soviet-Bloc Countries. The Contractor shall notify the Commission of all such proposed unofficial travel by its employees of which it becomes aware pursuant to the notification given in accordance with the provisions hereof.
 6. The Contractor, if the contract herein is of cost type rather than a fixed-price type, shall inform the Commission, in advance whenever feasible, of all proposed visits by nationals of any of the Soviet-Bloc Countries and shall furnish a report thereof in accordance with directions furnished by the Contracting Officer.
 7. All correspondence and other communications relative to the exchange of information whether with Soviet-Bloc or other Countries shall be subject to the following policy and procedure:
 - a. Transmittal of published information relating to the peaceful uses of atomic energy is permitted and encouraged provided the transmittals to Countries listed in Group B of Section 2, above, are made in the name of the Contractor or the individual scientist and not in the name of the Commission;

- b. Transmittal of unpublished information relating to the peaceful uses of atomic energy is permitted and encouraged provided:
- (1) The information transmitted is made available to requesters in the United States. In order to insure availability to requesters in the United States, one copy of all such unpublished information (with the exception of personal correspondence covering informal scientific or technical opinion) shall be forwarded to the Contracting Officer; and
 - (2) The transmittals to Countries listed in Section 2, above, are accompanied by a request for appropriate equally valuable material in return; and
 - (3) The transmittals to Countries listed in Group B of Section 2, above, are made in the name of the Contractor or the individual scientist and not in the name of the Commission.
- c. Requests for information not falling within the scope of the above stated policy and any unusual requests for published and unpublished information shall be forwarded to the Contracting Officer. Examples of unusual requests for published and unpublished information include: (1) Requests for collections of published documents or for unpublished information which are not readily available to the recipient of the request; (2) Requests for comprehensive and detailed unpublished design information and unpublished development information on major equipment, such as reactors, chemical processing plants, and accelerators; and (3) Official correspondence from any government other than the United States, its territories and possessions.

As used in this Section 7:

- a. The term "published information" means all unclassified scientific and technical documents; internal and informal reports; reprints, preprints, page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions; etc., originated within Commission programs, and available either from the Division of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or other sources from which the public may obtain the above types of information by purchase or without cost.

- b. The term "unpublished information" means all unclassified scientific and technical documents; internal and informal reports, reprints, preprints, page proofs of journal articles; engineering drawings; photographs; films; notes; irradiated emulsions; etc., originating within Commission programs but which are not available from the Division of Technical Information Extension, Oak Ridge, Tennessee, AEC depository libraries, or from other sources from which the public may normally obtain the information by purchase or without cost.
8. In all exchanges of information, care should be taken that the release of the information does not result in the disclosure of Restricted Data or other classified information, or privileged information, in violation of applicable law and/or the provisions of this contract; or the disclosure of any information that would adversely affect the patent interest of the Commission in violation of the provisions of this contract.

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this day of , 1962, effective as of the 1st day of September, 1962, 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 the UNIVERSITY OF TENNESSEE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and Modifications thereto numbered 1 through 8 providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to further amend the contract to provide for: (a) the continuance of this research and/or the performance of additional research; (b) the revisions and/or additions of certain provisions thereof in accordance with current applicable rules and regulations of the Commission; and (c) as a result thereof, restate the provisions of this contract as of the effective date of this Supplemental Agreement; and

WHEREAS, this Supplemental Agreement is authorized by law, including the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties do mutually agree that the contract (including its Appendices), as amended, is hereby revised to read as follows:

ARTICLE I - THE RESEARCH TO BE PERFORMED

1. The Contractor shall furnish personnel, facilities, equipment, materials, and supplies substantially to the extent set forth in Appendix "A" attached hereto and made a part hereof, endeavor to procure the items that may be listed under III of said Appendix "A", and therewith perform to the best of its ability the research provided for in Appendix "A" and report thereon pursuant to the provisions of this contract.

2. This work shall be conducted under the direction of Dr. John L. Wood or such other member of the Contractor's staff as may be mutually satisfactory to the parties.

ARTICLE II - THE PERIOD FOR PERFORMANCE

The period for performance under this contract shall expire on August 31, 1963; provided, however, that this period may be extended for additional periods by the mutual written agreement of the parties.

ARTICLE III - CONSIDERATION

In full consideration of the Contractor's performance hereunder for the period commencing on September 1, 1962, and expiring on August 31, 1963, the Commission shall pay the Contractor the sum of \$10,811.00.

ARTICLE IV - THE REMAINING CONTRACT PROVISIONS

Appendices "A" and "B" set forth the other provisions of this contract.

IN WITNESS WHEREOF, the parties have executed this Supplemental Agreement.

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Herman M. Roth
DIRECTOR
RESEARCH AND DEVELOPMENT DIVISION
(Contracting Officer)

CITY OF TENNESSEE

BY: L. E. V. T.

TITLE: President

APPENDIX "A"

For the Contract Period September 1, 1962 through August 31, 1963.

A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

The Contractor will continue research on the origin and fate of thiocyanate ion in animal metabolism, to study the origin of thiocyanate in the body, the mechanism of its physiological action and the nature of the metabolic products including further studies of the transsulfurases (enzymes) which are identifiable, the kinetics of reactions of cyanides with proteins and disulfide-containing compounds, utilizing S³⁵ and Cl³⁴, and related relations, including work on detoxification of cyanide and reactions related to the generation of sulphydryl groups.

A-II APPROXIMATE LEVEL OF RESEARCH EFFORT(a) Contractor Personnel:

Approx.
% of time

Dr. J. L. Wood - Principal Investigator	25%
Research Associate	100%
Research Assistant	50%
Technician	50%
Administrative and Secretarial Assistance	As Needed

(b) Premises, Facilities, and Materials to be Furnished by the Contractor:

Adequate laboratory facilities are available to carry out research on the origin and fate of thiocyanate ion in animal metabolism. Equipment available includes a DK-2 spectrophotometer, Zeiss spectrophotometer, a double-beam infrared spectrophotometer, ultracentrifuges, amino acid analyzers, scintillation counter, 100 and 1000 tubes counter-current extractors, high voltage electrophoresis apparatus, a pH-stat, and gas chromatograph.

A-III EQUIPMENT TO BE PURCHASED OR FABRICATED BY THE CONTRACTOR

Estimated
Cost

Electrophoresis Migration Chamber	\$225.00
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A-IV EQUIPMENT TITLE TO WHICH IS TO REMAIN WITH GOVERNMENT

None

A-V SUBSTANTIAL DEVIATIONS

Substantial deviations from the foregoing shall be discussed with and subject to the written approval of the Commission.

APPENDIX "B"

July 1, 1962

ARTICLE B-I DEFINITIONS

1. The term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer except for the purpose of deciding an appeal under the article entitled "Disputes".

2. The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successors or any duly authorized representative of any such person.

ARTICLE B-II INSPECTION, REPORTS, RECORDS AND ACCOUNTS, AND RESULTS

1. The Commission shall have the right to inspect, in such manner and at all reasonable times as it deems appropriate, all activities of the Contractor arising in the course of its activities under this contract.

2. The Contractor shall make progress and other reports in such manner and at such times as specified in Article B-XX. The Contractor shall also make such other reports to the Commission, with respect to its activities under this contract, as the Commission may reasonably require from time to time. A copy of each article submitted by the Contractor for publication shall be promptly sent to the Commission and the Contractor shall furnish the Commission with a reprint when the article is published.

3. The Contractor agrees to keep records and books of account, in accordance with generally accepted accounting principles and practices, covering its costs and expenditures for the research work under this contract.

4. The Commission shall at all reasonable times be afforded access to the premises and to these books and records and to related correspondence, receipts, vouchers, memoranda, and other data of the Contractor; and the Contractor shall preserve such books and papers, without additional compensation therefor, for a period of three (3) years after completion of this contract.

5. Research results obtained under this contract shall be made available to all through normal and accepted channels except that

no "restricted data" as defined in the Atomic Energy Act of 1954, or other classified information, shall be disclosed to unauthorized persons. In order that public disclosure of such information will not adversely affect the patent interest of the Commission, such information shall be withheld from public disclosure if it discloses an invention, which should be promptly reported to the Commission, and in such case, it shall be withheld for a period of four (4) months after submission of the information to the Commission for patent review and possible patent application, unless the Commission approves earlier release. Any publication shall indicate that the research was supported by the Commission.

ARTICLE B-III DISCLOSURE OF INFORMATION

1. It is mutually expected that the activities under this contract will not involve Restricted Data or other classified information or material. It is understood, however, that if in the opinion of either party this expectation changes prior to the expiration or termination of all activities under this contract, said party shall notify other party accordingly in writing without delay. In any event, the Contractor shall classify, safeguard, and otherwise act with respect to all Restricted Data and other classified information and material, in accordance with applicable law and the requirements of the Commission, and shall promptly inform the Commission in writing if and when Restricted Data or other classified information or material becomes involved. If and when Restricted Data or other classified information or material becomes involved, or in the mutual judgment of the parties it appears likely that Restricted Data or other classified information or material may become involved, the Contractor shall have the right to terminate performance of the work under this contract and in such event the provisions of this contract respecting termination for the convenience of the Government shall apply.

2. Except as the Commission may authorize in accordance with the Atomic Energy Act of 1954, as amended, the Contractor shall not permit any individual to have access to Restricted Data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to Restricted Data will not endanger the common defense and security. As used in this paragraph the term "designated investigating agency" means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1954, as amended.

3. The term "Restricted Data" as used in this Article means all data concerning the design, manufacture or utilization of atomic weapons, the production of special nuclear material, or the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to Section 142 of the Atomic Energy Act of 1954, as amended.

ARTICLE B-IV RESPONSIBILITY FOR THE WORK

1. The Contractor is solely responsible for the conduct of the work.

2. Attention is directed to the fact that, among other legal requirements that may be applicable to the conduct of the work, the Contractor will be obliged to satisfy all of the Commission's regulatory requirements (including those pertaining to the obtainment of Commission licenses) that may be pertinent.

ARTICLE B-V FELLOWSHIPS

The Contractor agrees that, unless the Commission shall give its prior written approval, the Contractor shall not use any of the funds provided by the Commission under this contract to pay the stipend of any appointment for which commensurate services are not rendered under this contract or to pay any part of the stipend of a fellowship of any kind.

ARTICLE B-VI WRITTEN MATERIAL

1. The Contractor hereby grants to the Government a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use and dispose of, and to authorize others to do so, all copyrightable material produced or composed or delivered to the Government or its designees under this contract, including work not first produced or composed by the Contractor in the course of performance under this contract but incorporated in the material produced or composed or delivered under this contract (but only to the extent, that the Contractor now has, or prior to final settlement of the contract may have, the right to grant such license to such previously produced or composed work without becoming liable to pay compensation to others solely because of such grant).

2. The Contractor agrees that, except as the Commission may otherwise specifically authorize in writing, the Contractor will not include in any report or other material delivered under this contract, or in any published material relating to the work under this contract, any copyrighted material owned by others which such owners have not consented to have so included.

3. Anything in this Article or otherwise in this contract notwithstanding, the Commission shall have the right to inspect, use, and have used by others, and to publish and have published at its convenience, any written material first produced or composed under this contract. The Commission will not publish in advance of the Contractor's publication without prior consultation with the Contractor.

ARTICLE B-VII PATENTS

1. Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of or under this contract, the Contractor shall furnish the Commission with complete information thereon, and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The judgment of the Commission on these matters shall be accepted as final, and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

2. No claim for pecuniary award or compensation under the provisions of the Atomic Energy Acts of 1946 and 1954 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of or under this contract.

3. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purpose of paragraphs 1 and 2 of this Article from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.

4. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts and purchase orders, other than purchase orders for standard commercial items provisions making this article applicable to the subcontract or the purchase order. The Contractor will insert in purchase orders for standard commercial items a provision indemnifying the Government against liability for the use of any invention or discovery and for the infringement of any Letters Patent arising by reason of the purchase, use or disposal by or for the account of the Government of items manufactured or supplied under the purchase order.

ARTICLE B-VIII PROPERTY ITEMS

1. Except as otherwise provided in this paragraph 1 and paragraph 2 of this Article B-VIII, title to all materials, supplies, and equipment purchased or otherwise acquired by the Contractor in the performance of its research activities shall be and remain in the Contractor. Except as otherwise agreed in writing, title to any items of property listed as "Government property" shall pass directly to the Government; such property shall be subject to paragraphs 2, 3, 4 and 5 of this Article B-VIII.

2. Subject to the mutual agreement of the Commission and the Contractor, the Government may furnish the Contractor items of equipment, materials, supplies, or facilities for use by the Contractor in the performance of the contract work; title to these items shall remain in the Government unless otherwise agreed in writing. Such items of property and the items of property listed elsewhere in this contract as Government property, are hereinafter referred to as "Government property". Title to Government property shall not be affected by the incorporation or attachment thereof to any property not owned by the Government nor shall any such property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty.

3. To the extent practicable, the Contractor shall cause all items of Government property to be suitably marked with an identifying mark or symbol indicating that the items are the property of the Government. The Contractor shall maintain at all times and in a manner satisfactory to the Commission records showing the use and disposition of Government property, and unless otherwise authorized in writing by the Commission, shall use Government property only for the purposes of this contract. Such records shall be subject to Commission inspection at all reasonable times and the Commission shall at all reasonable times have access to the premises wherein any items of Government property are located.

4. The Contractor shall promptly notify the Commission of any loss or destruction of or damage to Government property. It is understood that the Contractor shall not be liable for any such loss, destruction, or damage, unless same results from wilful misconduct or lack of good faith on the part of any corporate officer of the Contractor, or of one of more of the Contractor's representatives having supervision or direction of all or substantially all of the activities under this contract. If the Contractor is liable for any such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission; if the Contractor is not liable therefor, and is indemnified, reimbursed, or otherwise compensated for such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of the Commission.

5. With the written approval of the Commission, the Contractor may sell, transfer or otherwise dispose of items of Government property to such parties and upon such terms as so approved, or itself acquire title to items of Government property upon such terms as may be mutually agreed upon in writing by the Contractor and the Commission. The proceeds of any such disposition, and any agreed price of any such Contractor acquisition, shall be paid by the Contractor to the Government, or credited on account of Commission payments to be made under this contract, as the Commission may direct. Subject to the other provisions of this contract, the Contractor shall deliver Government property to the Commission upon request (suitably packed and shipped at the Government's expense).

ARTICLE B-IX TERMINATION BY GOVERNMENT

1. The period for performance under this contract may be terminated by the Commission by written notice, either because of the breach by the Contractor of the provisions of this contract or for the convenience of the Government. In the event of such termination, the Contractor shall promptly furnish to the Commission such of the results of the work performed under this contract (and not theretofore furnished) as the Commission may request.

2. Upon a termination for convenience hereunder the parties shall agree in writing upon such amount to be paid the Contractor, in lieu of the monetary consideration specified in this contract with respect to the pertinent period, as they mutually consider to be fair and reasonable under the circumstances. If the parties fail so to agree in writing within a reasonable time, the amount shall be determined under the "Disputes" provisions of this contract. The amount otherwise due the Contractor under this contract shall be subject to such claims (if any) as the Government may have against the Contractor by reason of this contract. In the event of a termination for breach, the parties may, to the extent they mutually agree, stipulate, in writing, any monetary aspects of the situation.

3. In the event of a termination hereunder, the Contractor shall promptly comply with any Commission request for a refund of any partial payments in excess of such sums as are determined to be due to the Contractor under paragraph 2 above, theretofore made or for the delivery to Commission-designated recipients of any of the items of Government property acquired by the Contractor with the funds supplied by the Commission under this contract and which are then in the Contractor's possession or custody; said property shall be suitably packed and shipped at the Government's expense.

ARTICLE B-X PAYMENTS

1. The Commission shall make payments to the Contractor with respect to the amount specified in Article III of the contract, as follows:

45% - following execution of this contract, upon receipt of written request therefor from the Contractor.

45% - upon subsequent receipt of written request from the Contractor when the Contractor determines the amount requested is then required in connection with work under the contract.

10% - following submission by the Contractor of the annual progress report or final report provided for in Article B-XX, in form and content satisfactory to the Commission, within a reasonable period of time following the expiration of an annual contract period.

2. The payments made pursuant to paragraph 1 above shall not prejudice or otherwise affect adversely any of the Government's rights under the contract. For purposes of settlement in the event of termination pursuant to Article B-IX hereof, these payments shall not be construed as evidentiary or otherwise indicative of the amount or proportion of the work actually performed by the Contractor, and any excess payment in the light of Article B-IX shall be promptly returned to the Commission.

3. All payments under this contract will be subject to the submission by the Contractor to the Commission of such invoices or vouchers as are satisfactory to the Commission.

ARTICLE B-XI NONDISCRIMINATION IN EMPLOYMENT

(The following clause is applicable unless this contract is exempt under the rules and regulations of the President's Committee on Equal Employment Opportunity issued pursuant to Executive Order No. 10925 of March 6, 1961 (26 F.R. 1977).)

In connection with the performance of work under this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency Contracting Officer, advising the said labor union or workers' representative of the

Contractor's commitments under this Nondiscrimination clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) the Contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.

(e) The Contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the Nondiscrimination clause of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled in whole or in part and the Contractor may be declared ineligible for further government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.

(g) The Contractor will include the provisions of the foregoing paragraphs (a) through (f) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to Section 303 of Executive Order No. 10925 of March 6, 1961, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE B-XII CONVICT LABOR

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

ARTICLE B-XIII EIGHT-HOUR LAW

1. This contract, to the extent that it is of a character specified in the Eight-Hour Law of 1912, as amended (40 U.S. Code 324-326) and is not covered by the Walsh-Healey Public Contract Act (41 U.S. Code 35-45), is subject to the following provisions and exceptions of said Eight-Hour Law of 1912, as amended, and to all other provisions and exceptions of said Law:

No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this clause. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight hours per day; and work in excess of eight hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay. For each violation of the requirements of this clause a penalty of five dollars shall be imposed for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight hours upon said work without receiving compensation computed in accordance with this clause, and all penalties thus imposed shall be withheld for the use and benefit of the Government.

2. If this contract is with a state or political subdivision thereof:

(a) Paragraph 1 of this Article shall not apply to the work performed by employees of the Contractor.

(b) The Contractor agrees to insert the provisions of Paragraph 1 of this Article in all subcontracts hereunder with private persons or firms.

ARTICLE B-XIV DISPUTES

1. Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless within 30 days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. 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. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

2. This "Disputes" clause does not preclude consideration of law questions in connection with decisions provided for in paragraph 1 above: Provided, That nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

ARTICLE B-XV OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE B-XVI COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a Commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover the full amount of such Commission, percentage, brokerage, or contingent fee.

ARTICLE B-XVII EXAMINATION OF RECORDS

1. The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract.

2. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this clause excludes (i) purchase orders not exceeding \$2,500 and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

3. Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE B-XVIII BUY AMERICAN ACT

1. In acquiring end products, the Buy American Act (41 U.S. Code 10a-d) provides that the Government give preference to domestic source end products. For the purpose of this clause:

(a) "Components" means those articles, materials, and supplies, which are directly incorporated in the end products;

(b) "End products" means those articles, materials, and supplies, which are to be acquired under this contract for public use; and

(c) A "domestic source end product" means (i) an unmanufactured end product which has been mined or produced in the United States and (ii) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the costs of all its components. For the purposes of this 1(c)(ii), components of foreign origin of the same type or kind as the products referred to in (2) (b) or (c) of this clause shall be treated as components mined, produced, or manufactured in the United States.

2. The Contractor agrees that there will be delivered under this contract only domestic source end products, except end products:

(a) Which are for use outside the United States;

(b) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;

(c) As to which the Commission determines the domestic preference to be inconsistent with the public interest; or

(d) As to which the Commission determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954.)

ARTICLE B-XIX ASSIGNMENT: SUBCONTRACTING

Neither this contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor, except as expressly authorized in writing by the Commission. The Contractor shall not subcontract any research or development work under this contract, except as expressly authorized in writing by the Commission.

ARTICLE B-XX REPORTS AND RENEWAL PROPOSALS

The Contractor shall furnish six (6) copies of the following reports and renewal proposals, if any, addressed to:

Research and Development Division
Oak Ridge Operations Office
U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

(a) PROGRESS REPORT

The progress report shall briefly describe the scope of investigations undertaken and the significant results obtained. It shall also explain any significant differences between the actual level of effort and that contemplated in the contract (see Appendix "A"). Technical reports and articles prepared for publication shall be listed with bibliographic references. Reprints or preprints of all such material shall be appended and material contained therein need not be duplicated in the report. Progress reports shall be submitted approximately three months in advance of the expiration of the current contract term and shall give the Contractor's best estimate of the probable course and level of effort of the remainder of the current contract term. Except as the Commission may otherwise request, no further progress report will be required for any contract year unless there has been a significant change in level of effort or scientific results between the latest progress report by the Contractor and its actual experience: this shall be reported promptly.

(b) FINAL REPORT

Upon termination or expiration of the total period of performance, the Contractor shall submit, promptly, a summary of its activities for the entire period, including a list of publications issued during the total term of the contract and copies of any reprints not previously submitted, as well as a comprehensive evaluation of progress in the area of research supported by the contract.

(c) RENEWAL PROPOSALS

A renewal proposal, if any, shall accompany the progress report.

(d) REPORT OF EQUIPMENT PURCHASED OR FABRICATED

The Contractor shall itemize equipment purchased or fabricated, referred to in A-III of Appendix "A" (omit any items also appearing in A-IV of Appendix "A"), and submit a report thereof immediately following the expiration of the contract year specified in Appendix "A". This

report shall show the actual invoice cost of each item purchased and an engineering estimate of the cost of each item fabricated.

ARTICLE B-XXI FOREIGN TRAVEL

Foreign travel shall be subject to the prior approval of the Contracting Officer.

ARTICLE V-XXII PRIORITIES, ALLOCATIONS, AND ALLOTMENTS

1. This contract carries rating: DO-E-2, Certified for national defense use under DMS Reg. 1.

2. The Contractor shall follow the provisions of DMS Regulation 1 and all other applicable regulations and orders of the Business and Defense Service Administration in obtaining controlled materials and other products and materials needed to fill this order.

ARTICLE B-XXIII UTILIZATION OF CONCERNS IN LABOR SURPLUS AREAS

It is the policy of the Government to place contracts with concerns which will perform such contracts substantially in areas of persistent or substantial labor surplus, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use his best efforts to place his subcontracts in accordance with this policy. In complying with the foregoing and with paragraph 2 of the article of this contract entitled "Utilization of Small Business Concerns", the Contractor in placing his subcontracts shall observe the following order of preference: (a) persistent labor surplus area concerns which are also small business concerns; (b) other persistent labor surplus area concerns; (c) substantial labor surplus area concerns which are also small business concerns; (d) other substantial labor surplus area concerns; and (e) small business concerns which are not labor surplus area concerns.

ARTICLE B-XXIV UTILIZATION OF SMALL BUSINESS CONCERNS

1. It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

2. The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

ARTICLE B-XXV SOVIET-BLOC CONTROLS

In connection with the contract activities, the Contractor agrees to comply with all regulations or requirements of the Commission relating to Soviet-Bloc countries as identified by the AEC regulations or requirements.

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 10th day of September, 1961, effective as of the 1st day of September, 1961, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and the UNIVERSITY OF TENNESSEE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-1637 and Modifications thereto numbered 1 through 7 (hereinafter called the "contract") providing for the Contractor's performance of certain research; and

WHEREAS, the parties desire to amend the contract to provide for: (a) the continuance of this research and/or the performance of additional research; (b) the revisions and/or additions of certain provisions thereof in accordance with current applicable rules and regulations of the Commission; and (c) as a result thereof, restate the provisions of this contract as of the effective date of this Supplemental Agreement; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties do mutually agree that the contract (including its Appendices) is hereby revised to read as follows:

ARTICLE I - SCOPE

1. The work shall consist of performance of a research project involving the origin and fate of thiocyanate ion in metabolism. The plan of approach to the problem and the agreed upon program and budget for the project are described in Appendix 'A', which is hereby made a part of this contract. The Contractor shall be guided by, but not bound to conform to the details of, the budget described in Appendix "A".

2. The Contractor shall furnish all services, facilities, equipment, supplies and materials (except such services, equipment, supplies and materials as the Government has agreed to furnish herein) required for the performance of the research program described in section 1, above.

3. The work will be carried out by the Contractor under the direction of Dr. John L. Wood as Senior Investigator. Any change in Senior Investigator shall be made only with the written concurrence of the Commission, but without the necessity of a formal modification of the contract.

4. The Contractor shall commence the work as soon as feasible, prosecute it with due diligence and submit the reports required in Appendix "C", attached hereto and made a part hereof, as early as practicable but not later than the dates specified in Appendix "C".

ARTICLE II - SCHEDULE

9. The period during which the work under the contract may be conducted shall end on August 31, 1962.

ARTICLE III

1. Consideration

h. In consideration of the performance of the research activities described in TITLE VIII of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Fourteen Thousand, Eighty-five Dollars (\$14,085.00), the Government shall pay to the Contractor Eleven Thousand, Nine Hundred Twenty-seven Dollars (\$11,927.00) (\$8,713.00 in new funds and \$3,214.00 agreed to be the balance remaining unexpended from previous work under this contract).

2. Payment

a. On or before the date of commencement of work on the project described in Appendix "A", the Government shall pay to the Contractor, upon submission by the Contractor of a proper voucher, 45 per cent of the agreed consideration; provided, however, that this payment shall be reduced by the amount of the balance agreed to be remaining unexpended from previous work under this contract.

b. On or before the expiration of six months from the date of commencement of the project, the Government shall pay to the Contractor, upon submission by the Contractor of a proper voucher, 45 per cent of the agreed consideration.

c. Upon receipt and acceptance of a satisfactory progress report, in cases where the contract is to be renewed, or the final report if the contract is not to be renewed, the Government shall pay to the Contractor, upon submission by the Contractor of a proper voucher, the remaining 10 per cent of the agreed consideration. An extension of the contract work without additional funds shall not be considered a renewal of the contract and in such cases the retained 10 per cent of the agreed consideration will be paid upon submission and acceptance of a satisfactory final report.

d. In the event the contract is renewed, payments to the Contractor of any additional amount to be paid by the Government shall be made for the extended work in accordance with the schedule outlined in subsections a, b, and c, above.

3. Contract Renewal

When renewal of the contract is desired, the Contractor shall submit a renewal proposal, a progress report and a 200-word summary in such manner and at such times as specified in Appendix "C". The Contractor and the Commission shall then negotiate as to the amounts each will contribute for the additional research activities to be conducted, taking into consideration the actual costs incurred for the current work in comparison with the cost estimates in the contract, and, upon agreement, shall execute a formal modification of the contract.

ARTICLE IV - REPORTS, RECORDS AND INSPECTION

1. The Commission shall have the right to inspect in such manner and at such times as it deems appropriate all activities of the Contractor arising in the course of the work under this contract.

2. The Commission shall at all times be afforded access to the premises and to all technical records, correspondence, instructions, drawings and memoranda of record value of the Contractor pertaining to said work.

3. The Contractor shall submit a complete scientific report and such other reports as may be required in Appendix "C" in such manner and at such times as specified in Appendix "C" and shall submit such other reports as required by this contract in such manner and at such times as requested by the Commission.

4. Examination of Records

a. The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract.

b. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this clause excludes (i) purchase orders not exceeding \$2500 and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

c Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE V - PROPERTY

In consideration of the Contractor's contribution to the research project described in Appendix "A" of this contract, title to all materials, tools, machinery, equipment and supplies acquired from any source, including the Government, or manufactured by the Contractor under this contract, shall vest in the Contractor, except that title to items of property described in subsection 2.b. of Appendix "A" shall vest or remain in the Government. Additional items may be added to such subsection 2.b. in writing without the necessity for a formal modification of the contract.

ARTICLE VI - PROCUREMENT OF MATERIAL AND SERVICES FROM COMMISSION FACILITIES; COMPLIANCE WITH COMMISSION REGULATIONS

The Contractor shall comply with all licensing and other requirements of the Commission with respect to possession and use of by-product material, source material, and special nuclear material (as these terms are defined in the Atomic Energy Act of 1954), and may purchase or acquire such materials, irradiation services, other radioactive material, cyclotron time, etc., from the Commission or Commission facilities in accordance with applicable procedures.

ARTICLE VII - GENERAL PROVISIONS

The provisions of Appendix "B", dated June 1, 1961, attached hereto, are hereby made a part of this contract.

ARTICLE VIII - ALTERATIONS

The following alterations to this contract were made by mutual agreement of the parties prior to its execution: None.

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Richard B. Martin
ACTING DIRECTOR
RESEARCH AND DEVELOPMENT DIVISION
(Contracting Officer)

~~WITNESSES:~~ ATTEST:

[Signature]
Secretary
(Address)

(Address)

UNIVERSITY OF TENNESSEE

BY: [Signature]

TITLE: President

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement and the Appendices attached hereto and made a part hereof and agree to be bound by the provisions of this document.

[Signature]
Senior Investigator

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APPENDIX "A"

TITLE VIII

This TITLE VIII describes the research program and cost estimates agreed upon between the Commission and the Contractor.

1. PROGRAM

a. Scope and Plan of Approach:

The Contractor will continue the study of the origin and fate of the thiocyanate ion in the animal body, including the mechanism of its physiological action and the nature of its metabolic products. Using Carbon-14 and Sulfur-35 labeled substrates the following work will be undertaken: (1) investigation of the nature of the transsulfurase enzymes and their function in thiocyanate metabolism, (2) investigation of the relationship of thiocyanate formation to 2-iminothiazolidine-4-carboxylic acid formation, and (3) further study of the reaction of cyanide with proteins and other disulfide containing compounds to establish the rate at which sulfhydryl groups are generated in biological systems.

2. BUDGET

a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>		\$14,394.00
Dr. J. L. Wood (25% of time)	\$4,000.00	
Research Associate	6,955.00	
Technicians	2,889.00	
Administrative and Secretarial Assistance	150.00	
Consultation and Services	400.00	
(2) <u>Equipment:</u>		300.00
(3) <u>Supplies and Communications:</u>		500.00
(4) <u>Travel:</u>		400.00
(5) <u>Overhead and Indirect Costs:</u>		<u>10,418.00</u>
	TOTAL	\$26,012.00

- b. Items of property to be procured or manufactured by the Contractor, or to be furnished by the Government, title to which will vest or remain in the Government (see Article V): None

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APPENDIX "B"

GENERAL PROVISIONS
June 1, 1961

(FOR DIRECT AEC RESEARCH CONTRACTS)

1. Patents

- a. Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of, in connection with, or under the terms of this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.
- b. No claim for pecuniary award or compensation under the provisions of the Atomic Energy Acts of 1946 and 1954 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of, in connection with, or under the terms of this contract.
- c. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs a. and b. of this clause from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.
- d. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making this clause applicable to the subcontractor and its employees.
- e. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all purchase orders and supply subcontracts, for the procurement of any materials, tools, machinery, equipment or supplies described in subsection 2.b. of Appendix "A" of this contract, provisions securing for itself and for the Government indemnification against liability for patent infringement with respect to the manufacture, use and sale of such materials, tools, machinery, equipment or supplies.

2. Publications

It is intended that the Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that "Restricted Data" as defined in the Atomic Energy Act of 1954 shall be governed by the provisions of Clause 3. of this Appendix "B" entitled "Security".

However, in order to insure that the public disclosure of such results will not adversely affect the patent interests of the Government provided in Clause 1. of this Appendix "B" entitled "Patents", approval for such release shall be secured from the Commission prior to any such publication.

All publications shall include a reference that the results were developed under a Commission sponsored project.

3. Security

- a. It is understood that the work under this contract will not involve restricted data or other classified matter and that the Contractor will perform such work as unclassified work. However, if in the course of such work any discoveries are made or any data used or developed that constitute restricted data or other classified matter, the Contractor shall promptly inform the Commission and will be bound by the following:

- (1) Contractor's Duty to Safeguard Restricted Data and Other Classified Information. In the performance of the work under this contract the Contractor shall, in accordance with the Commission's security regulations and requirements, be responsible for safeguarding restricted data and other classified matter and protecting against sabotage, espionage, loss and theft, the classified documents, materials, equipment, processes, etc., as well as such other material of high intrinsic or strategic value as may be in the Contractor's possession in connection with performance of work under this contract. Except as otherwise expressly provided in the specifications the Contractor shall upon completion or termination of this contract transmit to the Commission any classified matter in the possession of the Contractor or any person under the Contractor's control in connection with performance of this contract.

- (2) Regulations. The Contractor agrees to conform to all security regulations and requirements of the Commission.
- (3) Definition of Restricted Data. The term "Restricted Data", as used in this clause, means all data concerning (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142 of the Atomic Energy Act of 1954.
- (4) Security Clearance of Personnel. Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1954, the Contractor shall not permit any individual to have access to Restricted Data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to Restricted Data will not endanger the common defense and security. As used in this paragraph, the term "designated investigating agency" means the United States Civil Service Commission or the Federal Bureau of Investigation, or such other agency as may be designated by the provisions of the Atomic Energy Act of 1954. Access to classified information other than Restricted Data shall not be granted unless the recipient possesses appropriate security clearance.
- (5) Criminal Liability. It is understood that disclosure of information relating to the work or services ordered hereunder to any person not entitled to receive it, or failure to safeguard any Restricted Data or any top secret, secret, or confidential matter that may come to the Contractor or any person under the Contractor's control in connection with work under this contract, may subject the Contractor, its agents, employees, and subcontractors to criminal liability under the laws of the United States. (See the Atomic Energy Act of 1954, 68 Stat. 919). (See also Executive Order 10104 of February 1, 1950, 15 F. R. 597).
- (6) Subcontracts and Purchase Orders. Except as otherwise authorized in writing by the Contracting Officer, the Contractor shall insert provisions similar to the foregoing in all subcontracts and purchase orders under this contract.

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- b. The continuation by the Contractor of work found to involve restricted data will be subject to mutual agreement of the Commission and the Contractor and shall be covered by a modification of this agreement.

4. Disputes

- a. Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or its duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. 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. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.
- b. This "Disputes" clause does not preclude consideration of law questions in connection with decisions provided for in paragraph a. of this clause; Provided, that nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

5. Safety, Health and Fire Protection

The Contractor shall take all reasonable precautions in the performance of the work under this contract to protect the health and safety of employees and members of the public and to minimize danger from all hazards to life and property, and shall comply with all health, safety, and fire protection regulations and requirements (including reporting requirements) of the Commission. In the event that the Contractor fails to comply with said regulations or requirements of the Commission, the Contracting Officer may, without prejudice to any other legal or contractual rights of the Commission,

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issue an order stopping all or any part of the work; thereafter a start order for resumption of work may be issued at the discretion of the Contracting Officer. The Contractor shall make no claim for an extension of time or for compensation or damages by reason of or in connection with such work stoppage.

6. Officials Not to Benefit

No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

7. Covenant Against Contingent Fees

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability, or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

8. Convict Labor

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

9. Termination

- a. The Commission may at any time upon 120 days' written notice terminate this contract in whole or in part.
- b. In the event of termination pursuant to paragraph a. of this clause, the Contractor shall submit a statement of costs incurred in performance of the work under the contract prior to such termination, and the Government shall pay to the Contractor that portion of the costs incurred which bears the same relationship to the total as the agreed Government support for the full term bears to the total of cost estimates for the full term, less the amount of all payments

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theretofore made. If the total payments theretofore made to the Contractor exceed the amount to which it is entitled hereunder, the Contractor shall promptly remit the amount of any such excess to the Government.

10. Eight-Hour Law

- a. This contract, to the extent that it is of a character specified in the Eight-Hour Law of 1912, as amended (40 U. S. Code 324-326), and is not covered by the Walsh-Healey Public Contracts Act (41 U. S. Code 35-45), is subject to the following provisions and exceptions of said Eight-Hour Law of 1912, as amended, and to all other provisions and exceptions of said Law:

No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this clause. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight hours per day; and work in excess of eight hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay. For each violation of the requirements of this clause a penalty of five dollars shall be imposed for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight hours upon said work without receiving compensation computed in accordance with this clause, and all penalties thus imposed shall be withheld for the use and benefit of the Government.

- b. If this contract is with a state or political subdivision thereof:
- (1) Paragraph a. of this clause shall not apply to the work performed by employees of the Contractor.
 - (2) The Contractor agrees to insert paragraph a. of this clause in all subcontracts hereunder with private persons or firms.

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11. Nondiscrimination in Employment

In connection with the performance of work under this contract, the Contractor agrees as follows:

- a. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Commission setting forth the provisions of this Nondiscrimination clause.
- b. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.
- c. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Commission, advising the said labor union or workers' representative of the Contractor's commitments under this Nondiscrimination clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d. The Contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.
- e. The Contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to his books, records, and accounts by the Commission and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

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- f. In the event of the Contractor's noncompliance with the Non-discrimination clause of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled in whole or in part and the Contractor may be declared ineligible for further government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, and such other sanctions may be imposed and remedies invoked as provided in the said Executive order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.
- g. The Contractor will include the provisions of the foregoing paragraphs a. through f. in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order No. 10925 of March 6, 1961, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Commission may direct as a means of enforcing such provisions, including sanctions for non-compliance: Provided, however, That in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

12. Definitions

As used in this contract:

- a. The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successor or any duly authorized representative of such person.
- b. The term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer except for deciding an appeal under the clause entitled "Disputes".
- c. Except as otherwise provided in this contract, the term "subcontract" shall include purchase orders under this contract.

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13. Fellowships

It is understood by the Contractor that none of the funds supplied by the Commission under this contract shall be used in any way to pay the stipend of any appointment for which commensurate services are not rendered under this contract; nor shall any of the funds be used to confer a fellowship, or to pay any part of the stipend of a fellowship, of any kind.

14. Foreign Travel

It is agreed that none of the funds supplied by the Commission under this contract shall be used to pay the expenses of foreign travel, except where such foreign travel is made with the prior approval of the Commission. "Foreign travel" as used herein means travel outside the continental United States, excepting, however, travel to Canada.

15. Buy American Act

- a. In acquiring end products, the Buy American Act (41 U.S. Code 10a-d) provides that the Government give preference to domestic source end products. For the purpose of this clause:
 - (1) "Domestic source end products" means articles and supplies, which are directly incorporated in the end products;
 - (2) "End products" means those articles, materials, and supplies, which are to be acquired under this contract for public use; and
 - (3) A "domestic source end product" means (1) an unmanufactured end product which has been mined or produced in the United States and (2) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the costs of all its components. For the purposes of this a.(3)(2), components of foreign origin of the same type or kind as the products referred to in b.(2) or (3) of this clause shall be treated as components mined, produced, or manufactured in the United States.
- b. The Contractor agrees that there will be delivered under this contract only domestic source end products, except end products.

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- (1) Which are for use outside the United States;
- (2) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;
- (3) As to which the Commission determines the domestic preference to be inconsistent with the public interest; or
- (4) As to which the Commission determines the cost to the Government to be unreasonable.

16. Use of Concerns in Labor Surplus Areas

It is the policy of the Government to place supply contracts with suppliers who will perform such contracts substantially in areas of current labor surplus where this can be done at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts in accordance with this policy to the extent consistent with the efficient performance of this contract. In complying with the foregoing, the Contractor, in placing its subcontracts, shall observe the following order of preference:

- a. small business concerns located in labor surplus areas;
- b. other concerns located in labor surplus areas;
- c. small business concerns not located in labor surplus areas; and
- d. any other concerns.

17. Utilization of Small Business Concerns

- a. It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.
- b. The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

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18. Copyright

- a. The Contractor (i) agrees that the Commission shall determine the disposition of the title to and the rights under any copyright secured by the Contractor or its employees on copyrightable material first produced or composed and delivered to the Government under this contract and (ii) hereby grants to the Government a royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use and dispose of, and to authorize others so to do, all copyrighted or copyrightable work not first produced or composed by the Contractor in the performance of this contract but which is incorporated in the material furnished under the contract, provided that such license shall be only to the extent the Contractor now has, or prior to the completion or final settlement of the contract may acquire, the right to grant such license without becoming liable to pay compensation to others solely because of such grant.
- b. The Contractor agrees that it will not include any copyrighted material in any written or copyrightable material furnished or delivered under this contract, without a license as provided for in paragraph a. of this clause, or without the consent of the copyright owner unless specific written approval of the Commission to the inclusion of such copyrighted material is secured.
- c. The Contractor agrees to report in writing to the Commission, promptly and in reasonable detail, any notice or claim of copyright infringement received by the Contractor with respect to any material delivered under this contract.

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APPENDIX "C"

REPORTS AND PROPOSALS

August 1, 1961

(FOR DIRECT AEC RESEARCH CONTRACTS OTHER THAN OID)

1. If the Contractor contemplates renewal of this contract, the Contractor shall submit the number of copies of the following as indicated:

- | | |
|--|-----------|
| a. <u>Renewal Proposal</u> | Six (6) |
| b. <u>Progress Report</u> | Six (6) |
| c. <u>200-Word Summary of Purpose and Scope of Proposed Research</u> | Three (3) |

The above may be submitted at any time after the expiration of six (6) months of the current contract period, but in no event shall the above be submitted later than ninety (90) days prior to the date of expiration of the current contract period.

2. If the Contractor does not contemplate a renewal of this contract, or if the Contractor's renewal proposal is not accepted by the Commission, the Contractor shall submit six (6) copies of a Complete Scientific Report on the date of expiration of this contract.
3. Brief reports or manuscripts may be submitted as desired by the Senior Investigator.
4. All reports shall be addressed and delivered, postage prepaid, to:

Research and Development Division
Oak Ridge Operations Office
U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

5. The Complete Scientific Report shall include a complete technical summary of the results of the research performed under the contract from the date of its inception through the date of its expiration. Results of the investigations and developments should be described in sufficient detail to allow other interested groups to fully utilize the information.

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6. The 200-Word Summary shall be set forth on a form entitled "Notice of Research Project". This form will be furnished by the Commission.
7. The Progress Report shall briefly describe the scope of investigations undertaken and the significant results obtained. It should also explain any significant differences between the actual level of activity (expressed in the various categories of man months, facilities procured, travel performed, etc.) and that contemplated in the contract. Technical reports and articles prepared for publication should be listed with bibliographic references. Reprints or preprints of all such material should be appended and material contained therein need not be duplicated in the report.
8. Renewal proposals shall contain the type of information outlined below unless the information is already contained in earlier proposals or in the accompanying progress report. Any contemplated change in program or scope for the additional work should be clearly explained and the cost estimated should be based upon past experience.
 - a. Title of the project.
 - b. The institution and department in which the work will be done
 - c. Scientific background including literature relevant to the proposal, the significance, and the motivation. If the proposal is for continuation of work already in progress the extent of present support should be stated identifying amounts received from other Federal agencies.
 - d. Scientific scope of the proposed research, its objectives, its relation to present knowledge and to comparable work in progress elsewhere, and a plan of accomplishments for the work.
 - e. Scientific Personnel. Give the name, highest academic degree, position in the institution, scientific experience, publications and accomplishments of the Senior Investigator (the individual who will actively direct the research program) and of each regular staff scientist who it is proposed will engage in the work. Indicate the approximate fraction of the time of each to be devoted to the project. Scientific personnel to be newly employed for the project should be so designated, and professional records given if possible.

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- f. Other Personnel. The number of persons of each sub-professional grade and the fraction of the time of each to be devoted to the project should be listed. Graduate student employees should be identified as such if their thesis is to be related to the project.
- g. Other Financial Assistance. If assistance for this or other activities involving the same personnel or facilities is to be proposed to or received from other Federal or non-university sources the extent of that assistance should be clearly stated, and the interplay of the arrangements should be fully explained.
- h. Materials, Equipment and Facilities. List those already available for the work and justify the need for major items to be procured.
- i. Travel and Other Items. Explain the purpose of the proposed travel, and of any other major items in the budget. Travel rates and the use of contract funds for attendance at regular scientific meetings should conform with the policy of the institution in the use of its own funds for these purposes.
- j. Budget. This should list in detail all items of cost necessary to carry the project. It should include: a list of the individual salaries attributable to the project, supplies and services, equipment (defined as things individually costing more than \$500 which will retain their utility for more than a year), travel, communication and publication, and the indirect costs allocable to the project. The basis for computing the indirect costs should be briefly explained. The budget should not include the stipend of fellows. All salaries chargeable to the project should be in accord with the established policies of the institution, or, if not, an explanation should be submitted.
- k. Amount Requested. A statement of the part of the total amount listed in the budget which the institution is prepared to bear, and the amount requested from the AEC, and a statement of any other sponsors of the project with the amounts contributed by each. The proposal should be signed by the Senior Investigator and endorsed by a responsible administrative officer of the institution.
- l. Statement of Current Expenditures. A current statement of its expenditures for the project, and an estimate of expenses to be incurred.

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- m. Residual Funds. Any difference in the scope of the work from that contemplated in the contract, as brought out in the report, may be reflected in the amount requested. If no new funds are required, the contract may be renewed without funds. A proposal for such renewal should state the scope of the work proposed for use of residual funds.

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Contract No. AT-(40-1)-1637
University of Tennessee
Modification No. 7

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 25th day of October, 1960, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and UNIVERSITY OF TENNESSEE (hereinafter called the "Contractor"),

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1637, dated June 30, 1953, providing for the performance of studies of the origin and fate of thiocyanate ion in metabolism, and

WHEREAS, the contract has been amended heretofore by Modifications Nos. 1 - 6; and

WHEREAS, the Commission desires to provide additional time for completion of the research described in TITLE VII of Appendix "A", without additional funds, to obtain reports thereon, and to effect certain other changes as are hereinafter more particularly described; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties hereto do mutually agree that said contract is hereby modified in the following particulars, but in no others.

1. The following new section "8." is added to Article II:

"8. The period during which the work under this contract may be conducted is hereby extended to August 31, 1961."

2. The following sentence is added to subparagraph 3.a. (4) of Appendix "B":

"Access to classified information other than Restricted Data shall not be granted unless the recipient possesses appropriate security clearance."

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3. Paragraph 16. of Appendix "B" is revised to read as follows:

"16. Use of Concerns in Labor Surplus Areas

It is the policy of the Government to place supply contracts with suppliers who will perform such contracts substantially in areas of current labor surplus where this can be done at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts in accordance with this policy to the extent consistent with the efficient performance of this contract. In complying with the foregoing, the Contractor, in placing its subcontracts, shall observe the following order of preference:

- a. small business concerns located in labor surplus areas;
- b. other concerns located in labor surplus areas.
- c. small business concerns not located in labor surplus areas.
- d. any other concerns."

4. The following new paragraph "17." is added to Appendix "B":

"17. Use of Small Business Concerns

a. It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services be procured from small business concerns.

b. The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract."

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY:

Herman M. Roth
HERMAN M. ROTH
DIRECTOR
RESEARCH AND DEVELOPMENT DIVISION
(Contracting Officer)

~~MISSISSIPPI~~ ATTEST:

J. D. Smith
Secretary

~~MISSISSIPPI~~

(Address)

UNIVERSITY OF TENNESSEE

BY:

TITLE: President

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement and agree to be bound by the provisions of this document.

J. D. P. W. Smith
Senior Investigator

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1125928

Contract No. AT-(40-1)-1637
University of Tennessee
Modification No. 6

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 25th day of February, 1960, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and the UNIVERSITY OF TENNESSEE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1637, dated June 30, 1953, providing for the performance of studies of the origin and fate of thiocyanate ion in metabolism; and

WHEREAS, the contract has been amended heretofore by Modifications Nos. 1 - 5; and

WHEREAS, the Commission desires to provide for additional research as more particularly described in TITLE VII of Appendix "A", to obtain reports thereon, and to effect certain other changes as are hereinafter more particularly described; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties hereto do mutually agree that said contract is hereby modified in the following particulars, but in no others:

1. The following new section "7." is added to Article II:

"7. The period during which the work under this contract may be conducted is hereby extended to August 31, 1960."

2. The following new subsection "1. g." is added in Article III:

"g. In consideration of the performance of the additional work described in TITLE VII of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Twelve Thousand, Two Hundred Four and 97/100 Dollars (\$12,204.97), the Government will pay to the Contractor Ten Thousand, Seven Hundred Thirty Dollars (\$10,730.00), (\$9,000.00 in new funds and \$1,730.00 agreed to be the balance remaining unexpended from previous work under this contract. As an additional contribution by the Government to the work,

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it is agreed that the Contractor may utilize the balance remaining unexpended from the work under Contract No. AT-(40-1)-1829, estimated at \$4,801.00, for the purpose of purchasing a spectrophotometer for use in connection with the work under this contract."

3. In subsections 2. a., 2. b. and 2. c. of Article III, delete the words "properly certified voucher" and substitute therefor the words "proper voucher."

4. In subsection 2. d. of Article III, delete the word "term" and substitute therefor the word "work."

5. Subsections a. and b. of section 4., Examination of Records, of Article IV are revised to read as follows:

"a. The Contractor agrees that the Comptroller General of the of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract.

"b. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term 'subcontract' as used in this clause excludes (1) purchase orders not exceeding \$2500; (2) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public; and (3) subcontracts or purchase orders for general inventory items not specifically identifiable with the work under this contract."

6. Article V is deleted in its entirety, and the following new Article V is substituted therefor:

"ARTICLE V - PROPERTY

"In consideration of the Contractor's contribution to the research project described in Appendix "A" of this contract,

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title to all materials, tools, machinery, equipment and supplies acquired from any source, including the Government, or manufactured by the Contractor under this contract, shall vest in the Contractor, except that title to items of property described in section 2. b. of Appendix "A" shall vest or remain in the Government. Additional items may be added to such section 2. b. in writing without the necessity for a formal modification of the contract."

7. In Appendix "B", paragraph 4. is revised to read as follows:

"4. Disputes

"a. Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or its duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. 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. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

"b. This 'Disputes' clause does not preclude consideration of law questions in connection with decisions provided for in paragraph a., above; provided, that nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law."

8. In Appendix "B", subparagraph 7. b. is revised to read as follows:

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"b. The Contractor further agrees to insert the foregoing provisions in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials."

9. In Appendix "B", the second sentence of paragraph 11., Covenant Against Contingent Fees, is revised to read as follows:

"For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee."

10. The following new paragraph "16." is added in Appendix "B":

"16. Placing Orders and Subcontracts with Firms Located in Areas of Substantial Labor Surplus

"It is the policy of the Government to place supply contracts with suppliers who will perform such contracts substantially in areas of current labor surplus where this can be done at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts and purchase orders in accordance with this policy to the extent consistent with the efficient performance of this contract."

11. The TITLE VII attached hereto and made a part hereof is added to Appendix "A".

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Herman M. Roth
HERMAN M. ROTH (Contracting Officer)
DIRECTOR
RESEARCH AND DEVELOPMENT DIVISION

~~XXXXXXXXXX~~ ATTEST:

J. P. [Signature]
Secretary
(Address)

(Address)

UNIVERSITY OF TENNESSEE

BY: [Signature]
TITLE: President

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement and the TITLE VII attached hereto and made a part hereof and agree to be bound by the provisions of this document.

[Signature]
Senior Investigator

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APPENDIX "A"

TITLE VII

This TITLE VII describes the research program and cost estimates agreed upon between the Commission and the Contractor.

1. PROGRAM

a. Scope and Plan of Approach:

The Contractor will continue work on the origin and fate of thiocyanate ion in the metabolism of animals, mechanism of physiological action, and the nature of the metabolic products, to include studies of origin, mechanism of formation of enzyme complex, nature of sulfur transfer, etc. Work will also continue to determine the relationship of thiocyanate formation to 2-iminothiazolidine-4-carboxylic acid formation and to 2-imino-tetrahydrothiazine-4-carboxylic acid. C^{14} -labeled cyanide will be used in the study. Also the reaction of cyanide with proteins as a step in detoxification will be studied. Included will be relations with the intermediary metabolism of other sulfur compounds, role of b-mercapto-pyruvate and thus cystine in detoxifying cyanide, prophylaxis against cyanide poisoning, the role of cysteine and other S compounds in protection against radiation damage and carcinogenesis, action of S compounds in liver function, and relations of cyanide or thiocyanate in blocking metabolism of iodide.

2. BUDGET

a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>		\$13,785.50
Dr. John L. Wood (1/4 of time)	\$3,773.00	
Research Associate	6,500.00	
Research Technician	1,600.00	
Instructor	531.50	
Administrative and Secretarial Assistance	100.00	
Consultation and Services	450.00	
Retirement	831.00	
(2) <u>Equipment:</u>		400.00

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(3) <u>Supplies and Communication:</u>	568.00
(4) <u>Travel:</u>	300.00
(5) <u>Overhead and Indirect Costs:</u>	<u>7,881.47</u>
Total \$22,934.97*	

*It is recognized that the research project may receive additional financial support as outlined in the Contractor's proposal to the Commission.

- b. Items of property to be procured or manufactured by the Contractor, or to be furnished by the Government, title to which will vest or remain in the Government (see Article V): None

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Contract No. AT-(40-1)-1637
University of Tennessee
Modification No. 5

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 29th day of September, 1958, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and the UNIVERSITY OF TENNESSEE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1637, dated June 30, 1953, providing for the performance of studies of the origin and fate of thiocyanate ion in metabolism; and

WHEREAS, the Contract has been amended heretofore by Modifications Nos. 1 - 4; and

WHEREAS, the Commission desires to provide for additional research as more particularly described in TITLE VI of Appendix "A", to obtain reports thereon, and to effect certain other changes as are hereinafter more particularly described; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties hereto do mutually agree that said contract is hereby modified in the following particulars, but in no others:

1. The following new section "5." is added to Article I:

"5. The Contractor shall commence the work as soon as feasible, prosecute it with due diligence and submit the reports required hereunder as early as practicable, and not later than the dates specified in Appendix "C".

2. The heading of Article II is changed from "TERM OF CONTRACT" to "SCHEDULE", and the following new section "6." is added to Article II:

"6. The period during which the work under this contract may be conducted is hereby extended to August 31, 1959."

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3. The following new subsection "1. f." is added in Article III:

"f. In consideration of the performance of the additional work described in TITLE VI of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Thirteen Thousand, Nine Hundred Eighty-four and 97/100 Dollars (\$13,984.97), the Government will pay to the Contractor Nine Thousand, Twenty-two Dollars (\$9,022.00)."

4. Subsection 2. a. of Article III is revised to read as follows:

"a. On or before the date of commencement of the work on the project described in Appendix "A", the Government shall pay to the Contractor upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration."

5. In subsection 2. c. of Article III, delete the word "term" and substitute therefor the word "work".

6. Section 3. of Article III is revised to read as follows:

"3. Contract Renewal

"When renewal of the contract is desired, the Contractor shall submit to the Commission's Oak Ridge Operations Office a renewal proposal as outlined in Appendix "C" attached hereto. The Contractor and the Commission shall then negotiate as to the amounts each will contribute for the additional research activities to be conducted, taking into consideration the actual costs incurred for the current work in comparison with the cost estimates in the contract, and, upon agreement, shall execute a formal modification of the contract."

7. The following new TITLE "VI" is added in Appendix "A":

"TITLE VI

"This TITLE VI describes the research program and cost estimates agreed upon between the Commission and the Contractor.

"1. PROGRAM

"a. Scope and Plan of Approach:

The Contractor will continue studies directed toward identification of the origin and metabolism of thiocyanate in the animal

body, to include determination of the nature of the enzyme-substrate involved and the nature of the reactions, determination of detoxification mechanisms, etc., and extend the work to include the intermediary metabolism of this and related sulfur compounds. Elucidation of the role of b-mercaptopyruvate and thus cystine in the detoxifying of cyanide will be of research interest, with view of prophylaxis against poisoning by cyanide, studies of the role of cysteine and other compounds in protection against radiation and against carcinogenesis, sulfur compounds in liver function, and role of thiocyanate in relation to iodine metabolism will all be within the province of the research program.

"2. BUDGET

"a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>		\$16,098.23
Dr. John L. Wood (1/4 of time)	\$3,552.19	
Research Associates	6,841.17	
Research Assistants, Technician, and Instructor	5,104.87	
Consultation and Services	500.00	
Administrative and Secretarial Assistance	100.00	
(2) <u>Equipment:</u>		300.00
(3) <u>Supplies and Communications:</u>		500.00
(4) <u>Travel:</u>		300.00
(5) <u>Overhead and Indirect Costs:</u>		<u>5,808.74</u>
		\$23,006.97*

*It is recognized that the research project may receive additional financial support as outlined in the Contractor's proposal to the Commission.

"b. Items of property to be procured or manufactured by the Contractor, title to which will vest in the Government (see Article V): None."

8. Appendix "C" is deleted in its entirety and the new Appendix "C" attached hereto is substituted therefor.

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Herman M. Roth
HERMAN M. ROTH
DIRECTOR
RESEARCH AND DEVELOPMENT DIVISION
(Contracting Officer)

WITNESSES:

Evelyn Sims
Knoxville Tennessee
(Address)
Engly B. Smith
Knoxville Tennessee
(Address)

UNIVERSITY OF TENNESSEE

BY: W. G. Buchanan
TITLE: President

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement and the Appendix "C" attached hereto and made a part hereof and agree to be bound by the provisions of this document.

2021
Senior Investigator

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APPENDIX "C"

REPORTS AND PROPOSALS (FOR DIRECT AEC RESEARCH CONTRACTS)

	Date Due	Copies
1. Progress Report	JUN - 1	Six
2. Renewal Proposal	JUN - 1	Six
3. 200-word summary of purpose and scope with submittal date indicated thereon	Within 30 days after SEP - 1	Three
4. Complete Scientific Report	On contract expiration or termination	Six
5. Radioisotopes Purchase Report	With renewal proposal if proposal is submitted, otherwise on contract expiration or termination	Three
6. Brief reports or manuscripts may be submitted as desired by Senior Investigator		

NOTES:

All of the above should be submitted to:

Research and Development Division
Oak Ridge Operations Office
U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

The progress report should briefly describe the scope of investigations undertaken and the significant results obtained. It should also explain any significant differences between the actual level of activity (expressed in the various categories of man-months, facilities procured, travel performed, etc.) and that contemplated in the contract. Technical reports and articles prepared for publication should be listed with bibliographic references. Reprints or preprints of all such material should be appended and material contained therein need not be duplicated in the report.

Renewal proposals, if any, should accompany the progress report and should contain the type of information outlined below unless the information is already contained in earlier proposals or in the accompanying progress report. Any contemplated change in program or scope for the additional work should be clearly explained and the cost estimated should be based upon past experience.

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1. Title of the project.
2. The institution and department in which the work will be done.
3. Scientific background including literature relevant to the proposal, the significance, and the motivation. If the proposal is for continuation of work already in progress the extent of present support should be stated identifying amounts received from federal agencies.
4. Scientific scope of the proposed research, its objectives, its relation to present knowledge and to comparable work in progress elsewhere, and a plan of accomplishments for the work.
5. Scientific Personnel. Give the name, highest academic degree, position in the institution, scientific experience, publications and accomplishments of the Senior Investigator (the individual who will actively direct the research program) and of each regular staff scientist who it is proposed will engage in the work. Indicate the approximate fraction of the time of each to be devoted to the project. Scientific personnel to be newly employed for the project should be so designated, and professional records given if possible.
6. Other Personnel. The number of persons of each sub-professional grade and the fraction of the time of each to be devoted to the project should be listed. Graduate student employees should be identified as such if their basis is to be related to the project.
7. Other Financial Assistance. If assistance for this or other activities involving the same personnel or facilities is to be proposed to, or received from other federal or non-university sources the extent of that assistance should be clearly stated, and the interplay of the arrangements should be fully explained.
8. Materials, Equipment and Facilities. List those already available for the work and justify the need for major items to be procured.
9. Travel and Other Items. Explain the purpose of the proposed travel, and of any other major items in the budget. Travel rates and the use of contract funds for attendance at regular scientific meetings should conform with the policy of the institution in the use of its own funds for these purposes.
10. Budget. This should list in detail all items of cost necessary to carry the project. It should include: a list of the individual salaries attributable to the project; supplies and services, equipment (defined as things individually costing more than \$500 which will retain their utility for more than a year), travel, communication and publication, and the indirect costs allocable to the project. The basis for computing the indirect costs should be briefly explained. The budget should not include the stipend of fellows. All salaries chargeable to the project should be in accord with the established policies of the institution, or, if not, an explanation should be submitted.

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11. Amount Requested. A statement of the part of the total amount listed in the budget which the institution is prepared to bear, and the amounts requested from the AEC, and a statement of any other sponsors of the project with the amounts contributed by each. The proposal should be signed by the Senior Investigator and endorsed by a responsible administrative officer of the institution.
12. Statement of Current Expenditures. A current statement of its expenditures for the project, and an estimate of expenses to be incurred.
13. Residual Funds. Any difference in the scope of the work from that contemplated in the contract, as brought out in the report, may be reflected in the amount requested. If no new funds are required the contract may be renewed without funds. A proposal for such renewal should state the scope of the work proposed for use of residual funds.

The radioisotopes purchase report shall list all radioisotopes included in the budget at the regular price established by the Commission, but which are purchased, or will be purchased under the current budget, at a price less than the established price by utilizing the discount authorized by an AEC Discount Certificate issued to the Contractor. For each such purchase, the report shall state the price as established by the Commission, the price paid or to be paid using the discount, and the savings realized or to be realized. The report due on contract termination or expiration shall cover all such purchases actually made and not previously reported.

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SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 10th day of October, 1957, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and the UNIVERSITY OF TENNESSEE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1637, dated June 30, 1953, providing for the performance of studies of the origin and fate of thiocyanate ion in metabolism; and

WHEREAS, the contract has been amended heretofore by Modifications Nos. 1 - 3; and

WHEREAS, the parties hereto desire to extend the term of the contract in order to continue the research activities previously undertaken, as such extended program is described in TITLE V of Appendix "A", and to effect certain other changes as are hereinafter more particularly described; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties hereto do mutually agree that said contract is hereby modified in the following particulars, but in no others:

1. The following new section "5." is added to Article II:

"5. The fifth period of performance for the research project covered by this contract will commence on September 1, 1957, and will end on August 31, 1958."

2. The following new subsection "1. e." is added in Article III:

"e. In consideration of the performance of the research activities described in TITLE V of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Twelve Thousand, Four Hundred Seventy-nine and 13/100 Dollars (\$12,479.13), the Government will pay to the Contractor for the fifth period of performance the sum of Six Thousand, Five Hundred Thirty Dollars (\$6,530.00) (\$5,935.00 in new funds and \$595.00 agreed to be the balance remaining unexpended from the previous period of performance)."

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3. The following new "TITLE V" is added in Appendix "A":

"TITLE V

"September 1, 1957 - August 31, 1958

"This TITLE V describes the research program and cost estimates agreed upon between the Commission and the Contractor for the fifth period of performance.

"1. PROGRAM

"a. Scope and Plan of Approach:

The Contractor will continue work on the origin of thiocyanate in the body, the mechanism of its physiological action, and the nature of its metabolism products, emphasizing (1) studies of thiocyanate formation utilizing the radioactive isotope Sulfur-35, with studies of the enzyme systems, (2) studies of antagonisms between iodide and thiocyanate, (3) the detoxification of thiocyanate and its relation to metabolic products, (4) with studies of protection against cyanide poisoning, (5) studies of sulfur compounds in liver function, and related subjects as appropriate.

"2. BUDGET

"a. Outline of Cost Estimates for the Fifth Period:

(1) <u>Salaries and Wages:</u>		\$13,246.00
Dr. John L. Wood (25% of time)	\$3,000.00	
Research Associate	6,000.00	
Research Assistants	3,400.00	
Consultation and Services	500.00	
Administrative and Secretarial Assistance	100.00	
Retirement	246.00	
(2) <u>Equipment:</u>		300.00
(3) <u>Communication and Supplies:</u>		500.00
(4) <u>Travel:</u>		300.00
(5) <u>Overhead and Indirect Costs:</u>		<u>4,663.13</u>
	TOTAL	\$19,009.13

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"b. Items of property to be procured or manufactured by the Contractor during this period, title to which will vest in the Government (see Article V): None."

4. Paragraph 2. Publications of Appendix "B" is revised to read as follows:

"2. Publications

"It is intended that the Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that 'restricted data' as defined in the Atomic Energy Act of 1954 shall be governed by the provisions of Paragraph 3. of this Appendix "B".

"However, in order to insure that the public disclosure of such results will not adversely affect the patent interests of the Government provided in Paragraph 1. of this Appendix "B" entitled 'Patents' approval for such release shall be secured from the Commission prior to any such publication.

"All publications shall include a reference that the results were developed under a Commission sponsored project."

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Herman M. Roth
HERMAN M. ROTH
DIRECTOR

(Contracting Officer)

UNIVERSITY OF TENNESSEE

BY: C. E. Brehm

TITLE: C. E. Brehm, President

WITNESSES:

(Address)

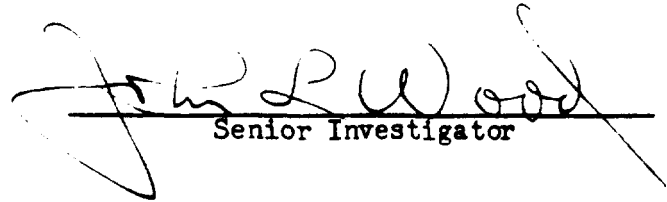
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ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement and agree to be bound by the provisions of this document.


Senior Investigator

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SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 17th day of October, 1956, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and the UNIVERSITY OF TENNESSEE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1637, dated June 30, 1953, providing for the performance of studies of the origin and fate of thiocyanate ion in metabolism; and

WHEREAS, the Contract has been amended heretofore by Modifications Nos. 1 and 2; and

WHEREAS, the parties hereto desire to extend the term of the contract in order to continue the research activities previously undertaken, as such extended program is described in TITLE IV of Appendix "A", and to effect certain other changes as are hereinafter more particularly described; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties hereto do mutually agree that said contract is hereby modified in the following particulars, but in no others:

1. The following new section "4." is added to Article II:

"4. The fourth period of performance for the research project covered by this contract will commence on September 1, 1956, and will end on August 31, 1957."

2. The following new subsection "1. d." is added in Article III:

"d. In consideration of the performance of the research activities described in TITLE IV of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Seven Thousand, Five Hundred Seventy-one and 55/100 Dollars (\$7,571.55), the Government will pay to the Contractor for the fourth period of performance the sum of Seven Thousand, Five Hundred Thirty-eight Dollars (\$7,538.00) (\$2,533.00 in new funds and \$5,005.00 agreed to be the balance remaining unexpended from the previous period of performance)."

3. Subsection 2. a. of Article III is revised to read as follows:

"a. On or before the date of commencement of the work on the project described in Appendix "A", the Government shall pay to the Contractor upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration; provided, however, that this payment shall be reduced by the amount of the balance, if any, agreed to be remaining unexpended from the previous period of performance."

4. Subsection 2. b. of Article III is revised to read as follows:

"b. On or before the expiration of six months from the date of commencement of the project, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration; provided, however, that this payment shall be reduced by the amount by which the balance, if any, agreed to be remaining unexpended from the previous period of performance exceeds 45 per cent of the agreed consideration."

5. "ARTICLE VI - PURCHASE OF RADIOISOTOPES" is deleted in its entirety and the following new Article "VI" is inserted in lieu thereof:

"ARTICLE VI - PROCUREMENT OF MATERIAL AND SERVICES FROM
COMMISSION FACILITIES; COMPLIANCE WITH COMMISSION REGU-
LATIONS"

"The Contractor shall comply with all licensing and other requirements of the Commission with respect to possession and use of by-product material, source material, and special nuclear material (as these terms are defined in the Atomic Energy Act of 1954), and may purchase or acquire such materials, irradiation services, other radioactive material, cyclotron time, etc. from the Commission or Commission facilities in accordance with applicable procedures."

6. The following new Article "VI-A" is added immediately following Article VI:

"ARTICLE VI-A - PURCHASE OF RADIOISOTOPES UNDER AN AEC
DISCOUNT CERTIFICATE"

"If any radioisotopes are budgeted in the outline of cost estimates at the full amount of the price as established by the Commission, but are purchased at less than such established prices under an AEC Discount Certificate issued to the Contractor (See: Title 10 C.F.R., Part 37), then any difference between the established price and the price so paid shall be paid by the Contractor to the Government or otherwise credited to the Government's account as the Contracting Officer may direct or approve. The requirement for a report to be submitted to the Commission indicating the purchases under the discount program is outlined in Appendix "C"."

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7. In Appendix "B", section 7. Nondiscrimination in Employment is deleted in its entirety and the following new section "7." is inserted in lieu thereof:

"7. Nondiscrimination in Employment

- "a. In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color or national origin. The aforesaid provision shall include but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of the nondiscrimination clause.
- "b. The Contractor further agrees to insert the foregoing provision in all subcontracts hereunder, except (i) subcontracts for standard commercial supplies or raw materials, (ii) subcontracts to be performed outside the United States where no recruitment of workers within the limits of the United States is involved, (iii) purchase orders on pocket-size forms similar to U. S. Standard Form 44, and (iv) subcontracts to meet other special requirements or emergencies, if recommended by the Committee on Government Contracts. In the case of purchase orders hereunder which do not exceed \$5,000, the last sentence of paragraph a. above may be omitted."

8. In Appendix "B", the following new section "15. Buy American Act" is added immediately following section 14. Foreign Travel:

"15. Buy American Act

"In the event this contract provides for the acquisition of articles, materials, or supplies by the Government, the following provision shall apply with respect to such items: The Contractor agrees that there will be delivered under this contract only such unmanufactured articles, materials and supplies (which term 'articles, materials and supplies' is hereinafter referred to in this clause as 'supplies') as have been mined or produced in the United States, and only such manufactured supplies as have been manufactured in the United States substantially all from supplies mined, produced, or manufactured, as the case may be, in the United States. The foregoing provisions shall not apply (i) with respect to supplies exempted by the

Commission from the application of the Buy American Act (41 U.S.C. 10a-d), (ii) with respect to supplies for use outside the United States, or (iii) with respect to the supplies to be delivered under this contract which are of a class or kind determined by the Commission not to be mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, or (iv) with respect to such supplies, from which the supplies to be delivered under this contract are manufactured, as are of a class or kind determined by the Commission not to be mined, produced or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, provided that this exception (iv) shall not permit delivery of supplies manufactured outside the United States if such supplies are manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality."

9. In the list of reports on the first page of Appendix "C", the designation "5." is revised to read "6.", and the following new report is provided for as "5." of the list:

"Radioisotope Purchase Report	With renewal proposal if proposal is submitted, otherwise on contract termination	Three"
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10. In Appendix "C", the following new paragraph is added immediately following the provision on page 3 entitled "13. Residual funds.":

"The radioisotopes purchase report shall list all radioisotopes included in the budget for the current period at the regular price established by the Commission, but which are purchased, or will be purchased during the current period, at a price less than the established price by utilizing the discount authorized by an AEC Discount Certificate issued to the Contractor. For each such purchase, the report shall state the price as established by the Commission, the price paid or to be paid using the discount, and the savings realized or to be realized. The report due on contract termination shall cover all such purchases actually made during the final period."

11. In Appendix "C", delete the words "Research and Medicine Division", and insert the words "Research and Development Division" in lieu thereof.

12. The following new TITLE "IV" is added in Appendix "A":

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"TITLE IV

"September 1, 1956 - August 31, 1957

"This TITLE IV describes the research program and cost estimates agreed upon between the Commission and the Contractor for the fourth period of performance.

"1. PROGRAM

"a. Scope and Plan of Approach:

The Contractor will continue studies of thiocyanate ion in animals and in the human, following up earlier studies on the thyroid as a site of concentration, reactions with cystine and cyanide, possible functions of thiocyanate and the nature of thiocyanate binding in the body. Enzyme action will be studied and detoxication products will be determined. A special study will be made of the origin of thiocyanate in the body, its mechanism of action, nature of precursors, and conditions of metabolism and biochemical and physiological actions which permit thiocyanates to form in organs and tissues. Iodine-131 and Sulfur-35 will be used to study antagonisms in metabolism, and detoxification mechanisms will be studied, with view of relating the program as a whole to problems of the intermediary metabolism of sulfur compounds. Role of thiocyanate in blocking or inhibiting metabolism of iodide will be included in the study.

"2. BUDGET

"a. Outline of Cost Estimates for the Fourth Period:

(1) <u>Salaries and Wages:</u>		\$10,420.00
Dr. John L. Wood (25% of time)	\$ 2,870.00	
Research Associate	5,500.00	
Research Assistant	1,000.00	
Consultation and Services	500.00	
Administrative and		
Secretarial Assistance	270.00	
Retirement	280.00	
(2) <u>Supplies, Equipment and Communication:</u>		800.00
(3) <u>Travel:</u>		300.00
(4) <u>Overhead and Indirect Costs:</u>		<u>3,589.55</u>
	TOTAL	\$15,109.55

"b. Items of property to be procured or manufactured by the Contractor during this period, title to which will vest in the Government (see Article V):
None."

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Herman M. Roth
(Contracting Officer)

WITNESSES:

L. P. White House
Dr. M. W. L. L. L.
(Address)

King D. Smith
Ray L. L. L.
(Address)

UNIVERSITY OF TENNESSEE

BY: K. E. Brehm
TITLE: President

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement and agree to be bound by the provisions of this document.

John L. Wood
Senior Investigator
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Contract No. AT-(40-1)-1637
University of Tennessee
Modification No. 2

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 17 day of September, 1955, effective as of September 1, 1955, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and the UNIVERSITY OF TENNESSEE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1637, dated June 30, 1953, providing for the performance by the Contractor of studies of the origin and fate of thiocyanate ion in metabolism; and

WHEREAS, the contract has been amended heretofore by Modification No. 1; and

WHEREAS, the parties hereto desire to extend the term of the contract in order to continue the research activities previously undertaken, as such extended program is described in TITLE III of Appendix "A", and to revise the form of the contract and appendices; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties hereto do mutually agree that as of September 1, 1955, Contract No. AT-(40-1)-1637 is amended to read (with Appendices "A", "B", and "C" attached) as follows:

ARTICLE I - PURPOSE AND SCOPE

1. The Commission, in furtherance of its policy of assisting and fostering private research, desires to support the Contractor's fundamental research in the field of atomic energy.
2. The work shall consist of performance of a research project involving the origin and fate of thiocyanate ion in metabolism. The plan of approach to the problem and the agreed upon program and budget for the project are described in Appendix "A", which is hereby made a part of this contract. The Contractor shall be guided by, but not bound to conform to, the details of the budget described in Appendix "A".
3. The Contractor shall furnish all services, facilities, equipment, supplies and materials (except such services, equipment, supplies and materials as the Government has agreed to furnish herein) required for the performance of the research program described in Section 2. above.

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4. The work will be carried out by the Contractor under the direction of Dr. Jonn L. Wood as Senior Investigator.

ARTICLE II - TERM OF CONTRACT

3. The third period of performance for the research project covered by this contract will commence on September 1, 1955, and will end on August 31, 1956. It is recognized that completion of the research work under this contract may involve a period of several years and that the term of this contract may be extended by mutual agreement.

ARTICLE III

1. Consideration

c. In consideration of the performance of the research activities described in TITLE III of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Eight Thousand, Seven Hundred Seventy-one and 05/100 Dollars (\$8,771.05), the Government will pay to the Contractor for the third period of performance the sum of Nine Thousand, Three Hundred Sixty-four Dollars (\$9,364.00) (\$8,157.00 in new funds and \$1,207.00 agreed to be the balance remaining unexpended from the previous period of performance).

2. Payment

a. On or before the date of commencement of the work on the project described in Appendix "A", the Government shall pay to the Contractor upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration; provided, however, that this payment shall be reduced by the amount of the balance agreed to be remaining unexpended from the previous period of performance.

b. On or before the expiration of six months from the date of commencement of the project, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration.

c. Upon receipt and acceptance of a satisfactory progress report, in cases where the contract is to be renewed, or the final report if the contract is not to be renewed, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, the remaining 10 per cent of the agreed consideration. An extension of the contract term without additional funds shall not be considered a renewal of the contract and in such cases the retained 10 per cent of the agreed consideration will be paid upon submission and acceptance of a satisfactory final report.

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d. In the event the contract is renewed, payments to the Contractor of any additional amount to be paid by the Government shall be made for the extended term in accordance with the schedule outlined in Paragraphs a., b. and c. above.

3. Program and Budget for Subsequent Periods

When renewal of the contract is desired, the Contractor shall submit to the Commission's Oak Ridge Operations Office a renewal proposal as outlined in Appendix "C", attached hereto. The Contractor and the Commission shall then negotiate as to the amounts each will contribute for the services to be performed during the ensuing period, taking into consideration the actual costs incurred during the current period in comparison with the cost estimates in the contract, and, upon agreement, shall execute a formal modification of the contract.

ARTICLE IV - REPORTS, RECORDS AND INSPECTION

1. The Commission shall have the right to inspect in such manner and at such times as it deems appropriate all activities of the Contractor arising in the course of the work under this contract.

2. The Commission shall at all times be afforded access to the premises and to all technical and administrative instructions, drawings and memoranda of record value of the Contractor pertaining to said work.

3. The Contractor shall make progress and other reports in such manner and at such times as specified in Appendix "C" which is attached and hereby made a part of this contract.

4. Examination of Records

a. The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract.

b. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract with the Government, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor involving transactions related to the subcontract. The term "subcontract" as used herein means any purchase order or agreement to perform all or any part of the

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work or to make or furnish any materials required for the performance of this contract, but does not include (1) purchase orders not exceeding \$1,000, (2) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public, or (3) subcontracts or purchase orders for general inventory items not specifically identifiable with the work under this contract.

c. Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE V - TITLE TO PROPERTY PURCHASED BY CONTRACTOR

In consideration of the Contractor's contribution to the research project described in Appendix "A" of this contract, title to all materials, tools, machinery, equipment and supplies, acquired from any source including the Government, or manufactured by the Contractor under this contract shall vest in the Contractor, except that title to items of property described in Section 2. b. of Appendix "A" shall vest in the Government.

ARTICLE VI - PURCHASE OF RADIOISOTOPES

The Contractor shall purchase, to the extent available in appropriate form, all radioisotopes, irradiation services and cyclotron time required in the performance of the work hereunder, through the Commission's Isotopes Division, Post Office Box E, Oak Ridge, Tennessee.

ARTICLE VII - GENERAL PROVISIONS

The provisions of Appendix "B" attached hereto, are hereby made a part of this contract.

ARTICLE VIII - ALTERATIONS

The following alterations to this contract were made by mutual agreement of the parties prior to its execution: None.

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Herman M. Korn

Contracting Officer

UNIVERSITY OF TENNESSEE

BY: Carl E. Rinehart

TITLE: President

Witnesses: J. H. ...
Secretary
(Address)

...
(Address)

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement with Appendices attached hereto and made a part hereof and agree to be bound by the provisions of this document.

John L. Wood
Senior Investigator

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APPENDIX "A"

TITLE III

September 1, 1955 - August 31, 1956

This TITLE III describes the research program and cost estimates agreed upon between the Commission and the Contractor for the third period of performance.

1. PROGRAM

a. Scope and Plan of Approach:

Continuing studies of the origin and fate of thiocyanate ion in the animal body, its physiological action and nature of its products, the Contractor proposes to extend Sulfur-35 labeling techniques to cystine and other sulfur-containing biological compounds of importance, with the view of studying enzyme inhibitors, the interference between thiocyanate and iodide with respect to binding of anions on serum albumin and on proteins of the thyroid, to study the detoxication products of cyanide as they show in urines of persons having cyanide exposures, and elucidation of the role of beta-mercaptopyruvate, protective action of cysteine against radiation and against carcinogenesis, and studies in general of sulfur compounds on liver function.

2. BUDGET

a. Outline of cost estimates for the third period:

(1) <u>Salaries and Wages:</u>		\$10,640.00
Dr. J. L. Wood (25% of time)	\$2,750.00	
Research Associate	5,250.00	
Research Assistants	2,520.00	
Secretarial Assistance	120.00	
(2) <u>Consultation and Services:</u>		2,400.00
(3) <u>Supplies, Equipment, and Communication:</u>		600.00
(4) <u>Travel:</u>		300.00
(5) <u>Indirect Charges:</u>		<u>4,195.00</u>
	TOTAL	\$18,135.05

- b. Items of property to be procured or manufactured by the Contractor during this period, title to which will vest in the Government (see Article V):
None.

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APPENDIX "B"

GENERAL PROVISIONS

(FOR DIRECT AEC RESEARCH CONTRACTS)

1. Patents

- a. Whenever any invention or discovery is made or conceived by the Contractor or its employees in the course of, in connection with, or under the terms of this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.
- b. No claim for pecuniary award or compensation under the provisions of the Atomic Energy Acts of 1946 and 1954 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of, in connection with, or under the terms of this contract.
- c. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs a. and b. of this article from all persons who perform any part of the work under this contract, except such clerical and manual labor personnel as will not have access to technical data.
- d. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making this article applicable to the subcontractor and its employees.

2. Publications

The Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that "restricted data" as defined in the Atomic Energy Act of 1954 shall be governed by the provisions of Paragraph 3 of this Appendix "B". All publications shall include a reference that the results were developed under a Commission sponsored project.

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3. Security

- a. It is understood that the work under this contract will not involve restricted data or other classified matter and that the Contractor will perform such work as unclassified work. However, if in the course of such work any discoveries are made or any data used or developed that constitute restricted data or other classified matter, the Contractor shall promptly inform the Commission and will be bound by the following:

- (1) Contractor's Duty to Safeguard Restricted Data and other Classified Information. In the performance of the work under this contract the Contractor shall, in accordance with the Commission's security regulations and requirements, be responsible for safeguarding restricted data and other classified matter and protecting against sabotage, espionage, loss and theft, the classified documents, materials, equipment, processes, etc., as well as such other material of high intrinsic or strategic value as may be in the Contractor's possession in connection with performance of work under this contract. Except as otherwise expressly provided in the specifications the Contractor shall upon completion or termination of this contract transmit to the Commission any classified matter in the possession of the Contractor or any person under the Contractor's control in connection with performance of this contract.
- (2) Regulations. The Contractor agrees to conform to all security regulations and requirements of the Commission.
- (3) Definition of Restricted Data. The term "Restricted Data", as used in this article, means all data concerning (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 112 of the Atomic Energy Act of 1954.
- (4) Security Clearance of Personnel. Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1954, the Contractor shall not permit any individual to have access to Restricted Data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to Restricted Data will not endanger the common defense and security. As used in this paragraph, the

term "designated investigating agency" means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1954.

- (5) Criminal Liability. It is understood that disclosure of information relating to the work or services ordered hereunder to any person not entitled to receive it, or failure to safeguard any Restricted Data or any top secret, secret, or confidential matter that may come to the Contractor or any person under the Contractor's control in connection with work under this contract, may subject the Contractor, his agents, employees, and subcontractors to criminal liability under the laws of the United States. (See the Atomic Energy Act of 1954, 68 Stat. 919), (See also Executive Order 10104 of February 1, 1950, 15 F. R. 597.)
- (6) Subcontracts and Purchase Orders. Except as otherwise authorized in writing by the Contracting Officer, the Contractor shall insert provisions similar to the foregoing in all subcontracts and purchase orders under this contract.

- b. The continuation by the Contractor of work found to involve restricted data will be subject to mutual agreement of the Commission and the Contractor and shall be covered by a modification of this agreement.

4. Disputes

Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. Within 30 days from the date of receipt of such copy, the Contractor may appeal by mailing or otherwise furnishing to the Contracting Officer a written appeal addressed to the Commission, and the decision of the Commission shall, unless determined by a court of competent jurisdiction to have been fraudulent, arbitrary, capricious, or so grossly erroneous as necessarily to imply bad faith, or is not supported by substantial evidence, be final and conclusive: Provided, That if no such appeal to the Commission is taken, the decision of the Contracting Officer 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.

Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

5. Safety, Health and Fire Protection

The Contractor shall take all reasonable precautions in the performance of the work under this contract to protect the health and safety of employees and of members of the public and to minimize danger from all hazards to life and property, and shall comply with all health, safety, and fire protection regulations and requirements (including reporting requirements) of the Commission. In the event that the Contractor fails to comply with said regulations or requirements of the Commission, the Contracting Officer may without prejudice to any other legal or contractual rights of the Commission, issue an order stopping all or any part of the work; thereafter a start order for resumption of work may be issued at the discretion of the Contracting Officer. The Contractor shall make no claim for an extension of time or for compensation or damages by reason of or in connection with such work stoppage.

6. Officials Not to Benefit

No member of or delegate to Congress or resident commissioner shall be entitled to any share or part of this contract or to any benefit that may arise therefrom but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

7. Nondiscrimination in Employment

In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color, or national origin. The aforesaid provision shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of the nondiscrimination clause. The Contractor further agrees to insert the foregoing provision in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials.

8. Convict Labor

In connection with the performance of work under this contract the Contractor shall not employ any person undergoing sentence of imprisonment at hard labor.

9. Termination

- a. The Commission may at any time upon 120 days written notice terminate this contract in whole or in part.
- b. In the event of termination pursuant to subsection a., the Contractor shall submit a statement of costs incurred in performance of the work under the contract prior to such termination, and the Government shall pay to the Contractor that portion of the costs incurred which bears the same relationship to the total as the agreed Government support for the full term bears to the total of cost estimates for the full term, less the amount of all payments theretofore made. If the total payments theretofore made to the Contractor exceed the amount to which it is entitled hereunder, the Contractor shall promptly remit the amount of any such excess to the Government.

10. Eight-Hour Law

- a. No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this article. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight hours per day and work in excess of eight hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay. For each violation of the requirements of this article a penalty of five dollars shall be imposed upon the Contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight hours upon said work without receiving compensation computed in accordance with this article, and all penalties thus imposed shall be withheld for the use and benefit of the Government: Provided, that this stipulation shall be subject in all respects to the exceptions and provisions of the Eight-Hour Laws as set forth in 40 U.S.C. 321, 324, 325, 325a and 326, which relate to hours of labor and compensation for overtime.
- b. This provision does not apply to work performed by employees of the Contractor if this contract is with a state or a state institution.

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11. Covenant Against Contingent Fees

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration the full amount of such commission, percentage, brokerage or contingent fee.

12. Definitions

As used in this contract:

- a. the term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successor or any duly authorized representative of such person.
- b. the term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer except for deciding an appeal under the article entitled "Disputes".

13. Fellowships

It is understood by the Contractor that none of the funds supplied by the Commission under this contract shall be used in any way to pay the stipend of any appointment for which commensurate services are not rendered under this contract; nor shall any of the funds be used to confer a fellowship, or to pay any part of the stipend of a fellowship, of any kind.

14. Foreign Travel

It is agreed that none of the funds supplied by the Commission under this contract shall be used to pay the expenses of foreign travel, except where such foreign travel is made with the prior approval of the Commission. "Foreign travel" as used herein means travel outside the continental United States, excepting, however, travel to Canada.

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APPENDIX "C"

REPORTS AND PROPOSALS (FOR DIRECT AEC RESEARCH CONTRACTS)

	Date Due	Copies
1. Progress Report	June 1	Six
2. Renewal Proposal	June 1	Six
3. 200-word summary of purpose and scope	Following completion of negotiation of contract and any renewal	Three
4. Complete Scientific Report	On contract termination	Six
5. Brief reports or manuscripts may be submitted as desired by investigator		

NOTES:

All of the above should be addressed to:

Research and Medicine Division
Oak Ridge Operations Office
U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

The progress report should briefly describe the scope of investigations undertaken and the significant results obtained. It should also explain any significant differences between the actual level of activity (expressed in the various categories of man-months, facilities procured, travel performed, etc.) and that contemplated in the contract. Technical reports and articles prepared for publication during the period covered should be listed with bibliographic references. Reprints or preprints of all such material should be appended and material contained therein need not be duplicated in the report.

Renewal proposals, if any, should accompany the progress report and should contain the type of information outlined below unless the information is already contained in earlier proposals or in the accompanying progress report. Any contemplated change in program or scope for the renewal period should be clearly explained and the cost estimated should be based upon past experience.

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1. Title of the project.
2. The institution and department in which the work will be done.
3. Scientific background including literature relevant to the proposal, the significance, and the motivation. If the proposal is for continuation of work already in progress the extent of present support should be stated identifying amounts received from federal agencies.
4. Scientific scope of the proposed research, its objectives, its relation to present knowledge and to comparable work in progress elsewhere, and a plan of accomplishments for the first year's work.
5. Scientific Personnel. Give the name, highest academic degree, position in the institution, scientific experience, publications and accomplishments of the senior investigator (the individual who will actively direct the research program) and of each regular staff scientist who it is proposed will engage in the work. Indicate the approximate fraction of the time of each to be devoted to the project during each period of the year. Scientific personnel to be newly employed for the project should be so designated, and professional records given if possible.
6. Other Personnel. The number of persons of each sub-professional grade and the fraction of the time of each to be devoted to the project should be listed. Graduate student employees should be identified as such if their thesis is to be related to the project.
7. Other Financial Assistance. If assistance for this or other activities involving the same personnel or facilities is to be proposed to, or received from other federal or non-university sources the extent of that assistance should be clearly stated, and the interplay of the arrangements should be fully explained.
8. Materials, Equipment and Facilities. List those already available for the work and justify the need for major items to be procured.
9. Travel and other items. Explain the purpose of the proposed travel, and of any other major items in the budget. Travel rates and the use of contract funds for attendance at regular scientific meetings should conform with the policy of the institution in the use of its own funds for these purposes.
10. Budget. This should list in detail all items of cost necessary to carry the project for one year or for the duration of the project if less than a year. It should include: a list of the individual salaries attributable to the project, supplies and services, equipment (defined as things individually costing more than \$500 which will retain their utility for more than a year), travel, communication and publication, and the

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indirect costs allocable to the project. The basis for computing the indirect costs should be briefly explained. The budget should not include the stipend of fellows. All salaries chargeable to the project should be in accord with the established policies of the institution, or, if not, an explanation should be submitted.

11. Amount requested. A statement of the part of the total amount listed in the budget which the institution is prepared to bear, and the amount requested from the AEC, and a statement of any other sponsors of the project with the amounts contributed by each. The proposal should be signed by the Senior Investigator and endorsed by a responsible administrative officer of the institution.
12. Statement of current expenditures. A current statement of its expenditures for the project, and an estimate of expenses to be incurred during the remainder of the current period.
13. Residual funds. Any difference in the scope of the work during the current contract period from that contemplated in the contract, as brought out in the report, may be reflected in the amount requested for the ensuing year. If no new funds are required the contract may be renewed without funds. A proposal for such renewal should state the scope of the work proposed for use of residual funds.

Contract No. AT-(40-1)-1637
The University of Tennessee
Modification No. 1

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 22 day of June, 1954, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and the UNIVERSITY OF TENNESSEE (hereinafter called the "Contractor");

WITNESSETH THAT:

~~WHEREAS, the Government and the Contractor entered into Contract No.~~
AT-(40-1)-1637, dated June 30, 1953, for the performance by the Contractor of studies of the origin and fate of thiocyanate ion in metabolism; and

WHEREAS, the parties hereto desire to extend without additional funds the initial period of the contract for an additional two months and to further extend the contract for an additional year under a new program and budget in order to pursue the research activities as described in Title II of Appendix "A", and to revise the form of the contract and appendices; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1946;

NOW, THEREFORE, the parties hereto do mutually agree that Contract No. AT-(40-1)-1637 is hereby modified in the following particulars, but in no others:

1. In ARTICLE II - TERM OF CONTRACT, Section 1, delete the date "June 30, 1954", and substitute therefor the date "August 31, 1954".
2. In TITLE I of Appendix "A", delete the date "June 30, 1954" wherever it appears, and substitute therefor in each instance the date "August 31, 1954".
3. Effective as of September 1, 1954, the contract is amended to read (with Appendices "A", "B" and "C" attached) as follows:

ARTICLE I - PURPOSE AND SCOPE

1. The Commission in furtherance of its policy of assisting and fostering private research, desires to support the Contractor's fundamental research in the field of atomic energy.

2. The work shall consist of studies of the origin of thiocyanate in the body, the mechanism of its physiological action and the nature of its metabolism products. The plan of approach to the problem and the agreed upon program and budget for the project are described in Appendix "A", which is

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hereby made a part of this contract. The Contractor shall be guided by, but not bound to conform to the details of the budget described in Appendix "A".

3. The Contractor shall furnish all services, facilities, equipment, supplies and materials (except such services, equipment, supplies and materials as the Government has agreed to furnish herein) required for the performance of the research program described in Section 2, above.

4. The work will be carried out by the Contractor under the direction of Mr. John L. Wood as senior investigator.

ARTICLE II - TERM OF CONTRACT

2. The second period of performance for the project shall commence on September 1, 1954, and shall end on August 31, 1955. It is recognized that completion of the research work under this contract may involve a period of several years and that the term of this contract may be extended by mutual agreement.

ARTICLE III

1. Consideration

In consideration of the performance of the research activities described in Title II of Appendix "A", and the Contractor's agreement to support the work in the estimated amount of \$8,839.00, the Government will pay to the Contractor the sum of \$8,964.00 for the second period of performance.

2. Payment

a. On or before the date of commencement of work on the project described in Appendix "A", the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration.

b. On or before the expiration of six months from the date of commencement of the project, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration.

c. Upon receipt and acceptance of a satisfactory progress report, in cases where the contract is to be renewed, or the final report if the contract is not to be renewed, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, the remaining 10 per cent of the agreed consideration. An extension of the contract term without additional funds shall not be considered a renewal of the contract and in such cases the retained 10 per cent of the agreed consideration will be paid upon submission and acceptance of a satisfactory final report.

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d. In the event the contract is renewed, payments to the Contractor of any additional amount to be paid by the Government shall be made for the extended term in accordance with the schedule outlined in Paragraphs a., b, and c, above.

3. Program and Budget for Subsequent Periods

When renewal of the contract is desired, the Contractor shall submit to the Commission's Oak Ridge Operations Office a renewal proposal as outlined in Appendix "C", attached hereto. The Contractor and the Commission shall then negotiate as to the amounts each will contribute for the services to be performed during the ensuing period, taking into consideration the actual costs incurred during the current period in comparison with the cost estimates in the contract, and, upon agreement, shall execute a ~~renewal~~ modification of the contract.

ARTICLE IV - REPORTS, RECORDS AND INSPECTION

1. The Commission shall have the right to inspect in such manner and at such times as it deems appropriate all activities of the Contractor arising in the course of the work under this contract.

2. The Commission shall at all times be afforded access to the premises and to all technical records, correspondence, instructions, drawings and memoranda of record value of the Contractor pertaining to said work.

3. The Contractor shall make progress and other reports in such manner and at such times as specified in Appendix "C" which is attached and hereby made a part of this contract.

4. Examination of Records

a. The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract, unless the Commission authorizes their prior disposition.

b. The Contractor further agrees to include in all his sub-contracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract with the Government, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor involving transactions related to the subcontract, unless the Commission authorizes their prior disposition. The term "subcontract" as used herein means any purchase order or agreement to perform all or any part of the work or to make or furnish any materials required for the performance of this

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- 4 -

contract, but does not include (i) purchase orders not exceeding \$1,000, (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public, or (iii) subcontracts or purchase orders for general inventory items not specifically identifiable with the work under this contract.

c. Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE V - TITLE TO PROPERTY PURCHASED BY CONTRACTOR

In consideration of the Contractor's contribution to the research project described in Appendix "A" of this contract, title to all materials, tools, machinery, equipment and supplies, acquired from any source including the Government, or manufactured by the Contractor under this contract shall vest in the Contractor, except that title to items of property described in Section 2. b. of Appendix "A" shall vest in the Government.

ARTICLE VI - PURCHASE OF RADIOISOTOPES

The Contractor shall purchase, to the extent available in appropriate form, all radioisotopes, irradiation services and cyclotron time required in the performance of the work hereunder, through the Commission's Isotope Division, Post Office Box E, Oak Ridge, Tennessee.

ARTICLE VII - GENERAL PROVISIONS

The provisions of Appendix "B", attached hereto, are hereby made a part of this contract.

ARTICLE VIII - ALTERATIONS

The following alterations to this contract were made by mutual agreement of the parties prior to its execution:

In Appendix "B", General Provisions, Paragraph 3, Disclosure of Information, the third sentence of subparagraph a. was deleted.

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IN WITNESS WHEREOF the parties hereto have executed this Supplemental

BY: U. S. ATOMIC ENERGY COMMISSION

BY: Kasschan

Kenneth Kasschan

Director

Contracting Officer

RESEARCH AND MEDICINE DIVISION

APPENDIX "A"

TITLE II

September 1, 1954 - August 31, 1955

This Title II describes the research program and the cost estimates agreed upon between the Commission and the Contractor for this second period of performance.

1. PROGRAM

a. Scope and Plan of Approach

~~The Contractor is to study the origin of thiocyanate in the body~~
the mechanism of its physiological action and the nature of its metabolism products. Experiments will include a study of the action of rhodanese on beta-mercaptopyruvate, studies of the inhibition of exchange between iodide-I¹³¹ and diiodotyrosine and the effect of thiocyanate on the exchange with thyrodine. Additional studies will be made of the iodination of thyronine and protein.

2. BUDGET

a. Outline of cost estimates for the second period:

(1) Salaries and wages: \$9,645.00

Dr. John L. Wood (1/5 of time)	\$2,125.00
Research Associate	5,000.00
Technical Assistant	2,400.00
Secretarial Assistance	120.00

(2) Consultation and Services: 2,400.00

(3) Supplies, equipment, and communication: 600.00

(4) Travel: 300.00

(5) Indirect Costs and Overhead: 4,858.00

GRAND TOTAL \$17,803.00

b. Items of property to be procured or manufactured by the Contractor during this period, title to which will vest in the Government (See Article V): None.

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APPENDIX "B"

GENERAL PROVISIONS

(FOR DIRECT AEC RESEARCH CONTRACTS)

1. Patents

- a. Whenever any patentable invention or discovery is made or conceived by the Contractor or its employees in the course of any of the work under this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the patent and the rights under any application or patent that may result. The judgement of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.
- b. No claim for pecuniary award under the provisions of the Atomic Energy Act of 1946 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of any of the work under this contract.
- c. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs a. and b. of this Article from all persons who perform any part of the work under this contract, except clerical and manual labor personnel who will not have access to technical data.
- d. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making paragraphs a., b., and c. of this Article applicable to the subcontractor and its employees.

2. Publications

The Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that "restricted data" as defined in the Atomic Energy Act of 1946 shall be governed by the provisions of Paragraph 3 of this Appendix "B". All publications shall include a reference that the results were developed under a Commission sponsored project.

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3. Disclosure of Information

- a. It is understood that the work under this contract will not involve restricted data and the Contractor will perform such work as unclassified work. However, if in the course of such work any discoveries are made or any data used or developed that constitute restricted data, the Contractor shall promptly inform the Commission and shall classify and safeguard all discoveries and data in accordance with the requirements of the Commission. It is understood that the person directing research work under this contract shall have been cleared by the Commission for access to restricted data. Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1946, as amended, the Contractor shall not permit any individual to have access to restricted data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security. As used in this paragraph the term "designated investigating agency" means the United States Civil Service Commission or the Federal Bureau of Investigation or both as determined pursuant to the provisions of the Atomic Energy Act of 1946, as amended. If doubt exists as to whether any discovery or data developed constitute restricted data prior to the release of these data and before permitting any individual who has not received clearance from the Commission to have access to such data, the Contractor shall seek guidance from the Commission. Furthermore, the Commission reserves the right to require the classification of work whenever in its opinion restricted data are involved.
- b. The continuation by the Contractor of work found to involve restricted data will be subject to mutual agreement of the Commission and the Contractor and shall be covered by a modification of this agreement. The phrase "restricted data" as defined in the Atomic Energy Act of 1946 and employed in this section shall mean "all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material, or the use of fissionable material in the production of power, but shall not include any data which the Commission from time to time determines may be published without adversely affecting the common defense and security".

4. Disputes

Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. Within 30 days from the date of receipt of such copy,

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the Contractor may appeal by mailing or otherwise furnishing to the Contracting Officer a written appeal addressed to the Commission, and the decision of the Commission shall be final and conclusive, unless determined by a court of competent jurisdiction to have been fraudulent or arbitrary or capricious or so grossly erroneous as necessarily to imply bad faith or not to be supported by substantial evidence: Provided, That, if no such appeal to the Commission is taken, the decision of the Contracting Officer 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. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

5. Safety and Accident Prevention - Inspections

The Contractor will comply with health and safety regulations of the Commission required for work of this nature, and permit the Commission and its designees to inspect the work conducted under this agreement.

6. Officials Not to Benefit

No member of or Delegate to Congress, or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may be derived therefrom, in whole or in part, or to any extent, to this contract if made with a corporation for its general benefit.

7. Anti-Discrimination

The Contractor, in performing the work required by this contract, shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin.

8. Convict Labor

The Contractor shall not, in the performance of this contract, employ any person undergoing sentence or imprisonment at hard labor.

9. Termination

- a. The Commission may at any time upon 120 days written notice terminate this contract in whole or in part.
- b. In the event of termination pursuant to subsection a., the Contractor shall submit a statement of costs incurred in performance of the work under the contract prior to such termination, and the Government shall pay to the Contractor that portion of the costs incurred which bears the same relationship to the total as the agreed Government support

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for the full term bears to the total of cost estimates for the full term, less the amount of all payments theretofore made. If the total payments theretofore made to the Contractor exceed the amount to which it is entitled hereunder, the Contractor shall promptly remit the amount of any such excess to the Government.

10. Eight-Hour Law

- a. No laborer or mechanic doing any part of the work contemplated by this contract in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight (8) hours in any one calendar day upon such work at the site thereof, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this Article. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight (8) hours per day and work in excess of eight (8) hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of eight (8) hours per day at not less than one and one-half ($1\frac{1}{2}$) times the basic rate of pay. For each violation of the requirements of this Article a penalty of Five Dollars (\$5.00) shall

be assessed for each calendar day in which such employee is required or permitted to labor more than eight (8) hours upon said work without receiving compensation computed in accordance with this Article, and all penalties thus imposed shall be withheld for the use and benefit of the Government; provided, that this stipulation shall be subject in all respects to the exceptions and provisions of U. S. Code, Title 40, Sections 321, 324, 325, and 326, relating to hours of labor, as modified by the provisions of Section 303 of Public Act No. 781, 76th Congress, approved September 9, 1940, relating to compensation for overtime.

- b. ~~This provision shall not apply to work performed by employees of the Contractor if this contract is with a state or a state institution.~~

11. Definitions

As used in this contract the terms "United States Atomic Energy Commission" "Atomic Energy Commission" and "Commission" shall mean the United States Atomic Energy Commission or its duly authorized representative or representatives.

12. Fellowships

It is understood by the Contractor that none of the funds supplied by the Commission under this contract shall be used in any way to pay the

stipend of any appointment for which commensurate services are not rendered under this contract; nor shall any of the funds be used to confer a fellowship, or to pay any part of the stipend of a fellowship, of any kind.

13. Foreign Travel

It is agreed that none of the funds supplied by the Commission under this contract shall be used to pay the expenses of foreign travel, except where such foreign travel is made with the prior approval of the Commission. "Foreign travel" as used herein means travel outside the continental United States, excepting, however, travel to Canada.

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APPENDIX "C"

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REPORTS AND PROPOSALS (FOR DIRECT AEC RESEARCH CONTRACTS)

	Date Due	Copies
1. Progress Report	June 1	Six
2. Renewal Proposal	June 1	Six
3. 200-word summary of purpose and scope	Following completion of negotiation of contract and any renewal	Three
4. Complete Scientific Report	On contract termination	Six
5. Brief reports or manuscripts may be submitted as desired by investigator		

NOTES

All of the above should be addressed to:

Research and Medicine Division
Oak Ridge Operations Office
U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

The progress report should briefly describe the scope of investigations undertaken and the significant results obtained. It should also explain any significant differences between the actual level of activity (expressed in the various categories of man-months, facilities procured, travel performed etc.) and that contemplated in the contract. Technical reports and articles prepared for publication during the period covered should be listed with bibliographic references. Reprints or preprints of all such material should be appended and material contained therein need not be duplicated in the report.

Renewal proposals, if any, should accompany the progress report and should contain the type of information outlined below unless the information is already contained in earlier proposals or in the accompanying progress report. Any contemplated change in program or scope for the renewal period should be clearly explained and the cost estimated should be based upon past experience.

1. Title of the project
2. The institution and department in which the work will be done.
3. Scientific background including literature relevant to the proposal, the significance, and the motivation. If the proposal is for continuation of work already in progress the extent of present support should be stated identifying amounts received from federal agencies.
4. Scientific scope of the proposed research, its objectives, its relation to present knowledge and to comparable work in progress elsewhere, and a plan of accomplishments for the first year's work.
5. Scientific Personnel. Give the ~~name~~, highest academic degree, position in the institution, scientific experience, publications and accomplishments of the senior investigator (the individual who will actively direct the research program) and of each regular staff scientist who it is proposed will engage in the work. Indicate the approximate fraction of the time of each to be devoted to the project during each period of the year. Scientific personnel to be newly employed for the project should be so designated, and professional records given if possible.
6. Other personnel. The number of persons of each sub-professional grade and the fraction of the time of each to be devoted to the project should be listed. ~~their thesis is to be related to the project.~~
7. Other Financial Assistance. If assistance for this or other activities involving the same personnel or facilities is to be proposed to, or received from other federal or non-university sources the extent of that assistance should be clearly stated, and the interplay of the arrangements should be fully explained.
8. Materials, Equipment and Facilities List those already available for the work and justify the need for major items to be proposed.
9. Travel and other major items in the budget. ~~Travel rates and the use of contract funds for attendance at regular scientific meetings should conform with the policy of the institution in the use of its own funds for these purposes.~~
10. Budget. This should list in detail all items of cost necessary to carry the project for one year or for the duration of the project if less than a year. It should include: a list of the individual salaries attributable to the project, supplies and services, equipment (defined as things individually costing more than \$500 which will retain their utility for more than a year), travel, communication and publication, and the indirect costs allocable to the project. The basis for computing the indirect costs should be briefly explained. The budget should not

include the stipend of fellows. All salaries chargeable to the project should be in accord with the established policies of the institution, or, if not, an explanation should be submitted.

11. Amount requested. A statement of the part of the total amount listed in the budget which the institution is prepared to bear, and the amount requested from the AEC, and a statement of any other sponsors of the project with the amounts contributed by each. The proposal should be signed by the Senior Investigator, endorsed by a responsible administrative officer of the institution.
12. Statement of current expenditures. A current statement of its expenditures for the project, and an estimate of expenses to be incurred during the remained of the current period.
13. Residual funds. Any difference in the scope of the work during the current contract period from that contemplated in the contract, as brought out in the report, may be reflected in the amount requested for the ensuing year. If no new funds are required the contract may be renewed without funds. A proposal for such renewal should state the scope of the work proposed for use of residual funds.

UNITED STATES
ATOMIC ENERGY COMMISSION

LUMP SUM
RESEARCH CONTRACT

Contract No. AT-(40-1)- 1637

THIS CONTRACT, entered into this 30th day of June, 19 53, by the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission") and THE UNIVERSITY OF TENNESSEE (hereinafter called the "Contractor"):

ARTICLE I - PURPOSE AND SCOPE

1. The Commission, in furtherance of its policy of assisting and fostering private research, desires to support the Contractor's fundamental research in the field of atomic energy
2. The work shall consist of studies of the origin and fate of Thiocyanate ion in metabolism.

The plan of approach to the problem and the agreed upon program and budget for the project are described in Appendix "A", which is hereby made a part of this contract. The Contractor shall be guided by, but not bound to conform to the details of the budget described in Appendix "A".

3. The Contractor shall furnish all services, facilities, equipment, supplies and materials (except such services, equipment, supplies and materials as the Government has agreed to furnish herein) required for the performance of the research program described in Section 2 above.

4. The work will be carried out by the Contractor under the direction of Dr. John L. Wood, Project Leader

ARTICLE II - TERM OF CONTRACT

1. The initial period of performance for the research project covered by this contract will commence on July 1, 1953 and will end on June 30, 1954.

It is recognized that completion of the research work under this contract may involve a period of several years and that the term of this contract may be extended by mutual agreement.

ARTICLE III

1. Consideration. a. In consideration of the performance of the research activities described in Article I, the Government shall pay to the Contractor the sum of Five Thousand, Nine Hundred Eighteen Dollars (\$ 5,918.00) for the initial period of performance. In addition the sum of Five Hundred Twenty Dollars (\$520.00) in the Contractor's hands, the estimated unexpended balance as of June 30, 1953 under Title VII of Contract No. AT-(40-1)-283 under which this work was formerly done, shall be deemed payment in consideration of the performance of research activities described in Article I.

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2. Payment

- a. On or before the date of commencement of work on the project described in Appendix "A", the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, one-half the amount of the agreed consideration.
- b. On or before the expiration of six months from the date of commencement of the project, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, the remaining one-half of the agreed consideration.
- c. In the event that the term of the contract is extended, the Government shall pay to the Contractor, upon submission by the Contractor of properly certified vouchers, each six months in advance an amount equal to one-half the annual agreed consideration for the project as mutually agreed upon by the parties hereto.

3. Program and Budget for Subsequent Periods. At least three months before the end of the initial period of performance of the project, the Contractor will submit to the Commission a current statement of its expenditures for the project, an estimate of expenses to be incurred during the remainder of the period, and a proposed program and budget for the succeeding year, showing the proposed work to be financed by the Commission and the Contractor. The Contractor and the Commission shall then negotiate as to the amount to be paid by the Commission to the Contractor for the services to be performed during the ensuing period, taking into consideration any portion of payments theretofore made which will remain unexpended at the end of the initial period. The extended program, budget and the additional amount to be paid to the Contractor shall be incorporated into a formal modification to this contract.

ARTICLE IV - ADMINISTRATION OF CONTRACT BY COMMISSION

The Commission has assigned the responsibility for administering the technical and scientific aspects for the project to the Washington organizational unit set forth below, to be addressed as follows:

Medical Branch
Division of Biology and Medicine
U. S. Atomic Energy Commission
1901 Constitution Avenue, N. W.
Washington 25, D. C.

Responsibility for administering the business aspects of this contract, including contract negotiations, budget, payment, audit, etc., has been assigned by the Commission to:

Office of Research & Medicine
Oak Ridge Operations Office
U. S. Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

The Contractor may, as necessary, communicate directly with the appropriate office, as indicated above. The Contractor shall furnish information copies of communications, memoranda of telephone conversations, or other contacts to Oak Ridge Operations Office on all direct dealings with the Washington Office.

ARTICLE V - REPORTS, RECORDS AND INSPECTION

1. The Commission shall have the right to inspect in such manner and at such times as it deems appropriate all activities of the Contractor arising in the course of the work under this contract.

2. The Contractor shall make progress and other reports in such manner and at such times as specified in Appendix "C" which is attached hereto and hereby made a part of this contract. Progress reports shall include a list of personnel working on the project. Names appearing for the first time should be accompanied by a brief statement of the individual's background, training, and experience.

3. The Commission shall at all times be afforded access to the premises and to all technical records, correspondence, instructions, drawings, and memoranda of record value of the Contractor pertaining to said work.

4. Examination of Records

a. The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract.

b. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract with the Government, have access to and the right to examine any directly pertinent books, documents, papers and records of such subcontractor involving transactions related to the subcontract. ~~The term 'subcontract' as used herein does not include (i) purchase orders not exceeding \$500, or (ii) contracts or purchase orders for public utility services at rates established for uniform applicability to the general public.~~

c. Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE VI - TITLE TO PROPERTY PURCHASED BY CONTRACTOR

In consideration of the Contractor's contribution to the research project described in Appendix "A" of this contract, title to all materials, tools, machinery, equipment and supplies, acquired from any source including the Government, or manufactured by the Contractor under this contract shall vest in the Contractor, except that title to items of property described in Section 2.c. of Appendix "A" shall vest in the Government.

ARTICLE VII - PURCHASE OF RADIOISOTOPES

The Contractor shall purchase, to the extent available in appropriate form, all radioisotopes, irradiation services and cyclotron time required in the performance of the work hereunder, through the Commission's Isotope Division, Post Office Box E, Oak Ridge, Tennessee.

ARTICLE VIII - GENERAL PROVISIONS

The provisions of Appendix "B", attached hereto, are hereby made a part of this contract.

ARTICLE IX - AUTHORIZATION

This contract is authorized by and has been executed under the Atomic Energy Act of 1946.

ARTICLE X - ALTERATIONS

The following alterations to this contract were made by mutual agreement of the parties prior to its execution: (Alterations are shown on page 3a. attached hereto.)

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Herman H. Koch
Acting Director

RESEARCH AND MEDICINE DIVISION
THE UNIVERSITY OF TENNESSEE

WITNESSES:

J. K. Kern
Memphis, Tennessee
(Address)

(Contractor)

BY: C. G. Johnson
President

TITLE:

Emily B. Smith
Memphis, Tennessee
(Address)

ACCEPTANCE BY PROJECT LEADER

I have read the foregoing Contract and the Appendices attached hereto and made a part hereof, and I agree to be bound by the provisions of this document.

John L. Woods
Project Leader

The following alterations to this contract were made by mutual agreement of the parties prior to its execution:

1. In ARTICLE V - REPORTS, RECORDS AND INSPECTION, the last sentence of section 4.a. was deleted and the following substituted therefor:

"The term 'subcontract' as used herein means any purchase order or agreement to perform all or any part of the work or to make or furnish any materials required for the performance of this contract, but does not include (i) purchase orders not exceeding \$1,000, (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public, or (iii) subcontracts or purchase orders for general inventory items not specifically identifiable with the work under this contract."

2. In Appendix "B", the third sentence of section 3.a. was deleted.
3. In Appendix "C", section 10 - Eight-Hour Law was deleted in its entirety.

APPENDIX "A"

Contract No. AT-(40-1)-1637
University of Tennessee

TITLE I

July 1, 1953 - June 30, 1954

1. PROGRAM

a. Scope and Plan of Approach

The Contractor will undertake a survey of cyanocysteine in the human by study of saliva and urine in individuals who have been exposed to cyanide vapor. In animals, formation of cyanocysteine will be traced with use of compounds labelled with radioactive sulfur, and the breakdown of products such as cyanalbumin will be studied for evidence of thiocyanate formation. Preparation will be made of derivatives of histidine-2-thiocyanohistidine and eyanoergothioneine and these will be studied with respect to metabolic fate. Clarification will be made of competition between iodide and thiocyanate in the thyroid. Methods may include use of autoradiography.

2. BUDGET - First Period: July 1, 1953 - June 30, 1954

a. The Contractor will furnish as its contribution to the project:

- (1) Salaries of staff members, including the Project Leader, and other personnel engaged in the work in excess of the Government's contribution under b.(1) below.
- (2) Use of laboratory work space, and equipment, materials and facilities needed for the project in excess of the Government's payment under b. below.
- (3) All clerical, administrative and overhead costs in excess of the Government's payment under b. below.

- b. The Government's payment as provided in section 1.a. of Article III, together with the sum of Five Hundred Twenty Dollars (\$520.00) (which amount the parties agree shall be deemed to represent the amount by which total payments made by the Government for work in Title VII of Contract No. AT-(40-1)-283 for the period July 1, 1952 - June 30, 1953 exceed total expenditure for the same period) are to cover generally the following operating estimates:

(1)	<u>Salaries and Wages</u>	
	Dr. Hilfe Fieldler (full time)	\$4,500.00
	Technical Assistance	<u>500.00</u>
	Total Salaries and Wages	\$5,000.00
(2)	<u>Supplies and Equipment</u>	700.00
(3)	<u>Travel</u>	<u>300.00</u>
	Subtotal	\$6,000.00
(4)	<u>Overhead</u>	<u>438.00</u>
	Total	\$6,438.00

- c. Items of property procured or manufactured by the Contractor during this period, title to which will vest in the Government (See Article VI): None.

APPENDIX "B"

GENERAL PROVISIONS

1. Patents

a. Whenever any patentable invention or discovery is made or conceived by the Contractor or its employees in the course of any of the work under this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.

b. No claim for pecuniary award under the provisions of the Atomic Energy Act of 1946 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of any of the work under this contract.

c. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs a. and b. of this Article from all persons who perform any part of the work under this contract, except clerical and manual labor personnel who will not have access to technical data.

d. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making paragraphs a., b., and c. of this Article applicable to the subcontractor and its employees.

2. Publications. The Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that "restricted data" as defined in the Atomic Energy Act of 1946 shall be governed by the provisions of Paragraph 3 of this Appendix "B". All publications shall include a reference that the results were developed under a Commission sponsored project.

3. Disclosure of Information.

a. It is understood that the work under this contract will not involve restricted data and the Contractor will perform such work as unclassified work. However, if in the course of such work any discoveries are made or any data used or developed that constitute restricted data, the Contractor shall promptly inform the Commission and shall classify and safeguard all discoveries and data in accordance with the requirements of the Commission. It is understood that the person directing research work under this contract shall have been cleared by the Commission for access to restricted data. Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1946, as amended, the Contractor shall not permit any individual to have access to restricted data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security. As used in this paragraph the term 'designated investigating agency' means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1946, as amended by the Act of April 5, 1952, Public Law 298, 82nd Congress, 66 Stat. 43. If doubt exists as to whether any discovery or data developed constitute restricted data, prior to

the release of these data and before permitting any individual who has not received clearance from the Commission to have access to such data, the Contractor shall seek guidance from the Commission. Furthermore, the Commission reserves the right to require the classification of work whenever in its opinion restricted data are involved.

b. The continuation by the Contractor of work found to involve restricted data will be subject to mutual agreement of the Commission and the Contractor and shall be covered by a modification of this agreement. The phrase "restricted data" as defined in the Atomic Energy Act of 1946 and employed in this section shall mean "all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material, or the use of fissionable material in the production of power, but shall not include any data which the Commission from time to time determines may be published without adversely affecting the common defense and security".

4. Disputes. Except as otherwise specifically provided in this contract, all disputes which may arise under this contract and which are not disposed of by mutual agreement shall be decided by a representative of the Commission duly authorized to supervise and administer performance under this contract, who shall reduce his decision to writing and cause a copy thereof to be mailed to the Contractor; said decision shall be final and conclusive, subject to the provisions of the sentence next following. Within thirty (30) days from the date of such mailing, the Contractor may appeal in writing to the Commission, whose written decision thereon, or that of its duly authorized representative, representatives, or board, not including the representative mentioned in the preceding sentence, shall be final and conclusive. Pending decision of a dispute hereunder, the Contractor shall proceed with the performance of its undertakings under this contract.

5. Safety and Accident Prevention - Inspections. The Contractor will comply with health and safety regulations of the Commission required for work of this nature, and permit the Commission and its designees to inspect the work conducted under this agreement.

6. Officials not to Benefit. No member of or Delegate to Congress, or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

7. Anti-Discrimination. The Contractor, in performing the work required by this contract, shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin.

8. Convict Labor. The Contractor shall not, in the performance of this contract, employ any person undergoing sentence or imprisonment at hard labor.

9. Termination.

a. The Commission may at any time upon 120 days written notice terminate this contract in whole or in part.

b. In the event of termination pursuant to subsection a., the Contractor will be reimbursed for the cost of the contract work already performed, together with reasonable costs of termination less the amount of all payments theretofore made. If the total payments theretofore made to the Contractor exceed the amount to which it is entitled hereunder, the Contractor shall promptly remit the amount of any such excess to the Government.

10. Eight-Hour Law. No laborer or mechanic doing any part of the work contemplated by this contract in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight (8) hours in any one calendar day upon such work at the site thereof, except upon the condition that compensation is paid to such laborer or

mechanic in accordance with the provisions of this Article. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight (8) hours per day and work in excess of eight (8) hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of eight (8) hours per day at not less than one and one-half (1½) times the basic rate of pay. For each violation of the requirements of this Article a penalty of Five Dollars (\$5.00) shall be imposed upon the Contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight (8) hours upon said work without receiving compensation computed in accordance with this Article, and all penalties thus imposed shall be withheld for the use and benefit of the Government; provided, that this stipulation shall be subject in all respects to the exceptions and provisions of U. S. Code, Title 40, Sections 321, 324, 325, and 326, relating to hours of labor, as modified by the provisions of Section 303 of Public Act No. 781, 76th Congress, approved September 9, 1940, relating to compensation for overtime.

11. Definitions. As used in this contract the terms "United States Atomic Energy Commission", "Atomic Energy Commission" and "Commission" shall mean the United States Atomic Energy Commission or its duly authorized representative or representatives.

12. Fellowships. It is understood by the Contractor that none of the funds supplied by the Commission under this contract shall be used in any way to pay the stipend of any appointment for which commensurate services are not rendered under this contract; nor shall any of the funds be used to confer a fellowship, or to pay any part of the stipend of a fellowship, of any kind.

APPENDIX "C"

DISTRIBUTION AND SCHEDULING OF REPORTS FOR DIRECT AEC RESEARCH CONTRACTS

	Date	Copies and Distribution	Remarks
<u>CONTRACTOR REPORTS</u>			
1. Progress	On one of Following: March 15 June 15 Sept. 15 Dec. 15	(2) Appropriate Washington Division (See note) (2) Oak Ridge Operations Office (See note)	To be received on date listed which is nearest to end of nine month period from effective date of contract and annually thereafter on the same date.
2. Summary 200 words on scope and purpose	1. On completion of contract negotiation 2. With progress reports	Prepared as a part of contract negotiations (2) Same as Progress Reports	1. Distribution by Oak Ridge Operations Office with Contract copies 2. Revised Summary to be included as part of Progress Report
3. Manuscripts	As available	(1) Patent Branch, Washington (1) Technical Library, Washington (1) Appropriate Washington Division (1) Oak Ridge Operations Office	
4. Reprints	As available	(2) Appropriate Washington Division (2) Technical Information Branch, Washington (1) Oak Ridge Operations Office	
5. Complete Scientific Report	On Contract Termination	(1) Same (1) as (1) for (1) manuscripts	Manuscripts prepared for publication may in some cases take the place of this report
6. Brief Reports	As desired by investigator	(1) Appropriate Washington Office (1) Oak Ridge Operations Office	Covering significant results or developments.

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