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|---|--|---|---|--|--|
| NRC FORM 173<br>(2-78)  |  | U.S. NUCLEAR REGULATORY COMMISSION  |   | ORDER NUMBER<br>60-79-195  |  |
| <b>STANDARD ORDER FOR DOE WORK</b>  |  |   |   | DATE<br>JUL 05 1979  |  |
|   |  |   |   | ACCOUNTING CITATION<br>APPROPRIATION SYMBOL<br>31X0200.609   |  |
| ISSUED TO: (DOE Office)<br>Richland Operations Office   |  | ISSUED BY: (NRC Office)<br>Division of Safeguards, Fuel<br>Cycle & Environmental Research |   | B&R NUMBER<br>60193004   |  |
| PERFORMING ORGANIZATION AND LOCATION<br>Pacific Northwest Laboratory  |  |   |   | FIN NUMBER<br>B2281-9  |  |
| FIN TITLE<br>Decontamination Effects on Radwaste Systems  |  |   |   | WORK PERIOD - THIS ORDER<br>FIXED <input type="checkbox"/> ESTIMATED <input checked="" type="checkbox"/><br>FROM: 5/1/79 TO: 9/30/79 |  |
| <b>OBLIGATION AVAILABILITY PROVIDED BY:</b>   |  |   |   |  |  |
| A. THIS ORDER   |  |   |   | \$ 34,000  |  |
| B. TOTAL OF ORDERS PLACED PRIOR TO THIS DATE WITH THE PERFORMING ORGANIZATION UNDER THE SAME "APPROPRIATION SYMBOL" AND THE FIRST FOUR DIGITS OF THE "B&R NUMBER" CITED ABOVE   |  |   |   | \$ 10,084,100  |  |
| C. TOTAL ORDERS TO DATE (TOTAL A & B)   |  |   |   | \$ 10,118,100  |  |
| D. AMOUNT INCLUDED IN "C" APPLICABLE TO THE "FIN NUMBER" CITED IN THIS ORDER.   |  |   |   | \$ 75,000  |  |
| <b>FINANCIAL FLEXIBILITY:</b><br><input type="checkbox"/> FUNDS WILL NOT BE REPROGRAMMED BETWEEN FINs. LINE D CONSTITUTES A LIMITATION ON OBLIGATIONS AUTHORIZED.<br><input checked="" type="checkbox"/> FUNDS MAY BE REPROGRAMMED NOT TO EXCEED ± 10% OF FIN LEVEL UP TO \$50K. LINE C CONSTITUTES A LIMITATION ON OBLIGATIONS AUTHORIZED. |  |   |   |  |  |
| STANDARD TERMS AND CONDITIONS PROVIDED DOE ARE CONSIDERED PART OF THIS ORDER UNLESS OTHERWISE NOTED.  |  |   |   |  |  |
| <b>ATTACHMENTS:</b><br>THE FOLLOWING ATTACHMENTS ARE HEREBY MADE A PART OF THIS ORDER:<br><input checked="" type="checkbox"/> STATEMENT OF WORK<br><input type="checkbox"/> ADDITIONAL TERMS AND CONDITIONS<br><input type="checkbox"/> OTHER   |  |   | <b>SECURITY:</b><br><input checked="" type="checkbox"/> WORK ON THIS ORDER IS NOT CLASSIFIED.<br><input type="checkbox"/> WORK ON THIS ORDER INVOLVES CLASSIFIED INFORMATION. NRC FORM 187 IS ATTACHED. |  |  |
| <b>REMARKS:</b> REF: SOEW #60-79-061 dated December 8, 1978 for \$41K.  |  |   |   |  |  |
| <b>ISSUING AUTHORITY</b>  |  |   | <b>ACCEPTING ORGANIZATION</b>   |  |  |
| SIGNATURE <i>Frank J. Arsenault</i><br>Frank J. Arsenault, Director   |  |   | SIGNATURE   |  |  |
| TITLE<br>Division of Safeguards, Fuel Cycle and Environmental Research  |  |   | TITLE   |  |  |
| NRC FORM 8211180163 790705<br>PDR ADOCK 05000320<br>PDR   |  |   | DATE  |  |  |

4/24/79

SAFER PROJECT BRIEF

TITLE: DECONTAMINATION EFFECTS ON  
RADWASTE SYSTEMS

FIN NO.: B-2281  
CONTRACTOR: PNL

RES LEAD BRANCH: Systems Performance Branch

TYPE: DOE  
STATE: Washington

RES PROJECT MANAGER: D. E. Solberg

PERIOD OF WORK: 5/1/78 - 9/30/79

Principal Investigator:  
L. Perrigo

RES REQUEST ID: NRR 77-20

PREV FY 1979 OBLIG: \$41K  
THIS ORDER: \$34K  
TOTAL FY 1979 OBLIG: \$75K

OBJECTIVES:

1. To establish through literature reviews and site visits the actual radwaste system design and operation for several operating LWRs and formulate composite baseline designs for evaluating radwaste capabilities.
2. To establish through literature review and site visits to AE's and utilities their plans for primary coolant system decontamination with detailed flow sheets for each process. Both weak and strong solution decontamination processes will be investigated.
3. Based on information obtained and experience of project personnel, evaluate the effects of the candidate decontamination processes on the ability of baseline designs to function effectively and, if appropriate, provide conceptual designs for additional radwaste systems needed for acceptable radwaste system operation.
4. To provide cost estimates of additional radwaste systems required for candidate decontamination processes.
5. To evaluate the safety issues associated with decontamination plans.
6. To evaluate the effects of decontamination processes, designs, and procedures on radiation exposure of operating personnel.
7. To provide consultation and assistance to NRC in decontamination-related topics.

SCOPE:

The scope of work defined in the draft 189a submitted on April 26, 1978, is to be implemented except for the reactors to be evaluated as defined below. The program consists of the basic tasks discussed below:

#### Task 1 - Data Acquisition

Data will be obtained for at least five operating LWR stations. First choices will be Dresden, Calvert Cliffs, Oconee, Surry and Pickering (Canada). If any of these are not possible or if additional plants are to be surveyed, the order of preference is Maine Yankee, Browns Ferry, Crystal River and Turkey Point or Trojan. The contractor will contact appropriate management personnel at the reactor sites to be visited to obtain utility permission for on-site visits and their agreement to review their design and decontamination information. Personnel at Dow and Halliburton will also be contacted to set up visits to review their decontamination plans. Published information on the radwaste systems for the plants to be visited and on decontamination processes will be reviewed. Based on this review, the data needed from the site visits will be defined. Data will be obtained from the five reactor sites as well as from Dow and Halliburton personnel through site visits.

#### Task 2 - Data Evaluation

Procedures will be developed for evaluating the adequacy of the radwaste system when subjected to the decontamination process materials. A preliminary analysis of effects of the decontamination processes on the radwaste systems will be made and the results submitted for review by appropriate organizations (NRC, PNL, and LWR operators). The final evaluation will be prepared with appropriate consideration of the review feedback.

#### Task 3 - Cost Considerations

Perform a conceptual design study of the modifications required to the baseline radwaste systems in order to function adequately with the common decontamination processes. The study should be based on an assumed power level of about 3300MWt (1100MWe). Provide a cost estimate of these design changes which should include cost effects of reactor downtime.

#### Task 4 - Reporting

Informal monthly progress letters will be provided. Quarterly oral reports will be provided. A detailed report outline will be provided to NRC by December 1, 1979. A final draft report will be presented to NRC by March 15, 1979, and the final report published by September 30, 1979.

Task 5

Review the proposed decontamination processes and designs obtained from site visits and published data to determine the accidents which may occur which would result in significant consequences. Provide information on the accident scenarios, the list of materials involved, and the estimated consequences.

Task 6

Review the proposed decontamination system designs and procedures obtained from site visits to determine areas which may result in large radiation doses to operating personnel. Identify how these exposures are different from current licensed facilities and recommend changes in design or procedures which could reduce these exposures.

Task 7

Provide consultation and assistance by L. Perrigo, G. Halseth and other PNL staff as appropriate in tasks as identified by NRC related to decontamination. Of the total funding provided, \$20,000 is allocated to Task 7.

**ROUTING AND TRANSMITTAL SLIP**

Date 7/10/79

| TO: (Name, office symbol, room number, building, Agency/Post) |                   | Initials | Date |
|---|-------------------|----------|------|
| 1.  | <i>J. Collins</i> |          |      |
| 2.  |                   |          |      |
| 3.  |                   |          |      |
| 4.  |                   |          |      |
| 5.  |                   |          |      |

| Action       | File                 | Note and Return  |
|--------------|----------------------|------------------|
| Approval     | For Clearance        | Per Conversation |
| As Requested | For Correction       | Prepare Reply    |
| Circulate    | For Your Information | See Me           |
| Comment      | Investigate          | Signature        |
| Coordination | Justify              |                  |

**REMARKS**

*Took 7 of the attached authorization provide \$20K for decontamination support by Lyle Perigo which I had told you about earlier.*

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

|  |                           |
|--|---------------------------|
| FROM: (Name, org. symbol, Agency/Post) | Room No.—Bldg.            |
|  | Phone No.<br><i>74356</i> |

5041-102

☆ U. S. GPO: 1978-0-261-647 3354

OPTIONAL FORM 41 (Rev. 7-76)  
Prescribed by GSA  
FPMR (41 CFR) 101-11.206