

ATTACHMENT I

DISTRIBUTION
NRR Contract File
✓SGEB Rdg.
HPolk
PTKuo
GLear
JKnight
EPentecost
VZeoli
DDandois
ZRosztoczy, DS
CPaugh, P-415

SEP 28 1983

Mr. Gregory J. Ogeka, Manager
Administrative Branch
Brookhaven Area Office
U. S. Department of Energy
Upton, NY 11973

Dear Mr. Ogeka:

Subject: BNL Technical Assistance to the Division of Engineering, NRR,
NRC - "LMR Systems Corrosion" A3363 and "Diablo Canyon Verifi-
cation" A3720

The enclosed NRC Form 173, Standard Order for DOE Work, is hereby
submitted in accordance with Section III D.2 of the DOE/NRC Memorandum
of Understanding, dated February 24, 1970.

Funding authorizations totaling \$60,000 for A3363 were provided through
FY 1983. The purpose of this letter is to transfer funds in the amount
of \$6,000 to another BNL FII, A3720, as described in the enclosure.

I have reviewed the BNL proposal for the requested effort, dated Septem-
ber 16, 1983, and find it acceptable. Funding in the amount of \$100,000
was provided for A3720 in our letter of September 9, 1983. The purpose...
of this letter is to authorize incremental funding in the amount of
\$29,000 for the subject project; \$23,000 in new money and \$6,000 repro-
grammed from A3363. The balance of funds required for project completion
will be provided incrementally during FY 1984.

If you have any questions concerning the acceptance of this order,
please contact Mr. Ed Pentecost on FTS 492-7067. Thank you for your
assistance.

Sincerely,

Richard H. Vollmer, Director
Division of Engineering
Office of Nuclear Reactor Regulation

~~8310180078 030908~~
~~OF ADDCK 03060075~~

Enclosure:
NRC Form 173

8310180078 13pp.XA

cc: H. Rauch, CHOO/DOE
A. Romano, DNL
H. Grahn, DNL
H. Reich, DNL
*See attached for previous concurrences.

B-3

OFFICE	DE	TSO/NRR	de VVg
SURNAME	EPentecost:mg	EGrenier	RVollmer
DATE	9/29/83	9/27/83	9/29/83

STANDARD ORDER FOR DOE WORK

ISSUED TO: (DOE Office)

Brookhaven Area Office

ISSUED BY: (NRC Office)

Office of Nuclear Reactor
Regulation, DE

ACCOUNTING CITATION

APPROPRIATION SYMBOL

31X0200.203

B&R NUMBER

20-19-40-41-2

FIN NUMBER

See Attached

WORK PERIOD - THIS ORDER

FIXED

ESTIMATED

FROM

TO

See Attached

PERFORMING ORGANIZATION AND LOCATION

Brookhaven National Laboratory
Upton, New York

FIN TITLE

See Attached

OBLIGATION AVAILABILITY PROVIDED BY:

A. THIS ORDER

\$ 23,000

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

\$ 6,943,045

C. TOTAL ORDERS TO DATE

(TOTAL A & B)

\$ 6,966,045

D. AMOUNT INCLUDED IN "C" APPLICABLE TO THE "FIN NUMBER" CITED IN THIS ORDER.

\$ See Attached

FINANCIAL FLEXIBILITY:

FUNDS WILL NOT BE REPROGRAMMED BETWEEN FINs. LINE D CONSTITUTES A LIMITATION ON OBLIGATIONS AUTHORIZED

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.

ATTACHMENTS:

THE FOLLOWING ATTACHMENTS ARE HEREBY MADE A PART OF THIS ORDER:

- STATEMENT OF WORK
- ADDITIONAL TERMS AND CONDITIONS
- OTHER

SECURITY:

- WORK ON THIS ORDER IS NOT CLASSIFIED
- WORK ON THIS ORDER INVOLVES CLASSIFIED INFORMATION. NRC FORM 187 IS ATTACHED.

REMARKS (Reference the proposal by number and date, and indicate if the attached statement of work modifies the DOE proposal)

This order accepts the BNL proposal dated September 16, 1983 (Revision 1) and provides incremental funds in the amount of \$29,000 for continuation of work for FIN A3720 (\$23,000 new funds and \$6,000 deobligated from A3363). See attachment for accounting information.

After acceptance, please send to the NRC Office of Resource Management, ATTN: D. Dandois, and provide a copy to the Office of Nuclear Reactor Regulation, ATTN: C. Paugh.

ISSUING AUTHORITY

ACCEPTING ORGANIZATION

SIGNATURE

William V. Johnston

Richard H. Vollmer, Director

SIGNATURE

TITLE

Division of Engineering

TITLE

DATE

ATTACHMENT TO DOE WORK ORDER NUMBER 20-83-682

<u>FIN</u>	<u>Title</u>	<u>Period of Performance</u>	<u>Previous Oblig.</u>	<u>This Order</u>	<u>Revised Oblig.</u>
A3363-3	LWR Systems Corrosion	02/01/81 - 07/30/83	\$ 60,000	(-\$6,000)	\$ 54,000
A3720-3	Diablo Canyon Verifi- cation	01/18/83 - 11/30/83	\$273,000	+\$6,000	\$279,000
		TOTAL	<u>\$333,000</u>	<u>0</u>	<u>\$333,000</u>

ATTACHMENT 1 32 8-12-81 9/23/83
GENERAL AND RESERVE FUNDING, to item
215 - UP + PTR

KCVV
9/23/83
JPO LR

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.

Upton, Long Island, New York 11973

(516) 282-3317
FTS 666

Office of the Director

September 20, 1983

Mr. David Schweller, Manager
Brookhaven Area Office
U. S. Department of Energy
Upton, New York 11973

Dear Mr. Schweller:

9/26/83
Dennis Mahony said to
Jim for memo stating 23K and
incidental in 1984 - amount
changed to 29K - 6K reimbursement from
A 3363 9/26/83 H. C. Grahn

Enclosed is one copy of a proposal to the Nuclear Regulatory Commission entitled, "Diablo Canyon Verification," FIN A-3720, being submitted for your review and approval. The proposal is being submitted in response to a request from NRC dated September 9, 1983. Two copies have been sent to Mr. J. Maher, Department of Energy, one copy has been sent to Mr. B. L. Grenier, Nuclear Regulatory Commission, and two copies have been sent to:

Mr. E. Pentecost, Program Assistant
Office of Nuclear Reactor Regulation
Mail Stop P-202
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

The total cost of this program is \$290,000. The funds obligated to date are \$250,000.

This proposal has been prepared in accordance with the modification to statement of work attached to the aforementioned letter. If there are any questions regarding the document, please call the principal investigator or Mr. A. J. Romano, FTS 666-4024, Department Administrator for the Department of Nuclear Energy.

Sincerely yours,

H. C. Grahn

H. C. Grahn
Assistant Director
for Financial Planning

Enclosures

cc: B. L. Grenier
J. Maher (2)
E. Pentecost (2)

Att. 1, 1, D

NRC FORM 189
(2-81)



U.S. NUCLEAR REGULATORY COMMISSION

DATE OF PROPOSAL
September 16, 1983

PROJECT AND BUDGET PROPOSAL FOR NRC WORK

NEW
 REVISION NO. 1

PROJECT TITLE Diablo Canyon Verification			FIN NUMBER A-3720
NRC OFFICE Nuclear Reactor Regulation			NRC B&R NUMBER 20-19-40-41-2
DOE CONTRACTOR Associated Universities, Inc. Brookhaven National Laboratory			CONTRACTOR ACCOUNT NUMBER 04241
SITE Upton, New York 11973			DOE B&R NUMBER
COGNIZANT PERSONNEL	ORGANIZATION	FTS PHONE NUMBER	PERIOD OF PERFORMANCE
NRC PROJECT MANAGER H. E. Polk	REG/DE/SEB	492-8420	STARTING DATE 01/18/83
OTHER NRC TECHNICAL STAFF			COMPLETION DATE 11/30/83 IX
DOE PROJECT MANAGER David Schweller	Brookhaven Area Office	666-3424	
CONTRACTOR-PROJECT MANAGER H. J. Kouts W. Y. Kato	DNE	666-2815 666-2444	
PRINCIPAL INVESTIGATOR(S) M. Reich	DNE	666-2448	

STAFF YEARS OF EFFORT (Round to nearest tenth of a year)	FY 1983	FY 1984	FY	FY	FY
Direct Scientific/Technical	2.0	0.1			
Other Direct (Graded)	0.6	0.1			
TOTAL DIRECT STAFF YEARS	2.6	0.2			

COST PROPOSAL		FY 1983	FY 1984	FY	FY	FY
Direct Salaries		118	9			
Material and Services (Excluding ADP)		5	0			
ADP Support		35	2			
Subcontracts		0	0			
Travel Expenses	Foreign Domestic	0 17	0 2			
Indirect Labor Costs (Departmental Administration)		16	1			
Other (Security, Electric Power Distribution)		1	0			
General and Administrative (41% of modified direct cost)		78	6			
TOTAL OPERATING COST		270	20			
CAPITAL EQUIPMENT FIN CHARGED		0	0			
TOTAL PROJECT COST		270	20			


MONTHLY FORECAST EXPENSE (dollars in thousands)	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH
		-	-	-	17	27
	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
	33	35	33	30	7	61

PROJECT AND BUDGET PROPOSAL FOR NRC WORK

DATE
Sept. 10, 1983

PROJECT TITLE
Diablo Canyon Verification

DOE PROPOSING ORGANIZATION **Associated Universities, Inc.
Brookhaven National Laboratory**

FORECAST MILESTONE CHART: Scheduled to Start -  - Completed (Shown in Quarter Year)
PROVIDE ESTIMATED DOLLAR COST FOR EACH TASK FOR EACH FISCAL YEAR

TASK	SCHEDULE	FY 1983				FY 1984				FY 1985				FY 1986			
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Task 1	SCHEDULE	▲▲															
	COST	43K															
Task 2	SCHEDULE	▲	—————			▲											
	COST	54K															
Task 3	SCHEDULE	▲	—————			▲											
	COST	88K															
Task 4	SCHEDULE	▲	—————			▲											
	COST	17K															
Task 5	SCHEDULE	▲	—————			▲											
	COST	17K															
Task 6	SCHEDULE	▲	—————			▲											
	COST	34K															
Task 7	SCHEDULE	▲▲															
	COST	17K															
Task 8	SCHEDULE					▲▲											
	COST					20K											
	SCHEDULE																
	COST																
	SCHEDULE																
	COST																
TOTAL ESTIMATED PROJECT COST		270K				20K											

APPROVAL AUTHORITY SIGNATURE
Walter G. Kott

DATE
9/17/83

PROJECT DESCRIPTION1. OBJECTIVE OF PROPOSED WORKa. Background

On September 28, 1981 PG&E reported that a diagram error had been found in a portion of the seismic qualification of the Diablo Canyon Nuclear Power Plant, Unit 1 (DCNPP-1). This error resulted in an incorrect application of the seismic floor response spectra for sections of the annulus of the Unit 1 containment building. The error originated when PG&E transmitted a sketch of Unit 2 to a consultant. This sketch contained Unit 2 opposite hand geometry incorrectly identified as Unit 1 geometry.

As a result of this error, a seismic reverification program was established to determine if the seismic qualification of the plant was adequate for the postulated Hosgri 7.5M earthquake. The Commission issued an order suspending license CI-81-30 for fuel load and low power tests up to 15% of rated power at DCNPP-1. This suspending order also specified that an Independent Design Verification Program (IDVP) be conducted to assure that the plant met the licensing criteria. The IDVP program is currently underway and producing Interim Technical Reports (ITR) on the work as it progresses.

b. Objective

The objective of this work is for BNL to independently analyze for NRC/SCEB Diablo Canyon Power Plant annulus steel structure and the buried diesel oil tanks for the seismic loads imposed by the Hosgri event. Furthermore, BNL will also provide the NRC/SCEB staff with expertise in the field of seismic analyses to carry out reviews and audits of the work currently underway at the IDVP and PG&E. BNL will also attend technical interchange meetings for the Diablo Canyon license restoration work.

2. SUMMARY OF PRIOR EFFORTS

Under Fin No. A-3377, BNL carried out similar work for NRC with respect to independent derivations for the Diablo Canyon Annulus Structure Vertical Floor Spectra. The BNL staff, especially, the senior members are highly familiar with all aspects of structural dynamic response analysis, having derived some of the analysis methods currently employed by engineers in the civil/structural area.

3. WORK TO BE PERFORMED AND EXPECTED RESULTSa. Work Requirements

With respect to the Diablo Canyon verification work to be carried out under this program, seven specific tasks will be performed. These are:

3. WORK TO BE PERFORMED AND EXPECTED RESULTS (Cont'd)

	Estimated Completion Date	Estimated Level of Effort
1. Carry out horizontal seismic analysis for Diablo Canyon Nuclear Power Plant containment annulus structure. Generate independent horizontal floor spectra based on detailed 3-D models.	March 31, 1983	15 man-weeks
2. Perform seismic and stress analysis for a buried diesel oil storage tank to be chosen for analysis by mutual agreement between NRC/SCEB and Structural Analysis Division of BNL.	July 6, 1983	10 man-weeks
Verify the results of the PG&E analysis of record. Provide timely briefings to the staff and IDVP.	Sept. 30, 1983	9 man-weeks
3. Provide assistance to NRC staff in the review and audit of approximately 45 Independent Design Verification Programs (IDVP) Interim Technical Reports (ITR) and Final Design Reports.	Sept. 30, 1983	31 man-weeks
4. Assist NRC staff in the review and audit of the final IDVP reports.	Sept. 30, 1983	6 man-weeks
5. Assist NRC staff in the review and audit of the PG&E Phase I Final Report.	Sept. 30, 1983	6 man-weeks
6. Attend technical interchange meetings as requested by staff, and assist in preparing trip reports.	Sept. 30, 1983	12 man-weeks
7. Carry out all necessary work required to respond to Teledyne's request for information, RFI 5511-0151 and RFI 5511-0152 (Docket No. 50-275).	March 1, 1983	6 man-weeks
8. Prepare testimony and appear as expert witness at licensing hearing.	Nov. 30, 1983	6 man-weeks

3. WORK TO BE PERFORMED AND EXPECTED RESULTS (Cont'd)

b. Meetings and Travel

It is anticipated that 5 meetings with the staff will be necessary in regard to Tasks 1 and 2. The amount of travel for Tasks 3 through 6 cannot be determined at this time, however, it is anticipated that 5 or 6 meetings with the IDVP and PG&E might be sufficient.

c. NRC Furnished Materials

NRC will furnish BNL copies of necessary drawings and calculations needed in support of Tasks 1 and 2. These drawings and calculations will be requested from the appropriate parties. NRC will furnish BNL with copies of the selected ITR's and meeting agenda's (when available) for Tasks 3 through 6.

4. DESCRIPTION OF ANY FOLLOW-ON EFFORTS

Not applicable.

5. RELATIONSHIP TO OTHER PROJECTS

This effort is somewhat related to other work carried out by BNL in the areas of seismic response, and soil structure interaction evaluations. It utilizes the structural analysis methods developed under previous NRC programs.

6. REPORTING REQUIREMENTS

Technical Reports

At the completion of Tasks 1 and 2, BNL will provide the Project Manager with the following:

- a. Briefing on the progress of the work.
- b. A written report describing the methodology used and the results of the work will be provided at the request of the Project Manager.
- c. If desired by the Project Manager, item (b) above could be exchanged by a BNL staff presentation at a public meeting to be scheduled by NRC.

For Tasks 3 through 6, BNL will provide the Project Manager with the following:

- d. A letter report on the results of the review and audit of the selected ITR's.
- e. A letter report on the review and audit of the final IDVP report.
- f. A letter report on the review and audit at PG&E Phase I final report.

(See Continuation Sheet)

6. REPORTING REQUIREMENTS (Cont'd)

- g. A letter report containing, as a minimum, the technical content of the meeting, items discussed and any resolution of differences in opinion of meeting participants.
- h. For Task 7, BNL will provide to the Project Manager answers pertaining to RFI 5511-0151, RFI 5511-0152 and IDVP RFI5511-0189.
- i. Provide final design reports (see Task 3, work requirements.)
- j. Provide written trip report to NRC staff on "as needed basis" for preparation of trip reports.

Monthly Business Letter Report

A monthly business letter report will be submitted by the 20th of the month to the NRR Project Manager with copies provided to the Director, Division of Engineering, ATTN: Program Assistant, Branch Chief, SCEB and B.L. Grenier, NRR. These reports will identify the title of the project, the FIN, the Principal Investigator, the period of performance, and the reporting period and will contain three sections as follows:

a. Project Status Section

- 1) A listing of efforts completed during the period, milestones reached, or if missed, an explanation provided.
- 2) Any problems or delays encountered or anticipated and recommendations for resolution. (NOTE: If the recommended resolution involves a contract modification, i.e., change in work requirements, level of effort (costs), or period of performance, a separate letter will be prepared and submitted to H.E. Polk.)
- 3) A summary of progress to date. (This may be expressed in terms of percentage completion for each task.)
- 4) A brief summary of plans for the next reporting period.

b. Financial Status Section

BNL will provide the total cost (value) of the project as reflected in the proposal (NRC Form 189), the total amount of funds obligated to date, and the balance of funds required to complete the work.

<u>Total</u> Projected <u>Projected Cost</u>	<u>Funds</u> Obligated <u>to Date</u>	<u>Balance of Funds</u> by Fiscal Year		
		<u>FY-</u>	<u>FY-</u>	<u>FY-</u>

BNL will provide the amount of funds expended (costed) by category during the period and total cumulative year-to-date as follows:

(See Continuation Sheet)

6. REPORTING REQUIREMENTS (Cont'd)

	<u>Period</u>	<u>Cumulative</u>
Direct Salaries		
Indirect Salaries		
ADP Support		
Travel		
Subcontracts		
Equipment & Materials		
Overhead	_____	_____
Total		(X)*

*Percentage of funds received (year-to-date) against funds obligated

c. Fee Recovery Cost Status Section

Pursuant to the provisions of NRC Regulation 10 CFR 170, BNL will provide the total amount of funds expended (costed) during the period and cumulative to date for each task, e.g., by facility or report, and report them on a separate page as part of this report in the following format:

FIN: A3720
 TITLE: Diablo Canyon Verification
 PERIOD:

<u>Facility/Report</u>	<u>Docket #</u>	<u>ID#</u>	<u>\$</u> <u>Period</u>	<u>\$</u> <u>Cumulative</u>
Diablo Canyon	50-275			

7. SUBCONTRACTOR INFORMATION

BNL does not intend to subcontract any portion of this work. In the event a subcontract is anticipated, BNL will notify NRC before it is initiated.

8. NEW CAPITAL EQUIPMENT REQUIRED

None.

9. SPECIAL FACILITIES REQUIRED

None.

10. CONFLICT OF INTEREST INFORMATION

There are neither significant contractual nor organizational relationships of the Department of Energy, BNL and employees, or expected subcontractors or consultants on this proposal, with industries regulated by the NRC and suppliers thereof that give rise to an apparent or actual conflict of interest.

ATTACHMENT 3

TECHNICAL ASSISTANCE PROGRAM SUPPORT SYSTEMS
PROJECT IDENTIFICATION SUMMARY (PIDS)
AS OF: 06/23/83

PAGE 68

IN: A3720 TITLE: DIABLO CANYON VERIFICATION
DIVISION: DE B&R #: 20-19-40-41-2, NRR OPERATING PLAN INDEX NO:
RANCH: SGEB CONTRACT #: PROJECT MANAGER: H. POLK

CONTRACTOR: BNL CONTRACT METHOD (NON-DOE):
CITY, STATE (NON-DOE): SMALL BUSINESS/MINORITY
SUB CONTRACTOR(S): CONTRACT (NON-DOE):

PERIOD OF PERFORMANCE START DATE: 01/18/83 END DATE: ~~09/30/83~~ 10/31/83

FINANCIAL DATA COMMITMENTS AS OF / / , OBLIGATIONS/COSTS AS OF 05/83

	<u>CARRY OVER</u>	<u>CURRENT FY BUDG</u>	<u>CURRENT FY COMIT</u>	<u>CURRENT FY OBLS</u>	<u>CURRENT FY COSTS</u>
ACTUAL	0	150,000	150,000	100,000	100,000
PROJECTED	_____	215 200,000 275,000	_____	_____	_____
	<u>TOTAL VALUE</u>	<u>TOTAL OBLS</u>	<u>TOTAL COSTS</u>	<u>NEXT FY BUDGET</u>	<u>NEXT +1 BUDGET</u>
ACTUAL	150,000	100,000	100,000	0	--
PROJECTED	_____	_____	_____	_____	_____

APPLICATION (RELATE THE PROJECT TO A SPECIFIC PLANNED ACCOMPLISHMENT)

Restore the low power and testing license of Diablo Canyon Nuclear Plant 1. ~~Perform an independent analysis of the annulus steel structure~~

WORK REQUIREMENTS (DESCRIBE WHAT IS TO BE PERFORMED)

- Independently analyzes the containment annulus steel structure and the buried diesel oil tanks for the Hosgri seismic event. *and provide timely briefing to the staff and the IDVP*
- Assist the NRC staff in the review and audit of technical submittals by PG&E and Teledyne Engineering Services relative to analysis work currently underway.
- Attend technical interchange meetings as requested by the staff.

MODIFICATIONS (DESCRIBE MAJOR CHANGES TO THE PROPOSAL)

- 4. Carry out necessary work required to respond to Teledyne's request for information, RFI 5511-0151, 5511-0152 and 5511-189.

APPROVAL (COMPLETE AS APPLICABLE) 1ST LINE: (INITIALS) 2ND LINE: (DATE)

RECOMMENDED:	ENDORSED:	ENDORSED:	ENDORSED:	ENDORSED:
PROJECT MANAGER	SECTION LEADER	BRANCH CHIEF	ASST. DIRECTOR	DIVISION DIRECTOR

<u>STP</u>	<u>P. J. Cur</u>	<u>G. Lear</u>	<u>[Signature]</u>	<u>AKO</u>
<u>7/13/83</u>	<u>7/13/83</u>	<u>7/18/83</u>	<u>7/18/83</u>	<u>8/4/83</u>

OFFICE DETERMINATION

APPROVAL CODE: _____
DATE: / /