UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Application of SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. for a Class 103 License to Acquire, Possess, and Use a Utilization Facility as Part of Unit No. 2 of the San Onofre Nuclear Generating Station	)	Docket No. 50-361 Amendment Application No. 66

SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. pursuant to 10 CFR 50.90, hereby submit Amendment Application No. 66.

This amendment application consists of Proposed Technical Specification Change No. NPF-10-268 to Facility Operating License No. NPF-10. Proposed Technical Specification Change No. NPF-10-268 is a request to revise San Onofre Unit 2 Technical Specifications 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation," and Technical Specification 3/4.3.3.1, "Radiation Monitoring Instrumentation," surveillance requirements for the Containment Airborne Radiation Monitors. This revision would revise the frequency of channel calibration surveillances from an 18 months interval to an interval at least once per refueling, nominally 24 months or maximum 30 months.

Subscribed on this 1st day of December, 1989.

Respectfully submitted,

SOUTHERN CALIFORNIA EDISON COMPANY

By: Harold G Bay

Subscribed and sworn to before me this 1st day of December, 1989.

OFFICIAL SEAL
CAROL A. GOMEZ
NOTARY PUBLIC - CALIFORNIA
LOS ANGELES COUNTY
My Comm. Expires Feb. 26, 1993

Carol A. Gomez

Notary Public in and for the ~~County of Los Angeles~~ State of California, County of Orange

Charles R. Kocher
James A. Beoletto
Attorneys for Southern
California Edison Company

By: James A. Beoletto

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Application of SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. for a Class 103 License to Acquire, Possess, and Use a Utilization Facility as Part of Unit No. 3 of the San Onofre Nuclear Generating Station	)	Docket No. 50-362 Amendment Application No. 52

SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. pursuant to 10 CFR 50.90, hereby submit Amendment Application No. 52.

This amendment application consists of Proposed Technical Specification Change No. NPF-10-268 to Facility Operating License No. NPF-15. Proposed Technical Specification Change No. NPF-10-268 is a request to revise San Onofre Unit 3 Technical Specifications 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation," and Technical Specification 3/4.3.3.1, "Radiation Monitoring Instrumentation," surveillance requirements for the Containment Airborne Radiation Monitors. This revision would revise the frequency of channel calibration surveillances from an 18 months interval to an interval at least once per refueling, nominally 24 months or maximum 30 months.

Subscribed on this 1st day of December, 1989.

Respectfully submitted,

SOUTHERN CALIFORNIA EDISON COMPANY

By: Harold B. Ray

Subscribed and sworn to before me this
1st day of December, 1989.

Carol A. Gomez

Notary Public in and for the ~~County of~~ ~~Los Angeles~~ State of California,
County of Orange

OFFICIAL SEAL
CAROL A. GOMEZ
NOTARY PUBLIC - CALIFORNIA
LOS ANGELES COUNTY
My Comm. Expires Feb. 26, 1993

Charles R. Kocher
James A. Beoletto
Attorneys for Southern
California Edison Company

By: James A. Beoletto
James A. Beoletto

DESCRIPTION AND SAFETY ANALYSIS
OF
PROPOSED CHANGE NPF-10/15-268

This is a request to revise Technical Specifications 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation, and 3/4.3.3.1, "Radiation Monitoring Instrumentation."

Supporting Documentation:

Units 2 & 3: Attachment "A" - Tables

Existing Specification:

Unit 2: See Attachment "B"
Unit 3: See Attachment "C"

Proposed Specification

Unit 2: See Attachment "D"
Unit 3: See Attachment "E"

Description

Technical Specification 3/4.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation" provides instrumentation operability and surveillance requirements for these systems to assure that the functional capability is maintained comparable to the original design. The Technical Specifications also assure that the integrated operation of each of these systems is consistent with the assumptions used in the accident analysis. Technical Specification 3/4.3.3.1, "Radiation Monitoring Instrumentation," provides operability and surveillance requirements to ensure monitoring, alarm or automatic actions and that sufficient information is available to monitor and assess selected plant parameters following an accident.

The Containment Airborne Monitors (2RI-7804-1, 2RI-7807-2, 3RI-7804-1, and 3RI-7807-2) are part of the Containment Purge Isolation System, which is an Engineered Safety Feature Actuation System. Operability and surveillance requirements are identified in Technical Specifications 3/4.3.2 and 3/4.3.3.1.

These monitors alarm on high radiation level and initiate a Containment Purge Isolation Signal (CPIS) in the event of a fuel handling accident inside the containment. In addition, these monitors are used to detect a primary to atmosphere leak rate change inside the containment.

Surveillance requirements state that each containment airborne monitor shall be demonstrated operable by the performance of a Channel Calibration at a frequency which is currently defined as "at least once per 18 months." The proposed change would revise this requirement from the current 18 month interval to an interval "at least once per refueling," nominally 24 months, or maximum 30 months. The 30 month interval is the maximum 25% extension of the surveillance interval permitted by Technical Specification 4.0.2.

SONGS Units 2 and 3 have entered the first nominal 24-month fuel cycle. The surveillance calibration for the Containment Airborne Monitors is performed concurrent with the calibration for the Containment Area Monitors. The area monitors are located in containment. In order to maintain radiation exposure as low as reasonably achievable, the unit would need to be in a shutdown mode to conduct the calibration testing for these monitors. The current 18 month surveillance interval necessitates a plant shutdown for the purpose of performing the surveillance. To avoid the need for an otherwise unnecessarily large man-rem exposure or unit shutdown, the proposed change is requested.

Background

These monitors take a continuous air sample from the containment atmosphere through containment penetrations. The samples are continuously monitored for iodine, airborne particulate, and gaseous activity. These monitors each have 3 individual detection channels for iodine (Channel A), particulates (Channel B), and noble gas (Channel C). Each of these channels consists of a detector and a NIMS bin control module. These function to provide internal alarms, isolated data recording and computing systems, and control room annunciation.

The technical specifications require that at least one of the two noble gas and one of two particulate monitoring channels be operable during all operating modes except cold shutdown (Mode 5). One of two iodine channels must be operable during refueling (Mode 6).

A detailed maintenance history review was conducted for the Containment Airborne Radiation Monitoring system from the period from August 5, 1983 to August 1, 1989. This review covered the period from the time the plants went into commercial operation to the date of the most current calibration. The results of this review identified monitor problems which are further detailed in Attachment A, Tables 1 and 2. A Reliability Centered Maintenance (RCM) methodology was used as a basis for evaluating the monitor problems. This is the same approach that has been recently submitted in support of Proposed Change Notices 266 and 267 by SCE to NRC letter dated September 5, 1989. These proposed changes requested a similar extension of the calibration surveillance interval for the Containment Area Monitors (2,3-RE-7856-1 and 2,3-RE-7857-2) and Containment High Range Monitors (2,3-RE-7820-1 and 2,3-RE-7820-2). The surveillances for the Containment Airborne and Containment Area Radiation monitors are performed concurrently.

The objective of any Technical Specification surveillance is to verify if the specified limiting condition(s) of operation is (are) being met. Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation. It is this aspect of Technical Specification surveillances that the RCM approach concentrates on.

In order to evaluate a surveillance interval, with the intent of surveillance interval extension, two reviews are necessary:

1. A review to determine if the existing surveillance is finding equipment problems, i.e., performance/accuracy, hidden failures, or degraded conditions, and if operability is affected; and

2. A review of corrective maintenance history to ensure that all problems affecting operability were detected by a condition or time directed means, i.e., surveillance, alarm, or indication to the operator.

A surveillance becomes a candidate for interval extension under the following circumstances. The corrective maintenance review shows that failures affecting operability are detected and corrected in an expedient manner, without performing the surveillance. And, the surveillance does not have a repeated history of finding failures affecting operability.

Approach

The Reliability Centered Maintenance (RCM) approach was applied to confirm the candidacy potential of the 18 month channel calibration surveillance extension to 24 months. The Preventative Maintenance (PM) program for these monitors is made up of the 18 month channel calibrations, quarterly inspections (including lubrication) of the monitor sample blowers, 31 day channel functional tests, weekly channel checks, and shiftly channel checks. The basis for PM extension is derived from the use of the RCM methodology.

A comparison was made of the test activities performed by the 18 month channel calibration surveillance and the 31 day channel functional test. This comparison was made to identify unique tests performed by the 18 month surveillance and determine if inoperable conditions were detected by the unique portions of the 18 month surveillance test that would not be captured by the 31 day channel functional test.

The 31 Day Channel Functional Test Surveillance for the Containment Airborne Radiation Monitors performs the following tests:

- Channel accuracy test by using injected test signals. The functional test determines operability based on overall loop accuracy.
- High activity and circuit failure alarm tests which include activating the ESFAS function. This performs a portion of the automatic actuation logic test. The response time test performs the other portion of the automatic actuation logic. The response time test is discussed below.
- A qualitative check source test which injects an isotopic signal into the detector and is evaluated to verify detector efficiency and accuracy.
- Tests the Trip Bypass functions.
- Tests sample flow control and alarm functions.
- Tests the operation of the sample filter paper drive assembly.

The 18 month calibration provides an in-depth test to detect degraded system

elements and problems in equipment performance. This calibration is designed to establish the standards for equipment performance and provide a routine interval for these tests. In addition to performing a channel functional test, the 18 month surveillance performs the following functions:

- o Physical inspection of the equipment and cable termination between skids and control panels.
- o Isotopic calibration of the detector assembly.
- o Channel response time test.
- o A more detailed subassembly accuracy determination and calibration than the 31 day channel functional test. This assessment consists of individual test point verification within a loop, i.e., mid-loop checks.
- o Manual (Trip Buttons) actuation.

The following is a discussion of the unique tests performed by the 18 month surveillances.

Physical inspection of the equipment in containment may identify degraded equipment conditions or obvious equipment deficiencies. Physical inspection is not relied on for verifying monitor operability.

The isotopic calibration establishes and verifies detector efficiency and accuracy to standard isotopic calibration gases and solid sources. The type of problems which are identified by the isotopic calibration will also result in check source failures during the 31 day channel functional test.

The channel response time test provides a measure of module response time, i.e., the loop response from radiation detection to valve isolation actuation. This evaluation is limited to an instrument logic time response test. The valve response time test is performed as part of Technical Specification 3/4.6.3.1 and Table 3.6-1. The surveillance testing of the valves themselves is addressed in Proposed Change Notice (PCN) 251. This test is not the lone check of this alarm logic. The failure alarm and high alarm tests, performed in the 31 day channel functional test, actually go through the logic and cause the same circuits to actuate, only the response time is not measured. Review of the response time tests conducted to date have found no instances of radiation monitoring channels being unable to meet the specified criteria.

The more detailed subassembly accuracy determination and calibration assessment, which consists of individual test point verification within a loop, is not necessary for operability determination. The 31 day channel functional test will perform a complete loop calibration assessment which envelopes the individual test point verifications.

The manual trip is unique in that it is not a process measurement channel, as are the iodine, particulate and nobel gas channels. It consists of switches which ultimately result in purge valve isolation. The results of surveillance

testing included review of the manual trip. There have been no failures associated with the manual trip pushbuttons. Based on these results, there are no detrimental affects associated with extending the test interval for these switches. In addition, no credit is taken in the analyses for operator action, i.e., manual trip.

This comparison established that inoperable conditions which can be detected by the unique portions of the channel calibration surveillance would also be captured by the 31 day channel functional test. This comparison verifies that an alternate means exists of identifying problems which are detected by the unique test functions of the 18 month surveillance.

A review of all 18 month surveillances was then performed. This review was used to determine whether identified problems would affect Technical Specification operability. The method of problem detection was identified.

The 18 month surveillance procedure can only be used for calibrating out of tolerance equipment conditions. Other monitor problems identified during the 18 month surveillance must be repaired by Corrective Maintenance (CM) actions. CMs are also used to track repairs and engineering studies. For this reason, a review of CM actions taken on these monitors, as the result of 18 month surveillances, was necessary. This review was to determine whether identified problems would affect Technical Specification operability and to identify the method of problem detection. CM review was not limited to those generated as the result of the 18 month surveillances. All CMs were reviewed to assure that operability problems were being detected and to identify the method of detection.

Results

Every 18 month surveillance identified out of nominal voltage tolerance problems on the mid-loop circuit board calibration voltage. Table 1 provides a listing of these problems. These problems are not operability impacting but rather represent variances from preferred nominal values. The 18 month calibration specifies a voltage tolerance for several intermediate voltages. This is intended to provide assurance that 31 day surveillances, which verify overall circuitry performance, will not fail during the refueling interval. These 18 month calibration adjustments might be thought of as a "fine tuning" of the circuitry. The 31 day test would have identified an operability problem prior to Technical Specification impact. The frequency of occurrence of these tolerance problems has been noted as a generic problem. A design change has been initiated which will replace the mid-loop circuit board and minimize calibration drift. This enhancement is expected to resolve this generic problem.

A review of all CM actions taken on these monitors, which resulted from the 18 month surveillance process, verified that an alternate means of detection existed for all identified problems. Table 1 also provides a listing of these CM actions. These problems would have been detected by either the 31 day functional test, weekly or shiftly surveillances, or alarms. Some of the problems would have been detected by more than one means. For example, both

the 31 day test and alarms; the 31 day test and weekly or shiftly surveillances, or alarms and weekly or shiftly surveillances.

The comprehensive CM review of all CMs verified that the majority of the problems which could eventually impact monitor operability were detected during the 31 day tests. Table 2 provides a summary listing of these CM actions. This list gives a generalized summary of all CM activities that could have impacted Technical Specification operability. The table shows that all problems were detected by elements of the PM program, including 31 day tests, weekly or shiftly surveillances, and alarms. The table also verifies that the problems found during the 18 month surveillances, as described in Table 1, were also detected by the alternate methods listed. The 31 day tests typically identify instrument tolerance problems, and problems with the check source drive, the particulate filter paper drive mechanism and the sample pump.

Problems with the monitor check source drive will not impact operability. Problems such as these arise from the channel functional testing process itself. The tolerance problems detected by the 31 day test were marginal tolerance problems. These did not cause monitor inoperability. Again, degradation to the point of operability impact would have resulted in alarms.

The paper drive advances the filter paper to provide samples which are representative of the process stream. A malfunction in the advance mechanism can result in an accumulation of radioactive particles which is not representative of the process stream. Particulate paper drive problems, if undetected, will result in high radiation level alarms. Sample pump problems, or any equipment problems which affect flow sample, will result in either high or low flow. If left undetected, these types of problems will result in high or low flow alarms.

Weekly or shiftly operations or weekly chemistry surveillances also provide means of problem detection. Accordingly, problems are identified by these methods, and action taken to assure operability problems are minimized. These surveillances verify proper operation of the channels by observing individual channel behavior. The types of problems typically identified by these methods are flow problems, paper drive problems, and monitor noise/spiking.

Other types of equipment failures that were typically identified by alarms are module failures, high or low, and excessive instrument drift.

Conclusion

The review of all 18 month surveillances performed has found that no inoperable conditions were detected by the unique portions of the 18 month channel calibration surveillance. The out of tolerance condition that was detected does not adversely impact operability. A more degraded condition would have been captured by the 31 day channel functional test prior to affecting Technical Specification operability requirements. Attachment A, Table 1 details all surveillance problems detected during the 18 month surveillance that were corrected during the surveillance.
A review of CM actions taken on these monitors, which resulted from the 18

month surveillance process, verified that an alternate means of problem detection exists. These problems would have been detected by either the 31 day functional test or alarms. The review of all CM actions identified for these monitors provides a high degree of assurance that monitor problems are being detected by means other than the 18 month surveillance process. Some of the problems would have been detected by more than one means. Attachment A, Table 1 also summarizes the Corrective Maintenance activities which resulted from the 18 month surveillance activities. No monitor problems have been included which do not adversely impact Technical Specification monitor operability requirements.

Table 2 provides a summary of all CM activities which resulted from other than the 18 month surveillance process. These CM activities resulted from problems identified during 31 day functional tests or as the result of other weekly or daily surveillances. Conditions which resulted in alarms are also corrected by CMs.

Channel functional testing, alarms, and operator indication for operability verification of these monitors provide adequate technical justification for extending the 18 month interval for channel calibration to a nominal 24 months, or maximum 30 months. The 30 month interval is identified pursuant to the maximum 25% extension of the surveillance interval permitted by allowance of Technical Specification 4.0.2.

Safety Analysis

The proposed changes discussed above shall be deemed to involve a significant hazards consideration if there is a positive finding in any one of the following areas:

1. Will operation of the facility in accordance with this proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   The proposed change will extend the frequency of the 18 month surveillance test for the Containment Airborne Monitors (2RI-7804-1, 2RI-7807-2, 3RI-7804-1, and 3RI-7807-2). These monitors take a continuous air sample from the containment atmosphere through containment penetrations. The samples are continuously monitored for iodine, airborne particulate, and gaseous activity. The function of these monitors is to alarm on high radiation level and initiate a Containment Purge Isolation Signal (CPIS) in the event of a fuel handling accident inside the containment and detect a primary to atmosphere leak rate change inside the containment.

   The technical specifications require that at least one of the two noble gas and one of two particulate monitoring channels be operable during all operating modes except cold shutdown (Mode 5). One of two iodine channels must be operable during refueling (Mode

6). Surveillance requirements state that each containment airborne monitor shall be demonstrated operable by the performance of a Channel Calibration at a frequency which is currently defined as "at least once per 18 months." The proposed change would revise this requirement from the current 18 month interval to an interval at least once per refueling, nominally 24 months, or maximum 30 months. The 30 month interval is identified pursuant to the maximum 25% extension of the surveillance interval permitted by allowance of Technical Specification 4.0.2.

A detailed maintenance history review was conducted for the Containment Airborne Radiation Monitoring system from the period from August 5, 1983 to August 1, 1989. This review covered the period from the time the plants went into commercial operation to the date of the most current calibration. A Reliability Centered Maintenance (RCM) methodology was used as a basis for evaluating the monitor problems. All 18 month surveillance activities, and corrective maintenance (CM) activities were reviewed. This review provided an analysis of the problems being identified by the surveillance and identified alternate means of detection, by either condition or time directed means. The identification of adequate alternate means of problem detection provides assurance that surveillance extension will not impact Technical Specification operability requirements.

The confidence that the equipment will perform the required Technical Specification defined function, over the increased surveillance interval, is provided by performance of the 31 day channel functional tests. The conclusion is that all problems that affect monitor operability were detected, or would have been detected, by the 31 day channel functional test (time directed means), alarms or indications to the operator (condition directed means). Extending the surveillance interval to a nominal 24 months interval, or maximum 30 months will not adversely affect monitor operability.

Therefore, the proposed change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change extends the surveillance interval (for a test intended to be performed during a refueling outage) to coincide with the refueling outage interval of 24-month fuel cycles.

The 18 month surveillance procedure can only be used for calibrating out of tolerance equipment conditions. Other monitor problems identified during the 18 month surveillance must be repaired by Corrective Maintenance (CM) actions. CMs are also used to track repairs and engineering studies. The Surveillance and CM history was reviewed and evaluated for these monitors. In order to verify that a new or different kind of accident would not be created, CM review was not restricted to CMs generated by surveillances. Rather, all corrective maintenance actions taken on these monitors were reviewed. This review was used to determine whether identified problems would affect Technical Specification operability and to identify the method of problem detection.

The comprehensive CM review of all CMs verified that the majority of the problems which could eventually impact monitor operability were detected during the 31 day tests. This review of CM activities verified that all problems were detected by elements of the Preventive Maintenance (PM) program. The PM program elements include 31 day tests, weekly or shiftly surveillances, and alarms. The problems that were found during the 18 month surveillances were also detected by the these alternate methods. The 31 day tests typically identify instrument tolerance problems, and problems with the check source drive, the particulate filter paper drive mechanism and the sample pump.

Weekly or shiftly operations or weekly chemistry surveillances also provide means of problem detection. Accordingly, problems are identified by these methods, and action taken to assure operability problems are minimized. These surveillances verify proper operation of the channels by observing individual channel behavior. The types of problems typically identified by these methods are flow problems, paper drive problems, and monitor noise/spiking.

Other types of equipment failures that are typically identified by alarms are monitor failures, high or low, and excessive instrument drift.

The results of the review of all identified CMs served a two fold purpose. Primarily, it served to identify the different types of problems which the monitors were experiencing so that these could be evaluated. It also served to verify that problems, identified to date, were identified by either the 31 day channel functional test, alarms, or indication to the operator.

Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Will operation of the facility in accordance with the proposed change involve a significant reduction in a margin of safety?

Response: No

The proposed change extends the 18 month interval for performing the 18 month surveillance to a refueling interval, nominally 24 months.

The margin of safety for the Containment Airborne Radiation monitors is inherent with the design of the monitors. This proposed change does not modify monitor design in any way.

The review of all 18 month surveillances performed has found that no inoperable conditions were detected by the unique portions of the channel calibration. The out of tolerance condition that was detected does not adversely impact operability. A more degraded condition would have been captured by the 31 day channel functional test prior to affecting operability. All operability problems were detected, or would have been detected, by the channel functional test, alarms, or indications to the operator.

Channel functional testing, alarms, and operator indication for operability verification of these monitors provide adequate technical justification for extending the 18 month interval for channel calibration to a nominal 24 months, or maximum 30 months. The 30 month interval is identified pursuant to the maximum 25% extension of the surveillance interval permitted by allowance of Technical Specification 4.0.2. This evaluation serves to verify that design functions will not be affected by this proposed change.

Therefore, the proposed change will not involve a significant decrease in a margin of safety.

Safety and Significant Hazards Determination

Based on the above Safety Analysis it is concluded that: (1) the proposed change does not constitute a significant hazards consideration as defined by 10 CFR 50.92; and (2) there is reasonable assurance that the health and safety of the public will not be endangered by the proposed change; and (3) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

ATTACHMENT "A"

TABLES

UNITS 2 AND 3

Table 1

SONGS UNITS 2 AND 3
CONTAINMENT AIRBORNE RADIATION MONITORS
Radiation Monitoring 18 Month Channel Calibration
Surveillance Summary Sheet

Surveillance (SV) Maintenance Order (MO)	Problem Found	Notes
2RI-7804-1		
87031124	B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1,2)
85103701	B,C Module circuit board calibration, voltages out of tolerance and adjusted during calibration	(1,2)
84100202	A,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1)
	B,C Detector mylar covering torn and replaced (CM 84113154 and CM 84112613).	(3,4)
	Module reads high replaced detector and preamplifier (CM 84113154)	(3,4,5)
83303570	A,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1,2)

Table 1

SONGS UNITS 2 AND 3
CONTAINMENT AIRBORNE RADIATION MONITORS
Radiation Monitoring 18 Month Channel Calibration
Surveillance Summary Sheet (Continued)

Surveillance (SV) Maintenance Order (MO)	Problem Found	Notes
2RI-7807-2		
89010401	B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1)
	Detector failed calibration. Replaced detector preamplifier and photomultiplier tube (CM 89052262).	(4,6)
87060940	A,B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1,2)
85103704	A,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1,2)
84100203	B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1,2)
	Sample collection filter drive motor failed	(4,6)
83306857	B Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1)
	Monitor failed low (CM 83712917)	(5)
	Monitor will not calibrate to within calibration specifications. Monitor initial start-up problem (CM 83712164).	(3,4)

Table 1

SONGS UNITS 2 AND 3
CONTAINMENT AIRBORNE RADIATION MONITORS
Radiation Monitoring 18 Month Channel Calibration
Surveillance Summary Sheet (Continued)

Surveillance (SV) Maintenance Order (MO)	Problem Found	Notes
3RI-7804-1		
88011671	B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1,2)
86081873	A,B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1)
	Sample flow will not control properly (CM # 87011327)	(4)
85041227	C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1)
	Indication oscillating low and high due to detector failure (CM 85113857)	(5,6)
83713096	A,B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1)
	Failed source check due to low detector gain. Replaced detector preamplifier and photomultiplier tube (CM 84003402)	(4)
	Detector failed calibration check and required recalibration (CM 84003350)	(4)

Table 1

SONGS UNITS 2 AND 3
CONTAINMENT AIRBORNE RADIATION MONITORS
Radiation Monitoring 18 Month Channel Calibration
Surveillance Summary Sheet (Continued)

Surveillance (SV) Maintenance Order (MO)	Problem Found	Notes
3RI-7807-2		
88011669	A,B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1)
	Module will not calibrate to within calibration specifications. Resoldered sensitive connections, replaced transistor. (CM 88042581)	(3,4)
86081875	B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1)
	Monitor failed low (CM 87021196)	(5)
	Module will not calibrate to within calibration specifications. Log diode and bias resistors were replaced (CM 87020033)	(3,4)
85040550	A,B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1)
	B,C Check Source failed due to connector problem (CM 85110290 and CM 85110229)	(3,4)
	Detector failed. Replaced Preamplifier and photomultiplier tube (CM 85102328001)	(4)
83712920	B,C Module circuit board calibration voltages out of tolerance and adjusted during calibration	(1,2)

Table 1

SONGS UNITS 2 AND 3
CONTAINMENT AIRBORNE RADIATION MONITORS
Radiation Monitoring 18 Month Channel Calibration
Surveillance Summary Sheet (Continued)

Surveillance (SV) Maintenance Order (MO)	Problem Found	Notes

Notes:

(1) As found loop values were within operability requirements, however some mid-loop circuit board calibration voltages were found outside their more restrictive calibration tolerances. More restrictive tolerances and test methodology are employed by the 18 month channel calibration. By monitoring and calibrating to specified mid-circuit indications, rather than to loop output indications, a more accurate calibration and greater margin is provided for 31 day channel check calibrations. The combined effect of the mid-loop circuit card voltages did not exceed the total loop tolerance allowable. The 31 day channel functional test determines operability based on overall loop accuracy. The 31 day channel functional test would have identified a problem prior to Technical Specification operability impact.

The frequency of module circuit board calibration voltage out of tolerance problems has been noted as a generic problem. A design change has been initiated which will replace each signal processor circuit board. This change will minimize calibration drift. This enhancement is expected to resolve this generic problem.

(2) No CMs, with monitor operability impact, were issued as the result of the surveillance activity.

(3) This finding does not affect technical specification operability.

(4) This degradation, although discovered on the 18 month SV, would have been detected by the 31 day SV had it been performed at this time.

(5) This degradation, although discovered on the 18 month SV, would have been detected by an alarm if the condition had gone undetected and uncorrected.

(6) This degradation, although discovered on the 18 month SV, would have been detected by the weekly/shiftly SV.

Table 2
Radiation Monitor Corrective Maintenance
Summary

Description of Problem	Technical Specification Operability Affected?	Method of Detection
Plant Computer out of tolerance	No	31 Day Test
Health Physics Computer out of tolerance	No	31 Day Test
Instrument ranges out of tolerance	Yes (1)	31 Day Test
Recorder out of tolerance	No	31 Day Test Weekly SV Shiftly SV
Particulate filter paper drive mechanism advance or belt problems	No	31 Day Test Weekly SV Alarm
Detector failure	Yes	31 Day Test Weekly SV Shiftly SV
Detector indicates degradation, i.e. failing, prior to failure	No	31 Day Test
Detector background high or low	No	31 Day Test Alarm
Check source or check source drive problems	No	31 Day Test
Detector mylar torn or defective	No	31 Day Test
Monitor spikes/noise	Yes	Alarm
Loss of High Voltage, High Voltage Drift	Yes	31 Day Test Weekly SV Shiftly SV
Sample pump trips	Yes	Alarm
Flow or flow meter problems	Yes (1)	Weekly SV Shiftly SV Alarm
Fan/Blower or belt problems	Yes (1)	92 Day PM Alarm

Table 2
Radiation Monitor Corrective Maintenance
Summary (Continued)

Description of Problem	Technical Specification Operability Affected?	Method of Detection
Module failures, high or low range problems	Yes	Alarm
Module meter sticking, intermittent readings or out of tolerance	No	31 Day Test
Bad board, connection, components	Yes	31 Day Test Alarm
Alarm setpoint out of tolerance	Yes	31 Day Test
CPIS will not reset	No	31 Day Test

Notes:

(1) These problems have not always resulted in operability problems. The degree of degradation of these problems determines whether there is an adverse impact on Technical Specification operability impact. For conservative purposes, an affirmative (YES) response is provided to the operability impact question.

NPF-10/15-268

ATTACHMENT "B"

EXISTING TECHNICAL SPECIFICATIONS

UNITS 2