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DOCKET #
 05000361
 05000362

SUBJECT: Forwards responses to NRC open items & questions identified in 801107 ltr re staffing, sys & effluent parameter values; source term & magnitude of radioactive releases, sprinkler sys, methodology for determining doses & monitoring readings.

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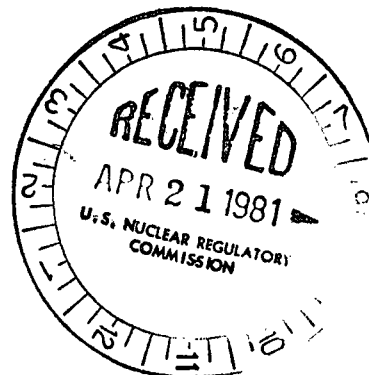
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K. P. BASKIN
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April 20, 1981

Director, Office of Nuclear Reactor Regulation
Attention: Mr. Frank Miraglia, Branch Chief
Licensing Branch No. 3
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555



Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

Enclosed are sixty-three (63) copies of responses to NRC Open Items and questions identified in the NRC letter dated November 7, 1980. Enclosure 1 is a list of the responses which are included in Enclosure 2.

Direct distribution of these responses will be made as part of the Amendment 24 distribution and will be in accordance with the service list provided by SCE's letter of October 29, 1979. An affidavit attesting to the fact that distribution has been completed will be provided within ten (10) days of docketing of Amendment 24.

Please let me know if you have any questions or need any additional information.

Very truly yours,

KP Baskin

Enclosures

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<u>QUES. NO.</u>	<u>DESCRIPTION</u>
432.19	Staffing
432.39	System and Effluent Parameter Values
432.41	Source Term and Magnitude of Radio- active Releases
432.42	Relationship Between Monitor Readings and Exposures
432.44	Methodology for Determining Doses
FQ015.60	Sprinkler Systems

Enclosure 2

Response to NRC Questions

Question 432.19

It is not clear whether the staffing level on p. 5-1 is for one unit or for all three units. Please clarify this and justify any differences between your staffing level and the requirements in Table B-1 of NUREG 0654.

Response

The minimum shift crew for San Onofre Unit 2 and for Units 2 and 3 is indicated below:

<u>Unit 2</u>	<u>Units 2 and 3</u>
One (1) Watch Engineer	One (1)
One (1) Shift Technical Advisor	One (1)
One (1) Operating Foreman	One (1)
Two (2) Control Room Operators	Three (3)
Two (2) Plant Equipment Operators	Three (3)
*One (1) Health Physics Technician	*One (1)
*One (1) Nuclear Chemical Technician	*One (1)
**One (1) Control Room Operator	**One (1)

The shift manning requirements in Table B-1 of NUREG-0654, can be met in all cases with operators meeting the requirements on July 1, 1982. This compliance is predicated on using the Health Physics Technician and Nuclear Chemical Technician added to the shift to also meet the 2 HP Technician requirement for Protective Actions (in-plant). Our ability to meet the operator manning is problematic and is being presented to the Commission by separate correspondence.

We must take exception to the 30-minute augmentation manning. The basis of this exception is twofold. First, we are not capable of meeting it. A 30-minute response from most people working at San Onofre can not reasonably be achieved due to their physical living location. Further, the 30-minute requirement is arbitrary. It has not been demonstrated that 30-minutes is required. In supporting our objection to this requirement, it can be asserted that personnel could be called, proceed to the plant and arrive within 30-minutes. It is not possible to assert they all will in fact arrive in 30-minutes. It is therefore more realistic to establish a commitment to initiate call outs immediately with the understanding that some personnel will arrive within 30-minutes and that all required would be present in 60-minutes.

*Shared between Unit No. 1 and Unit Nos. 2&3.

**This CRO will fulfill notification/communication requirement and is not required to be licensed.

The 60-minute augmentation manning can be met and we recommend that the 30-minute augmentation manning be made 60-minutes also.

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Reference

None.

Question 432.39

Identify plant system and effluent parameter values characteristic of a spectrum of off-normal conditions and all the example initiating conditions in NUREG-0610.

Response

The assessment parameter values will be included in the appropriate facility emergency procedure. Typical implementing emergency procedures are listed in revised Emergency Plan Appendix C.

A controlling procedure will be written that will direct the operator to implement the emergency procedure appropriate to handle the symptoms of the event. Each of the initiating conditions described in Appendix 1 of NUREG-0654, Rev 1, will be covered by the controlling procedure. The procedures will be written based on the instrumentation and controls described in the FSAR for the appropriate system, and on the operating limits stated in the plant Technical Specifications.

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Reference

Emergency Plan, Appendix C. No FSAR change was made.

Question 432.41

Provide methods and techniques to determine the source term of release of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors.

Response

FSAR chapter 12 and section 11.5 provide a detailed description of the plant facilities for monitoring and determining the source term of a release of radioactive material within the plant. In addition, the health physic computer system is fully described in FSAR Amendment 23, Response to NRC Action Plan NUREG-0660, Section III.A.1.2.

Appropriate plant procedures will be written to direct the operator to implement the proper assessment actions. Typical implementing emergency procedures are listed in revised Emergency Plan, Appendix C.

Reference

FSAR chapter 12; FSAR section 11.5; Response to NRC Action Plan NUREG-0660, Section III.A.1.2; Emergency Plan, Appendix C.

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Question 432.42

Establish the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions.

Response

A health physics computer facility described in FSAR Amendment 22, Response to NRC Action Plan NUREG-0660, Section III.A.1.2 is provided to calculate offsite exposures. This computer receives inputs from the effluent radiation monitoring system and from the site meteorological tower. Output consists of estimated offsite doses for each sector, based on actual monitor readings.

Based on recent information from the equipment supplier for the health physics computer system, the Phase II-A part of the system using the counting room processor to provide displays is expected to be operational by fuel load. The Phase II-B part of the system is expected to be complete before mid-year 1982.

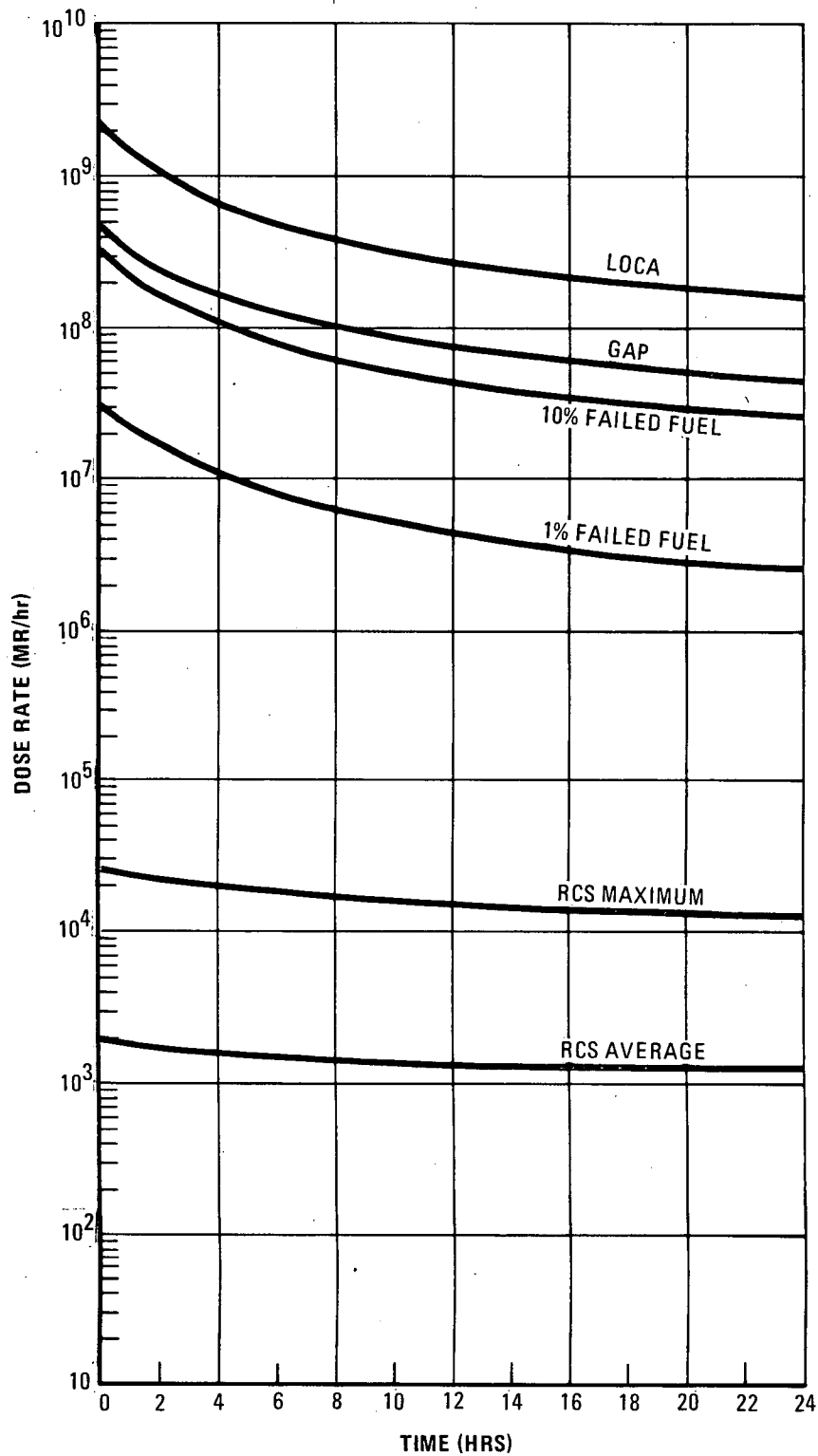
To evaluate the onsite exposure due to large radioactive releases within the containment, the dose is determined using readings from the high range in containment monitors and emergency radiation monitoring system detectors and preestablished relationships (see figures 432.42-1, 2, and 3).

The assessment parameter values and implementation direction will be included in the appropriate facility emergency procedure.

Reference

Response to NRC Action Plan NUREG-0660, Section III.A.1.2. No FSAR change was made.

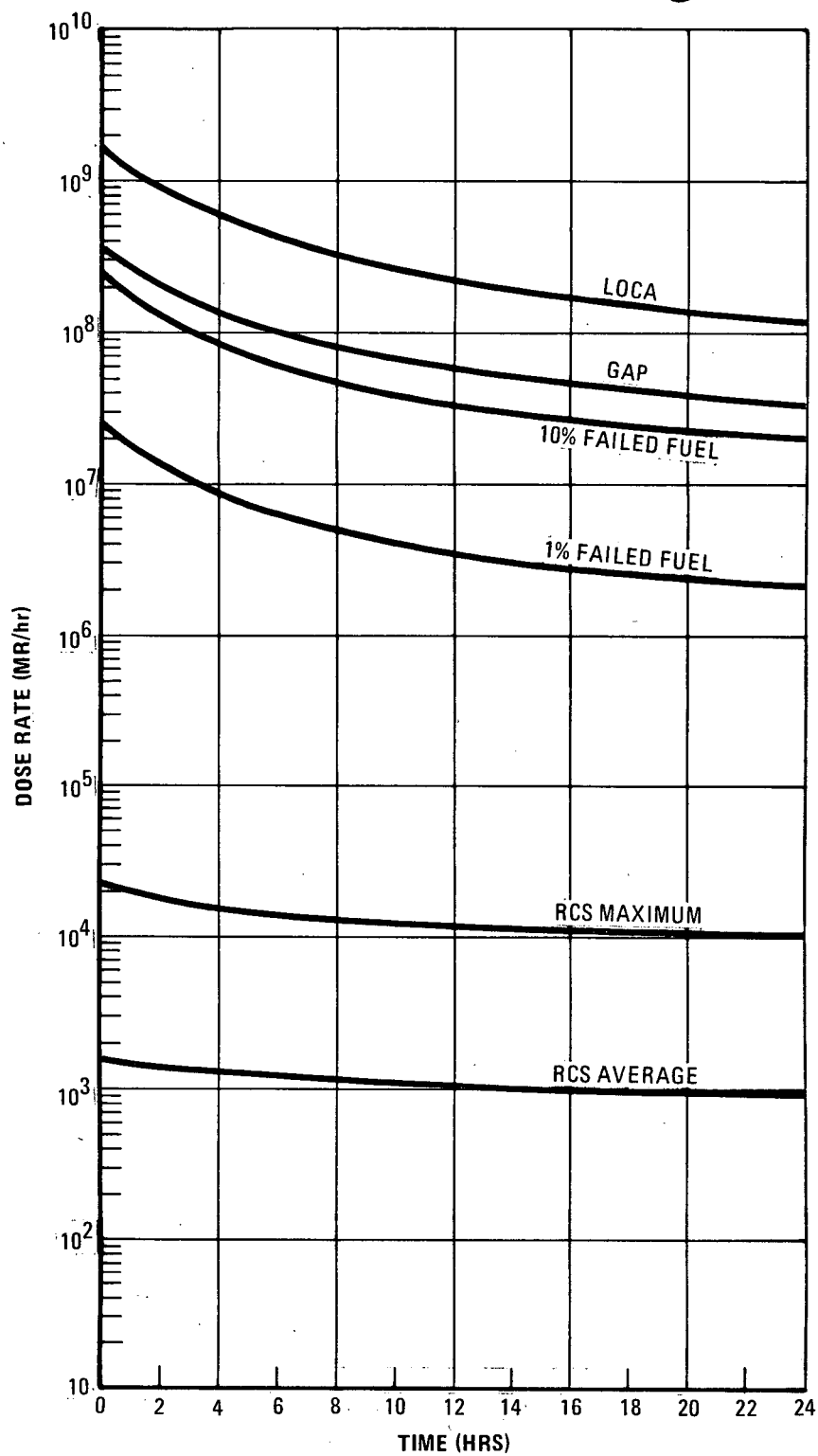
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**SAN ONOFRE
NUCLEAR GENERATING STATION
Units 2 & 3**

DOSE RATE VS TIME FOR
HIGH RANGE IN-CONTAINMENT
MONITOR AT EL. 99'6" ON
SECONDARY SHIELD WALL

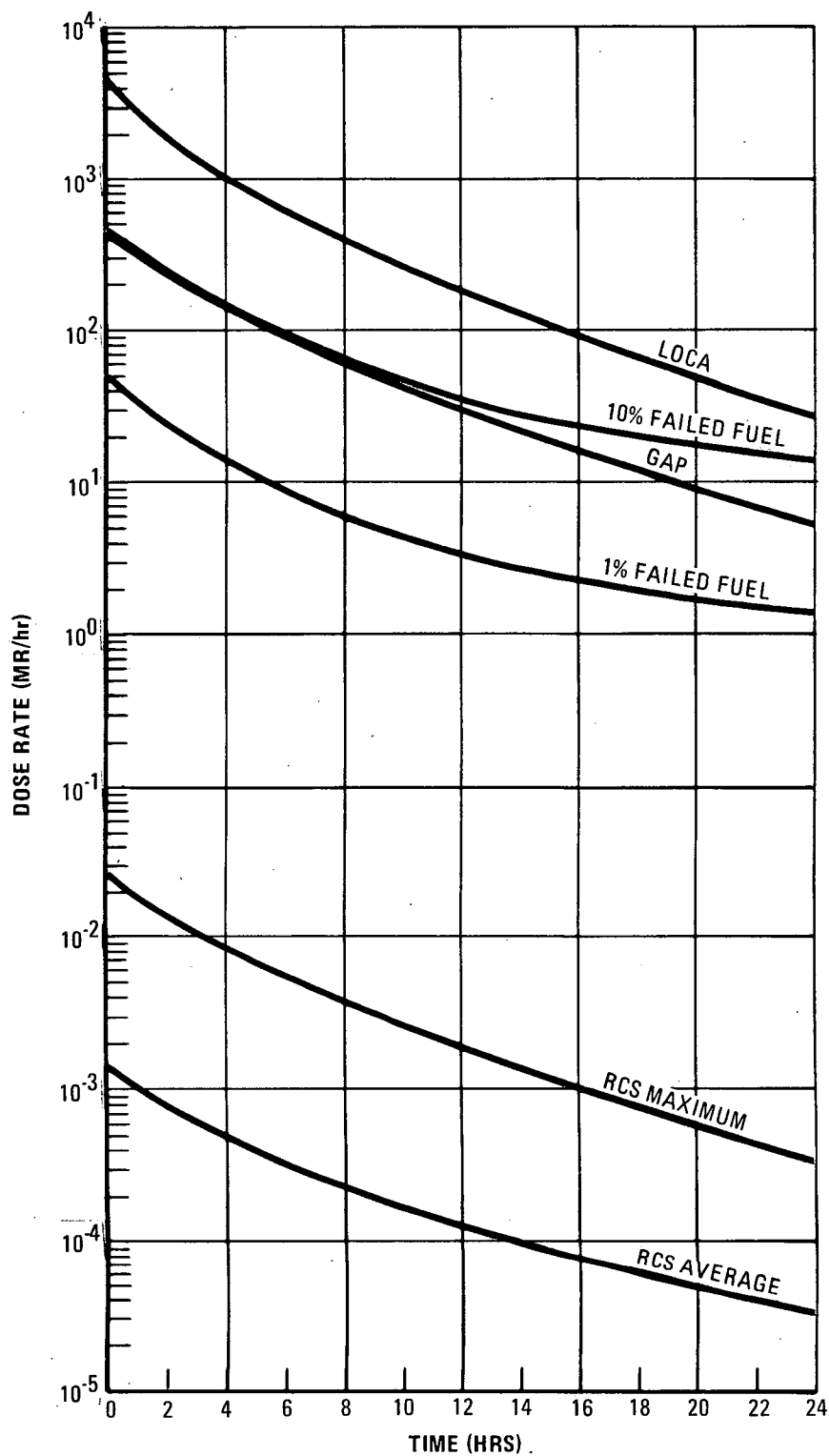
FIGURE 432.42-1



**SAN ONOFRE
NUCLEAR GENERATING STATION
Units 2 & 3**

DOSE RATE VS TIME FOR
HIGH RANGE IN-CONTAINMENT
MONITOR AT EL. 94' ABOVE
THE ELEVATOR SHAFT

FIGURE 432.42-2



**SAN ONOFRE
NUCLEAR GENERATING STATION
Units 2 & 3**

DOSE RATE VS TIME FOR
EMERGENCY RADIATION
MONITORS

FIGURE 432.42-3

Question 432.44

Establish the methodology for determining the release rate/projected doses if the instrumentation for such assessment are offscale or inoperable.

Response

To provide an extended range assessment capability, several wide range monitors are included in the plant design as described in FSAR section 11.5 and subsection 12.3.4. These monitors are designed for post-accident environments. Therefore, no special procedures are required for assessments since offscale situations are precluded. For inoperable monitors, the response to NRC Question 321.12 response describes plan capabilities.

Reference

FSAR Sections 12.3.4 and 11.5 and response to NRC Question 321.12. No FSAR charge was made.

Fire Harzards Analyses
Questions and Responses
San Onofre 2&3

Question FQ015.60

It is our position that all areas which contain redundant safe shutdown systems which are not separated by three-hour fire rated barriers should be provided with an automatic, wet-pipe sprinkler system designed to cover the entire area as well as an early warning smoke detection system. In addition, to allow for possible thermal lag or failure of the suppression system, in those areas where the redundant systems are separated by less than 20 feet of clear, open air space, an ASTM #E119 rated fire barrier which will completely enclose one of the redundant systems should be provided. The barrier should protect the circuit integrity/equipment availability of that system for one hour under fire test conditions. Areas where such protection is required include the following fire zones:

- 12 Cable Riser Gallery
- 13A Emergency HVAC Unit Room 309A
- 15 Rooms 308A and B, ESF Switchgear Rooms
- 22 Auxiliary Feedwater Pump Room
- 23 Spent Fuel Pool Heat Exchanger Room
- 29 Cable Riser Galleries
- 30 Electrical Tunnel Elev. 30'-6"
- 32B Fan Room - 233, 234 - Train B
- 36 Spent Fuel Pool Pump Room
- 42 Cable Riser Galleries
- 44 Intake Structure
- 48 CCW Heat Exchangers and Piping Rooms, Elev. 8'-0"
- 63 Corridor, Elev. 50'-0", Control Building
- 67 Cable Riser Galleries, Radwaste Area, Elev. 63'-6"
- 72 Corridor 442, Elev. 70'

Fire Harzards Analyses
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San Onofre 2&3

78 Corridor Room 105

83 Salt Water Cooling Tunnel, Train A, Train B

84 Safety Equipment Building, Elev. 8', A/C Room No. 017

In lieu of the one-hour fire rated barrier, an alternate shutdown system can be provided.

Where safe shutdown capability cannot be assured by barriers, suppression and detection systems, it is our position that an alternate shutdown system should be provided. Such areas include the following fire zones:

5 Cable Riser Gallery

31 Control Room Complex

41 Cable Spreading Room

The alternate shutdown system should be completely independent of the area for which it is being provided such that a fire in either area which damages redundant systems will not affect the shutdown capability from the other area. Reference Q015.44a.

Response

As stated in response to Question FQ015.12, exposure fire barriers are provided for redundant safe shutdown cables separated by less than 20 feet, with the exception of the containment, cable spreading room and control room. This wrapping concept, as a barrier, has been tested to ASTM E-119 temperature profiles and has an appropriate 1-hour fire rating.

In addition to the wrapping, automatic suppression systems are provided in those fire zones where fire severity exceeds one hour.

Automatic suppression systems are not considered necessary for zones with less than one-hour fire loading for the following reasons:

1. Wrapping provides an approximate one-hour protection thereby maintaining integrity of at least one of the safe shutdown trains.
2. Fire barrier ratings exceed the fire severity, which is less than one-hour, in each zone. Also, as stated in response to Question FQ015.27, the tests showed that the existing construction of the walls provides protection in excess of two hours.

Fire Harzards Analyses
Questions and Responses
San Onofre 2&3

3. Manual fire fighting capability is provided in all areas containing redundant safe shutdown systems. As stated in response to Question FQ015.9, this capability will exist even after a safe shutdown earthquake. 5

These provisions are considered adequate to ensure the capability for safe shutdown of the plant with the fire hazards involved. Nonetheless, automatic suppression systems will also be installed in these zones (except Zones 15, 23 and 36, as described below) to ensure coverage for all areas containing safe shutdown systems which are not separated by three-hour fire rated barriers. These additional suppression systems will be of either the dry or wet pipe type depending on the existing fire water system capability and area configuration. 6
5

Zone 15 switchgear rooms contain equipment and cable from only one safe shutdown system. There are cables within the zone from two control channels, but both of these channels are associated with the same safe shutdown train, and do not become associated with the redundant safe shutdown train. All equipment and cable for the redundant train are separated from the Zone 15 train by the equivalent of a three-hour rated fire barrier.

Zones 23 and 36 contain cables and equipment for the Spent Fuel Pool Coolant System (SFPCS). This system was analyzed as an essential system with respect to fire hazards, but is not a safe shutdown system. Moreover, should both trains of this system be disabled by fire in spite of the exposure fire barriers, fire detection and manual fire fighting capability which have been provided, a minimum of 12 hours are available with the maximum refueling heat load (2 2/3 cores) to effect repairs and restore cooling before pool boiling occurs. In addition, hardpiped connections are provided from the Shutdown Cooling System for independent, backup cooling capability (in the worst case event of SFPCS loss with maximum pool heat load - 3 1/3 cores resulting from full core unloading - the SDCS would be aligned for safety related, backup pool cooling). Based on the above, it is not considered necessary to install sprinklers in Zones 23 and 36. 6

Smoke detectors are provided for early warning of incipient fires in all areas of high safety-related cable tray concentration outside the containment, as stated in response to Question FQ015.44(d).

Fire Harzards Analyses
Questions and Responses
San Onofre 2&3

As stated in the response to Questions 015.34 and 015.44, alternate shutdown features exist to provide remote safe shutdown capability that is electrically and physically independent of the control room (zone 31) and cable spreading room (zone 41). The cable riser gallery (zone 5), contains only one of the two redundant trains required for safe shutdown of the plant. Thus at least one train will be available for safe shutdown remote from the fire zone, as stated in the revised Fire Hazards Analysis, Zone 5 section.

Reference

See revised Fire Hazards Analysis, Section II, Zone 5, paragraph IIC (2), page II-24.