

U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/89-22, 50-361/89-22, 50-362/89-22

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

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

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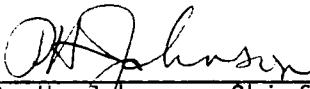
Facility Name: San Onofre Units 1, 2 and 3

Meeting Location: San Onofre, San Clemente, California

Meeting Date: June 27, 1989

Prepared by: A. Hon, Resident Inspector

Approved By:



P. H. Johnson, Chief
Reactor Projects Section 3

7/23/89
Date Signed

Meeting Summary

Management Meeting on November 2, 1988 (Report Nos. 50-206/89-22, 50-361/89-22, and 50-362/89-22)

Management meeting to discuss issues of current interest relating to the San Onofre Nuclear Generating Station.

DETAILS

1. Meeting Participants

Nuclear Regulatory Commission (NRC)

J. Martin, Regional Administrator
R. Zimmerman, Acting Director, Division of Reactor Safety and Projects
G. Knighton, Director, Reactor Project Directorate V, NRR
D. Kirsch, Chief, Reactor Safety Branch
P. Johnson, Chief, Reactor Projects Section 3
F. Huey, Senior Resident Inspector
D. Hickman, Project Manager, NRR
A. Hon, Resident Inspector
A. Toth, Reactor Inspector

Southern California Edison Company

L. Papay, Senior Vice President
K. Baskin, Vice President, Nuclear Engineering, Safety, & Licensing
C. McCarthy, Vice President, Nuclear Generating Site Manager
H. Morgan, Station Manager
R. Rosenblum, Manager of Regulatory Affairs
D. Nunn, Manager of Nuclear Engineering & Construction
D. Shull Jr., Quality Assurance Manager
J. Wambold, Project Manager
F. Nandy, Manager, Licensing
R. Krieger, Operations Manager
L. Cash, Maintenance Manager
R. Waldo, Acting Technical Manager
P. Knapp, Health Physics Manager
J. Schramm, Operations Superintendent, Unit 1
M. Merlo, Manager, Nuclear Design Engineering

San Diego Gas & Electric Co.

G. Cotton, Senior Vice President
R. Lacy, Manager, Nuclear

2. Introduction

A meeting was held at the San Onofre Site on June 27, 1989 to discuss recent activities and other issues of interest relating to the San Onofre Nuclear Generating Station. A copy of the slides used during the licensee's presentations is enclosed as Attachment 1 to this report.

3. Management Discussion

Mr. Martin opened the meeting by referring to topics covered at the last management meeting, held in November, 1988. The major topics included SCE improvement efforts in the areas of engineering/technical work and the quality oversight organization. The purpose of the meeting was to review progress made by SCE in these areas and to discuss problem areas

which warrant additional action. In this regard, Mr. Martin suggested a review of recent engineering problems associated with the Unit 1 nuclear instrumentation system (NIS) and steam generator level instruments.

Mr. McCarthy reviewed the current site organization chart and Mr. Baskin addressed recent changes in the Nuclear Engineering, Safety, & Licensing (NES&L) organization:

- * The recently vacated position of Manager of Nuclear Regulatory Affairs was assumed by Mr. Rosenblum.
- * Mr. Shull replaced Mr. Rosenblum as the corporate Quality Assurance (QA) Manager (Mr. Shull was formerly the Manager of Maintenance at San Onofre and was replaced by Mr. Cash.)
- * The relocation of NES&L from Rosemead to Irvine was initiated in November, 1988 and scheduled to be completed in August, 1989. Use of the Irvine facility will significantly reduce travel time and should improve corporate office access to San Onofre.

The new Quality Assurance Manager, Mr. Shull, provided his initial impressions of the quality assurance organization. He stated that SCE possesses considerable technical talent; however, until recently, QA oversight lacked sufficient depth and experience, especially in technical and maintenance areas. This weakness was evidenced by Notices of Violation involving areas which had not been effectively probed by QA. He noted that a number of improvements have been initiated since the last management meeting. Mr. Shull and Mr. Rosenblum cited the improved QA Auditor Certification Program as an example. This program was implemented in January 1989 to assess QA auditor qualification with respect to the ANSI standard. Written examinations and oral examination boards were given to lead auditors to evaluate their critical skills and inquisitive attitude. These boards resulted in 20 of 67 lead auditors being downgraded for necessary retraining and requalification.

In response to Mr. Kirsch's inquiry about QA staff background and involvement in the engineering organization, Mr. Rosenblum stated that QA reviews some of the design changes and 10CFR50.59 evaluations. In addition, the Independent Safety Engineering Group (ISEG) has begun to review all NCR resolutions. Mr. Shull stated that the organization generally possesses the necessary technical skills; also, expertise can be drawn from other organizations through cross training. However, Mr. McCarthy pointed out that there is currently a licensed operator shortage, necessitating a freeze on job transfers from the Operations Division.

Mr. Martin and Mr. Zimmerman expressed concern about the infrequent presence of QA and other management inside the protected area. Dr. Papay and Mr. Rosenblum acknowledged this concern and stated that a higher level of expectation in this regard had been communicated to all levels of management. Mr. Shull stated that specific monitoring areas and frequency requirements had been assigned to all levels in the QA organization. Mr. Martin reemphasized the importance of the oversight

organizations being actively involved in day-to-day plant operations in order to aid in the anticipation and identification of problems before events occur. In this regard, Mr. Martin inquired about the progress of QA improvement efforts since the last management meeting. Mr. Baskin replied that SCE had begun to implement improvements in the areas of personnel reassignment and the Auditor Certification Program. Licensee representatives considered that although there has been some recent downward trend in QA effectiveness, it has begun to turn around and significant improvement is expected during the next 6 to 9 months.

Mr. Martin asked for three recent examples of significant findings by the QA organization. Mr. Rosenblum cited the following examples: 1) a Technical Specifications error regarding low temperature overpressure protection, 2) health physics monitoring problems associated with the control and release of contaminated material outside the protected area, and 3) evaluation of Unit 1 return to service activities to identify problem areas following major modifications, such as the nuclear instrumentation system and steam generator level instruments. Mr. Martin concluded discussion of this topic by reemphasizing the importance of self-critical oversight organizations, and noted that the NRC will closely monitor SCE's effort in this area during the coming months.

Mr. Nunn reviewed the findings and recommendations of the safety system functional inspection (SSFI) Task Force, as presented at the previous meeting. Mr. Nunn then discussed in-house design efforts planned for 1989 and 1990. In this regard, he noted that Unit 1 would be the area of most activity. With respect to the design base documentation (DBD) effort, Mr. Nunn reported that the pilot DBD program was underway and scheduled for completion by the end of 1989. Mr. Martin cautioned SCE to consider participating in the development of an industry consensus. Mr. Baskin acknowledged this and stated that SCE has been participating in the NUMARC DBD standard development program.

Mr. Merlo reviewed Nuclear Engineering Design Organization (NEDO) progress since the last meeting. He stated that major programmatic changes are being made in the areas of system design engineer training, better communication of performance expectations, increased emphasis on quality monitoring, and additional emphasis on organizational readjustment from a plant construction environment to an operations/modification environment. A videotape prepared for system design engineer training, to communicate management's expectations of excellence, was shown at the meeting. In response to a question from Mr. Johnson, Mr. Merlo stated that typically a system design engineer is expected to be in the plant at least every two weeks and similar guidelines were established for others at NEDO.

Two problems associated with Unit 1 Cycle 10 outage activities were discussed:

- * Mr. Martin noted that the NIS problems appeared to indicate a weakness in the interface between the system design engineer and the control room. Mr. Merlo agreed and attributed this problem to a failure to communicate expectations for full coverage of the control

room by the design engineer, and to delayed interface training due to the outage workload. Both Mr. Baskin and Mr. Merlo agreed with Mr. Martin's assessment and indicated that SCE would continue to improve this interface. In addition, Mr. Merlo said that the NIS modification could have been smoother if more attention had been paid to identification and correction of electrical noise problems before system installation, as well as during post-modification testing.

- * The second problem discussed involved the steam generator wide range level instruments. Mr. Merlo said that engineers involved in the design change overlooked dynamic flow effects in the steam generator, and that SCE also had not properly involved Westinghouse in the design modification process. Mr. Huey noted that the root cause for this error needs to address more than just the design group, since other involved groups (such as operations and quality assurance) had opportunities to identify and correct the problems. Mr. Nunn said that the root cause investigation was intended to focus on the accountability of responsible individuals who made the mistake. He agreed, however, that others involved in the modification process should also be evaluated.

Mr. Morgan discussed SCE root cause investigation activities. He stated that equipment failures are investigated by the system cognizant engineer as part of the NCR resolution process; human errors are investigated by the division to which the involved individual belongs; and reportable events are investigated by the Compliance organization. Although independent, Compliance often uses inputs from other division findings to formulate conclusions for licensee event reports. Mr. Zimmerman and Mr. Johnson noted that SCE was considered one of the leaders in root cause assessment a few years ago; however, the industry has made significant progress in this area since then and appears to have surpassed SCE's effort. An example of actions taken by other facilities involves the use of a centralized and dedicated root cause investigation group which is independent of other organizations. Mr. McCarthy stated that SCE would evaluate new concepts for application at San Onofre. Mr. Morgan agreed, noting that some recent licensee event reports (LERs) were inadequate. Mr. Martin reemphasized the need for SCE to learn from industry experience in this area and noted that the NRC will assess SCE efforts closely.

Mr. Baskin summarized NES&L's continued planned improvement actions as follows:

- * Continue implementation of the SSFI Task Force recommendations.
- * Increase in-house design and modification activities with adequate independent review.
- * Continue improvement of the interface between the design engineer and the station.
- * Complete consolidation and continued reevaluation of NES&L's effectiveness.

Mr. Knapp discussed program changes to control potentially radioactive items. In August 1988, one contaminated item was found outside the protected area in an unmarked container. SCE subsequently spent about 200 man-days of effort searching for additional examples of this problem, and identified a total of 82 items of minor contamination outside the protected area. Mr. Knapp attributed the root cause for these deficiencies to inadequate worker training and to the large amount of material leaving the controlled area during outages. He stated that corrective actions were being taken to raise the workers' awareness through revised red badge training. Furthermore, a hold-down area was established inside the protected area, in which all items will be surveyed before release. Also, an INPO assistance visit was requested and performed. Recent experience has indicated that these actions have been effective.

Mr. Martin inquired about efforts to improve the reliability of the post-accident sampling system (PASS). Mr. McCarthy replied that SCE had initiated a high-priority effort to improve PASS reliability. SCE had purchased some new instruments, although some have a long lead time.

Mr. McCarthy then reported on the status of the substance abuse program. Currently all SCE and contractor employees are under the random drug test program. This test program, in conjunction with a periodic plant search program, has resulted in a downward trend of drug problems. SCE planned to continue the detection and education effort and implement the balance of the Fitness for Duty rule.

Mr. Zimmerman stated that a recent Unit 1 rigging problem did not appear to have been addressed in an appropriate or timely manner by SCE management. Mr. Morgan agreed that SCE management was slow to respond to the event, in that management actions were not initiated until 24 hours after the event occurred. However, he believed that subsequent management actions were appropriate. Mr. Shull said that the root cause of this event was more than a poor rigging practice and involved a serious breakdown of the maintenance order process. He believed it was more important to identify the final root causes and communicate this message to station personnel than to hastily retrain people only on rigging practices. Mr. McCarthy also concurred that a number of lessons were learned from this incident.

4. Conclusion

Mr. Martin concluded the meeting with the following summary:

- * SCE appears to have laid necessary ground work for significant improvements in the performance of engineering and nuclear oversight organizations. However, continued active involvement by upper levels of SCE management is needed to sustain these improvements.
- * The root cause investigation program appears to need reevaluation to expand its scope and effectiveness.
- * SCE's efforts in the above areas should produce additional findings and "value added" to overall plant safety and reliability. The NRC will follow this closely in the coming months.

NRC MANAGEMENT MEETING

June 27, 1989



Southern California Edison

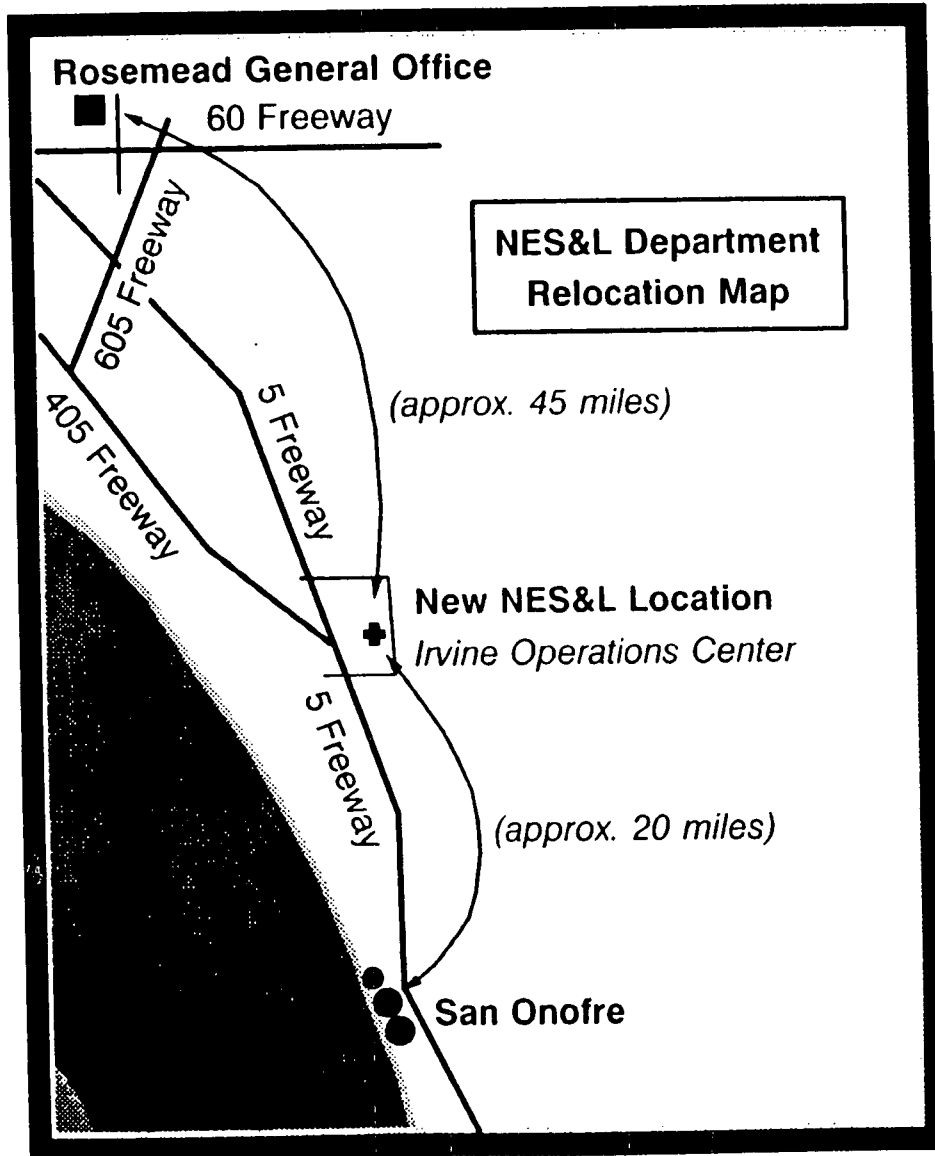
SCE / NRC MANAGEMENT MEETING

SCE AGENDA

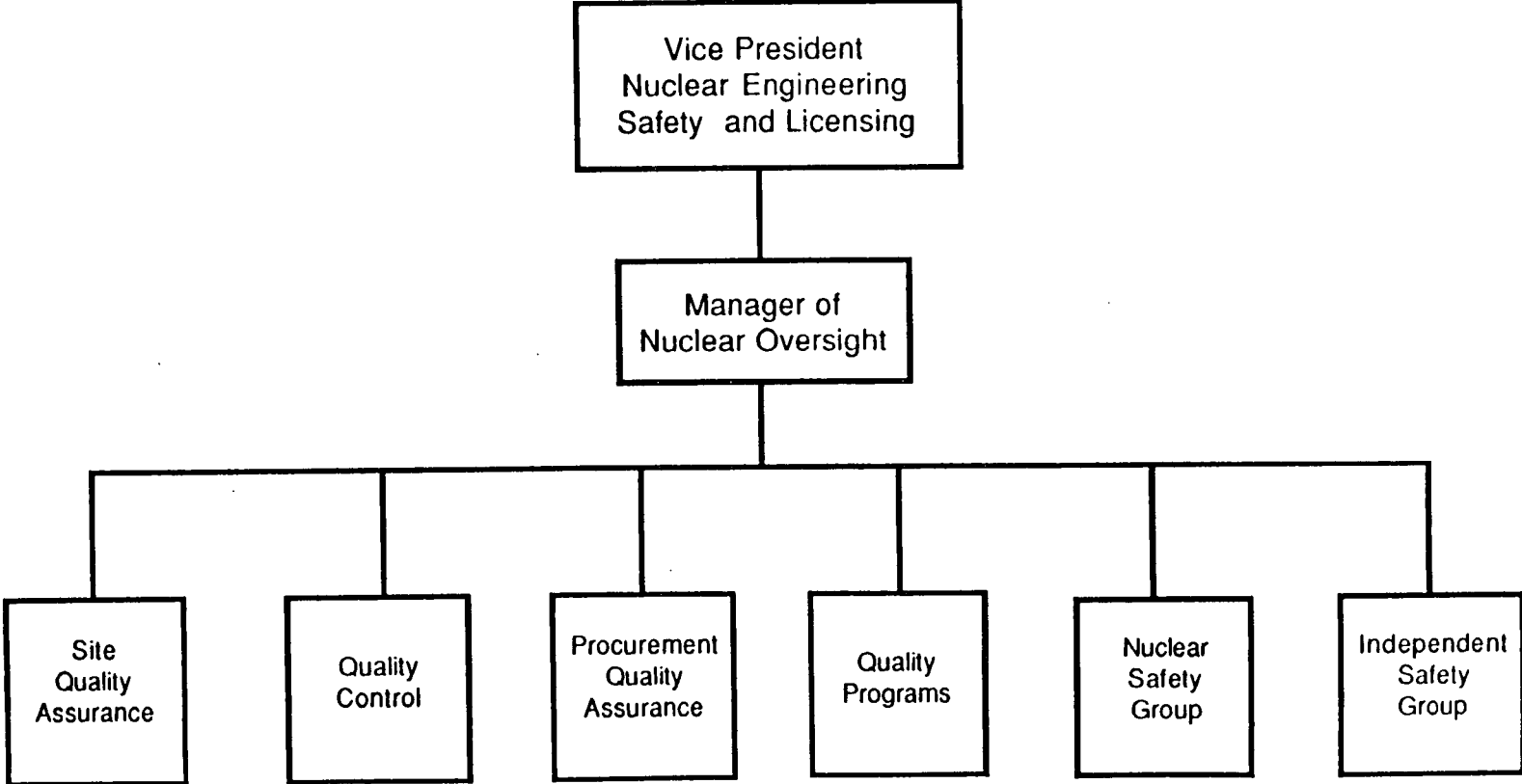
1. Opening Remarks
2. Nuclear Organization Update
 - NGS
 - NES&L
 - Nuclear Oversight Organization
 - Nuclear E&C Reorganization and Consolidation
 - Design Bases Documentation
 - Nuclear Engineering Design Activities
 - Progress To Date
 - Unit 1, Cycle 10
 - NIS Case Study
 - Steam Generator Wide Range Level
 - Future Actions
3. Control of Potentially Radioactive Items
4. Update on Substance Abuse and Fitness for Duty

NES&L Relocation to Irvine

- Initial Move -- November 1988
 - Quality Assurance
 - Nuclear Fuel
- Construction in Progress
- Completion of Move -- August 1989



Nuclear Oversight Organization



Nuclear Oversight Organizational Improvements

- Auditor Certification Program
 - Certification Procedure Upgraded
 - Written Examination
 - Oral Review Board
 - Evaluation of Critical Skills
 - 30% of Lead Auditors Downgraded (20/67)
 - Training / Development Needs Defined

Organizational Improvements (Continued)

- Development of Oversight Personnel
 - Technical Training
 - Performance Based Auditing
 - Observation Training
 - Interview Skills
 - Plant Systems
 - Cross-Training / Depth Enhancements
 - Inter-group Reassignments
- Supervision Changes
 - Site QA (100%)
- Missed Opportunities Evaluation

Nuclear Oversight Recent Activities

- Return to Service Evaluation - Unit 1
- Low Temperature Overpressure Protection (LTOP)
- Health Physics Monitoring

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

Review

Task Force Results - September 1988

	Findings	Recommendations
■ Design Process	24	24
		<ul style="list-style-type: none">- Design Bases Document- Establish Design Accountability/Responsibility- System Design Engineers- Design Process Feedback- Supervision/Management
■ Training	13	12
		<ul style="list-style-type: none">- Systems Training- Technical Training- Cross-Training with Station

Review

Task Force Results - September 1988

(Continued)

	Findings	Recommendations
■ Resources	9	9
		- Enhance Technical Design Resources
		- Single A/E
■ Organization	8	8
		- Consolidate Design Engineering Function

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

Consolidate Functions

- Nuclear Fuel Management to NE&C

- Transition of Design Related Activities
 - Procurement Engineering
 - O&M Services
 - Station Technical
 - COPE Program

Nuclear Engineering & Construction

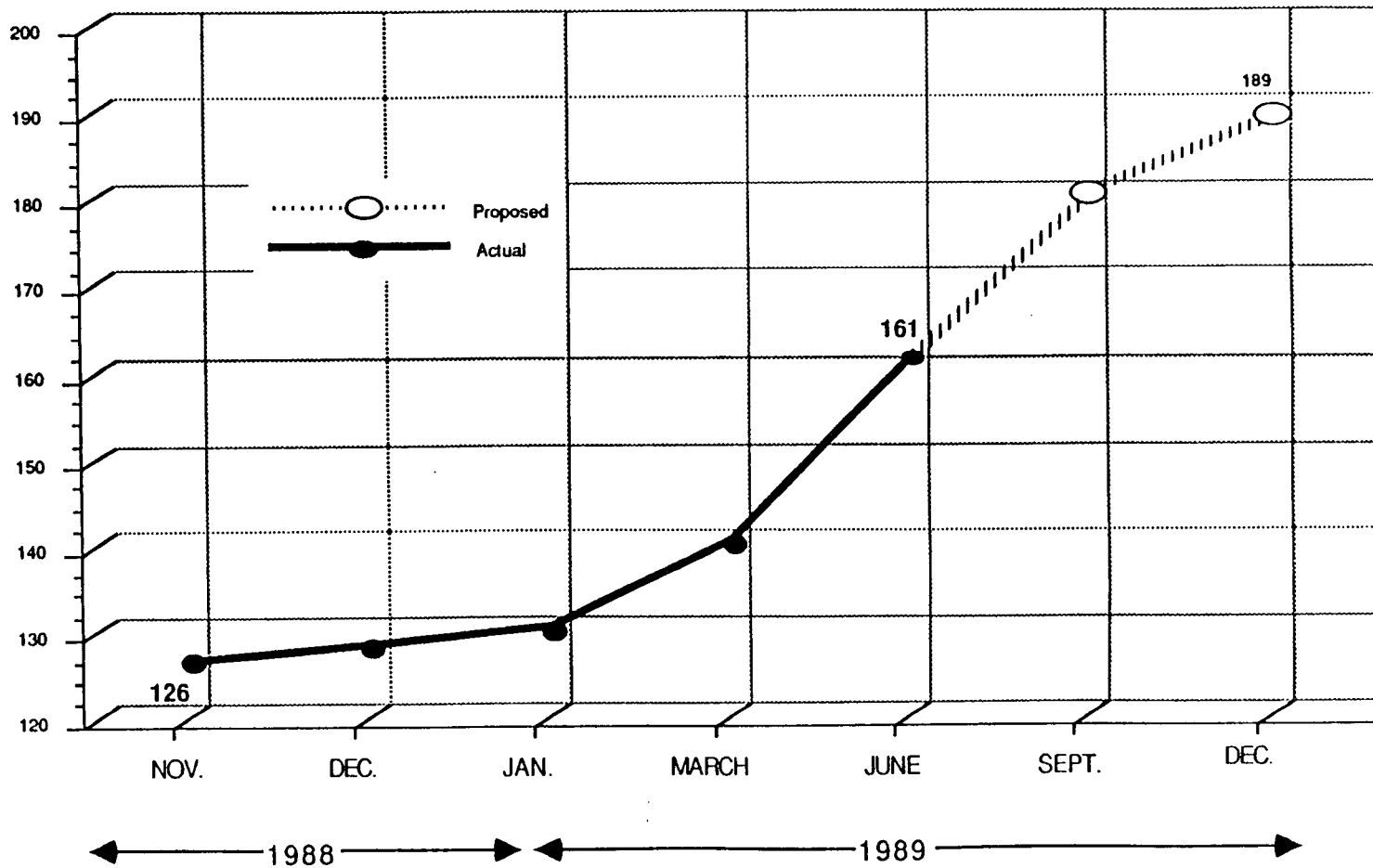
Increase Level and Quality of In-House Design

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

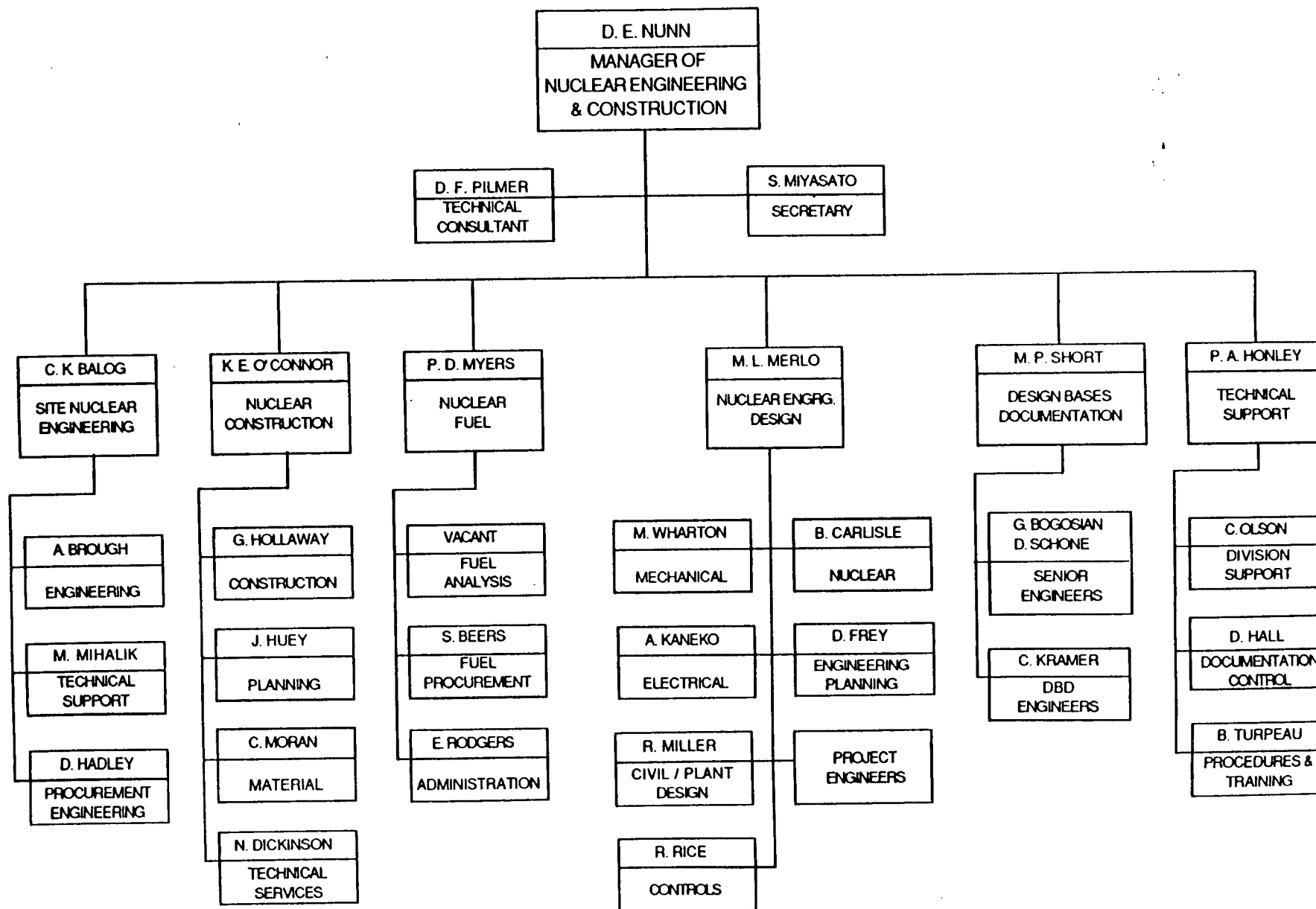
Nuclear Engineering & Construction

1989 Resource Plan

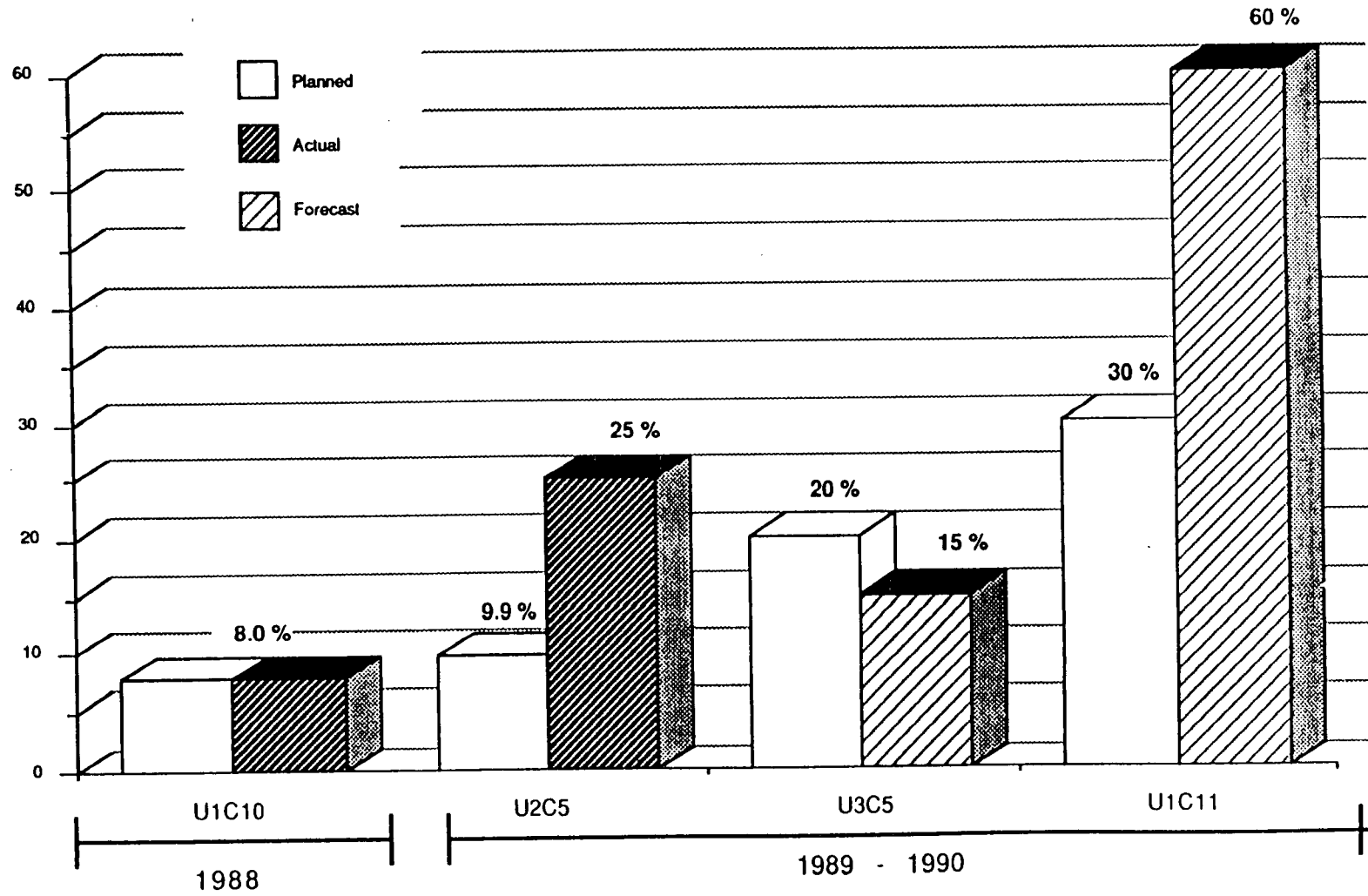
PERSONNEL



NUCLEAR ENGINEERING AND CONSTRUCTION DIVISION



In-House Design



Design Bases Documentation

Status

- Pilot DBD's Underway
 - SO23 Instrument Air
 - SO1 SLSS (Sequencer)
 - SO23 Component Cooling Water
 - EQ Topical

- NSSS / Industry Participation
 - CE / W Document Retrieval
 - NUMARC / INPO / Region V Utilities Efforts

Scope

- All Systems with Safety Functions

- Major Topical Areas

Design Bases Documentation

Verification

- Verification Program in Development for 4th Quarter
 - Multi-Organization -- SSFI Style
 - Incorporate Lessons from SONGS 1

Schedule

- 5 - 6 Unit 1 Systems/Year
- 9 - 10 Unit 2/3 Systems/Year
- Completion by 1995

Design Bases Documentation

Lessons Learned from SONGS 1

- 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)

Nuclear Engineering Design Organization Progress Since November 1988 Meeting

- System Design Engineering Concept Implemented
- Engineering Excellence Program Initiated to Change Culture
- Engineering Quality Monitoring Program Established
- Engineering Resources Increased
- Training Program and Design Change Process Improvements in Final Review

Unit 1, Cycle 10

Successes

- Restart Report
 - 14 Items Identified
 - 8 Modifications
 - 2 Analysis
 - 2 Tech Spec changes
 - 2 Other
- 10 of 14 Items Resulted from a Questioning Attitude
- Assumed Leadership Role in Solving Problems
- Retained Outage Experience In-House

Unit 1, Cycle 10

Problem Areas

- Engineering Quality Monitoring Program Identified 15 Specific Areas For Improvement
- Commissioned Separate Case Studies
 - NIS
 - S/G Wide Range Level Problem
- Improve Interface with Operations

NIS Case Study

Background

- System Replaced Due to Age and Availability of Parts
- New System Purchased in 1987 & Designed in Summer 1988
- Noise Problems Encountered during Installation & Test
- Dedicated On-Site Team
- Station Cognizant Engineer & Core Physics Group Involvement

NIS Case Study

Initial Plant Startup

- Initial Startup May 16 Halted due to Noise Problems
- Design Engineer / Station Cog Engineer not available in Control Room
- Vendor Representative available but not in Control Room
- Case Study Commissioned

NIS Case Study

Findings

- Lack of feedback from Design Organization to Operations Personnel
- More Guidance Needed on Post-Modification Testing
- Roles of NGS/NES&L not Understood
- All Recommendations will be Implemented

S/G Wide Range Level

Background

- Initiated Change during Cycle 10 to Correct Design
- Converted Existing Narrow Range Instruments to Wide Range
- Utilized Existing Wide Range Level Tap
 - Cold Calibrated Wide Range
 - Turbine Equipment Protection
- Changed Auxiliary FW Initiation from Narrow Range to Wide Range

S/G Wide Range Level

Preliminary Findings

- Engineers overlooked dynamic flow effects
- Vendor not consulted
- Modification procedures need clarification
- Post-modification testing inadequate

Actions

- Review all Cycle 10 post-modification tests
- Increase percent of design that is independently reviewed

Engineering Assessment Summary

Progress To Date

- Improvement in Quality and Questioning Attitude
- Established Self Critical Assessment Process
- Retaining Experience In-House

Continuing Improvements

- Interface with Site Organizations
- Areas of Technical Expertise
- Focus on Operational-Based Engineering Organization

Future Actions

- Aggressive Implementation of Task Force Recommendations
 - Design Process
 - Training
 - Resources
 - Organization
- Increase Design Percentage
- Personnel Changes
- Independent Review of Design Products
 - Predetermined Sample Bases
 - Feedback for Improvement

Future Actions

(Continued)

- Operational Based Engineering
 - State of System Reporting
 - Operations Involvement
 - System Ownership

- Independent Assessment of Nuclear Consolidation Progress

Program Changes

Control of Potentially Radioactive Items

- Introduction

- Brief Chronology
 - Initial Identification
 - Subsequent Findings
 - Issuance of Stop Work Order
 - Lifting of Stop Work Order

Program Changes Control of Potentially Radioactive Items (Continued)

- Characterization of the Items Found
 - Removable Contamination
 - Fixed Contamination

- Causes and Corrective Actions
 - Root Cause
 - Contributing Causes
 - Other Actions