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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DEC 07 1998

Purdue Research Foundation
ATTN: Edie Doland
1063 Hovde Hall, Purdue University
West Lafayette, IN 47907-1063

Dear Ms. Doland:

SUBJECT: TASK ORDER NO. 5 MODIFICATION NO. 6 ENTITLED "SUBCOOLED
BOILING AT LOW PRESSURE" UNDER CONTRACT NO. NRC-04-97-046

In accordance with Section G.4, Task Order Procedures, of the subject contract, this letter definitizes Task Order No. 5 Modification No. 6. This effort shall be performed in accordance with the enclosed Statement of Work.

The period of performance for this task order is changed to run from January 14, 1998 through November 30, 2000. The total estimated cost for full performance of this task order is increased by \$149,950 from \$301,210 to \$451,160. \$149,950 in incremental funding is hereby allotted to Task Order No. 5. This action changes the total cumulative funds obligated for performance of this task order from \$296,960 to \$466,910. The Contractor shall not incur costs for this task order which exceed the cumulative obligated amount of \$466,910. All other terms and conditions of Task Order No. 5 remain unchanged.

Accounting data for Task Order No. 5 Modification No. 6 is as follows:

B&R No.: 06015110135
Job Code: W6749
BOC Code: 252A
RES ID: RES-C00-330
Appropriation No.: 31X0200
Obligated Amount This Action: \$149,950
FY 98 Obligated Amount: \$151,960
FY 99 Obligated Amount: \$145,000
FY 00 Obligated Amount: \$149,950
Total Cumulative Obligations: \$466,910

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Contract No. NRC-04-97-046
Task Order No. 5 Mod 6
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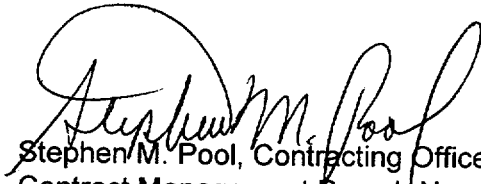
The issuance of this task order does not amend any terms or conditions of the subject contract. Your contacts during the course of this task order are:

Technical Matters: James Han, Project Officer (301) 415-6773

Contractual Matters: Stephen Pool, Contract Specialist (301) 415-8168


Please indicate your acceptance of this task order by having an official, authorized to bind your organization, execute three copies of this document in the space provided and return two copies to the Contract Specialist. You should retain the third copy for your records.

Sincerely,


Stephen M. Pool, Contracting Officer
Contract Management Branch No. 1
Division of Contracts and
Property Management

Enclosure:
As stated

ACCEPTED: TASK ORDER NO. 5 Mod 6


NAME

DEC 17 1999

DATE

Peter E. Dunn
Assistant Vice President for Research

TITLE

Modification (No. ¹⁰~~8~~) to the Statement of Work of Task Order #5, "Subcooled Boiling at Low Pressure," under Contract # NRC-04-97-046 and Job Code W6749, "Thermal-Hydraulic Research"

Additional Work Requirements

Task 7. Perform 9-Rod Bundle Tests and Develop Models

This task performs approximately 90 tests in the 9-rod (3x3 electrically-heated rods with 36" uniformly-heated length) rod bundle, which was designed and constructed under Task 5. Measurements for each test include fluid pressure and temperatures, mass flow rate in the bundle, heater rod surface temperatures, nucleation site density, bubble release frequency, bubble size at departure, condensation heat transfer rate for detached bubbles, bubble number density, bubble velocity, and void fraction.

Test conditions will cover a broad spectrum of key parameters - pressure in the range of 1 to 5 bar (1 bar = 14.5 psia), mass flux in the range of 300 to 1000 kg/m²s, fluid subcooling at bundle inlet in the range of 0 to 50 °C, and heater rod wall heat flux in the range of 20 to 80 W/cm².

Data should be analyzed after the performance of each test or a group of similar tests. Based on the data obtained (including any other relevant data available in the literature), analytical models on wall heat transfer partitioning, interfacial heat transfer, and interfacial friction will be developed for subcooled boiling at low pressure.

Complete a NUREG/CR report to present test results and discuss the models developed; comparison with other relevant models/correlations in the literature should also be included in the report. Provide electronically to NRC all the test data in the NRC databank format.

Estimated Completion Date: November 30, 2000

Estimated Level of Effort: 20 staff months

Task 8. Provide Technical Support

This task provides technical support to NRC. The work includes attending meetings, making presentations, reviewing technical reports, and conducting additional tests as requested by the NRC Technical Monitor.

Estimated completion date: November 30, 2000

Estimated level of effort: 1 staff month

Meetings and Travel:

The contractor will attend two meetings at the NRC office in Rockville, Maryland. For planning purpose, each meeting will involve two people and last for two days. The contractor will be also allowed to attend a domestic technical meeting sponsored by ANS, ASME or other national organizations. However, any travel must be approved in advance by the NRC Technical Monitor.