

TESTIMONY
OF
NUNZIO J. PALLADINO
CHAIRMAN
U. S. NUCLEAR REGULATORY COMMISSION
BEFORE THE
SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
UNITED STATES HOUSE OF REPRESENTATIVES
ON
DIABLO CANYON LICENSING CONCERNS
MARCH 8, 1983

Mr. Chairman and members of the Subcommittee, thank you for the invitation to appear before you today. We appreciate the opportunity to discuss with you the issues and concerns presently surrounding the Diablo Canyon Nuclear Power Plant. Let me assure you at the outset that the NRC considers the errors that have been discovered at Diablo Canyon to be quite serious and will not authorize any operation of the facility, including fuel loading, until an overall assessment of the plant's safety has been adequately completed.

In order that you and the other members of the Subcommittee may better understand the issues, a brief discussion of the background leading up to the question of Diablo Canyon Unit 1 loading fuel would be appropriate. On September 22, 1981, the Nuclear Regulatory Commission issued an operating license for Diablo Canyon Unit 1. That license authorized the Pacific Gas and Electric Company (PG&E) to load fuel into the reactor, conduct cold and hot functional testing, bring the reactor to criticality and allow power testing up to 5% of rated power.

On September 28, 1981 the licensee informed the NRC that they had discovered what has become known as the "mirror image" problem. An arrangement drawing for Unit 2 (which is a mirror-image design of Unit 1) was used in the seismic analysis of equipment mounted on the Unit 1 containment annulus steel structure. At that time fuel loading operations had not

COMMENCED, AND THE LICENSEE COMMITTED TO POSTPONE LOADING FUEL UNTIL THE ADEQUACY OF THE SEISMIC DESIGN OF UNIT 1 WAS SATISFACTORILY RESOLVED.

DURING THE NEXT FEW WEEKS AN INITIAL RE-ANALYSIS BY PG&E OF PORTIONS OF THE SEISMIC DESIGN OF THE FACILITY IDENTIFIED A NUMBER OF ADDITIONAL DIFFERENT ERRORS AND QUESTIONS, AND NRC EVALUATION EFFORTS IDENTIFIED A POTENTIAL SIGNIFICANT WEAKNESS IN THE IMPLEMENTATION OF THE PG&E QUALITY ASSURANCE PROGRAM WITH REGARD TO WORK PERFORMED BY SEISMIC DESIGN CONTRACTORS. AS A RESULT OF THESE FINDINGS AND CONCERNS, ON NOVEMBER 19, 1981, THE NRC TOOK TWO ACTIONS.

FIRST, THE COMMISSION ISSUED ITS ORDER, CLI-81-30 (THE ORDER), WHICH SUSPENDED THE LOW POWER LICENSE FOR DIABLO CANYON UNIT 1 AND REQUIRED PG&E TO INSTITUTE A DESIGN VERIFICATION PROGRAM CONCERNING SAFETY-RELATED ACTIVITIES PERFORMED UNDER SEISMIC-RELATED SERVICE CONTRACTS PRIOR TO JUNE 1978.^{1/} THE PROGRAM

1/ PACIFIC GAS AND ELECTRIC COMPANY (DIABLO CANYON NUCLEAR POWER PLANT, UNIT 1), ORDER SUSPENDING LICENSE, CLI-81-30, 14 NRC 950, NOVEMBER 19, 1981.

WAS TO BE CONDUCTED BY A QUALIFIED AND INDEPENDENT COMPANY AND WAS TO INCLUDE A REVIEW OF THE QUALITY ASSURANCE PROGRAM IMPLEMENTATION AND TO INCLUDE SAMPLE CALCULATIONS OF THE SEISMIC DESIGN OF SAFETY-RELATED STRUCTURES, SYSTEMS, AND COMPONENTS. THE ORDER ALSO PROVIDED FOR COMMENTS BY THE PARTIES TO THE DIABLO CANYON LICENSING PROCEEDING PERTAINING TO THE DEVELOPMENT OF THE PROGRAM AND SELECTION OF THE INDEPENDENT COMPANY. THE ACTIVITIES ASSOCIATED WITH THE ORDER HAVE BECOME KNOWN AS PHASE I OF THE INDEPENDENT DESIGN VERIFICATION PROGRAM (IDVP).

SECOND, THE DIRECTOR OF THE OFFICE OF NUCLEAR REACTOR REGULATION REQUIRED PG&E TO INITIATE FURTHER INDEPENDENT DESIGN VERIFICATION EFFORTS WHICH ARE REQUIRED TO BE COMPLETED PRIOR TO A DECISION REGARDING EXCEEDING 5% POWER OPERATION.^{2/} THESE ADDITIONAL EFFORTS HAVE BECOME KNOWN AS PHASE II OF THE DESIGN VERIFICATION PROGRAM AND ARE DIRECTED TO SAFETY-RELATED ACTIVITIES PERFORMED UNDER OTHER CONTRACTS AND TO PG&E INTERNAL DESIGN ACTIVITIES.

2/ DIABLO CANYON UNIT 1 - INDEPENDENT DESIGN VERIFICATION PROGRAMS, LETTER FROM H. R. DENTON, DIRECTOR, OFFICE OF NUCLEAR REACTOR REGULATION TO M. H. FURBUSH, VICE PRESIDENT-GENERAL COUNSEL, PACIFIC GAS AND ELECTRIC COMPANY, DATED NOVEMBER 19, 1981.

THE FUNDAMENTAL REQUIREMENTS OF THE PHASE II EFFORTS ARE THE SAME AS FOR PHASE I, NAMELY, DEVELOPMENT OF AN ACCEPTABLE PROGRAM TO BE CONDUCTED BY AN INDEPENDENT COMPANY. A MORE DETAILED OUTLINE OF THE TASKS REQUIRED TO BE INCLUDED IN PHASE I AND PHASE II IS OUTLINED IN ATTACHMENT 1.

IN MARCH OF 1982, THE LICENSEE PROPOSED THE USE OF TELEDYNE ENGINEERING SERVICES AS THE INDEPENDENT COMPANY TO MANAGE PHASE I OF THE IDVP WITH R. L. CLOUD ASSOC. AND R. F. REEDY INC., AS SUBCONTRACTORS. THIS PROPOSAL, AS MODIFIED, WAS FOUND ACCEPTABLE BY THE COMMISSION AND IN APRIL 1982 THE COMMISSION APPROVED THE FORMAL PROGRAM PLAN FOR PHASE I OF THE IDVP. THE PROPOSAL FOR THE PHASE II PROGRAM WAS SUBMITTED IN JUNE 1982 AND APPROVED, AS MODIFIED, BY THE COMMISSION IN DECEMBER 1982. IN ADDITION TO THE TWO PHASE I SUBCONTRACTORS, STONE AND WEBSTER ENGINEERING CORP. HAS BEEN RETAINED BY THE IDVP TO AUGMENT ITS CAPABILITY TO UNDERTAKE THE PHASE II EFFORTS.

THE SCOPE OF THE OVERALL DESIGN VERIFICATION EFFORTS HAS BEEN SIGNIFICANTLY EXPANDED SINCE NOVEMBER 1981. MOST SIGNIFICANT WAS THE DECISION BY THE LICENSEE TO UNDERTAKE A COMPREHENSIVE INTERNAL TECHNICAL PROGRAM (ITP) DESIGNED TO VERIFY THE SEISMIC ADEQUACY OF ALL SAFETY-RELATED STRUCTURES, SYSTEMS AND COMPONENTS. SEVERAL OTHER REVIEWS AND AUDITS WERE ALSO UNDERTAKEN BY THE LICENSEE AND HIS CONTRACTORS. THE MAJOR

VERIFICATION EFFORT IS BEING CARRIED OUT BY AN INTEGRATED PROJECT TEAM MADE UP OF PG&E AND REPRESENTATIVES OF THE BECHTEL POWER CORPORATION WHO IS UNDER CONTRACT TO PG&E. THE JOINT EFFORT IS COMPOSED OF BOTH PG&E AND BECHTEL PROFESSIONAL AND MANAGEMENT PERSONNEL WITH A SENIOR BECHTEL MANAGER RESPONSIBLE FOR OVERALL PROJECT DIRECTION, REPORTING DIRECTLY TO A PG&E EXECUTIVE VICE PRESIDENT. THIS PG&E/BECHTEL PROGRAM IS AN UNPRECEDENTED EFFORT FOR REVERIFYING THE ADEQUACY OF A PLANT WHICH IS ALREADY BUILT.

OVER THE PAST YEAR THE NRC HAS BEEN CLOSELY FOLLOWING THE CONTINUING EVALUATION BY BOTH THE PG&E/BECHTEL TEAM AND BY THE INDEPENDENT CONTRACTORS. IN ADDITION, THE STAFF HAS INITIATED A SERIES OF INDEPENDENT SEISMIC ANALYSES THAT ARE SERVING AS BENCHMARKS FOR THE REVIEW OF THE PG&E AND IDVP EFFORTS.

DURING THE LATTER PART OF 1982, REVIEW EFFORTS BY BOTH THE PG&E/BECHTEL PROGRAM AND THE IDVP PHASE I AND PHASE II PROGRAMS HAD PROCEEDED TO THE POINT THAT THE DISTINCTIONS BETWEEN THE PRE-1978 AND POST-1978 TIME PERIODS AND BETWEEN SEISMIC AND NON-SEISMIC DESIGN ACTIVITIES AS THEY ARE ADDRESSED IN PHASE I AND PHASE II OF THE DESIGN VERIFICATION EFFORT, RESPECTIVELY, COULD NO LONGER BE MADE. ACCORDINGLY, THE STAFF SUBMITTED A PROPOSAL TO THE COMMISSION IN OCTOBER 1982 WHICH SUPPORTED A MORE INTEGRATED PHASE I/PHASE II CONCEPT, SUCH THAT REINSTATE-

MENT OF THE OPERATING LICENSE WOULD REQUIRE COMPLETION OF NOT ONLY PHASE I ACTIVITIES BUT ALSO COMPLETION OF ENOUGH OF PHASE II TO ASSURE THAT NO MAJOR DEFICIENCY WOULD GO UNDETECTED. IN EARLY DECEMBER 1982 PG&E PROPOSED A PROCESS TO ACHIEVE THE SAME GOAL. AFTER CAREFUL CONSIDERATION, THE COMMISSION APPROVED A SOMEWHAT REVISED APPROACH IN DECEMBER 1982. THE APPROACH CALLS FOR A CAREFUL, DELIBERATE APPROACH TOWARDS DECISIONS REGARDING THE DIABLO CANYON FACILITY. THE APPROACH WAS DEVELOPED TO ENSURE THAT THE NRC HAS ADEQUATE CONFIDENCE THAT ALL DETECTED ERRORS HAVE BEEN THOROUGHLY EVALUATED AND RESOLVED AND TO PROVIDE CONFIDENCE THAT NO ADDITIONAL SIGNIFICANT ERRORS EXIST. THE EVALUATION APPROACH APPROVED IN DECEMBER 1982 IS A THREE-STEP PROCESS.

1. A DECISION REGARDING THE LOADING OF FUEL INTO THE REACTOR VESSEL AND COLD SYSTEM TESTING,
2. A DECISION REGARDING LOW POWER TESTING UP TO 5% POWER, AND
3. A DECISION REGARDING THE FULL POWER LICENSE.

STEPS 1 AND 2 TOGETHER CONSTITUTE THE SCOPE OF THE LICENSE ORIGINALLY ISSUED BY THE NRC IN SEPTEMBER 1981. IT IS OUR INTENT THAT THE REVIEW, EVALUATION, AND MODIFICATIONS FOR ALL SAFETY-RELATED STRUCTURES, SYSTEMS, AND COMPONENTS NEEDED TO SUPPORT THE ACTIVITY IN EACH STEP WILL BE COMPLETED PRIOR TO A

DECISION FOR THAT STEP. IN ADDITION, PRIOR TO ANY DECISION, EVEN FOR STEP 1, EVALUATIONS FOR ALL ASPECTS OF THE VERIFICATION (PHASE I AND PHASE II) MUST HAVE BEEN SUFFICIENTLY COMPLETED TO PROVIDE THE NRC CONFIDENCE THAT NO OTHER SAFETY SIGNIFICANT ERRORS EXIST. ATTACHMENT 2 IDENTIFIES IN MORE DETAIL THE ELEMENTS OF THIS DECISION PROCESS AND OUR RECENT LETTER TO REP. UDALL PROVIDES ^{3/}ADDITIONAL INFORMATION REGARDING THIS THREE-STEP APPROACH.

PG&E/BECHTEL EVALUATION EFFORTS AND THE IDVP VERIFICATION EFFORTS ARE APPROXIMATELY TWO-THIRDS COMPLETE FOR PHASE I AND ONE-THIRD COMPLETE FOR PHASE II ACTIVITIES. THE STAFF REVIEW IS PROCEEDING AND ITS EFFORTS ARE COMPATIBLE WITH THE PG&E AND IDVP SCHEDULES.

AS I INDICATED IN MY RECENT LETTER AND CONSISTENT WITH OUR ORDER, BEFORE A FAVORABLE DECISION REGARDING FUEL LOADING, ALL EVALUATIONS AND MODIFICATIONS TO THOSE STRUCTURES, SYSTEMS AND

3/ LETTER FROM N. J. PALLADINO, CHAIRMAN, U. S. NUCLEAR REGULATORY COMMISSION, TO M. K. UDALL, CHAIRMAN ON INTERIOR AND INSULAR AFFAIRS, U. S. HOUSE OF REPRESENTATIVES, DATED FEBRUARY 17, 1983

COMPONENTS THAT ARE NOT REQUIRED FOR STEP 1 WILL BE COMPLETED, IN ORDER TO PROTECT THE PUBLIC HEALTH AND SAFETY. IN ADDITION, THE ACTIVITIES TERMED PHASE II WILL HAVE PROCEEDED TO AN EXTENT THAT WILL ALLOW US TO REACH A CONCLUSION WITH RESPECT TO ANY ADDITIONAL DESIGN VERIFICATION THAT MIGHT BE REQUIRED AND TO PROVIDE ASSURANCE THAT NO ADDITIONAL SIGNIFICANT ERRORS ARE LIKELY TO EXIST.

IN CLOSING, LET ME AGAIN ASSURE YOU THAT WE DO NOT FEEL RESTRICTED IN OUR OWN REVIEW EFFORTS BY ANY SPECIFIC SCHEDULES PROPOSED BUT WILL TAKE THE TIME NECESSARY TO ASSURE OURSELVES AND THE PUBLIC THAT THERE ARE NO DEFICIENCIES THAT WOULD PREVENT SAFETY-RELATED STRUCTURES, SYSTEMS AND COMPONENTS FROM PERFORMING THEIR INTENDED SAFETY FUNCTIONS.

ATTACHMENT 1

NRC NOVEMBER 19, 1981 REQUIREMENTS

PHASE I

COMMISSION ORDER (CLI-81-30)

- Suspended fuel loading and low power testing license.
- Required:
 1. Results of an IDVP for all SSR contracts prior to 6/78.
See Note (i) below.

PHASE II

STAFF LETTER

- Activities required prior to a decision regarding power levels above 5%
 2. IDVP for NSSR contracts prior to 6/78.
 3. IDVP for PGE internal QA, and
 4. IDVP for all service related contracts post 1/78.
See Note (i) below.

NOTES:

- (i) Items 1, 2, 3, and 4 each require:
- a. A technical report of the basic cause of the errors, their significance, and their impact on facility design.
 - b. PGE's conclusion on effectiveness of IDVP, and
 - c. A schedule for modifications; including a basis for any deferred beyond a fuel load decision.

Both Phase I and Phase II activities must be performed by a qualified, independent organization.

Both Phase I and Phase II required that a Program Plan be submitted for our review and approval, and

Both Phase I and Phase II were necessary, but not necessarily sufficient, activities for the appropriate approvals.

NOMENCLATURE:

IDVP = Independent Design Verification Program
SSR = Seismic Service-Related
NSSR = Non-Seismic Service-Related

ATTACHMENT 2

ESTIMATED SCHEDULE FOR COMPLETION OF ACTIVITIES REQUIRED
FOR FUEL LOADING, LOW POWER TESTING, AND FULL POWER OPERATION

STEP 1	ACTIVITY	SCHEDULED COMPLETION DATE
Requirements for Restoration of the Low Power License	1. PG&E Evaluations:	
	A. Phase I Final Report	02/83
	B. Phase II Status Report	02/83
	C. As-Built Report	03/83
	2. IDVP Evaluations:	
	A. Phase I Status Report	03/83
	B. Phase II Status Report	03/83
	C. Other Reports	03/83
	3. NRC Decision for Restoration of the Low Power License	03/83
STEP II		
Requirements for Initial Criticality and Low Power Testing	1. PG&E Evaluations:	
	A. Phase I Final Report, Supplement	04/83
	B. As-Built Report	04/83
	2. IDVP Evaluations:	
	A. Phase I Final Report	04/83
	B. Phase II Status Report	04/83
	3. NRC Decision for Initial Criticality and Low Power Testing	05/83
STEP III		
Requirements for Issuance of a Full Power License	1. PG&E Evaluations:	
	A. Phase II Final Report	05/83
	B. As-Built Report	06/83
	2. IDVP Evaluations:	
	A. Phase II Final Report	06/83
	B. Other Reports	06/83
	3. NRC Decision for Issuance of a Full Power License	06/83