Subscribed on this 23rd day of July, 1982.

Respectfully submitted.

SOUTHERN CALIFORNIA EDISON COMPANY

By _____
Robert Dietch

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

By _____

Subscribed and sworn to before me
this 23rd day of July, 1982.

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

OFFICIAL SEAL
AGNES CRABTREE
NOTARY PUBLIC - CALIFORNIA
PRINCIPAL OFFICE IN
LOS ANGELES COUNTY
My Commission Exp. Aug. 27, 1982

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By _____

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By _____

David R. Pigott

Subscribed and sworn to before me
this 21 day of July 1982.

_____

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OFFICIAL SEAL
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THE CITY OF ANAHEIM

By Gordon W. Hoyt

Gordon W. Hoyt

Alan R. Watts
Rourke & Woodruff
Attorney for the City of Anaheim

By Alan R. Watts

OFFICIAL SEAL
J. RICHARD SANTO
Notary Public-California
ORANGE COUNTY
My Commission Expires Aug. 13, 1982

Subscribed and sworn to before me
this 19 day of JULY, 1982.

J. Richard Santo

Notary Public in and for the County
of ORANGE, State of California

THE CITY OF RIVERSIDE

By _____

Everett C. Ross

Alan R. Watts
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Attorney for the City of Riverside

By _____

Subscribed and sworn to before me
this 19th day of July, 1982.

_____
Notary Public in and for the County
of Riverside, State of California

OFFICIAL SEAL
MARGARET I. ALLEN
NOTARY PUBLIC
RIVERSIDE CO., CALIF.
My commission expires 4-29-83

DESCRIPTION OF PROPOSED CHANGE NPF-10-4 AND SAFETY ANALYSIS
OPERATING LISCENSE NPF-10
SAN ONOFRE NUCLEAR GENEATING STATION UNIT 2

This is a request to revise Appendix "A" Technical Specification 4.3.2, Table 4.3-2, "Engineered Safety Feature Actuation System Instrumentation Surviellance Requirements."

Existing Technical Specification

See Attachment A

Proposed Technical Specification

See Attachment B

Reason for Proposed Change

The present test interval in Technical Specification Table 4.3-2 for the Engineered Safety Feature (ESF) subgroup relays is 6 months. This 6 month interval was based on the NRC Standard Technical Specification requirement. The design of the auxiliary relay cabinets is such that each of the ESF subgroup relays cannot be individually tested without actuating all of the equipment that each subgroup relay operates. It has become apparent that the procedures required for testing all the subgroup relays while the plant is at power (Modes 1 and 2) are extremely complex and require the use of several operators and technicians to either temporarily realign system lineups or to locally monitor components. Additionally, it is undesirable to have a test interval that results in relatively frequent operation of ESF equipment.

The ESF actuation system is described in Section 7.3 of the San Onofre Units 2 and 3 FSAR. The design of the ESF trip channel logic, initiation relays and subgroup relays including equipment actuation provides for testing during plant operation, although total system verification may rely on the combined results of separate testing to avoid undesirable equipment actuation which could adversly affect the plant. This combined testing assures a high degree of component reliability and is consistent with the recommendations of Regulatory Guide 1.22 as described in FSAR Section 3A.1.22.

The ESF subgroup relays are only a part of the ESF accident mitigation system; the mitigating function is achieved by a series of actuations from channel sensor inputs through equipment actuation. The operability of this system is verified by combining results of:

(a) separate tests on individual actuated components (for example, by the routine Section XI testing of pumps and valves);

(b) channel checks and channel functional tests (for example, on setpoints and actuation logic);

(c) channel calibrations and response time measurements (for example, on sensors or valve closing or opening); and

(d) tests that exercise individually or in combination with one of the above objectives, all the components not otherwise routinely tested in the ESF system.

For each of the above tested components, the specific design is considered in conjunction with operating history and reliability data to assign a surveillance interval within which periodic testing of that component must be completed.

Based on the above concerns, the basis for defining a periodic surveillance interval for the ESF subgroup relays that both maintains consistency with the recommendations of Regulatory Guide 1.22 and yet minimizes undersirable effects on normal plant operation was reviewed as discussed in the "Safety Analysis of the Proposed Change" below. The results of the review support a testing interval of 18 months for the ESF subgroup relays.

Safety Evaluation of Proposed Change

The present test interval in Technical Specification Table 4.3-2 (Note 4) for the ESF subgroup relays is 6 months. Research indicates that this test interval is historical in nature and primarily based on the Plant Protection System 30 day test interval. A more in-depth study was subsequently conducted in an effort to provide a justifiable test interval. This study consisted of the following tasks:

1. Research of relay manufacturers to establish long term relay operational considerations.

2. Performing a reliability analysis to establish an acceptable test interval.

3. Contacting C-E operating utilities to determine the test interval for their Engineered Safety Feature Actuation System (ESFAS).

The results of this study are as follows:

Relay Physical Parameter Review

Numerous other relay suppliers in addition to the ESF actuation logic subgroup relay manufacturer (Potter-Brumfield) were contacted. Information was requested on factors which could affect reliable operation of the relays, and how these factors are related to the frequency of relay operation. Physical parameters of concern are discussed below.

Coil - Discussions with relay manufacturers resulted in one concern: since the relays are operated as energized closed, the coil should be specifically designed for continuous operation. Further investigation showed that the coil is designed for continuous operation, and is operated within its specifications. Therefore, it is concluded that the mode of coil operation does not warrant a frequent test interval.

Contact Gap - Contact gap requirements were researched to determine if contact welding due to arcing could occur. It was found that the establishment of the appropriate contact gap is a function of the applied load. With the maximum design load in the San Onofre Unit 2 ESFAS application, the contact gap is approximately twice the required gap needed to extinguish an arc. Furthermore, the subgroup relay manufacturer has conducted a full load cycle test on a representative sample of relays to show that welding does not occur. Therefore, since the subgroup relay contact loads are within manufacturers specifications, the remote potential for welding due to arcing is not considered to warrant a frequent test interval.

Contact Material - Contact material was considered in order to identify the potential for problems associated with oxidation or corrosion. The concern is whether a prolonged test interval would cause an increase in contact degradation or resistance and thereby prevent proper circuit operation. Various relay manufacturers were consulted and in each case they stated that degradation would not be a significant factor when extending the test interval up to 18 months provided the contacts are 100% fine silver, and that the contact loads are not too small (i.e., less than 100 milliamperes). In the San Onofre Unit 2 subgroup relay design, the contact material is 100% fine silver and contact loads are on the order of one ampere. Therefore, contact material corrosion is not considered to warrant a frequent test interval.

Rotor Operation - The rotor operation in conjunction with coil material outgasing was initially thought to be a limiting factor in determining a test interval and that increasing time between tests may reduce the relays' reliability. This concern was based on undocumented (and unsubstantiated) information regarding an aging test performed on a similar relay where response time increased beyond acceptable tolerances after test. In discussions with the relay manufacturer they hypothesize that coil outgasing may have caused deposits to form on the relay/rotor bearing surfaces. Such deposits could impede rotor operation and increase relay response time. Increasing the test frequency may cause self cleaning of the bearing surfaces. Further investigation with the test facility revealed that the test temperatures used to accelerate aging were excessive and therefore the test was deemed invalid by the responsible organization. Furthermore, tests performed on the ESF subgroup relays at ANO-2 (which are identical to those used at San Onofre Unit 2 in the same application) during their refueling outage showed that the rotor performs properly after an extended period of energization. Therefore the potential for degraded rotor operation is not considered to warrant a frequent test interval.

Reliability Analysis

An evaluation by C-E Reliability Systems was performed to determine the impact of increasing the periodic test frequency to 18 months. The results of the analysis indicate that an 18 month interval for all ESFAS actuation relays (including subgroup relays) would not significantly affect the reliability of the systems.

Operating Utility Review

As part of the test frequency investigation, several operating plants with ESF actuation systems similar or identical to San Onofre Unit 2 were contacted. All utilities contacted test their final actuation (subgroup) relays during refueling shutdowns. In addition, no evidence of problems or relay failures associated with the 18 month testing interval for these actuation relays were discovered.

Accordingly, it is concluded that: (1) Proposed Change NPF-10-4 does not involve an unreviewed safety question as defined in 10 CFR 50.59, nor does it present significant hazard considerations not described or implicit in the Final Safety Analysis; (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.

FRN:4833

# ATTACHMENT A

# EXISTING SPECIFICATION

TABLE 4.3-2

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTAION SURVEILLANCE REQUIREMENTS

| FUNCTIONAL UNIT | CHANNEL CHECK | CHANNEL CALIBRATION | CHANNEL FUNCTIONAL TEST | MODES FOR WHICH SURVEILLANCE IS REQUIRED |
|---|---|---|---|---|
| 1. SAFETY INJECTION (SIAS) | | | | |
| a. Manual (Trip Buttons) | N.A. | N.A. | R | 1, 2, 3, 4 |
| b. Containment Pressure - High | S | R | M | 1, 2, 3 |
| c. Pressurizer Pressure - Low | S | R | M | 1, 2, 3 |
| d. Automatic Actuation Logic | N.A. | N.A. | M(1)(3), SA(4) | 1, 2, 3, 4 |
| 2. CONTAINMENT SPRAY (CSAS) | | | | |
| a. Manual (Trip Buttons) | N.A. | N.A. | R | 1, 2, 3, 4 |
| b. Containment Pressure -- High - High | S | R | M | 1, 2, 3 |
| c. Automatic Actuation Logic | N.A. | N.A. | M(1)(3), SA(4) | 1, 2, 3, 4 |
| 3. CONTAINMENT ISOLATION (CIAS) | | | | |
| a. Manual CIAS (Trip Buttons) | N.A. | N.A. | R | 1, 2, 3, 4 |
| b. Manual SIAS (Trip Buttons)(5) | N.A. | N.A. | R | 1, 2, 3, 4 |
| c. Containment Pressure - High | S | R | M | 1, 2, 3 |
| d. Automatic Actuation Logic | N.A. | N.A. | M(1)(3), SA(4) | 1, 2, 3, 4 |
| 4. MAIN STEAM ISOLATION (MSIS) | | | | |
| a. Manual (Trip Buttons) | N.A. | N.A. | R | 1, 2, 3 |
| b. Steam Generator Pressure - Low | S | R | M | 1, 2, 3 |
| c. Automatic Actuation Logic | N.A. | N.A. | M(1)(3), SA(4) | 1, 2, 3 |
| 5. RECIRCULATION (RAS) | | | | |
| a. Refueling Water Storage Tank - Low | S | R | M | 1, 2, 3 |
| b. Automatic Actuation Logic | N.A. | N.A. | M(1)(3), SA(4) | 1, 2, 3 |
| 6. CONTAINMENT COOLING (CCAS) | | | | |
| a. Manual CCAS (Trip Buttons) | N.A. | N.A. | R | 1, 2, 3, 4 |
| b. Manual SIAS (Trip Buttons) | N.A. | N.A. | R | 1, 2, 3, 4 |
| c. Automatic Actuation Logic | N.A. | N.A. | M(1)(3), SA(4) | 1, 2, 3, 4 |