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APPROVED *[Signature]*
PREPARED *[Signature]*
APPROVED *[Signature]*
[Other signatures]

Contract No. AT-(40-1)-1771
University of Arkansas
Modification No. 5

717170

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 29th day of October, 1958, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and the UNIVERSITY OF ARKANSAS (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1771, dated October 20, 1954, providing for investigation, development and evaluation of radioisotopes for teletherapy; and

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

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

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

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

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

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

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

"e. In consideration of the performance of the additional work described in TITLE V of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Twenty-seven Thousand, Four Hundred Thirteen and 52/100 Dollars (\$27,413.52), the Government will pay to the Contractor Ten Thousand Dollars (\$10,000.00)."

REPOSITORY Oak Ridge Operations
Records Holding Area
COLLECTION Documents 1954-94
Contracts AT(40-1)-1770-1773
BOX No. 1 of 3 Bldg. 2714A
Contract No. AT-(40-1)-1771
FOLDER Univ. of Arkansas

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

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

4. The following new TITLE "V" is added in Appendix "A":

"TITLE V

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

"1. PROGRAM

"a. Scope and Plan of Approach:

The Contractor will continue work on the development, evaluation and testing of teletherapy methods utilizing gamma irradiation from Cobalt-60, for the clinical evaluation of cancer patients so treated, especially with regard to the advantages, curative or palliative, over more conventional methods of therapy. The clinical studies will be carried out in cooperation with the Teletherapy Evaluation Program of the Medical Division, Oak Ridge Institute of Nuclear Studies. A system of grid therapy has been devised and put to use and this approach will be utilized on advanced cases where only palliation is possible. Included in the work will be an evaluation of results on cancer of the cervix.

"2. BUDGET

"a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>		\$24,705.00
Dr. Howard J. Barnhard (25% of time)	\$ 3,225.00	
Research Associates	7,300.00	
Research Assistants, Technician, Orderly, and Nurse	11,960.00	
Secretary	2,220.00	
(2) <u>Social Security:</u>		555.87
(3) <u>Equipment:</u>		1,000.00
(4) <u>Materials:</u>		2,000.00
(5) <u>Travel:</u>		1,000.00
(6) <u>Overhead (33% of salaries and wages):</u>		<u>8,152.65</u>
	TOTAL	\$37,413.52

"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:

/s/ Patricia Sangsten
Fayetteville, Arkansas
(Address)

/s/ Marion D. Harris
Fayetteville, Arkansas
(Address)

UNIVERSITY OF ARKANSAS

BY: /s/ J. E. Conrath
TITLE: Secretary, Board of Trustees

ACCEPTANCE BY SENIOR INVESTIGATOR

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

/s/ Howard J. Barnhard, M. D.
Senior Investigator

PREPARED *[Signature]*
APPROVED *[Signature]*
SUB *[Signature]*
AT-40-1-1771 *[Signature]*
UNIVERSITY OF ARKANSAS *[Signature]*
MODIFICATION NO. 4 *[Signature]*
CONTRACT SECTION *[Signature]*

Contract No. AT-(40-1)-1771
University of Arkansas
Modification No. 4

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 20th 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 the UNIVERSITY OF ARKANSAS (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1771, dated October 20, 1954, providing for investigation, development and evaluation of radioisotopes for teletherapy; and

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

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

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

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

1. The following new section "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 "4." is added to Article II:
"4. The period during which the work under this contract may be conducted is hereby extended to September 30, 1958."
3. The following new subsection "1.d." is added in Article III:
"d. In consideration of the performance of the additional work described in TITLE IV of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Twenty-Five Thousand, Eighty-nine and 92/100 Dollars (\$25,089.92), the Government will pay to the Contractor Ten Thousand Dollars (\$10,000.00)."

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

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

"3. Contract Renewal

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

7. The following new TITLE "IV" is added in Appendix "A":

"TITLE IV

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

"1. PROGRAM

"a. Scope and Plan of Approach:

The Contractor will continue work in teletherapy utilizing Cobalt-60 as a gamma source to further clinical investigations and evaluation of treated tumor patients with regard to the advantages, curative or palliative, of radiation treatment over conventional methods. The work will be a part of the cooperative program with ORINS entitled Teletherapy Evaluation, and will include body cavity measurements, other appropriate dosimetry, evaluation of grid therapy, and other therapy developments and approaches.

"2. BUDGET

"a. Outline of Cost Estimates:

(1) <u>Salaries and Wages:</u>		\$23,504.21
Dr. Howard J. Barnhard (25% of time)	\$ 3,125.00	
Research Associates	6,890.00	
Research Assistants, Technicians, Orderly, and Nurse	10,872.00	
Secretary	2,100.00	
Social Security	517.21	
(2) <u>Equipment:</u>		1,000.00
(3) <u>Material:</u>		2,000.00
(4) <u>Travel:</u>		1,000.00
(5) <u>Overhead (33% of Salaries):</u>		7,585.71
	TOTAL	\$35,089.92

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

8. 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 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."

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

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

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

WITNESSES:

UNIVERSITY OF ARKANSAS

/s/ Janice R. Yelton
Fayetteville, Ark.
(Address)

BY: /s/ J. C. Carlsson
J. C. Carlsson
TITLE: Secretary - Treasurer

/s/ Marion R. Harris
Fayetteville, Ark.
(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 J. Barnhart
Senior Investigator

APPENDIX "C"

REPORTS AND PROPOSALS
(FOR DIRECT AEC RESEARCH CONTRACTS)

	Date Due	Copies
1. Progress Report	"	Six
2. Renewal Proposal		Six
3. 200-word summary of purpose and scope with submittal date indicated thereon	Within 30 days after	Three
4. Complete Scientific Report	On contract expiration or termination	Six
5. Radioisotopes Purchase Report	With renewal proposal if proposal is submitted, otherwise on contract expiration or termination	Three
6. Brief reports or manuscripts may be submitted as desired by Senior Investigator		

NOTES:

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

The radioisotopes purchase report shall list all radioisotopes included in the budget at the regular price established by the Commission, but which are purchased, or will be purchased under the current budget, at a price less than the established price by utilizing the discount authorized by an AEC Discount Certificate issued to the Contractor. For each such purchase, the report shall state the price as established by the Commission, the price paid or to be paid using the discount, and the savings realized or to be realized. The report due on contract termination or expiration shall cover all such purchases actually made and not previously reported.

Contract No. AT-(40-1)-1771
University of Arkansas
Modification No. 3

APPROVED
PREPARED *TD*
APPROVED: *[Signature]*
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SUPPLEMENTAL AGREEMENT

RECEIVED
CONTRACT NO. 1771Q

THIS SUPPLEMENTAL AGREEMENT, entered into this 7th day of January, 1956, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and the UNIVERSITY OF ARKANSAS (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1771, dated October 20, 1954, providing for investigation, development and evaluation of radioisotopes for teletherapy; and

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

WHEREAS, the parties hereto desire to extend the term of the contract in order to continue the research activities previously undertaken, as such extended program is described in TITLE III 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 "3." is added to Article II:

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

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

"c. In consideration of the performance of the research activities described in TITLE III of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Twenty-two Thousand, One Hundred Forty-one and 65/100 Dollars (\$22,141.65), the Government will pay to the Contractor for the third period of performance the sum of Ten Thousand Dollars (\$10,000.00) (\$8,792.00 in new funds and \$1,208.00 agreed to be the balance remaining unexpended from the previous period of performance)."

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

BY Glice Dawson

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

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

"TITLE III

"October 1, 1956 - September 30, 1957

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

"1. PROGRAM

"a. Scope and Plan of Approach:

"The Contractor will continue work in teletherapy utilizing a Cobalt-60 source and teletherapy machine to further clinical evaluation of treatment methods, curative or palliative. Body cavity dose measurements will be made, and evaluation will be made of substances which might increase the absorbed dose to malignant tissues. Continuing studies will be made of means for recording of reactions and response to therapy as well as survival.

"2. BUDGET

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

(1) <u>Salaries and Wages:</u>		\$21,731.00
Dr. H. J. Barnhard (25% of time)	\$3,125.00	
Research Associate	2,700.00	
Research Assistants, Physicist, Technician, Orderly, and Nurse	13,806.00	
Secretary	2,100.00	
(2) <u>Social Security:</u>		434.62
(3) <u>Equipment:</u>		1,000.00
(4) <u>Materials:</u>		2,000.00
(5) <u>Travel:</u>		1,000.00
(6) <u>Overhead (27.5% of Salaries and Wages):</u>		<u>5,976.03</u>
	TOTAL	\$32,141.65

"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
Herman M. Roth, Director
Research and Development Division
(Contracting Officer)

WITNESSES:

/s/ Jeanette T. Davis
400 E. Maple, Fayetteville, Ark.
(Address)

/s/ Marion R. Harris
Fayetteville, Ark.
(Address)

UNIVERSITY OF ARKANSAS

BY: /s/ T. C. Carlson

TITLE: Secy - Treas

ACCEPTANCE BY SENIOR INVESTIGATOR

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

/s/ H. J. Barnhard, M. D.
Senior Investigator

PREPARED BY
[Handwritten signature]
APR 21 1956
APR 21 1956
APR 21 1956

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 26th day of March, 1956, effective as of October 1, 1955, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), and the UNIVERSITY OF ARKANSAS (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1771, dated October 20, 1954, providing for investigation, development and evaluation of radioisotopes for teletherapy; and

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

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

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

NOW, THEREFORE, the parties hereto do mutually agree that as of October 1, 1955, Contract No. AT-(40-1)-1771 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 investigation, development and evaluation of radioisotopes for teletherapy. 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.

[Handwritten signature: Jenkins Nicholson]

4. The work will be carried out by the Contractor under the direction of Dr. H. J. Barnhard as Senior Investigator.

ARTICLE II - TERM OF CONTRACT

2. The second period of performance for the research project covered by this contract will commence on October 1, 1955, and will end on September 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

b. In consideration of the performance of the research activities described in TITLE II of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Twenty-two Thousand, One Hundred Thirty-eight and 65/100 Dollars (\$22,138.65), the Government will pay to the Contractor for the second period of performance the sum of Twelve Thousand, Six Hundred Fifty Dollars (\$12,650.00) (\$5,766.00 in new funds and \$6,884.00 agreed to be the balance remaining unexpended from the previous period of performance).

2. Payment

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

b. On or before the expiration of six months from the date of commencement of the project, the Government shall pay to the Contractor, upon submission by the Contractor of a properly certified voucher, 45 per cent of the agreed consideration; provided, however, that this payment shall be reduced by the amount by which the balance agreed to be remaining unexpended from the previous period of performance exceeds 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 - PROCUREMENT OF MATERIAL AND SERVICES FROM COMMISSION FACILITIES; COMPLIANCE WITH COMMISSION REGULATIONS

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

ARTICLE VII - 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".

ARTICLE VIII - GENERAL PROVISIONS

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

ARTICLE IX - 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 & Development Division
(Contracting Officer)

WITNESSES:

s/ Norma Leslie

Fayetteville, Arkansas
(Address)

s/ J. R. Carney

Fayetteville, Ark.
(Address)

UNIVERSITY OF ARKANSAS

BY: s/ T. C. Carlson

TITLE: Secretary-Treasurer

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/ H. J. Barnhard, M.D.
Senior Investigator

APPENDIX "A"

TITLE II

October 1, 1955 - September 30, 1956

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

1. PROGRAM

a. Scope and Plan of Approach:

The Contractor proposes to continue work in teletherapy using gamma radiations from a Cobalt-60 source, to further clinical evaluation of cancer patients so treated, particularly with view of studying the advantages, curative or palliative, of this method of treatment over conventional methods. Means have been devised for systematic recording of unusual responses and the effects upon lesions in conjunction with follow-up procedures previously reported. Cooperation is with the Teletherapy Evaluation Program of the Oak Ridge Institute of Nuclear Studies, Medical Division.

2. BUDGET

a. Outline of Cost Estimates for the Second Period:

(1) <u>Salaries and Wages:</u>		\$23,755.80
Dr. H. J. Barnhard (25% of time)	\$ 3,000.00	
Research Associate	2,700.00	
Research Assistants, Technicians, Orderly, etc.	16,190.00	
Secretary	1,400.00	
Social Security	465.80	
(2) <u>Materials and Supplies:</u>		2,000.00
(3) <u>Telecobalt Unit General Expenses:</u>		1,500.00
(4) <u>Travel:</u>		1,000.00
(5) <u>Overhead (27.5% of Salaries and Wages):</u>		<u>6,532.85</u>
	TOTAL	\$34,788.65

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

2. Publications

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

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.

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

4. Disputes

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

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

5. Safety, Health and Fire Protection

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

6. Officials Not to Benefit

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

7. Covenant Against Contingent Fees

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

8. Convict Labor

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

9. Termination

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

10. Eight-Hour Law

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

11. Nondiscrimination in Employment

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

12. Definitions

As used in this contract:

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

13. Fellowships

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

14. Foreign Travel

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

15. Buy American Act

In the event this contract provides for the acquisition of articles, materials, or supplies by the Government, the following provision shall apply with respect to such items: The Contractor agrees that there will be delivered under this contract only such unmanufactured articles, materials and supplies (which term "articles, materials and supplies" is hereinafter referred to in this clause as "supplies") as have been mined or produced in the United States, and only such manufactured supplies as have been manufactured in the United States substantially all from supplies mined, produced, or manufactured, as the case may be, in the United States. The foregoing provisions shall not apply (i) with respect to supplies exempted by the Commission from the application of the Buy American Act (41 U.S.C. 10a-d), (ii) with respect to supplies for use outside the United States, or (iii) with respect to the supplies to be delivered under this contract which are of a class or kind determined by the Commission not to be mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, or (iv) with respect to such supplies, from which the supplies to be delivered under this contract are manufactured, as are of a class or kind determined by the Commission not to be mined, produced, or manufactured, as the case may be, in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality, provided that this exception (iv) shall not permit delivery of supplies manufactured outside the United States if such supplies are manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.

APPENDIX "C"

REPORTS AND PROPOSALS
(FOR DIRECT AEC RESEARCH CONTRACTS)

	Date Due	Copies
1. Progress Report	July 1	Six
2. Renewal Proposal	July 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. Radioisotopes Purchase Report	With renewal proposal if proposal is submitted, otherwise on contract termination	Three
6. Brief reports or manuscripts may be submitted as desired by investigator		

NOTES:

All of the above should be addressed to:

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

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

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

1109685

Name of Institution

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 amounts requested from the AEC, and a statement of any other sponsors of the project with the amounts contributed by each. The proposal should be signed by the Senior Investigator and endorsed by a responsible administrative officer of the institution.
12. Statement of Current Expenditures. A current statement of its expenditures for the project, and an estimate of expenses to be incurred 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.

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.

Contract No. AT-(40-1)-1771
University of Arkansas
Modification No. 1

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SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into this 30th day of December, 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 UNIVERSITY OF ARKANSAS (hereinafter called the "Contractor");

WITNESSETH THAT:

WHEREAS, the Government and the Contractor entered into Contract No. AT-(40-1)-1771, dated October 20, 1954, providing for investigation, development and evaluation of radioisotopes for teletherapy; and

WHEREAS, the parties hereto desire to change the amount of money to be paid by the Government for the Cobalt 60 source and to make certain other changes; hereinafter set out; 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 Contract No. AT-(40-1)-1771 is modified in the following particulars, but in no others:

1. In ARTICLE III, subsections 1. a. (2) and 2. d., the words and figures "Three Thousand Five Hundred Dollars (\$3,500.00)" and "\$3,500.00" are deleted and the words and figures "Nine Thousand Dollars (\$9,000.00)" and "\$9,000.00" are substituted respectively therefor.

2. In Appendix "A", TITLE I, the item "Cobalt 60 Source (450 to 600c) \$3500.00" in Section 2 a. (2) is changed to read "Cobalt 60 Source \$9000.00" and the budget total is changed to read "\$59,881.00".

3. In Appendix "B" General Provisions, the following changes are made:

a. In Section 1 Patents, paragraph b., there are inserted immediately before the words "the Atomic Energy Act of 1954", the words "the Atomic Energy Act of 1946 or".

b. Section 7, Anti-Discrimination, is deleted and the following substituted therefor:

"7. Anti-Discrimination. 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; lay-off 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 non-discrimination clause.

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

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

UNITED STATES OF AMERICA

BY: UNITED STATES ATOMIC ENERGY COMMISSION

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

WITNESSES:

UNIVERSITY OF ARKANSAS

Fors L. Gessner
Fayetteville, Ark.
(Address)

BY: I. L. Larkins
TITLE: Secy. Treas.

Jan Cannon
Fayetteville, Ark.
(Address)

ACCEPTANCE BY SENIOR INVESTIGATOR

I have read the foregoing Supplemental Agreement and the contract amended thereby and agree to be bound by the provisions of these documents.

Meschau, M.D.
Senior Investigator

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APPROVED [initials]
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UNITED STATES
ATOMIC ENERGY COMMISSION

LUMP SUM
RESEARCH CONTRACT

Contract No. AT-(40-1)-1771

THIS CONTRACT, entered into this 20th day of October, 1954, by the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission") and the UNIVERSITY OF ARKANSAS (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 investigation, development and evaluation of radioisotopes for teletherapy. 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. Isadore Meschan as Senior Investigator.

ARTICLE II - TERM OF CONTRACT

1. The initial period of performance for the research project covered by this contract will commence on October 1, 1954, and will end on September 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

- a. In consideration of the performance of the research activities described in TITLE I of Appendix "A", and the Contractor's agreement to support that work in the estimated amount of Forty Thousand, Eight Hundred Eighty-One Dollars (\$40,881.00), the Government will pay to the Contractor for the

Frank Richardson

first period of performance:

(1) The sum of Ten Thousand Dollars (\$10,000.00) to be paid as provided in 2. a., b., and c. below; and

(2) Not in excess of Three Thousand, Five Hundred Dollars (\$3,500.00), to be paid as provided in 2. d. below, for the costs of a Cobalt 60 source and of necessary packaging and handling involved in its delivery; provided that such amount may by mutual agreement be increased or decreased to reflect the actual costs incurred.

2. Payment

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

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

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

d. Upon submission of a properly certified voucher supported by a copy of the invoice for the Cobalt 60 source and information as to related packaging and handling costs, the Government will pay to the Contractor the amount stated in such voucher but not to exceed \$3,500.00 or such revised sum as may by mutual agreement be substituted in 1. a. (2) above.

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

IN WITNESS WHEREOF, the parties hereto have executed this contract 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/ Lois C. Gease

Fayetteville, Ark.
(Address)

s/ Diane Fair

Fayetteville, Ark.
(Address)

UNIVERSITY OF ARKANSAS

BY: s/ T. C. Carlson

TITLE: Secy-Treas.

ACCEPTANCE BY SENIOR INVESTIGATOR

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.

s/ I. Meschan, MD

Senior Investigator

APPENDIX "A"

TITLE I

October 1, 1954 - September 30, 1955

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

1. PROGRAM

a. Scope and Plan of Approach

The availability of high-energy sources of gamma radiation has allowed the development of new types of teletherapy apparatus which offer considerable improvement over the radium packs currently being used in some installations. The newer teletherapy machines may also offer further advantages over x-ray generators, both from the standpoint of cost of operation and also from the standpoint of monochromatic radiation.

A systematic study of the adaptation of these new types of apparatus to clinical problems has been organized under the guidance of a large group of medical schools in conjunction with the Teletherapy Board, Oak Ridge Institute of Nuclear Studies. The investigation, for which the present contract provides a part, will encompass a large number of patients treated in a pattern set forth by the Teletherapy Board so that statistical evaluation of various treatments may be made in a relatively short time. One-fourth of the use of the machine provided for in this contract will follow the central plan of the Teletherapy Board while three-fourths of the use will be on experimental problems decided upon by the Department of Radiology of the University of Arkansas. The records of the use of the machine on both individual and Teletherapy Board problems will be reported to a central committee for evaluation of various methods of treatment.

2. BUDGET

a. Outline of cost estimates for the first period:

(1) Salaries & Wages:		\$13,240.00
Dr. I. Meschan (15% of time)	\$2,700.00	
Research Associate	7,000.00	
Research Assistant	3,540.00	

(2) Equipment:		\$35,500.00
Teletherapy Machine and Installation	\$30,000.00	
Cobalt 60 (2 curie instal- lation)	2,000.00	
Cobalt 60 Source (450 to 600 c)	3,500.00	
(3) Materials and Indirect Costs (27.5% of Direct Salaries)		3,641.00
	TOTAL	<u>\$54,381.00</u>

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 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 judgement of the Commission.
- b. No claim for pecuniary award under the provisions of 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. 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 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 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 1954. 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 1954 and employed in this section shall mean "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. 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 calenday 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 wroked 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	July 1	Six
2. Renewal Proposal	July 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 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.