U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/89-34, 50-361/89-34, 50-362/89-34

Docket Nos. 50-206, 50-361, 50-362

License Nos. DPR-13, NPF-10, NPF-15

Licensee: Southern California Edison Company
Irvine Operations Center
23 Parker Street
Irvine, California 92718

Facility Name: San Onofre Units 1, 2 and 3

Meeting at: Walnut Creek, California

Meeting conducted: November 29, 1989

Prepared by: C. W. Caldwell, Senior Resident Inspector

Approved By: DH Johnson 12/28/89
P. H. Johnson, Chief Date Signed
Reactor Projects Section 3

Summary

A Management Meeting was held on November 29, 1989 to discuss issues related to the failure of an ASCO solenoid valve on August 23, 1989 and recent operator performance problems. In addition, the licensee provided a status on the enhancements to the Emergency Preparedness and Root Cause Assessment Programs, engineering program improvements, the Design Basis Documentation (DBD) review, and the activities of Nuclear Oversight Organizations.

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DETAILS

1. Meeting Participants

Nuclear Regulatory Commission

J. Martin, Regional Administrator
B. Faulkenberry, Deputy Regional Administrator
R. Zimmerman, Director, Division of Reactor Safety and Projects
D. Kirsch, Chief, Reactor Safety Branch
G. Yuhas, Chief, Emergency Preparedness and Radiological Protection Branch
P. Johnson, Chief, Reactor Projects Section 3
C. Caldwell, Senior Resident Inspector

Southern California Edison Company

H. Ray, Vice President, Nuclear Engineering, Safety, and Licensing (NES&L)
R. Bridenbecker, Vice President and Site Manager
H. Morgan, Station Manager
D. Shull Jr., Nuclear Oversight Manager, NES&L
D. Nunn, Manager of Nuclear Engineering and Construction
D. Brevig, Supervisor, Onsite Nuclear Licensing

San Diego Gas and Electric Company

R. Lacy, Manager, Nuclear Department

2. Management Meeting

On November 29, 1989, a Management Meeting was held in the Region V Office in Walnut Creek, California with the individuals identified in Paragraph 1. The purpose of this meeting was to discuss issues related to the failure of an ASCO solenoid valve on August 23, 1989 and recent operator performance problems. In addition, the licensee provided a status on enhancements to the Emergency Preparedness and Root Cause Assessment Programs, engineering program improvements, the Design Basis Documentation (DBD) review, and activities of Nuclear Oversight Organizations.

The meeting convened at 10:00 a.m.

Introduction

Mr. Martin opened by stating that the purpose of the meeting was to review recent concerns and to assess the progress of program initiatives since the last Management Meeting.

Slides used during the licensee's presentations are enclosed as an attachment to this report.

Mr. Ray began by identifying actions being taken in response to the June 27, 1989 Management Meeting. In particular, he indicated that

Southern California Edison (SCE) has placed specific emphasis in the following areas:

- Enhanced training of all personnel
- Reduction in the backlog of work items
- Consolidation and enhancement of the Root Cause Assessment Program
- Evaluation for necessary qualified staff resources in all areas
- Maintenance of positive progress toward goals in the Nuclear Engineering, Safety, and Licensing Organization

Failure of the ASCO solenoid for CV-304

Mr. Caldwell introduced this topic by noting that on August 23, 1989, an Automatic Switch Company (ASCO) solenoid valve operator for CV-304, the normal charging valve in Unit 1, failed, rendering CV-304 inoperable. This issue was discussed in special Inspection Report No. 50-206/89-31. Valve CV-304 is required to be closed for hot leg recirculation (HLR) when it is necessary to prevent boron precipitation in the core in the event of a loss of coolant accident (LOCA). Mr. Caldwell briefly summarized the history surrounding the failure of this solenoid, the apparent root cause of the failure, and the number of weaknesses found in the corrective action program that were associated with this issue.

Mr. Caldwell further noted that when CV-304 failed, the licensee entered a 72-hour administrative action to fix the valve or initiate a plant shutdown. This was done since SCE did not believe that the Technical Specifications (TS) were applicable to the HLR flowpath, since it had been added to the plant in 1981. However, the NRC considered that when CV-304 failed, TS 3.3.1 was applicable. In the absence of a specific action statement concerning this valve, TS 3.0.3 would have required that a plant shutdown be initiated within one hour of the valve failure.

The licensee agreed with the NRC's characterization of the problems surrounding the failure of CV-304 and the interpretation of the TS requirements for this valve. SCE representatives also stated that the company is committed to conservative implementation of TS requirements and would consult with the NRC as necessary to ensure conservative implementation in the future.

Mr. Martin stated that this issue was being discussed to ensure that future situations do not arise in which TS interpretations compound issues when activities (such as engineering reviews) find problems in the plant.

Operator Performance Problems

Mr. Johnson summarized recent performance problems observed in the Operations area. In particular, a number of events have taken place that were attributable to training (insufficient emphasis on routine plant operations) or to a need for additional formality in the performance of routine duties. The most recent of these events included (1) a partial draindown of approximately 700 gallons of water from the reactor coolant system due to operation of the wrong valve and (2) failure to recognize

that a test conducted in Unit 2 rendered one of the Unit 3 off-site AC power sources (via a cross-tie breaker) inoperable.

Mr. Morgan responded that SCE had been closely monitoring performance problems that have occurred and were not merely reacting to NRC concerns in this area when they initiated their review. The licensee believed that these recent problems were due to training weaknesses; insufficient formality; and performance, design, and human factors problems, with the two most significant causes being training difficulties and lack of formality in the performance of normal activities. Mr. Morgan indicated that they were attempting to reduce the number of performance errors through various means, including the Formality, Attention to Detail, Communications, and Teamwork (FACT) program, professional operator development, and simulator improvements. The licensee also indicated that they were evaluating other potential factors for performance problems such as the use of extensive overtime during outages and operator morale. Long term actions would then be implemented based upon the results of these evaluations.

Mr. Martin stated that there was a perception on the part of the NRC that Operations performance has not recently been as strong as in previous years. He encouraged SCE to make program adjustments as necessary to prevent continued perceptions of a decreasing trend in the Operations area.

Program Enhancements

SCE provided a status on enhancements to the Emergency Preparedness and Root Cause Assessment Programs. In addition, engineering program improvements, the DBD review, and the activities of Nuclear Oversight Organizations were also summarized. Slides used by the licensee during these presentations are provided as an enclosure to this report.

Closing Remarks

Mr. Martin stated that he considered this to have been a useful session, and indicated that efforts to implement program improvements appeared to be going as well as could be expected. He noted that licensee management appeared to share NRC perceptions about recent trends in Operations performance. He emphasized that the NRC did not want to overemphasize recent operator performance errors; however, it is desirable that any perceived adverse performance trend be reversed.

The meeting adjourned at 2:00 p.m.

OPERATIONAL EVENTS

CAUSE CATEGORIES

A. TRAINING

B. FORMALITY/ ATTENTION TO DETAIL

C. PERFORMANCE

D. DESIGN/HUMAN FACTORS

EVENTS

- CREACUS DOOR [A]*
- PLCEA DOWN POWER [A,D]
- ASI TRIP [A]
- D-G AUTO START [D,A,B,C]
- OFF-SITE ELECTRICAL SOURCES [A,C]
- ADV MANIPULATION [C,B]
- VALVE MANIPULATION [C,B]

*First Category is Primary

CORRECTIVE ACTIONS

* PERFORMANCE ISSUES

* DESIGN/HUMAN FACTORS

* TRAINING/FORMALITY/ATTENTION TO DETAIL

INITIATIVES UNDER DEVELOPMENT

* BACKGROUND

* PROFESSIONAL OPERATOR DEVELOPMENT AND EVALUATION PROGRAM

* SIMULATOR IMPROVEMENTS

PROFESSIONAL OPERATOR DEVELOPMENT & EVALUATION PROGRAM (PODEP)

AREA	ACTION
COMMUNICATIONS	DEVELOP STANDARDS
TAILBOARDING	DEVELOP CHECKLIST
PLANT MONITORING	RADIX TRENDS
PROCEDURE USE	JOB PERFORMANCE MEASURES (JPM)
PLANT MANIPULATION	SIMULATOR
PROBLEM SOLVING	
ALARM RESPONSE	

SIMULATOR IMPROVEMENTS

* LESSON PLAN UPGRADE
  - ✓ LONGER PROBLEM SESSIONS
  - ✓ CONCENTRATION
  - ✓ IDENTIFIED PROBLEMS (NORMAL PLANT EVOLUTIONS)
* DEDICATE ONE WEEK TO NORMAL OPS
  - ✓ PLANT MANEUVERING
  - ✓ RESPONSE TO THE UNEXPECTED
  - ✓ STRESS PODEP FEATURES
* PROVIDE PODEP TRAINING TO THE INSTRUCTORS
* UPGRADE SIMULATOR MODELING
* EVALUATION

ATTENDANT ISSUES

* OVERTIME
  - ✓ 1989/OUTAGE
  - ✓ RELATIONSHIP TO INCIDENTS
* ATTRITION/MANNING
  - ✓ ANNUAL
  - ✓ CAUSES
* MORALE
  - ✓ PERSONAL OBSERVATION
  - ✓ OPS/TRNG OD EFFORT
  - ✓ QA CONCERN

Management Meeting - November 29, 1989

- SCE Has Reviewed the NRC and SCE Memoranda Concerning the June 27 Meeting
  - Actions Are Being Taken in Accordance With That Discussion
- Agenda for Today Includes Items of Concern to SCE As Well As the NRC
  - Of Particular Concern Are Efforts to Maintain Operational Excellence
- Overall SCE Assessment, Based on Last 3 Months
  - There Is a Need to Increase Training in All Areas, Both "How-To" and "Why", With Emphasis on Excellence in Normal Operations
  - There Is a Need to Reduce the Backlog of Work in Both Technical and Related Program Areas
  - There Is a Need to Consolidate and Enhance Root Cause Determination Processes
  - Action Is Required to Maintain and Increase Qualified Staff Resources
  - Significant, Positive Progress Has Been Made Toward Our Goals, Including Much Greater Involvement In--and Awareness Of--Ongoing Plant Activities by NES&L

Application of Technical Specification Requirements

- Conservatively Implement Requirements At All Times
- Inform Region V and Consult With NRR When Clarification Is Required to Ensure Conservative Implementation
- Where Functions or Components Have Been Added and/or Taken Credit For Subsequent to Issuance of the Relevant Technical Specification Requirements, Include These Functions or Components Within the Requirements
- Propose Changes Where Necessary to Clarify Applicability

Emergency Preparedness Program

- SCE Has Included Emergency Classification Among the Responsibilities of the Emergency Coordinator
- This Worked Well So Long As the Emergency Coordinator Remained in the Technical Support Center (TSC)
- When SCE Decided to Transfer the Emergency Coordinator Function to the Emergency Operations Facility (EOF) Following Its Activation, Emergency Classification Was Slow
  - Region V Comment in Connection With 1988 Exercise
- In 1989 Exercise, SCE Attempted to Duplicate TSC Emergency Classification Timing at the EOF
  - Results Successful With Respect to Timing
  - Other EOF Functions Adversely Impacted
- SCE Will Modify Its Program to Retain Emergency Classification in the TSC Following Emergency Coordinator Transfer to the EOF
- Result Will Improve the Interface Between the EOF and TSC

Root Cause Assessment Program

- Need for SCE Reassessment Discussed by NRC at the June 27 Management Meeting

- SCE Has Been Strongly Oriented Toward the Principle that the Most Effective Corrective Action Results When Root Cause is Determined by the Organization Responsible for Implementing the Action

  - This Remains an Important Factor in Our Development of a Revised Program

  - Nevertheless, We Must Pull Together Scattered Activities Into a Single Program Which Must Be Developed

Root Cause Assessment Program

- The Program Will Be Administered by Oversight Engineering, Within the Nuclear Oversight Division of NES&L

  - Dr. Chiu Will Be the Manager of Oversight Engineering Effective 1/1/90

  - The Program Will Be Fully Functional by 6/1/90

  - Root Cause Program Staff to be Engineers Drawn from Quality Organization - Additional Staff Will Be Hired If Needed

  - In Addition to Root Cause Program Group, Oversight Engineering Will Include Quality Engineering, Independent Safety Engineering Group and Nuclear Safety Group

Root Cause Assessment Program

- The Program Will Provide for:
  - Systematic Oversight of All Root Cause Determinations by the Program Staff - This Will Include Tracking to Provide Visibility to Timeliness and Backlog
  - Independent Root Cause Determinations by Oversight Engineering for Designated Events or Conditions
  - Establishment of Ad Hoc Evaluation Teams When Directed by the Manager of Oversight Engineering
  - Systematic Evaluation of Data to Identify Conditions by the Manager of Oversight Engineering
  - Definition and Training in the Use of the Appropriate Methodology to be Applied to Root Cause Determinations in Various Circumstances

UPDATE ON ENGINEERING IMPROVEMENTS
AND
SONGS DESIGN BASES DOCUMENTATION (DBD)

November 29, 1989

Southern California Edison

Review

BASIC SSFI CONCLUSIONS - JUNE 1988

- SCE Lacks Full Understanding of Basic Design of Systems Reviewed
- SCE Lacks Ready Access to Accurate Design Information
- Many Identified Deficiencies Result from Inadequate Access to Basic Design Information
- Technical Work Is Not Always Complete and Technically Correct
- SCE Relies Heavily on Contractors

Assessment

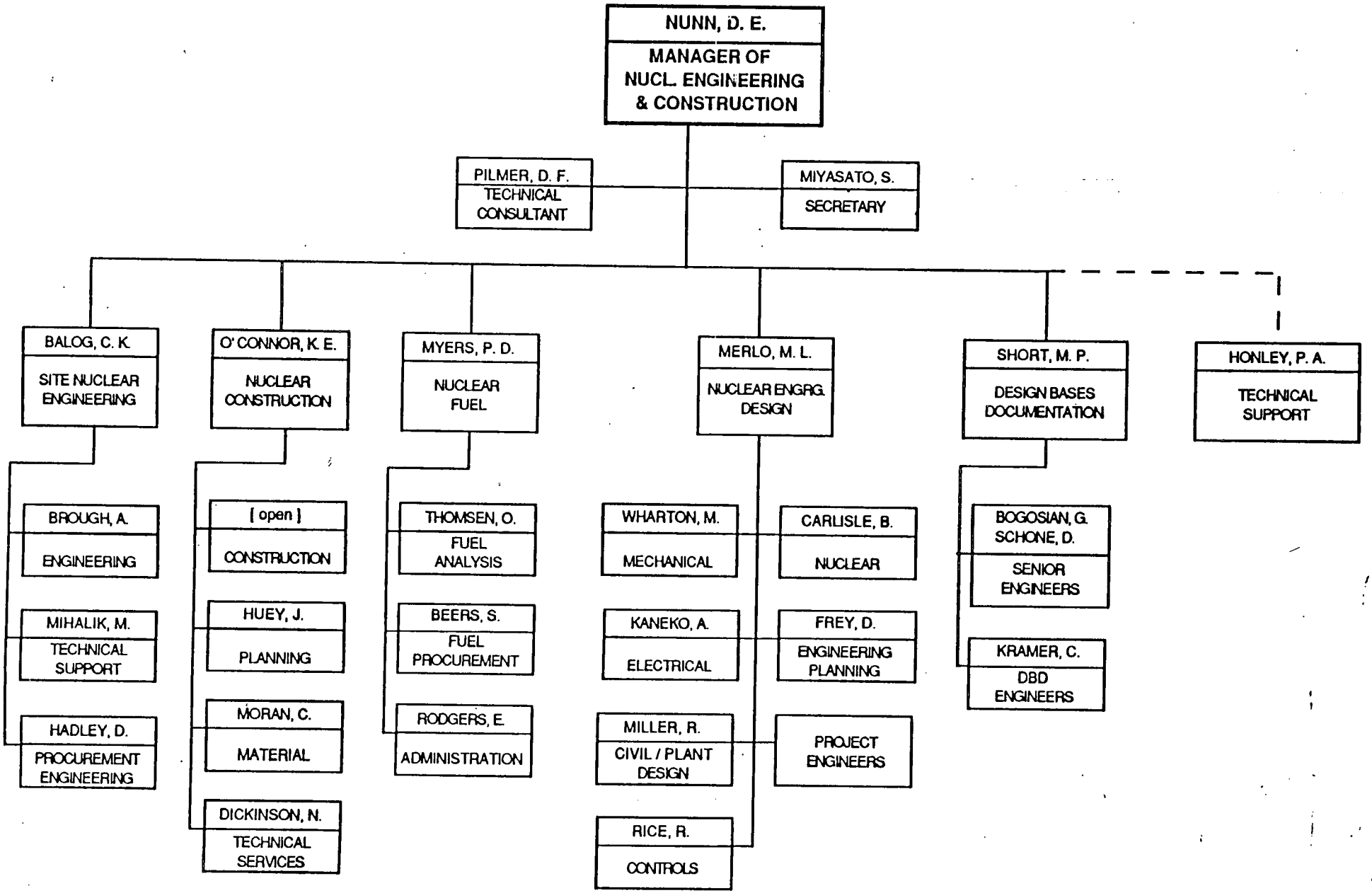
- Improvement in Quality of Design
- Increased In-House Design
- System Ownership
- Continuing Improvements
  - Interface
  - Technical Expertise
  - Training
  - Backlog

Nuclear Engineering and Construction

TASK FORCE RECOMMENDATIONS

- Consolidate Nuclear Functions
- Increase Level and Quality of In-House Design
- Develop a Design Bases Documentation Program

NUCLEAR ENGINEERING & CONSTRUCTION DIVISION



Nuclear Engineering and Construction

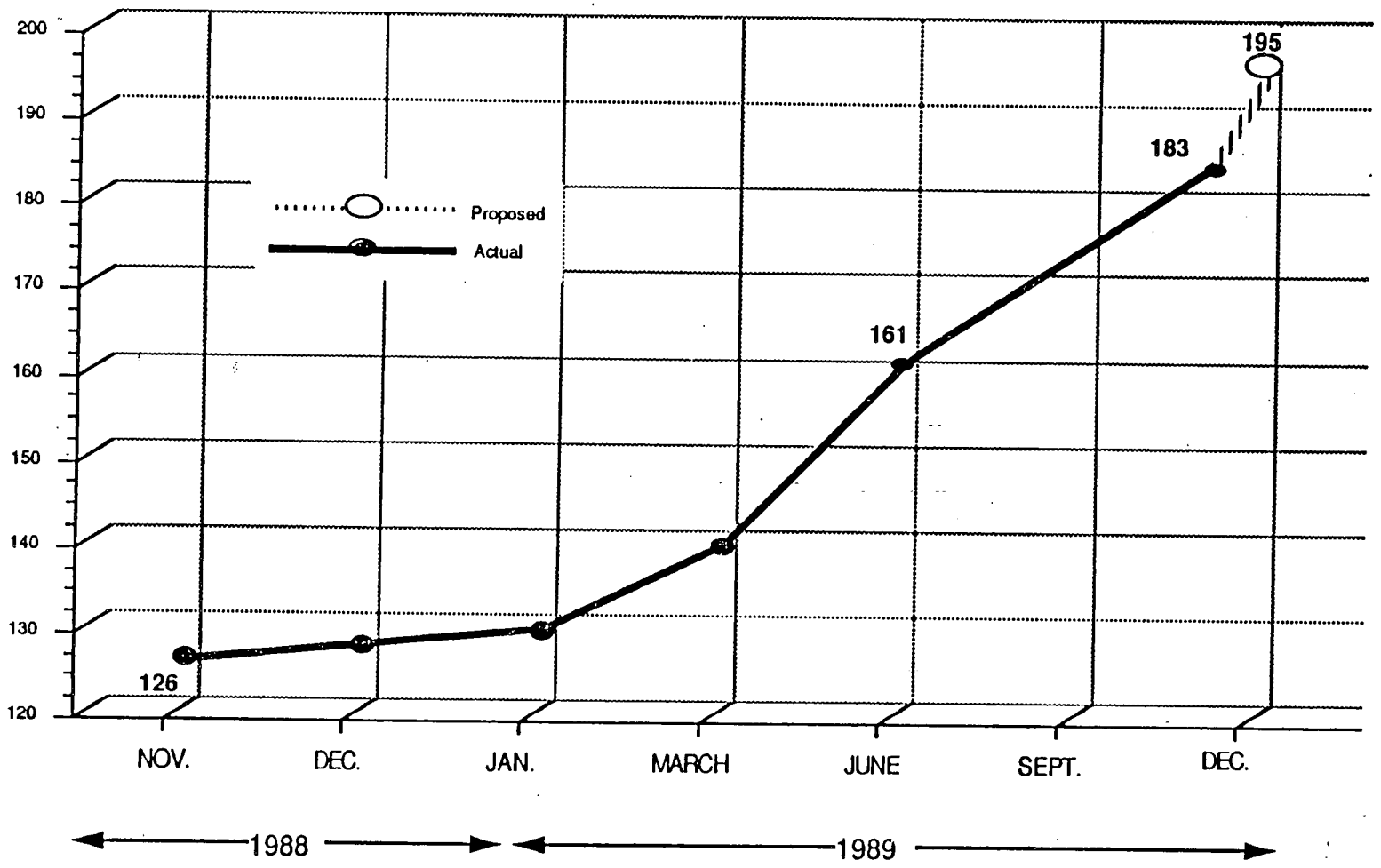
INCREASE LEVEL AND QUALITY OF IN-HOUSE DESIGN

- Resources
- Level of In-House Design
- Quality -- Engineering Excellence Program

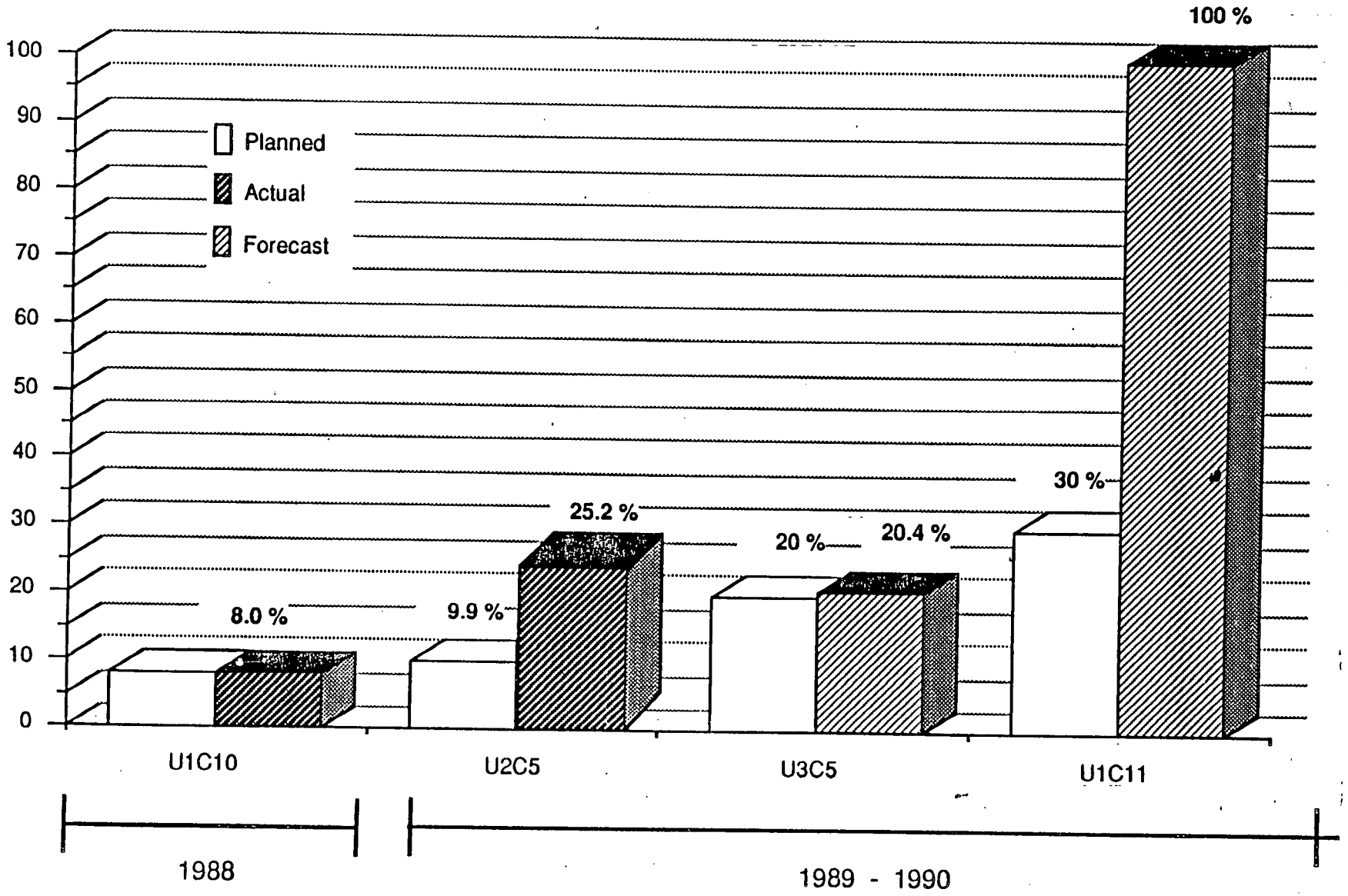
Nuclear Engineering & Construction

1989 Resource Plan

PERSONNEL



In-House Design



Engineering Excellence

- Engineering Quality Monitoring Program
  - Unit 1 Cycle 10: Complete
    29 Action Items
  - Unit 2 Cycle 5: Ongoing
    12/89 Forecast
  - Independent Review: Unit 2 Cycle 5
    - Cygna and Sargent & Lundy
    - Four (4) DCPs
    - Forecast 12/89

Engineering Excellence

- Design Engineering Training
  - Consolidated as part of NES&L Department Training Group
    - Increased resources - 1990
    - INPO Accreditation Criteria
  - Training Needs Analyses - Complete
    - Training curriculum - Approved
    - Training Program Description - 12/89
    - Priority / Schedule - 1/90
  - Process Training (50.59, DCPs, systems)

Engineering Excellence

- Standing Committees Established
  - Standards
  - Design Review
- Communications Improvements
  - Roles & Responsibilities
- Procedures and Work Process Enhancements
- Analytical Tools Acquired
  - BECAP and PTI
  - ME101

Nuclear Engineering Design Organization

PROGRESS SINCE CONSOLIDATION

- System Design Engineering Concept Implemented
- Engineering Excellence Program Initiated to Change Culture
- Engineering Quality Monitoring Program Established
- Engineering Resources Increased
- Design Change Process Improved and Training Program Under Way

Design Bases Documentation

Program Overview

Design Bases Documentation

RECOMMENDATIONS FROM 1988 ASSESSMENT

- Evaluate and Refine Configuration Management Program
- Develop Design Bases Documentation Program
- Maximize Use of SCE Engineering Resources
- Verify Existence, Correctness and Consistency of Design Documents
- Verify Incorporation of Design Basis Information Into Operations, Surveillance, Maintenance and Training Programs
- Verify Final Safety Analysis

Design Bases Documentation

PILOT PROGRAM GOALS

- Prepare DBD Program Plan by January 1, 1989
- Prepare Three to Four Pilot DBDs by End of 1989
- Field Verify Pilot DBDs
- SSFI Type Review of One SO1 and One SO23 Pilot DBD System
- Review Results and Revise DBD Program as Necessary
- Prioritize Remaining SO1 and SO23 Systems for DBD Development

Design Bases Documentation

PROGRAM STATUS & SCOPE

Status

- Pilot DBDs Under Way
  - SO23 Instrument Air
  - SO1 SLSS (Sequencer)
  - SO23 Component Cooling Water
  - EQ Topical
- NSSS / Industry Participation
  - CE / W / BPC Document Retrieval
  - NUMARC / INPO / Region V Utilities Efforts

Scope

- All Systems with Safety Functions
- Major Topical Areas

Design Bases Documentation

LESSONS LEARNED
DURING PILOT PROGRAM

- Schedule Changes
  - Accident Analysis Topical
  - Electrical Systems
  - Component Cooling Water
- Verification Program
  - Operability derived from design bases
  - Post-installation testing program derived from design bases
  - Vendor supplied skids (i.e., black boxes)
  - FSAR commitments

NUCLEAR OVERSIGHT

STATUS REPORT

NOVEMBER 29, 1989

NUCLEAR OVERSIGHT

I. Status of Items to Address NRC Observations and SCE Commitments made from last meeting

II. State of the Organization

NRC - OVERSIGHT MANAGEMENT PRESENCE IN THE PLANT UNACCEPTABLE

SCE ACTION

- AREA MONITORING PROGRAM
- ACTIVITY MONITORING AND SURVEILLANCE PROGRAM
- NOD OUTAGE PLANNING PROGRAM

AREA MONITORING PROGRAM

- All Oversight Participates except QC Inspectors
- Site Engineers Monitor Assigned Areas Weekly
- Offsite Engineers Monitor Assigned Areas Bi-Monthly
- Area Monitoring Program Status Reported to Management Monthly
- Look at Activities in Areas, Evaluate Material Condition and Housekeeping
- NOD Staff Participation for October was 85% (309 Area Monitoring Reports submitted)

ACTIVITY MONITORING AND SURVEILLANCE PROGRAM

- Formal Procedure Implemented
- Typical Assignments
  - Shadow PEO from Pre-Shift Brief to end of Shift Turnover
  - Monitor Reactor Stud Final Tensioning
- Average of 35 Activities Monitored each month for last 6 months and a total of 88 findings resulted

NOD OUTAGE PLANNING PROGRAM

- Formal Procedure Implemented
- All Six Oversight Groups participate
- Vulnerability Analysis used to Select Areas of Interest
- Examples of Selected Oversight Areas – Unit 2 Outage
  - Refueling Activities were covered 24 hours/day
  - Balance of Plant Work was covered 2 shifts/day
  - Steam Generator Inspections and Repairs
  - Surveillance of FME Control Program
  - Monitored Shutdown Cooling and Mid-Loop Entry
  - Surveillance of HP Controls and Programs

NUCLEAR OVERSIGHT DIVISION PROTECTED AREA ENTRIES	SEPTEMBER				OCTOBER			
	WEEK 1*	WEEK 2	WEEK 3	WEEK 4	WEEK 1	WEEK 2*	WEEK 3	WEEK 4
NOD MNGMT/SUPVSN	5	10	8	6	7	6	7	5
ISEG	3	2	2	3	2	2	2	2
NSG	1	3	1	1	1	2	0	0
SUPPLIER QA	4	3	3	7	2	4	5	4
SITE QA	23	28	26	30	25	18	25	22
QUALITY PROGRAMS	2	2	3	4	3	1	3	1
TOTAL	38	48	43	51	40	33	42	34

*HOLIDAY

NRC - OVERSIGHT NEEDS TO BE MORE AGGRESSIVE, INTRUSIVE AND ACTIVE

SCE ACTION

- De-Certify 30% of the Auditors/Lead Auditors - Developed Get Well Program for Each
- Gave NSG & ISEG Corrective Action Capability
- All Violations in the Field Immediately Corrected or Formal Stop Work Issued
- All Violations reported to Supervision
- Independent Evaluation of Causal Factors for Specific Events

NRC - OVERSIGHT NEEDS TO BE MORE AGGRESSIVE, INTRUSIVE AND ACTIVE

SCE ACTION (continued)

- Moved NCR Approval from Site QA to ISEG
- Hired Operators – Implemented Operator Surveillance Program
- All NOD Trained on INPO Observation Techniques and Performance Based Auditing

STATE OF NOD

CHALLENGING THE CORPORATION

LEAVING FOOTPRINTS

ADDING VALUE

EXAMPLES

- Crimper use Out of Control
- Background Investigation Vendors Uncontrolled
- Unit 1 Trip – Feedwater Valve Control Logic
- 50.59 Evaluation ADV Modifications

STATE OF NOD (continued)

- Maintenance Staff Passing Tools under Contamination Zone Barriers
- Test Engineer asking Security to Help Perform Leak Rate Test of Emergency Hatch
- Operator requests HP Technician to take Reactor Vessel Level Readings in a Zone III (Fuel Flea Zone)
- Pipe Support in Turbine Building found deficient
  - Struts Disconnected
  - Loose Fasteners

MANAGERS ASSESSMENT

- Trending of deficiencies is not where I want it to be.
- Audit training program is not where I wish it was.
- Although 40 corrective action documents were issued in the area of Design this effort not as cohesive as I would like it to be.
- Evaluating performance and effectiveness rather than merely reporting compliance.
- Are asking the next question – pulling the string.
- Organization has embraced the requirement to be part of the team and add value to Nuclear operations.

MANAGERS ASSESSMENT (continued)

- Exceeded my expectations of June
- Must keep the pressure on
- Cannot allow ' We're good enough' to settle in