

SUPPLEMENTAL AGREEMENT  
BETWEEN  
THE UNIVERSITY OF WASHINGTON  
AND  
THE U. S. NUCLEAR REGULATORY COMMISSION

THIS SUPPLEMENTAL AGREEMENT, effective the 1st day of May, 1980, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), as represented by the UNITED STATES NUCLEAR REGULATORY COMMISSION (hereinafter referred to as the "Commission"), and The University of Washington (hereinafter referred to as the "Contractor"),

WITNESSETH THAT:

WHEREAS, the parties desire to modify Contract No. NRC-04-78-245 as hereinafter provided, and this supplemental agreement is authorized by law, including the Energy Reorganization Act of 1974, as amended, and the Atomic Energy Act of 1954, as amended.

NOW, THEREFORE, said contract is hereby modified as follows:

1. Appendix A, attached to this supplemental agreement and made a part hereof, supersedes Modification No. 3 and provides for the research to be performed by the Contractor during the contract period specified therein.
2. In Article II - The Period of Performance, the date "September 30, 1982" is substituted for the date "April 30, 1980".
3. In Article III - Consideration, the sum "\$ 262,252.00" is substituted for the sum "\$207,252.00".

IN WITNESS WHEREOF, the parties have executed this document.

UNITED STATES OF AMERICA

BY:

[Signature]  
Kellogg V. Morton  
Contracting Officer  
(title)

Nuclear Regulatory Commission

THE UNIVERSITY OF WASHINGTON

BY:

[Signature]  
J. F. Ryan, Vice President for  
Business and Finance August 4, 1980  
(title)

I, Barbara J. Zimmerman, certify that I am the  
(attester)

Secretary, Board of Regents of the Contractor named  
(title)

under this document; that J. F. Ryan  
(signatory)

who signed this document on behalf of said Contractor was then  
Vice President for Business and Finance of said Contractor; that  
this document was duly signed for and on behalf of said Contractor by  
authority of its governing body and is within the scope of its legal  
powers.

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

[Signature]  
Barbara J. Zimmerman

(SEAL)

CONTRACTOR: THE UNIVERSITY OF WASHINGTON

APPENDIX A

For the Contract period May 1, 1980 through September 30, 1982

Article A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

(a) The unclassified scope of work under this contract entitled "Quantitative Classification of Two-Phase Flow Regimes Using Global and Local Neutronic Perturbations II" is as follows:

1. Conduct extensive parameter variation in the UWNR two-phase flow classification experiment.
2. Perform analytical modelling of two-phase flow stochastic characteristics.
3. Plan and design a local/global two-phase flow experiment in PBF.
4. Analyze LOFT data to investigate usefulness of SPNDs and fission chambers for in-core flow characterization.
5. Investigate auxiliary/complementary techniques.

(b) The Principal Investigator expects to devote the following approximate amount(s) of time to the contract work:

Dr. R. W. Albrecht  
100% of his time 2 mo. summer, 1980.  
100% of his time 2 mo. summer, 1981.  
100% of his time 2 mo. summer, 1982.  
20% of his time 9 mo. academic year 1980-81.  
20% of his time ½ mo. academic year 1981.  
20% of his time 8½ mo. academic year 1981.  
20% of his time ½ mo. academic year 1982.

ARTICLE A-II WAYS AND MEANS OF PERFORMANCE

(a) Items for which support will be provided as indicated in A-III, below

- |   |                      |
|---|----------------------|
| (1) Salaries and Wages  | <u>\$ 206,952.00</u> |
| (2) Equipment to be purchased or fabricated by the Contractor | <u>\$ 20,288.00</u>  |

Items in excess of \$1,000.00

Option 265 for HP5451B Fourier Analyzer:  
 Model 7970E Subsystem, 9 Track, 45 ips, 1600 BD. . . \$ 11,800.00

Cabinet for Magnetic Tape System Option 130,  
 Single Bay, 56-inch . . . . . \$ 2,700.00

13401A Record/Reproduce Heads (1"). . . . . \$ 2,500.00

(3) Travel

(i) Domestic	\$ 9,600.00
(ii) Foreign	\$ - 0 -

(4) Other direct costs including fringe benefits.

(5) Indirect costs based on a predetermined rate of 57 percent applicable to salaries and wages.

(b) Items, if any, significant to the performance of this contract, but excluded from computation of Support Cost and from consideration in proportioning costs:

NONE

(c) Time or effort of Principal Investigator(s) including indirect costs and fringe benefits contributed by Contractor but excluded from computation of Support Cost and from consideration in proportioning costs: Professor Robert W. Albrecht -

20% of his time for the nine-month period in academic year 1980-81  
 20% of his time for the 1/2 month academic year 1981  
 20% of his time for 8 1/2 month academic year 1981  
 Article A-III 20% of his time for 1/2 month academic year 1982

The total estimated cost of items under A-II(a) above for the contract period stated in this Appendix A is \$ 422,778.00; the Commission will pay 100 percent of the actual costs of these items incurred during the contract period stated in this Appendix A, subject to the provisions of Article III and Article B-XXVIII. The estimated NRC Support Cost for the contract period stated in this Appendix A is \$ 422,778.00 .

The estimated NRC Support Cost is funded as follows:

(a) Estimated unexpended balance from prior period(s)	\$ - 0 -
(b) New funds for the current period	\$ 55,000.00
(c) Funds to be provided subject to their availability in FY 81	\$234,054.00
(d) Funds to be provided subject to their availability in FY 82	\$133,724.00
(e) The new funds being added in A-III(b) constitute the basis for advance payments provided under Article B-X.	