

TOPICAL REPORT T2-80

SACRAMENTO MUNICIPAL UTILITY DISTRICT

RANCHO SECO

NUCLEAR GENERATING STATION

OPERATOR TRAINING PROGRAM

FOR

NRC LICENSED OPERATOR RETRAINING PROGRAM

8008050429

1.0 PURPOSE

The purpose of this procedure is to formally establish the programs, responsibilities and requirements for the requalifications of NRC Licensed Senior Operators and Reactor Operators at the Rancho Seco Nuclear Generating Station, Unit 1. The programs and contents established by this plan shall be enforced and adhered to for the life of the plant.

This program is established to meet the requirements of Appendix A of 10 CFR 55 necessary for renewal of licenses in accordance with Section 55.33 of 10 CFR 55.

This requalification program is subject to approval by the Nuclear Regulatory Commission. In accordance with 10 CFR 50.54 (i-1), no changes shall be made in this program to reduce the scope or time allotted without prior approval by the NRC.

2.0 REFERENCES

- .1 ANSI/ANS 3.1 - 1978, Selection and Training of Nuclear Power Plant Personnel
- .2 10 CFR 50, Licensing of Production and Utilization Facilities
- .3 10 CFR 55, Operators' Licenses

3.0 DEFINITIONS

The following definitions are extracted from 10 CFR 55.4. ("Simulator" and "Simulate" are derived from 10 CFR 55, Appendix A, Section 4.d.)

- .1 "Facility" means any production facility or utilization facility as defined per 10 CFR 50.2; namely, "Utilization Facility" which means any nuclear reactor other than one designed or used primarily for the formation of plutonium U-223.
- .2 "Operator" is an individual who manipulates controls of a facility. An individual is deemed to manipulate a control if he directs another to manipulate a control.
- .3 "Senior Operator" is an individual designated by a facility licensee under 10 CFR 50, to direct the licensed activities of licensed operators.
- .4 "Controls" when used with respect to a nuclear reactor, means apparatus and mechanisms, the manipulation of which directly affect the reactivity or power level of the reactor.

3.0 DEFINITIONS (Continued)

- .5 "Simulator," a working model of the control room similar to the plant for which an individual is licensed or is a candidate for license, may be considered a "simulator" provided it reproduces the general operating characteristics of the plant with similar arrangements of instrumentation and controls.
- .6 "Simulate," when an individual performs a walk-through of actions to be taken, using the control panel involved, discussing each step without actually operating any controls, he has "simulated" the operation. This method is used as a means of teaching or reviewing actions required by an emergency or abnormal condition.

4.0 PROGRAM REQUIREMENTS

.1 Schedule

The requalification program shall be conducted for a continuous period not to exceed two years. Successive requalification programs using generally the same format and schedule shall follow the first in a continuous cycle of two-year programs.

.2 Lectures

The requalification program shall include preplanned lectures to be given throughout the two-year period. Lectures will normally be scheduled to average sixty hours per man to accommodate all licensed operating personnel during the requalification program cycle; however, the schedule may take into consideration heavy vacation periods and infrequent operations such as refueling periods and forced outages. Lectures may be deferred due to unanticipated shutdowns, but shall be conducted as soon as practicable thereafter. Lectures may consist of preplanned supervised classroom discussions or seminars.

Films, video tapes, programmed instruction and other effective training aids may be used to supplement lectures; however, an instructor shall participate in at least thirty hours of the lecture series.

Lecture content shall take into consideration the following:

- .1 Theory and Principles of Operation
- .2 General and Specific Plant Operating Characteristics
- .3 Plant Instrumentation and Control Systems
- .4 Plant Protection Systems
- .5 Engineered Safety Systems

4.0 PROGRAM REQUIREMENTS (Continued)

- .2 .6 Normal, Casualty and Emergency Operating Procedures
- .7 Radiation Control and Safety
- .8 Technical Specifications
- .9 Applicable portions of Title 10, Chapter 1, Code of Federal Regulations
- .10 Principles of Heat Transfer, Fluid Flow and Thermodynamics
- .11 Operating Experiences from Similar Plant such as TMI-2 and Lessons Learned
- .12 Mitigation of Accidents Involving a Degraded Core
- .13 Results of Annual Examinations

.3 On-the-Job Training

The requalification program shall include on-the-job training consisting of:

.1 Control Manipulations

Each Licensed Senior Operator and Operator shall participate as much as possible in plant control manipulations involving reactivity changes to demonstrate his/her skill and/or familiarity with reactivity control systems. Enclosure 1 delineates the control manipulations required by Appendix A, Paragraph 3a, of 10 CFR 55.

.2 Simulator Training

Each licensed Senior Operator and Operator shall participate in simulator training during the term of his/her license. A simulator shall be used in meeting the requirements of Section 4.3.1 above for evolutions not performed at the plant.

.3 Procedure Review Training

.1 Each operator shall review the contents of all emergency, casualty and applicable security procedures at least once per retraining cycle.

.2 Applicable training methods are described in Section 4.4. Training in this area shall be included in the pre-planned schedule of the retraining cycle.

4.0 PROGRAM REQUIREMENTS (Continued)

.3 .4 Other Areas of Training

.1 Training of topics that cannot usually be pre-planned as part of the retraining cycle will be conducted as necessary to ensure each Licensed Senior Operator or Operator is cognizant of:

.1 Facility Design Changes

.2 Procedure Changes

.3 Facility License Changes

.4 Applicable Operating Experiences

.2 Acceptable training methods are described in Section 4.4.

.4 Miscellaneous Training Methods

.1 Training in addition to the pre-planned lectures per 4.2 may be conducted to supplement the scheduled lectures or to conduct training on other areas outlined in Section 4.3.3 and 4.3.4.

.2 Acceptable methods used for this training may include, but are not limited to:

.1 Brief lectures conducted by the Shift Supervisor or other appropriate personnel.

.2 Staff Meeting

.3 Written communications to each licensed individual from facility management.

.4 Explanation of major changes as part of the pre-planned lecture series.

.5 Supervised discussion.

.5 Evaluation and Observation

The requalification program shall include an evaluation and observation system to obtain the maximum benefits from the retraining program and as a method to determine areas in which retraining is needed. The evaluations and observations will be conducted by the Training Supervisor or his designated representative.

4.0 PROGRAM REQUIREMENTS (Continued)

.5 (Continued)

Licensed Senior Operators or Operators may be assigned to one or more examination groups and the annual examinations for their groups are conducted on different dates. Individuals may be shifted between groups and individuals receiving an initial license may be placed in any group as long as the period between annual examinations or between the license effective date and the first annual examination does not exceed thirteen (13) months.

It is not required that the individual(s) preparing or reviewing the examination (up to a maximum of 3) also take the examination. The examination and observation process shall include:

.1 Annual Written Exams

- .1 Written examinations shall be administered at 11 to 13-month intervals, depending on plant scheduling. The examination shall follow the guidelines of 10 CFR 55 Appendix A and will be used as a system to determine licensed operator and senior operator knowledge of subjects covered in the requalification program; normal, abnormal and emergency procedures; and as a method to determine areas in which retraining is needed to upgrade licensed operator and senior operator knowledge.
- .2 An operator scoring above 80% in all sections of the annual requalification examination shall not be required to attend further requalification lectures until the next annual requalification examination. Other operators may be excused from lectures in subjects for which they scored above 80% but shall be required to attend lectures on all other topics. If in the opinion of the Plant Superintendent, an individual has justifiable cause, such as sickness or emergency shift coverage, the individual may be excused from the required assigned lectures up to a maximum of 20% of the allotted total lecture time. The individual shall be assigned reading material on a self-studying basis to fulfill missed lecture time.

4.0 PROGRAM REQUIREMENTS (Continued)

.5 .1 .3 If an individual receives a less-than-passing grade (less than 80% overall or less than 70% in any category), the individual will be administered an oral examination within two (2) weeks. If the results of the oral examination confirm the results of the written examination, the individual shall not perform his licensed duties until such time as additional training is administered through an accelerated training program and an examination is administered to indicate that he is capable of such performance in a safe and efficient manner. If an individual is unsuccessful on the annual written examination, but is allowed to continue operation based on the results of the oral examination, within six (6) weeks of the original examination, a written re-examination shall be successfully completed or the individual shall be removed from licensed duties until such time as additional training through an accelerated training program and examination indicate that he is capable of such performance in a safe and efficient manner. The scope, duration and type of accelerated program and examination shall be determined on a case-by-case basis as the need arises.

.4 A second annual written examination shall be administered to all Licensed Senior Operators and Operators and shall be similar in content to the first annual written examination. The results of the written examinations shall be used by the Training Supervisor or his designated representative in designing the next two-year cycle requalification program.

.2 Quizzes

From time to time, written quizzes will be administered to determine the Licensed Operator and Senior Operator's knowledge of particular subjects covered in lectures or specific reading assignments. Any individual scoring less than 80% on a quiz shall receive additional training in the weak areas until sufficient knowledge is obtained as evidenced by a requiz or an oral evaluation.

.3 Observations

Systematic observation and evaluation of the performance and competency of Licensed Senior Operators and Operators will be made by the Training Supervisor or his designated representative.

4.0 PROGRAM REQUIREMENTS (Continued)

.5 .3 (Continued)

Such observations should also include evaluations including actions taken during actual or simulated abnormal and emergency conditions.

- .1 Each Licensed Senior Operator or Operator shall participate in an annual oral examination with the Training Supervisor or his designated representative. The examination and evaluation shall consist of:
 - .1 A discussion of required actions during abnormal and emergency conditions.
 - .2 A simulation of abnormal and emergency conditions while in the Control Room showing each action and controlling device to be operated.
- .2 Should the performance of the Licensed Senior Operator or Operator be deemed unsatisfactory, the Senior Operator or Operator will participate in an accelerated review program tailored to place emphasis where there is a clear indication of need.
- .3 Upon completion of the accelerated review program, the individual shall be subject to re-examination.

.6 Records and Documentation

- .1 Training files shall be maintained in format that is auditable to verify that retraining is conducted in accordance with this requalification program and shall meet the requirements of Appendix A, Paragraph 5 of 10 CFR 55.
- .2 Records and documentation shall be in accordance with Administrative Procedures.

.7 Inactive License

- .1 Pursuant to 10 CFR 55.31(e), any licensed Senior Operator or Operator who has not been actively performing the functions of an Operator or Senior Operator for a period of four (4) months or longer shall, prior to resuming licensed activities, complete the following requirements to demonstrate satisfactory knowledge and understanding of facility operations and administration by:

4.0 PROGRAM REQUIREMENTS (Continued)

- .7 .1 .1 Complete all individual study assignments made during the period of his absence.
- .2 Review all significant changes to operating procedures, license changes, plant design changes and special orders for the period of his absence.
- .3 Meet with the Training Supervisor or his designated representative to cover the material in all requalification lectures for which attendance was required but missed.
- .4 Successfully complete an oral examination and evaluation approved by the Plant Superintendent to demonstrate that his knowledge and understanding of the facility is satisfactory.
- .5 The Plant Superintendent must certify to the NRC that the Senior Operator or Operator is requalified. Approval must be received from the NRC that the Senior Operator or Operator's requalification is satisfactory before resuming activities for which he is licensed.

.8 Instructors

Instructors who provide instruction in systems, integrated response and transients related to the safety system shall be Licensed Senior Operators. For instruction where the instructors who have expertise in the above are not licensed, a Licensed Senior Operator shall be present to audit and approve the training for consistency and accuracy.

5.0 ENCLOSURE

.1 CONTROL MANIPULATIONS

ENCLOSURE 5.1

CONTROL MANIPULATIONS

The following control manipulations and plant evolutions where applicable to plant design are acceptable for meeting the reactivity control manipulations required by Appendix A, Paragraph 3.a of 10 CFR Part 55. The starred items shall be performed on an annual basis; all other items shall be performed on a two-year cycle. Each individual shall perform or participate in a combination of reactivity control manipulations based on the availability of plant equipment and systems. Those control manipulations which are not performed at the plant may be performed on a simulator. The use of the Technical Specifications should be maximized during the simulator control manipulations. Personnel with senior licenses are credited with these activities if they direct or evaluate control manipulations as they are performed.

- *1. Plant or reactor startups to include a range that reactivity feedback from nuclear heat addition is noticeable and heatup rate is established.
2. Plant shutdown.
3. Manual control of steam generators and/or feedwater during startup and shutdown.
4. Boration and/or dilution during power operation.
- *5. Any significant (>10%) power change in manual rod control.
6. Any reactor power change of 10% or greater where load change is performed with load limit control on manual.
- *7. Loss of coolant including:
 - 1) Significant steam generator leaks.
 - 2) Inside and outside primary containment.
 - 3) Large and small, including leak-rate determination.
 - 4) Saturated Reactor Coolant response.
8. Loss of electrical power (and/or degraded power sources).
- *9. Loss of core coolant flow/natural circulation.
10. Loss of condenser vacuum.
11. Loss of shutdown cooling.

ENCLOSURE 5.1 (Continued)

12. Loss of component cooling system or cooling to an individual component.
13. Loss of normal feedwater or normal feedwater system failure.
- *14. Loss of all feedwater (normal and emergency).
15. Loss of protective system channel.
16. Mispositioned control rod or rods (or rod drops).
17. Inability to drive control rods.
18. Conditions requiring use of emergency boration.
19. Fuel cladding failure or high activity in reactor coolant.
20. Turbine or generator trip.
21. Malfunction of automatic control system(s) which affect reactivity.
22. Malfunction of reactor coolant pressure/volume control system.
23. Reactor trip.
24. Main steam line break (inside or outside containment).
25. Nuclear instrumentation failure(s).