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CONTRACT SE  
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Contract No. AT-(40-1)-1038  
Southern Research Institute  
Modification No. 9

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 3rd day of December, 1959, 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 SOUTHERN RESEARCH INSTITUTE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1038, dated June 22, 1950, providing for a study of the dosages of Carbon<sup>14</sup>-labeled sodium formate required to produce radiation effects; and

WHEREAS, the contract has been amended heretofore by Modifications Nos. 1 - 8; and

WHEREAS, the Commission desires to provide for additional research as more particularly described in TITLE XI of Appendix "A", to obtain reports thereon, and to effect certain other changes as are hereinafter more particularly described; and

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

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

1. The following new section "ll." is added to Article II:

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

2. The following new subsection "l. k." is added in Article III:

"k. In consideration of the performance of the additional work described in TITLE XI of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Five Thousand, Four Hundred Thirty-five Dollars (\$5,435.00), the Government will pay to the Contractor Ten Thousand, Two Hundred Forty-nine Dollars (\$10,249.00) (\$8,252.00 in new funds and \$1,997.00 agreed to be the balance remaining unexpended from previous work under this contract)."

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REPOSITORY Oak Ridge Operations  
COLLECTION Records Holding Area  
Documents 1944-94  
BOX No. Contracts AT-(40-1)-1011-1040  
2 of 2 Bldg 2714-H  
FOLDER Contract No. AT-(40-1)-1038  
Southern Research Institute

CERTIFIED A TRUE COPY  
BY Gene Brown

3. In subsections 2. a., 2. b. and 2. c. of Article III, delete the words "properly certified voucher" and substitute therefor the words "proper voucher."

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

5. Subsections a. and b. of section 4., Examination of Records, of Article IV are revised to read as follows:

- "a. The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under this contract, have access to and the right to examine any directly pertinent books, documents, papers and records of the Contractor involving transactions related to this contract.
- "b. The Contractor further agrees to include in all his subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term 'subcontract' as used in this clause excludes (1) purchase orders not exceeding \$2500; (2) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public; and (3) subcontracts or purchase orders for general inventory items not specifically identifiable with the work under this contract."

6. Article V is deleted in its entirety, and the following new Article V is substituted therefor:

"ARTICLE V - PROPERTY

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

described in section 2. b. of Appendix "A" shall vest or remain in the Government. Additional items may be added to such section 2. b. in writing without the necessity for a formal modification of the contract."

7. In Appendix "B", paragraph 4. is revised to read as follows:

"4. Disputes

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

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

8. In Appendix "B", subparagraph 7. b. is revised to read as follows:

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

9. In Appendix "B", the second sentence of paragraph 11., Covenant Against Contingent Fees, is revised to read as follows:

"For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee."

10. The following new paragraph "16." is added in Appendix "B":

"16. Placing Orders and Subcontracts with Firms Located in Areas of Substantial Labor Surplus

It is the policy of the Government to place supply contracts with suppliers who will perform such contracts substantially in areas of current labor surplus where this can be done at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts and purchase orders in accordance with this policy to the extent consistent with the efficient performance of this contract."

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

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: /s/ Richard B. Martin  
Acting Director  
Research and Development Division  
(Contracting Officer)

WITNESSES:

/s/ R. D. Osgood, Jr.  
R. D. Osgood, Jr., Asst. Director  
2000 Ninth Ave., So., Birmingham,  
(Address) Ala.

/s/ Andrew Wyper, Jr.  
Andrew Wyper, Jr., Business Mgr.  
2000 Ninth Ave., So., Birmingham,  
(Address) Ala.

SOUTHERN RESEARCH INSTITUTE

BY: /s/ W. M. Murray, Jr.  
TITLE: W. M. Murray, Jr., Director

ACCEPTANCE BY SENIOR INVESTIGATOR

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

/s/ Howard E. Skipper  
Senior Investigator  
H. E. Skipper, Assistant Director

## APPENDIX "A"

### TITLE XI

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

#### 1. PROGRAM

##### a. Scope and Plan of Approach:

The Contractor will continue studies on the retention in the body of radioactive Carbon-14 and the effects upon animal tissues, including the extension of these studies to bacteria. The program of work will be essentially as follows:

1. Biological Effects of Carbon-14 Incorporated into DNA of the Fetus.
  - a. Pregnant rats injected singly with 100 uc of sodium formate-C14 as a precursor of purines and thymine will be used and their progeny studied. Animals will be kept under close daily observation, will be autopsied, and thoroughly studied with regard to pathology. Animals now on hand which have been treated with C14 will be bred to see if there is any gross genetic damage.

##### 2. Experiments with Bacterial Systems.

- a. E. coli will be highly labeled during growth with a C14 precursor of DNA, the labeled cells will be preserved with suitable control cells on agar for periods of months. From time to time cultures will be made, and the number and nature of bacterial mutations will be studied by the Adelberg technique, by (a) culturing on minimal media, (b) treatment with penicillin to kill growing cells (the parent wild line), (c) treatment with penicillinase to destroy penicillin, (d) addition of enriched medium to promote growth of auzotrophs that did not grow on the minimal medium and hence were not killed by penicillin, and (e) isolation and characterization of the mutants. Isolation and characterization will include isolation of mutants with specific growth requirements. After labeling and storing the bacteria, the DNA of the labeled bacterial will be subjected to the effects of Carbon-14 radiation and transmutation, so it should be possible to study cumulative long-term effects.

3. Experiments with Cells in Tissue Culture.

a. Mammalian cells in tissue culture will be used for DNA labeling by utilizing  $C^{14}$  precursors. These cells will be stored on a long-term basis, and thawed cells will be studied in culture and clones will be isolated by the technique of Puck. Mutants judged by morphology, and effects of radiation, will be identified and studied.

2. BUDGET

a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>		\$ 7,850.00
Dr. H. E. Skipper (5% of time)	\$1,000.00	
Research Associates	4,450.00	
Research Assistants	2,100.00	
Animal Keeper	300.00	
(2) <u>Retirement Fund:</u>		290.00
(3) <u>Materials and Supplies:</u>		1,350.00
(4) <u>Overhead</u> (78.9% of Salaries and Wages):		<u>6,194.00</u>
	Total	\$15,684.00

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

TYPED ML  
PREPARED TL  
APPROVED

Contract No. AT-(40-1)-1038  
Southern Research Institute  
Modification No. 8

*[Handwritten signatures and initials]*  
FILED  
10 FEB 1959

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 10th day of December 1958, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and SOUTHERN RESEARCH INSTITUTE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1038, dated June 22, 1950, providing for a study of the dosages of Carbon<sup>14</sup>-labeled sodium formate required to produce radiation effects; and

WHEREAS, the contract has been amended heretofore by Modifications Nos. 1 - 7; and

WHEREAS, the Commission desires to provide for additional research as more particularly described in TITLE X of Appendix "A", to obtain reports thereon, and to effect certain other changes as are hereinafter more particularly described; and

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

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

1. The following new section "10." is added to Article II:  

"10. The period during which the work under this contract may be conducted is hereby extended to September 30, 1959."
2. The following new subsection "l. j." is added in Article III:  

"j. In consideration of the performance of the additional work described in TITLE X of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Four Thousand, Three Hundred Thirty-nine Dollars (\$4,339.00), the Government will pay to the Contractor Ten Thousand Dollars (\$10,000.00) (\$8,323.00 in new funds and \$1,677.00 agreed to be the balance remaining unexpended from previous work under this contract)."
3. The following new TITLE "X" is added in Appendix "A":

*[Handwritten signature]*

"TITLE X

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

"1. PROGRAM

"a. Scope and Plan of Approach:

The Contractor will continue work on the body retention and incorporation of Carbon-14 into the mammalian fetus, utilizing mice, in order to study body burden, distribution, and the incorporation of C-14-labeled formate, in relation to production of abnormalities or lethality. Evaluation of radiation effects from Carbon-14 will include (a) gross abnormalities in young, (b) life-span information, and (c) assay of tissues for the Carbon-14 content, and if possible the isolation of nucleic acid purines to determine Carbon-14 incorporation in nucleic acid.

"2. BUDGET

"a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>	\$ 7,055.00
Dr. H. E. Skipper (5% of time)	\$1,075.00
Research Associates	4,000.00
Assistant Chemist	1,980.00
(2) <u>Retirement Fund:</u>	204.00
(3) <u>Materials and Supplies:</u>	2,000.00
(4) <u>Overhead</u> (72% of salaries and wages):	5,080.00
	<u>TOTAL</u>
	\$14,339.00

"b. Items of property to be procured or manufactured by the Contractor, title to which will vest in the Government (see Article V): 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: /s/ Herman M. Roth  
HERMAN M. ROTH, DIRECTOR  
RESEARCH AND DEVELOPMENT DIVISION  
(Contracting Officer)

WITNESSES:

SOUTHERN RESEARCH INSTITUTE

\_\_\_\_\_

BY: /s/ W. M. Murray, Jr.

\_\_\_\_\_  
(Address)

TITLE: W. M. Murray, Jr., Director

\_\_\_\_\_

\_\_\_\_\_  
(Address)

ACCEPTANCE BY SENIOR INVESTIGATOR

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

/s/ Howard E. Skipper  
**Senior Investigator**

Howard E. Skipper, Assistant Director

Typed  
Prepared  
Approved  
Contract No. 7

Contract No. AT-(40-1)-1038  
Southern Research Institute  
Modification No. 7

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 3rd day of December, 1957, effective as of October 1, 1957, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and SOUTHERN RESEARCH INSTITUTE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1038, dated June 22, 1950, providing for a study of the dosages of Carbon <sup>14</sup>-labeled sodium formate required to produce radiation effects; and

WHEREAS, the Contract has been amended heretofore by Modifications Nos. 1-6; and

WHEREAS, the Commission desires to provide for additional research as more particularly described in TITLE IX of Appendix "A", to obtain reports thereon, and to effect certain other changes as are hereinafter more particularly described; and

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

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

1. The following new section "5." is added to Article I:

"5. The Contractor shall commence the work as soon as feasible, prosecute it with due diligence and submit the reports required hereunder as early as practicable, and not later than the dates specified in Appendix "C"."

2. The heading of Article II is changed from "TERM OF CONTRACT" to "SCHEDULE", and the following new section "9." is added to Article II:

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

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

"1. In consideration of the performance of the additional work described in TITLE IX of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Five Thousand, Three Dollars (\$5,003.00), the Government will pay to the Contractor the sum of Ten Thousand Dollars (\$10,000.00)."

BY [Signature]

4. Subsection 2. a. of Article III is revised to read as follows:

"a. On or before the date of commencement of the work on the project described in Appendix "A", the Government shall pay to the Contractor upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration; provided, however, that this payment shall be reduced by the amount of the balance, if any, agreed to be remaining unexpended from previous work under this contract."

5. Section 3. of Article III is revised to read as follows:

"3. Contract Renewal

"When renewal of the contract is desired, the Contractor shall submit to the Commission's Oak Ridge Operations Office a renewal proposal as outlined in Appendix "C" attached hereto. The Contractor and the Commission shall then negotiate as to the amounts each will contribute for the additional research activities to be performed, taking into consideration the actual costs incurred for the current work in comparison with the cost estimates in the contract, and, upon agreement, shall execute a formal modification of the contract."

6. The following new TITLE "IX" is added in Appendix "A":

"TITLE IX

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

"1. PROGRAM

"a. Scope and Plan of Approach:

The Contractor will continue the program, extending from the original purpose of determine of Carbon-14 binding and biological hazard of C-14 to studies upon (1) conservation of the nucleic acids in embryonic tissues, studying mice which have received C-14-labeled precursors of purines, (2) studies of embryonic tissues to determine binding of C-14 in the nucleic acids, followed by life period studies, (3) life-span studies to determine minimal level of C-14 causing demonstrable changes and possible long-range development of leukemia, and (4) other appropriate work to evaluate differences in behavior of the adult to C-14 compared with animals which received the radioactive isotope in compounds administered during foetal stages. Special emphasis in general will be on the hazard of C-14 when incorporated into the animal during early stages of development.

"2. BUDGET

"a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>	\$ 7,475.00 ✓
Dr. H. E. Skipper (10% of time)	\$1,980.00
Research Associates	3,695.00
Assistant Chemist	1,800.00
(2) <u>Retirement Fund:</u>	285.00
(3) <u>Materials and Supplies:</u>	1,500.00
(4) <u>Overhead (76.83% of Salaries and Wages):</u>	<u>5,743.00</u>
TOTAL	\$15,003.00 ✓

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

7. Paragraph 2. Publications of Appendix "B" is revised to read as follows:

"2. Publications

"It is intended that the Contractor shall have full freedom of publication of the results of the research under this contract and the Contractor is urged to disseminate the results of the work through customary scientific publication channels, except that "restricted data" as defined in the Atomic Energy Act of 1954 shall be governed by the provisions of Paragraph 3. of this Appendix "B".

"However, in order to insure that the public disclosure of such results will not adversely affect the patent interests of the Government provided in Paragraph 1. of this Appendix "B" entitled 'Patents' approval for such release shall be secured from the Commission prior to any such publication.

"All publications shall include a reference that the results were developed under a Commission sponsored project."

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

9. In subsection 2. c. of Article III, the word "term" is deleted, and the word "work" is substituted therefor.

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: /s/ David F. Cope

Acting Director

Research and Development Division  
(Contracting Officer)

WITNESSES:

SOUTHERN RESEARCH INSTITUTE

BY: /s/ W. M. Murray, Jr.

TITLE: W. M. Murray, Jr., Director

\_\_\_\_\_

\_\_\_\_\_

(Address)

\_\_\_\_\_

\_\_\_\_\_

(Address)

ACCEPTANCE BY SENIOR INVESTIGATOR

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

/s/ Howard E. Skipper

Senior Investigator

H. E. Skipper, Assistant Director

APPENDIX "C"

REPORTS AND PROPOSALS  
(FOR DIRECT AEC RESEARCH CONTRACTS)

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

NOTES:

All of the above should be addressed to:

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

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

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

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

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

UNITED STATES  
ATOMIC ENERGY COMMISSION

*BAH*  
*abm*  
*SL*  
*9/10*

Letter Supplement to  
Contract No. AT-(40-1)-1038  
September 13, 1956

Southern Research Institute  
Birmingham 5  
Alabama

Attention: Dr. W. M. Murray, Director

Gentlemen:

Reference is made to Modification No. 6 of your Contract No.  
AT-(40-1)-1038.

Pursuant to Paragraph 13. of said modification, you are hereby  
notified that your contract is extended through September 30,  
1957, and that the modifications provided for in said Paragraph  
13. are effective as of October 1, 1956.

Please acknowledge receipt of this notice in the space provided  
below and return the original to this office.

Very truly yours,

THE UNITED STATES OF AMERICA

BY: U. S. ATOMIC ENERGY COMMISSION

BY: *Herman M. Roth*  
Contracting Officer

Herman M. Roth  
Director  
Research and Development Division

RECEIVED:

Southern Research Institute

BY: /s/ Andrew Wyper, Jr.

Andrew Wyper, Jr.

TITLE: Business Manager

DATE: September 18, 1956

CERTIFIED A TRUE COPY

BY: \_\_\_\_\_

Contract No. AT-(40-1)-1038  
Southern Research Institute  
Modification No. 6

Contract No. AT-(40-1)-1038  
Southern Research Institute  
Modification No. 6

RECEIVED  
APPROVED  
6/20/56  
6/20/56

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 21st 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 SOUTHERN RESEARCH INSTITUTE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1038, dated June 22, 1950, providing for a study of the dosages of Carbon<sup>14</sup>-labelled sodium formate required to produce radiation effects; 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 in order to continue the research activities previously undertaken, as such extended program is described in TITLE VII of Appendix "A", and to effect certain other changes as are hereinafter more particularly described; and

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

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

1. The following new section "7." is added to Article II:

"7. The seventh period of performance for the research project covered by this contract will commence on July 1, 1956, and will end on September 30, 1956."

2. a. The following new subsection "l. g." is added in Article III:

"g. In consideration of the performance of the research activities described in TITLE VII of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of One Thousand, Five Hundred Nine and 67/100 Dollars (\$1,509.67), the Government will pay to the Contractor for the seventh period of performance the sum of Two Thousand, Seven Hundred Fifty-eight Dollars (\$2,758.00).

b. Section 2. of Article III shall not be in effect during the seventh period of performance, but shall be in effect thereafter in the event this contract is renewed. During the seventh period of performance only, the following section 2. of Article III shall be in effect:

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, the agreed consideration; provided,

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however, that this payment shall be reduced by the amount of the balance, if any, agreed to be remaining unexpended from the previous period of performance."

3. "ARTICLE VI - PURCHASE OF RADIOISOTOPES" is deleted in its entirety and the following new Article "VI" is inserted in lieu thereof:

"ARTICLE VI - PROCUREMENT OF MATERIAL AND SERVICES FROM  
COMMISSION FACILITIES; COMPLIANCE WITH COMMISSION REGU-  
LATIONS

"The Contractor shall comply with all licensing and other requirements of the Commission with respect to possession and use of by-product material, source material, and special nuclear material (as these terms are defined in the Atomic Energy Act of 1954), and may purchase or acquire such materials, irradiation services, other radioactive material, cyclotron time, etc. from the Commission or Commission facilities in accordance with applicable procedures."

4. The following new Article "VI-A" is added immediately following Article VI:

"ARTICLE VI-A - PURCHASE OF RADIOISOTOPES UNDER AN AEC  
DISCOUNT CERTIFICATE

"If any radioisotopes are budgeted in the outline of cost estimates at the full amount of the price as established by the Commission, but are purchased at less than such established prices under an AEC Discount Certificate issued to the Contractor (See: Title 10 C.F.R., Part 37), then any difference between the established price and the price so paid shall be paid by the Contractor to the Government or otherwise credited to the Government's account as the Contracting Officer may direct or approve. The requirement for a report to be submitted to the Commission indicating the purchases under the discount program is outlined in Appendix "C".

5. In subsections a. and b. of section 1. Patents of Appendix "B", the words "in the course of any of the work under this contract" are deleted, and the words "in the course of, in connection with, or under the terms of this contract" are inserted in lieu thereof in both subsections.

6. In Appendix "B", section 7. Nondiscrimination in Employment is deleted in its entirety and the following new section "7." is inserted in lieu thereof:

"7. Nondiscrimination in Employment

- "a. In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color or national origin. The aforesaid provision shall include but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of the nondiscrimination clause.
- "b. The Contractor further agrees to insert the foregoing provision in all subcontracts hereunder, except (i) subcontracts for standard commercial supplies or raw materials, (ii) subcontracts to be performed outside the United States where no recruitment of workers within the limits of the United States is involved, (iii) purchase orders on pocket-size forms similar to U. S. Standard Form 44, and (iv) subcontracts to meet other special requirements or emergencies, if recommended by the Committee on Government Contracts. In the case of purchase orders hereunder which do not exceed \$5,000, the last sentence of paragraph a. above may be omitted."

7. In Appendix "B", the following new section "15. Buy American Act" is added immediately following section 14. Foreign Travel:

"15. Buy American Act

"In the event this contract provides for the acquisition of articles, materials, or supplies by the Government, the following provision shall apply with respect to such items: The Contractor agrees that there will be delivered under this contract only such unmanufactured articles, materials and supplies (which term 'articles, materials and supplies' is hereinafter referred to in this clause as 'supplies') as have been mined or produced in the United States, and only such manufactured supplies as have been manufactured in the United States substantially all from supplies mined, produced, or manufactured, as the case may be, in the United States. The foregoing provisions shall not apply (i) with respect

to supplies exempted by the Commission from the application of the Buy American Act (41 U.S.C. 10a-d), (ii) with respect to supplies for use outside the United States, or (iii) with respect to the supplies to be delivered under this contract which are of a class or kind determined by the Commission not to be mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, or (iv) with respect to such supplies, from which the supplies to be delivered under this contract are manufactured, as are of a class or kind determined by the Commission not to be mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, provided that this exception (iv) shall not permit delivery of supplies manufactured outside the United States if such supplies are manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality."

8. In the list of reports on the first page of Appendix "C", the designation "5." is revised to read "6.", and the following new report is provided for as "5." of the list:

"Radioisotope Purchase Report	With renewal proposal if	Three"
	proposal is submitted, other-	
	wise on contract termination	

9. In Appendix "C", the following new paragraph is added immediately following the provision on page 3 entitled "13. Residual funds." :

"The radioisotopes purchase report shall list all radioisotopes included in the budget for the current period at the regular price established by the Commission, but which are purchased, or will be purchased during the current period, at a price less than the established price by utilizing the discount authorized by an AEC Discount Certificate issued to the Contractor. For each such purchase, the report shall state the price as established by the Commission, the price paid or to be paid using the discount, and the savings realized or to be realized. The report due on contract termination shall cover all such purchases actually made during the final period."

10. In Appendix "C", delete the words "Research and Medicine Division", and insert the words "Research and Development Division" in lieu thereof.

11. The following new "TITLE VII" is added in Appendix "A":

"TITLE VII

"July 1, 1956 - September 30, 1956

"This TITLE VII describes the research program and cost estimates agreed upon between the Commission and the Contractor for the seventh period of performance.

"1. PROGRAM

"a. Scope and Plan of Approach:

During the seventh period of performance, the Contractor shall continue work along the lines already underway; i.e., a study of the tissue radiation resulting from administration of additional C<sup>14</sup>-labeled precursors of nucleic acids. C<sup>14</sup>-labeled compounds available for this work and not hitherto studied are: adenylic acid (mixture of 2' - and 3' -isomers), adenosine-5' -phosphate, inosine-5'-phosphate, xanthylic acid (mixture of 2'-and 3'-isomers), adenosine, guanosine, inosine, and xanthosine. These compounds will be administered to mice, rats, and hamsters bearing tumors, and the radiation in each of several tissues resulting from the administration of these compounds will be calculated on the basis of the incorporation at six hours and the known turnover of the nucleic acid purines.

"2. BUDGET

"a. Outline of Cost Estimates for the Seventh Period:

(1) <u>Salaries and Wages:</u>		\$2,253.80
Dr. Howard E. Skipper	\$ 825.00	
Research Associate and Assistants	1,363.80	
Retirement Fund	65.00	
(2) <u>Materials and Supplies:</u>		300.00
(3) <u>Indirect Costs:</u>		<u>1,713.87</u>
	TOTAL	\$4,267.67

"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."

12. In Appendix "C", delete the date "April 1" wherever it appears, and insert the date "July 1" in lieu thereof in each instance.

13. Upon written notice by the Contracting Officer before September 30, 1956, this contract shall be automatically renewed, and modified in the following particulars, but in no others:

a. The following new section "8." will be added in Article II:

"8. The eighth period of performance for the research project covered by this contract shall commence on October 1, 1956, and will end on September 30, 1957."

b. The following new subsection "l. h." will be added in Article III:

"h. In consideration of the performance of the research activities described in TITLE VIII of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Six Thousand, Fifty-two and 67/100 Dollars (\$6,052.67), the Government will pay to the Contractor for the eighth period of performance the sum of Ten Thousand, Eight Hundred Fifty-one Dollars (\$10,851.00). Notwithstanding anything else in this contract, any balance remaining unexpended from the seventh period of performance shall be carried forward and considered as an unexpended balance for the eighth period of performance."

c. The following new "TITLE VIII" will be added in Appendix "A":

"TITLE VIII

"October 1, 1956 - September 30, 1957

"This TITLE VIII describes the research program and cost estimates agreed upon between the Commission and the Contractor for the eighth period of performance.

"1. PROGRAM

"a. Scope and Plan of Approach:

The Contractor shall continue the research program outlined in TITLE VII.

"2. BUDGET

"a. Outline of Cost Estimates for the Eighth Period:

(1) <u>Salaries and Wages:</u>		\$8,998.20
Dr. H. E. Skipper	\$3,300.00	
Research Associate and Assistants	5,455.20	
Retirement Fund	243.00	
(2) <u>Materials and Supplies:</u>		1,050.00
(3) <u>Indirect Costs:</u>		<u>6,855.47</u>
	TOTAL	\$16,903.67

"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."

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: s/ Herman M. Roth  
Director  
Research and Development Division  
(Contracting Officer)

WITNESSES:

\_\_\_\_\_  
\_\_\_\_\_  
(Address)

\_\_\_\_\_  
\_\_\_\_\_  
(Address)

CONTRACTOR SOUTHERN RESEARCH INSTITUTE

BY: s/ R. D. Osgood, Jr.

TITLE: Assistant Director

ACCEPTANCE BY SENIOR INVESTIGATOR

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

s/ Howard E. Skipper  
Senior Investigator

PREPARED  
J.P. 6/7/55  
JFM 6/7/55  
E. J. [unclear]

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 6th day of June, 1955, effective as of June 30, 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 SOUTHERN RESEARCH INSTITUTE (hereinafter called the "Contractor");

**WITNESSETH THAT:**

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1038, dated June 22, 1950, providing for a study by the Contractor of the dosages of Carbon 14-labelled sodium formate required to produce radiation effects; 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 VI 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)-1038 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 body retention of Carbon-14. 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.

CERTIFIED A TRUE COPY  
BY J. P. Nicholas

4. The work will be carried out by the Contractor under the direction of Dr. Howard E. Skipper as Senior Investigator.

ARTICLE II - TERM OF CONTRACT

6. The sixth 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

f. In consideration of the performance of the research activities described in TITLE VI of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Five Thousand, One Hundred Fifty-Seven Dollars (\$5,157.00), the Government will pay to the Contractor for the sixth period of performance the sum of Ten Thousand Dollars (\$10,000.00).

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: s/ Herman M. Roth

Director, Research & Medicine Division  
(Contracting Officer)

WITNESSES:

s/ Andrew Wyper, Jr.

938-111 Vt. Hts. Blv. Hgts.  
(Address)

s/ Madeleine Swartz

2311-10th Ave. So.  
(Address)

SOUTHERN RESEARCH INSTITUTE

BY: s/ W. M. Murray, Jr.

TITLE: Director

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.

s/ Howard E. Skipper  
Senior Investigator

APPENDIX "A"

TITLE VI

July 1, 1955 - June 30, 1956

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

1. PROGRAM

a. Scope and Plan of Approach:

Work by the Contractor will continue on incorporation of C-14 from various labelled compounds into genic chemicals of normal animal tissues and human tissues growing in animals, with view of the work being of value in setting limits on certain classes of C-14-labelled compounds in human tracer studies. It is hoped that information can be gained of value in identifying the nucleic acid metabolism characteristics of human tumor tissue. Further studies will be planned on human-tumor bearing animals with the following C-14 compounds:

C-14 Thymine	C-14 Adenylic Acid
C-14 Uracil	C-14 Thymidine
C-14 Orotic Acid	C-14 Serine
C-14 Aspartic Acid	C-14-4-Amino-5-imidazolecarboxamide
C-14 Guanylic Acid	C-14-Inosinic Acid

2. BUDGET

a. Outline of cost estimates for the sixth period:

(1) <u>Salaries and Wages:</u>	\$ 7,934.00
Dr. H. E. Skipper (10% s/HR of time)	\$2,000.00
Research Assistants	5,934.00
(2) <u>Retirement Fund:</u>	275.00
(3) <u>Materials and Supplies:</u>	1,050.00
(4) <u>Overhead:</u>	<u>5,898.00</u>
	TOTAL
	\$15,157.00

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.

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 F. R. 597.)
- (6) Subcontracts and Purchase Orders. Except as otherwise authorized in writing by the Contracting Officer, the Contractor shall insert provisions similar to the foregoing in all subcontracts and purchase orders under this contract.

- b. The continuation by the Contractor of work found to involve restricted data will be subject to mutual agreement of the Commission and the Contractor and shall be covered by a modification of this agreement.

#### 4. Disputes

Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. Within 30 days from the date of receipt of such copy, the Contractor may appeal by mailing or otherwise furnishing to the Contracting Officer a written appeal addressed to the Commission, and the decision of the Commission shall, unless determined by a court of competent jurisdiction to have been fraudulent, arbitrary, capricious, or so grossly erroneous as necessarily to imply bad faith, or is not supported by substantial evidence, be final and conclusive: Provided, That if no such appeal to the Commission is taken, the decision of the Contracting Officer shall be final and conclusive. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal.

Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

5. Safety, Health and Fire Protection

The Contractor shall take all reasonable precautions in the performance of the work under this contract to protect the health and safety of employees and of members of the public and to minimize danger from all hazards to life and property, and shall comply with all health, safety, and fire protection regulations and requirements (including reporting requirements) of the Commission. In the event that the Contractor fails to comply with said regulations or requirements of the Commission, the Contracting Officer may without prejudice to any other legal or contractual rights of the Commission, issue an order stopping all or any part of the work; thereafter a start order for resumption of work may be issued at the discretion of the Contracting Officer. The Contractor shall make no claim for an extension of time or for compensation or damages by reason of or in connection with such work stoppage.

6. Officials Not to Benefit

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

7. 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.

TYPED  
PREPARED  
APPROVED

Contract No. AT-(40-1)-1038  
Southern Research Institute  
Modification No. 4

RETURN TO  
CONTRACTOR

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 9th day of June, 1954, effective as of June 30, 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 SOUTHERN RESEARCH INSTITUTE (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1038, dated June 22, 1950, providing for a study by the Contractor of the dosages of Carbon 14-labeled sodium formate required to produce radiation effects; and

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

WHEREAS, the parties hereto desire to further 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 1946;

NOW, THEREFORE, the parties hereto do mutually agree that as of July 1, 1954, Contract No. AT-(40-1)-1038 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 a study of the chromosomal incorporation of Carbon-14 from variously-labeled organic compounds in animal tissues and human sarcoma grown in animals. 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

CERTIFIED A TRUE COPY

*Paul Nicholas*

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. Howard E. Skipper 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, 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

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 Six Thousand Three Hundred Ninety Dollars and Eighty-nine Cents (\$6,390.89), the Government will pay to the Contractor the sum of Twelve Thousand Dollars (\$12,000.00) (which sum includes an unexpended balance from the fourth period of performance in the amount of Three Thousand One Hundred Dollars (\$3,100.00) and new funds in the amount of Eight Thousand Nine Hundred Dollars (\$8,900.00)) for the fifth period of performance.

##### 2. Payment

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

ten (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 ten (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 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, 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 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:



APPENDIX "A"

TITLE V

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

1. PROGRAM

a. Scope and Plan of Approach

Studies will be performed on the chromosomal incorporation of carbon-14 from variously labeled organic compounds. In addition, extensive investigations will be made on localization of carbon-14 labeled compounds of the nucleic acid and protein precursor types in various tissues. These studies should provide information about rates of biological processes relating to growth with growth in normal and neoplastic tissues.

2. BUDGET

a. Outline of cost estimates for the fifth period:

(1) Salaries and Wages:	\$10,250.00
Biochemist, Biologists, and Physicist (all part time)	\$9,916.00
Employees Retirement Fund	340.00
(2) Materials and Supplies:	712.00
(3) Travel:	150.00
(4) Overhead:	<u>7,278.89</u>
GRAND TOTAL	\$18,390.89

b. Items of property to be procured or manufactured 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 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.

TYPED  
PREPARED  
APPROVED  
RETURN TO  
CONTRACT SECTION

Contract No. AT-(40-1)-1038  
Southern Research Institute  
Modification No. 3

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 17th day of June, 1953, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SOUTHERN RESEARCH INSTITUTE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1038, dated June 22, 1950, providing for a study by the Contractor of the dosages of Carbon 14-labelled sodium formate required to produce radiation effects, which contract was subsequently amended by Modifications Nos. 1 and 2 thereto; and

WHEREAS, the parties desire to further extend the term of the contract in order to continue the research project; 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)-1038 is modified in the following respects, but in no others:

1. In ARTICLE II - TERM OF CONTRACT, add the following new section 4:

"4. The fourth period of performance for the project will commence on July 1, 1953, and will end on June 30, 1954."

2. In ARTICLE III, section 1, Consideration, add the following new sub-section d:

"d. In consideration of the Contractor's performance of the research activities described in Title IV to Appendix 'A' and the Contractor's other contributions to the project, the Government will pay to the Contractor the sum of Six Thousand Eight Hundred and Fifty Eight Dollars (\$6,858.00) for the fourth period of performance. It is expressly agreed that the sum of Four Thousand Seven Hundred and Fifty Dollars (\$4,750.00), which has been previously paid to the Contractor by the Government but which will remain unexpended at the end of the third period of performance shall be applied to the costs of the fourth period."

*Glenn Brown*

3. In ARTICLE V - REPORTS, RECORDS AND INSPECTION, add the following new section 4:

"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."

4. In Appendix "A", add the following new Title IV:

"Title IV

"July 1, 1953 - June 30, 1954

"1. PROGRAM

"a. Scope and Plan of Approach

"Published reports and paper on the hazards involved in exposure to C-14 have appeared. It is planned to continue the studies of distribution, retention, and the metabolism of carbon-14-labelled compounds in the mouse. The information is required to estimate the allowable levels of C-14 organic compounds that might be introduced into the human body during the course of test treatments or in experimentation. A large number of C-14-labelled nucleic acid precursors and antagonists are being prepared and will be used in the retention studies. All the nucleic acid bases will be involved in this study, the known precursors, and five of the purine antagonists. Studies of chromosome metabolism will be made and correlated with possible radiation damage with the view of relating these results to what is known of nucleic acid metabolism.

"2. BUDGET - Fourth Period - July 1, 1953 - June 30, 1954

"a. The Contractor shall 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 payment 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 contribution 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 and the Contractor's balance as set out in ARTICLE III, section 1, subsection d. together amounting to Eleven Thousand Six Hundred and Eight Dollars (\$11,608.00) shall be applied generally in accordance with the following operating estimates:

(1) Salaries and Wages	
Biochemist (Part time)	\$4,500.00
Biologist (Full time)	3,410.00
Biologist (Part time)	1,000.00
Physicist (Part time)	<u>1,000.00</u>

\$9,910.00

(2) Contribution to Employees Retirement Fund		\$ 340.00
(3) Materials and Supplies		
Radioactive Compounds	\$ 300.00	
Glassware and Animals	<u>400.00</u>	
		700.00
(4) Travel		150.00
(5) Overhead		508.00
		<hr/>
	GRAND TOTAL	\$11,608.00

"c. Items of property procured or manufactured by the Contractor, title to which will vest in the Government (see ARTICLE VI): None."

5. In Appendix "B", GENERAL PROVISIONS, section 3, Disclosure of Information, subsection a, delete the third and fourth sentences thereof, and substitute therefor the following:

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

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

UNITED STATES OF AMERICA

BY: U. S. ATOMIC ENERGY COMMISSION

BY: /s/ Kenneth Kaschau  
Contracting Officer

SOUTHERN RESEARCH INSTITUTE

BY: /s/ W. M. Murray, Jr.

TITLE: Director

**WITNESSES:**

/s/ Eleanor L. Denham

535 Rutherford Circle, B'ham  
(Address)

/s/ Glynn P. Wheeler

125 E. Edgewood Dr., B'ham, Ala.  
(Address)

**Acceptance By Project Leader**

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

/s/ Howard E. Skipper  
Project Leader

PREPARED BY  
APPROVED BY  
*[Handwritten signatures and initials]*  
DATE  
1952

Contract No. AT-(40-1)-1038  
(Southern Research Institute)  
Modification No. 2

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 20<sup>th</sup> day of May, 1952, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter referred to as the "Commission"), and SOUTHERN RESEARCH INSTITUTE (hereinafter referred to as the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1038, dated June 22, 1950, for the performance by the Contractor of a study, commencing on July 1, 1950, of what dosages of Carbon 14 labeled sodium formate are required to produce radiation effects; and

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

WHEREAS, the parties desire to farther modify and extend the said contract in order to continue and expand the research activities undertaken during the first two periods of performance, 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)-1038, as heretofore modified, is hereby further 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, 1952, and will end on June 30, 1953."

2. Add the following new subsection 3. to Article III - Consideration:

"3. In consideration of the performance of the work described in TITLE III of Appendix 'A', the Government will pay to the Contractor the sum of Fifteen Thousand Ninety-Eight Dollars (\$15,098.00) for the third period of performance."

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

"TITLE III

"July 1, 1952 - June 30, 1953

"1. PROJECT

"a. Scope and Present Status

A reinvestigation of the long-term retention of  $C^{14}$  from bicarbonate carbon in bone and radiation calculations on dosages being received by the 'active volume' of bones is now under way. Excellent confirmation of previously reported results has been obtained up to one year after a single injection of 100  $\mu$ c of  $Na HC^{14}O_3$ .

The effects of high levels of  $C^{14}$  - formate (100 - 250 microcuries) on the development of spontaneous leukemia in Axm mice, on the life span of mice with Ak-4 leukemia, and on hematopoiesis in leukemia mice (Ak-4) have been investigated. Results obtained suggest that these levels (280-750 millicurie man-equivalents) have no detectable effects under the conditions employed.

Extension of studies on retention of  $C^{14}$  from various organic compounds has been possible. Limited data are now available on  $C^{14}$ -formyl folic acid and labeled guanidine.

"b. Plan of Approach

During the second period of performance the Contractor will place particular emphasis on the following phases of study:

- (1) A continuation of the present investigation on long-term retention of bicarbonate carbon in bone and more particularly the localization in bone shaft and the radiation dosages received by areas of localization.

- (2) An extension of data on localization in areas of soft tissues having rapid mitotic and metabolic activity (tissue autoradiogram studies.
- (3) An attempt to extend knowledge of  $C^{14}$ -localization on a cellular level. Using giant cells of the salivary gland of *Drosophila*, it is planned to attempt microautoradiograms (following administration of  $C^{14}$  compounds) to determine localization in cell nuclei, chromosomes, nucleoli, and cytoplasmic elements.

**"2. BUDGET: Third 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 contribution under b. below.

"b. The Government's payment as provided in section 1.c. of Article III, is to cover generally the following operating estimates:

(1) Salaries

Biochemist (part-time)	\$ 4,500.00
Biologist (full-time)	3,000.00
Biologist (full-time)	3,200.00
Physicist (part-time)	2,000.00

Total Salaries \$12,700.00

(2) <u>Contribution to employees' Retirement Fund</u>		430.00
(3) <u>Materials and Supplies</u>		
Radioactive compounds	300.00	
Glassware and animals	<u>400.00</u>	
Total Materials and supplies		700.00
(4) <u>Travel</u>		<u>150.00</u>
Sub-total		\$18,980.00
(5) Overhead ( @ 8%)		1,118.00
TOTAL		<u>\$15,098.00</u>

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

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

UNITED STATES OF AMERICA

WITNESSES:

Rollin D. Jorgensen  
Southern Research Institute  
 97 Road, Ala.

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: R. B. Stimpfonia  
 TITLE: Acting Director, Contract Division

Wesley L. Willis  
Southern Research Inst.  
 (Address)  
 B Ham, Ala.

SOUTHERN RESEARCH INSTITUTE

BY: W. J. Munnaff  
 TITLE: Director

ACCEPTANCE BY PROJECT LEADER

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

Howard E. Skipper  
 Project Leader

Contract No. AT-(40-1)-1038  
(Southern Research Institute)  
Modification No. 1

TYPED \_\_\_\_\_  
PREPARED 2/20  
APPROVED SA

*est  
mcc  
1/27/51*

SUPPLEMENTAL AGREEMENT

RETURN TO  
CONTRACT SECTION

THIS SUPPLEMENTAL AGREEMENT, entered into this 28th day of June, 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 SOUTHERN RESEARCH INSTITUTE (hereinafter called the "Contractor");

**WITNESSETH THAT:**

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1038, dated June 22, 1950, for the performance by the Contractor of a study, commencing on July 1, 1950, of what dosages of Carbon 14 - labeled sodium formate are required to produce radiation effects; and

WHEREAS, the parties desire to extend the term of the contract in order to continue and expand the research project undertaken during the initial period, as described in Title II of 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)-1038 is modified in the following particulars, but in no others:

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 project covered by this contract will commence on July 1, 1951, and will end on June 30, 1952."

2. Insert the sub-section letter "a," between the

the contractor for the performance of the work described in Title II of Appendix 'A', the Government will pay to the Contractor the sum of Four Thousand Eleven Dollars (\$4,011.00) for the second period of performance. It is expressly agreed that the sum of Six Thousand Nine Hundred Seventy Nine Dollars (\$6,979.00) which has been previously paid to the Contractor by the Government but which will remain unexpended at the end of the initial period of performance will be applied to the costs of the second period of performance."

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

## "TITLE II

July 1, 1954 to June 30, 1955

### 2. Health and Research Status

**The entrance** of carbon from carbon dioxide into both organic and inorganic metabolic pathways has been established. This fact, coupled with knowledge of the half life of  $C^{14}$  (approximately 5,000 years), has led to considerable concern regarding hazards to persons utilizing this most important isotope. Information as to the degree and duration of tissue exposure following the intake of compounds labeled with  $C^{14}$ , as well as knowledge of the effect of such exposures on organs, tissues and cells is required if the hazard accompanying the use of this isotope is to be properly assessed. In an attempt to obtain information which will be useful in a final assessment of the hazard involved in use of  $C^{14}$ , the Contractor has employed the following as guiding principles:

- (1) The two most probable sources for inadvertent  $C^{14}$  intake by the laboratory worker are  $C^{14}O_2$  and  $BaC^{14}O_3$ .

- (2) In view of (1) above, it becomes of greatest importance to determine the rate of turnover of  $C^{14}$  from  $C^{14}O_2$  in organs, tissues, and areas in tissues (down to cellular dimensions, since  $C^{14}$  emits beta rays that traverse but several cell diameters).
- (3) It is imperative to learn more about the retention of  $C^{14}$  from inspired  $BaC^{14}O_3$  under the most realistic conditions.
- (4) Since carcinogenesis is the greatest biologic danger from  $C^{14}$  ingestion, studies should be carried out to learn if reasonable doses of this isotope affect the onset of neoplastic diseases such as leukemia.

Research during the initial period of performance has added to the knowledge of body retention of  $C^{14}$ . This research suggests that long-term retention of  $C^{14}$  in bone, and more specifically, certain areas of the bone, is of greatest importance to the problem. Longer experiments (> one year) including quantitative  $C^{14}$  determination, area distribution as measured by autoradiograms, and radiation calculations in bone are most important. To date, the Contractor has obtained no information suggesting that fairly high levels of  $C^{14}$ -bicarbonate or  $C^{14}$ -formate hasten the onset of spontaneous leukemia in Akm mice. In fact, the findings to date are encouraging from the standpoint of the lack of danger to users of this isotope.

**nb. Plan of Approach**

During the second period (1) the longer term experiments on  $C^{14}$  turnover in bone will be continued, (2) attempts will be made to obtain more information on  $C^{14}$  localization (and local radiation) in bone and soft tissues by use of microscopic autoradiograms, (3) continued efforts to observe biologic effects from high levels of  $C^{14}$  will be made, (4) work will be continued on the fundamental processes of hematopoiesis using the blood smear autoradiogram technique, and (5) further work will be carried out toward determination

of the rate constants of the reactions involved in turnover of  $C^{14}$  from  $C^{14}O_2$  employing analog computers

"C" BUDGET - Second Period: July 1, 1951 - June 30, 1952

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

- (1) Use of laboratory work space and equipment and facilities on hand.
- (2) Clerical and administrative expenses and other general and administrative type costs, in excess of the overhead allowance in b (6) below.

"b. The Government will pay to the Contractor the sum of Four Thousand Eleven Dollars (\$4,011.00) which, together with the unexpended amount of Six Thousand Nine Hundred Seventy Nine Dollars (\$6,979.00) remaining from the Government's payments under the initial period of performance, will cover the Contractor's other expenses, estimated as follows, in the performance of the contract during the second period:

(1) Salaries

Biochemist (part time)	\$4,000.00
Biologist (full time)	2,800.00
Physicist (part time)	1,875.00
Physical chemist (part time)	500.00
(2) Contributions to employee's retirement fund	321.00
(3) Radioactive compounds	300.00
(4) Glassware and animals	230.00
(5) Travel	150.00
(6) Overhead	<u>811.00</u>
Total	\$10,990.00

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

IN WITNESS WHEREOF, the parties 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, Acting Manager, ORO  
TITLE: Contracting Officer

WITNESSES:

[Signature]  
917 So. 20th Street  
Birmingham, Ala.  
(Address)

SOUTHERN RESEARCH INSTITUTE

BY: W. M. Murray, Jr.  
WILLIAM M. MURRAY, JR.  
TITLE: Director

Willie J. Black  
917 So. 20th Street  
Birmingham, Ala.  
(Address)

ACCEPTANCE BY PROJECT LEADER

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

Howard E. Skipper  
Project Leader

# STATEMENT AND CERTIFICATE OF AWARD

No. AT-(40-1)-1038  
(Contract)  
Date June 22, 1950

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).

## 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 Bulek  
(Signature of contracting officer)

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

TYPED \_\_\_\_\_  
PREPARED 1  
APPROVED [Signature]

LUMP SUM  
RESEARCH CONTRACT

RETURN TO  
CONTRACT SECTION

Contract No. AT-(40-1)- 1038

THIS CONTRACT, entered into this 12 day of June, 19 50, by the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission") and SOUTHERN RESEARCH INSTITUTE (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 what dosages of carbon 14 - labeled sodium formate are required to produce radiation effects.

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. Howard E. Skipper

ARTICLE II - TERM OF CONTRACT

The initial period of performance for the research project covered by this contract will commence on July 1, 1950 and will end on June 30, 1951. 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 Seventeen-Thousand Nine Hundred Seventy-nine Dollars (\$ 17,979.00 ) 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:

### Div. of Biology and Medicine

#### Biology Activity #6400

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:

None

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

BY: *C. Vanden Bulck*  
C. Vanden Bulck  
Contracting Officer

SOUTHERN RESEARCH INSTITUTE  
(Contractor)

BY: *W.D.M. Murray*

TITLE: Director

WITNESSES:

*Leonard L. Bennett, Jr.*  
917 S. 20th St. B'ham, Ala.  
(Address)

*Mary Frances Woodruff*  
1630 Church Ave. S., B'ham, Ala.  
(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.

*Howard E. Skipper*  
Project Leader

1. PROJECT

- a. Title: Body Retention of Carbon 14.
- b. Project Leader: Howard B. Skipper.
- c. Term: Initial period - one year - (July 1, 1960 through June 30, 1961).
- d. Scientific Motivation: It has been determined that formate is a rather specific precursor for the 2- and 6-carbon atoms of the purine skeleton of uric acid in pigeons. Preliminary investigations have been carried out using  $C^{14}$  - labeled sodium formate. The aim of this research will be to study the hazards involved in the use of  $C^{14}$  under most stringent conditions and to study possible radiation effects therefrom.
- e. Method of Attack: In its studies to date, the institute has for purposes of safety used relatively low levels of activity and small animals. With the data now at hand regarding safety of experimentation with carbon 14, more stringent experiments are indicated. The plan is to carry out long-term retention studies utilizing carbon 14 - labeled sodium formate. The program may be divided into:
  - (1) Long-term over-all body  $C^{14}$  retention studies using  $HC^{14}OONa$ .
  - (2) Parallel nucleic acid and Na purine turnover studies.
  - (3) Investigation of acute toxic effects of high levels of carbon 14 (from formate) on mice. Pathological studies on tissues from these mice.
  - (4) Studies on the effects of high levels of formate activity on the pattern of deaths from spontaneous leukemia in adm mice. In this experiment it seems probable that high chromosome nucleic acid activity would provide a situation most conducive to carcinogenic or anti-leukemic action.
  - (5) Blood smear and marrow autoradiographs will be prepared from mice injected with  $HC^{14}OONa$  with the objective of obtaining fundamental information on hematopoiesis by following a nucleic acid precursor into nucleated marrow and peripheral blood cells.

2. SUBCONTRACT (Period July 1, 1960 through June 30, 1961)a. Contractor's Contribution:

- (1) Metabolism chambers, special strains of leukemia susceptible mice, oxidation equipment and gas phase counting equipment, laboratory space, and laboratory supplies including water, gas, air, and electricity.
- (2) General and administrative and clerical expenses.

b. Cost to Commission:

The lump sum paid by the Commission in the amount of \$17,979.00 will be used by the Contractor roughly as follows:

(1) Personnel

Biochemist -----	6,380.87
Organic Chemist -----	1,063.48
Physical Chemist -----	1,063.48
Physicist -----	1,118.70
Biologist -----	2,977.74
Contribution to employees' regular retirement fund -----	435.00

(2) Apparatus and Equipment

1 - Autoscaler -----	650.00
1 - Windowless flow counter -----	500.00
2 - Sample storage cabinet -----	50.00
1 - C14 reference source -----	8.00

(3) Expendable Supplies

Radioactive sodium formate -----	1,500.00
Other radioactive compounds -----	500.00
Glassware and miscellaneous -----	300.00

(4) <u>Travel</u> -----	250.00
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(5) <u>Overhead</u> -----	1,331.73
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TOTAL -----	<u>\$17,979.00</u>
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It is understood and agreed, by and between the parties hereto, that the Contractor in expending the funds provided by the Government shall be guided by, but not bound to conform to, the details of the program and budget set forth above.

- C. Items of property procured or manufactured by the contractor under this contract title to which will vest in the Government (See Article VI)

Quantity

None

Description

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## APPENDIX "B"

### GENERAL PROVISIONS

#### 1. Patents

a. Whenever any patentable invention or discovery is made or conceived by the Contractor or its employees in the course of any of the work under this contract, the Contractor shall furnish the Commission with complete information thereon; and the Commission shall have the sole power to determine whether or not and where a patent application shall be filed, and to determine the disposition of the title to and rights under any application or patent that may result. The 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

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

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

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

APPENDIX "C"

DISTRIBUTION AND SCHEDULING OF REPORTS  
FOR DIRECT AEC RESEARCH CONTRACTS

	Date	Copies and Distribution	Remarks
<b>CONTRACTOR REPORTS</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 and annually thereafter on the same date
2. Summary 200 words on scope and purpose	1. On completion of contract negotiation  2. With progress reports	Prepared as a part of contract negotiations  (2) Same as Progress Reports	1. Distribution by Oak Ridge Operations Office with Contract copies 2. Revised Summary to be included as part of Progress Report
3. Manuscripts	As available	(1) Patent Branch, Washington (1) Technical Library, Washington (1) Appropriate Washington Division (1) Oak Ridge Operations Office	
4. Reprints	As available	(2) Appropriate Washington Division (2) Technical Information Branch, Washington (1) Oak Ridge Operations Office	
5. Complete Scientific Report	On Contract Termination	(1) Same (1) as (1) for (1) manuscripts	Manuscripts prepared 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.

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.