SAN ONOFRE
NUCLEAR GENERATING STATION
UNITS 2 & 3

PLANT OPERATIONS PERSONNEL REVIEW

February 1983

SCE *Southern California Edison Company*

SDG&E *San Diego Gas & Electric Company*

City of Anaheim
City of Riverside

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February 15, 1983

Chairman of the Nuclear Control Board
Southern California Edison

In accordance with SCE's letter to the NRC of November 15, 1982, we hereby transmit to you the final report of the Plant Operations Personnel Review Committee.

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Chairman

Lou Bernath

Harry L. Mathis

Jarlath M. Curran

David F. Pilmer

Consultant to the Committee

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EXECUTIVE SUMMARY

1.1 INTRODUCTION

On November 15, 1982, Southern California Edison (SCE) committed to establish a committee to perform a review of the staffing and training of operations personnel at the San Onofre Nuclear Generating Station, Unit 3.

This report details the results of the Plant Operations Personnel Review Committee's (POPRC) review including conclusions and recommendations on how SCE management can assist in improving the overall effectiveness of the Unit 3 operating staff. Mr. Ben C. Rusche of Management Analysis Company was retained by SCE to actively participate in the POPRC's review.

The review was conducted by developing an action plan structured into five major tasks. The major tasks (A, B, C, D and E) were designed to verify the operational readiness of the plant operating staff by (a) reviewing staffing, operator qualifications, overtime, and turnover rates; (b) reviewing past performance; (c) reviewing operator training; (d) obtaining operator feedback; and (e) summarizing conclusions and proposing recommendations. The action plan provided a basis for evaluating the readiness of plant operations personnel in terms of these parameters.

This executive summary provides a synopsis of the review, the conclusions and recommendations.

1.2 SCOPE

The scope of this effort was to conduct an independent review of the operational readiness of the plant operating staff of San Onofre Unit 3 in terms of certain defined parameters.

This review included the administering of questionnaires to all levels of the shift operating staff.

The review focused on licensed and non-licensed shift operations personnel and focused on the Operations Department interface with other station and general office departments. The operator training portion was limited to a review of those activities affecting Units 2 and 3.

The POPRC reviewed and evaluated the:

1. Readiness of plant operations personnel to conduct intended operation and testing, including the adequacy of staffing levels and the effectiveness of measures to control and reduce required overtime.

2. Past performance in plant operations and adherence to procedures and administrative controls.

3. Adequacy of the operator training program, including a comparison with other PWR training programs.

4. In performing the review and evaluation the POPRC considered how company management can assist in improving the overall effectiveness of the plant operating staff.

The action plan consisted of five tasks:

A. Task A, Readiness of Plant Operating Personnel, focused on a review and evaluation of staffing, operator qualifications, overtime, and turnover rates. Past and present data and future estimates were evaluated for the staffing, overtime and turnover rates. The intent of this task was to evaluate areas relevant to the operational readiness of plant operating personnel.

B. Task B, Past Performance, consisted of a review of station compliance history, Systematic Assessment of Licensee Performance (SALP) reports, an Institute of Nuclear Power Operations (INPO) evaluation of San Onofre Unit 1 and procedural controls. The intent of this task was to review plant history concerning operator performance and adherence to procedures.

C. Task C, Operator Training, consisted of a review of the content of the licensed and non-licensed operator training programs, the requalification program, and the training staff qualifications. The training programs were compared with other PWR training programs. The Saddleback Community College Nuclear Technology Work Study Program was also reviewed relative to its potential for providing future operators. The intent of this task was to provide assurance that the training programs are adequate to meet the needs of current operators and the demands of increased staffing levels for both units.

D. Task D, Operator Feedback, involved the administration of a questionnaire to shift plant operations personnel and training staff. The intent of this task was to gain operator feedback in order to identify problem areas for the purposes of evaluating their impact on readiness and to recommend corrective action.

E. Task E, Review and Evaluation, involved processing and evaluating the assembled data and formulating the conclusions and recommendations identified in Tasks A, B, C and D. The individual conclusions were regrouped and summarized.

This entire action plan provided the basis on which the readiness of the plant operations staff was evaluated.

1.3 TASKS

Sections 1.3.1 through 1.3.4 summarize the review activities conducted for each task. The conclusions and recommendations are summarized in Section 1.3.5.

1.3.1 Readiness of Plant Operating Personnel, Task A

Objective

The objective of Task A was to review and evaluate plant operations department staffing, operator qualifications, overtime, and turnover rate. Past and present data and future estimates were gathered.

.1 Staffing

Staffing level history for Units 2 and 3 was gathered from 1977 to present. Present staffing levels were compared to station needs and NRC regulations. Future staffing requirements were presented to the Committee by the Station Operations Manager.

Conclusions

This review determined that present staffing levels with a five shift rotation are adequate to operate Units 2 and 3 both in terms of actual operating needs and NRC requirements. Six shift rotation will not be implemented until mid-1983 due to the decision to license the common operator position and the ability to handle planned vacancies. This schedule was considered acceptable by the POPRC.

Sufficient numbers of personnel are being trained to meet current staffing goals.

Historically, efforts were made not to deplete the Unit 1 staff during staffing of Units 2&3. Future plant staffing is being pursued from a variety of sources.

.2 Operator Qualifications

Education and experience data for the Units 2 and 3 operators were gathered. Job descriptions of the shift personnel were reviewed. The future need for contract personnel was discussed.

Conclusion

Relevant average experience of the staff is 3.5 years for operators and 5 years for supervisors at San Onofre which is considered adequate. Commercial nuclear power plant experience is comparable to industry averages of 2.8 years for RO's and 6.4 years for SRO's as reported in NUREG/CR-1750.

.3 Overtime

Overtime history was collected since the receipt of the Unit 2 operating license. Data is presented showing overtime by operator classification. Future overtime projections and license requirements were discussed.

Conclusions

Planned overtime has been decreasing steadily since May 1982 to an average amount of 4% per month for December 1982. Adequate controls are now in place to keep planned overtime near present levels. The Station Operations Manager estimates that approximately 10% per month per operator planned overtime would be worked on the average for 1983. The POPRC found this level of overtime acceptable.

.4 Turnover Rate

Data was gathered on operator turnovers for four years and compared with recent INPO industry figures. Future turnover was estimated at 10%.

Conclusions

Turnover has decreased steadily since 1979 to a present level of 11.2% which compares favorably with an industry average of 12.6%. Adequate provisions have been made to train replacements to offset anticipated attrition of 10%.

Recommendations

None

1.3.2 Past Performance, Task B

Objective

The objective of Task B was to review available plant history concerning operator performance and adherence to procedures and administrative controls. This review determined if there was a need to improve procedural compliance of operators based on past performance.

.1 Compliance History

The NRC Systematic Assessment of Licensee Performance (SALP) reports were reviewed for all three units. The 1981 INPO evaluation of Unit 1 was also reviewed.

Conclusions

Insufficient data was available to discern any pattern on which a conclusion could be reached due to the limited amount of operational data available from Units 2 and 3.

.2 Procedural Controls

The SALP reports were reviewed for all three units. Recent SALP reports indicate that a potential problem exists regarding performing and scheduling surveillances. The plans to implement a computer-based surveillance and scheduling program were reviewed.

Conclusions

Adequate corrective measures are now underway. However, results must be monitored on a continuing basis.

Data to date does not show a problem with adherence to procedures on Unit 2 based on a review of the SALP reports.

Recommendations

Adherence to procedures should be continually emphasized. The computer-based surveillance and scheduling program should be implemented promptly for both units.

1.3.3 Operator Training, Task C

Objective

The objective of Task C was to review the content of the training and requalification programs. The training staff qualifications were reviewed by the Committee's staff. SCE's training programs were compared with other PWR training programs. The Saddleback Community College program was also reviewed.

.1 Current and Proposed Programs

The following training program documents were reviewed: cold license, hot license, requalification including the simulator; and the four proposed programs for non-licensed operator, reactor operator, senior reactor operator and shift supervisor. The Saddleback Community College Program was also reviewed.

Conclusions

The individual training program documents were reviewed and found to be acceptable.

The Saddleback Community College Program will provide San Onofre Nuclear Generating Station (SONGS) with trainees for Nuclear Plant Equipment Operator (NPEO) positions starting in 1983. This innovative program shows great promise. It has the potential of enhancing both the educational level and retention rate for operators. The program will augment some of the reliance now placed on hiring ex-Navy personnel. It will also tend to increase the educational level of the operating staff.

.2 Comparison With Other Utility Programs

The initial SCE training programs were compared with the programs of four other utilities; GPU (Three Mile Island), Commonwealth Edison (Zion), Northeast Utilities (Millstone 2), and Vermont Yankee Nuclear Power Corp. (Vermont Yankee). The requalification program was compared with the regulatory requirements and INPO Guidelines. In addition, Management Analysis Company performed an independent review of the content of the training programs.

Conclusions

The content of the training programs compares favorably with other utility programs, but a need for additional training was noted in certain non-technical operating training areas, e.g., stress management.

.3 Instructors

Instructor resumes were reviewed by the Committee staff. Implementation schedules for providing qualified SCE instructors were evaluated.

Although the current staff of contract instructors is adequate, staffing with SCE training instructors will improve the training program by providing plant specific insight and actual on-the-job experience. The POPRC recognizes the complement of training instructors will be improved when the four SCE instructors presently in shift operations return to the training department.

Conclusions

None

Recommendations

The administrative training requirements contained in the SRO training program should include the delineation of job responsibilities for other operator classifications.

Stress management training for RO's should be upgraded to equal that for SRO's.

1.3.4 Operator Feedback, Task D

Objective

The objective of Task D was to obtain feedback through a comprehensive questionnaire given to shift plant operations and training personnel. The POPRC also reviewed the scope of the interviews being conducted by an outside consultant. The intent of this task was to gain operator feedback in order to identify problem areas for the purpose of evaluating their impact on readiness and to recommend corrective action.

.1 Questionnaire

A questionnaire was administered to 104 (83%) Unit 2 and 3 operations and training personnel on January 12 and 14. The job titles of these individuals were divided into two categories: (1) Operators, who comprised 84% of the sample, and (2) Supervisors, who comprised 16% of the sample.

The 72 job attitude responses were grouped into four categories: Training, Communications, Operations and Job Satisfaction.

Conclusions

1. Supervisors have adequate technical experience but minimal supervisory experience.

2. The amount of operations experience is comparable to industry averages.

3. Operators feel they have the skills and knowledge required to perform their jobs well.

4. Operators feel opportunities exist to learn new and challenging work.

5. Both supervisors and operators felt the people on shift work well as a team.

6. Operators were slightly dissatisfied with working hours and conditions.

7. Inadequate communications with management is a significant area of job dissatisfaction among operators and supervisors.

.2 Interviews

Prior to the efforts of this Committee, Station Management had received reports of increased stress and lowering of morale. Station Management then retained an outside consultant not associated with POPRC to conduct individual interviews with operations personnel. These interviews attempted to identify the factors underlying the problems reported.

This effort was started prior to November 15, 1982. Recognition by Station Management of a potential problem is seen as a conscientious, progressive effort to implement corrective action to improve the overall effectiveness of operations personnel.

Conclusions

None

Recommendations

Provide additional supervisory skills training to operations supervisors.

Institute a program to improve communications within the Operations Department.

1.3.5 Review and Evaluation, Task E

Objective

The objective of Task E was to process and evaluate the conclusions and recommendations identified in Tasks A, B, C and D. A general conclusion is reached for each of the 4 categories identified in the November 15, 1982 letter. Finally, an overall conclusion of this effort is provided.

.1 Summary of Conclusions

The conclusions of Tasks A, B, C and D are summarized below into four categories. The categories correspond to the items addressed in the November 15, 1982 letter.

A. Readiness of Plant Operations Personnel

Based on parameters evaluated in this special review, plant operations personnel are ready to conduct intended full power operation and startup testing of San Onofre Unit 3. This conclusion is supported by the following findings noted previously:

1. Present staffing levels for five shift operation are adequate.

2. The schedule for implementing six shift operation is acceptable.

3. Sufficient numbers of personnel are being trained to meet current staffing goals and to compensate for anticipated attrition.

4. Relevant average experience of the staff is 3.5 years for operators and 5 years for supervisors at San Onofre which is adequate overall.

5. Future plant staffing is being pursued from a variety of sources.

6. Overtime has been decreasing since May 1982 to an average amount of 4% per month for December 1982. Adequate controls are now in place to keep planned overtime near present levels.

7. Turnover has decreased steadily since 1979 to a present level of 11.2% which compares favorably with an industry average of 12.6%.

B. Past Performance

Compliance history and adherence to procedures indicates a need for continued emphasis in this category. This conclusion is based on the following findings:

1. Adequate corrective measures are now underway. However, results must be monitored on a continuing basis.

2. Data to date does not show a problem with adherence to procedures on Unit 2 based on a review of the SALP reports.

C. Operator Training

The training programs are acceptable and compare favorably with other PWR training programs. This conclusion is supported by the following findings:

1. The individual training program documents were reviewed and the programs were found to be acceptable.

2. The Saddleback Community College Program is an innovative program that shows great promise.

3. The content of the programs compares favorably with other utility programs but a need for additional training was noted in certain non-technical operator training areas, e.g., stress management.

D. Improving Overall Effectiveness

Generally, the plant operating staff is experienced and motivated. Communications with management needs to be improved. This conclusion is supported by the following findings:

1. Supervisors have adequate technical experience but minimal supervisory experience.

2. The amount of operations experience is comparable to industry averages.

3. Operators feel they have the skills and knowledge required to perform their jobs well.

4. Operators feel opportunities exist to learn new and challenging work.

5. Both supervisors and operators felt the people on shift work well as a team.

6. Operators were only slightly dissatisfied with working hours and conditions.

7. Inadequate communications with management is a significant area of job dissatisfaction among operators and supervisors.

Based on parameters evaluated in this special review, the plant operations personnel are ready to conduct full power operations on Unit 3. The staff is capable, experienced and adequately trained.

.2 Recommendations

The POPRC recommends the following items receive management attention and further action:

A. Adherence to procedures should be continually emphasized.

B. Implement the planned computer-based surveillance program for both units to improve adherence to surveillance schedules.

C. The administrative training requirements in the SRO training program should include the delineation of job responsibilities for other operator classifications.

D. Stress management training for RO's should be upgraded to equal that for SRO's.

E. Institute a program to improve communications within the Operations Department.

F. Provide additional supervisory skills training to operations supervisors.

1. INTRODUCTION

1.1 INTRODUCTION

On November 15, 1982, Southern California Edison (SCE) committed to establish a committee to perform a review of the staffing and training of operations personnel at the San Onofre Nuclear Generating Station, Unit 3.

This report details the results of the Plant Operations Personnel Review Committee's (POPRC) review including conclusions and recommendations on how SCE management can assist in improving the overall effectiveness of the Unit 3 operating staff.

The review was conducted by developing an action plan structured into five major tasks. The major tasks (A, B, C, D and E) were designed to verify the operational readiness of the plant operating staff by (a) reviewing staffing, operator qualifications, overtime, and turnover rates; (b) reviewing past performance; (c) reviewing operator training; (d) obtaining operator feedback; and (e) summarizing conclusions and proposing recommendations. The action plan provided a basis for evaluating the readiness of plant operations personnel in terms of these parameters.

The POPRC is composed of four professionals independent of SCE operating staff and used the service of a nationally known consultant. The services of appropriately qualified non-members were used as necessary to provide the desired technical expertise. The POPRC had the capability, experience, and technical expertise to be responsive to the concerns detailed in the scope of this report. The POPRC was qualified to perform this evaluation for Southern California Edison.

The POPRC was composed of the following members:

Title	Member
Manager of Personnel and Employee Relations	E. J. Bresnahan (Chairman)
Manager, Nuclear Department San Diego Gas & Electric	L. Bernath
Manager, Quality Assurance	J. M. Curran
Manager, Nuclear Training Division	H. L. Mathis
Manager, Nuclear Engineering and Safety	D. F. Pilmer (Alternate Chairman)

Consultant to POPRC:

Vice President, Management Analysis Company	B. C. Rusche

During this effort, over 100 documents were reviewed. More than 5 man-months have been expended in the total program effort.

1.2 SCOPE

The scope of this effort was to conduct an independent review of the operational readiness of the plant operating staff of San Onofre Unit 3 in terms of certain defined parameters.

This review included the administering of questionnaires to all levels of the shift operating staff.

The review focused on licensed and non-licensed shift operations personnel and to the Operations Department interface with other station and general office departments. The operator training portion was limited to a review of those activities affecting Units 2 and 3.

The POPRC reviewed and evaluated the:

1. Readiness of plant operations personnel to conduct intended operation and testing, including the adequacy of staffing levels and the effectiveness of measures to control and reduce required overtime.

2. Past performance in plant operations and adherence to procedures and administrative controls.

3. Adequacy of the operator training program, including a comparison with other PWR training programs.

4. In performing the review and evaluation the POPRC considered how company management can assist in improving the overall effectiveness of the plant operating staff.

This report consists of an introduction and five chapters organized as follows:

A. Chapter 2, Readiness of Plant Operating Personnel, focused on a review and evaluation of staffing, operator qualifications, overtime, and turnover rates. Past and present data and future estimates were evaluated for the staffing, overtime and turnover rates. The intent of this task was to evaluate areas relevant to the operational readiness of plant operating personnel.

B. Chapter 3, Past Performance, consisted of a review of station compliance history, SALP reports, an INPO evaluation of San Onofre Unit 1 and procedural controls. The intent of this task was to review plant history concerning operator performance and adherence to procedures.

C. Chapter 4, Operator Training, consisted of a review of the content of the licensed and non-licensed operator training programs, the requalification program, and the training staff qualifications. The training programs were compared with other PWR training programs. The Saddleback Community College Nuclear Technology Work Study Program was also reviewed relative to its potential for providing future operators. The intent of this task was to provide assurance that the training programs are adequate to meet the needs of current operators and the demands of increased staffing levels for both units.

D. Chapter 5, Operator Feedback, involved the administration of a questionnaire to shift plant operations personnel and training staff. The intent of this task was to gain operator feedback in order to identify problem areas for the purpose of evaluating their impact on readiness and to recommend corrective action.

E. Chapter 6, Review and Evaluation, involved processing and evaluating the assembled data and formulating the conclusions and recommendations identified in Tasks A, B, C and D. The individual conclusions were regrouped and summarized.

This entire report provided the basis on which the readiness of the plant operations staff was evaluated.

2. READINESS OF PLANT OPERATING PERSONNEL

2.1 INTRODUCTION

This chapter describes the review and evaluation of the Operations Department in the areas of staffing, operator qualifications, overtime, and turnover rate. Conclusions are presented at the end of each section.

Section 2.2 provides information on staffing for past, present and future periods. The staffing levels are compared to operating license requirements and SCE commitments. Section 2.3 reviews operator education and experience. Job descriptions were reviewed by the POPRC staff and the future need for contract personnel was assessed. Section 2.4 reviews overtime data for past, present, and future periods. The data was compared to operating license requirements and NRC guidelines. Section 2.5 reviews turnover rates for past, and present, and estimates future attrition periods. This data was compared with nuclear industry figures.

2.2 STAFFING

This section presents staffing data for San Onofre Units 2 and 3 for three different time periods; past, present and future. Staffing is discussed only in terms of the Operations Department Organization for Units 2 and 3 as shown in Figure 2-1. The Operations Department coordinators are included only to the extent that those who hold a valid license are included in the computations where licensed operators are discussed. Non-shift positions shown in Figure 2-1 were not included in the Committee's review.

This discussion is centered on the shift operations organization as shown in Figure 2-2. This part of the organization is central to the review and evaluation since they are the on-shift operations personnel.

2.2.1 Staffing History

Staffing of Units 2 and 3 started in July 1977 when 4 operators from Unit 1 were assigned to Units 2 and 3 to draft study guides and operating procedures. License training started in February 1978 when the first group of 24 operators started license training. Control room manning started in September 1978 on the day shift only. Rotating shifts were initiated during May 1979 and simulator training started in February 1980. Twelve hour shifts were started in August 1980 to support the start-up. Staffing continued to increase to present levels.

Figure 2-1

OPERATIONS DEPARTMENT ORGANIZATION

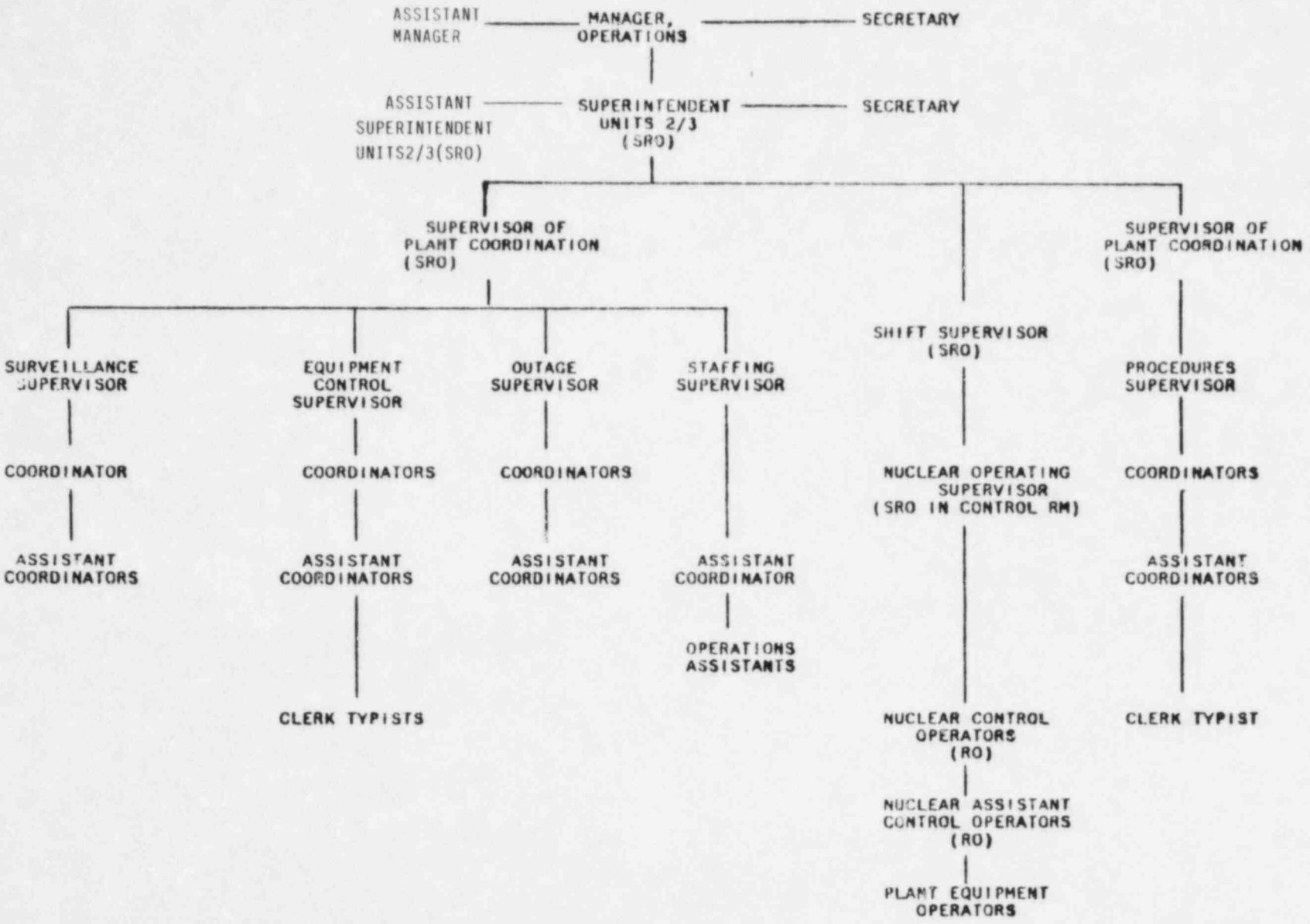
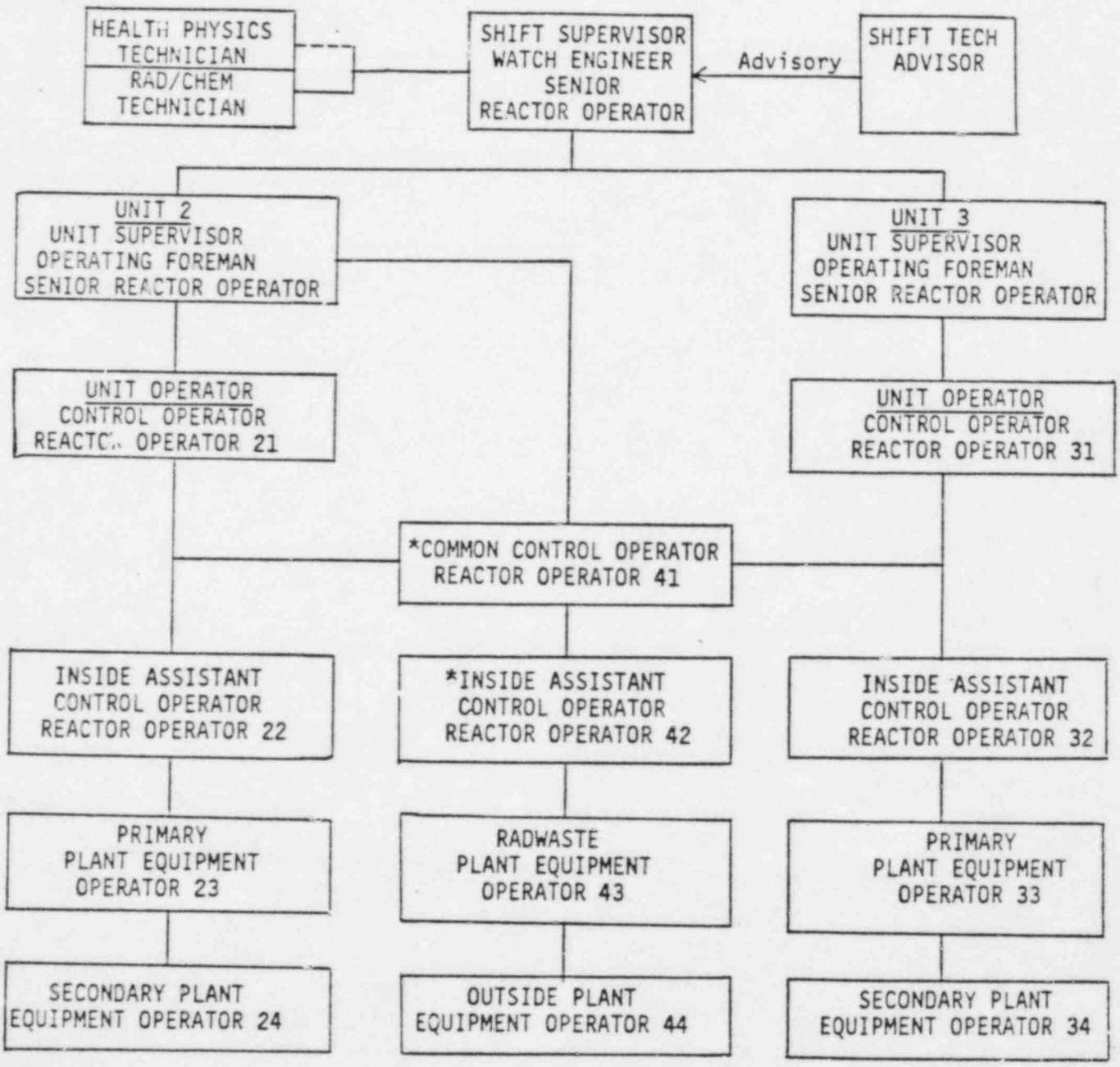


Figure 2-2

SAN ONOFRE NUCLEAR GENERATING STATION
UNITS 2 & 3

SHIFT MANNING TABLE



* May be filled by qualified non-licensed operators

The review concentrated on staffing history for 1982 since the Unit 2 operating license was received on February 16, 1982 and the Unit 3 operating license was received on November 15, 1982. Table 2.1 gives a monthly breakdown of staffing by classification. Staffing has increased in 1982 to the present level of 147 operators as of January 1, 1983.

2.2.2 Present Levels

Units 2 and 3 operators are presently on a five shift rotation. As of January 1, 1983, there were 126 operators available for shift work. There are presently 18 operators plus a variable number of contract personnel working per shift.

The present work assignments on-shift follow Figure 2-2. Besides the 15 positions shown in the figure, two additional plant equipment operators are used to run the makeup demineralizer and the auxiliary boiler. The remaining operators are used where needed.

Intended staffing levels call for 1 Shift Supervisor (SS), 2 Senior Reactor Operators (SRO), 6 Reactor Operators (RO), 3 Nuclear Plant Equipment Operators (NPEO), and 4 Plant Equipment Operators (PEO) for a total of 16 operators per shift. It is anticipated that this staffing level will be met by December 1983. To meet this end the Operations Department has budgeted for 96 operators for shift work and 60 operators for initial training.

As of February 14, 1983 there were 16 SRO's and 20 RO's available for shift work. This staffing complement meets the license requirement and SCE commitment for 5 shift operation without the use of planned overtime.

2.2.3 Staffing Projection

Six shift rotation will not be implemented until mid-1985 due to the decision to license the common operator position as shown in Figure 2-2 and the ability to handle planned overtime. The intent of 6 shift operation is to have 1 shift in training and 1 full shift in reserve to handle vacations and other planned vacancies as they arise. Six shifts are desirable because there are 168 hours per week and the minimum number of shifts required without planned overtime is 4-1/5.

TABLE 2.1

1982 OPERATOR STAFFING BY CLASSIFICATON

Title/Date	12/81	1/82	2/82	3/82	4/82	5/82	6/82	7/82	8/82	9/82	10/82	11/82	12/82	1/83
Shift Supervisor	5	5	5	6	6	5	4	4	4	6	6	6	6	6
Operating Supervisor	4	6	8	10	10	12	12	9	9	7	7	8	12	13
Control Operator	10	10	10	16	16	15	14	14	14	16	16	16	16	19
Assistant Control Operator	8	8	8	4	6	4	4	6	6	4	4	4	3	0
Plant Equipment Operators	93	98	90	87	81	79	79	92	90	90	90	90	106	109
Total	120	127	121	123	119	115	113	125	123	123	123	124	143	147

NOTE: Not all control operators or operating supervisors hold a reactor operating license. They are used in such areas as radwaste, auxiliary boilers, and makeup demineralizers.

2.2.4 License Requirements

The San Onofre Units 2 and 3 operating licenses call for a minimum of 2 SRO's, 3 RO's and 3 NPEO's per shift. The present staffing level is adequate to meet these minimum requirements. The requirements allow 1 SRO and 1 RO, and 1 NPEO to be shared between both units.

As soon as staffing levels permit, it is the intent of SCE to move into 6 shift rotation and then to reduce the number of shared positions.

2.2.5 SCE Commitments

SCE has committed to the NRC to have at least 3 SRO's and 4 RO's per shift between the time frame of initial criticality on Unit 3 and full power operation plus 30 days on Unit 2.

2.2.6 Conclusions

This review determined that present staffing levels with a five shift rotation are adequate to operate Units 2 and 3 both in terms of actual operating needs and NRC requirements. The scheduled implementation for six shift rotation is mid-1985. This schedule was considered acceptable by the PORC.

Historically, efforts were made not to deplete the Unit 1 staff during initial staffing of Units 2&3 in 1977-78. Sufficient numbers of personnel are being trained to meet current staffing goals. Future plant staffing is being pursued from a variety of sources.

2.3 OPERATOR QUALIFICATIONS

This section presents education and experience data for the Units 2&3 operators. Job descriptions and responsibilities are reviewed for each classification of operator and supervisor. Contract personnel are discussed also.

2.3.1 Licensed Operator Education and Experience

Of the 31 licensed operators on Units 2&3, all held a high school diploma. Eighteen (56%) had attended college for at least 1 year, 12 (38%) for at least 2 years, 5 (16%) for at least 3 years and 3 (9%) had a bachelor's degree. A larger percentage of licensed operators had college experience (68%) as compared to supervisors (38%). This data shows a trend toward hiring more college educated personnel for operating positions.

In general, supervisory personnel averaged 5 years of service with SCE. Only three supervisors and one operator had Unit 1 experience. This data verifies the conclusion reached in the staffing discussion that efforts were made not to deplete the Unit 1 staff for staffing Units 2&3.

A large percentage of licensed supervisors (77%) averaged 5 years nuclear Navy experience. This percentage was even higher for licensed operators (89%). In contrast, only 1 supervisor (8%) and 4 operators (21%) had other nuclear industry experience. One operator had Unit 1 experience. Licensed operators averaged 3-1/2 years and supervisors averaged 4-1/2 years of SONGS Units 2&3 experience. This data is summarized in Table 2.2.

2.3.2 Nonlicensed Operator Education and Experience

The total group of operators had a larger percentage of baccalaureate (14%) or master's degrees (2.2%) than was true for the licensed operators or supervisory personnel described in Section 2.3.1 In contrast, the total group of operators with Naval experience had decreased to 62%. Non-licensed operators did not have Unit 1 experience and very few had previous commercial nuclear, commercial non-nuclear or test reactor experience.

In general, the length of service with SCE was between one and three years.

2.3.3 Job Descriptions and Responsibilities

The Committee staff reviewed the job descriptions and responsibilities of each classification of operator. The various classifications are described below and should be viewed in the context of the Station Operations Department organization chart for Units 2&3 shown in Figure 2-2.

.1 Shift Supervisor

Generally, a person in this position supervises operating activities of the assigned nuclear unit(s) on a scheduled rotating shift. He is responsible to the Units 2&3 Plant Superintendent for the safe operation of Units 2&3 under all conditions on his shift, assuring the units are operated within the requirements of license conditions, Technical Specifications, NRC orders and station procedures. Specifically, his duties are to:

1. Direct and coordinate licensed and nonlicensed operating activities as required;

TABLE 2.2

LICENSED OPERATOR QUALIFICATIONS SUMMARY*

Title	Number	Education						Experience Number (average years)			
		High School	College (years) 1	2	3	4	5	Navy	Other Utilities	SONGS 1	SONGS 2&3
Shift Supervisor	6	6		1		1		3 (5 yrs)	---	3 (8 yrs)	6 (5 yrs)
Operating Supervisor	7	7	1	1	1			7 (5 yrs)	1 (1 yr)	---	7 (4 yrs)
Control Operator	15	15	5	4	1	1		14 (5 yrs)	3 (1-1/2 yrs)	1 (9 yrs)	15 (3-1/2 yrs)
Assistant Control Operator	4	4		1		1		3 (4 yrs)	1 (1-1/2 yrs)	---	4 (2-1/2 yrs)

*As of December 1, 1982

2. Coordinate overall administrative, security and other activities in the absence of Plant Superintendents and Managers such as during swing and graveyard shifts;

3. Authorize stopping or deferring of any plant operational, maintenance or engineering activities that could compromise safe operation;

4. Administer assigned plant responsibilities and duties;

5. Take scheduled retraining courses and maintain a Senior Reactor Operator License.

.2 Nuclear Operating Supervisor

The nuclear operating supervisor is responsible to the shift supervisor for supervising control room operators and activities of Nuclear Plant Operators on scheduled rotating shifts. His duties are to:

1. Maintain an overall perspective of plant operating conditions from the control room location;

2. Supervise the operation of remote or manual controls by nuclear power plant operators;

3. Supervise the maintenance of shift operating logs and records, preparation of operating reports;

4. Recommend to the shift supervisor or, as authorized, take action to stop or defer any plans that could compromise safe plant operations;

5. Take scheduled retraining courses and maintain a Senior Reactor Operator License.

.3 Nuclear Control Operator

The Nuclear Control Operator is responsible to the Shift Supervisor and Nuclear Operating Supervisor for directing the activities of licensed and nonlicensed operators.

His duties and responsibilities are to:

1. Maintain a valid Reactor Operator License and take scheduled retraining courses;

2. Be responsible for unit operation within the requirements of the Operating License, Technical Specifications, NRC orders, approved station procedures and operating instructions;

3. Be responsible for and authorized to shut down the reactor if he determines the safety of the plant is in jeopardy or if operating parameters exceed the reactor protection setpoints and an automatic shutdown has not occurred;

4. Be responsible for maintaining records of all shift activities and establishing unit load as directed by the SCE system load dispatcher or as emergency conditions dictate.

.4 Nuclear Assistant Control Operator

The Nuclear Assistant Control Operator is responsible to the Nuclear Control Operator for assisting in directing the activities of licensed and nonlicensed personnel.

His responsibilities and duties are to:

1. Maintain a valid Reactor Operator License and take scheduled retraining courses;

2. Be responsible for unit operation within the requirements of the Operating License, Technical Specifications, orders of the Nuclear Regulatory Commission and approved station procedures and operating instructions;

3. Act as Control Operator in the absence from the Control Room of the Control Operator.

.5 Nuclear Plant Equipment Operator

The Nuclear Plant Equipment Operator is responsible to the Nuclear Control Operator for following approved procedures and operating instructions.

His duties and responsibilities are to:

1. Be responsible for keeping the Control Operator aware of plant conditions, particularly those pertaining to safeguard systems;

2. Perform inspections and operate primary and secondary plant equipment;

3. Follow a course of study that will prepare him for NRC operator license certification.

.6 Plant Equipment Operator

His duties and responsibilities are to:

1. Be responsible for keeping the Control Operator aware of plant conditions, particularly those pertaining to safeguard systems;

2. Perform inspections and operate primary and secondary plant equipment.

.7 Apprentice Plant Equipment Operator

The Apprentice Plant Equipment Operator is a training position. He reports to the Nuclear Operating Supervisor during on-the-job training.

His responsibilities and duties are to:

1. Assist the Plant Equipment Operator in performing inspections and operating primary and secondary plant equipment during on-the-job training;

2. Follow a course of study and observation that will prepare him for advancement.

2.3.4 Contract Personnel

Contract personnel are used in the Operations Department to fill vacancies in shift operations and to assist the Supervisor of Plant Coordination in planning, coordinating and auditing the Operations Department activities. Such activities include the development and implementation of symptom-oriented emergency operating procedures and instructions, equipment control and outage coordination, surveillance program, and revising operating instructions required because of plant configuration changes.

It is the intent of the Station Operations Department to phase out the contract operators as more SCE personnel become qualified and licensed. Contract personnel are now used mainly in the plant coordination areas and are only used in shift operations when needed.

2.3.5 Conclusion

This review determined that relevant average experience of the licensed staff is 5 years in the Nuclear Navy and at least 3.5 years at San Onofre which is considered adequate. Commercial nuclear power plant experience is 3.5 years for operators and 5 years for supervisors which is comparable with industry averages of 2.8 years for RO's and 6.4 years for SRO's as reported in NUREG/CR-1750.

2.4 OVERTIME

Overtime history was collected since the receipt of the Unit 2 operating license. The data is presented showing overtime by operator classification. Future overtime projections and license requirements are discussed.

2.4.1 Overtime History

Overtime data was collected for Units 2 and 3 operators for 1982. The data is graphically displayed by month and classification in Figure 2-3. The graphs show a large increase in overtime hours worked during February 1982 which coincides with the receipt of the Unit 2 operating license. By March 1982 the operators were averaging just less than 80 hours per month overtime. The overtime hours started dropping in May 1982 and have continued to decrease. Overtime distribution is shown in Table 2.3 which gives the high, low, and average monthly figures for the operations staff.

2.4.2 Present Levels

The present average overtime worked by individual operators is less than 5 percent per month. The range as shown in Table 2.3 is a high of 24 hours, a low of 0 hours, and an average of 7 hours per month for December 1982.

Overtime is assigned as equally as practicable. Labor contract rules are followed when assigning overtime and an operator is allowed to decline overtime under certain conditions.

2.4.3 Future Projections

Operations Department management projects that planned overtime hours worked will average approximately 10% for 1983. It is the goal of the Operations Department to work a straight 40-hour a week shift.

2.4.4 License Requirements

San Onofre Units 2 and 3 each contain overtime limits in their operating licenses. Unit 2 has a license condition and Unit 3 has Technical Specification 6.2.2.f.

The objective of these restrictions is to have operating personnel work a normal 8-hour day, 40-hour week while the plant is operating. Routine heavy use of overtime should be avoided. Temporary relaxed guidelines are allowed during unforseen events, extended periods of shutdown for refueling, major maintenance or major plant modifications.

San Onofre has implemented this policy for all three units. Administrative procedures are in place and the number of overtime hours worked is documented.

2.5.4 Conclusions

Planned overtime has been decreasing steadily since May 1982 to an average amount of 4% per month for December 1982. Adequate controls are now in place to keep planned overtime at or near present levels.

The Station Operations Manager estimates that approximately 10% per month per operator planned overtime would be worked on the average for 1983. The POPRC found this level of overtime acceptable.

OVERTIME SUMMARY FOR 1982

Figure 2-3

TABLE 2.3

1982 OVERTIME

OPERATIONS - UNITS 2 AND 3
(Hours per Individual per Month)

	HIGH	LOW	AVERAGE
JANUARY	46	4	23
FEBRUARY	76	8	46
MARCH	96	60	78.5
APRIL	92	23	72
MAY	88	20	73
JUNE	108	48	66.5
JULY	88	8	39
AUGUST	68	Ø	31
SEPTEMBER	44	Ø	24
OCTOBER	49	Ø	23
NOVEMBER	45	Ø	17
DECEMBER	24	Ø	7

2.5 TURNOVER RATE

Turnover rates were reviewed for the past and present and were estimated for future periods. This data was compared with nuclear industry figures.

2.5.1 Turnover History

Turnover history is presented below in Table 2.4.

TABLE 2.4

TURNOVER HISTORY
UNITS 2 AND 3

Year	Prior to 1979	1979	1980	1981	1982
Terminated	13	12	17	22	9*
Transferred	1	5	6	3	7
Reduction	14	17	23	25	16
Number of Personnel	50	77	117	149	142
Attrition Rate	28%	22%	19.6%	16.7%	11.2%

*Two operators held a reactor operator license.

Of the operators who terminated or transferred within SCE during 1982, greater than 75% were entry level trainees.

2.5.2 Present Rate

The present attrition rate is 11%. The Station Operations Manager reported that an adequate number of trainees has been hired to compensate for this rate. The present rate is the lowest attrition rate experienced for San Onofre Units 2 and 3 since staffing commenced in 1977. This decrease is not unexpected where many new personnel are being brought into the company during initial unit manning.

2.5.3 Assumptions on Future Attrition

The Station Operations Manager expects the attrition rate to drop to 10%. Since the 1982 rate was 11% it seems that adequate measures are now being taken when compared with nuclear industry

turnover rates. INPO turnover data for 1980 and 1981 is shown in Table 2.5. Nuclear power industry turnover rates were 13.8% for 1980 and 12.6% for 1981. These percentages are comparable to Station figures. Sufficient numbers of personnel are being enrolled in training to compensate for anticipated attrition.

2.5.4 Comparisons with Nuclear Industry Rates

San Onofre Units 2 and 3 turnover rates were compared with INPO nuclear industry figures released in January 1983. Tables 2.5 and 2.6 show that SCE compares favorably with industry averages. Total SCE attrition for all nuclear personnel is 12% as compared to 12.6% for the industry. These figures tend to confirm the validity of the assumptions made on future attrition rates.

TABLE 2.5

TURNOVER RATES, 1980 AND 1981

Turnover Category	1980[a]	1981[b]	Change
Intrautility[c]	4.3%	4.6%	+0.3%
Interutility[c]	4.1%	2.6%	-1.5%
Exit Industry[c]	5.4%	5.4%	0
Total	13.8%	12.6%	-1.2%

a 1980 data are taken from Table 5 (page 15) of "A Survey of Occupational Employment and Training in the Nuclear Power Industry," INPO, September 1981.

b 1981 data are taken from Table 7 (page 20) of "1982 Survey of Nuclear-Related Occupational Employment in U.S. Electric Utilities," INPO, December 1982.

c See Table 2.6 for definitions of these terms.

2.5.5 Conclusions

Turnover rates have decreased steadily since 1979 to a present level of 11.2% which compares favorably with an industry average of 12.6%.

Adequate provisions have been made to train replacements to offset anticipated attrition of 10%.

2.6 RECOMMENDATIONS

None.

Table 2.6

On-Site and Off-Site Employee Turnover Rates
At INPO Member Utilities, 1981
INDUSTRY and SOUTHERN CALIFORNIA EDISON

Occupations	Turnover (percent)							
	Intrautility (a)		Interutility (b)		Exit Industry (c)		Total	
	Industry	SCE (d)	Industry	SCE	Industry	SCE	Industry	SCE
MANAGERS & SUPERVISORS	4.0	1.1	1.4	6.8	2.6	0.0	8.0	8.0
ENGINEERS								
Chemical	0.8	0.0	5.4	-	4.7	-	10.9	0.0
Civil	9.6	0.0	3.9	-	9.2	-	22.7	0.0
Electrical	8.0	0.0	3.6	-	5.7	-	17.3	0.0
Instrument & Control	4.7	-	1.8	-	8.6	-	15.1	-
Mechanical	5.2	0.0	5.5	-	7.5	-	18.2	0.0
Nuclear and Reactor	6.1	0.0	4.6	-	7.0	-	17.7	0.0
Quality Assurance/Control	4.4	0.0	3.1	-	6.5	-	14.0	0.0
Radiation Protection	2.4	-	4.8	-	4.8	-	12.0	-
All Other Engineers	5.8	0.0	2.4	-	4.1	-	12.3	0.0
SCIENTISTS								
Biologists	0.1	-	0.9	-	0.9	-	1.9	-
Chemists	4.2	0.0	2.6	-	4.8	-	11.6	0.0
Health Physicists	2.7	0.0	4.3	-	4.7	-	11.7	0.0
Other Scientists	2.8	0.0	0.0	-	4.9	-	7.7	0.0
TRAINING PERSONNEL								
SRO/RO Licensed Certified Instructors	3.8	0.0	2.9	-	7.1	-	13.8	0.0
Other Technical Scientific Instructors	4.4	0.0	1.3	-	0.0	-	5.7	0.0
Other Instructors	2.8	0.0	4.7	-	6.5	-	14.0	0.0
Support Staff	0.0	-	3.8	-	2.9	-	6.7	-
OPERATORS								
Shift Technical Advisors	2.3	0.0	4.6	-	4.2	-	11.1	0.0
Shift Supervisors	2.8	0.0	2.3	5.9	3.8	5.9	8.9	11.8
Sr. Licensed Operators (SRO)	8.2	0.0	5.1	-	6.1	-	19.4	0.0
Licensed Operators (RO)	3.6	0.0	5.5	-	4.4	-	13.5	0.0
Non-Licensed Operators Assigned to Shift	5.1	0.0	4.4	-	4.9	-	14.4	0.0
Other Non-Licensed Operators	19.9	-	3.3	-	5.0	-	28.2	-

Table 2.6

(Continued)

INDUSTRY and SOUTHERN CALIFORNIA EDISON

Occupations	Turnover (percent)							
	Intrautility (a)		Interutility (b)		Exit Industry (c)		Total	
	Industry	SCE (d)	Industry	SCE	Industry	SCE	Industry	SCE
OPERATORS (Continued)								
Individuals in Training for SRO Licenses	9.5	0.0	0.2	-	2.9	-	12.6	0.0
Individuals in Training for RO Licenses	4.4	0.0	1.4	-	3.6	-	9.4	0.0
Individuals in Training for Non-Licensed Positions	3.4	-	7.2	-	10.9	-	21.5	-
TECHNICAL AND MAINTENANCE PERSONNEL								
Chemistry Technicians	3.5	0.0	4.3	-	7.3	-	15.1	0.0
Draftsmen	3.9	-	1.6	-	10.4	-	15.9	-
Electricians	5.4	0.0	1.2	-	6.4	-	13.0	0.0
Instrument & Control Technicans	3.8	0.0	2.6	-	7.7	-	14.1	0.0
Mechanics	3.4	0.0	0.6	-	4.7	-	8.7	0.0
Quality Assurance/Control Technicians	6.0	0.0	2.1	-	4.6	-	12.7	0.0
Radiation Protection Technicians	5.0	0.0	5.2	-	6.9	-	17.1	0.0
Welders with Nuclear Certification	1.9	0.0	1.9	-	4.4	-	8.2	0.0
Other Technical and Maintenance Personnel	5.4	0.0	1.0	-	6.0	-	12.4	0.0
ALL OTHER PROFESSIONAL WORKERS	5.4	-	0.5	-	5.8	-	11.7	-
OTHER TECHNICAL PERSONNEL	1.3	-	0.8	-	5.0	-	7.1	-
TOTAL	4.6	0.2	2.6	11.0	5.4	0.8	12.6	12.0

(a) Promotions and transfers to positions that are nuclear-related within the utility.

(b) Movement from nuclear-related positions at one utility to nuclear-related positions at other utilities.

(c) Exit from utility nuclear-related work - employees accepting non-nuclear jobs or nuclear-related jobs at non-utility firms, and retirements and deaths

(d) "-" indicates no turnover data were provided.

NOTE: Staff turnover in the All Other Reasons or Unknown Category was prorated proportionately to categories of Interutility and Exit Industry on the assumption that movement within the utility would be documented in most instances.

3. PAST PERFORMANCE

3.1 INTRODUCTION

This chapter summarizes the review of available plant history concerning operator performance and adherence to procedures and administrative controls. This review determined if there was a need to improve procedural compliance of operators based on past performance.

Section 3.2 reviews the two most recent Systematic Assessment of Licensee Performance (SALP) reports for all three San Onofre units. The findings in the reports are compared with Unit 1 Institute of Nuclear Power Operations (INPO) findings. The SALP report is an integrated NRC staff effort to collect the available observations on an annual basis and evaluate licensee performance based on those observations. The objective of SALP is to improve the NRC Regulatory Program and licensee performance.

Section 3.3 also reviews the SALP reports for information on adherence to procedures and compliance with surveillance requirements. A computer-based surveillance scheduling program is discussed.

Section 3.4 provides recommendations for this chapter.

3.2 COMPLIANCE HISTORY

The SALP reports were reviewed for Units 1, 2 and 3. These reports are based on the Regional Performance Evaluation Reports issued by the NRC Region V SALP Review Board. Each report covers roughly a one-year period from July 1 to June 30. The reports for each unit are discussed separately.

A comparison of the SALP findings is made with the 1981 INPO evaluation of Unit 1. Finally, conclusions are presented for this topic.

3.2.1 SALP Findings

.1 Unit 1

SALP reports were issued for Unit 1 on April 26, 1982 and October 18, 1982. The periods covered for each report are from May 16, 1980 to June 30, 1981 and from July 1, 1981 to June 30, 1982, respectively.

The review of this Committee centered on plant operations although the reports were reviewed in their entirety. In the area of plant operations the first report noted that personnel staffing needed improvement, particularly for plant operators, in order to support training and to minimize the use of overtime and to support a good mental attitude of

licensee employees. Extensive overtime was required of the operators which resulted in very long working hours and gradual attrition.

Strong points noted in the first report include a thorough revision of all operating and emergency procedures to reflect actual practice and ANSI N 18.7 requirements. Shift supervisors were exceptionally cognizant of their safety responsibilities. The training program has steadily improved to an above average level. Supervisory and management response to revised regulatory requirements has been positive.

During this first period the NRC gave Unit 1 operations a satisfactory grade.

The second report noted that the licensee's management appears to be involved and concerned with nuclear safety. However, during this period, licensee resources were not effectively used. Only minimal satisfactory performance with respect to operational safety was achieved. In addition, several significant operational errors were made which demonstrated an occasional casual approach to procedural compliance. Recently, licensee management has vigorously emphasized procedural compliance by operating personnel.

SCE took issue with the report in their December 3, 1982 response stating that the occurrences identified were not causally linked to operator action or performance. SCE also took issue with the phrase "an occasional casual approach to procedural compliance" as being unfounded. The report did note however that SCE management has vigorously emphasized procedural compliance by operating personnel. The NRC gave Unit 1 a slightly unsatisfactory grade for this period.

The choice of words used by the NRC to describe procedural compliance caused the POPRC to consider whether any carryover from Unit 1 to Units 2 and 3 on this issue was evident. None was found on the basis of the limited operational data available from Units 2&3.

The POPRC having reviewed the Unit 1 reports felt that a conclusion should be made on procedural compliance even though perceptually there is a disagreement on the extent of the problem.

.2 Units 2 and 3

SALP reports for Units 2 and 3 were issued on the same dates as Unit 1. The periods covered for each report are from June 1, 1980 to June 30, 1981 and from July 1, 1981 to June 30, 1982, respectively.

In the area of plant operations the first report noted that the operating staff appeared to be well qualified and motivated. Additions to the operating staff were needed to increase depth. No items of noncompliance or deviations were found.

The second report noted that four items of noncompliance were identified.

"The licensee appears to be taking satisfactory corrective actions in response to these problems."

"In addition to these difficulties the licensee has had difficulty in providing sufficient qualified operators. This has resulted in the extensive use of overtime. Some improvement in this area has occurred as evidenced by the change from three to four shifts on June 28, 1982. In this area, the shortage of Senior Reactor Operators (S.R.O.'s) has prevented the manning of the training department with four Unit 2 licensed S.R.O.'s as planned. Contractor S.R.O. "equivalent" licensed personnel are being used on a temporary basis in the training department."

"Procedural compliance has been a problem during this period. Increased management emphasis has resulted."

"During this period of initial startup, many procedures were used for the first time. Thus, procedure problems were expected. In the area of procedure upgrade the licensee has shown a marked improvement."

The NRC rated operations as satisfactory for both periods.

3.2.2 INPO Findings on Unit 1

INPO conducted its first evaluation of Unit 1 during the weeks of November 30 and December 7, 1981.

In the area of operations organization and administration INPO noted that Operations Department staffing is not sufficient to ensure timely and effective performance of all normally assigned responsibilities, including training and retraining. The then current four-shift staffing resulted in excessive overtime.

SCE acknowledged the problem and stated that efforts have concentrated on achieving six-shift operation in 1983. Five-shift operation was planned for the end of 1982.

This finding pointed out that the staffing problem exists for all three units and is being corrected with the implementation of six-shift operation in 1983.

3.2.3 Conclusions

Insufficient data was available to discern any pattern on which a conclusion could be reached due to the limited amount of operational data available from Units 2 and 3.

3.3 PROCEDURAL CONTROLS

The SALP reports discussed earlier were again used to determine if a problem existed in this area. The two areas discussed in this section are adherence to procedures and meeting surveillances. These areas were noted in the SALP reports for Units 2 and 3. The POPRC decided to review the report findings and SCE responses.

3.3.1 Adherence to Procedures

As noted in Section 3.2.2.2, procedural compliance was a problem during the most recent SALP evaluation period. Procedure problems were expected when procedures were used for the first time during initial startup of Unit 2.

Increased management emphasis resulted and to date a problem with adherence to procedures on Units 2 and 3 is not evident.

3.3.2 Meeting Surveillance Requiements

The most recent SALP report identified four major weaknesses in the Technical Specification surveillance program;

"o Inadequate management control procedures for assigning and accomplishment of surveillance requirements.

o Inadequate identification of surveillance requirements necessary to support changes in operating modes.

o Inadequate surveillance testing procedures.

o Inadequate system to control and schedule surveillance performance."

The SALP report discussed the surveillance program as follows:

"These adverse findings further highlighted the weaknesses identified in the licensee's procedure review system and resulted in an additional operating license condition to assure that the licensee would establish surveillance procedure adequacy and performance prior to changing operating modes.

The licensee's corrective actions included a massive reexamination of the system to control and comply with Technical Specification surveillance requirements. These corrective actions appear to have been effective with the exception of controlling and scheduling surveillance performance.

Several event reports have resulted from the failure to comply with Technical Specification limiting conditions for operation and surveillance requirements. These indicate the need for increased management attention to assure that surveillance are appropriately scheduled and performed as required by Technical Specifications."

SCE's response in the December 11, 1982 letter stated that additional Station Orders and procedures have been prepared which implement the surveillance program. To assure the adequacy of procedures, all surveillance procedures for Unit 2 (and for Unit 3 as it proceeds through mode changes) are reviewed by three organizations, (the Corporate Nuclear Engineering Staff, Quality Assurance and an independent consultant), independent of the review by the cognizant Station organization.

3.3.3 Computer-Based Surveillance Scheduling

A specific plan and schedule has been developed for the full implementation of the "San Onofre Maintenance Management System" (SOMMS) at Unit 2 and at Unit 3 as the startup program proceeds. SOMMS will bring together the plant data base, surveillance plan, preventive maintenance planning, and the execution of surveillance activities into a single coherent computer-based system.

3.3.4 Conclusions

Adequate corrective measures are now underway. However, results must be monitored on a continuing basis.

Data to date does not show a problem with adherence to procedures on Unit 2 based on a review of the SALP reports.

3.4 RECOMMENDATIONS

Adherence to procedures should be continually emphasized.

Implement the planned computer-based surveillance program for both units to improve adherence to surveillance schedules.

4. OPERATOR TRAINING

4.1 INTRODUCTION

The contents of the operator training programs were reviewed and evaluated. The intent of this task was to provide assurance that the respective programs are adequate to meet the needs of current operators and demands of increased staffing levels on Units 2 and 3.

Section 4.2 discusses the review of the following current training programs: cold license, hot license, requalification, simulator requalification, the Saddleback Community College work study program and plant equipment operators. Section 4.3 discusses the review of the following proposed programs: non-licensed operator, reactor operator, senior reactor operator, and shift supervisor. The training programs were compared with other PWR training programs in Section 4.4. A training schedule for 1983 is presented in Section 4.5. The training staff is reviewed in Section 4.6. Section 4.7 provides a discussion on previous NRC evaluations of the training programs. Conclusions and recommendations are presented in Section 4.8.

4.2 CURRENT TRAINING PROGRAMS

4.2.1 Cold License

The cold license training program has been completed, as prescribed in the Final Safety Analysis Report for SONGS Units 2 and 3. The program incorporated the regulatory requirements and guidelines for licensing of both operators and senior operators for plants in a cold startup status.

Southern California Edison personnel developed a cold license training program of 90 4-hour lectures covering the various plant systems. An additional 20 weeks of training was supplied in: physics, chemistry, thermal hydraulics, mechanical, electrical and instrumentation systems. This training program fulfills all of the NRC requirements for reactor operator training.

In addition, Combustion Engineering supplied the following training:

A. Five weeks training in the above listed areas.

B. Two weeks intensive and detailed information in heat transfer, fluid flow, and thermodynamics.

C. Four days of intensive and detailed information in mitigating core damage.

D. Simulator training based on the following schedule:

5 weeks - Inexperienced personnel
3 weeks - Ex-Navy Nuclear Personnel
2 weeks - Previous NRC SRO/RO license

4.2.2 Hot License

The hot license training program closely parallels the cold license training program and was implemented for those operator and senior operator license candidates who were scheduled to license after Unit 2 achieved 20% power. The significant difference is an added segment of observation training while the plant is at power. The on-the-job training segment is supervised by the Operations Department.

This training program covers four basic areas: Administrative Procedures, Normal and Emergency Operating Instructions, Surveillance Procedures, and Practical Factors. Procedural walk throughs and practical factors outlined in the program are used.

4.2.3 Requalification

The licensed operator requalification training program was formulated to meet the requirements of Appendix A of 10 CFR 55. It also includes the requirements of NUREG-0737 and has been approved by the Operator Licensing Branch of the NRC.

The program is conducted for a continuous period not to exceed 2 years and upon conclusion shall be promptly followed, pursuant to a continuous schedule, by successive requalification programs.

The requalification program includes a series of preplanned lectures that are presented on a regular basis. Also included is an on-the-job training program to make operators aware of procedure changes, design changes and license changes.

All records of the requalification program, including completed written exams, evaluations, attendance records and documentation of special training in deficient areas are maintained.

4.2.4 Simulator Requalification

The simulator requalification program is supportive of the licensed operator requalification training program. It meets the requirements of 10 CFR 55, Appendix A and includes the new requirements for annual and semi-annual control manipulations as delineated in NUREG-0737.

This training is a 5-day program with each day consisting of approximately 4 hours of classroom followed by 4 hours of control room operations. Station procedures and Technical Specifications are used. Students are evaluated on their ability to utilize procedures during normal, abnormal, and emergency conditions.

4.2.5 Saddleback Community College

The Saddleback Community College work study program is a pilot program which was implemented in 1982. It provides college credit courses covering academic and technical subjects which are prerequisites to the licensing process.

Graduates receive an Associate Degree in Nuclear Technology from the college and join SCE on a full-time basis as a Nuclear Plant Equipment Operator.

The objective of this pilot program is to supply SONGS with qualified personnel by recruiting people from the local community. The goal is to replace losses due to attrition and to retain graduates in the employ of SCE.

The program is designed to supplement SCE's anticipated need for new operators.

4.2.6 Plant Equipment Operators

There are 3 classifications of non-licensed operators at San Onofre. The Apprentice Plant Equipment Operator (APEO) training program lasts 4 months and covers such areas as plant familiarization, communication skills, science and engineering fundamentals, and plant specifics. After completing formal classroom training there is a 2-month on-the-job training phase. The APEO can qualify for the Plant Equipment Operator (PEO) position following completion of the on-the-job training phase.

PEO's have 3 options in their career path. They may qualify for the nuclear PEO (NPEO) positions, transfer to non-nuclear SCE power plants, or to a non-operations position within the company.

NPEO's are in training to receive their reactor operator licenses.

4.3 PROPOSED PROGRAMS

Revised training programs have been drafted which reflect the changes to content and format which are anticipated as a result of the INPO accreditation process. Programs included are:

4.3.1 Non-licensed Operator

The proposed non-licensed operator training program will provide the academic and systems training that is currently afforded in the APEO training program. Format and curriculum have been expanded and the on-the-job training segment has been lengthened. The career path options remain unchanged.

4.3.2 Reactor Operator

An NPEO will be the entry level position for this program which is designed to culminate with the issuance of an NRC Reactor Operator (RO) license. At the time of licensing, each candidate will be required to have a minimum of 3 years of power plant experience, one of which is nuclear.

Formal classroom training is approximately 15 months long covering the same areas described in the non-licensed operator training program but in more depth. The classroom training is followed by on-the-job training, simulator training, and a series of exams and review sessions to prepare for the NRC license exam.

4.3.3 Senior Reactor Operator

The Senior Reactor Operator (SRO) candidate will be required to have at least 4 years of power plant experience, 2 of which are nuclear. If the candidate does not have a B.S. in Engineering or a related science, he will be required to have at least 1 year of experience as a licensed RO.

The training program covers such areas as supervisory skills, radiation science, plant specifics, and simulator training. Thereafter, at least 3 months will be spent in on-the-job training before taking audit exams and participating in review training prior to the NRC exam.

4.3.4 Shift Supervisor

The training program for the Shift Supervisor (SS) will consist of on-the-job training and SCE certification. The trainee will spend approximately 3 months in on-the-job training. Thereafter, oral exams will be taken and if successful the candidate will be certified by SCE Nuclear Operations management.

In addition to the Committee review of the training programs, an independent evaluation was completed by staff members of an outside consulting firm, Management Analysis Company. Review comments include:

1. Overall, the programs are good.

2. The technical and practical training curricula appear complete.

3. The non-technical training curricula are less than complete. Stress management training for RO's should be upgraded to equal that for SRO's. Administrative training requirements contained in the SRO training program should include the delineation of job responsibilities for other operator classifications.

4.4 COMPARISON WITH OTHER UTILITY PROGRAMS

The SCE training programs were compared with four other utilities: GPU (Three Mile Island), Commonwealth Edison (Zion), Northeast Utilities (Millstone 2), and Vermont Yankee Nuclear Power Corporation (Vermont Yankee).

The requalification program was compared with the regulatory requirements and INPO guidelines. The content of the training programs compares favorably with other utility programs and the programs meet regulatory requirements.

4.5 SCHEDULES

The training schedule for licensing operators is satisfactory. The projected licensing dates will allow the Operations Department to adopt a six-shift manning schedule by mid-1985.

Figure 4-1 shows the current training schedule for 1983. NRC examinations are planned for June and November 1983.

4.6 INSTRUCTORS

The current staff of contract instructors is adequate to meet the projected training needs. Staffing with more SCE training instructors will improve the training program by providing plant specific insight and actual on-the-job experience. There are three SCE instructors currently enrolled in training. Two are scheduled to license in November 1983 and the other in April 1984. One of the four SCE licensed instructors originally in shift operations is scheduled to return to an instructor status in August 1983. The remaining three instructors are scheduled to return in mid-1984.

There are currently 17 instructors (4 SCE, 12 Combustion Engineering, 1 Associated Technical Training Services) on site. The POPRC staff reviewed the instructors' qualifications and summarized the data:

1. Ten instructors (59%) had a college education (9 Baccalaureates, 1 Masters).

2. Ten instructors (59%) had previous utility experience.

3. Eight instructors (47%) had Nuclear Navy experience.

4. Five instructors (29%) have held or hold reactor operator or senior reactor operator licenses.

4.7 EVALUATION OF TRAINING PRACTICES

The current programs have been evaluated by inspectors from NRC Region V and by examiners from the Operator Licensing Branch during routine audits. The onsite resident inspectors have also evaluated the programs as required by their inspection modules, including the observation of lesson presentations for hot license and requalification training programs. In each instance, there were no items of noncompliance. Consistently, the NRC personnel made positive comments regarding the training programs and lesson presentations.

4.8 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The training programs are acceptable and compare favorably with other PWR training programs. This conclusion is supported by the following findings:

1. The individual training program documents were reviewed and the programs were found to be acceptable.

2. The Saddleback Community College Program is an innovative program that shows great promise.

3. The content of the programs compares favorably with other utility programs but a need for additional training was noted in certain non-technical operator training areas, e.g., stress management.

Recommendations

The administrative training requirements contained in the SRO training program should include the delineation of job responsibilities for other operator classifications.

Stress management training for RO's should be upgraded to equal that for SRO's.

Figure 4-1

SONGS
UNITS 2 & 3 TRAINING SCHEDULE 1983

GROUP	EXAM DATE	NUMBER	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
B	6/83	3	PHASE 6					NRC						
C	11/83	8	ON SHIFT	PHASE 1			PHASE 4	PHASE 5	PHASE 6				NRC	
D1	11/83	12	PHASE 3			PHASE 4		PHASE 5	PHASE 6				NRC	
D2	4/84	11			ON SHIFT				PHASE 1				PHASE 4	PHASE 5
E	10/84	13			PHASE 3				ON SHIFT					PHASE 1
281-1	3/85	16				ON SHIFT			PHASE 3				ON SHIFT	
282-1	8/85	18						ON SHIFT						PHASE 3
A282-1	NA	24	APEO TRAINING			OJT			ON SHIFT					

5. OPERATOR FEEDBACK

5.1 INTRODUCTION

This chapter evaluates operator feedback obtained from a questionnaire administered to on-shift plant operations and training personnel. A discussion is presented on the interviews presently being conducted by an outside consultant. Findings, conclusions, and recommendations for improving the effectiveness of plant operations personnel are presented.

Section 5.2 provides background information on the need for operator feedback. The interviews are discussed in Section 5.3. The reasons for not conducting additional interviews are also noted. Section 5.4 presents a detailed discussion on the questionnaire which includes sample, content, method, and results. The conclusions are presented in Section 5.5. Recommendations for improving operations are provided in Section 5.6.

5.2 BACKGROUND

The objective of the questionnaire process was to gain operator feedback in areas affecting operator effectiveness. Recommendations are made that will assist in creating and maintaining a highly motivated and dedicated nuclear work force.

The pressures associated with the startup and operation of Units 2 and 3 can cause an increase in mental and physical fatigue, stress, and lowering of morale of the shift operations personnel. Oral and written feedback received by the Station Operations Manager convinced station management to retain the services of an outside consultant. It was perceived that there was some dissatisfaction with overall working conditions of the shift operations personnel.

Coincidentally, on November 15, 1982, SCE committed to establish a committee to conduct an independent review of the overall readiness of the plant operating staff of San Onofre Unit 3. This commitment was made after the NRC expressed concern about the comments that were volunteered by the San Onofre operators to the NRC examiners. The commitment made by SCE included the conducting of interviews or other appropriate means to gain operator feedback.

5.3 INTERVIEWS

Station Management hired an outside consultant, Corporate Systemics Incorporated (CSI), to identify the factors underlying the dissatisfaction among the shift operations staff and to provide recommendations to resolve the root causes of concern. Interviews were conducted on a volunteer basis among shift operations personnel at Units 2 and 3.

The POPRC was briefed by CSI on their present efforts. The interviews are seen as a conscientious, progressive effort by Station Management to implement corrective action to improve the overall effectiveness of operations personnel.

In-house SCE expertise and outside consultants, (MAC and CSI) were utilized to determine whether additional interviews conducted under the auspices of the committee were necessary or advisable. A decision was made not to conduct additional interviews since a duplication of effort would result in most areas. In addition, the reliability of the data would be questionable since interviewing operators after having been already interviewed by CSI would probably skew the findings in the negative direction. The questionnaire was determined to differ in scope and format such that reliable data could be obtained. The findings of the questionnaire were determined to provide sufficient information on which the POPRC could base its review and subsequent recommendations.

5.4 QUESTIONNAIRE

An attitude survey was administered on January 12 and 14, 1983 to 104 SONGS operations personnel for Units 2 and 3. The questionnaire was designed to assess the perceptions of operators and first-line supervisors concerning operational readiness and general job satisfaction. While participation was voluntary, approximately 90% of the personnel on-shift during this period agreed to participate. It was believed that this method would provide the most complete and objective data upon which the POPRC could base their review of operators' opinions and concerns.

5.4.1 Sample

104 Individuals from all five shifts and the Nuclear Training Division completed the questionnaire. Operators comprised 84% of the sample, while first and second level supervisors comprised the remaining 16%. A total of 16 respondents held Reactor Operator licenses (15 operators, 1 supervisor) and an additional 14 individuals held SRO licenses (2 operators, 12 supervisors).

The majority of respondents (72%) had less than 3 years service with SCE, however the group averaged 5.3 years nuclear operations experience. As might be expected, supervisors had considerably more operations experience (9.6 years) but appeared to have only between 1 and 3 years supervisory experience.

Experience results compare favorably with operator responses to a job satisfaction questionnaire at 9 sites reported in NUREG/CR-1750 in which 97 ROs reported an average of 2.8 years of experience and 125 SROs reported an average of 6.4 years.

Questions concerning previous work experience indicated that approximately two-thirds of the sample had previous Navy experience. Naval background was more frequent among supervision (82%) than among operators (62%). Relatively small percentages of the total group had previous commercial nuclear, commercial non-nuclear, test reactor, or SONGS 1 experience.

5.4.2 Questionnaire Content

The questionnaire was developed to assess attitudes concerning operational readiness and job satisfaction. Specific areas addressed include:

- Demographic Information
- Job Characteristics
- Training
- Communications
- Working Conditions and Environment
- Management Effectiveness
- Policies, Procedures and Organization

In addition to satisfaction ratings in the above areas, individuals were asked to rank the most important factors of the job related to retention and turnover. Finally, open-ended questions were provided to allow for free response feedback in areas not specifically covered in the rating items.

5.4.3 Method

On January 12 and 14, 1983 the questionnaires were administered to 104 respondents by an SCE industrial psychologist. All individuals were told the purposes of the POPRC and the reason for the questionnaire. Participation was strictly voluntary. 104 out of 114 individuals attending the sessions agreed to participate. All individual responses were guaranteed to be confidential.

The questionnaire was administered during a break in scheduled training or over a two-hour period immediately preceding or following the operator's shift. Throughout these sessions the Industrial Psychologist was present to answer questions and receive feedback from the participants.

Specifically to ensure confidentiality, respondents sealed questionnaires in unmarked envelopes upon completion.

5.4.4 Results

5.4.4.1 Questionnaire

Operations personnel were asked to rate 20 job characteristics on a 9 point scale from 1-extremely dissatisfied to 9-extremely satisfied. Characteristics to be rated covered four general categories including working conditions, training, opportunity for advancement and management effectiveness. Since the ratings had a standard deviation of 1.5 or greater, ratings of 3.5 or below were considered to be substantially dissatisfied, while ratings of 6.5 or greater were considered to be substantially satisfied.

High mean satisfaction ratings were obtained for job security (7.2), co-workers (7.1) and the opportunity to do challenging work (6.8). Low satisfaction was expressed concerning communication with management (3.3). Essentially neutral ratings were obtained for work hours, working conditions, work variety, opportunity to advance, job responsibility and authority, and recognition for work.

Out of the 20 job characteristics rated, only three showed significant difference between supervisors and operators. Operators were significantly less satisfied with salary, while supervisors were significantly more satisfied with their opportunity to use their current knowledge and skills and their opportunity to supervise others.

5.4.4.2 Retention and Turnover Factors

Operations personnel were asked to indicate the five most important factors which led them to stay in their present jobs. Rankings were combined in order to determine an overall importance weight.

Table 5.1 presents the most important retention factors in descending order of importance. Job security, the opportunity to do challenging work and salary were expressed as the most important factors which led operations personnel to remain in their present jobs. Co-workers and the opportunity to learn new knowledge and skills were also significant factors. It is interesting to note that while operators listed salary as an important retention factor, they also gave it a mean satisfaction rating below neutral. In contrast, all other key retention factors received mean satisfaction ratings of 6 or above.

TABLE 5.1

RELATIVE IMPORTANCE OF 20 JOB CHARACTERISTICS FOR RETENTION (N=104)

Order of Importance	Job Characteristic	Importance Weight*
1	Job Security	288
2	Opportunity to do Challenging Work	220
3	Salary	214
4	People You Work With	163
5	Opportunity to Learn New Knowledge and Skills	127
6	Job Responsibility and Authority	81
7	Use of Knowledge and Skills You Presently Have	70
8	Opportunity to Work Independently	65
9	Opportunity to Advance	63
10	Work Variety	45
11	Fringe Benefits	37
12	Recognition for Your Work	26
13	Skill Level of Co-Workers	17
14	Working Conditions	16
15	Work Hours	15
16	Confidence and Ability to Deal with Unplanned or Unusual Operating Conditions	14
17	Opportunity to Manage Others	13
18	Adequacy of Training and Preparation for Operation	11
19	Clarity and Availability of Procedures	6
20	Communication with Management	2

* Importance weights were obtained as follows: 5 points were assigned for a number 1 ranking, 4 points for a 2 ranking, 3 points for a 3 ranking, 2 points for a 4 ranking, and 1 point for a 5 ranking.

Supervisors and operators ranked the job characteristics quite similarly as retention factors. Supervisors, however substituted "job responsibility and authority" for "the opportunity to learn new knowledge and skills."

This question replicated a question in the NUREG/CR-1750 survey which also found salary and job security to be important retention factors. SONGS personnel, however, ranked the opportunity to do challenging work and the opportunity to learn new knowledge and skills much higher than did operators at the 9 plants surveyed by Analysis and Technology, Inc.

Operations personnel were also asked to indicate the five most important factors which would lead them to decide to leave SCE. Table 5.2 presents the most important turnover factors expressed by the respondents in descending order of importance. Salary, work hours, the opportunity to advance, communication with management and working conditions were the overriding factors expressed. All of these factors were rated slightly below neutral on the satisfaction scale, with the exception of communications which was rated as "Dissatisfied."

Although supervisors and operators listed the same four factors as most important to turnover, supervisors ranked communication with management as their number one concern, while operators ranked it fourth. Rankings on the other factors were essentially the same.

5.4.4.3 Job Attitudes

Operations personnel were asked to rate 72 statements of job attitude on a 9-point scale ranging from 1-Strongly Disagree to 9-Strongly Agree. Statements were phrased both positively and negatively to avoid response bias.

The 72 job attitude ratings were grouped into four categories: Training, Communications, Operations, and Job Satisfaction. Where necessary, scales were adjusted so that a statement which was phrased negatively could be appropriately combined with a positively phrased statement. The resulting scale indicates that high scores reflect positive attitudes while low scores reflect negative attitudes.

TABLE 5.2

RELATIVE IMPORTANCE OF 20 JOB CHARACTERISTICS FOR TURNOVER

Order of Importance	Job Characteristic	Importance Weight*
1	Salary	271
2	Work Hours	220
3	Opportunity to Advance	186
4	Communication with Management	172
5	Working Conditions	150
6	Fringe Benefits	60
7	Recognition for Your Work	55
8	Opportunity to Learn New Knowledges and Skills	51
9	Job Security	40
10	Work Variety	33
11	Opportunity to do Challenging Work	31
12	Clarity and Availability of Procedures	27
13	People You Work With	26
14	Job Responsibility and Authority	21
15	Adequacy of Training and Preparation for Operation	21
16	Skill Level of Co-Workers	20
17	Opportunity to Work Independently	20
18	Opportunity to Manage Others	17
19	Use of the Knowledge and Skills You Presently Have	15
20	Confidence and Ability to Deal with Unplanned or Unusual Operating Conditions	11

* Importance weights are sample-size dependent; hence they should be interpreted only in a relative sense within the table.

Means, standard deviations, and the range of scores for each category appear in Table 5.3.

Strongest contrasts were seen between Training which received a positive rating and Communications which received a negative rating. Somewhat neutral ratings were associated with Operations and Job Satisfaction.

A marked similarity was found in the ratings of operators and their supervisors, perhaps reflecting a group socialization process among individuals who share the same shift.

Despite the overall similarity of responses, ten significant differences were found between supervisors and operators in the 72 items. While supervisors were significantly more likely to indicate that their jobs were a source of personal frustration, and that the amount of work they were expected to do was unreasonable, supervisors were also more likely to indicate that their salaries adequately reflected their skill and level of responsibility and that they were satisfied with their progress in the organization. Operators were significantly more likely to indicate that they would like to be promoted to a higher level of responsibility and authority, that they would like better equipment and tools to work with, and that there was little incentive to perform better on one's job. In contrast, they were also more likely to indicate that they would still choose a career in commercial nuclear power, if they were starting over.

Much of the information derived from the above analysis reflects more on general issues of job satisfaction than on specific issues of operational readiness and effectiveness. As a result, 10 specific items were identified which give a clear picture of the perceptions of operations personnel. Ratings for these statements are presented in Table 5.4.

The ratings indicate very positive perceptions of their own skill levels as well as the technical competence of their supervision. A sense of shift teamwork was also conveyed. For statements 2 and 6, over 70% of the respondents rated the statements 7 or above. For statements 1, 5 and 10, over 70% of the respondents provided ratings of 6 or above. Lowest ratings were found in the operators' perception of procedural compliance. While operators were somewhat neutral about the need for more training, supervisors felt that more training would help them perform more efficiently and competently. In combination with statement 6 concerning the perceived technical competence of supervisors, it is assumed that training in supervisory/management skills is desired.

TABLE 5.3

MEAN RATINGS OF JOB ATTITUDE STATEMENTS
BY CONTENT CATEGORIES

TOTAL GROUP	N	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
Training	101	5.7	0.8	2.6	7.5
Communications	85	3.8	1.0	1.4	6.2
Operations	94	4.7	0.7	2.6	6.4
Job Satisfaction	70	4.3	0.7	2.8	6.2
SUPERVISORS					
Training	14	5.4	0.9	4.0	7.1
Communications	13	4.0	0.7	3.1	5.2
Operations	14	4.6	0.7	3.6	6.0
Job Satisfaction	5	4.2	0.6	3.2	4.8
OPERATORS					
Training	87	5.7	0.8	2.6	7.5
Communications	72	3.8	1.0	1.4	6.2
Operations	80	4.8	0.7	2.6	6.4
Job Satisfaction	65	4.3	0.8	2.8	6.2

TABLE 5.4

AGREEMENT RATINGS FOR 10 JOB ATTITUDE STATEMENTS

	Statement	Mean Rating: Total Group	Mean Rating: Supervisors	Mean Rating: Operators
1.	I have a clear understanding of my job responsibilities	6.2	5.9	6.3
2.	I feel I have the skills and knowledge required to perform my current job well	6.8	6.4	6.9
3.	The people I work with are really interested in doing a good job	5.3	5.3	5.2
4.	The necessary training has been provided for me to perform efficiently and competently	4.7	4.1	4.9
5.	The personnel on my shift have sufficient experience and training to operate the unit safely	6.4	5.6	6.5
6.	My supervisor is technically competent	6.9	6.7	6.9
7.	Adequate authority is given to me to do my job	5.4	5.4	5.4
8.	Employees are expected to meet high standards of job performance	5.4	6.1	5.3
9.	Actual work practices conform to clearly established procedures	4.3	4.4	4.3
10.	The people on my shift work well as a team	6.5	6.9	6.5

5.4.4.4 Open-Ended Questions

Responses for several open-ended questions were analyzed for content. Summaries of the responses appear in Table 5.5.

In response to the question, "If you could change one thing about your job in order to perform more effectively, what would it be?", the most frequent responses were: provide regular working hours (20%), improve communications patterns (19%), and improve working conditions (11.5%). In response to the question, "What, if anything, should be done to reduce the number of people who leave this organization?", the single most frequent response was pay a salary commensurate with responsibility and cost of living (41%). Other frequent responses were: establish an open, visible career pattern (12.5%), increase management's sensitivity to the problems/perceptions of line staff (11.5%), management should use input from line staff (11.5%) and treat employees with respect (10.6%). The final question, "What can be done to improve the way the organization uses employees' skills, knowledge, and abilities?", had two main responses: bridge the communication gap (21%) and use interdepartment training to maximize employees' skills (18%).

TABLE 5.5

OPEN ENDED ATTITUDE SURVEY QUESTIONS

Question I: If you could change one thing about your job in order to perform more effectively, what would it be?

		# of Responses (N = 104)	%
1.	Provide regular working hours.	21	20.0%
2.	Improve communication patterns. (Quality Circle Idea).	20	19.2%
3.	Improve working conditions.	12	11.5%
4.	Provide tools and equipment needed for the job.	10	9.6%
5.	Provide parking which is more accessible to job.	8	7.7%
6.	Reduce security.	6	5.8%
7.	Provide opportunities to use theoretical knowledge on the job.	6	5.8%
8.	Hire more competent, permanent employees as opposed to contract employees.	5	4.8%
9.	Introduce the idea of working as a team.	5	4.8%
10.	Put emphasis on the Quality of the job as opposed to Quantity: Accuracy as opposed to Speed.	4	3.8%
11.	Establish a central data gathering system to track changes in design, operations, and procedures.	4	3.8%
12.	Create an environment where people enjoy their work and are adequately compensated for it.	3	2.9%
13.	Provide efficient, reliable, scheduling.	3	2.9%
14.	Reduce work load.	3	2.9%
15.	Provide professional management from the plant superintendent level and higher.	2	1.9%

Question I (continued)

		# of Responses (N = 104)	%
16.	Reduce the problem of information overload.	2	1.9%
17.	Clearly delineate the responsibilities of each watch and watch-station.	2	1.9%
18.	Reduce the "Red Tape" between support departments.	2	1.9%
19.	Restructure the "Station/Operator" Department.	2	1.9%
20.	Get rid of excess employees (terminate).	2	1.9%
21.	Provide competent and effective management.	2	1.9%
22.	Distribute work equally among employees.	2	1.9%
23.	Protect the equipment.	1	.96%
24.	Prioritize job functions.	1	.96%
25.	Replace the Training Department	1	.96%
26.	Provide more mobility within the security system.	1	.96%
27.	Better planning at various levels of management.	1	.96%
28.	Provide SRO foreman for each unit and shift.	1	.96%
29.	Terminate the Quality Assurance Department.	1	.96%
30.	Speed up the Operator Training Program.	1	.96%
31.	Restructure the organization implementing a rigid structure with competent managers.	1	.96%

Question II: What, if anything, should be done to reduce the number of people who leave this organization?

		# of Responses (N = 104)	%
1.	Pay salary commensurate with responsibility and cost of living.	43	41.3%
2.	Establishment of an open, visible career pattern.	13	12.5%
3.	Increase management's sensitivity to the problems/ perceptions of line staff.	12	11.5%
4.	Management should use input from line staff.	12	11.5%
5.	Treat employees with respect	11	10.6%
6.	Give positive feedback to employees for a job well done.	9	8.7%
7.	Increase benefit package to include housing and transportation allowances.	5	5.0%
8.	Provide incentives for educational pursuits.	4	3.8%
9.	Develop a reward system (profit sharing) that is tied directly to employee performance/achievement.	4	3.8%
10.	Do not force employees to work overtime.	4	3.8%
11.	Reduce preferential treatment among certain groups.	4	3.8%
12.	Provide appropriate training for employees.	4	3.8%
13.	Establish credibility with employees: Management should keep promises.	3	2.9%
14.	Hire more employees and reduce overtime.	3	2.9%
15.	Different Union Representative.	3	2.9%
16.	Put an end to "crisis management" by transfering identified managers to less sensitive locations.	2	1.9%
17.	Tighten up on maintenance and safety procedures.	2	1.9%
18.	Buy down interest rates on housing for employees.	2	1.9%

Question II (Continued)

		# of Responses (N = 104)	%
19.	Four-day work weeks.	2	1.9%
20.	Terminate incompetent employees.	2	1.9%
21.	Implement a merit system.	1	1.9%
22.	Earlier licensing of personnel.	1	.96%
23.	Implement a Quality Circle Program.	1	.96%
24.	Establish better communication between management and union.	1	.96%
25.	A more realistic understanding of working conditions before being hired.	1	.96%
26.	Select persons with good judgment to do the hiring.	1	.96%

Question III: What can be done to improve the way the organization uses employees' skills, knowledge, & abilities?

		# of Responses (N = 104)	%
1.	Bridge the communication gap.	22	21.0%
2.	Make an assessment of each employee's skills and utilize them via interdepartmental training and experience designed to maximize the competency of the employee.	19	18.0%
3.	Provide effective evaluation and training.	6	5.8%
4.	Provide training, in effective management skills, for management personnel.	5	5.0%
5.	Reduce paper work.	4	3.8%
6.	Promote from within.	4	3.8%
7.	Recognize that employees possess skills, knowledge, and abilities.	2	1.9%
8.	Provide an objective appraisal of employees skill, knowledge, and abilities at entry and for promotion.	2	1.9%
9.	Provide an avenue to resolve problems promptly.	2	1.9%
10.	Provide positive incentives.	2	1.9%
11.	Utilize the skills of employees to train less advanced peers.	2	1.9%
12.	Establish a merit system.	2	1.9%
13.	Design the job to create specialized tasks/job functions.	2	1.9%
14.	Change some administrative procedures.	2	1.9%

5.5 CONCLUSIONS

The conclusions on operator feedback are summarized below in four categories corresponding to the items discussed in the November 15, 1982 letter.

A. Readiness of Plant Operations Personnel

1. Supervisors have adequate technical experience but minimal supervisory experience.

2. The amount of operations experience is comparable to industry averages.

3. Operators feel they have the skills and knowledge required to perform their jobs well.

4. Operators feel opportunities exist to learn new and challenging work.

5. Both supervisors and operators felt the people on shift work well as a team.

6. Operators were only slightly dissatisfied with working hours and conditions.

B. Past Performance

None

C. Operator Training

None

D. Improving Overall Effectiveness

Inadequate communications with management is a significant area of job dissatisfaction among operators and supervisors.

5.6 RECOMMENDATIONS

Provide additional supervisory skills training to operations supervisors.

Institute a program to improve communications within the Operations Department.

6. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Summary of Conclusions

The conclusions of Chapters 2, 3, 4 and 5 are summarized below into four categories. The categories correspond to the items addressed in the November 15, 1982 letter.

A. Readiness of Plant Operations Personnel

Based on parameters evaluated in this special review, plant operations personnel are ready to conduct intended startup testing and full power operation of San Onofre Unit 3. This conclusion is supported by the following findings noted previously:

1. Present staffing levels for five-shift operation are adequate.

2. The schedule for implementing six-shift operation is satisfactory.

3. Sufficient numbers of personnel are being trained to meet current staffing goals and to compensate for anticipated attrition.

4. Relevant average experience of the staff is 3.5 years for operators and 5 years for supervisors at San Onofre which is adequate overall.

5. Future plant staffing is being pursued from a variety of sources.

6. Overtime has been decreasing since May 1982 to an average amount of 4% per month for December 1982. Adequate controls are now in place to keep planned overtime near present levels.

7. Turnover has decreased steadily since 1979 to a present level of 11.2% which compares favorably with an industry average of 12.6%.

B. Past Performance

Compliance history and adherence to procedures indicates a need for continued emphasis in this category. This conclusion is based on the following findings:

1. Adequate corrective measures are now underway. However, results must be monitored on a continuing basis.

2. Data to date does not show a problem with adherence to procedures on Unit 2 based on a review of the SALP reports.

C. Operator Training

The training programs are acceptable and compare favorably with other PWR training programs. This conclusion is supported by the following findings:

1. The individual training program documents were reviewed and the programs were found to be acceptable.

2. The Saddleback Community College Program is an innovative program that shows great promise.

3. The content of the programs compares favorably with other utility programs but a need for additional training was noted in certain non-technical operator training areas, e.g., stress management.

D. Improving Overall Effectiveness

Generally, the plant operating staff is experienced and motivated. Communications with management needs to be improved. This conclusion is supported by the following findings:

1. Supervisors have adequate technical experience but minimal supervisory experience.

2. The amount of operations experience is comparable to industry averages.

3. Operators feel they have the skills and knowledge required to perform their jobs well.

4. Operators feel opportunities exist to learn new and challenging work.

5. Both supervisors and operators felt the people on shift work well as a team.

6. Operators were slightly dissatisfied with working hours and conditions.

7. Inadequate communications with management is a significant area of job dissatisfaction among operators and supervisors.

Based on parameters evaluated in this special review, the plant operations personnel are ready to conduct full power operations on Unit 3. The staff is capable, experienced and adequately trained.

Recommendations

The POPRC recommends the following items receive management attention and further action:

A. Adherence to procedures should be continually emphasized.

B. Implement the planned computer-based surveillance program for both units to improve adherence to surveillance schedules.

C. The administrative training requirements contained in the SRO training program should include the delineation of job responsibilities for other operator classifications.

D. Stress management training for RO's should be upgraded to equal that for SRO's.

E. Institute a program to improve communications within the Operations Department.

F. Provide additional supervisory skills training to operations supervisors.

1. Letter from R. Dietch, objectives of this rep

2. U.S. Nuclear Regulator Recommendations Concer NUREG/CR-1750, January

3. "Final Safety Analysis Units 2&3," Amendment

4. "1981 Evaluation - San Institute of Nuclear P

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8. Letter from R. H. Enge Systematic Assessment 1982.

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10. Letter from D. M. Ster Systematic Assessment October 18, 1982.

11. Letter from Robert Die Response to SALP Repor 1982.

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