



**SMUD**

SACRAMENTO MUNICIPAL UTILITY DISTRICT □ 6201 S Street, Box 15830, Sacramento, California 95813; (916) 452-3211

November 29, 1982

*EA 82-50  
Rec'd 12/2/82*

RICHARD C DE YOUNG DIRECTOR  
OFFICE OF INSPECTION AND ENFORCEMENT  
U S NUCLEAR REGULATORY COMMISSION  
WASHINGTON D C 20555

DOCKET 50-312  
RANCHO SECO NUCLEAR GENERATING STATION, UNIT NO. 1  
REQUEST FOR RECONSIDERATION OF ORDER IMPOSING CIVIL MONETARY PENALTIES

At our meeting on Tuesday, November 23, 1982, I gave you a copy of a memorandum from R. J. Rodriguez, our Nuclear Plant Manager, to me that indicated the diesel generator relays could be reset from the control room. I would like to formally submit this document as an attachment to my letter of November 23, 1982.

Certainly the major function of the diesel generators is to supply the necessary power to bring the plant to a safe condition when all offsite power is lost. In my opinion, the diesel generator was not operative for only a matter of seconds. The breaker could have been reset from the control room and the generator would have taken load. Upon returning to Sacramento, I checked and found that our operators are trained to perform this function as part of their regular training. This further supports my opinion that in reality, the diesel generator was not incapable of performing its safety function.

I am also enclosing and making it an attachment to the November 23rd letter, the consultant's report by Qualification Evaluation Systems Corporation (QES), which was mentioned in that letter and has been transmitted to Revion V.

*John J. Mattimoe*

John J. Mattimoe  
General Manager

Enclosures

cc: Bob Martin, Revion V, NRC

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Q PDR

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SACRAMENTO MUNICIPAL UTILITY DISTRICT

OFFICE MEMORANDUM

TO: J. J. Mattimoe

DATE: November 22, 1982

RJR 82-645

FROM: R. J. Rodriguez

SUBJECT: DIESEL GENERATOR BREAKER RESET CAPABILITY

After our conversation this morning, I further explored the source of my impression that the diesel generator reverse power relay trip condition could be reset from the Control Room. The source of that was the NRC's report dated June 8, 1982, written by Harvey Canter. Further investigation with the technicians who had explained the breaker operation to Harvey supports that the diesel generator breaker trip relay (486) will reset when the trip button at the H2ES panel in the Control Room is pushed.

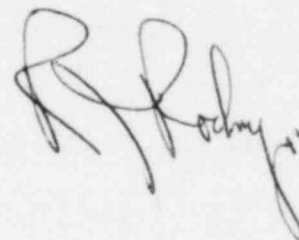
Based on this operating condition, I think it's reasonable for you to pursue the argument that under actual emergency conditions, upon discovering that the breaker did not close automatically, the operator could have simply pushed the trip button to reset the relays and then push the close button again to close in the breaker.

Mr. Canter's report clearly identified that the Shift Supervisor did in fact push the trip button to reset the current fault relay after the Electrical Maintenance personnel had told him that they suspected the cause of the B Diesel trouble alarm was the result of the reverse power relay having operated.

I had Charlie Linkhart reconfirm this condition. Apparently Charlie was looking at the incorrect print when he gave Pierre Oubre' the comment that this capability did not exist on our diesel generators.

Sorry about the confusion and I hope that this clarifies the question.

/jr



*nuclear  
Operating  
RF#1  
6-9-82  
(Loss in File)*



QUALIFICATION  
EVALUATION  
SYSTEMS  
CORP.

*See ltr 6-9-82  
Wobridge to  
Engelken*

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## I. INTRODUCTION

As a result of recent occurrences involving non-licensed operators at the Rancho Seco Nuclear Generating Facility, Sacramento Municipal Utility District has asked Qualification Evaluation Systems Corp. (QES) to undertake the following tasks:

- A. Review the non-licensed operator training program for those individuals assigned to the Operations Division. This review is to determine if sufficient detail is being presented to ensure that the individuals are being instructed into specifics of what they are supposed to do.
- B. Review management controls for their effectiveness in supplying information to those supervisors operating the plant. This review is to ensure there is no lack of understanding of the plant conditions and that sufficient information is available to those supervisors to determine operational status of safety equipment.

Discussion of the task data collecting, review and evaluation results, conclusions and recommendations are described in the following sections of this report.

## II. REPORT DATA COLLECTION

- A. In order to complete the assigned tasks, the following data were collected:
1. Power Plant Helper Training Program Course Outline, Representative Lesson Plans and Final Examination
  2. Representative System Checkout Lists and Systems Evolution Certification Sheets
  3. Rancho Seco Operator Training Program (In final stages of development)
  4. Equipment Attendant, Auxiliary Operator, Control Operator and Shift Supervisor Shift Turnover Sheets
  5. The Following Administrative Procedures:
    - a. AP4, Administrative Clearance Procedure
    - b. AP23, Control Room Watchstanding
    - c. AP24, Control of Special Orders
    - d. AP26, Abnormal Tag Procedure
  6. Non-licensed Operator Log Sheets
- B. In addition, personal discussions and interviews were conducted with selected members of the Rancho Seco staff. Individuals contacted were:
1. P. Oubre-Plant Superintendent
  2. J. Mau-Training Supervisor
  3. D. Blachly-Supervisor, Nuclear Operations
  4. W. Spencer-Shift Supervisor
  5. A. Frazier-Shift Supervisor
  6. M. Hieronimus-Shift Supervisor
  7. R. Zarich-Senior Control Operator
  8. D. Gouker-Shift Supervisor
  9. M. Hayes-Auxiliary Operator
  10. R. Malenab-Equipment Attendant
  11. C. Bourassa-Equipment Attendant
  12. M. Cochran-Auxiliary Operator

### III. NON-LICENSED OPERATOR TRAINING PROGRAM EVALUATION

The non-licensed operator training program, as it now stands, consists of a 5-week Power Plant Helper's course conducted by the Rancho Seco Training Department. This 5-week course includes classroom instruction, videotape lectures and hands-on demonstrations. It is intended to prepare a newly-hired individual for his first assignment in the power plant. Attachment A shows a typical schedule and content for this 5-week program.

Once an individual leaves the formal training program and is assigned to a shift, further training is the responsibility of the Operations Division. Responsibility for the conduct of this on-shift training rests with each Shift Supervisor.

In addition, each shift periodically returns to the Training Department for retraining. During this time the non-licensed operators receive additional classroom work.

At present, there does not appear to be any definition or structure to the on-shift training that an individual receives. He learns his duties by following another operator around, observing and asking questions. The knowledge that is gained is a function of his own inquisitiveness and the inclination of the experienced operator to instruct. There is no documentation of any of this training conducted on shift, hence there is no way to determine with certainty, that all non-licensed operators have been trained for each specific task assigned to them. In addition, rotation between shifts breaks up whatever training continuity might exist.

Discussions with operators lead to the conclusion that the 'buddy system' training described above is less than satisfactory. For example:

" While I was a Power Plant Helper, my Equipment Attendant only taught me the menial jobs so he would not have to do them "

" My Equipmant Attendant was not very helpful. He told me that training was not part of his job "

" After I was assigned as a Helper, I was teamed with another Helper who only had 1 month of experience. It was the blind leading the blind "

The Shift Supervisors interviewed indicated a recognition of their responsibilities toward the training of members of their shifts. They indicated that they did try to conduct training and checkouts, when possible, but that other demands on their time left little remaining for training.

And, similar to some of the other operators, not all Shift Supervisors show the same inclination to teach. Some documentation is being maintained by the individual Supervisors but is not being forwarded to a central file for each individual. It is difficult to determine what training and qualifications each non-licensed individual has had.

There is no list of specific subjects or systems that the Shift Supervisors follow. They tend to teach, if at all, in areas they think are important. Since each Supervisor may emphasize different operations, the scope of training to which the non-licensed personnel have been exposed varies.

The Training Department attempted to implement a series of systems checklists for non-licensed operators early in 1980. This was an attempt to ensure that each non-licensed individual was exposed to all of the systems. When the individual felt he understood all items on the checklist, he presented himself to the Shift Supervisor for evaluation of his knowledge.

By the end of 1980, the program was no longer in operation. The Shift Supervisors indicated that the period during which the check lists were being used was a particularly hectic one, making it difficult to conduct the evaluations as they were asked. Also, little guidance was provided from the Training Department as to the depth of evaluation required.

From the non-licensed operators' standpoint, they welcomed the guidance received through the format of the checklists. It provided them with a scope of what they were expected to know, something otherwise lacking. However, since there was no guidance provided for minimum expected knowledge, some non-licensed operators felt the Shift Supervisors got carried away with what they expected the operators to know and refused to participate. Gradually the program died.

In the latter part of 1981, checklists were again put into use. It is not clear that they are being universally applied through-out the non-licensed ranks. At this time there is no formal invocation of checklists and evaluations as a requirement for advancement.

One training requirement for advancement does exist; however, it could be classified as peripheral training not directly related to specific tasks. The Training Department uses a series of booklets entitled "Nuclear Power Plant Steam and Mechanical Fundamentals", consisting of 35 Sections in 12 Volumes. A list of Section titles is provided in Attachment B. A Power Plant Helper must complete Sections 1-5 by the end of his 6 month probation period. A written examination is given and is one of the considerations of that period of evaluation. Prior to



advancement to Equipment Attendant, Sections 15-23 must be completed and an examination passed. The remainder of the Sections are completed prior to advancement to Auxiliary Operator.

One important aspect of any training program is the availability and quality of reference material. There is a complete set of lesson plans covering all systems available in the control room. Detailed System Descriptions are being developed. Those that are completed are also available in the control room. The control room location of this reference material serves adequately for the Auxiliary Operators, who periodically come through that area. However, for the Power Plant Helpers and Equipment Attendants, the focal point of their activities is the 'water shack' in the turbine building. A complete set of reference material should be made available in that location for their use.

The non-licensed operator training program, as it currently is conducted, is not adequate from several standpoints.

1. In order for a training program to be effective, it must be comprehensive and universally applied. There must be continuous oversight and progress evaluation. Overall system and equipment operation must be taught as well as specific duties and tasks that must be performed. This, simply, is not being done.
2. Reliance on 'buddy system' training presumes too much. For example, it is presumed that the 'experienced' hand is in fact experienced. Witness: One 'experienced' operator said he was reluctant to pass information to his trainee because he is not sure himself what he is doing. Witness: One 'experienced' operator has been in his job only 3 months, is training another operator and only had 2 weeks training in that position himself. Witness: Another 'experienced' operator said he knows what to do but doesn't know why. He doesn't know how the system works but he knows what controls to twist.

In addition, it is presumed the experienced operator will impart his knowledge to the less experienced operator. As noted previously, this is not always a safe presumption.

The overall experience level in all positions of non-licensed operator is dangerously low. This, coupled with the variation in desire and ability to teach, makes the unsupervised 'buddy system' of training a poor vehicle to safe operation.

3. The reliance on the Shift Supervisor to conduct or supervise aspects of the training program is not realistic. A valid argument can be made for his ultimate responsibility for the competence of his shift complement; however, requiring his participation in the mechanics of the program builds in an irregularity to progressive training. He can only address training when other job requirements permit, something over which he may have no control. We believe it is appropriate that he maintain his evaluation function but leave the training to others.
4. Adequate documentation of training must be maintained for each individual. This makes sense not only from a quality assurance standpoint, but also from a regulatory standpoint. Signed checklists or evaluations are effective means of determining quickly the qualifications of each operator.

Rancho Seco management is aware of the inadequacy of the present non-licensed operator training program. A new training program is under development which addresses many of the weaknesses which currently exist. Highlights of the new program are as follows:

1. The program consists of Qualification Check-off Sheets and Training Guides.
2. The Shift Supervisor will evaluate each individual and sign the Check-off Sheets.
3. Whenever an employee is transferred to a different crew, he continues the check-offs with the new Supervisor.
4. The Shift Supervisor assisted by the Training Supervisor assure a uniform, consistent qualification check-off.
5. The Training Guides provide a list of reference material and a set of questions and statements to aid the employee in preparation for qualification check-off by his Supervisor.
6. Actual operation should be demonstrated to the Supervisor in every case where possible. Whenever the demonstration is impossible, a detailed walk through of the procedure should be substituted.
7. Signed check-offs are maintained as documentation of training.



8. Completion of various check-offs is a prerequisite for advancement.

A copy of a representative Check-off Sheet and accompanying Training Guide, as well as, instructions for their use and a list of required check-offs are included as Attachment C.

We believe implementation of this new program will address many of the shortcomings which exist in the present program. However, we are concerned about the lack of direct oversight by the Training Department. The new program will still rely heavily on the 'buddy system' of training and it will require extensive use of the Supervisors' time to perform check-offs and evaluations.

As noted previously, the experience base existing in the present non-licensed operators is low. We do not believe reliance should be placed on current operators teaching new operators. Until all non-licensed operators have gained more experience, the training of new operators, including on-shift training, should be the responsibility of the Training Department.

In order to accommodate the requisite training for non-licensed operators, 3 additional instructors should be assigned to the Rancho Seco Training Department. This is consistent with the "Proposed Rancho Seco Training Organization" submitted to J. J. Mattimoe from R. P. Oubre on August 10, 1981. These three instructors should be experienced operators who have served in all non-licensed positions. If it is not possible to get them from the Operations Division, contract personnel may be used. It is imperative, however, that experienced power plant operators rather than ex-navy operators be used.

The three instructors assigned to non-licensed operator training should be used on-shift to guide and conduct the training. They should ensure that adequate progress is being maintained and serve as a permanent resource of information. They should also conduct evaluations and check-offs, relieving, as much as possible, the burden on the Shift Supervisor.

Specific recommendations concerning the non-licensed training program are summarized in Section V.

#### IV. MANAGEMENT CONTROLS FOR SUPERVISOR INFORMATION

In order for a Shift Supervisor to effectively carry out his responsibilities he must at all times know the status of the facilities under his control. He must know the availability of equipment, understand work in progress and know the contents of any special orders which exist.

QES has reviewed applicable procedures as well as conducted interviews with both Supervisors and Operators. With few exceptions, our review has indicated that an effective system exists to ensure that the Supervisors have all the pertinent information necessary for safe operation of the plant.

It should be noted that the Institute of Nuclear Power Operations (INPO) conducted an evaluation at Rancho Seco in September of 1981. One area addressed by INPO was Administrative Controls. Several recommendations were made by them which corrected deficiencies and added strength to Administrative Controls. Attachment D contains the INPO findings and recommendations. Also included are corrective steps taken by Rancho Seco management.

One of the primary means that exist for Supervisors to remain cognizant of operational status of safety equipment is by being informed by operators on their shift. All operators are required to notify Supervisors of any change in status or availability of equipment under their control. In addition, this information is logged on the Shift Turnover Sheet and discussed with the oncoming shift. Equipment Attendants, Auxiliary Operators, Control Operators and Shift Supervisors all complete Shift Turnover Sheets noting operational status of systems, including safety related equipment, as well as, operations underway at the time relief is made.

Prior to relieving the shift, the oncoming shift must review with their counterparts on shift the plant status. This includes:

1. Equipment out of service and why.
2. Any tests or procedures in progress and their status (duty Shift Supervisor determines when any test/procedure can be interrupted for watch relief).
3. Any clearance/test authorizations issued that restrict Safety Features Systems, Reactor Protection Systems or Auxiliary Feedwater Systems.
4. Shift Supervisor and Senior Control Operator must review any unplanned transient that has occurred since their previous shift.

5. Shift Supervisor must determine if any new Standing Orders or written instructions exist for that shift.
6. Shift Supervisor must review all procedure changes initiated by the off-going operating crew during the previous shift.

Log books are maintained by Operators and Supervisors in which significant events or evolutions are permanently recorded. These log books are reviewed by oncoming shifts and serve as an effective conduit for information.

We believe the Shift Supervisors should make it a practice to review the non-licensed operator logs. This is particularly important in light of the lack of experience in the non-licensed corps. The experienced Supervisor may spot a trend developing which may not be recognized by a less experienced individual.

All activities involving taking equipment out of service, working on equipment, providing safeguards while testing equipment and returning equipment to service is done under control of AP 4, 'Administrative Clearance Procedure'. Isolation and de-activation of systems or equipment and the hanging of appropriate Caution/Danger tags is done with the concurrence of the Shift Supervisor. It is not credible that a safety significant system can be compromised without the Shift Supervisor's knowledge. Copies of the clearance are maintained in the control room files.

As a result of the INPO evaluation, a log of abnormal tags is maintained in the Shift Supervisors' office. An index is used to provide rapid review of outstanding clearance, caution and test authorizations. Plant status control is monitored by the Shift Relief Checklist. The index and log is reviewed once a week to identify systems and equipment that should be released back to operation or service.

We believe the control of clearances and tags is effective. However, we would go one step further and provide a master status board of all systems. Color coded markers or symbols would be used to provide at-a-glance information on systems or equipment unavailable for operation.

Discussions with Shift Supervisors suggest there is another improvement which could be made to the system. When a system is cleared for maintenance the Supervisors lose all knowledge of the status of the system. Other than knowing that the system, per se, is unavailable, they do not know whether the system is open, the pump in twenty pieces, etc. Information of this nature could be useful if, in emergency conditions,

consideration may be given to rapid restoration of system operability. We believe it would not be burdensome for maintenance or electrical personnel to provide a system status report at the end of the work day or prior to departing for the weekend.

In addition to the Clearance Procedure described above, AP 26, 'Abnormal Tag Procedure' exists. AP 26 controls the placing of temporary jumpers or lifting electrical wire causing an abnormal condition in an electrical circuit. It also applies to routing temporary cable. The procedure specifically states, "At no time during normal operation will a system or electrical circuit be made abnormal without the knowledge and consent of the Shift Supervisor". Stubs of all abnormal tags are hung in the Shift Supervisors' office. Thus, all oncoming Shift Supervisors have information about what abnormal tags were hung on previous shifts; however, determining the specific circuits involved requires the Supervisor to go through the stack stub-by-stub. We believe an Abnormal Tag Log should be maintained in the Shift Supervisors' office in addition to the log currently maintained in the Electrical, Electrical Tech and I&C shops.

Special Orders are issued to Shift Supervisors by the Supervisor, Nuclear Operations in accordance with AP 24, 'Control of Special Orders'. Special Orders encompass special operations, housekeeping, data taking, publications and their distribution, plotting process parameters, personnel actions, or other similar matters. Each Shift Supervisor receives a personal copy of each Special Order and a file of Special Orders is maintained in the Shift Supervisors' office. Each Shift Supervisor is to initial the file copy signifying he has read, understands and will comply with the Special Order. The Supervisor, Nuclear Operations is to review the file yearly and cancel those Special Orders which no longer apply.

The procedural requirements affecting Special Orders are designed to ensure that all Shift Supervisors get the necessary information. However, our review of the file indicated that not all Shift Supervisors are initialing the file copies for documentation purposes. Special Orders dating back almost a year did not contain the required initials. We recommend that the Special Order file be brought up to date by requiring the Shift Supervisors who have not initialed the orders to do so. We also recommend that the Special Order file be reviewed within 30 days following the issuance of a Special Order to ensure Shift Supervisor acknowledgement in a timely manner.

In addition to Special Orders, another document exists through which the Supervisor, Nuclear Operations conveys instructions and information to the Shift Supervisors. This document is called a Night Order Book. We found no administrative pro-

cedure which addressed the use of the Night Order Book, but our understanding is that it is used to provide special instructions to be carried out during the nighttime hours. The book is used infrequently and on an irregular basis. Several Supervisors mentioned the potential for failing to look at it since long periods of time may exist between entries. We believe the Night Order Book should be formalized by procedure and require a daily acknowledgement by each Shift Supervisor. In lieu of this a more foolproof method of conveying temporary special instructions to the Shift Supervisors should be developed.

A summary of recommendations pertaining to this Section appear in Section V.

## V. RECOMMENDATIONS

### NON-LICENSED OPERATOR TRAINING PROGRAM

1. Implement, as soon as possible, the new training program using Check-offs and Study Guides.
2. Require all current non-licensed operators to satisfactorily complete all system Check-offs.
3. Place the responsibility for program oversight in the Training Department.
4. Concurrently, hire 3 experienced instructors and devote them to on-shift non-licensed operator training.
5. Perform a complete task analysis of the Power Plant Helper, Equipment Attendant and Auxiliary Operator functions to ensure appropriate training is administered.
6. Expedite the completion of detailed system descriptions and make these readily available in the turbine building for reference.
7. Develop a retraining program for non-licensed operators
8. Concurrently, get to 6-shift rotation as soon as practicable to allow retraining on a regularly scheduled basis.

### ADMINISTRATIVE CONTROLS FOR SUPERVISOR INFORMATION

1. Shift Supervisors should routinely review logs kept by non-licensed operators.
2. Provide a master status board for at-a-glance determination of systems or equipment unavailable for operation.
3. Require maintenance and other service personnel to provide an end-of-work-day status report on physical condition of system or equipment being worked on.
4. Maintain an Abnormal Tag Log in Shift Supervisors' office.
5. Require all Shift Supervisors who have failed to do so to acknowledge all Special Orders. Revise the Special Order procedure to require a review for Shift Supervisor acknowledgement within 30 days of the issuance of a Special Order.



V. RECOMMENDATIONS (Continued)

6. Develop a procedure to formalize the use of the Night Order Book. In lieu of this develop another method to convey temporary instructions to the Shift Supervisors.

ATTACHMENT A

SEPT 14	15	16	17	18
Course Intro Oubre' AP Training	New Employee Orientation	CPR	Properties of Water  NUS Mod 4 Tape 1 Steam Power Cycle	NUS Mod 4 Tape 2  Thermodynamics
LUNCH				
AP Training	Respiratory  Training Reference Material P & ID's	CPR	NUS  Steam Traps	NUS  Valves

SEPT 21	22	23	24	25
NUS Mod 4 Tape 3  Steam Boilers	NUS Mod 4 Tape 4  Turbine Generator	Health Physics	NUS Mod 4 Tape 5  Condenser	NUS Mod 5 Tape 1  Biological Effects of Radiation
LUNCH				
NUS  Positive Displacement Pumps	NUS  Centrifugal Pumps	Health Physics	NUS Mod 6 Tape 1  Water Chemistry	OTSG  Main & Reheat Steam

SEPT 28	29	30	OCT 1	2
First Aid	Condenser  Air Ejectors  Condensate & Feedwater	Turbine  Turbine Lube Oil	Boilers	Boiler Ops
LUNCH				
First Aid	Lovejoy Controls  Trace Steam  Plant Components	Auto Stop Oil  EHC	Boilers	Boiler Ops

ATTACHMENT A

OCT 5	6	7	8	9
Fire Brigade	NUS Mod 5 Tape 2 Units, Guides and Limits	RCS Vessel and Core Internals	Watchstanding	NUS Mod 5 Tape 3 Protection Techniques against Radiation
LUNCH				
Fire Brigade	Ion Exchange Polishers and Resin Regeneration	CCW/TCPW PCW Effluent	Site Water Supply Circ Water Make-up Water Tour Pump House	Tour Reactor Building  Self Study

OCT 12	13	14	15	16
Boiler Ops Review Tour Aux Bldg	DHR LPI Core Flood RB Spray	Fire Protection	Electrical Dist.	Review
LUNCH				
Makeup Letdown HPI BWST	Aux Feed NSCW NSRW	Rad Waste	Rx Theory	Exam Exam Review

LUNCH				

ATTACHMENT BTABLE OF CONTENTSNUCLEAR POWER PLANT STEAM AND MECHANICAL FUNDAMENTALSSECTION

1. Introduction
2. Overall Description of a Nuclear Power Plant
3. Pressure and Flow
4. Temperature and Heat
5. Properties of Water
6. Structure of Matter
7. Radioactivity
8. Nuclear Fission
9. Neutron Behavior
10. Reactor Control
11. Reactor Heat Transfer
12. Nuclear Power Plant Heat Cycles
13. Reactor Vessel Internal Arrangement
14. Reactor Auxiliary Systems
15. Steam Generators
16. Turbines
17. Condensers
18. Condensate and Feedwater Systems
19. Pumps
20. Water Chemistry
21. Oils and Lubrication
22. Valves, Traps and Pipes
23. Station Service System
24. Nuclear Instrumentation
25. Process Instrumentation and Control
26. Engineered Safety Features
27. Health Physics Fundamentals
28. Radiation Protection
29. Radioactive Waste Treatment
30. Nuclear Fuel
31. Refueling and Fuel Handling
32. Licensing and Regulation Requirements
33. Operating the Plant
34. Quality Assurance
35. The Job of the Operating Staff

P.P.H. SYSTEMS EVOLUTION CERTIFICATION

NAME \_\_\_\_\_

P=Perform W=Walkthrough

#39	Auxiliary Steam System:	P or W	Date	Operator's Initials
A.	Perform two (2) start-ups and shutdowns of Auxiliary Boilers per A.39.	#1 _____	_____	_____
		#2 _____	_____	_____
B.	Place Auxiliary reducer in service/adjust Auxiliary header press controller.	_____	_____	_____
C.	Perform the following on E365/360:			
	1. Blow soot.	_____	_____	_____
	2. Low drum level trip test.	_____	_____	_____
	3. Cut in/out mud drum steam.	_____	_____	_____
	4. Add chemicals.	_____	_____	_____
	5. Place nitrogen blanket on drum.	_____	_____	_____
	6. Blowdown drum to rhut(s).	_____	_____	_____
	7. Operate bottom blowdown valve.	_____	_____	_____
D.	Discuss casualty procedure C.5.	_____	_____	_____
E.	Perform system logs.	_____	_____	_____

Reviewed By (Licensed Operator): \_\_\_\_\_ Date \_\_\_\_\_

## ATTACHMENT C

### Rancho Seco Operator Training Program

#### MECHANICAL SYSTEMS

#### 439 Auxiliary Steam Systems.

#### 1.0 REFERENCES

1. RWB M-536 and M-537, E-206, Sh 5, 10, 12, 14, 34 and 38.
2. Plant Limits and Precautions.
3. Rancho Seco Water Chemistry Manual.
4. Station General Specifications Section M-13.
5. SOP A. 26.
6. Vendor Manual - Emerson-Modford for E-360 and E-365.

#### 2.0 STUDY GUIDE

1. Description and purpose of the auxiliary steam system.
2. Detail description of the auxiliary boiler including the following items:
  - a. Combustion air and flue gas path.
  - b. Feedwater inlet to steam outlet path.
  - c. Drum internals description.
3. Detail description of the auxiliary boiler fuel systems.
4. Complete description of the auxiliary boilers feedwater system.
5. Describe the auxiliary boiler control system.
6. Discuss purging the auxiliary boilers. Under what condition would you not purge the boilers using the normal method?
7. List the conditions that will trip the auxiliary boilers.
8. Discuss the auxiliary boiler pre-fire check list.
9. How would you verify auxiliary boiler drum level?

ATTACHMENT C

- .10 Describe auxiliary boiler startup.
- .11 How do you determine when soot blowing is needed? What is the minimum level for blowing soot?
- .12 Define the terms drum level shrink and swell.
- .13 Discuss auxiliary boiler water treatment.
- .14 Outline procedure for placing in service and removing from service the auxiliary steam reducing station.
- .15 Discuss the auxiliary steam system limits and precautions.
- .16 Physically locate the system components.

## ATTACHMENT C

### Rancho Seco Operator Training Program

#### MECHANICAL SYSTEMS

#### #39 Auxiliary Steam Systems.

##### 1.0 REFERENCES

- .1 P&ID M-530 and M-537, E-206, Sh 5, 10, 12, 14, 34 and 38.
- .2 Plant Limits and Precautions.
- .3 Rancho Seco Water Chemistry Manual.
- .4 Station Manual System Description, Sh M-13
- .5 SOP A.39.
- .6 Vendor Manual - Bumstead-Woolford for E-360 and E-365.

##### 2.0 STUDY GUIDE

- .1 Description and purpose of the auxiliary steam system.
- .2 Detail description of the auxiliary boiler including the following items.
  - a. Combustion air and flue gas path.
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- .4 Complete description of the auxiliary boilers feedwater system.
- .5 Describe the auxiliary boiler control system.
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- .7 List the conditions that will trip the auxiliary boilers.
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- .9 How would you verify auxiliary boiler drum level?



ATTACHMENT C

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- .11 How do you determine when soot blowing is needed? What is the minimum load for blowing soot?
- .12 Define the terms drum level shrink and swell.
- .13 Discuss auxiliary boiler water treatment.
- .14 Outline procedure for placing in service and removing from service the auxiliary steam reducing station.
- .15 Discuss the auxiliary steam system limits and precautions.
- .16 Physical location of the system components.

OPERATOR QUALIFICATION CHECK LIST

INSTRUCTIONS TO TRAINEE:

1. Plant systems checkout list:

As each portion of the system is studied, the trainee should initial and date the appropriate block. Upon completion of the entire system checkout, the Shift Supervisor performing the checkout shall sign and date designated space. The Shift Supervisor may deligate a licensed Operator to perform the checkout. Then he will sign and date the designated space for the Shift Supervisor.

2. Plant systems evaluation certification:

As each evolution is performed or "walked through" by the trainee, the cognizant Operator (EA, AO, CO, SCO, SS) shall initial the trainee's evolution check sheet in the appropriate space. Upon completion of each individual system, a licensed Operator shall review the system with the trainee to ensure satisfactory understanding of the system operation, and how the system interfaces with other systems.

ATTACHMENT C

II EQUIPMENT ATTENDANT CHECK-OUTS

To be completed prior to being promoted to Equipment Attendant.

- 6 STEAM GENERATOR SECONDARY SIDE SYSTEM.
- 26 COMPONENT COOLING & TURBINE PLANT COOLING WATER SYSTEM.
- 27 CHILL WATER SYSTEM.
- 30 MISCELLANEOUS DRAINS AND SUMPS SYSTEM.
- 31 DIESEL GENERATOR SYSTEM.
- 32 DIESEL FUEL OIL SYSTEM.
- 33 FIRE PROTECTION WATER SYSTEM.
- 34 AUXILIARY GAS SYSTEM.
- 35 CARBON DIOXIDE SYSTEM.
- 37 ELECTRO HYDRAULIC OIL SYSTEM.
- 43 TURBINE PLANT CHEMICAL ADDITION SYSTEM.
- 46 MAIN TURBINE SYSTEM.
- 47 CONDENSATE AND FEEDWATER SYSTEM.
- 50 MAIN FEEDWATER PUMPS SYSTEM.
- 51 EMERGENCY FEEDWATER SYSTEM.
- 54 220 KV SYSTEM.
- 55 22 KV SYSTEM.
- 56 12.4 KV SYSTEM.
- 57 6.9 KV SYSTEM.

ATTACHMENT C

I POWER PLANT HELPER CHECK-OUTS

To be completed as part of the six months probationary period.

- 25 NUCLEAR SERVICE RAW WATER SYSTEM.
- 28 MISCELLANEOUS WATER SYSTEM.
- 29 WASTE WATER DISPOSAL SYSTEM.
- 33 FIRE PROTECTION WATER SYSTEM.
- 35 CARBON DIOXIDE SYSTEM.
- 36 PLANT COOLING WATER AND RESERVIOR SYSTEM.
- 38 CIRCULATING COOLING WATER SYSTEM.
- 39 AUXILIARY STEAM SYSTEM.
- 40 PLANT AIR SYSTEM.
- 41 GENERATOR SEAL OIL SYSTEM.
- 42 GENERATOR HYDROGEN SYSTEM.
- 45 TURBINE LUBE OIL TRANSFER SYSTEM.
- 48 POLISH. DEMIN., RESIN, TRANS. AND REGENERATION SYSTEM.
- 49 AIR EJECTOR AND GLAND STEAM SYSTEM.
- 51 AUXILIARY FEEDWATER SYSTEM.
- 57 6.9 KV SYSTEM.
- 58 4.16 KV SYSTEM.
- 59 480 V SYSTEM.
- 60 208/120 V LIGHTING SYSTEM.

ATTACHMENT C

II EQUIPMENT ATTENDANT CHECK-OUTS #2

To be completed within probationary period.

- 20 BORATED WATER STORAGE SYSTEM.
- 21 SPENT FUEL COOLING SYSTEM.
- 24 NUCLEAR SERVICE COOLING WATER SYSTEM.
- 25 NUCLEAR SERVICE RAW WATER SYSTEM.
- 28 MISCELLANEOUS WATER SYSTEM.
- 29 WASTE WATER DISPOSAL SYSTEM.
- 38 CIRCULATING COOLING WATER SYSTEM.
- 39 AUXILIARY STEAM SYSTEM.
- 40 PLANT AIR SYSTEM.
- 41 GENERATOR SEAL OIL SYSTEM.
- 42 GENERATOR HYDROGEN SYSTEM.
- 44 TURBINE PLANT SAMPLE SYSTEM.
- 45 TURBINE LUBE OIL TRANSFER SYSTEM.
- 48 FULL FLOW POLISHING DEMINERALIZER RESIN TRANSFER AND REGENERATION.
- 49 AIR EJECTOR AND GLAND STEAM SYSTEM.
- 53 EXTRACTION STEAM REHEATER FEEDWATER DRAIN SYSTEM.
- 58 4.16 KV SYSTEM.
- 59 480 V SYSTEM.
- 60 208/120 V LIGHTING SYSTEM.
- 64 GENERATOR AND EXCITER SYSTEM.

ATTACHMENT C

III AUXILIARY OPERATOR CHECK-OUTS

To be completed prior to being promoted to Auxiliary Operator.

- 1 REACTOR COOLANT SYSTEM.
- 2 REACTOR COOLANT PUMP.
- 3 PRESSURIZER AND PRESSURIZER RELIEF TANK SYSTEM.
- 4 CORE FLOOD SYSTEM.
- 5 REACTOR COOLANT DRAIN TANK SYSTEM.
- 6 STEAM GENERATOR SECONDARY SIDE SYSTEM.
- 7 REACTOR BUILDING SPRAY STEAM.
- 8 DECAY HEAT REMOVAL SYSTEM.
- 9 CONTROL ROD DRIVE COOLING WATER SYSTEM.
- 10 DEMINERALIZED REACTOR COOLANT STORAGE SYSTEM.
- 11 REACTOR SAMPLING SYSTEM.
- 12 REACTOR COOLANT CHEMICAL AND HYDROGEN ADDITION SYSTEM.
- 13 FUEL AND COMPONENT HANDLING SYSTEM.
- 14 PLANT HEATING, VENTILATING AND AIR CONDITIONING.
- 15 LETDOWN AND PURIFICATION MAKE-UP SYSTEM.
- 16 COOLANT RADWASTE SYSTEM.
- 17 MISCELLANEOUS LIQUID RADWASTE SYSTEM.
- 18 MISCELLANEOUS WASTE CONCENTRATOR SYSTEM.
- 19 BORIC ACID CONCENTRATOR SYSTEM.
- 20 BORATED WATER STORAGE SYSTEM.
- 21 SPENT FUEL COOLING SYSTEM.
- 22 NEW AND SPENT RESIN SYSTEM.
- 23 WASTE GAS SYSTEM.
- 24 NUCLEAR SERVICE COOLING WATER SYSTEM.

- 25 NUCLEAR SERVICE RAW WATER SYSTEM.
- 26 COMPONENT COOLING AND TURBINE PLANT COOLING SYSTEM.
- 30 MISCELLANEOUS DRAINS AND SUMPS SYSTEM.
- 31 DIESEL GENERATOR SYSTEM.
- 34 AUXILIARY GAS SYSTEM.
- 35 CARBON DIOXIDE SYSTEM.
- 39 AUXILIARY STEAM SYSTEM.
- 40 PLANT AIR SYSTEM.
- 51 EMERGENCY FEEDWATER SYSTEM.
- 52 HYDROGEN PURGE SYSTEM.
- 57 6.9 KV SYSTEM.
- 58 4.16 KV SYSTEM.
- 59 480 V SYSTEM.
- 60 208/120 V LIGHTING SYSTEM.
- 61 125 VDC SYSTEM.
- 62 120 V VITAL SYSTEM.
- 63 120 V NON-VITAL SYSTEM.
- 65 GASEOUS SYSTEM.
- 66 RADIATION DETECTION LIQUID SYSTEM.
- 67 AREA RADIATION MONITORING SYSTEM.

**PLANT OPERATIONS PROCEDURES**

**PERFORMANCE OBJECTIVE:** Provide timely, effective guidance to operators in the form of written procedures.

Finding  
(OP.4-1)

Adherence to administrative controls for the plant operations manual needs to be emphasized. Incorporation of temporary changes into pertinent procedures is overdue, and some working copies of procedures are missing temporary changes. Additionally, the periodic review and revision of several procedures is overdue.

Recommendation

Establish management controls to ensure timely incorporation of temporary changes into plant operating manuals. In addition, emphasize adherence to the schedule for periodic reviews of associated procedures.

Response

Temporary changes will be controlled by the Chairman of the Plant Review Committee (PRC). When approved by the Plant Review Committee and the Plant Superintendent, the PRC Secretary will transmit a copy to the control room and log when the committee requires the temporary change to be made into a permanent change. The Secretary will notify the PRC and the Plant Superintendent when the change must become permanent. Overdue responses will be referred to the Plant Superintendent for corrective action. Temporary changes will have the expiration date written on the change and will therefore be considered void and not be used after that date. The control room copy is and will continue to be the "Official Up-to-Date" copy. Working copies of procedures utilized by operators in the plant will also be maintained current.

The Assistant Supervisor, Nuclear Operations Division, will have the responsibility to ensure that the periodic reviews of operating procedures are performed. Additionally, the maintenance area is adding two senior engineering technicians who will perform the reviews on maintenance procedures.

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**PLANT STATUS CONTROLS**

**PERFORMANCE OBJECTIVE:** Maintain plant status in a condition that ensures equipment and system availability as necessary for safe and reliable plant operations at all times.

Finding  
(OP.5-1)

The plant status control system needs to be improved. Clearance, caution, and abnormal tags are not reviewed during the shift turnover process.



**Recommendation** Incorporate a review of outstanding tags as part of the shift turnover procedure to ensure that the status of plant equipment is accurately communicated.

**Response** A log of abnormal tags will be added to the control room (Shift Supervisor's Office). In addition, an index is now being used to provide rapid review of outstanding clearance, caution, and test authorizations. Plant status control will continue to be monitored by the shift relief checklist. Additionally, the index and log will be reviewed once a week to identify systems and equipment that should be released back to operations or service.

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**Finding (OP.5-2)** Uncontrolled notes, portions of procedures, labels, and drawings of a temporary nature used as operator aids are attached to the unit control panels at various plant locations. No method is in use for approving, updating, or verifying these temporary messages.

**Recommendation** Implement administrative controls for all written instructions or aids used by operations personnel. The use of posted instructions should be minimized.

**Response** Only operational personnel will attach approved notes, portions of procedures, and drawings of temporary nature used as operator aids for plant equipment to control panels. All existing notes will be reviewed periodically for applicability. Unacceptable notes will be removed; acceptable notes will be signed by a shift supervisor. Where temporary plant conditions exist and normal operating procedures do not necessarily apply, Administrative Procedure Number 2, "Review, Approval, and Maintenance of Procedures," or Administrative Procedure Number 4, "Administrative Clearance Procedure," will be used by the shift supervisor. If AP.2 or AP.4 is used, each operator classification will carry the change on shift turnover sheets until all operating crews are informed. If plant equipment arrives on site with manufacturer's operator aids attached, the shift supervisors will review and approve each aid if it is applicable. Then, if applicable, it will be incorporated into the plant operating procedures. All other unapproved notes or aids will be removed from the equipment.

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**SHIFT TURNOVER**

**PERFORMANCE OBJECTIVE:** Ensure a continuous and correct understanding of plant conditions at all shift operating positions through proper shift turnover.

<b>Finding</b> (OP.6-1)	Shift turnover procedures are needed for auxiliary operators and equipment attendants. The present turnover method is a discussion of equipment status based on memory and a review of the log sheets taken at the beginning of the preceding shift. The informality of this approach could result in inadequate information exchange.
<b>Recommendation</b>	Develop shift turnover procedures for each watch station. Instruct all operators in the proper use of turnover procedures and periodically assess the effectiveness of the turnover procedures. The procedures should include a checklist for each operating shift station to guide the turnover process.
<b>Response</b>	Individual shift relief checklists have been added for the auxiliary building, turbine building, demineralizer area, and outside plant stations. These are to be used to inform and document the plant status in each specific area as a supplement to the verbal turn-overs. The turnover will still be discussed with the oncoming shift. The remarks section will include major tasks, valve line-ups, and other work either performed or in progress. The checklists will be signed at shift turnover.

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**TAGOUT PRACTICES**

**PERFORMANCE OBJECTIVE:** Protect personnel and plant equipment by implementing effective tagout practices.

<b>Finding</b> (OP.7-1)	The tag systems should be upgraded to include a periodic review of outstanding danger tags, caution tags, and abnormal tags.
<b>Recommendation</b>	Revise the administrative procedures governing all tag systems. The procedures should include performance checks, as follows, on a periodic basis: <ul style="list-style-type: none"><li>a. review of the tag index</li><li>b. adequacy of tagouts</li><li>c. condition of posted tags</li><li>d. proper attachment of tags and position of tagged equipment</li></ul>

- e. presence of unauthorized tags
- f. tagouts remaining in effect beyond their need

**Response**

A log of abnormal tags will be added to the control room (Shift Supervisor's Office). In addition an index is now in use to provide rapid review of outstanding clearance, caution, and test authorizations. Plant status control will continue to be monitored by the shift relief checklist. The index and log will be reviewed once a week for systems and equipment that should be released back to operations or service. All clearances, caution, and test tags outstanding for 30 days or more, as determined by that review, will be verified to be properly placed and legible.

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**Finding  
(OP.7-2)**

**Mechanical maintenance personnel working under a tagout do not consistently review clearance boundaries to ensure the adequacy of the clearance.**

**Recommendation**

Strict adherence to Administrative Procedure 4 should be emphasized. The procedure requires the person receiving the clearance to be cognizant of the boundaries, instructions, and limitations of the clearance.

**Response**

The importance of adhering to the clearance procedure, AP.4, will be periodically reemphasized at safety meetings.

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