

Contract No. AT-(40-1)-1301  
 Tulane University  
 Modification No. 6

709228

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 13<sup>th</sup> day of June, 1956, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and TULANE UNIVERSITY (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1301, dated February 27, 1951, providing for a study of the exchange rate of tissue electrolytes; and

WHEREAS, the Contract has been amended heretofore by Modifications Nos. 1 - 5; and

WHEREAS, the parties hereto desire to extend the term of the contract without additional funds in order to continue the research activities previously undertaken; 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. In section 5. of Article II, delete the date "June 30, 1956" and insert the date "August 31, 1956" in lieu thereof.
2. In TITLE V of Appendix "A", delete the date "June 30, 1956" and insert the date "August 31, 1956" in lieu thereof.

REPOSITORY Oak Ridge Operations  
Records Holding Area  
 COLLECTION Documents 1944-1994  
 BOX No. H-177-4 Bldg. 2714-H  
Contract No. AT(40-1)1301  
 FOLDER Tulane Univ.

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: David A. Cope

Acting \_\_\_\_\_

(Contracting Officer)

WITNESSES:

Gildred Oakes

Sulane University  
(Address)

J.F. Hackett

Sulane University  
(Address)

CONTRACTOR

BY: James Scheps

TITLE: Comptroller

ACCEPTANCE BY SENIOR INVESTIGATOR

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

Walter S. Wilde  
Senior Investigator

Contract No. AT-(40-1)-1301  
Tulane University  
Modification No. 5

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 13<sup>th</sup> day of June, 1955, effective as of July 1, 1955, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and TULANE UNIVERSITY (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1301, dated February 27, 1951, providing for a study by the Contractor of the exchange rate of tissue electrolytes; and

WHEREAS, the contract has been amended heretofore by Modifications Nos. 1-4; and

WHEREAS, the parties hereto desire to extend the term of the contract in order to continue the research activities previously undertaken, as such extended program is described in TITLE V of Appendix "A", and to revise the form of the contract and appendices; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1954;

NOW, THEREFORE, the parties hereto do mutually agree that as of July 1, 1955, Contract No. AT-(40-1)-1301 is amended to read (with Appendices "A", "B", and "C" attached) as follows:

ARTICLE I - PURPOSE AND SCOPE

1. The Commission, in furtherance of its policy of assisting and fostering private research, desires to support the Contractor's fundamental research in the field of atomic energy.

2. The work shall consist of performance of a research project involving the metabolic exchange of tissue electrolytes. 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. Walter S. Wilde as Senior Investigator.

ARTICLE II - TERM OF CONTRACT

5. The fifth period of performance for the research project covered by this contract will commence on July 1, 1955, and will end on June 30, 1956. It is recognized that completion of the research work under this contract may involve a period of several years and that the term of this contract may be extended by mutual agreement.

ARTICLE III

1. Consideration

e. In consideration of the performance of the research activities described in TITLE V of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Ten Thousand, Three Hundred Eighteen and 08/100 Dollars (\$10,318.08), the Government will pay to the Contractor for the fifth period of performance the sum of Fifteen Thousand Dollars (\$15,000.00).

2. Payment

a. On or before the date of commencement of the work on the project described in Appendix "A", the Government shall pay to the Contractor upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration.

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, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract.

b. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract with the Government, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor involving transactions related to the subcontract. The term "subcontract" as used herein means any purchase order or agreement to perform all or any part of the

work or to make or furnish any materials required for the performance of this contract, but does not include (1) purchase orders not exceeding \$1,000, (2) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public, or (3) subcontracts or purchase orders for general inventory items not specifically identifiable with the work under this contract.

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

ARTICLE V - TITLE TO PROPERTY PURCHASED BY CONTRACTOR

In consideration of the Contractor's contribution to the research project described in Appendix "A" of this contract, title to all materials, tools, machinery, equipment and supplies, acquired from any source including the Government, or manufactured by the Contractor under this contract shall vest in the Contractor, except that title to items of property described in Section 2. b. of Appendix "A" shall vest in the Government.

ARTICLE VI - PURCHASE OF RADIOISOTOPES

The Contractor shall purchase, to the extent available in appropriate form, all radioisotopes, irradiation services and cyclotron time required in the performance of the work hereunder, through the Commission's Isotopes Division, Post Office Box E, Oak Ridge, Tennessee.

ARTICLE VII - GENERAL PROVISIONS

The provisions of Appendix "B" attached hereto, are hereby made a part of this contract.

ARTICLE VIII - ALTERATIONS

The following alterations to this contract were made by mutual agreement of the parties prior to its execution: None.

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

PHYSICS  
RESEARCH AND MEDICINE DIVISION

(Contracting Officer)

WITNESSES:

237 Sackett  
Tulane Univ., New Orleans  
(Address)

Mrs. Margaret J. Jones  
Tulane Univ., New Orleans  
(Address)

TULANE UNIVERSITY

BY: Clair A. ...

TITLE: Contracting Officer

ACCEPTANCE BY SENIOR INVESTIGATOR

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

Walter D. Wilde  
Senior Investigator  
Professor of Physiology

APPENDIX "A"

TITLE V

July 1, 1955 - June 30, 1956

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

1. PROGRAM

a. Scope and Plan of Approach

Work by the Contractor will continue on the development of the full potentialities of the effluogram method. Development work will be carried out on the studies in the blood and heart of simultaneous unknowns, using Sodium-24 and Potassium-42 which can be counted together in the new scintillation adaptation to automatic counting techniques, so it will become possible to delineate outflux of  $K^{42}$  and  $Na^{24}$  or of  $K^{42}$  and  $P^{32}$  from the same heart on the same experimental run. An adaptation will be made of a fluorescent type volume indicator to these experiments, and studies will be made of the effects of drugs, lowered temperature, epinephrine, digitalis, et. al. If possible activation analysis will be tried on strip samples collected from perfusate run through a non-radioactive heart with view of determining sodium or other unknowns as net chemical releases.

2. BUDGET

a. Outline of cost estimates for the fifth period:

(1) <u>Salaries and Wages:</u>	\$12,576.44
Dr. W. S. Wilde (3/4 time)	\$6,176.44
Research Assistants, Technicians, Etc.	4,500.00
Secretarial Assistance	1,900.00
(2) <u>Social Security and Retirement:</u>	745.64
(3) <u>Equipment:</u>	2,260.00
(4) <u>Services and Supplies:</u>	2,160.00
(5) <u>Isotopes and Shipping:</u>	2,800.00
(6) <u>Travel:</u>	300.00

(7) Laundry:	200.00
(8) <u>Overhead</u> (34% of Salaries and Wages):	<u>4,276.00</u>
TOTAL	\$25,318.08*

\*It is recognized that the work hereunder may receive additional support as outlined in the Contractor's proposal to the Commission.

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

APPENDIX "B"

GENERAL PROVISIONS

(FOR DIRECT AEC RESEARCH CONTRACTS)

1. Patents

- a. Whenever any patentable invention or discovery is made or conceived by the Contractor or its employees in the course of any of the work under this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The judgment of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.
- b. No claim for pecuniary award under the provisions of the Atomic Energy Act of 1946 or the Atomic Energy Act of 1954 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of any of the work under this contract.
- c. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs a. and b. of this Article from all persons who perform any part of the work under this contract, except clerical and manual labor personnel who will not have access to technical data.
- d. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making paragraphs a., b., and c. of this Article applicable to the subcontractor and its employees.

2. Publications

The Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that "restricted data" as defined in the Atomic Energy Act of 1954 shall be governed by the provisions of Paragraph 3 of this Appendix "B". All publications shall include a reference that the results were developed under a Commission sponsored project.

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 P. 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. Nondiscrimination in Employment

In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color, or national origin. The aforesaid provision shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of the nondiscrimination clause. The Contractor further agrees to insert the foregoing provision in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials.

8. Convict Labor

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

9. Termination

- a. The Commission may at any time upon 120 days written notice terminate this contract in whole or in part.
- b. In the event of termination pursuant to subsection a., the Contractor shall submit a statement of costs incurred in performance of the work under the contract prior to such termination, and the Government shall pay to the Contractor that portion of the costs incurred which bears the same relationship to the total as the agreed Government support for the full term bears to the total of cost estimates for the full term, less the amount of all payments theretofore made. If the total payments theretofore made to the Contractor exceed the amount to which it is entitled hereunder, the Contractor shall promptly remit the amount of any such excess to the Government.

10. Eight-Hour Law

- a. No laborer or mechanic doing any part of the work contemplated by this contract, in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this article. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight hours per day and work in excess of eight hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay. For each violation of the requirements of this article a penalty of five dollars shall be imposed upon the Contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight hours upon said work without receiving compensation computed in accordance with this article, and all penalties thus imposed shall be withheld for the use and benefit of the Government: Provided, that this stipulation shall be subject in all respects to the exceptions and provisions of the Eight-Hour Laws as set forth in 40 U.S.C. 321, 324, 325, 325a and 326, which relate to hours of labor and compensation for overtime.
- b. This provision does not apply to work performed by employees of the Contractor if this contract is with a state or a state institution.

11. Covenant Against Contingent Fees

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

12. Definitions

As used in this contract:

- a. the term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successor or any duly authorized representative of such person.
- b. the term "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof, including the Contracting Officer except for deciding an appeal under the article entitled "Disputes".

13. Fellowships

It is understood by the Contractor that none of the funds supplied by the Commission under this contract shall be used in any way to pay the stipend of any appointment for which commensurate services are not rendered under this contract; nor shall any of the funds be used to confer a fellowship, or to pay any part of the stipend of a fellowship, of any kind.

14. Foreign Travel

It is agreed that none of the funds supplied by the Commission under this contract shall be used to pay the expenses of foreign travel, except where such foreign travel is made with the prior approval of the Commission. "Foreign travel" as used herein means travel outside the continental United States, excepting, however, travel to Canada.

## 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	Following completion of negotiation of contract and any renewal	Three
4. Complete Scientific Report	On contract termination	Six
5. Brief reports or manuscripts may be submitted as desired by investigator		

## NOTES:

All of the above should be addressed to:

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

The progress report should briefly describe the scope of investigations undertaken and the significant results obtained. It should also explain any significant differences between the actual level of activity (expressed in the various categories of man-months, facilities procured, travel performed, etc.) and that contemplated in the contract. Technical reports and articles prepared for publication during the period covered should be listed with bibliographic references. Reprints or preprints of all such material should be appended and material contained therein need not be duplicated in the report.

Renewal proposals, if any, should accompany the progress report and should contain the type of information outlined below unless the information is already contained in earlier proposals or in the accompanying progress report. Any contemplated change in program or scope for the renewal period should be clearly explained and the cost estimated should be based upon past experience.

1. Title of the project.
2. The institution and department in which the work will be done.
3. Scientific background including literature relevant to the proposal, the significance, and the motivation. If the proposal is for continuation of work already in progress the extent of present support should be stated identifying amounts received from federal agencies.
4. Scientific scope of the proposed research, its objectives, its relation to present knowledge and to comparable work in progress elsewhere, and a plan of accomplishments for the first year's work.
5. Scientific Personnel. Give the name, highest academic degree, position in the institution, scientific experience, publications and accomplishments of the senior investigator (the individual who will actively direct the research program) and of each regular staff scientist who it is proposed will engage in the work. Indicate the approximate fraction of the time of each to be devoted to the project during each period of the year. Scientific personnel to be newly employed for the project should be so designated, and professional records given if possible.
6. Other personnel. The number of persons of each sub-professional grade and the fraction of the time of each to be devoted to the project should be listed. Graduate student employees should be identified as such if their thesis is to be related to the project.
7. Other Financial Assistance. If assistance for this or other activities involving the same personnel or facilities is to be proposed to, or received from other federal or non-university sources the extent of that assistance should be clearly stated, and the interplay of the arrangements should be fully explained.
8. Materials, Equipment and Facilities. List those already available for the work and justify the need for major items to be procured.
9. Travel and other items. Explain the purpose of the proposed travel, and of any other major items in the budget. Travel rates and the use of contract funds for attendance at regular scientific meetings should conform with the policy of the institution in the use of its own funds for these purposes.
10. Budget. This should list in detail all items of cost necessary to carry the project for one year or for the duration of the project if less than a year. It should include: a list of the individual salaries attributable to the project, supplies and services, equipment (defined as things individually costing more than \$500 which will retain their utility for more than a year), travel, communication and publication, and the 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.

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 24<sup>th</sup> day of June, 1954, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and TULANE UNIVERSITY (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1301, dated February 27, 1951, providing for a study by the Contractor of the exchange rate of tissue electrolytes; and

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

WHEREAS, the parties hereto desire to extend the term of the contract in order to continue the research activities previously undertaken, as such extended program is described in TITLE IV of Appendix "A", and to revise the form of the contract and appendices; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1946;

NOW, THEREFORE, the parties hereto do mutually agree that as of July 1, 1954, Contract No. AT-(40-1)-1301 is hereby amended to read (with Appendices "A", "B" and "C" attached) as follows:

ARTICLE I - PURPOSE AND SCOPE

1. The Commission, in furtherance of its policy of assisting and fostering private research, desires to support the Contractor's fundamental research in the field of atomic energy.

2. The work shall consist of study of the exchange rate of tissue electrolytes. 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. Walter S. Wilde as Senior Investigator.

#### ARTICLE II - TERM OF CONTRACT

4. The fourth period of performance for the research project covered by this contract will commence on July 1, 1954, and will end on June 30, 1955. It is recognized that completion of the research work under this contract may involve a period of several years and that the term of this contract may be extended by mutual agreement.

#### ARTICLE III

##### 1. Consideration

d. In consideration of the performance of the research activities described in TITLE IV of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Ten Thousand, Three Hundred Sixty-Seven Dollars (\$10,367.00), the Government will pay to the Contractor for the fourth period of performance the sum of Fourteen Thousand, Four Hundred Thirty-Seven Dollars (\$14,437.00), which amount includes the sum of One Thousand, Seven Hundred Eighty-Nine Dollars (\$1,789.00) agreed to be the amount of the unexpended balance remaining from the previous period of performance, and Twelve Thousand, Six Hundred Forty-Eight Dollars (\$12,648.00) in new funds.

##### 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, provided, however, that said payment shall be reduced by the amount of any unexpended balance agreed to be remaining from the previous period of performance.

b. On or before the expiration of six months from the date of commencement of the project, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration.

c. Upon receipt and acceptance of a satisfactory progress report, in cases where the contract is to be renewed, or the final report if the contract is not to be renewed, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, the remaining 10 per cent of the agreed consideration. An extension of the contract term without additional funds shall not be considered a renewal of the contract and in such cases the retained 10 per cent of the agreed consideration will be paid upon submission and acceptance of a satisfactory final report.

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, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract, unless the Commission authorizes their prior disposition.

b. The Contractor further agrees to include in all his sub-contracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract with the Government, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor involving transactions related to the subcontract, unless the Commission authorizes their prior disposition. The term "subcontract" as used herein means any purchase order or agreement to perform all or any part of the work or to make or furnish any materials required for the performance of this

contract, but does not include (i) purchase orders not exceeding \$1,000, (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public, or (iii) subcontracts or purchase orders for general inventory items not specifically identifiable with the work under this contract.

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

#### ARTICLE V - TITLE TO PROPERTY PURCHASED BY CONTRACTOR

In consideration of the Contractor's contribution to the research project described in Appendix "A" of this contract, title to all materials, tools, machinery, equipment and supplies, acquired from any source including the Government, or manufactured by the Contractor under this contract shall vest in the Contractor, except that title to items of property described in Section 2. b. of Appendix "A" shall vest in the Government.

#### ARTICLE VI - PURCHASE OF RADIOISOTOPES

The Contractor shall purchase, to the extent available in appropriate form, all radioisotopes, irradiation services and cyclotron time required in the performance of the work hereunder, through the Commission's Isotope Division, Post Office Box E, Oak Ridge, Tennessee.

#### ARTICLE VII - GENERAL PROVISIONS

The provisions of Appendix "B", attached hereto, are hereby made a part of this contract.

#### ARTICLE VIII - ALTERATIONS

The following alterations to this contract were made by mutual agreement of the parties prior to its execution:

- In Appendix "B", General Provisions, Paragraph 3, Disclosure of Information, the third sentence of subparagraph a. was deleted.

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: *Herman M. Roth*  
*Contracting Officer*  
RESEARCH AND MEDICINE DIVISION  
(Contracting Officer)

WITNESSES:

\_\_\_\_\_

(Address)

\_\_\_\_\_

(Address)

TULANE UNIVERSITY

BY: *Charles Schep*

TITLE: *Comptroller*

ACCEPTANCE BY SENIOR INVESTIGATOR

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

*Walter J. Wilde*  
Senior Investigator

APPENDIX "A"

TITLE IV

July 1, 1954 - June 30, 1955

This TITLE IV describes the research program and cost estimates agreed upon between the Commission and the Contractor for the fourth period of performance.\*

1. PROGRAM

a. Scope and Plan of Approach

Work during this period will be a continuation of that carried on during the previous period and will include effluographic determination of ionic fluxes in heart muscle in time relation to ECG and contraction.

2. BUDGET

a. Outline of cost estimates for the fourth period:

(1) Salaries and Wages:		\$15,600.00
Dr. W. S. Wilde (75% of time)	\$7,400.00	
Research Associates	6,400.00	
Research Assistants	1,200.00	
Secretarial Assistance	600.00	
(2) Equipment:		1,800.00
(3) Service, Supplies and Materials:		2,100.00
(4) Overhead and Indirect Costs (34% of Salaries and Wages)		5,304.00
	Total	\$24,804.00

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

\*It is recognized that additional support may be received from other sources as outlined in the Contractor's proposal to the Commission.

APPENDIX "B"

GENERAL PROVISIONS

(FOR DIRECT AEC RESEARCH CONTRACTS)

1. Patents

- a. Whenever any patentable invention or discovery is made or conceived by the Contractor or its employees in the course of any of the work under this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The judgement of the Commission on these matters shall be accepted as final; and the Contractor, for itself and for its employees, agrees that the inventor or inventors will execute all documents and do all things necessary or proper to carry out the judgment of the Commission.
- b. No claim for pecuniary award under the provisions of the Atomic Energy Act of 1946 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of any of the work under this contract.
- c. Except as otherwise authorized in writing by the Commission, the Contractor will obtain patent agreements to effectuate the purposes of paragraphs a. and b. of this Article from all persons who perform any part of the work under this contract, except clerical and manual labor personnel who will not have access to technical data.
- d. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making paragraphs a., b., and c. of this Article applicable to the subcontractor and its employees.

2. Publications

The Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that "restricted data" as defined in the Atomic Energy Act of 1946 shall be governed by the provisions of Paragraph 3 of this Appendix "B". All publications shall include a reference that the results were developed under a Commission sponsored project.

3. Disclosure of Information

- a. It is understood that the work under this contract will not involve restricted data and the Contractor will perform such work as unclassified work. However, if in the course of such work any discoveries are made or any data used or developed that constitute restricted data, the Contractor shall promptly inform the Commission and shall classify and safeguard all discoveries and data in accordance with the requirements of the Commission. ~~It is understood that the person directing research work under this contract shall have been cleared by the Commission for access to restricted data.~~ Except as the Commission may authorize, in accordance with the Atomic Energy Act of 1946, as amended, the Contractor shall not permit any individual to have access to restricted data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security. As used in this paragraph the term "designated investigating agency" means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1946, as amended. If doubt exists as to whether any discovery or data developed constitute restricted data, prior to the release of these data and before permitting any individual who has not received clearance from the Commission to have access to such data, the Contractor shall seek guidance from the Commission. Furthermore, the Commission reserves the right to require the classification of work whenever in its opinion restricted data are involved.
- b. The continuation by the Contractor of work found to involve restricted data will be subject to mutual agreement of the Commission and the Contractor and shall be covered by a modification of this agreement. The phrase "restricted data" as defined in the Atomic Energy Act of 1946 and employed in this section shall mean "all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material, or the use of fissionable material in the production of power, but shall not include any data which the Commission from time to time determines may be published without adversely affecting the common defense and security".

4. Disputes

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

the Contractor may appeal by mailing or otherwise furnishing to the Contracting Officer a written appeal addressed to the Commission, and the decision of the Commission shall be final and conclusive, unless determined by a court of competent jurisdiction to have been fraudulent or arbitrary or capricious or so grossly erroneous as necessarily to imply bad faith or not to be supported by substantial evidence: Provided, That, if no such appeal to the Commission is taken, the decision of the Contracting Officer shall be final and conclusive. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

5. Safety and Accident Prevention - Inspections

The Contractor will comply with health and safety regulations of the Commission required for work of this nature, and permit the Commission and its designees to inspect the work conducted under this agreement.

6. Officials Not to Benefit

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

7. Anti-Discrimination

The Contractor, in performing the work required by this contract, shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin.

8. Convict Labor

The Contractor shall not, in the performance of this contract, employ any person undergoing sentence or imprisonment at hard labor.

9. Termination

- a. The Commission may at any time upon 120 days written notice terminate this contract in whole or in part.
- b. In the event of termination pursuant to subsection a., the Contractor 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 (8) hours in any one calendar day upon such work at the site thereof, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this Article. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight (8) hours per day and work in excess of eight (8) hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for all hours worked in excess of eight (8) hours per day at not less than one and one-half ( $1\frac{1}{2}$ ) times the basic rate of pay. For each violation of the requirements of this Article a penalty of Five Dollars (\$5.00) shall be imposed upon the Contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight (8) hours upon said work without receiving compensation computed in accordance with this Article, and all penalties thus imposed shall be withheld for the use and benefit of the Government; provided, that this stipulation shall be subject in all respects to the exceptions and provisions of U. S. Code, Title 40, Sections 321, 324, 325, and 326, relating to hours of labor, as modified by the provisions of Section 303 of Public Act No. 781, 76th Congress, approved September 9, 1940, relating to compensation for overtime.
- 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. Definitions

As used in this contract the terms "United States Atomic Energy Commission" "Atomic Energy Commission" and "Commission" shall mean the United States Atomic Energy Commission or its duly authorized representative or representatives.

12. Fellowships

It is understood by the Contractor that none of the funds supplied by the Commission under this contract shall be used in any way to pay the

stipend of any appointment for which commensurate services are not rendered under this contract; nor shall any of the funds be used to confer a fellowship, or to pay any part of the stipend of a fellowship, of any kind.

13. Foreign Travel

It is agreed that none of the funds supplied by the Commission under this contract shall be used to pay the expenses of foreign travel, except where such foreign travel is made with the prior approval of the Commission. "Foreign travel" as used herein means travel outside the continental United States, excepting, however, travel to Canada.

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	Following completion of negotiation of contract and any renewal	Three
4. Complete Scientific Report	On contract termination	Six
5. Brief reports or manuscripts may be submitted as desired by investigator		

NOTES:

All of the above should be addressed to:

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

The progress report should briefly describe the scope of investigations undertaken and the significant results obtained. It should also explain any significant differences between the actual level of activity (expressed in the various categories of man-months, facilities procured, travel performed etc.) and that contemplated in the contract. Technical reports and articles prepared for publication during the period covered should be listed with bibliographic references. Reprints or preprints of all such material should be appended and material contained therein need not be duplicated in the report.

Renewal proposals, if any, should accompany the progress report and should contain the type of information outlined below unless the information is already contained in earlier proposals or in the accompanying progress report. Any contemplated change in program or scope for the renewal period should be clearly explained and the cost estimated should be based upon past experience.

1. Title of the project.
2. The institution and department in which the work will be done.
3. Scientific background including literature relevant to the proposal, the significance, and the motivation. If the proposal is for continuation of work already in progress the extent of present support should be stated identifying amounts received from federal agencies.
4. Scientific scope of the proposed research, its objectives, its relation to present knowledge and to comparable work in progress elsewhere, and a plan of accomplishments for the first year's work.
5. Scientific Personnel. Give the name, highest academic degree, position in the institution, scientific experience, publications and accomplishments of the senior investigator (the individual who will actively direct the research program) and of each regular staff scientist who it is proposed will engage in the work. Indicate the approximate fraction of the time of each to be devoted to the project during each period of the year. Scientific personnel to be newly employed for the project should be so designated, and professional records given if possible.
6. Other personnel. The number of persons of each sub-professional grade and the fraction of the time of each to be devoted to the project should be listed. Graduate student employees should be identified as such if their thesis is to be related to the project.
7. Other Financial Assistance. If assistance for this or other activities involving the same personnel or facilities is to be proposed to, or received from other federal or non-university sources the extent of that assistance should be clearly stated, and the interplay of the arrangements should be fully explained.
8. Materials, Equipment and Facilities. List those already available for the work and justify the need for major items to be procured.
9. Travel and other items. Explain the purpose of the proposed travel, and of any other major items in the budget. Travel rates and the use of contract funds for attendance at regular scientific meetings should conform with the policy of the institution in the use of its own funds for these purposes.
10. Budget. This should list in detail all items of cost necessary to carry the project for one year or for the duration of the project if less than a year. It should include: a list of the individual salaries attributable to the project, supplies and services, equipment (defined as things individually costing more than \$500 which will retain their utility for more than a year), travel, communication and publication, and the indirect costs allocable to the project. The basis for computing the indirect costs should be briefly explained. The budget should not

include the stipend of fellows. All salaries chargeable to the project should be in accord with the established policies of the institution, or, if not, an explanation should be submitted.

11. Amount requested. A statement of the part of the total amount listed in the budget which the institution is prepared to bear, and the amount requested from the AEC, and a statement of any other sponsors of the project with the amounts contributed by each. The proposal should be signed by the Senior Investigator, endorsed by a responsible administrative officer of the institution.
12. Statement of current expenditures. A current statement of its expenditures for the project, and an estimate of expenses to be incurred during the remained of the current period.
13. Residual funds. Any difference in the scope of the work during the current contract period from that contemplated in the contract, as brought out in the report, may be reflected in the amount requested for the ensuing year. If no new funds are required the contract may be renewed without funds. A proposal for such renewal should state the scope of the work proposed for use of residual funds.

Contract No. AT-(40-1)-1301  
Tulane University  
Modification No. 3

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 30th day of June, 1953, 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 TULANE UNIVERSITY (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1301, dated February 27, 1951, for the performance by the Contractor of a study of the exchange rate of tissue electrolytes; and

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

WHEREAS, the parties hereto desire to extend the term of the contract in order to continue the research activities previously undertaken, as such extended program is described in TITLE III to Appendix "A", and to effect certain other changes hereinafter set out; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1946;

NOW, THEREFORE, the parties hereto do mutually agree that Contract No. AT-(40-1)-1301 is hereby modified in the following particulars, but in no others:

1. Add the following new section 3 to ARTICLE II -- TERM OF CONTRACT:

"3. The third period of performance for the project covered by this contract will commence on July 1, 1953, and will end on June 30, 1954."

2. Add the following new subsection c. to section 1 of Article III:

"c. In consideration of the Contractor's performance of the research activities described in Title III to Appendix 'A', the Government will pay to the Contractor the sum of Eleven Thousand, Three Hundred Four Dollars (\$11,304.00) for the third period of performance."

3. Add the following new Section 4 to ARTICLE V - REPORTS, RECORDS AND INSPECTION:

"4. Examination of Records.

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

"b. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract with the Government, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor involving transactions related to the subcontract. The term 'subcontract' as used herein means any purchase order or agreement to perform all or any part of the work or to make or furnish any materials required for the performance of this contract, but does not include (i) purchase orders not exceeding \$1,000, (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public, or (iii) subcontracts or purchase orders for general inventory items not specifically identifiable with the work under this contract.

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

4. Add the following new "TITLE III" to Appendix "A":

"TITLE III

"July 1, 1953 - June 30, 1954

"This TITLE III describes the research program and budget agreed upon between the Commission and the Contractor for the third period of performance.

"1. PROGRAM

"a. Scope and Plan of Approach

During this period the Contractor will continue the research previously undertaken. Specific activities will include effluographic determinations of ionic and chemical changes

in heart muscle; continuation of studies on single ions of isotopes such as  $K^{42}$ ,  $P^{32}$ ,  $Na^{22}$ , and  $Na^{24}$ ; undertaking simultaneous effluograms of two or more ions; and study of the effects of X-rays, drugs, ionic changes and other conditions upon the ionic fluxes in contracting and quiescent hearts.

\*2. BUDGET - Fourth Period: July 1, 1953 - June 30, 1954

\*a. The Contractor will furnish as its contribution to the project:

(1) Salaries of staff members, including the Project Leader, and other personnel engaged in the work, in excess of the Government's contribution under b. (1) below.

(2) Use of laboratory work space; and equipment, materials and facilities needed for the project in excess of the Government's payment under b. below.

(3) All clerical, administrative and overhead costs in excess of the Government's payment under b. below.

\*b. The Government's payment as provided in section 1. c. of ARTICLE III, together with the sum of Two Thousand, Three Hundred Ninety-Nine Dollars (\$2,399.00) (which amount the parties hereby agree shall be deemed to represent the amount by which payments made by the Government for the second contract period exceeds total expenditures for the same period) is to cover generally the following operating estimates:

(1) Salaries and Wages

Research Associates	\$4,000.00	
Technician	3,200.00	
2 Assistants (Part Time)	<u>666.00</u>	
Total Salaries and Wages		\$ 7,866.00

(2) Equipment 1,000.00

(3) Services, materials and Supplies

IBM Service	1,000.00	
Glassware, etc.	<u>800.00</u>	
Total Services, Materials, and Supplies		1,800.00

(4) <u>Animals</u>	\$ 400.00
(5) <u>Isotopes and Shipping</u>	<u>1,800.00</u>
Subtotal	\$12,866.00
(6) <u>Overhead</u>	<u>837.00</u>
TOTAL	\$13,703.00

"c. Items of property procured or manufactured by the Contractor during this period, title to which will vest in the Government (See Article II): None."

5. In Appendix "B" delete the third sentence of section 3. a. and substitute therefor the following:

"The Contractor agrees that it will not permit any individual to have access to restricted data until the designated investigating agency shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security. As used in this paragraph the term 'designated investigating agency' means the United States Civil Service Commission or the Federal Bureau of Investigation, or both, as determined pursuant to the provisions of the Atomic Energy Act of 1946, as amended by the Act of April 5, 1952, Public Law 298, 82nd Congress, 66 Stat. 43."

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

THE UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: Herman M. Roth  
Herman M. Roth  
 Actg. Director Contracting Officer  
 RESEARCH AND MEDICINE DIVISION  
 TULANE UNIVERSITY

WITNESSES:

\_\_\_\_\_  
 \_\_\_\_\_  
 (Address)  
Mrs. J. L. Allen Jr.  
76 P. McAlister Place  
 (Address)

BY: James Scheys  
 TITLE: Comptroller

ACCEPTANCE OF PROJECT LEADER

I have read the foregoing Supplemental Agreement and agree to be bound by its terms.

Walter S. Airdo  
 Project Leader

# STATEMENT AND CERTIFICATE OF AWARD

(Contract)

Date February 27, 1951

U. S. Atomic Energy Commission  
(Department or establishment)

(Bureau or office)

Oak Ridge, Tennessee  
(Location)

## METHOD OF OR ABSENCE OF ADVERTISING

(Section 3709 of the Revised Statutes)

FOR USE BY G. A. O. ONLY		
Indexed	Card	Reviewed

1. After advertising in newspapers.
2. (a) After advertising by circular letters sent to ..... dealers.  
(b) And by notices posted in public places.  
(If notices were not posted in addition to advertising by circular letters sent to dealers, explanation of such omission must be made. The notation on the certificate below must be "2 (a) (b)" or "2 (a)," depending on whether or not notices were posted.)
3. Without advertising, under an exigency of the service which existed prior to the order and would not admit of the delay incident to advertising.
4. Without advertising in accordance with the Atomic Energy Act of 1946
5. Without advertising, it being impracticable to secure competition because of .....

(Here state circumstances under which the securing of competition was impracticable)

## AWARD OF CONTRACT

- A. To lowest bidder as to price (Expenditures).
- B. To other than the lowest bidder as to price (Expenditures).
- C. To highest bidder as to price (Receipts).
- D. To other than the highest bidder as to price (Receipts).

G. A. O.		
Rec'd	3/2/51	
Ind.	4/9/51	BC
Rev.		

## CERTIFICATE

I CERTIFY that the foregoing statement is true and correct; that the agreement was made in consequence of No. 4 of the method of or absence of advertising and in accordance with award of contract lettered           , as shown above; that the total number of bids received is           , and that where lower bids (expenditure contracts) or higher bids (receipt contracts) as to price were received a statement of reasons for their rejection, together with an abstract of bids received, including all lower than that accepted in case of expenditure contracts and all higher in case of receipt contracts, is given below or on the reverse hereof or on a separate sheet attached hereto; that the articles or services covered by the agreement (expenditure) are necessary for the public service, and that the prices charged are just and reasonable.

*C. Vanden Bulck*

(Signature of contracting officer) C. Vanden Bulck

Contracting Officer

(Title)

NOTE.—This statement and certificate will be used to support all agreements, both formal contracts and less formal agreements of whatever character, involving the expenditure or receipt of public funds. It must be executed and signed by the contracting officer (unless the award is made by or is subject to approval by an officer other than the contracting officer, when execution and signature may be made by such officer).

UNITED STATES  
ATOMIC ENERGY COMMISSION

LUMP SUM  
RESEARCH CONTRACT

Contract No. AT-(40-1)- 1301

THIS CONTRACT, entered into this 37<sup>th</sup> day of February, 1951, by the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission") and TULANE UNIVERSITY, New Orleans, Louisiana (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 a study of the exchange rate of tissue electrolytes.

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

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. Walter S. Wilde.

ARTICLE II - TERM OF CONTRACT

The initial period of performance for the research project covered by this contract will commence on March 1, 1951 and will end on February 29, 1952.

It is recognized that completion of the research work under this contract may involve a period of several years and that the term of this contract may be extended by mutual agreement.

ARTICLE III

1. Consideration. In consideration of the performance of the research activities described in Article I, the Government shall pay to the Contractor the sum of Nine Thousand, Five Hundred Fifty-Eight Dollars (\$ 9,558.00 ) for the initial period of performance.

## 2. Payment

- a. On or before the date of commencement of work on the project described in Appendix "A", the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, one-half the amount of the agreed consideration.
- b. On or before the expiration of six months from the date of commencement of the project, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, the remaining one-half of the agreed consideration.
- c. In the event that the term of the contract is extended, the Government shall pay to the Contractor, upon submission by the Contractor of properly certified vouchers, each six months in advance an amount equal to one-half the annual agreed consideration for the project as mutually agreed upon by the parties hereto.

3. Program and Budget for Subsequent Periods. At least three months before the end of the initial period of performance of the project, the Contractor will submit to the Commission a current statement of its expenditures for the project, an estimate of expenses to be incurred during the remainder of the period, and a proposed program and budget for the succeeding year, showing the proposed work to be financed by the Commission and the Contractor. The Contractor and the Commission shall then negotiate as to the amount to be paid by the Commission to the Contractor for the services to be performed during the ensuing period, taking into consideration any portion of payments theretofore made which will remain unexpended at the end of the initial period. The extended program, budget and the additional amount to be paid to the Contractor shall be incorporated into a formal modification to this contract.

## ARTICLE IV - ADMINISTRATION OF CONTRACT BY COMMISSION

The Commission has assigned the responsibility for administering the technical and scientific aspects for the project to the Washington organizational unit set forth below, to be addressed as follows:

### Division of Biology and Medicine

U. S. Atomic Energy Commission  
1901 Constitution Avenue, N. W.  
Washington 25, D. C.

Responsibility for administering the business aspects of this contract, including contract negotiations, budget, payment, audit, etc., has been assigned by the Commission to:

Office of Research & Medicine  
Oak Ridge Operations Office  
U. S. Atomic Energy Commission  
Post Office Box E  
Oak Ridge, Tennessee

The Contractor may, as necessary, communicate directly with the appropriate office, as indicated above. The Contractor shall furnish information copies of communications, memoranda of telephone conversations, or other contacts to Oak Ridge Operations Office on all direct dealings with the Washington Office.

## ARTICLE V - REPORTS, RECORDS AND INSPECTION

1. The Commission shall have the right to inspect in such manner and at such times as it deems appropriate all activities of the Contractor arising in the course of the work under this contract.

2. The Contractor shall make progress and other reports in such manner and at such times as specified in Appendix "C" which is attached hereto and hereby made a part of this contract. Progress reports shall include a list of personnel working on the project. Names appearing for the first time should be accompanied by a brief statement of the individual's background, training, and experience.
3. The Commission shall at all times be afforded access to the premises and to all technical records, correspondence, instructions, drawings, and memoranda of record value of the Contractor pertaining to said work.

#### ARTICLE VI - TITLE TO PROPERTY PURCHASED BY CONTRACTOR

In consideration of the Contractor's contribution to the research project described in Appendix "A" of this contract, title to all materials, tools, machinery, equipment and supplies, acquired from any source including the Government, or manufactured by the Contractor under this contract shall vest in the Contractor, except that title to items of property described in Section 2.c. of Appendix "A" shall vest in the Government.

#### ARTICLE VII - PURCHASE OF RADIOISOTOPES

The Contractor shall purchase, to the extent available in appropriate form, all radioisotopes, irradiation services and cyclotron time required in the performance of the work hereunder, through the Commission's Isotope Division, Post Office Box E, Oak Ridge, Tennessee.

#### ARTICLE VIII - GENERAL PROVISIONS

The provisions of Appendix "B", attached hereto, are hereby made a part of this contract.

#### ARTICLE IX - AUTHORIZATION

This contract is authorized by and has been executed under the Atomic Energy Act of 1946.

#### ARTICLE X - ALTERATIONS

The following alterations to this contract were made by mutual agreement of the parties prior to its execution:

Section 3.a. of Appendix "B" is amended by deleting the third sentence thereof in its entirety.

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: C. Vanden Bulck  
C. Vanden Bulck, Contracting Officer

TULANE UNIVERSITY  
(Contractor)

BY: Clare Scheps

TITLE: Comptroller

WITNESSES:

Elic Priestley  
Tulane University  
(Address)

Edward Ballentine  
Tulane University  
(Address)

ACCEPTANCE BY PROJECT LEADER

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

Walter S. Wilde  
Project Leader

APPENDIX "A"

1. Program.

a. Background and Scope of Project.

Potassium is the most abundant metallic cation present in living protoplasm. It is essential for growth; it is a catalyzing co-enzyme for biochemical reactions. It regulates excitability and determines the magnitude of electrical potential differences so characteristic across cell interfaces.

Though accumulated to such large extent in the protoplasm, potassium shows a rapid and often complete exchange between the cell and its bathing medium. Yet, at the same time, potassium is held in the cell to the exclusion of other cations such as sodium which latter is so abundant in the medium. It is proposed to evaluate the exchange rate of potassium in resting muscle and liver and to test the effect of hormonal and other agents on it. It is felt that such rates would clarify the role of potassium in biochemical processes and the manner of its binding.

(1) The exchange in resting tissue.

An early problem in the evaluation of ionic exchange rate of electrolytes in tissues is the question whether the tissue is acting as a single or as a multiple pool of the particular electrolyte undergoing exchange. That is, in order to measure the exchange rate for a given pool, the specific activity of the precursor or feeding pool must be known.

It has been found that after peritoneal injection of K-42, liver specific activity rises to become equal to circulating plasma values but then continues for a prolonged period to remain above the plasma. It is noted that after intravenous injection the liver specific activity not only remains above that of plasma but continues to rise even for prolonged periods after the plasma has begun to fall. At 50 minutes after a quick intravenous injection, the liver expells tracer potassium to give elevated plasma values. This could not happen if liver K is a single continually mixed pool and if the circulating plasma bathing the liver is everywhere equal in specific activity to that measured in arterial plasma.

Intestine as well as liver and kidney cortex are quick to take up the K-42. It had been suspected that the intestine receives an early batch of tracer only to give it off later to the liver by way of the portal vein. If tracer is injected by way of the portal vein, into a tributary from an intestinal loop, the time course for liver uptake is completely changed. Its peak uptake of K-42 comes much earlier with a continual decline and no secondary rebound of plasma tracer occurs. This suggests that after intravenous injection the gut receives a large batch of tracer only later to discharge it to the liver, thus giving the delayed liver uptake.

This attempt to set up criteria for measuring exchange rate of tissue potassium will be continued. It is proposed to make further checks on the question whether the early intestinal uptake explains the liver phenomenon: for instance, to run simultaneous intestinal and liver specific activities and perhaps sample portal blood after intravenous tracer, to compare it with arterial specific activity.

Finally certain hormonal and other tests will be made for possible heterogeneity of liver K. Adrenalin causes large expulsions of liver K. It will be interesting to allow first rapid liver uptake of tracer and then give adrenalin to see whether specific activity of liver changes as the K comes out of the liver, more than would be expected from the normal leakage of tracer.

Considerable time has been spent on the mathematical interpretation of exchange rates as measured with isotopes. The analysis of the problem in liver, in muscle, and possibly in nerve, will be continued.

Finally, it is proposed to measure the effect of hormonal and other factors on the exchange rate once that is evaluated. The overall interest is to gain an insight into the mechanism of electrolyte distribution in animal tissues. Work on the exchange will be done in "resting" muscle.

- (2) The exchange during muscle activity. There is strong evidence that potassium is released during muscle work: either during the contraction, during the relaxation or the recovery period. Classical chemical analyses for potassium are, however, too insensitive to relate these changes to a particular phase of the contraction process, or to particular changes in the activity potentials.

It is felt that by studying muscles in animals equilibrated with large doses of radiopotassium means of detecting these rapid but

likely slight changes can be concocted. It is believed that this can be done by placing a count-rate-meter directly over a muscle partially isolated to afford shielding from adjacent tissue and yet with intact circulation, or by using a scintillation counter or fluorescent detector of some kind directly over the outflow vein or draining cannula of a perfused preparation using artificial media.

b. Availability of Facilities and Equipment.

The following facilities and equipment are available to the Contractor for use in connection with the project:

(1) Laboratory space available exclusively to Project Leader:

Office with 2 desks  
Chemical laboratory with hood  
Small operating room  
Flame photometer room  
Counting room  
Constant temperature room  
Refrigerator

(2) Additional laboratory facilities recently installed by the Contractor:

Chemical bench  
Hood  
Water still

(3) Two machine shops

(4) Equipment available exclusively to Project Leader:

Large centrifuge  
2 clinical centrifuges  
Kjeldahl rack  
Hot plates  
Analytical balance  
Klett colorimeter  
Hand scaler and counter  
Flame photometers  
    Fox-Hanke  
    Perkin Elmer  
Air compressor for above  
Propane tanks  
Oven  
Furnace, electric  
Platinum crucibles (6)

- (5) Other equipment is also available on loan from the Contractor's Department of Physiology.

2. Budget.

- a. During the period March 1, 1951 - February 29, 1952, inclusive, the Contractor will furnish in addition to the equipment and facilities described in Section 1.b. above, the salaries of the Project Leader and one graduate assistant.
- b. During the period March 1, 1951 - February 29, 1952, inclusive, the sum of \$9,558.00 to be paid by the Government to the Contractor shall be used by the Contractor in the performance of the work hereunder roughly as follows:

(1) Salaries

Assistant with M.A. or equivalent experience in chemistry	\$ 3,200.00	
Summer Assistant - a junior or senior medical student on vaca- tion	<u>800.00</u>	
		\$4,000.00

(2) Equipment

Autoscaler	\$ 650.00	
Printer Timer	450.00	
Sample Changer	950.00	
G. M. Tube Shield	200.00	
Count Rate Meter Circuit	<u>1,000.00</u>	
		\$3,250.00

(3) Expendable Materials and Supplies	600.00
(4) Animals (including care)	400.00
(5) Isotopes and Shipping	600.00
(6) Overhead (8%)	<u>708.00</u>

Total	\$9,558.00
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It is understood and agreed that the Contractor, in the performance of the work under this contract, will be guided by but not bound to conform to the details of the budget set forth above.

c. Items of property acquired or manufactured by the Contractor under this contract, title to which will vest in the Government (See Article VI of the contract).

Quantity

Description

None

xxx

GENERAL PROVISIONS1. Patents

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

b. No claim for pecuniary award under the provisions of the Atomic Energy Act of 1946 shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of any of the work under this contract.

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

d. Except as otherwise authorized in writing by the Commission, the Contractor will insert in all subcontracts provisions making paragraphs a., b., and c. of this Article applicable to the subcontractor and its employees.

2. Publications. The Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that "restricted data" as defined in the Atomic Energy Act of 1946 shall be governed by the provisions of Paragraph 3 of this Appendix "B". All publications shall include a reference that the results were developed under a Commission sponsored project.

3. Disclosure of Information.

a. It is understood that the work under this contract will not involve restricted data and the Contractor will perform such work as unclassified work. However, if in the course of such work any discoveries are made or any data used or developed that constitute restricted data, the Contractor shall promptly inform the Commission and shall classify and safeguard all discoveries and data in accordance with the requirements of the Commission. ~~It is understood that the person directing research work under this contract shall have been cleared by the Commission for access to restricted data.~~ The Contractor agrees that it will not permit any individual to have access to restricted data until the Federal Bureau of Investigation shall have made an investigation and report to the Commission of the character, associations and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security. If doubt exists as to whether any discovery or data developed constitute restricted data, prior to the release of these data and before permitting any individual who has not received clearance from the Commission to have access to such data, the Contractor shall seek guidance from the Commission. Furthermore, the Commission reserves the right to require the classification of work whenever in its opinion restricted data are involved.

b. The continuation by the Contractor of work found to involve restricted data will be subject to mutual agreement of the Commission and the Contractor and shall be covered by a modification of this agreement. The phrase "restricted data" as defined in the Atomic Energy Act of 1946 and employed in this section shall mean "all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material, or the use of fissionable material in the production of power, but shall not include any data which the Commission from time to time determines may be published without adversely affecting the common defense and security".

4. Disputes. Except as otherwise specifically provided in this contract, all disputes which may arise under this contract and which are not disposed of by mutual agreement shall be decided by a representative of the Commission duly authorized to supervise and administer performance under this contract, who shall reduce his decision to writing and cause a copy thereof to be mailed to the Contractor; said decision shall be final and conclusive, subject to the provisions of the sentence next following. Within thirty (30) days from the date of such mailing, the Contractor may appeal in writing to the Commission, whose written decision thereon, or that of its duly authorized representative, representatives, or board, not including the representative mentioned in the preceding sentence, shall be final and conclusive. Pending decision of a dispute hereunder, the Contractor shall proceed with the performance of its undertakings under this contract.

5. Safety and Accident Prevention - Inspections. The Contractor will comply with health and safety regulations of the Commission required for work of this nature, and permit the Commission and its designees to inspect the work conducted under this agreement.

6. Officials not to Benefit. No member of or Delegate to Congress, or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

7. Anti-Discrimination. The Contractor, in performing the work required by this contract, shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin.

8. Convict Labor. The Contractor shall not, in the performance of this contract, employ any person undergoing sentence or imprisonment at hard labor.

9. Termination.

a. The Commission may at any time upon 120 days written notice terminate this contract in whole or in part.

b. In the event of termination pursuant to subsection a., the Contractor will be reimbursed for the cost of the contract work already performed, together with reasonable costs of termination less the amount of all payments theretofore made. If the total payments theretofore made to the Contractor exceed the amount to which it is entitled hereunder, the Contractor shall promptly remit the amount of any such excess to the Government.

10. Eight-Hour Law. No laborer or mechanic doing any part of the work contemplated by this contract in the employ of the Contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight (8) hours in any one calendar day upon such work at the site thereof, except upon the condition that compensation is paid to such laborer or mechanic in accordance with the provisions of this Article. The wages of every laborer and mechanic employed by the Contractor or any subcontractor engaged in the performance of this contract shall be computed on a basic day rate of eight (8) hours per day and work in excess of eight (8) hours per day is permitted only upon the condition that every such laborer and mechanic shall be compensated for

## APPENDIX "C"

DISTRIBUTION AND SCHEDULING OF REPORTS  
FOR DIRECT AEC RESEARCH CONTRACTS

	Date	Copies and Distribution	Remarks
<b><u>CONTRACTOR REPORTS</u></b>			
1. Progress	On one of Following: March 15 June 15 Sept. 15 Dec. 15	(2) Appropriate Washington Division (See note)  (2) Oak Ridge Operations Office (See note)	To be received on date listed which is nearest to end of nine month period from effective date of contract
2. Summary 200 words on scope and purpose	1. On completion of contract negotiation  2. With progress reports	Prepared as a part of contract negotiations  (2) Same as Progress Reports	1. Distribution by Oak Ridge Operations Office with Contract copies 2. Revised Summary to be included as part of Progress Report
3. Manuscripts	As available	(1) Patent Branch, Washington (1) Technical Library, Washington (1) Appropriate Washington Division (1) Oak Ridge Operations Office	
4. Reprints	As available	(2) Appropriate Washington Division (2) Technical Information Branch, Washington (1) Oak Ridge Operations Office	
5. Complete Scientific Report	On Contract Termination	(1) Same (1) as (1) for (1) manuscripts	Manuscripts prepared for publication may in some cases take the place of this report
6. Brief Reports	As desired by investigator	(1) Appropriate Washington Office (1) Oak Ridge Operations Office	Covering significant results or developments.

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all hours worked in excess of eight (8) hours per day at not less than one and one-half (1½) times the basic rate of pay. For each violation of the requirements of this Article a penalty of Five Dollars (\$5.00) shall be imposed upon the Contractor for each laborer or mechanic for every calendar day in which such employee is required or permitted to labor more than eight (8) hours upon said work without receiving compensation computed in accordance with this Article, and all penalties thus imposed shall be withheld for the use and benefit of the Government; provided, that this stipulation shall be subject in all respects to the exceptions and provisions of U. S. Code, Title 40, Sections 321, 324, 325, and 326, relating to hours of labor, as modified by the provisions of Section 303 of Public Act No. 781, 76th Congress, approved September 9, 1940, relating to compensation for overtime.

11. Definitions. As used in this contract the terms "United States Atomic Energy Commission", "Atomic Energy Commission" and "Commission" shall mean the United States Atomic Energy Commission or its duly authorized representative or representatives.

12. Fellowships. It is understood by the Contractor that none of the funds supplied by the Commission under this contract shall be used in any way to pay the stipend of any appointment for which commensurate services are not rendered under this contract; nor shall any of the funds be used to confer a fellowship, or to pay any part of the stipend of a fellowship, of any kind.

NOTE: Full Addresses as follows:

Washington Offices:

Atomic Energy Commission  
(Add name of Division or Branch)  
1901 Constitution Avenue, N. W.  
Washington, D. C.

Oak Ridge Operations Office

Atomic Energy Commission  
Office of Research and Medicine  
Post Office Box E  
Oak Ridge, Tennessee

The appropriate Washington Divisions are:

Division of Biology and Medicine - for contracts in Biology and Medicine.

Division of Research - for contracts in physical research.

Recd.	<i>JAC</i>	
Ind.	<i>10/17/51</i>	<i>RR</i>
Rev.		

Contract No. AT-(40-1)-1301  
(Tulane University)  
Modification No. 1

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 24th day of September, 1951, 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 TULANE UNIVERSITY (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1301, dated February 27, 1951, for the performance by the Contractor of a study of the exchange rate of tissue electrolysis; and

WHEREAS, the parties desire to extend the term of the initial period of performance; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1946;

NOW, THEREFORE, the parties hereto do mutually agree that Contract No. AT-(40-1)-1301 is modified in the following particulars only:

1. In ARTICLE II - TERM OF CONTRACT delete, in line 2, the date "February 29, 1952" and substitute therefor the date "June 30, 1952".
2. In APPENDIX "A" delete, in line 1 of Section 2a, the date "February 29, 1952" and substitute therefor the date "June 30, 1952"; and delete, in line 1 of Section 2b, the date "February 29, 1952" and substitute therefor the date "June 30, 1952".

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: *C. Vanden Bulck*  
C. Vanden Bulck, Assistant Manager, ORO  
TITLE: Contracting Officer

TULANE UNIVERSITY

BY: *Charles Scheps*  
TITLE: Comptroller

WITNESSES:

*Elaine Priestley*  
*Tulane University*  
(Address)

*J. J. Hackett*  
*Tulane University*  
(Address)

ACCEPTANCE BY PROJECT LEADER

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

*Walter D. Wilde*  
Project Leader

G.A.O.		
Rec'd	6.9.52	
Ind.	Tulane	AAA
Rev.		

Contract No. AT-(40-1)-1301  
(Tulane University)  
Modification No. 2

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 16th day of June, 1952, 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 TULANE UNIVERSITY (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1301, dated February 27, 1951, for the performance by the Contractor of a study of the exchange rate of tissue electrolysis; and

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

WHEREAS, the parties desire to extend the term of the Contract in order that the research work undertaken during the initial period of performance may be continued and expanded, as such extended program is described in TITLE II to Appendix "A"; and

WHEREAS, this Supplemental Agreement is authorized by and executed under the Atomic Energy Act of 1946;

NOW, THEREFORE, the parties hereto do mutually agree that Contract No. AT-(40-1)-1301, as heretofore amended, is modified in the following particulars only:

1. Insert the section number "1." before the first word of Article II - TERM OF CONTRACT - and add the following new Section 2. to Article II:

"2. The second period of performance for the research project covered by this Contract will commence on July 1, 1952, and will end on June 30, 1953."

2. Insert the subsection letter "a." between the words "Consideration" and "in" in Article III, and add the following new subsection b. to Article III:

"b. In consideration of the performance of the research activities described in Title II to Appendix 'A', the Government will pay to the Contractor the sum of Ten Thousand One Hundred Eight Dollars and Twenty-Four Cents (\$10,108.24) for the second period of performance."

3. Insert the term "TITLE I" under the heading of Appendix "A", and add the following new TITLE II to Appendix "A":

"TITLE II

"July 1, 1952 - June 30, 1953

"This TITLE II describes the research program and budget agreed upon between the Commission and the Contractor for the second period of performance.

"1. PROGRAM

"a. Scope and Plan of Approach

During the second period of performance the work will continue to be a study of and research into the metabolic exchange of tissue electrolyte, as described in TITLE I to Appendix 'A'.

During this period the work will center around two projects:

- (1) Rat organs with similar rates of potassium exchange will be grouped in an attempt to show to what extent organ groups with a given exchange rate account for a single one of each of the several phases or 'breaks' seen in the plasma curve for disappearance of  $K^{42}$ .
- (2) Exchange rates in vivo will be compared with exchange rates in membranous muscle sheets and in liver and kidney slices in a Warburg flask.

"2. BUDGET - Second Period: July 1, 1952 - June 30, 1953

"a. The Contractor will furnish as its contribution to the project:

- (1) Salaries of staff members, including the Project Leader, and other personnel engaged in the work in excess of the Government's contribution under b(1) below.
- (2) Use of laboratory work space, and equipment, materials, and facilities needed for the project in excess of the Government's payment under b. below.
- (3) All clerical, administrative and overhead costs in excess of the Government's payment under b. below.

"b. The Government's payment as provided in section 1.b. of Article III, together with the sum of Sixteen Dollars and Seventy-Six Cents (\$16.76) (which amount the parties hereby agree shall be deemed to represent the amount by which the total of payments made by the Government for the initial contract period exceeds total expenditures for the same period) is to cover generally the following operating estimates:

(1) Salaries

Assistant (M.A. or equivalent in Chemistry)	\$3,200.00
Summer assistant (Junior or Senior Medical student)	<u>750.00</u>
Total Salaries	\$ 3,950.00

(2) Equipment

Special Kymograph for effluoyraphic technic	500.00
Scintillation counting adaptation to autoscaler	450.00
Chromotography Cabinet and accessories	325.00
Tracerlab Automatic counting Autoscaler and sample changer	<u>2,250.00</u>
Total Equipment	3,225.00

(3) <u>Expendable Material and Supplies</u>	600.00
(4) <u>Animals</u>	400.00
(5) <u>Isotopes and shipping</u>	<u>900.00</u>
Subtotal	\$ 9,375.00
(6) Overhead (@ 8%)	750.00
	<u>\$10,125.00</u>
Less Balance from First Period	<u>16.76</u>
TOTAL	\$10,108.24

"c. Items of property procured or manufactured by the Contractor during this period, title to which will vest in the Government (see Article VI);  
None."

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

WITNESSES:

BY: John R. Moore  
John R. Moore  
TITLE: Director, Contract Division, ORO

(Address)  
Echie Priestley  
New Orleans, Louisiana  
(Address)

TULANE UNIVERSITY  
BY: Clarence Scheps  
Clarence Scheps  
TITLE: Comptroller

ACCEPTANCE BY PROJECT LEADER

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

Walter S. Wilde  
Project Leader