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November 6, 1985

Mr. John B. Martin, Regional Administrator
U. S. Nuclear Regulatory Commission, Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596-5368

Dear Mr. Martin:

Subject: NRC Special Inspection of San Onofre Units 1 and 2
Docket Nos. 50-206 and 50-361

In a letter dated October 30, 1985, Mr. D. F. Kirsch forwarded to us a report concerning the subject matter. In accordance with separate correspondence, an enforcement conference was held on November 1, 1985, at your offices in Walnut Creek, and the results of the special inspection were discussed.

As we indicated at the conference, we recognize the need to take action to prevent recurrence of the circumstances that contributed to the failure of the turbine-driven auxiliary feedwater pump at San Onofre Unit 1 on September 19, 1985. The purpose of this letter is to describe this action, as we discussed it briefly at the conference, and to provide additional information for your consideration concerning the matters addressed in the report forwarded by Mr. Kirsch's letter.

If you have any questions concerning the action we are taking, or the additional information provided by this letter, please let us know. We believe the additional information provided will be important to your evaluation, and we appreciate this opportunity for it to be included in your consideration of the subject matter.

Sincerely,

Harold B. Ray

Attachment

cc: David J. Fogarty
L. T. Papay
Kenneth P. Baskin
F. R. Huey (SRI-San Onofre)

IE-01

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Attachment

Information Provided in Connection With NRC Special Inspection San Onofre Units 1 and 2

I. SUMMARY

On September 19, 1985, San Onofre Unit 1 experienced a failure of its Turbine-Driven Auxiliary Feedwater Pump (TD AFWP) as a result of improper maintenance that led to inadequate lubrication of one of the turbine bearings. Southern California Edison (SCE) and the NRC conducted investigations into the facts and circumstances surrounding this failure, and into a number of matters that could be related to it, with the objectives to identify underlying causes and to define appropriate corrective action to prevent recurrence.

The results of the NRC investigations are summarized in Inspection Report Nos. 50-206/85-33 and 50-361/85-32. Provided below is a description of SCE's conclusions concerning appropriate corrective action to prevent recurrence as well as some additional information which SCE respectfully considers will be helpful to the NRC in evaluating the entire matter.

In summary, SCE believes that careful evaluation of the event illustrates the fact that, even though personnel may be properly trained and motivated to perform their work in accordance with procedures and programs that are well understood, fully accepted and both complete and correct, nevertheless, a physical context must be maintained for work on important safety systems such that the likelihood of individual lapses occurring and remaining undetected is extremely remote. The establishment and maintenance of such a physical context requires careful development and management guidance.

SCE is implementing a program to address this need as an enhancement of its existing policies. This, and additional information concerning the matters addressed in the NRC inspection report, are discussed below.

II. BACKGROUND

In 1984, SCE undertook a number of initiatives to increase the effectiveness of its management and implementation of a wide variety of safety-related activities. These initiatives included establishment of a formal training and qualification program for non-licensed personnel focused on the importance, bases and detailed requirements for implementation of the rigorous administrative controls applied to these activities at San Onofre. Personnel are required to achieve and maintain this qualification, and a monetary bonus is provided for doing so. A number of other significant initiatives were also undertaken.

As discussed further below, these initiatives have been effective in ensuring a consistent understanding of, and commitment to, management's policies and procedures for control of work and plant status. However, the initiatives did not include a mechanism to systematically combine the knowledge and experience of several important areas of functional responsibility, on a continuing basis. (i.e., First-level supervision responsible for operations, technical and maintenance functions were not systematically addressing issues of mutual interest.) Consequently, each functional area has had a tendency to sub-optimize its activities.

III. IMPORTANCE OF PHYSICAL CONTEXT

In evaluating the facts and circumstances surrounding the September 19 failure of the TD AFWP, it was apparent that neither deficiencies in specific knowledge and acceptance of the governing policies and procedures, nor deficiencies in their content were significant contributing causes. Corrective actions directed at such deficiencies could not be expected to prevent recurrence of a similar event.

Since SCE is fully committed to identifying and implementing corrective actions to effectively prevent recurrence of errors (and, to avoid them through foresight wherever possible), careful consideration has been given to identifying which human factors contributed to the individual lapse involving the improper maintenance that led to the failure of the TD AFWP. (This commitment is illustrated by SCE's participation, along with 7 other nuclear utilities, in the ongoing development of the Human Performance Evaluation System sponsored by INPO.) Factors of time pressure, work distraction, inadequate material

support, fatigue, etc., were considered. Although these may contribute to individual lapses in many cases, they were not important factors during the maintenance of the TD AFWP.

It was concluded that the physical context within which the work is accomplished is the major factor that can be changed, so as to reduce the likelihood of a recurrence of a maintenance error, such as occurred. The physical context within which the work was done is described more fully below. It included the fact that the TD AFWP had been maintained and operated satisfactorily for almost 20 years by personnel (including the maintenance person involved in this case) who had developed a great familiarity with Unit 1 equipment, and with a standard of general material condition that was normative and acceptable throughout that period. A program to systematically change that context has been defined and is being implemented.

IV. AREA MONITORING PROGRAM

As indicated in Sections II and III above, SCE recognized that its earlier initiatives do not include a mechanism to systematically combine the knowledge and experience of several important areas of functional responsibility, on a continuing basis. These functional areas are Operations, Technical (i.e., engineering), Maintenance and Health Physics, and they each have effective programs for performing their assigned responsibilities. Effective management involvement is also maintained in each functional area. But, as SCE has implemented increased standards of performance in each area, the results have been evaluated separately.

For example, the designation of and emphasis placed on the role of the cognizant system engineers has been effective in focusing attention on means of achieving various operational goals, including reducing the time when the AFW system, and other similar systems, are out of service. (Note: For Units 2 and 3, the time the AFW system is out of service in the past has been reported to the NRC monthly, as required, and the cognizant system engineer evaluates the condition of the system frequently, with a view toward minimizing this outage time. Thus, he tends to be opposed to actions that unnecessarily remove the system from service.) However, this goal is generally viewed from an engineering perspective that is not systematically balanced against other goals for the

material condition and operation of the system. These other goals may require that portions of the system be removed from service relatively more frequently, in order to maintain a material condition consistent with the overall physical standards established for the system.

In order to achieve balance among the competing goals of ALARA, minimum system outage time, maximum system reliability and minimum diversion of skilled resources to unwarranted activities, while at the same time substantially improving the context within which achieving these goals is managed, SCE has defined a program which initially will be identified as the Area Monitoring Program (AMP). "Area" in this case refers to one of several physical areas within each unit which is the designated responsibility of a team comprised primarily of first-level supervision from Operations, Technical and Maintenance and, where appropriate, from Health Physics.

The AMP is to be the direct responsibility of each Unit Superintendent. (The Unit Superintendent is the senior management person in Operations for Unit 1 or Units 2 and 3.) Through subordinate Operations supervision, each team will be responsible to the Unit Superintendent for establishing, and monitoring on a continuing basis the maintenance of, a material condition standard that will provide an appropriate physical context for all work done in that area. It is expected that each team will develop an "ownership" for its area and will be accountable for ensuring that the other, existing programs (e.g., preventive maintenance, housekeeping, operational surveillance, deficiency identification, etc.) are successful in maintaining the established standard. Higher levels of management than the Unit Superintendents will assist each team in defining the appropriate standard.

It is important that the AMP be carefully established and implemented, in order for it to be successful over the long term. Therefore, it is intended that it be implemented for Unit 1 by the end of 1985 and for Units 2 and 3 by the end of April, 1986.

SCE considers that the AMP will provide a vehicle for substantially improving the physical context for work within the plant, as compared with what has been achievable and required previously.

V. NRC REPORT OF SPECIAL INSPECTION

The following information is provided to supplement that included in Inspection Report Nos. 50-206/85-33 and 50-361/85-32. SCE believes this information is important, both generally and specifically, in evaluating the facts and circumstances related to the September 19, 1985, failure of the San Onofre Unit 1 TD AFWP. It is provided in a sequence that is consistent with the presentation in the inspection report, in order to facilitate its use to supplement the information in the inspection report.

A. Safety Significance of Event

Design/Operational Significance

As a matter of clarification, the two Motor-Driven Main Feedwater Pumps (MD MFWP) at Unit 1 are fully safety-related and may be powered from the emergency diesel generators following a total loss of offsite power. If no Safety Injection Actuation Signal (SIAS) is present, they can be operated normally when powered by the diesel generators. Steam generator level control is maintained through use of the Feedwater Bypass Regulators which are remote-manual operated from the main Control Room, and required condensate is furnished by the condensate pumps taking suction from the hotwells with makeup being supplied from the Condensate Storage Tank. (The condensate pumps can be powered by the emergency diesel generators in this situation.)

If SIAS is present, then one of the two MD MFWP may be aligned to take suction from the condensate system and feed the steam generators concurrent with the other MD MFWP performing its Safety Injection functions. (By procedure, this cannot be done when the incore thermocouples are greater than 1200°F and Reactor Coolant System hot leg RTDs are greater than 680°F. If this condition exists, both MD MFWP must remain in safety injection service, since response to inadequate core cooling takes precedence over response to loss of heat sink.)

Therefore, following failure of the TD AFWP, the MD AFWP and both MD MFWP (total of 3 pumps) remained available to feed the steam generators for plant cooldown in the event of a total loss of offsite power. (In addition, if no feedwater pumps are available, core cooling would be provided for Unit 1 by use of primary system feed and bleed.)

Management Significance

As indicated in Section 5.b.(12) of the inspection report, maintenance personnel are knowledgeable with regard to procedure requirements related to observed nonconforming conditions and the performance of work not covered in a safety-related maintenance order (MO). More generally, an independent inquiry, performed for SCE in the wake of the failure of the TD AFWP, and focused on the attitudes of maintenance supervisors with the longest tenure, determined that they uniformly both understand and are committed to compliance with management's expectations concerning adherence to established written policies and procedures.

This determination is consistent with the fact that the maintenance foreman responsible for the improper maintenance of the TD AFWP volunteered the information necessary to determine what had occurred in the first place, and, in doing so, he stated that he was aware that his actions had violated those policies and procedures. His reasoning for what he did is described further below, but at no point has he, or any of his peers, suggested that they were unaware of the policies and procedures, that management's expectations for their application to the work in question were unclear, or that the disciplinary action taken for their violation was not entirely justified.

SCE believes that management has been effective in assuring that maintenance personnel understand its expectations with regard to the need to adhere to established written policies and procedures. SCE believes that the explanation for the error that occurred, and the effective means to prevent recurrence, are as described elsehere herein.

B. Specific Findings Involving Failure of the Unit 1 AFW Pump

Pertinent Information Concerning TD AFWP

The TD AFWP is a seven-stage centrifugal pump driven by a 292 horsepower steam turbine. The pump and turbine were manufactured by Turbo-dyne (now Worthington) and were installed and operated as part of the original plant equipment. Design disclosures conformed to the requirements at the time. As such, for example, neither the technical manual nor the available component drawings show the sight glasses for the turbine bearing oil reservoirs, or any aspect of their required configuration. (SCE will take action to include the sight glasses in the TD AFWP design disclosures and to ensure that important aspects of lubrication systems are also included in the design disclosures for other Unit 1 safety equipment.)

In Section 5.a. of the inspection report, oil replenishment on numerous occasions is described during a period which included extended pump operation. (Cumulative run time: approximately 12 hours.) It should be noted that this replenishment was performed by a number of different shift operators, and the number of times oil was replenished was not determined until some time following the September 19 failure. The determination is based on interviews performed by SCE of all operating personnel. One of the objectives of the AMP described in Section IV above is to determine how information concerning shiftly or daily actions by a number of people can be used to anticipate a problem prior to its development.

Since the Unit 1 return to service in 1984, formally documented Preventive Maintenance (PM) activities have been performed in accordance with specific MOs, and it was this work which is described in the inspection report as occurring in February and August, 1985.

Surveillance of TD AFW Pump Prior to September 19

As described in Section 5.b.(13) of the inspection report, SCE established the assignment in its Technical Division of the cognizant system engineer. The engineer for AFW is responsible for the systems on all 3 units. The practices and procedures followed in the conduct of his duties are considered to be effective, and they provided for frequent scrutiny of the condition of the Unit 1 TD AFWP prior to its failure on September 19. Unfortunately, that scrutiny did not detect the fact that one of the bearing sight glasses was plugged and that oil was not being replenished as necessary. The vehicle for providing the additional emphasis referred to in the inspection report will be the establishment of the AMP described in Section IV above.

The AFW systems for Units 2 and 3 have also been the subject of frequent surveillance by SCE management, as well as by the NRC. (Reference NRC team inspection report Nos. 50-361/85-22 and 50-362/85-21 for an inspection including AFW Systems completed on August 23, 1985.)

February Preventive Maintenance of TD AFWP

During the maintenance work completed on February 22, 1985, the craftsman identified a problem with the sight glass for the turbine bearing that later failed on September 19. He made a notation on MO #84112253 as follows:

"packing glands at both ends of pump are leaking moderately. Paint buildup is so great that gland adjustment is impeded. Paint and scale need to be removed to adjust packing with pump in operation. Outboard bearing sight glass on turbine was found 'Mickey Moused' to repair a leak at that point. Vent on top of glass is frozen and cannot be vented properly. MWs handheld tubes to fill to proper level and then reinstalled brass outer housing. Hung Deficiency Tag #021259."

The MO was reviewed and closed as indicated in the inspection report. This review and closure was done correctly, in accordance with maintenance procedures, and the TD AFWP was returned to service. (Use of slang in the notation is not appropriate or acceptable, and training will be provided requiring use of more precise descriptions.)

The action to correct the deficiencies identified by the notation on the MO appeared to have clearly been initiated by the craftsman through the creation of the deficiency tag (DT). (Note that the two deficiencies are discussed in the above notation, and it can easily be read to say that the problem with the sight glass had been corrected in the course of completing the PM.)

MO #85022543 was written on February 28, 1985, in response to DT #021259, and it specifically did address the first of the two deficiencies described in MO #84112253. The DT itself is no longer available, but it is believed that it did not address the sight glass deficiency. (Personnel involved indicate that they would use two DTs to describe two different deficiencies.)

In any case, whether the notation on MO #84112253 was misread as indicating the sight glass deficiency had been corrected, or whether reviewing supervision believed the referenced DT identified the sight glass as remaining in a deficient condition while the DT itself did not include this information, the appropriate action was taken to close the PM MO and to open a new corrective MO based on the DT. Unfortunately, the DT apparently did not include the sight glass deficiency, and so it was not included in MO #85022543. The sight glass deficiency remained through the next 6 months of TD AFWP operation until it was again identified during the PM in August.

In summary, the failure to correct the sight glass deficiency in February resulted from it apparently not being identified on the DT referenced by the PM MO, along with the packing gland deficiency, and not from closure of the MO by supervision without initiating action to correct either of the deficiencies identified.

DTs Hanging on TD AFWP on September 20

There were DTs hanging on the TD AFWP when it failed on September 19. Three of the DTs addressed deficiencies involving the turbine bearing oil reservoir sight glasses. These DTs, and their status on September 19, are described as follows:

DT #29026
Addressed minor leakage on the inboard bearing sight glass. MO # 85081347 was initiated on August 19, 1985, to correct this problem, but work had not yet been done.

DT #29027
Addressed minor leakage on the outboard bearing sight glass. MO # 85081347 also addressed this problem.

DT #001874 (Referred to in the inspection report as #11892)
Addressed minor leakage on both the bearing sight glasses. As indicated in the inspection report, no MO referenced this DT. However, it should be noted that this DT refers to the same conditions as are described by DT #29026 and #29027. The computerized MO system used at San Onofre included reference to only the first two DTs, but the the third one addressed the same conditions as the first two.

In summary, the condition addressed by DT #001874 was covered by a properly prepared MO that was awaiting completion when the pump failure occurred. In the meantime, the minor oil leakage from the sight glasses was considered acceptable on the basis that shiftly checks were made of oil level, and oil would be replenished when needed. (Unfortunately, due to the outboard sight glass being plugged, this did not occur for its bearing.)

Unit 2 Diesel Generator DT Concerning Oil Leak

The one case identified in the inspection report where a Unit 2 deficiency had been documented on a DT but not included in an MO cannot be evaluated since the DT has not been retained.

Use of the DT System Generally

Notwithstanding the discussion of the two DTs provided above, SCE is concerned that its use of DTs warrants improvement to ensure that all deficiencies that should be tagged receive DTs, that the tags are promptly dispositioned by

writing MOs or otherwise, and that the tags are removed when the associated MO is completed. A very large number of DTs are initiated at San Onofre, and the standards to be established under the AMP will doubtless raise the number. Means to achieve the needed improvement in the face of this high volume are under consideration.

August Preventive Maintenance of TD AFWP

During the replacement of turbine bearing oil as part of the August PM, the craftsman experienced what he thought was difficulty with proper venting of the outboard bearing sight glass. He called his foreman, who is a member of first-level supervision. (Although an experienced craftsman prior to being appointed foreman in 1982, as a relatively recent addition to first-level supervision, SCE would not characterize him as a senior member of station maintenance supervision.)

The foreman identified what was apparently the same deficiency that had been identified and documented by the craftsman in February, as discussed above. He corrected the deficiency by removing a hardened sealing compound from the top of the sight glass. This action evidently resulted in the development of minor leakage from the sight glass, and the foreman's improper attempt to correct this new problem then eventually led to the pump failure as described below.

With respect to the foreman's action in removing the hardened sealing compound, the intent of San Onofre policies concerning the documentation of nonconforming conditions was violated when this occurred. This violation was included in the consideration of disciplinary action taken. (It is appropriate to note that requirements of applicable standards for maintenance include work on gaskets within the scope of those activities not requiring formal procedures.*)

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*ANS-3.2/ANSI N 18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants Section 5.2.7 entitled, "Maintenance and Modifications" states: "Skills normally possessed by qualified maintenance personnel may not require detailed step-by-step delineations in a written procedure." Appendix A of Regulatory Guide 1.33, Rev. 2, Section 9 entitled, "Procedures for Performing Maintenance," states: "The following types of activities are among those that may not require detailed step-by-step written procedures: (1) Gasket Replacement...."

Based on his written statements, in response to the leakage from the sight glass which developed after removal of the hardened sealing compound, the foreman sought to temporarily return the sight glass to service, pending the performance of all checks involved in completion of the PM MO. He fashioned a piece of foam rubber from an ear plug and inserted it in the place of the sealing compound at the top of the sight glass. This action directly violated San Onofre policies and procedures for performing maintenance.

The foreman has stated that, when his action failed to completely stop the oil leakage, and DTs were hung concerning minor leakage from both sight glasses, he took no further action to remove the piece of rubber because he thought a corrective MO would be written to repair the sight glass properly (it was) and that the repair would occur prior to the loss of significant oil from the bearing reservoir (it did not).

Although the source of the sight glass blockage was unknown initially following the pump failure, and vandalism was suspected, the foreman came forward promptly to accept responsibility for his actions. He indicated that he knew at the time that they violated San Onofre policies and procedures for performing work, but that he had taken responsibility for authorizing the violation as a temporary measure and that he had then "let the matter slip" by not ensuring personally that the piece of rubber was removed. The piece of rubber subsequently became dislodged from the top of the sight glass and fell to the bottom, thus blocking the outflow of oil and resulting in a false level indication. After approximately 12 hours of TD AFWP operation, the bearing failed due to inadequate lubrication, as described in the inspection report.

Disciplinary action was taken by SCE for violation of San Ononfre policies and procedures. This action included both the foreman and the craftsman involved in the August work on the sight glass, and the foreman has been assigned other duties.

Other TD AFWP Maintenance Performed Since September 1984

The inspection report identifies the number of MOs for the TD AFWP during this period. It should be noted that the MOs all contain more than one signature, but in a number of cases multiple signatures on an MO will be by the same supervisory individual. It was not the intention of the applicable procedure that different, qualified individuals sign the MO. Rather, the intent was that a supervisor must

sign at one place, and at another place either a supervisor or a journeyman may sign. The only requirement is that the person signing has performed the action required by the signature. The intent of the procedure was satisfied for all MOs identified.

Maintenance of Proper Bearing Lubrication on Safety-Related Equipment

The cognizant system engineer performed an in-service test of Unit 2 AFWP 2P 140 on August 6, 1985. At that time, he observed conditions concerning leakage of oil from the bearings of AFWP 2P 141 and concluded that what appeared to be a large quantity of oil was instead a small quantity of oil and a much greater quantity of water from leaking pump glands, which were acceptable. He did not consider that oil was leaking from the motor bearings in any significant quantity. Nevertheless, as discussed in Section IV above, the importance of establishing and maintaining an enhanced physical context for the AFW Systems generally, is recognized.

During the test of 2P 140 on August 6, the cognizant engineer specifically observed motor bearing oil level and took annual bearing oil temperature measurements. (Refer to Test Record 2P 140-8-85.) He determined that oil level was proper, although it was slightly above the upper scribe on the sight glass. Since the limit represented by the scribe on the sight glass is not defined in terms of specification requirements, SCE will provide additional guidance concerning what does constitute an out-of-specification condition.

Also, on August 29, 1985, the cognizant system engineer performed a similar test on Unit 2 AFWP 2P 504. At this time, he inspected the level in the bearing oil cooling system drain tanks for both MD AFWP. The level appears in a sight glass mounted on each tank. He identified the DT hung on the tank for 2P 141, which was initiated in order to generate an MO to drain the tank. In fact, no deficiency existed in that the cognizant system engineer determined that any level within the range of the sight glass would be acceptable, relative to the design requirements for the tanks. Again, this information will be made more readily available through appropriate signage, which is to be installed. In the future, a DT and MO will not be used in order to remove the accumulation of oil from the drain tank. Instead, it will be routinely drained, when required, in the course of normal operator duties.

With respect to the Unit 1 and Unit 2 charging pumps, unlike the AFWP, these components run continuously, are in moderate radiation fields (10 mrem area, 400 mrem hot spot at

Unit 1) and potential radiological contamination areas, and they have pressure feed lubrication systems. The oil reservoirs for each pump contain approximately 8 gallons and 7 gallons of oil, respectively. The lubrication systems have proven effective and reliable, and small amounts of oil leakage are considered acceptable in the short term, until an equipment outage is required for overhaul or other reason. From the standpoint of the reliability and availability of important safety equipment, and from an ALARA viewpoint, SCE has not considered it prudent to remove these pumps from service to repair very small weepages of oil from gauge connections, casing gaskets and the like, while the plants are in operation. From the viewpoint of equipment operability, oil leakage has been identified and corrected whenever it threatened to become excessive. The balancing of these considerations against the important objectives of maintaining a higher material condition standard will be addressed by the AMP.

With respect to the Unit 1 positive displacement charging pump (i.e., "test pump"), this pump is not normally relied upon for Technical Specification functions (it has not been so relied upon since the Unit 1 return to service in 1984) and it will not be required for post-DBE redundancy following the modifications planned for the next refueling outage.

As indicated in the inspection report, SCE is evaluating the subject of bearing lubrication for all safety-related pumps. Improved definition concerning acceptable conditions and parameter ranges will be provided as part of the AMP.

D. CONCLUSIONS RESULTING FROM NRC REVIEW

SCE believes that maintenance supervision did perform an adequate review of completed MO #84112253, as required by procedure and described above. A DT was evidently not initiated, and an corrective MO definitely was not initiated, to correct the sight glass deficiency identified by the PM MO. Both a DT and a corrective MO were initiated in response to the packing gland deficiency, which was identified along with the sight glass deficiency.

Although DT #001874 was not referenced on the MO which was written to repair the outboard turbine bearing sight glass for the Unit 1 TD AFWP, the MO was written and it did reference another DT dealing with the same condition. SCE concludes that an MO therefore was written to track and correct this deficiency. A DT concerning the Unit 2 diesel generator that did not result in an MO cannot now be evaluated as to cause.

The installation of the piece of rubber at the top of the sight glass by a maintenance foreman during the August PM of the Unit 1 TD AFWP is considered to be an improper and unauthorized repair rather than a modification. It was rationalized at the time by the foreman as only a temporary measure which, although in violation of San Onofre policies and procedures, would be corrected as soon as other aspects of the PM were verified as satisfactory.

Design disclosures for the TD AFWP do not specify the configuration of the sight glass, or of its component details. (Action is being taken to include this information in the design disclosures.) The maintenance foreman thought he was in the process of devising a repair to the gasketed top of the sight glass when he installed the piece of rubber. His actions violated established controls, but installation of a proper gasket would not have been treated as a modification of design had it been properly authorized by an approved corrective maintenance order.

As indicated above, the maintenance foreman was a relatively junior member of first-level maintenance supervision; not a senior member. However, it is considered understandable that his authority to direct work within the skill of the craftsman, in the repair of what appeared to be a gasketed location at the top of the sight glass, would be accepted by the craftsman. The craftsman has been counseled concerning SCE policy that no member of management or supervision has the authority to direct work in violation of established procedures, except in an emergency.

Finally, with respect to the timeliness of submittal of PM MO packages to QA for final review, SCE did not intend to indicate that this process would be accelerated in the future, or that any procedure changes were anticipated in this regard. The QA review of PM MO packages has been on a sampling basis only since June, 1985, and is done only to verify that programmatic requirements are being satisfied on a continuing basis.