

U. S. ATOMIC ENERGY COMMISSION  
Oak Ridge Operations Office

71844B

STATEMENT OF AUTHORITY  
(Assignment of Contract for Administration)

Contract No. AT-(40-1)-2130 , University of North Carolina

(Contractor)

is assigned to Dir., Res. & Dev. Div. effective July 1, 1957

(Name and Title of Official)

(Date)

for administration in accordance with Statement of Authority No. 1452-A . Authority for administering this contract may be redelegated to a designated AEC representative in accordance with the Statement of Authority cited above.

\_\_\_\_\_  
(Name)

ORIGINAL SIGNED BY  
HERMAN M. ROTH  
DIRECTOR

\_\_\_\_\_  
CONTRACTS AND DEVELOPMENT DIVISION

Distribution:

Original and one to official designated  
in line 2, above.

Copies to:

- Contract Division
- Assistant General Counsel ✓
- Organization and Personnel Division
- Finance Division

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

REPOSITORY Oak Ridge Operations  
 COLLECTION Records Holding area  
Box 1944-94  
 BOX No. 1 of 3  
A-69-5 68-6 Bldg. 2714-H  
 FOLDER Contract AT-(40-1)-2130  
Univ. of NC



Contract No. AT-(40-1)-2130  
Modification No. 11

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 26th day of October, 1966, effective as of the 1st day of October, 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 the UNIVERSITY OF NORTH CAROLINA (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-2130 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 extend the period of performance for the sole purpose of permitting the Contractor to complete properly and submit the final report required under the contract, and to provide for certain other changes; and

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

1. The date "September 30, 1966", 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 "March 31, 1967" is substituted therefor.

2. ARTICLE B-XII - EQUAL OPPORTUNITY is revised to read as follows:

"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.)

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"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.

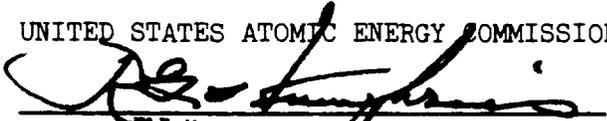
"(f) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 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, 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."

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

UNITED STATES OF AMERICA

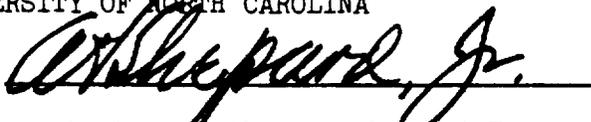
BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: 

R. G. Humphries, Director  
Contract Division, ORC

(Contracting Officer)

UNIVERSITY OF NORTH CAROLINA

BY: 

TITLE: Assistant Vice President & Treasurer

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 19th day of November, 1965, effective as of the 1st day of October, 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 NORTH CAROLINA (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-2130 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. H. C. Thomas 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 September 30, 1966; 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 October 1, 1965, and expiring on September 30, 1966, the Commission shall pay the Contractor the sum of \$20,221.00, and shall transfer title to the items of Government property listed in Paragraph (b) of ARTICLE V - GOVERNMENT PROPERTY to the Contractor.

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

ARTICLE V - GOVERNMENT PROPERTY is revised to read as follows:

"(b) The following items of property heretofore procured or fabricated by the Contractor or heretofore furnished the Contractor are also hereby listed as 'Government property': None."

ARTICLE VI - ALTERATIONS AND ADDITIONS

The following alterations in or additions to the provisions of this form of contract were made prior to execution of the contract by the parties:

1. Paragraph (d) of Appendix C is revised to read as follows:

"(d) Final Summary Report for Current Contract Period - Thirty-two (32) copies."

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY  
COMMISSION

BY:

*Ralph Elson*  
RALPH ELSON, ACTING DIRECTOR  
CONTRACT DIVISION

(Contracting Officer)

UNIVERSITY OF NORTH CAROLINA

BY:

*A. H. Shepard, Jr.*  
A. H. Shepard, Jr.

TITLE: Business Officer and Treasurer

## APPENDIX "A"

For the Contract Period October 1, 1965 through September 30, 1966.

A-I RESEARCH TO BE PERFORMED BY CONTRACTORScope

The Contractor will:

1. Complete certain research on the problems of return of radioactive wastes to the environment. This work will specifically include the preparation of a monograph covering the entire scope of research conducted under the contract.
2. Conduct other work related to unsettled matters connected with the work reported in the monograph. This may include investigation of ion exchange for a binary system on well characterized mica surfaces. No new work will be commenced which will not be completed in time for evaluation and inclusion in the monograph.

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

		<u>Approx. % of Time</u>
Dr. H. C. Thomas	Academic	25%
Principal Investigator	Summer	100%
1 Research Associate		100%

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

Adequate laboratory facilities and equipment are available for the Contractor to conduct an investigation of sorption and ion exchange phenomena in natural soils and treated materials.

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

None

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 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 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 Commission 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. 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" 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.

(d) With respect to any portion of the first ninety percent of the amount of consideration provided for in Article A-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 A-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 A-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

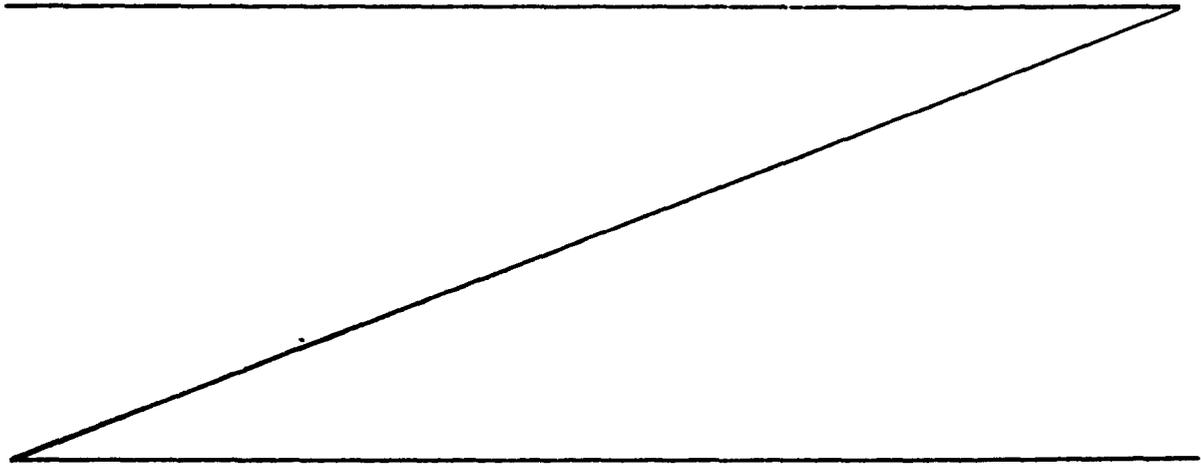
(The following clause is applicable unless this contract is exempt under the rules and regulations of the President's Committee on Equal Employment Opportunity (41 CFR, ch. 60). Exemptions include contracts and subcontracts (i) not exceeding \$10,000, (ii) not exceeding \$100,000 for standard commercial 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 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, 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 non-discrimination clause 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 - 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 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 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 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 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 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.



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 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 \$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: 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 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.

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

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 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 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 9th day of November, 1964, effective as of the 1st day of October, 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 the UNIVERSITY OF NORTH CAROLINA (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-2130 and modifications thereto numbered 1 through 8 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 others:

1. The date "September 30, 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 "September 30, 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 October 1, 1964, and expiring on September 30, 1965, the Commission shall pay the Contractor the sum of \$35,000.00."

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.

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 re-vest 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."

5. Item (a) of Appendix "C" is revised to read as follows:

"(a) Periodic Topical Reports - Seven (7) copies

These reports shall be submitted from time to time to inform the Commission of any significant technical developments."

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY  
COMMISSION

BY: Richard B. Martin  
ACTING DIRECTOR  
RESEARCH AND DEVELOPMENT DIVISION  
(Contracting Officer)

UNIVERSITY OF NORTH CAROLINA

BY: W. Sheppard, Jr.  
TITLE: Business Officer and Treasurer

## APPENDIX "A"

For the Contract Period October 1, 1964 through September 30, 1965.

**A-I RESEARCH TO BE PERFORMED BY CONTRACTOR**

The Contractor will continue to conduct research on some of the fundamental problems associated with the disposal of the byproducts of nuclear fission. This work will include such approaches as continuation of the study on (1) the synthesis and properties of potassium cobalt ferrocyanide, and (2) ion-exchange equilibria of ternary system on inorganic exchangers.

**A-II APPROXIMATE LEVEL OF RESEARCH EFFORT**

<b>(a) <u>Contractor Personnel:</u></b>		<b><u>Approx. % of time</u></b>
Dr. H. C. Thomas	Academic	37%
Principal Investigator	Summer	63%
2 Research Associates		70%
Laboratory Assistant		As Needed

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

Adequate laboratory facilities and equipment are available to conduct the proposed investigation of sorption and ion exchange phenomena in natural soils and treated materials.

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

None

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 3rd day of December, 1963, effective as of the 1st day of October, 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 NORTH CAROLINA (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-2130 and Modifications thereto numbered 1 through 7 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. Henry C. Thomas 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 September 30, 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 October 1, 1963, and expiring on September 30, 1964, the Commission shall pay the Contractor the sum of \$55,000.00.

**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

(b) The following items of property heretofore procured or fabricated by the Contractor or heretofore furnished the Contractor are also hereby listed as "Government property":

Equipment previously acquired under the contract.

**Analyzer - American Instrument Co.**

1 Cat. No. 5-445 Roller Particle size Analyzer  
1 " " 5-451 Sound-resistant cabinet  
1 " " 5-456 Spec. Brass Sample Tube  
1 " " 5-452 Low Pressure Air Pump

**Centrifuge - Macalaster Bicknell**

1 Internat'l Size 1 S.B. Serial # Z 6663

**Demineralizer - Penfield Products**

1 M-8 Cartridge Type

**Drop Collector - Technicon Chromatography Corp.**

1 Drop Counting accessories for Time Flow Fraction Collector

**Fraction Collector - Technicon Chromatography Corp.**

1 Time Flow Fraction collector with 150 minute timer

**Pumps - Milton Roy Co.**

1 MM2-B-11.5 "Mini Pump"

Macalaster Bicknell  
3 Eastern Model D6 Centrifugal Pump - Bronze Casting  
Macalaster Bicknell  
1 Eastern, Midget, Low pressure model D-6 Crackle finish  
Bronze #35193

Relays - Central Scientific Co.  
1 Cat. #99784 Relay  
1 Cat. #99785-A Electrode Relay, 50/60 cycle 115 V

Shaker - Macalaster Bicknell  
1 Burrell Shaker, Size C

Spectrophotometer - Will-N.Y. Inc.  
1 Beckman DU Serial No. 89442  
1 Powersupply Serial No. 77284

Survey Meter - (Beta Gamma) National Tech. Labs.  
1 #10800 Beckman Geiger Counter, Model "MX-5"  
Serial No. 21529

Counters - Eagle Signal Corp.  
1 HZ 50A6 Microflex Counter 115 V 50/60 cycle;  
400 count range, AAR A-212  
1 HN84 Cabinet

Autoscalers - General Radio  
2 SC-4 Eagle Preset Counters

Pump - Sigmamotor Co.  
1 Model T-6SH, with Graham 28A Variable drive,  
1/6 h.p. motor - all mounted on special  
base Serial No. 129 (S-547)

#### ARTICLE VI - ALTERATIONS AND ADDITIONS

The following alterations in or additions to the provisions of this form of contract were made prior to execution of the contract by the parties:

1. Paragraph (b) of Article B-III - Publication of Results was revised to read as follows:

"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, patent approval for release shall be secured from the Commission prior to any such publication."

2. Article B-XXI - Reports and Renewal Proposals was revised to read as follows:

"Unless otherwise directed by the Contracting Officer, the Contractor shall make progress and other reports in such manner and at such times as specified in Appendix "C", attached hereto and made a part hereof."

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 NORTH CAROLINA

BY: A. H. Shepard, Jr.  
A. H. Shepard, Jr.  
TITLE: Business Officer and Treasurer

## APPENDIX "A"

For the Contract Period October 1, 1963 through September 30, 1964

A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

The Contractor will continue with studies bearing on the disposal in the ground of radioactive wastes to include (1) further work on the application to performance data from ion-exchange columns of a method of computation which produces a description in terms of a Peclet number. In all but the simplest cases the method is necessarily empirical; its utility is to be assessed, and (2) prosecution of a study of ion sorption in ternary systems, in particular in sodium, cesium, and  $NH_4$  on the zeolite clinoptilolite. In (3) further studies, work will continue to be directed toward relating the ion-exchange behavior and the structure of inorganic materials.

A-II APPROXIMATE LEVEL OF RESEARCH EFFORT

<u>(a) Contractor Personnel:</u>		<u>Approx. % of time</u>
Dr. H. C. Thomas	Academic	75%
Principal Investigator	Summer	100%
2 Research Associates		100%
2 Research Assistants		50%
Secretarial Assistance		As Needed

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

Adequate laboratory facilities will be furnished to conduct an investigation of sorption and ion exchange phenomena in natural soils and treated materials. Among equipment items available for use on the project are various types of spectrometers, flame photometer, gas chromatographic equipment, and a computer.

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

None

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 Commission 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. 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" 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. If this contract is with a state or political subdivision thereof this Article shall not apply to work performed by employees of the Contractor.

(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 subcontracts.

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: 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 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.

## APPENDIX "C"

The Contractor shall furnish the number of 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) MONTHLY LETTER REPORTS - Seven (7) copies

The monthly letter report shall briefly describe the scope of investigations undertaken and the significant results obtained during the preceding thirty-day period covered by such report. This report shall be submitted as soon as practical after the expiration of each thirty-day period of the current contract period except for such period or periods where the information required in this report is contained in the Quarterly Technical Progress Report.

(b) QUARTERLY TECHNICAL PROGRESS REPORT - Seven (7) copies

The Quarterly Technical Progress Report shall briefly describe the scope of investigations undertaken and the significant results obtained during the preceding ninety-day period covered by such report. This report shall be submitted as soon as practical after the expiration of each ninety-day period of the current contract period.

(c) DRAFT FINAL SUMMARY REPORT FOR CURRENT CONTRACT PERIOD - Seven (7) copies

The draft final summary report for the current contract period shall briefly describe the scope of investigations undertaken and the significant results obtained during the period covered by such report. 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. This draft shall be submitted ninety (90) days before the expiration of the current contract period. The Contractor's best estimate of the probable course and level of effort for the remainder of the current contract period should accompany this draft along with an explanation of any significant difference between the actual level of effort and that contemplated in the contract (see Appendix "A") during the current contract period.

(DRD)

(d) FINAL SUMMARY REPORT FOR CURRENT CONTRACT PERIOD - Twenty-two (22) copies

The final summary report for the current contract period shall be submitted within thirty (30) days after the Contractor's receipt of the Commission's approval of the draft final summary report for the current contract period.

(e) RENEWAL PROPOSALS - Seven (7) copies

A renewal proposal, if any, shall accompany the draft final summary report for the current contract period.

(f) REPORT OF EQUIPMENT PURCHASED OR FABRICATED - Seven (7) copies

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.

(g) DRAFT FINAL SUMMARY REPORT FOR ENTIRE CONTRACT PERIOD - Seven (7) copies

Upon termination or expiration of the total period of performance, the Contractor shall submit, promptly, a draft 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.

(h) FINAL SUMMARY REPORT FOR ENTIRE CONTRACT PERIOD - Twenty-two (22) copies

The final summary report for the entire contract period shall be submitted within thirty (30) days after the Contractor's receipt of the Commission's approval of the draft final summary report for the entire contract period.

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;
- (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.

Contract No. AT-(40-1)-2130  
Modification No. 7

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 21st day of November, 1962, effective as of the 1st day of October, 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 NORTH CAROLINA (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-2130 and Modifications thereto numbered 1 through 6 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. Henry C. Thomas 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 September 30, 1963; provided, however, that this period may be extended for additional periods by the mutual written agreement of the parties.

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**ARTICLE III - CONSIDERATION**

In full consideration of the Contractor's performance hereunder for the period commencing on October 1, 1962, and expiring on September 30, 1963, the Commission shall pay the Contractor the sum of \$44,998.00.

**ARTICLE IV - THE REMAINING CONTRACT PROVISIONS**

Appendixes "A" and "B" set forth the other provisions of this contract.

**ARTICLE V - ALTERATIONS AND ADDITIONS**

The following alterations in or additions to the provisions of this form of contract were made prior to execution of the contract by the parties:

1. Paragraph 1 of Article B-X of Appendix B was revised to read as follows:

"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 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; and

10% - following submission by the Contractor of the final summary report for the current contract period or for the entire contract period 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. Article B-XX of Appendix "B" was revised to read as follows:

**"ARTICLE B-XX REPORTS AND RENEWAL PROPOSALS**

"Unless otherwise directed by the Contracting Officer, the Contractor shall make progress and other reports in such manner and at such times as specified in Appendix "C", attached hereto and made a part hereof."

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Fernando M Roth

(Contracting Officer)

UNIVERSITY OF NORTH CAROLINA

BY: W. Shepard, Jr.

TITLE: Business Officer and Treasurer

## APPENDIX "A"

For the Contract Period October 1, 1962 through September 30, 1963.

**A-I RESEARCH TO BE PERFORMED BY CONTRACTOR**

The Contractor will continue to conduct research on the disposal of radioactive by-products of nuclear fission through investigation of dispersion of such materials in ion-exchange siliceous systems. This research will include such approaches as (1) fundamental studies of qualitative nature and quantitative description of the effects observed in ionic sorption on siliceous materials and (2) the application of this knowledge to the development of practical means of treating the effects observed when sorption takes place in flowing liquid-stationary solid systems.

**A-II APPROXIMATE LEVEL OF RESEARCH EFFORT**

<u>(a) Contractor Personnel:</u>	<u>Approx. % of time</u>	
Dr. H. C. Thomas	Academic	75%
Principal Investigator	Summer	100%
2 Research Associates		100%
Research Assistant		50%
Secretarial Help		As Needed
<u>(b) Premises, Facilities, and Materials to be Furnished by the Contractor:</u>		

Adequate laboratory space and facilities are available to conduct research on the disposal of radioactive by-products of nuclear fission. Among equipment items available for use under the contract are:

- (1) X-Ray Spectrometer, camera
- (2) X-Ray Spectrometer, Geiger counter
- (3) Gamma Ray Spectrometer, Single Channel
- (4) Gamma Ray Spectrometer, with special automatic recording equipment, single channel
- (5) Optical Spectrometers, infra-red and U.V.
- (6) Flame Photometer
- (7) Gas Chromatographic Equipment
- (8) Computer

**A-III EQUIPMENT TO BE PURCHASED OR FABRICATED BY THE CONTRACTOR**

None

A-IV EQUIPMENT TITLE TO WHICH IS TO REMAIN WITH THE GOVERNMENT

Equipment previously acquired under the contract

Analyzer - American Instrument Co.

- 1 Cat. No. 5-445 Roller Particle size Analyzer
- 1 " " 5-451 Sound-resistant cabinet
- 1 " " 5-456 Spec. Brass Sample Tube
- 1 " " 5-452 Low Pressure Air Pump

Centrifuge - Macalaster Bicknell

- 1 Internat'l Size 1 S.B. Serial # Z 6663

Demineralizer - Penfield Products

- 1 M-8 Cartridge Type

Drop Collector - Technicon Chromatography Corp.

- 1 Drop counting accessories for Time Flow Fraction Collector

Fraction Collector - Technicon Chromatography Corp.

- 1 Time Flow Fraction collector with 150 minute timer

Pumps - Milton Roy Co.

- 1 MM2-B-11.5 "Mini Pump"
- Macalaster Bicknell
- 3 Eastern Model D6 Centrifugal Pump - Bronze Casting
- Macalaster Bicknell
- 1 Eastern, Midget, Low pressure model D-6 Crackle finish  
Bronze #35193

Relays - Central Scientific Co.

- 1 Cat. #99784 Relay
- 1 " #99785-A Electrode Relay, 50/60 cycle 115 V

Shaker - Macalaster Bicknell

- 1 Burrell Shaker, Size C

Spectrophotometer - Will-N.Y. Inc.

- 1 Beckman DU Serial No. 89442
- 1 Powersupply Serial No. 77284

Survey Meter - (Beta Gamma) National Tech. Labs.

- 1 #10800 Beckman Geiger Counter, Model "MX-5"  
Serial No. 21529

Counters - Eagle Signal Corp.

- 1 HZ 50A6 Microflex Counter 115 V 50/60 cycle;  
400 count range, AAR A-212
- 1 HN84 Cabinet

Autoscalers - General Radio  
2 SC-4 Eagle Preset Counters

Pump - Sigmamotor Co.  
1 Model T-6SH, with Graham 28A Variable drive,  
1/6 h.p. motor - all mounted on special  
base Serial No. 129 (S-547)

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  
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.

SEE ALTERNATIVE ADDITIONS

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.

(DRD)

APPENDIX "C"

July 1, 1962

The Contractor shall furnish the number of 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) MONTHLY LETTER REPORTS - Seven (7) copies

The monthly letter report shall briefly describe the scope of investigations undertaken and the significant results obtained during the preceding thirty-day period covered by such report. This report shall be submitted as soon as practical after the expiration of each thirty-day period of the current contract period except for such period or periods where the information required in this report is contained in the Quarterly Technical Progress Report.

(b) QUARTERLY TECHNICAL PROGRESS REPORT - Seven (7) copies

The Quarterly Technical Progress Report shall briefly describe the scope of investigations undertaken and the significant results obtained during the preceding ninety-day period covered by such report. This report shall be submitted as soon as practical after the expiration of each ninety-day period of the current contract period.

(c) DRAFT FINAL SUMMARY REPORT FOR CURRENT CONTRACT PERIOD - Seven (7) copies

The draft final summary report for the current contract period shall briefly describe the scope of investigations undertaken and the significant results obtained during the period covered by such report. 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. This draft shall be submitted ninety (90) days before the expiration of the current contract period. The Contractor's best estimate of the probable course and level of effort for the remainder of the current contract period should accompany this draft along with an explanation of any significant difference between the actual level of effort and that contemplated in the contract (See Appendix "A") during the current contract period.

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(DRD)

(d) FINAL SUMMARY REPORT FOR CURRENT CONTRACT PERIOD - Twenty-two (22) copies

The final summary report for the current contract period shall be submitted within thirty (30) days after the Contractor's receipt of the Commission's approval of the draft final summary report for the current contract period.

(e) RENEWAL PROPOSALS - Seven (7) copies

A renewal proposal, if any, shall accompany the draft final summary report for the current contract period.

(f) REPORT OF EQUIPMENT PURCHASED OR FABRICATED - Seven (7) copies

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 current contract period. This report shall show the actual invoice cost of each item purchased and an engineering estimate of the cost of each item fabricated.

(g) DRAFT FINAL SUMMARY REPORT FOR ENTIRE CONTRACT PERIOD - Seven (7) copies

Upon termination or expiration of the total period of performance, the Contractor shall submit, promptly, a draft 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.

(h) FINAL SUMMARY REPORT FOR ENTIRE CONTRACT PERIOD - Twenty-two (22) copies

The final summary report for the entire contract period shall be submitted within thirty (30) days after the Contractor's receipt of the Commission's approval of the draft final summary report for the entire contract period.

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 22nd day of January, 1962, 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 NORTH CAROLINA (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-2130 and Modifications thereto numbered 1 through 5 (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 transfer to the Contractor of one item of Government-owned property presently in the possession of the Contractor; and (b) for the description of additional items of Government-owned property in Subsection 2.b. of Appendix "A" which were inadvertently omitted therefrom in the preparation of Modification No. 5 to the contract; 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 is hereby amended in the following particulars, but in no others:

1. Subsection 1.f. of Article III is revised to read as follows:

"f. In consideration for 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 Six Thousand, Three Hundred Eleven Dollars (\$6,311.00), the Government: (a) will pay to the Contractor Fifty-seven Thousand, Five Hundred Ninety-eight Dollars (\$57,598.00) (\$39,690.00 in new funds and \$17,908.00 agreed to be the balance remaining unexpended from previous work under this contract); and (b) hereby transfers to the Contractor one (1) Helium Leak Detector (Property No. X-64481) presently in the possession of the Contractor."

2. The following additional items of Government-owned property are hereby added to Subsection 2.b. of Appendix "A" to the contract:

"Survey Meter - (Beta Gamma) National Tech. Labs.  
1 #10800 Beckman Geiger Counter, Model "MX-5"  
Serial No. 21529

Counters - Eagle Signal Corp.

- 1 HZ 50A6 Microflex Counter 115 V 50/60 cycle;  
400 count range, AAR A-212
- 1 HN84 Cabinet

Autoscalers - General Radio

- 2 SC-4 Eagle Preset Counters

Pump - Sigmamotor Co.

- 1 Model T-6SH, with Graham 28A Variable drive,  
1/6 h. p. motor - all mounted on special  
base Serial No. 129 (S-547)\*

IN WITNESSES 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:

Bettie Saunders  
Chapel Hill, N. C.  
(Address)

Sue White  
Chapel Hill, N. C.  
(Address)

UNIVERSITY OF NORTH CAROLINA

BY:

A. H. Shepard, Jr.  
A. H. Shepard, Jr.  
TITLE: Business Officer and Treasurer

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement and agree to be bound by the provisions of this document.

Henry C. Thomas  
Senior Investigator

Contract No. AT-(40-1)-2130  
Modification No. 5

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 28th day of November, 1961, effective as of the 1st day of October, 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 NORTH CAROLINA (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the parties hereto have heretofore entered into Contract No. AT-(40-1)-2130 and Modifications thereto numbered 1 through 4 (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 the investigation of sorption and ion exchange phenomena in natural soils and treated materials. 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.

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3. The work will be carried out by the Contractor under the direction of Dr. Henry C. Thomas 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

6. The period during which the work under the contract may be conducted shall end on September 30, 1962.

#### ARTICLE III

##### 1. Consideration

f. In consideration of the performance of the research activities described in TITLE VI of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Five Thousand, Six Hundred Forty-eight Dollars (\$5,648.00), the Government shall pay to the Contractor Fifty-eight Thousand, Two Hundred Sixty-one Dollars (\$58,261.00) (\$40,353.00 in new funds and \$17,908.00 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 its 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 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) sub-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 V - PROPERTY

1. 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.

2. a. Title to Property. All property listed in subsection 2.b. of Appendix "A", title to which shall vest or remain in the Government, is hereinafter referred to as "Government Property". Title to any property acquired by the Contractor for the Government as provided in this contract shall pass directly from the vendor thereof to the Government. Title to Government Property shall not be affected by the incorporation of the property into or the attachment of it to any property not owned by the Government, nor shall such Government Property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty.

b. Identification. To the extent directed by the Contracting Officer, the Contractor shall identify Government Property coming into the Contractor's possession or custody by marking or segregation in such a way, satisfactory to the Contracting Officer, as shall indicate its ownership by the Government.

c. Disposition. The Contractor shall make such disposition of Government Property which has come into the possession or custody of the Contractor under this contract as the Contracting Officer shall direct. When authorized in writing by the Contracting Officer during the progress of the work or upon completion or termination of this contract, the Contractor may, upon such terms and conditions as the Contracting Officer may approve, sell or exchange such property, or acquire such property at a price agreed upon by the Contracting Officer and the Contractor as the fair value thereof. The amount received by the Contractor as the result of any disposition, or the amount of the agreed fair value of any such property acquired by the Contractor, shall be applied in reduction of the consideration provided by the Government under this contract, or shall be otherwise credited to the account of the Government, as the Contracting Officer may direct. Upon completion of the work or the termination of this contract, or at such earlier time as may be requested by the Contracting Officer, the Contractor shall render an accounting, as prescribed by the Contracting Officer, of all Government Property which has come into the possession or custody of the Contractor under this contract.

d. Protection of Government Property - Classified Materials. The Contractor shall take all reasonable precautions, as directed by the Contracting Officer, or in the absence of such directions in accordance with sound industrial practice, to safeguard and protect Government Property in the Contractor's possession or custody. Special measures shall be taken by the Contractor in the protection of and accounting for any classified or special materials involved in the performance of this contract, in accordance with the regulations and requirements of the Commission.

e. Risk of Loss of Government Property. The Contractor shall not be liable for loss or destruction of or damage to Government Property in the Contractor's possession unless such loss, destruction or damage results from wilful misconduct or lack of good faith on the part of the Contractor's corporate officers or the Senior Investigator under this contract, or unless such loss, destruction or damage results from a failure on the part of the Contractor's corporate officers or the Senior Investigator under this contract to take all reasonable steps to comply with any appropriate written directives of the Contracting Officer to safeguard such property under subsection 2.d. hereof.

f. Steps to be Taken In Event of Loss. Upon the happening of any loss or destruction of or damage to Government Property in the possession or custody of the Contractor, the Contractor shall immediately inform the Contracting Officer of the occasion and extent thereof, shall take all reasonable steps to protect the property remaining, and shall repair or replace the lost, destroyed, or damaged property if and as directed by the Contracting Officer, but shall take no action prejudicial to the right of the Government to recover therefor and shall furnish to the Government on request all reasonable assistance in obtaining recovery.

g. Government Property for Government Use Only. Except as otherwise authorized by the Contracting Officer, Government Property shall be used only for the performance of this 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 October 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.

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

DIRECTOR  
RESEARCH AND DEVELOPMENT DIVISION

(Contracting Officer)

WITNESSES:

Bettie Saunders  
Bettie Saunders  
Chapel Hill, N. C.  
(Address)

Sue White  
Sue White  
Chapel Hill, N. C.  
(Address)

UNIVERSITY OF NORTH CAROLINA

BY:

A. H. Shepard, Jr.

A. H. Shepard, Jr.

TITLE Business Officer and Treasurer

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.

Henry C. Thomas

Senior Investigator

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 the conduct of research into the problem of disposal of the radioactive by-products of nuclear fission into such systems as various types of clays, other soil minerals and sand beds. This research will include such areas as (1) work on the sorptive properties of heat-treated clays, (2) investigation of the isotopic nonexchangeability of strontium, barium and other ions on representative clays and other soil minerals, and (3) studies of exchange sorption on natural and synthetic zeolites.

2. BUDGET

a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>	\$38,700.00
Dr. H. C. Thomas (2/3 of time for 9 months, full time 3 months)	\$10,600.00
Research Associates	23,600.00
Technician	2,400.00
Secretarial Assistance	900.00
Consultation	1,200.00
(2) <u>F.I.C.A. and Retirement:</u>	2,062.00
(3) <u>Supplies and Services:</u>	7,800.00
(4) <u>Travel:</u>	900.00
(5) <u>Overhead (37.33% of Salaries and Wages):</u>	<u>14,447.00</u>
TOTAL	\$63,909.00

- 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, except that it is recognized that title to the following property procured or manufactured by the Contractor or furnished by the Government under earlier TITLES remains in the Government:

Analyzer - American Instrument Co.

1 Cat. No. 5-445 Roller Particle size Analyzer  
 1 " " 5-451 Sound-resistant cabinet  
 1 " " 5-456 Spec. Brass Sample Tube  
 1 " " 5-452 Low Pressure Air Pump

Centrifuge - Macalaster Bicknell  
1 Internat'l Size 1 S.B. Serial # Z 6663

Demineralizer - Penfield Products  
1 M-8 Cartridge Type

Drop Collector - Technicon Chromatography Corp.  
1 Drop counting accessories for Time Flow Fraction Collector

Fraction Collector - Technicon Chromatography Corp.  
1 Time Flow Fraction collector with 150 minute timer

Pumps - Milton Roy Co.  
1 MM2-B-11.5 "Mini Pump"  
Macalaster Bicknell  
3 Eastern Model D6 Centrifugal Pump - Bronze Casting  
Macalaster Bicknell  
1 Eastern, Midget, Low pressure model D-6 Crackle finish  
Bronze #35193

Relays - Central Scientific Co.  
1 Cat. #99784 Relay  
1 " #99785-A Electrode Relay, 50/60 cycle 115 V

Shaker - Macalaster Bicknell  
1 Burrell Shaker, Size C

Spectrophotometer - Will-N.Y. Inc.  
1 Beckman DU Serial No. 89442  
1 Powersupply Serial No. 77284

APPENDIX "B"

GENERAL PROVISIONS

October 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 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 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.

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## 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 both, as determined pursuant to 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.

- 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,

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

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.

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.

- 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.

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) "Components" means those articles, materials, 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 (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.(3)(B), 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:

- (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. 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, 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 b. of the clause of this contract entitled "Utilization of Small Business Concerns", the Contractor in placing his 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.

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.

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.

APPENDIX "C"

REPORTS AND PROPOSALS

August 1, 1961

1. The Contractor shall submit seven (7) copies of a Monthly Status Letter on the date of the expiration of each one-month period during the contract except for the one-month period or periods where the information required herein for such period or periods is contained in the Progress Report, if any, and the Complete Scientific Report both as described herein.

2. If the Contractor contemplates renewal of this contract, the Contractor shall submit the number of copies of the following as indicated:

- a. Draft of the Progress Report Six (6)
- b. 200-Word Summary of Purpose and Scope of Proposed Research Three (3)
- c. Renewal Proposal Six (6)

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.

3. 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 Draft of the Complete Scientific Report on the date of expiration of this contract.

4. Brief reports or manuscripts may be submitted as desired by the Senior Investigator.

5. All reports should 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

6. The Monthly Status Letter shall consist of a brief technical report touching on all aspects and phases of the Contractor's effort during the one-month period covered by the report.

7. The Progress Report shall briefly describe the scope of investigations undertaken and the significant results obtained during the current contract period. In the event this contract is or has been renewed, the progress report shall be in the nature of an annual report in that it shall also briefly describe the scope of investigations undertaken and the significant results obtained for the period of time not covered by the preceding Progress Report.
8. 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.
9. Technical reports and articles prepared for publication should be listed with the bibliographic references appearing either in the Progress Reports or the Complete Scientific Report. Reprints or preprints of all such material should be appended and material contained therein need not be duplicated. Results of the investigations and developments should be described in sufficient detail to allow other interested groups to fully utilize the information.
10. It is contemplated under this contract that the Commission shall authorize, request, or direct, without additional cost to the Government, that the Contractor submit twenty-two (22) copies and the reproducible masters of the Progress Reports and the Complete Scientific Report (including preprints or reprints of the technical reports and articles) to others in accordance with a minimum distribution list furnished by the Commission. The submission of such reports shall be within thirty (30) days after the Contractor's receipt of notice of the Commission's review and acceptance of the drafts of such reports and the Commission's approval of the drafts of such reports pursuant to the clause of this contract entitled "Publications".
11. The 200-Word Summary shall be set forth on a form entitled "Notice of Research Project". This form will be furnished by the Commission.
12. 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.
- 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 theses are 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.
- 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.

Contract No. AT-(40-1)-2130  
University of North Carolina  
Modification No. 4

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 20th day of December, 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 NORTH CAROLINA (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-2130, dated September 27, 1957, providing for research involving the disposal of the radioactive by-products of nuclear fission; and

WHEREAS, the contract has been amended heretofore by Modifications Nos. 1 - 3; and

WHEREAS, the Commission desires to provide for additional research as more particularly described in TITLE V 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 II:

"5. The period during which the work under this contract may be conducted is hereby extended to September 30, 1961."

2. The following new subsection "1. e." is added in Article III:

"e. In consideration of the performance of the additional work described in TITLE V of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Ten Thousand, Three Hundred Forty and 58/100 Dollars (\$10,340.58), the Government will pay to the Contractor Sixty-five Thousand, Five Hundred Thirty-two Dollars (\$65,532.00) (\$46,958.00 in new funds and \$18,574.00 agreed to be the balance remaining unexpended from previous work under this contract)."

3. 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."

4. 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; and
- d. any other concerns."

5. 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."

6. Item 6. of Modification No. 3. is deemed to be of no force or effect.

7. The following sentence is added to Section 1. of Article V:

"Additional items may be added to such section 2. b. in writing without the necessity for a formal modification of the contract."

8. The TITLE V attached hereto and made a part hereof is added to Appendix "A".

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:

Bessie Saunders  
Bessie Saunders  
Chapel Hill, N. C.  
(Address)

Rachel O' Daniel  
Rachel O' Daniel  
Chapel Hill, North Carolina  
(Address)

UNIVERSITY OF NORTH CAROLINA

BY: W. D. Carmichael, Jr.  
W. D. Carmichael, Jr.  
TITLE: Vice President and Finance Officer

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement and the TITLE V attached hereto and made a part hereof and agree to be bound by the provisions of this document.

Henry C. Thomas  
Senior Investigator

APPENDIX "A"

TITLE V

This TITLE V 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 investigation of the sorption of various types of ions on zeolite type minerals. With the possibility of the disposal of radioactive wastes into deep sand beds in mind, the Contractor proposes to study the kinetics of the sorption process on sands of low ion exchange capacity. In addition, the Contractor will conduct investigations concerning (1) the sorption of trivalent positive ions from acid solutions on to montmorillonite clay, (2) the behavior of a glassy Utah bentonite in the sorption process, and (3) the properties of a synthetic anion exchanger which will provide an extreme example of anion exchange properties of soil minerals.

2. BUDGET

a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>	\$51,510.00
Dr. H. C. Thomas (60% of time 9 mos., full time 3 mos.)	\$13,210.00
Research Associates	27,000.00
Research Assistants and Laboratory Assistance	9,200.00
Secretarial Assistance	900.00
Consultation	1,200.00
(2) <u>Supplies:</u>	3,600.00
(3) <u>Laboratory, Glass and Machine Shop     Services, etc.:</u>	5,400.00
(4) <u>Freight, Phone, Postage, etc.:</u>	600.00
(5) <u>Travel:</u>	1,200.00
(6) <u>Overhead (26.33% of Salaries and Wages):</u>	<u>13,562.58</u>
TOTAL	\$75,872.58

- 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, except that it is recognized that title to the following property procured or manufactured by the Contractor or furnished by the Government under earlier TITLES remains in the Government:

Analyzer - American Instrument Co.

- 1 Cat. No. 5-445 Roller Particle size Analyzer
- 1 " " 5-451 Sound-resistant cabinet
- 1 " " 5-456 Spec. Brass Sample Tube
- 1 " " 5-452 Low Pressure Air Pump

Centrifuge - Macalaster Bicknell

- 1 Internat'l Size 1 S.B. Serial # Z 6663

Demineralizer - Penfield Products

- 1 M-8 Cartridge Type

Drop Collector - Technicon Chromatography Corp.

- 1 Drop counting accessories for Time Flow Fraction Collector

Fraction Collector - Technicon Chromatography Corp.

- 1 Time Flow Fraction collector with 150 minute timer

Pumps - Milton Roy Co.

- 1 MM2-B-11.5 "Mini Pump"
- Macalaster Bicknell
- 3 Eastern Model D6 Centrifugal Pump - Bronze Casting
- Macalaster Bicknell
- 1 Eastern, Midget, Low pressure model D-6 Crackle finish  
Bronze #35193

Relays - Central Scientific Co.

- 1 Cat. #99784 Relay
- 1 " #99785-A Electrode Relay, 50/60 cycle 115 V

Shaker - Macalaster Bicknell

- 1 Burrell Shaker, Size C

Spectrophotometer - Will-N.Y. Inc.

- 1 Beckman DU Serial No. 89442
- 1 Powersupply Serial No. 77284

Survey Meter - (Beta Gamma) - National Tech. Labs.  
1 #10800 Beckman Geiger Counter, Model "MX-5"  
Serial No. 21529

Counters - Eagle Signal Corp.  
1 HZ 50A6 Microflex Counter 115 V 50/60 cycle;  
400 count range, AAR A-212  
1 HN84 Cabinet

Autoscalers - General Radio  
2 SC-4 Eagle Preset Counters

Pump - Sigmamotor Co.  
1 Model T-6SH, with Graham 28A Variable drive,  
1/6 h. p. motor - all mounted on special  
base Serial No. 129 (S-547)

Contract No. AT-(40-1)-2130  
University of North Carolina  
Modification No. 3

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 22<sup>nd</sup> day of March, 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 NORTH CAROLINA (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-2130, dated September 27, 1957, providing for research involving the disposal of the radioactive by-products of nuclear fission; and

WHEREAS, the contract has been amended heretofore by Modifications Nos. 1 - 2; and

WHEREAS, the Commission desires to provide for additional research as more particularly described in TITLE IV 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 "4." is added to Article II:

"4. The period during which the work under this contract may be conducted is hereby extended to September 30, 1960."

2. The following new subsection "1. d." is added in Article III:

"d. In consideration of the performance of the additional work described in TITLE IV of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Nine Thousand, Forty-one and 37/100 Dollars (\$9,041.37), the Government will pay to the Contractor Fifty-one Thousand, Four Hundred Twenty-four Dollars (\$51,424.00) (\$40,314.00 in new funds and \$11,110.00 agreed to be the balance remaining unexpended from previous 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 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 (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, 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", the second sentence of paragraph 7., 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."

9. In Appendix "B", subparagraph 11. b. is revised to read as follows:

"b. The Contractor further agrees to insert the foregoing provision in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials."

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 IV attached hereto and made a part hereof is added to Appendix "A".

12. The list of reports in Appendix "C" is revised to read as follows:

- |  |   |   |
|--|---|---|
| "1. Monthly status letters   | First day of each month   | Six   |
| 2. Progress Report   | July 1  | Six   |
| 3. Renewal Proposal  | July 1  | Six   |
| 4. 200-word summary of purpose and scope with submittal date indicated thereon       | Within 30 days after October 1  | Three   |
| 5. Draft of Complete Scientific Report   | Within 30 days after completion of the technical aspects of contract                                    | Six   |
| 6. Complete Scientific Report  | Within 30 days after notification of Commission approval of the draft of the Complete Scientific Report | Twenty-two (together with reproduction masters) |
| 7. Brief reports or manuscripts may be submitted as desired by Senior Investigator". |   |   |

13. The following sentences are added to the next to last paragraph on the first page of Appendix "C":

"The progress report due on July 1 should be treated as a draft and not reproduced in quantity until Commission review as the Contractor may be requested to furnish more copies and/or the reproduction masters. The results of the research should be described in sufficient detail to allow other interested groups to utilize the information."

14. The following new paragraph is added immediately before the last paragraph on the first page of Appendix "C":

"The results of the research will be described in the Complete Scientific Report in sufficient detail to allow other interested groups to utilize the information. The Contracting Officer may require copies in addition to those specified above."

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:

UNIVERSITY OF NORTH CAROLINA

*Bettie Saunders*  
Bettie Saunders  
Chapel Hill, North Carolina  
(Address)

BY: *W. D. Carmichael, Jr.*  
W. D. Carmichael, Jr.  
TITLE: Vice President and Finance Officer

*Rachel O'Daniel*  
Rachel O'Daniel  
Chapel Hill, North Carolina  
(Address)

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing supplemental agreement and the TITLE IV attached hereto and made a part hereof and agree to be bound by the provisions of this document.

*Henry C. Thomas*  
Senior Investigator

APPENDIX "A"

TITLE IV

This TITLE IV 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 methods and facilities for testing, on a laboratory scale, of radioactive waste disposal of fission products and related nuclides, to include standard leach tests on materials prepared by others, basic and fundamental chemical and physical problems involving sorption on soil minerals, and specifically, efforts on sorption studies of vermiculite, attapulgite, and continue work on the sorption of the trivalent metals on montmorillonite. So far as possible, studies will also be prosecuted on flow through packed beds with various radioactive tracers.

2. BUDGET

a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>	\$37,810.00
Dr. H. C. Thomas (60% of time 9 mos. full time 3 mos.)	\$13,210.00
Research Associate	16,200.00
Research Assistants	6,000.00
Consultation	1,200.00
Secretarial Assistance	1,200.00
(2) <u>Equipment:</u>	2,000.00
(3) <u>Supplies:</u>	4,800.00
(4) <u>Laboratory, Glass and Machine Shop Services, etc.:</u>	4,100.00
(5) <u>Freight, Phone, Postage, etc.:</u>	600.00
(6) <u>Travel:</u>	1,200.00
(7) <u>Overhead</u> (26.33% of Salaries and Wages):	<u>9,955.37</u>
	Total \$60,465.37

- 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, except that it is recognized that title to the following property procured or manufactured by the Contractor or furnished by the Government under earlier TITLES remains in the Government:

Analyzer - American Instrument Co.

- 1 Cat. No. 5-445 Roller Particle size Analyzer
- 1 " " 5-451 Sound-resistant cabinet
- 1 " " 5-456 Spec. Brass Sample Tube
- 1 " " 5-452 Low Pressure Air Pump

Centrifuge - Macalaster Bicknell

- 1 Internat'l Size 1 S.B. Serial # Z 6663

Demineralizer - Penfield Products

- 1 M-8 Cartridge Type

Drop Collector - Technicon Chromatography Corp.

- 1 Drop counting accessories for Time Flow Fraction Collector

Fraction Collector - Technicon Chromatography Corp.

- 1 Time Flow Fraction collector with 150 minute timer

Pumps - Milton Roy Co.

- 1 MM2-B-11.5 "Mini Pump"
- Macalaster Bicknell
- 3 Eastern Model D6 Centrifugal Pump - Bronze Casting
- Macalaster Bicknell
- 1 Eastern, Midget, Low pressure model D-6 Crackle finish  
Bronze #35193

Relays - Central Scientific Co.

- 1 Cat. #99784 Relay
- 1 " #99785-A Electrode Relay, 50/60 cycle 115 V

Shaker - Macalaster Bicknell

- 1 Burrell Shaker, Size C

Spectrophotometer - Will-N.Y. Inc.

- 1 Beckman DU Serial No. 89442
- 1 Powersupply Serial No. 77284

Survey Meter - (Beta Gamma) - National Tech. Labs.

1 #10800 Beckman Geiger Counter, Model "MX-5" Serial No. 21529

Counters - Eagle Signal Corp.

1 HZ 50A6 Microflex Counter 115 V 50/60 cycle; 400 count range  
AAR A-212

1 HN84 Cabinet

Autoscalers - General Radio

2 SC-4 Eagle Preset Counters

Pump - Sigmamotor Co.

1 Model T-6SH, with Graham 28A Variable drive, 1/6 h. p.  
motor - all mounted on special base Serial No. 129  
(S-547)

Contract No. AT-(40-1)-2130  
University of North Carolina  
Modification No. 2

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 13th day of November, 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 NORTH CAROLINA (hereinafter called the "Contractor");

**WITNESSETH THAT:**

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-2130, dated September 27, 1957, providing for research involving the disposal of the radioactive by-products of nuclear fission; and

WHEREAS, the contract has been amended heretofore by Modification No. 1; and

WHEREAS, the Commission desires to provide for additional research as more particularly described in TITLE III 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 "3." is added to Article II:

"3. The period during which the work under this contract may be conducted is hereby extended to September 30, 1959."

2. The following new subsection "1. c." is added in Article III:

"c. In consideration of the performance of the additional work described in TITLE III of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Ten Thousand, Six Hundred Eighty-five and 89/100 Dollars (\$10,685.89), the Government will pay to the Contractor Forty-nine Thousand, Nine Hundred Eighty Dollars (\$49,980.00) (\$49,209.00 in new funds and \$771.00 agreed to be the balance remaining unexpended from previous work under this contract)."

3. The following new TITLE "III" is added in Appendix "A":

1129366



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: *R. G. Humphries*  
R. G. Humphries  
Acting Director, Contract Division, CRO  
(Contracting Officer)

WITNESSES:

*Rachel O'Daniel*  
Rachel O'Daniel  
Chapel Hill, North Carolina  
(Address)

*Bettie Saunders*  
Bettie Saunders  
Chapel Hill, North Carolina  
(Address)

UNIVERSITY OF NORTH CAROLINA

BY: *W. D. Carmichael, Jr.*  
W. D. Carmichael, Jr.  
TITLE: Vice President and Finance Officer

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement and agree to be bound by the provisions of this document.

*Henry C. Thomas*  
Senior Investigator

Contract No. AT-(40-1)-2130  
University of North Carolina  
Modification No. 1

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this <sup>th</sup> 10 day of June, 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 NORTH CAROLINA (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-2130, dated September 27, 1957, providing for research by the Contractor involving the disposal of the radioactive by-products of nuclear fission; and

WHEREAS, the Commission desires to provide for additional research as more particularly described in TITLE II 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 "2." is added to Article II:

"2. The period during which the work under this contract may be conducted is hereby extended to September 30, 1958."

3. The following new subsection "1.b." is added in Article III:

"b. In consideration of the performance of the additional work described in TITLE II of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Two Thousand, Four Hundred Seventy-five and 48/100 Dollars (\$2,475.48), the Government will pay to the Contractor Thirteen Thousand, Nine Hundred Fifty-seven Dollars (\$13,957.00) (\$1,202.00 in new funds and \$12,755.00 agreed to be the balance remaining unexpended from previous work under this contract)."

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; 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."

5. 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 agreed to be remaining unexpended from previous work under this contract exceeds 45 per cent of the agreed consideration."

6. In subsection 2.c. of Article III, delete the word "term" and substitute therefor the word "work".

7. 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."

8. The following new TITLE "II" is added in Appendix "A":

"TITLE II

"This TITLE II describes the research program and cost estimates agreed upon between the Commission and the Contractor.

"1. PROGRAM

"a. Scope and Plan of Approach:

The scope of work is to have three principal objectives:

- (1) To investigate problems directly related to the 'Return of Nature' of the radioactive fission products.
- (2) To provide facilities for and to carry out critical testing, on a laboratory scale, of proposals for the disposal of fission products.
- (3) To provide a center for advanced instruction in the scientific fundamentals of the problems involved in disposal and return to nature.

"2. BUDGET

"a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>	\$10,177.51
Dr. H. C. Thomas (Full time 3 mos.)	\$4,677.51
Research Associates	3,950.00
Laboratory Assistant	400.00
Secretarial Assistance	750.00
Consultation	400.00
(2) <u>Supplies:</u>	875.00
(3) <u>Services on Leak Detector:</u>	150.00
(4) <u>Freight, Phone, Postage, etc.:</u>	400.00
(5) <u>Glass Shop and Machine Shop:</u>	450.00
(6) <u>Travel:</u>	1,400.00
(7) <u>Overhead</u> (29.28% of salaries and wages):	<u>2,979.97</u>
Total	\$16,432.48

"b. Items of property to be procured or manufactured by the Contractor title to which will vest in the Government (see Article V): None."

9. Appendix "C" is deleted in its entirety and the new Appendix "C" attached hereto and made a part hereof is substituted therefor.

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

UNITED STATES OF AMERICA

BY: U. S. ATOMIC ENERGY COMMISSION

BY: David J. Lope  
Acting Director  
Research and Development Division  
(Contracting Officer)

WITNESSES:

Betty Saunders  
Betty Saunders  
Chapel Hill, N. C.  
(Address)

Samuel Westmoreland  
Samuel Westmoreland  
Chapel Hill, N. C.  
(Address)

UNIVERSITY OF NORTH CAROLINA

BY: W. D. Carmichael, Jr.  
W. D. Carmichael, Jr.

TITLE: Vice President and Finance Officer

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.

Henry C. Thomas  
Senior Investigator

APPENDIX "C"

REPORTS AND PROPOSALS  
(FOR DIRECT AEC RESEARCH CONTRACTS)

	Date Due	Copies
1. Progress Report	JUL 1	Six
2. Renewal Proposal	JUL 1	Six
3. 200-word summary of purpose and scope with submittal date indicated thereon	Within thirty days after OCT 1	Three
4. Complete Scientific Report	On contract expiration or termination	Six
5. Brief reports or manuscripts may be submitted as desired by Senior Investigator		

NOTES:

All of the above should be addressed 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.

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 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. 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 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.

UNITED STATES  
ATOMIC ENERGY COMMISSION

LUMP SUM  
RESEARCH CONTRACT

Contract No. AT-(40-1)-2130

THIS CONTRACT, entered into this 27th day of September, 1957, by and between 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 NORTH CAROLINA (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 research by the Contractor involving the disposal of the radioactive by-products of nuclear fission. 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. Henry C. Thomas as Senior Investigator.

ARTICLE II - TERM OF CONTRACT

1. The initial period of performance for the research project covered by this contract will commence on July 1, 1957, and will end on June 30, 1958. 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 Title I of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Nine Thousand, Five Hundred Ninety-seven Dollars (\$9,597.00), the Government will pay to the Contractor for the first period of performance the sum of Forty-nine Thousand, Seven Hundred Fifty-four Dollars (\$49,754.00).

1129376

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.

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 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 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.

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 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 until the expiration of three years after final payment under this contract. 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 (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

1. 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.

2. Title to Government Property shall not be affected by the incorporation of the property into or the attachment of it to any property not owned by the Government, nor shall such Government 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 directed by the Contracting Officer, the Contractor shall identify Government Property coming into the Contractor's possession or custody by marking or segregation in such a way, satisfactory to the Contracting Officer, as shall indicate its ownership by the Government.

4. The Contractor shall take all reasonable precautions, as directed by the Contracting Officer, or in the absence of such directions in accordance with sound industrial practice, to safeguard and protect Government Property in the Contractor's possession or custody. Special measures shall be taken by the Contractor in the protection of and accounting for any classified or special materials involved in the performance of this contract, in accordance with the regulations and requirements of the Commission.

5. The Contractor shall not be liable for loss or destruction of or damage to Government Property in the Contractor's possession unless such loss, destruction or damage results from wilful misconduct or lack of good faith on the part of a corporate officer of the Contractor or the Senior Investigator under this contract.

6. Upon the happening of any loss or destruction of or damage to Government Property in the possession or custody of the Contractor, the Contractor shall immediately inform the Contracting Officer of the occasion and extent thereof, shall take all reasonable steps to protect the property remaining, and shall repair or replace the lost, destroyed, or damaged property at Government expense,

if and as directed by the Contracting Officer, but shall take no action prejudicial to the right of the Government to recover therefor and shall furnish to the Government on request all reasonable assistance in obtaining recovery.

7. Government Property shall be used only for the performance of this contract.

8. The Contractor shall make such disposition of Government Property which comes into the possession or custody of the Contractor under this contract as the Contracting Officer shall direct, including acquisition by the Contractor upon such terms and conditions as are mutually agreed upon by the Contractor and the Contracting Officer.

9. As used in this Article V, "Government Property" means any property listed in Section 2. b. of any TITLE of Appendix "A".

**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", 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.

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 M. Roth  
HERMAN M. ROTH  
DIRECTOR  
RESEARCH AND DEVELOPMENT DIVISION  
(Contracting Officer)

WITNESSES:

Betty Saunders  
Betty Saunders  
Chapel Hill, North Carolina  
(Address)

Betty Marks  
Betty Marks  
Chapel Hill, North Carolina  
(Address)

THE UNIVERSITY OF NORTH CAROLINA

BY: W. D. Carmichael, Jr.  
W. D. Carmichael, Jr.  
TITLE: Vice President and Finance Officer

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing contract and the Appendices attached hereto and made a part hereof and agree to be bound by the provisions of this document.

Henry C. Thomas  
Senior Investigator

APPENDIX "A"

TITLE I

July 1, 1957 - June 30, 1958

This TITLE I describes the research program and cost estimates agreed upon between the Commission and the Contractor for the first period of performance.

1. PROGRAM

a. Scope and Plan of Approach:

The Contractor will undertake research in the field of radioactive waste disposal with three objectives: (1) To investigate problems related to the "return to nature" of radioactive fission products, including sampling, soil studies, ion movement and exchange, absorption, etc.; (2) Critical testing, on a laboratory scale, of proposals for the disposal of fission products, testing of materials, etc.; (3) and provide a center for advanced instruction and training in the scientific fundamentals of problems involved in radioactive waste disposal.

2. BUDGET

a. Outline of Cost Estimates for the First Period:

(1) <u>Salaries and Wages:</u>		\$30,400.00
Dr. H. C. Thomas (60% of time for 9 mos. Full time for 3 mos.)	\$11,500.00	
Research Associates	15,700.00	
Consultation	1,200.00	
Secretarial Assistance	2,000.00	
(2) <u>Equipment:</u>		12,150.00
To be purchased	12,150.00	
*Government Furnished (See subsection b. below)		.00
(3) <u>Supplies:</u>		2,000.00
(4) <u>Laboratory, Glass Shop, and Machine Shop Service:</u>		3,200.00
(5) <u>Freight, Transportation, Phone, Postage, etc.:</u>		1,500.00
(6) <u>Travel:</u>		1,200.00
(7) <u>Overhead (29.28% of Salaries and Wages):</u>		<u>8,901.00</u>
		\$59,351.00

\*This equipment was formerly used in connection with earlier work at Yale University on the research activities covered by this contract. The equipment will be transferred to the Contractor through arrangements made with the New York Operations Office of the Commission. Title to the equipment will remain with the Commission.

Appendix "A" - Cont.

Page 2.

- 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):

Analyzer - American Instrument Co.

- 1 Cat. No. 5-445 Roller Particle size Analyzer
- 1 " " 5-451 Sound-resistant cabinet
- 1 " " 5-456 Spec. Brass Sample Tube
- 1 " " 5-452 Low Pressure Air Pump

Bath - Will-N.Y. Inc.

- 1 Cat. No. 28341 Water Bath, 8 openings

Centrifuge - Macalaster Bicknell

- 1 Internat'l Size 1 S.B. Serial # Z 6663

Demineralizer - Penfield Products

- 1 M-8 Cartridge Type

Drop Collector - Technicon Chromatography Corp.

- 1 Drop counting accessories for Time Flow Fraction Collector

Preamplifier - Tracerlab Inc.

- 1 P-10 Pre-Amplifier

Meter - Tracerlab Inc.

- 1 TPN 100 M-3 Weston, Model 267

Fraction Collector - Technicon Chromatography Corp.

- 1 Time Flow Fraction collector with 150 minute timer

Pumps - Milton Roy Co.

- 1 MM2-B-11.5 "Mini Pump"
- Macalaster Bicknell
- 3 Eastern Model D6 Centrifugal Pump - Bronze Casting
- Macalaster Bicknell
- 1 Eastern, Midget, Low pressure model D-6 Crackle finish  
Bronze #35193

Relays - Central Scientific Co.

- 1 Cat. #99784 Relay
- 1 " #99785-A Electrode Relay, 50/60 cycle 115 V

Shaker - Macalaster Bicknell

- 1 Burrell Shaker, Size C

Spectrophotometer - Will-N.Y. Inc.

- 1 Beckman DU Serial No. 89442
- 1 Powersupply Serial No. 77284

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Appendix "A" - Cont.  
Page 3.

Stirrer - Macalaster Bicknell

1 "Mag-Mix" Precision #65904

Survey Meter - (Beta Gamma) - National Tech. Labs.

1 #10800 Beckman Geiger Counter, Model "MX-5" Serial No. 21529

Vise - N. T. Bushnell Co.

1 #123 Vise D & C

Counters - Eagle Signal Corp.

1 HZ 50A6 Microflex Counter 115 V 50/60 cycle; 400 count range  
AAR A-212  
1 HN84 Cabinet

Autoscalers - General Radio

2 SC-1B Autoscalers "wired for use with Eagle Precept Counters  
and equipped with P-1 preamplifiers and S-100 timers"  
2 SC-4 Eagle Preset Counters  
1 SC-1B Autoscaler  
1 SM-60A Electrical Timing Clock (S-100)

Timer - Timperly

1 Electronic Timer

Milliammeters - Hatry

2 Weston 471 ammeters Serial Nos. 48531 and 48512

Transformers - Hatry

1 Kyson T667  
2 " T177

Pump - Sigmamotor Co.

1 Model T-6SH, with Graham 28A Variable drive, 1/6 h. p.  
motor - all mounted on special base Serial No. 129  
(S-547)

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

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 channel 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 secure 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 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 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 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 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 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 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.

11. 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.

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.

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.

APPENDIX "C"

REPORTS AND PROPOSALS  
(FOR DIRECT AEC RESEARCH CONTRACTS)

	Date Due	Copies
1. Progress Report	April 1	Six
2. Renewal Proposal	April 1	Six
3. 200-word summary of purpose and scope with submittal date indicated thereon	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 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 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. 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 interplot 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 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.