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10 CFR 50.90

NUCLEAR SERVICES DEPARTMENT

October 15, 1992

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

SUBJECT: Limerick Generating Station, Units 1 and 2
Technical Specifications Change Request

Gentlemen:

Philadelphia Electric Company is submitting Technical Specifications Change Request (TSCR) No. 92-03-0, in accordance with 10 CFR 50.90, requesting an amendment to the Technical Specifications (TS) (Appendix A) of Operating License Nos. NPF-39 and NPF-85. Information supporting this Change Request is contained in Attachment 1 to this letter, the proposed markup pages are contained in Attachment 2, and the final proposed replacement pages are contained in Attachment 3.

This submittal requests changes to TS surveillance intervals to facilitate a change in the Limerick Generating Station (LGS), Units 1 and 2, refueling cycles from 18 months to 24 months. The 24 month refueling cycle will require a change from the current 18 month TS surveillance testing interval (i.e., a maximum of 22.5 months accounting for the allowable grace period) to a 24 month testing interval (i.e., a maximum of 30 months accounting for the allowable grace period). These TS changes were evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991, and are being proposed accordingly.

A001

As discussed in our letter dated February 11, 1992, this is the third (i.e., the final) of three Change Requests being submitted to the NRC to support the current change to 24 month refueling cycles at LGS, Units 1 and 2. This Change Request involves a proposed change to the TS surveillance intervals for instrument calibration TS line items, a change to the definition of "R" (i.e., for "Refueling Interval"), and the remaining TS line items to support 24 month refueling cycles.

The TS page markups contained in Attachment 2 reflect the proposed change to 24 month testing for each specific TS Surveillance Requirement identified and evaluated in this Change Request. The TS page markups are being provided for information only. The final proposed TS replacement pages, which reflect the combined changes proposed in this and the previous Change Request No. 92-02-0, are contained in Attachment 3.

Accordingly, we request that the NRC review the TS changes proposed in this Change Request by December 1992 in order to support approval of this and the previous Change Request prior to the expiration of the current TS surveillance interval limits in February 1992 (this includes the 25% grace period). In addition, we request that the approved TS changes be effective 30 days after issuance of the Amendments.

If you have any questions regarding this matter, please contact us.

Very truly yours,

G. J. Beck, Manager
Licensing Section

Attachments

cc: T. T. Martin, Administrator, Region I, USNRC
T. J. Kenny, USNRC Senior Resident Inspector, LGS
W. P. Dornsife, Commonwealth of Pennsylvania

COMMONWEALTH OF PENNSYLVANIA:

ss.

COUNTY OF CHESTER :

D. R. Helwig, being first duly sworn, deposes and says:

That he is Vice President of Philadelphia Electric Company; the Applicant herein; that he has read the foregoing Application for Facility Operating License Nos. NPF-39 and NPF-85 (Technical Specifications Change Request No. 92-03-0) to facilitate a change in the Limerick Generating Station, Units 1 and 2 refueling cycles from 18 months to 24 months, and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

DRHelwig

Vice President

Subscribed and sworn to

before me this 15th day

of October 1992.

Catherine A. Mendez

Notary Public

NOTARIAL SEAL
CATHERINE A. MENDEZ, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires Sept. 4, 1993

ATTACHMENT 1

LIMERICK GENERATING STATION
Units 1 and 2

Docket Nos. 50-352
50-353

License Nos. NPF-39
NPF-85

TECHNICAL SPECIFICATION CHANGE REQUEST
No. 92-03-0

"Priority 2 (Instrumentation) Line Item Changes in Support of 24 Month Refueling Cycles"

Supporting Information for Changes - 46 Pages

Philadelphia Electric Company (PECo), Licensee under Facility Operating Licenses NPF-39 and NPF-85 for the Limerick Generating Station (LGS) Units 1 and 2, respectively, requests that the Technical Specifications (TS) contained in Appendix A to the Operating Licenses be amended as proposed herein. The proposed changes specific to this Change Request are indicated on the associated TS page markups for both LGS, Units 1 and 2, and are contained in Attachment 2. The combined changes proposed in this and the previous Change Request are indicated by vertical bars in the margin of each page for both LGS, Units 1 and 2, and are contained in Attachment 3.

The proposed TS changes are requested to facilitate the current change in the LGS, Units 1 and 2, refueling cycles from 18 months to 24 months. The 24 month refueling cycle will require a change from the current 18 month TS surveillance testing interval (i.e., a maximum of 22.5 months accounting for the allowable grace period) to a 24 month testing interval (i.e., a maximum of 30 months accounting for the allowable grace period). These TS changes were evaluated in accordance with the guidance provided in NRC Generic Letter (GL) No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991.

As discussed in our letter dated February 11, 1992, this is the third (i.e., the final) of three Change Requests being submitted to the NRC to support the current change to 24 month refueling cycles at LGS, Units 1 and 2. This Change Request involves a proposed change to the TS surveillance intervals for instrument calibration TS line items, a change to the definition of "R" (i.e., for "Refueling Interval"), and the remaining TS line items to support 24 month refueling cycles.

The TS page markups contained in Attachment 2 reflect the proposed change to 24 month testing for each specific TS Surveillance Requirement (SR) identified and evaluated in this Change Request. The TS page markups are being provided for information only. The final proposed TS replacement pages, which reflect the combined changes proposed in this and the previous Change Request No. 92-02-0, are contained in Attachment 3.

Accordingly, we request that the NRC review the TS changes proposed in this Change Request by December 1992 in order to support approval of this and the previous Change Request prior to the expiration of the current TS surveillance interval limits in February 1992 (this includes the 25% grace period). In addition, we request that the approved TS changes be effective 30 days after issuance of the Amendments.

This Change Request provides a generic discussion on the effect of increased surveillance intervals on instrument drift and safety analysis assumptions. This Change Request also provides a discussion, description, and a safety assessment for each of the proposed TS changes by "group," information supporting a finding of No Significant Hazards Consideration, and information supporting an Environmental Assessment.

<u>Discussion on the Effect of Increased Surveillance Intervals on Instrument Drift and Safety Analysis Assumptions</u>

NRC GL No. 91-04, Enclosure 2 provided guidance to licensees on the type of analysis and information that would be required to justify a change to the surveillance interval for instrument recalibrations. Seven specific actions were delineated in the Enclosure. These actions are repeated below along with a generic discussion to provide insight into the methodology PECo used to evaluate the affects of an increased surveillance interval on instrument drift. A specific discussion on the affects of such a change are included in the description of changes and safety assessment section which follows.

1. Confirm that instrument drift as determined by as-found and as-left calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval.

   The effect of increased calibration intervals on the TS instrumentation for LGS Units 1 and 2 to accommodate 24 month refueling cycles has been determined. Two issues associated with the instrumentation have been evaluated: a) instrument availability based on consideration of historical instrument test failures, and b) instrument drift.

   a. Instrument Availability Based on Consideration of Historical Instrument Test Failures

      For the TS instrumentation at LGS Units 1 and 2, a search was done of all surveillance tests that satisfy the 18 month testing requirement of instrument calibration. The search identified all failed tests. Each failed test was reviewed to determine the cause of the failure. The purpose of this evaluation was to determine the impact an increase in the surveillance frequency has on instrument availability. This review identified that instrument failure rates detected by the 18 month surveillance requirement was significantly less than one (1) percent. Because of the very small percentage of failures which are detected on an 18 month basis and because of system redundancy, the change in the surveillance frequency will have a small impact, if any, on system availability.

   b. Instrument Drift

      For the TS instrumentation at LGS Units 1 and 2, all applicable surveillance tests were reviewed, and historical instrument drift related data was obtained. This data included as-left values, as-found values, and required limits identified during each instrument calibration. Based on this data, a drift analysis was performed. The failure history in combination with the drift study demonstrated that except in rare occasions instrument drift has not exceeded the current allowable limits.

2. Confirm that the values of drift for each instrument type (make, model, and range) and application have been determined with a high probability and a high degree of confidence. Provide a summary of the methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant calibration data.

   The methodology used to perform the LGS drift analysis is described below.

General Electric (GE) developed a computer model for drift determination as documented in NEDC-31336, "GE Instrument Setpoint Methodology" to perform instrument setpoint calculations. This document was submitted to the NRC, and is currently under review. The Boiling Water Reactor Owners' Group (BWROG) committee for Surveillance Test Extension determined that the drift module of the GE Instrument Setpoint Methodology could be used to determine instrument drift for periods longer than 18 months based on actual instrument performance in plant environments.

GE, under the direction of the BWROG Surveillance Test Extension committee, developed the "General Electric Instrument Trending Analysis System" (GEITAS). This quality assured program is being used to determine the feasibility of extending various surveillance tests to thirty-six months.

A copy of the verified and validated GEITAS program was obtained from GE and was used to project the thirty month drift number. The as-found and as-left data was taken from 18 month instrument calibration surveillance tests and was analyzed. This analysis produced values at intervals from one to thirty months. For conservatism, (1) the various errors contained in the as-found and as-left values (e.g., instrument accuracy, and temperature and calibration errors) were not removed, and (2) the interval with the highest projected drift value was compared with the present 18 month surveillance test acceptance criteria.

The results of the computer runs showed acceptable 30 month drift values that were within surveillance test drift allowances if (1) there were a sufficient amount of historical data to satisfy the computer algorithms and (2) the majority of the as-found and as-left values were within acceptable limits.

It should be noted that for certain cases a different methodology was utilized to demonstrate that the drift was acceptable. These cases included instruments that were recently installed, instruments that were tested more frequently because of other commitments, or instruments that have 30 month drift numbers published. For each instrument where the GE Program was not utilized to evaluate the drift data, a summary of the methodology is contained in the specific discussion of the change.

3. <u>Confirm that the magnitude of instrument drift has been determined with a high probability and a high degree of confidence for a bounding calibration interval of 30 months for each instrument type (make, model number, and range) and application that performs a safety function. Provide a list of the channels by TS section that identifies these instrument applications.</u>

The determination that the magnitude of instrument drift has been determined with a high degree of probability and a high degree of confidence for a bounding calibration interval of 30 months for each instrument type is included in the description of changes and safety assessment section that follows. A list of channels by TS section is included.

4. Confirm that a comparison of the projected instrument drift errors has been made with the values of drift used in the setpoint analysis. If this results in revised setpoints to accommodate larger drift errors, provide proposed TS changes to update trip setpoints. If the drift errors result in revised safety analysis to support existing setpoints, provide a summary of the updated analysis conclusions to confirm that safety limits and safety analysis assumptions are not exceeded.

   The 30 month projected drift number was compared to the present allowance for the instrument application. If the drift for an instrument type did not fall within the present bounds of the acceptance criteria, the surveillance interval was either left at an 18 month calibration surveillance interval or was extended to a 30 month calibration surveillance interval based on other justification, such as, more frequent testing. If an instrument has not been in service long enough to establish a 30 month projected drift value, the surveillance interval was either left at an 18 month surveillance interval or extended to a 30 month surveillance based on other, more frequent testing or justification obtained from the instrument manufacturer. In no case was the setpoint of an instrument changed to accommodate a drift error larger than previously evaluated.

5. Confirm that the projected instrument errors caused by drift are acceptable for control of plant parameters to effect a safe shutdown with the associated instrumentation.

   As discussed in response to number 4, the justification for extending the surveillance interval of an instrument was that the results of the instrument drift calculation were within the bounding analysis. Additional factors included more frequent testing or a manufacturer's recommendation. In no case was the existing safe shutdown analysis changed to accommodate a larger drift error.

6. Confirm that all conditions and assumptions of the setpoint and safety analyses have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for channel checks, channel functional tests, and channel calibrations.

   PECo has not changed any setpoint or acceptance criteria of the present 18 month surveillance tests since the 30 month projected drift fell within the bounds of the current acceptance criteria. Otherwise, the surveillance interval was left at 18 months, or was extended to 30 months based on other, more frequent testing or justification from the manufacturer. Therefore, there is no cause to reverify established acceptance criteria specified in the surveillance tests.

7. Provide a summary description of the program for monitoring and assessing the effects of increased calibration surveillance intervals on instrument drift and its effects on safety.

   PECo's program will review each calibration surveillance that does not meet the "leave alone" acceptance criteria (i.e., no recalibration or adjustment required) of the surveillance test. Based on the results of that review, a decision on the appropriate calibration interval will be made. Such a decision will consider such things as shortening the surveillance test interval, changing the setpoint of the instrument, or leaving the surveillance interval at 30 months. Review of the surveillance test results will be performed until such time as we determine that further evaluation is no longer necessary.

Discussion, Description and Safety Assessment of the Proposed Changes

Because of the volume of TS SRs to be evaluated, specific line item changes were evaluated within each group identified below. Note that the name of each group is merely an administrative title, and is not intended to mean that all of the specific TS requirements related to the group title have been included. The proposed TS changes generically involve changing the calibration interval, typically stated as "at least once per 18 months," to "at least once per 24 months." The proposed TS changes also typically involve a calibration interval designated with an "R" notation. The "R" designation shall remain unchanged by this Change Request. However, in accordance with the guidance provided in GL No. 91-04, a proposed change to the definition of "R" and the associated impact of the proposed increase in the calibration interval for the individual affected TS line items are evaluated within the associated "groups" in this Change Request. Also, this Change Request involves a proposed change to delete the words "during shutdown" from several TS SRs in accordance with the guidance provided in GL No. 91-04.

In addition, the proposed TS changes involve a change to associated Bases that indicate conformance to a specific Regulatory Guide related to the system being tested, i.e., the proposed change would indicate that the change to a 24 month testing interval would be an exception to the 18 month testing interval guidance specified in the Regulatory Guide. These and other specific changes are proposed and evaluated within the "groups" identified below.

The proposed TS changes only involve a change to the surveillance intervals; there are no changes to the SRs themselves or to the way in which the surveillances are performed. Also, the proposed changes do not involve any physical changes to plant systems or components. The proposed TS changes are described and evaluated below. These changes were evaluated in accordance with the guidance provided in NRC GL No. 91-04.

(1) Reactor Coolant and Containment Leakage Systems Instrumentation

TS SR 4.4.3.1.c; page 3/4 4-8	TS SR 4.6.4.1.b.3.a; page 3/4 6-45
TS SR 4.4.3.1.d; page 3/4 4-8	TS SR 4.6.4.1.b.3.b; page 3/4 6-45
TS SR 4.4.3.2.3.b; page 3/4 4-10	TS SR 4.6.4.1.b.3.c; page 3/4 6-45
TS SR 4.6.1.4.d.3; page 3/4 6-7	TS SR 4.6.6.1.b.1; page 3/4 6-57
TS SR 4.6.2.1.c.3; page 3/4 6-14	

The following TS SRs require that the Reactor Coolant System and Containment System instrumentation identified below shall be demonstrated operable by performing a channel calibration "at least once per 18 months."

TS SR 4.4.3.1.c - drywell floor drain sump and drywell equipment drain tank flow monitoring systems.

TS SR 4.4.3.1.d - drywell unit coolers condensate flow rate monitoring system.

TS SR 4.4.3.2.3.b - high/low pressure interface valve leakage pressure monitors.

TS SR 4.6.1.4.d.3 - operating instrumentation for the Main Steam Isolation Valve (MSIV) leakage control system (LCS).

TS SR 4.6.2.1.c.3 - suppression chamber water level and temperature indicators.

TS SR 4.6.4.1.b.3.b - suppression chamber - drywell vacuum breaker position indicators.

TS SR 4.6.6.1.b.1 - primary containment hydrogen recombiner system control room instrumentation and control circuits.

With respect to the suppression chamber - drywell vacuum breakers, TS SR 4.6.4.1.b.3.a requires verifying, at least once per 18 months, that each valve's opening setpoint from the closed position is 0.5 psid ± 5%. Also, TS SR 4.6.4.1.b.3.c requires verifying, at least once per 18 months, that each outboard valve's position indicator is capable of detecting disk displacement ≥ 0.120". The proposed TS changes involve changing the calibration interval for the above TS SRs to "at least once per 24 months" with the following exception. The calibration interval for TS SR 4.6.2.1.c.3 will be footnoted to indicate that the channel calibration for Unit 1 level transmitters LT-55-1N062B and -1N062F, and Unit 2 level transmitters LT-55-2N062B and -2N062F shall be performed at least once per 18 months.

The subject TS SRs currently require the calibration testing of the subject instrumentation nominally every 18 months. The calibration surveillance is performed to ensure that the instrument is properly aligned so that actuation takes place at the previously evaluated setpoint to provide the required safety function. By increasing the refueling cycle length, the time interval for calibration surveillance of the subject instrumentation will be increased. However, as currently required by LGS TS, functional tests are performed during the refueling cycle more frequently than the calibration surveillance. These functional tests detect failures of the instrumentation channels, except for field devices, such as transmitters, that are only tested once every 18 months. Gross instrumentation failures are detected by alarms or comparison with redundant and independent indications.

Instrumentation purchased for these functions are highly reliable. The Containment and Reactor Coolant Leakage Systems instrumentation that is classified as safety related meets the stringent design criteria of safety related status. This includes redundancy and independent channels which ensures a high confidence of system performance even with the failure of a single component. Based on the above discussion, we have concluded that the impact on instrument availability, if any, is small as a result of the change to 24 month surveillance intervals.

Portions of the Containment System and Reactor Coolant Leakage System instrumentation are classified as non-safety related. Again, there are multiple and diverse instrument channels that provide backup information in the event of a single channel failure.

To verify this conclusion, an evaluation of a historical search of the surveillance tests for each instrument was performed. The search identified all failed or partially failed tests, and then each failed or partially failed test was reviewed and evaluated. The purpose of this evaluation was to demonstrate that the increased calibration surveillance interval would not increase the period an instrument would be unavailable. The results of this search support the above conclusions that the impact on instrument availability, if any, is small as a result of the change in the surveillance interval.

A second evaluation performed an instrument drift analysis for the increase in the calibration interval to a maximum of 30 months. The purpose of this evaluation was to determine whether or not projected drift values for 30 months are within existing surveillance test drift allowances. The instrument drift analysis was performed using the GE methodology previously described in response to Item No. 2 under the generic discussion regarding NRC GL No. 91-04, Enclosure 2. This analysis was performed for the Ametek, Model Nos. 91X-16-6 and 7, MSIV-LCS instruments (TS SR 4.6.1.4.d.3); the Simmonds Precision, Model Nos. 10701F11060 and 10701D11000, suppression pool water level/temperature instruments (TS SR 4.6.2.1.c.3); and the Hecon, Model No. GO 422, and Bailey, Model No. 750110AAAA1, drywell floor drain sump/drywell equipment drain tank flow monitoring instruments (TS SR 4.4.3.1.c). The results of the analysis indicate that the projected 30 month drift values for these instruments do not exceed the existing surveillance test drift allowances. Based on the drift analysis, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling cycle will not affect these instruments with respect to drift.

The following instrumentation was evaluated based on justification other than the drift analysis.

Although the instruments that provide input to TS SRs 4.4.3.1.c and 4.4.3.1.d have an 18 month calibration interval, they also have a more frequent testing requirement which includes a calibration check. Since this more frequent testing requirement is unchanged, a drift evaluation for an increase in the calibration interval to accommodate a 24 month refueling cycle is not required for these instruments.

Rosemount transmitters provide input to TS SRs 4.4.3.1.c, 4.4.3.2.3.b, 4.6.1.4.d.3, and 4.6.6.1.b.1. Drift values for 30 months are published for Rosemount transmitters in Rosemount Report D8900126, and the published values are within the surveillance test drift allowances for these instruments. Therefore, an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect these

Rosemount transmitters with respect to drift.

Rosemount trip units are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect the Rosemount trip units with respect to drift.

Limit switches are mechanical devices that require mechanical adjustment only; drift is not applicable to these devices. Therefore, an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect the limit switches with respect to drift.

Bailey instrumentation provides input to TS SR 4.6.6.1.b.1. The calibration data for this instrumentation has been reviewed. This review indicates that from April, 1989 to July, 1991 for Unit 1, and from August, 1989 to February, 1991 for Unit 2, the calibration checks identified the as-found values within limits. Minor adjustments were made to the as-found values to bring the as-left values closer to the setpoint. Based on the review of existing data that shows essentially no drift for approximately 18 months, the surveillance interval for the Bailey instrumentation can be increased to accommodate a 24-month refueling cycle. Further, these instruments will continue to be monitored for drift using the trending program being established for instrument drift.

Based on the above evaluations, we have concluded that the impact on containment system and reactor coolant leakage system instrument availability, if any, is small as a result of the 24 month surveillance interval changes.

(2) Reactor Protection System Instrumentation

TS Table 4.3.1.1-1; Items 1.a, 3, 4, 5, 7, 8.a, 8.b, 9, and 10; pages 3/4 3-7 and 3/4 3-8

TS SR 4.3.1.1 requires that each reactor protection system (RPS) instrumentation channel identified in TS Table 4.3.1.1-1 shall be demonstrated operable by the performance of a channel calibration at the frequency shown in Table 4.3.1.1-1. The calibration interval in TS Table 4.3.1.1-1 is designated with an "R" which is defined in Table 1.1 in the Definitions Section of TS as "At least once per 18 months (550 days)." The "R" designation remains unchanged by this Change Request. However, since a change to the definition of "R" to accommodate a 24 month refueling cycle is proposed separately within a subsequent group in this Change Request, the impact of the increase in the calibration interval to accommodate a 24 month refueling cycle on the RPS instrumentation is evaluated within this group. This evaluation is specific to the RPS instrumentation channels indicated below.

<u>TS Table 4.3.1.1.-1, Items</u>

1.a Intermediate Range Monitors, Neutron Flux - High
3. Reactor Vessel Steam Dome Pressure - High

4. Reactor Vessel Water Level - Low, Level 3
5. Main Steam Line Isolation Valve - Closure
7. Drywell Pressure - High
8. Scram Discharge Volume Water Level - High
    a. Level transmitter
    b. Float Switch
9. Turbine Stop Valve - Closure
10. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low

The subject TS SRs currently require the calibration testing of the subject instrumentation nominally every 18 months. The calibration surveillance is performed to ensure that the instrument is properly aligned so that actuation takes place at the previously evaluated setpoint to provide the required safety function. By increasing the refueling cycle length, the time interval for calibration surveillance of the subject instrumentation will be increased. However, as currently required by LGS TS, functional tests are performed during the refueling cycle more frequently than the calibration surveillance. These functional tests detect failures of the instrumentation channels, except for field devices, such as transmitters, that are only tested once every 18 months. Gross instrumentation failures are detected by alarms or comparison with redundant and independent indications.

Instrumentation purchased for these functions are highly reliable and meet the stringent design criteria of safety related status. All RPS instrumentation is designed with redundant and independent channels which provide means to verify proper instrumentation performance during operation, and adequate redundancy to ensure a high confidence of system performance even with the failure of a single component. Based on the above discussion, we have concluded that the impact on instrument availability, if any, is small as a result of the change to 24 month surveillance intervals.

To verify this conclusion, an evaluation of a historical search of the surveillance tests for each instrument was performed. The search identified all failed or partially failed tests, and then each failed or partially failed test was reviewed and evaluated. The purpose of this evaluation was to demonstrate that the increased calibration surveillance interval would not increase the period an instrument would be unavailable. The results of this search support the above conclusions that the impact on instrument availability, if any, is small as a result of the change in the subject surveillance interval.

A second evaluation performed an instrument drift analysis for the increase in the calibration interval to a maximum of 30 months. The purpose of this evaluation was to determine whether or not projected drift values for 30 months are within existing surveillance test drift allowances. The instrument drift analysis was performed using the GE methodology previously described in response to Item No. 2 under the generic discussion regarding NRC GL No. 91-04, Enclosure 2. This analysis was performed for the Gould, Model No. PD3218-100-38, scram discharge volume water level - high level transmitter (Table 4.3.1.1-1, Item 8.a) and the Magnetrol, Model No. 57-3003-006, scram discharge volume water level - high float switch (Table 4.3.1.1-1, Item 8.b). The results of the analysis indicate that the projected 30 month drift values for these instruments do not exceed the existing surveillance test drift allowances. Based on the drift analysis, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling cycle will not affect these instruments with respect to drift.

The following instrumentation was evaluated based on justification other than the drift analysis.

Although the instruments that provide input to TS Table 4.3.1.1-1, Item 1.a, have an 18 month calibration interval, they also have a more frequent testing requirement which includes a calibration check. Since the more frequent testing requirement is unchanged, a drift evaluation for an increase in the calibration interval to accommodate a 24 month refueling cycle is not required.

Rosemount transmitters provide input to TS Table 4.3.1.1-1, Items 3, 4, 7, and 10. Drift values for 30 months are published for Rosemount transmitters in Rosemount Report D8900126, and these published values are within the surveillance test drift allowances for these instruments. Therefore, an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect these Rosemount transmitters with respect to drift.

Rosemount trip units are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect the Rosemount trip units with respect to drift.

Limit switches are mechanical devices that require mechanical adjustment only; drift is not applicable to these devices. Therefore, an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect the limit switches with respect to drift.

The scram discharge volume (SDV) water level - high float switch provides input to TS Table 4.3.1.1-1, Item 8.b. This instrument has a more frequent testing requirement which includes a calibration check. Since the more frequent testing requirement is unchanged, a drift evaluation for an increase in the calibration interval to accommodate a 24 month refueling cycle is not required.

The pressure switch for the main turbine control valve (MTCV) electro-hydraulic control (EHC) pressure has been evaluated using the GE drift computer program. This evaluation showed that these instruments (ITT Barton pressure switches for Unit 1 and Barksdale pressure switches for Unit 2) experienced significant drift. This drift was found to be 88 psi for the Barksdale pressure switches and 111 psi for the ITT Barton pressure switches. This drift exceeds the current allowable drift of 60 psi which is identified in NEDC 31336 and the more conservative 35 psi identified in surveillance tests which reflect the TS requirement for the End-of-Cycle Recirculation Pump Trip (EOC-RPT). The function of this pressure input is to provide an anticipatory reactor scram and the EOC-RPT in the event of the fast closure of the MTCVs which could result in a significant pressure transient following a generator load reject.

After reviewing the accident scenario and considering the potential impact to the analysis performed for this event, we have concluded that the only impact from drift in the non-conservative direction would be to the response time of the reactor scram and EOC-RPT signal. As identified in NEDC-31336, upon initiation of the event (i.e., the generator load reject), the fast acting solenoid valve will energize allowing the trip oil to drain. The pressure will decrease from a nominal 1600 psi to 0 psi within 8-10 milliseconds. At approximately 400 psig, the disk dump valve will open to allow the MTCV to start to fast close. Since it takes approximately 10 milliseconds for the pressure to reach zero, we have concluded that the 200 psi of drift would, in the worst case, cause an additional time delay of no greater than 3 milliseconds. This 3 millisecond time delay will be added to the overall response time of the trip. The "Transient Protection Parameters Verification Form" (GE Form OPL-3) identifies that the time between when the MTCV starts to fast close and the pressure switch actuates will be no greater than 30 milliseconds. OPL-3 also identifies an additional 250 milliseconds allowed for the RPS and control rods to start to insert. Historically, the response times for these functions has been in the order of 150 milliseconds, allowing significant margin to the input allowed for in OPL-3. The response time for the EOC-RPT is required to be 175 milliseconds as specified in TS. Again, historically these response times have been significantly lower than that input into the analysis.

In addition to the impact of drift on the response time, it should also be understood that the logic for these trips provides redundancy which would make it highly unlikely that all instruments composing a channel would drift to the same degree and in the same direction. Considering any potential drift in the conservative direction, we have determined that this is not a concern since the coincident logic for these trips should prevent any spurious reactor scrams or EOC-RPTs, and any drift high will be identified during the operating cycle and require corrective action. When evaluating the maximum drift projected by the BWROG program and determining the potential impact on the plant's safety analysis, we have concluded that this potential drift has a negligible impact and does not increase the consequence of an accident previously evaluated.

During the third refueling outage (1R03) for Unit 1 and the first refueling outage (2R01) for Unit 2 at LGS, modifications were performed on the EHC system to eliminate severe pressure oscillations and vibration of EHC piping. These modifications to the EHC system have been in place for one full cycle of operation on Unit 1. Based on the results of the calibrations performed during the fourth refueling outage (1R04) for Unit 1, the instrument drift was reduced within the allowable surveillance test values. We have concluded that the severe drift problem may have been caused by the EHC system vibration and pressure oscillations.
Based on the above observation, we have concluded that the surveillance interval can be increased to a nominal 24 months since data for one full cycle shows that the cause of the severe drift problem has been

satisfactorily reduced, and that the severe drift has a negligible impact on the accident analysis. Further, these instruments will continue to be monitored for drift using the trending program being established for instrument drift.

Based on the above evaluations, we have concluded that the impact on RPS instrument availability, if any, is small as a result of the 24 month surveillance interval changes.

(3) Isolation Actuation Instrumentation

TS Table 4.3.2.1-1; Items 1.a.1-.2, 1.c-.g, 2.a-.b, 3.a-.c, 3.e, 4.a-.f, 4.h, 5.a-.f, 5.h, 6.a-.b, 6.h, 7.a-.b; pages 3/4 3-27 through 3/4 3-31.

TS SR 4.3.2.1 requires that each isolation actuation instrumentation channel identified in TS Table 4.3.2.1-1 shall be demonstrated operable by performing a channel calibration at the frequency shown in Table 4.3.2.1-1. The calibration interval in TS Table 4.3.2.1-1 is designated with an "R" which is defined in Table 1.1 of the Definitions Section of TS as "At least once per 18 months (550 days)." The "R" designation remains unchanged by this Change Request. However, since a change to the definition of "R" to accommodate a 24 month refueling cycle is proposed separately within a subsequent group in this Change Request, the impact of an increase in the calibration interval to accommodate a 24 month refueling cycle on the isolation actuation instrumentation is evaluated within this group. This evaluation is specific to the isolation actuation instrument channels indicated below.

<u>TS Table 4.3.2.1-1; Items</u>

1. <u>Main Steam Line Isolation</u>

    a. Reactor Vessel Water Level
        1) Low, Low - Level 2
        2) Low, Low, Low - Level 1
    c. Main Steam Line Pressure - Low
    d. Main Steam Line Flow - High
    e. Condenser Vacuum - Low
    f. Outboard Main Steam Isolation Valve (MSIV) Room Temperature - High
    g. Turbine Enclosure - Main Steam Line Tunnel Temperature - High

2. <u>Residual Heat Removal (RHR) Shutdown Cooling Mode Isolation</u>

    a. Reactor Vessel Water Level - Low, Level 3
    b. Reactor Vessel (RHR Cut-In Permissive) Pressure - High

3. <u>Reactor Water Cleanup (RWCU) System Isolation</u>

    a. RWCU System Differential Flow - High
    b. RWCU System Area Temperature - High
    c. RWCU System Area Ventilation Differential Temperature - High

e. Reactor Vessel Water Level - Low, Low, Level 2

4. High Pressure Coolant Injection (HPCI) System Isolation

a. HPCI Steam Line Differential Pressure - High
b. HPCI Steam Supply Pressure - Low
c. HPCI Turbine Exhaust Diaphragm Pressure - High
d. HPCI Equipment Room Temperature - High
e. HPCI Equipment Room Differential Temperature - High
f. HPCI Pipe Routing Area Temperature - High
h. HPCI Steam Line Differential Pressure Timer

5. Reactor Core Isolation Cooling (RCIC) System Isolation

a. RCIC Steam Line Differential Pressure - High
b. RCIC Steam Supply Pressure - Low
c. RCIC Turbine Exhaust Diaphragm Pressure - High
d. RCIC Equipment Room Temperature - High
e. RCIC Equipment Room Differential Temperature - High
f. RCIC Pipe Routing Area Temperature - High
h. RCIC Steam Line Differential Pressure Timer

6. Primary Containment Isolation

a. Reactor Vessel Water Level
   1) Low, Low - Level 2
   2) Low, Low, Low - Level 1
b. Drywell Pressure - High
h. Drywell Pressure - High/Reactor Pressure - Low

7. Secondary Containment Isolation

a. Reactor Vessel Water Level - Low, Low, Level 2
b. Drywell Pressure - High

The subject TS SRs currently require the calibration testing of the subject instrumentation nominally every 18 months. The calibration surveillance is performed to ensure that the instrument is properly aligned so that actuation takes place at the previously evaluated setpoint to provide the required safety function. By increasing the refueling cycle length, the time interval for calibration surveillance of the subject instrumentation will be increased. However, as currently required by LGS TS, functional tests are performed during the refueling cycle more frequently than the calibration surveillance. These functional tests detect failures of the instrumentation channels, except for field devices, such as transmitters, that are only tested once every 18 months. Gross instrumentation failures are detected by alarms or comparison with redundant and independent indications.

Instrumentation purchased for these functions are highly reliable and meet the stringent design criteria of safety related status. All isolation actuation instrumentation is designed with redundant and independent channels which provide means to verify proper instrumentation performance during operation, and adequate redundancy to ensure a high confidence of system performance even with the failure of a single component. Based on the above discussion, we have concluded that the impact on instrument availability, if any, is small as a result of the change to 24 month surveillance intervals.

To verify this conclusion, an evaluation of a historical search of the surveillance tests for each instrument was performed. The search identified all failed or partially failed tests, and then each failed or partially failed test was reviewed and evaluated. The purpose of this evaluation was to demonstrate that the increased calibration surveillance interval would not increase the period an instrument would be unavailable. The results of this search supports the above conclusions that the impact on instrument availability, if any, is small as a result of the change in the subject surveillance interval.

A second evaluation performed an instrument drift analysis for the increase in the calibration interval to a maximum of 30 months. The purpose of this evaluation was to determine whether or not projected drift values for 30 months are within existing surveillance test drift allowances. The instrument drift analysis was performed using the GE methodology previously described in response to Item No. 2 under the generic discussion regarding NRC GL. No. 91-04, Enclosure 2. This analysis was performed for the Bailey, Model Nos. 745110AAAE2, 750110AAAN2, and 50-752410AAAN2, RWCU system differential flow - high instruments (TS Table 4.3.2.1-1, Item 3.a). The results of the analysis indicate that the projected 30 month drift values for these instruments do not exceed the existing surveillance test drift allowances. Based on the drift analysis, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling cycle will not affect these instruments with respect to drift.

The following instrumentation was evaluated based on justification other than the drift analysis.

General Electric's (GE's) NUMAC instrumentation has replaced existing isolation actuation instrumentation associated with the steam leak detection system. The NUMAC instrumentation is a replacement with insufficient historical data to evaluate 30 month drift using the GE drift computer program. However, GE has provided data for 30 month drift. GE indicated that the drift value for 30 months does not include contributions due to the sensors. The sensors for the steam leak detection system are thermocouples. A thermocouple is a factory calibrated instrument that does not exhibit drift because of the principle of operation of the temperature sensing mechanism. Therefore, the 30 month value for drift identified by GE would represent drift for an entire instrument loop. The value determined by GE for 30 month drift for the steam leak detection system is within existing surveillance test drift allowances.

For Unit 1, the NUMAC instrumentation was installed during the refueling outage in the Spring of 1992. For Unit 2, the NUMAC instrumentation will be installed during the refueling outage in the Winter of 1992-1993, prior to operation for the first 24 month refueling cycle. The existing instrumentation for Unit 2 will operate under the existing TS requirements until the replacement of the NUMAC instrumentation occurs.

The GE NUMAC instrumentation is associated with the following steam leak detection system instrument loops: TS Table 4.3.2.1-1, Items 1.f, 1.g, 3.b, 3.c, 4.d, 4.e, 4.f, 5.d, 5.e, and 5.f.

Rosemount transmitters provide input to TS Table 4.3.2.1-1, Items 1.a.1, 1.a.2, 1.c-.e, 2.a-.b, 3.a, 3.e, 4.a-.c, 5.a-.c, 5.h, 6.a-.b, 6.h, 7.a-.b. Drift values for 30 months are published for Rosemount transmitters in Rosemount Report D8900126, and these published values are within the surveillance test drift allowances. Therefore, an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect these Rosemount transmitters with respect to drift.

Rosemount trip units are functionally checked and setpoints verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the surveillance interval to accommodate a 24 month fuel cycle does not affect the Rosemount trip units with respect to drift

The instrument loops associated with TS Table 4.3.2.1-1, Items 4.h and 5.h include timer relays. Although these timer relays have an 18 month calibration interval, they also have a more frequent functional test that performs a calibration check. Since the functional testing requirement is unchanged, a drift evaluation for the 18 month calibration interval change is not required.

Based on the above evaluations, we have concluded that the impact on isolation actuation instrument availability, if any, is small as a result of the 24 month surveillance interval changes.

(4) Emergency Core Cooling System Instrumentation

TS Table 4.3.3.1-1; Items 1.a-.c, 2.a-.d, 3.a-.c, 3.e, 4.a-.b, 4.d-.f; pages 3/4 3-40 and 41
TS Table 4.3.5-1; Items a-c; page 3/4 3-56
TS SR 4.5.1.c; Items 3-5; page 3/4 5-5
TS SR 4.5.1.d.2.c; page 3/4 5-5
TS SR 4.7.3.c.4; page 3/4 7-10

TS SR 4.3.3.1 requires that each Emergency Core Cooling System (ECCS) actuation instrumentation channel identified in TS Table 4.3.3.1-1 shall be demonstrated operable by performing a channel calibration at the frequency shown in Table 4.3.3.1-1. TS SR 4.3.5.1 requires that each Reactor Core Isolation Cooling (RCIC) system actuation instrumentation channel identified in TS Table 4.3.5.1-1 shall be demonstrated operable by performing a channel calibration at the frequency shown in Table 4.3.5.1-1. The calibration interval in TS Tables 4.3.3.1-1 and 4.3.5.1-1 is designated with an "R" which is defined in Table 1.1 in the Definitions Section of TS as "At least once per 18 months (550 days)." The "R" designation remains unchanged by this Change Request. However, since a change to the definition of "R" to accommodate a 24 month refueling cycle is proposed separately within a subsequent group in this Change Request, the impact of an increase in the calibration interval to accommodate a 24 month refueling cycle on the ECCS and RCIC system actuation instrumentation is evaluated within this group. This evaluation is specific to the ECCS and RCIC actuation instrument channels indicated below.

TS Table 4.3.3.1-1; Items

1. Core Spray System (CSS)

   a. Reactor Vessel Water Level - Low, Low , Low, Level 1
   b. Drywell Pressure - High
   c. Reactor Vessel Pressure - Low

2. Low Pressure Coolant Injection (LPCI) Mode of RHR System

   a. Reactor Vessel Water Level - Low, Low, Low, Level 1
   b. Drywell Pressure - High
   c. Reactor Vessel Pressure - Low
   d. Injection Valve Differential Pressure - Low (Permissive)

3. High Pressure Coolant Injection (HPCI) System

   a. Reactor Vessel Water Level - Low, Low, Level 2
   b. Drywell Pressure - High
   c. Condensate Storage Tank Level - Low
   e. Reactor Vessel Water Level - High, Level 8

4. Automatic Depressurization System (ADS)

   a. Reactor Vessel Water Level - Low, Low, Low, Level 1
   b. Drywell Pressure - High
   d. Core Spray Pump Discharge Pressure - High
   e. RHR LPCI Mode Pump Discharge Pressure - High
   f. Reactor Vessel Water Level - Low, Level 3

TS Table 4.3.5.1-1; Items

   a. Reactor Vessel Water Level - Low, Low, Level 2
   b. Reactor Vessel Water Level - High, Level 8
   c. Condensate Storage Tank Level - Low

TS Table 4.3.3.1-1, Item 3.d, will not be extended to accommodate a 24 month refueling cycle. The calibration interval designation of "R" for TS Table 4.3.3.1-1, Item 3.d is proposed to be changed to "E". The "E" designation is proposed to be defined in Table 1.1 of the Definitions Section of TS as "At least once per 18 months (550 days)" as discussed and evaluated in a subsequent group within this Change Request. The proposed change from "R" to "E" for TS Table 4.3.3.1-1, Item 3.d, is an administrative change which maintains the calibration interval at the existing 18 month frequency.

TS SR 4.5.1.c requires that the ECCS shall be demonstrated operable by performing the following at least once per 18 months. (1) TS SR 4.5.1.c.3 requires performing a channel calibration of the CSS, LPCI, and HPCI system discharge line "keep filled" alarm instrumentation. (2) TS SR 4.5.1.c.4 requires performing a channel calibration of the CSS header differential pressure instrumentation and verifying the setpoint to be less than or equal to the allowable value of 4.4 psid. (3) TS SR 4.5.1.c.5 requires performing a channel calibration of the LPCI header differential pressure instrumentation and verifying the setpoint to be less than or equal to the allowable value of 3.0 psid. In addition, TS SR 4.5.1.d.2.c requires demonstrating the operability of the ADS at least once per 18 months by performing a channel calibration of the accumulator backup compressed gas system low pressure alarm system and verifying an alarm setpoint of 90 ± 2 psig on decreasing pressure. Also, TS SR 4.7.3.c.4 requires demonstrating the operability of the RCIC system at least once per 18 months by performing a channel calibration of the RCIC system discharge line "keep filled" level alarm instrumentation. The calibration interval for these instruments is proposed to be change from "at least once per 18 months" to "at least once per 24 months."

The subject TS SRs currently require the calibration testing of the subject instrumentation nominally every 18 months. The calibration surveillance is performed to ensure that the instrument is properly aligned so that actuation takes place at the previously evaluated setpoint to provide the required safety function. By increasing the refueling cycle length, the time interval for the calibration surveillance of the subject instrumentation will be increased. However, as currently required by LGS TS, functional tests are performed during the refueling cycle more frequently than the calibration surveillance. These functional tests detect failures of the instrumentation channels, except for field devices, such as transmitters, that are only tested once every 18 months. Gross instrumentation failures are detected by alarms or comparison with redundant and independent indications.

Instrumentation purchased for these functions are highly reliable and meet the stringent design criteria of safety related status. All ECCS instrumentation is designed with redundant and independent channels which provide means to verify proper instrumentation performance during operation, and adequate redundancy to ensure a high confidence of system performance even with the failure of a single component. Based on the above discussion, we have concluded that the impact on instrument availability, if any, is small as a result of the change to 24 month surveillance intervals.

To verify this conclusion, an evaluation of a historical search of the surveillance tests for each instrument was performed. The search identified all failed or partially failed tests, and then each failed or partially failed test was reviewed and evaluated. The purpose of this evaluation was to demonstrate that the increased calibration surveillance interval would not increase the period an instrument would be unavailable. The results of this search support the above conclusions that the impact on instrument availability, if any, is small as a result of the change in the subject surveillance interval.

A second evaluation performed an instrument drift analysis for the increase in the calibration interval to a maximum of 30 months. The purpose of this evaluation was to determine whether or not projected drift values for 30 months are within existing surveillance test drift allowances. The instrument drift analysis was performed using the GE methodology previously described in response to Item No. 2 under the generic discussion regarding NRC GL No. 91-04, Enclosure 2. The analysis was performed for the ITT Barton, Model No. 289A, low level alarm instrumentation (level switches) for the CS, LPCI, HPCI, and RCIC system discharge line "keep filled" systems (TS SRs 4.5.1.c.3 and 4.7.3.c.4), and the Mercoid, Model No. DAW7443RG24E, low pressure alarm instrumentation for the ADS accumulator backup compressed gas system (TS SR 4.5.1.d.2.c). The results of the analysis indicated that the projected 30 month drift values for these instruments do not exceed the existing surveillance test allowances. Based on the drift analysis, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling cycle will not affect these instruments with respect to drift.

The following instrumentation was evaluated based on justification other than the drift analysis.

Rosemount Transmitters provide input to the following TS instrument channels: TS Table 4.3.3.1-1, Items 1.a-.c, 2.a-.d, 3.a-.c, 4.a-.b, and 4.d-.f; TS Table 4.3.5.1-1, Items a and c; and TS SRs 4.5.1.c.4, 4.5.1.c.5, and 4.5.1.d.2.c. Drift values for 30 months are published for Rosemount transmitters in Rosemount Report D8900126, and these published values are within the surveillance test drift allowances. Therefore an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect Rosemount transmitters with respect to drift.

Rosemount trip units are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the surveillance interval to accommodate a 24 month fuel cycle does not affect the Rosemount trip units with respect to drift.

For LGS Unit 2 only, the ITT Barton pressure switches, Model No. RC6-2958201-13, have not been evaluated for 30 month drift. A review of the surveillance tests indicates that there are only 3 data points per switch since initial operation of Unit 2 in 1989. This is insufficient data for the GE drift computer program to determine a 30 month drift value. Further, since the existing data indicates that the switches will not operate satisfactorily for 30 months, we will replace the ITT Barton pressure switches with a design equivalent Mercoid switch. The Mercoid switches, which are used for the same application on Unit 1, demonstrate acceptable 30 month drift. Therefore, based on the commitment to replace the ITT Barton switches with design equivalent Mercoid switches that demonstrate acceptable 30 month drift, the surveillance interval for these pressure switches can be increased to accommodate a 24 month fuel cycle.

Based on the above evaluations, we have concluded that the impact on ECCS instrument availability, if any, is small as a result of the 24 month surveillance interval changes.

(5) Monitoring Instrumentation

TS Table 4.3.7.2-1; Items 1.a.1-.6, 1.b.1-.5, 1.c.1, 2.b-.c, 3.a, and 4.; pages 3/4 3-71 and 72
TS Table 4.3.7.4-1; Items 1, 2, and 4-18; page 3/4 3-83
TS Table 4.3.7.5-1; Items 1-7, 10 and 13; page 3/4 3-87
TS SR 4.3.7.6.a.2; page 3/4 3-88
TS SR 4.3.7.8.1.c; page 3/4 3-90
TS SR 4.3.7.8.2.c; page 3/4 3-91
TS SR 4.3.7.10.c; page 3/4 3-97
TS SR 4.4.2.1.b; page 3/4 4-7

TS SR 4.3.7.2.1 requires that each of the seismic monitoring instruments identified in TS Table 3.3.7.2-1 shall be demonstrated operable by performing a channel calibration at the frequency shown in Table 4.3.7.2-1. TS SR 4.3.7.4.1 requires that each remote shutdown monitoring instrumentation channel identified in TS Table 3.3.7.4-1 shall be demonstrated operable by performing a channel calibration at the frequency shown in Table 4.3.7.4-1. TS SR 4.3.7.5 requires that each accident monitoring instrumentation channel identified in Table 3.3.7.5-1 shall be demonstrated operable by performing a channel calibration at the frequency shown in Table 4.3.7.5-1. The calibration interval in TS Tables 4.3.7.2-1, 4.3.7.4-1, and 4.3.7.5-1 is designated with an "R" which is defined in Table 1.1 of the Definitions Section of TS as "At least once per 18 months (550 days)." The "R" designation remains unchanged by this Change Request. However, since a change to the definition of "R" to accommodate a 24 month refueling cycle is proposed separately within a subsequent group in this Change Request, the impact of an increase in the calibration interval to accommodate a 24 month refueling cycle on the seismic, remote shutdown, and accident monitoring instrumentation is evaluated within this group. This evaluation is specific to the monitoring instrument channels listed below.

<u>Seismic Monitoring; TS Table 4.3.7.2-1; Items</u>

1. Triaxial Time-History Accelerographs (T/A's)

   a. Sensors

      1) XE-VA-102 Primary Containment Foundation (Loc. 109-R15-177)
      2) XE-VA-103 Containment Structure (Diaphragm Slab)
      3) XE-VA-104 Reactor Enclosure Foundation (Loc. 111-R11-177)
      4) XE-VA-105 Reactor Piping Support (Mn. Stm. Line 'D,' El 313', in containment)
      5) XE-VA-106 Outside Containment on Seismic Category I Equipment, (RHR Heat Exchanger, Loc. 102-R15-177)
      6) XRSH-VA-107 Foundation of an Independent Seismic Category I Structure (Spray Pond Pump House, El 237')

   b. Recorders (Panel 00C693)

1) XR-VA-102 for XE-VA-102
2) XR-VA-103 for XE-VA-103
3) XR-VA-104 for XE-VA-104
4) XR-VA-105 for XE-VA-105
5) XR-VA-106 for XE-VA-106

c. Triaxial Seismic Trigger (S/T)

1) XSH-VA-001 (Activates Items 1.b.1) thru 5) above

2. Triaxial Peak Recording Accelerograph (P/A's)

b. XR-VA-152 Reactor Piping (Mn. Stm. Line 'D,' El 313', in containment)
c. XR-VA-153 Reactor Equipment Outside Containment (RHR Heat Exchanger, Loc. 203-R15-201)

3. Triaxial Seismic Switches

a. XSHH-VA-001 Primary Containment Foundation (Loc. 118-R16-177)

4. Triaxial Response Spectrum Analyzer (RSA)

Remote Shutdown Monitoring; TS Table 4.3.7.4-1; Items

1. Reactor Vessel Pressure
2. Reactor Vessel Water Level
4. Suppression Chamber Water Level
5. Suppression Chamber Water Temperature
6. Drywell Pressure
7. Drywell Temperature
8. RHR System Flow
9. RHR Service Water Pump Discharge Pressure
10. RHR Heat Exchanger Service Water Outlet Pressure
11. RCIC System Flow
12. RCIC Turbine Speed
13. Emergency Service Water Pump Discharge Pressure
14. Condensate Storage Tank Level
15. RHR Heat Exchanger Bypass Valve Position Indication (0 - 100%)
16. RCIC Turbine Tripped Indication
17. RCIC Turbine Bearing Oil Pressure Low Indication
18. RCIC LP Bearing Oil Temperature High Indication

Accident Monitoring; TS Table 4.3.7.5-1; Items

1. Reactor Vessel Pressure
2. Reactor Vessel Water Level
3. Suppression Chamber Water Level
4. Suppression Chamber Water Temperature
5. Suppression Chamber Air Temperature
6. Primary Containment Pressure
7. Drywell Air Temperature
10. Safety/Relief Valve Position Indicators

13. Neutron Flux

Note that the radiation monitors specified in these TS Tables are evaluated in a separate group in this Change Request.

The TS SRs listed below require that each of the specified monitoring instrumentation shall be demonstrated operable by performing a channel calibration "at least once per 18 months."

TS SR 4.3.7.6.a.2 - source range monitor channels
TS SR 4.3.7.8.1.c - chlorine detection system subsystems
TS SR 4.3.7.8.2.c - toxic gas detection system subsystems
TS SR 4.3.7.10.c - loose-parts detection system
TS SR 4.4.2.1.b - acoustic monitor for each safety/relief valve

The proposed change involves changing the calibration interval from "at least once per 18 months" to "at least once per 24 months."

In addition, the proposed change involves an administrative change to the format/layout of TS page 3/4 4-7. The format/layout of this page was inadvertently changed when proposed in Technical Specification Change Request (TSCR) No. 92-01-0, submitted to the NRC on May 15, 1992, and approved by the NRC through issuance of Amendment Nos. 56 and 21 for LGS, Units 1 and 2, respectively. Since a change to the text on this page is proposed in this Change Request, we also propose to change the format/layout of this page back to its original form with the exception of any changes to the text as a result of TSCR No. 92-01-0 or this Change Request.

The subject TS SRs currently require the calibration testing of the subject instrumentation nominally every 18 months. The calibration surveillance is performed to ensure that the instrument is properly aligned so that actuation takes place at the previously evaluated setpoint to provide the required safety function. By increasing the refueling cycle length, the time interval for the calibration surveillance of the subject instrumentation will be increased. However, as currently required by LGS TS, functional tests are performed during the refueling cycle more frequently than the calibration surveillance. These functional tests detect failures in the instrumentation channels, except for field devices, such as transmitters, that are only tested once every 18 months. Gross instrumentation failures are detected by alarms or comparison with redundant and independent indications.

Instrumentation purchased for these functions are highly reliable. The monitoring instrumentation that is classified as safety related meets the stringent design criteria of safety related status. This includes redundancy and independent channels which ensures a high confidence of system performance even with the failure of a single component. Based on the above discussion, we have concluded that the impact on the monitoring instrumentation availability, if any, is small as a result of the change to 24 month surveillance intervals.

The monitoring instrumentation that is classified as non-safety related also has been designed to criteria that provides reliability.

Requirements for non-safety related instrumentation that is classified as Category 2 instruments in accordance with the guidance provided in NRC Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," include the following:

a) environmental qualification,
b) high reliable, battery backed power source,
c) QA requirements consistent with the importance to safety of the instrumentation, and
d) diverse or backup instrument channels.

Other non-safety related instrumentation is inherently designed to perform its intended function. For example, seismic instrumentation is designed to operate during a seismic event. Further, for the seismic instrumentation there are redundant, mechanical instruments that consist of a stylus and scratch plate. These mechanical instruments provide backup information in the event of an instrument failure. Based on the above discussion, we have concluded that the impact on instrument availability, if any, is small as a result of the change in the subject surveillance interval.

To verify the above conclusions, an evaluation of a historical search of the surveillance tests for each instrument was performed. The search identified all failed or partially failed tests, and then each failed or partially failed test was reviewed and evaluated. The purpose of this evaluation was to demonstrate that the increased calibration surveillance interval would not increase the period an instrument would be unavailable. The results of this search support the above conclusions that the impact on instrument availability, if any, is small as a result of the change to the subject surveillance interval.

A second evaluation performed an instrument drift analysis for the increase in the calibration interval to a maximum of 30 months. The purpose of this evaluation was to determine whether or not projected drift values for 30 months are within the existing surveillance test drift allowances. The instrument drift analysis was performed using the GE methodology previously described in response to Item No. 2 under the generic discussion regarding NRC GL No. 91-04, Enclosure 2. The analysis was performed for the Unholtz-Dickie, Model Nos. P22 and P22MHA-2, loose parts detection system instrumentation (TS SR 4.3.7.10.c); the Simmonds Precision, Model Nos. 10701F11060 and 10701D11000, suppression pool water temperature accident monitoring instrumentation (TS Table 4.3.7.5-1, Item 4); the NDT Corp., Model No. 104D, safety relief valve acoustic monitoring/valve position indication instrumentation (TS SR 4.4.2.1.b and TS Table 4.3.7.5-1, Item 10); the Leeds & Northrup (L&N), Model No. Speedomax M, reactor vessel pressure accident monitoring instrumentation (TS Table 4.3.7.5.-1, Item 1), and reactor vessel water level accident monitoring instrumentation (TS Table 4.3.7.5-1, Item 2); the Woodward RCIC turbine speed indication remote shutdown monitoring instrumentation (TS Table 4.3.7.4-1, Item 12); the Limitorque, Model No. A6P6, RHR heat exchanger bypass valve position indication remote shutdown monitoring instrumentation (TS Table 4.3.7.4-1, Item 15); and the Square D, Model No. 9012 ACW-3, RCIC turbine bearing low oil pressure indication remote shutdown monitoring instrumentation (TS Table 4.3.7.4-1, Item 17). The results of the analysis indicated that the projected 30 month drift values for these instruments do not exceed the existing surveillance test allowances. Based on the drift analysis, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling cycle will not affect these instruments with respect to drift.

The following instrumentation was evaluated based on justification other than the drift analysis.

Although the instruments in TS SR 4.3.7.6.a.2 and/or TS Table 4.3.7.5-1, Item 13, have an 18 month calibration interval, they also have a more frequent testing requirement which includes a calibration check. Since the more frequent testing requirement is unchanged, a drift evaluation for the 18 month calibration interval change is not required.

Rosemount transmitters provide input to the following TS instrument channels: TS Table 4.3.7.4-1, Items 1, 2, 4, 6, 8-11, 13, and, 14; and TS Table 4.3.7.5-1, Items 2, 3, and 6. Drift values for 30 months are published for Rosemount transmitters in Rosemount Report D8900126, and these published values are within the surveillance test drift allowances. Therefore, an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect these Rosemount transmitters with respect to drift.

Rosemount trip units are functionally checked and setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the surveillance interval to accommodate a 24 month fuel cycle does not affect the Rosemount trip units with respect to drift.

Limit switches are mechanical devices that require mechanical adjustment only; drift is not applicable to these devices. Therefore, an increase in the surveillance interval to accommodate a 24 month fuel cycle does not affect limit switches with respect to drift.

Seismic monitoring instrumentation, manufactured by Kinemetrics, Models FBA-3, SMA-3 and TS-3, does not have sufficient historical data to determine a 30 month drift value using the GE drift computer program. However, Kinemetrics has provided us with a letter indicating that the calibration interval for this instrumentation can be increased to 30 months. Based on the information provided by Kinemetrics, the calibration interval of the following TS instrument channels can be increased to accommodate a 24 month refueling cycle: Table 4.3.7.2-1, Items 1.a.1-.6, 1.b.1-.5, 1.c.1; and 3.a.

The seismic instruments that provide input to TS Table 4.3.7.2-1, Items 2.b and 2.c, are triaxial peak acceleration recorders, Engdahl Enterprises, Model No.PAR400, designed to record the peak accelerations in three orthogonal directions that the instruments' mounting locations experience during a seismic event. These instruments are passive devices which use the mechanical energy imparted to them during a seismic event to record the data. The acceleration data is recorded on a replaceable medium within the instruments; the data is not transmitted to any other location. The data is retrieved after the seismic event, and is used to verify design analyses in support of justifying plant integrity and operability.

These seismic instruments are part of the plant's seismic instrumentation system that includes peak acceleration recorders, time-history accelerographs, response spectrum analyzer, seismic switch and seismic trigger. The seismic instrumentation mounted on Unit 1 and common structures and components satisfies the seismic instrumentation requirements for both Units 1 and 2. These instruments are not important to safety in that they are not needed for safe shutdown nor do they interface with or control any structure, system, or component which is important to safety. In addition, these instruments do not control or initiate any protective or mitigating action. Also, these instruments do not present the plant operators with any on-line information which is used by the operators for the initiation of any protective or mitigating actions.

The manufacturer recommends periodic replacement of some of the components (e.g., gasket, O-rings) of the peak acceleration recorders. This recommended replacement period exceeds 30 months. The peak acceleration recorders contain an indicating desiccant which, according to the manufacturer's recommendation and surveillance test directions, is replaced only when the desiccant indicates that it is moist (i.e., a color change from blue to pink). Since these instruments are sealed devices, the probability that the proposed extended surveillance period will fully expend the capacity of the desiccant and result in a failure of the instruments due to corrosion is very low. The manufacturer of these instruments has found a calibration interval of 30 months to be acceptable.

The proposed change in the surveillance frequency of these instruments do not introduce any new failure modes to the instruments, and there is no indication that lengthening the calibration period will significantly increase the probability of occurrence of the existing failure modes of the instruments. Therefore, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling cycle will have negligible, if any, impact on this seismic monitoring instrumentation.

The same type of device (i.e., TS Table 4.3.7.2-1, Item 2.a) was previously evaluated for an increase in the surveillance interval to accommodate a 24 month refueling cycle in TSCR No. 92-01-0 submitted to the NRC on May 15, 1992, and approved by the NRC on August 20, 1992 through issuance of Amendment Nos. 56 and 21 for LGS, Units 1 and 2, respectively.

The chlorine detection instrument loops (TS SR 4.3.7.8.1.c) have a more frequent testing requirement which includes a calibration check. Since the more frequent testing requirement is unchanged, a drift evaluation for an increase in the calibration interval to accommodate a 24 month fuel cycle is not required.

The seismic recording channel (TS Table 4.3.7.2-1, Item 4) has a more frequent testing requirement which includes a calibration check. Since the more frequent testing requirement is unchanged, a drift evaluation for an increase in the calibration interval to accommodate a 24 month fuel cycle is not required.

The calibration data for the temperature instrumentation manufactured by Bailey for drywell/suppression chamber air temperature loops (TS Table 4.3.7.4.-1, Item 7, and TS Table 4.3.7.5-1, Items 5 and 7) has been reviewed. This review indicates that from May, 1986 to August, 1990 for Unit 1 and from July, 1989 to March, 1991 for Unit 2, the calibration checks identified the as-found values within limits. Minor adjustments were made to the as-found values to bring the as-left values closer to the setpoint. Based on the review of existing data that shows essentially no drift for periods of 18 months and greater (for Unit 1), the surveillance interval for the Bailey instrumentation can be increased to accommodate a 24 month fuel cycle. Further, these instruments will continue to be monitored for drift using the trending program being established for instrument drift.

The loose parts monitoring instrumentation (TS SR 4.3.7.10.c) except for the sensors, has a more frequent testing requirement which includes a calibration check. Since the more frequent testing requirement is unchanged, a drift evaluation for an increase in the calibration interval to accommodate a 24 month fuel cycle is not required.

A review of the surveillance tests associated with the RCIC low pressure bearing oil temperature instrumentation (TS Table 4.3.7.4-1, Item 18) indicates that for Unit 1, no calibration adjustments were required for 42 months. For Unit 2, no calibration adjustments were required for 23 months. Therefore, the historical data supports the increase in the calibration interval for this instrumentation to support a 24 month refueling cycle. Note, a 30 month drift value was not calculated by the GE drift computer program for this instrumentation because there is an insufficient number of data points for a statistical evaluation. Further, these instruments will continue to be monitored for drift using the trending program being established for instrument drift.

The instrument loops for the suppression chamber water temperature indication on the remote shutdown panel (TS Table 4.3.7.4-1, Item 5) have been recently installed, and therefore, insufficient historical calibration data for these instrument loops exists to determine a 30 month drift value using the GE drift computer program. For Unit 1, the only calibration data available is from an initial calibration check. For Unit 2, there is data on an initial calibration check and data from a calibration check performed 18 months later. Data from the second calibration check for Unit 2 indicates that the as-found readings were acceptable and recalibration was not required. Although a minimal amount of historical calibration data exists, the results of the existing calibrations show satisfactory drift within existing surveillance test drift allowances. Further, the drift identified was only half of the allowable surveillance test value. Based on the existing calibration data for 18 months that shows drift only half of the allowable value, the surveillance interval for these instruments can be increased to support a 24 month refueling cycle. Also, these instruments will continue to be monitored for drift using the trending program being established for instrument drift.

Based on the above evaluations, we have concluded that the impact on seismic, remote shutdown, and accident on monitoring instrument availability, if any, is small as a result of the 24 month surveillance interval changes.

(6) Radiation/Effluents Monitoring Instrumentation

TS Table 4.3.1.1-1; Item 6 ; page 3/4 3-7
TS Table 4.3.2.1-1; Items 1.b, 6.c, 6.e, 7.c.1, 7.c.2, and 7.d; pages 3/4 3-27, 3/4 3-30, and 3/4 3-31
TS Table 4.3.7.1-1; Items 1, 2.a.1, 2.b, and 3; page 3/4 3-66
TS Table 4.3.7.4-1; Item 19; page 3/4 3-83
TS Table 4.3.7.5-1; Items 11 and 12; page 3/4 3-87
TS Table 4.3.7.12-1; Item 4.a; page 3/4 3-107
TS SR 4.4.3.1.a; page 3/4 4-8

TS SRs 4.3.1.1, 4.3.2.1, 4.3.7.1, 4.3.7.4.1, 4.3.7.5, and 4.3.7.12 require that each instrumentation channel shall be demonstrated operable by performing a channel calibration at the frequency shown in TS Tables 4.3.1.1-1, 4.3.2.1-1, 4.3.7.1-1, 4.3.7.4-1, 4.3.7.5-1, and 4.3.7.12-1, respectively. The calibration interval in these TS Tables is designated with an "R" which is defined in Table 1.1 of the Definitions Section of TS as "At least once per 18 months (550 days)." The "R" designation remains unchanged by this Change Request. However, since a change to the definition of "R" to accommodate a 24 month refueling cycle is proposed separately within a subsequent group in this Change Request, the impact of an increase in the calibration interval to accommodate a 24 month refueling cycle on the subject instrumentation is evaluated within this group. This evaluation is specific to the instrumentation channels listed below.

<u>Reactor Protection System; TS Table 4.3.1.1-1; Item</u>

6. Main Steam Line Radiation - High

<u>Isolation Actuation; TS Table 4.3.2.1-1; Items</u>

1. <u>Main Steam Line Isolation</u>

   b. Main Steam Line Radiation - High

6. <u>Primary Containment Isolation</u>

   c. North Stack Effluent Radiation - High
   e. Reactor Enclosure Ventilation Exhaust Duct Radiation - High

7. <u>Secondary Containment Isolation</u>

   c.1 Refueling Area Unit 1 Ventilation Exhaust Duct Radiation

- High
- c.2 Refueling Area Unit 2 Ventilation Exhaust Duct Radiation - High
- d. Reactor Enclosure Ventilation Exhaust Duct Radiation - High

Radiation Monitoring; TS Table 4.3.7.1-1; Items

1. Main Control Room Normal Fresh Air Supply Radiation Monitor

2. Area Monitors
   - a. Criticality Monitors
     - 1) Spent Fuel Storage Pool
   - b. Control Room Direct Radiation Monitor

3. Reactor Enclosure Cooling Water Radiation Monitor

Remote Shutdown System; TS Table 4.3.7.4-1; Item

19. Residual Heat Removal (RHR) Heat Exchanger Discharge Line High Radiation Indication

Accident Monitoring; TS Table 4.3.7.5-1; Items

11. Primary Containment Post LOCA Radiation Monitors
12. North Stack Wide Range Accident Monitors

Offgas Monitoring; TS Table 4.3.7.12-1; Item

4. Main Condenser offgas pre-treatment radioactivity monitor (steam jet air ejector)
   - a. Noble gas activity monitor

TS SR 4.4.3.1.a requires that the reactor coolant system leakage detection systems shall be demonstrated operable by performing a channel calibration of the primary containment atmosphere gaseous radioactivity monitoring system "at least once per 18 months." The proposed change involves changing this calibration interval to "at least once per 24 months."

The subject TS SRs currently require the calibration testing of the subject instrumentation nominally every 18 months. The calibration surveillance is performed to ensure that the instrument is properly aligned so that actuation takes place at the previously evaluated setpoint to provide the required safety function. By increasing the refueling cycle length, the time interval for calibration surveillance of the subject instrumentation will be increased. However, as currently required by the LGS TS, functional tests are performed during the refueling cycle more frequently than the calibration surveillance. These functional tests detect failures of the instrumentation channels, except for field devices, such as transmitters, that are only tested once every 18 months. Gross instrumentation failures are detected by alarms or comparison with redundant and independent indications.

Instrumentation purchased for these functions are highly reliable. The radiation/effluents monitoring instrumentation that is classified as safety related meets the stringent design criteria of safety related status. This includes redundancy and independent channels which ensures a high confidence of system performance even with the failure of a single component. Based on the above discussion, we have concluded that the impact on instrument availability, if any, is small as a result of the change to 24 month surveillance intervals.

Portions of the radiation/effluents monitoring instrumentation are non-safety related. Again, there are multiple and diverse instrument channels that provide backup information in the event of a single channel failure.

To verify this conclusion, an evaluation of a historical search of the surveillance tests for each instrument was performed. The search identified all failed or partially failed tests, and then each failed or partially failed test was reviewed and evaluated. The purpose of this evaluation was to demonstrate that the increased calibration surveillance interval would not increase the period an instrument would be unavailable. The results of this search support the above conclusions that the impact on instrument availability, if any, is small as a result of the change in the surveillance interval.

A second evaluation performed an instrument drift analysis for the increase in the calibration interval to a maximum of 30 months. The purpose of this evaluation was to determine whether or not projected drift values for 30 months are within existing surveillance test drift allowances. The instrument drift analysis was performed using the GE methodology previously described in response to Item No. 2 under the generic discussion regarding NRC GL No. 91-04, Enclosure 2. The analysis was performed for the Brooks, Model No. 3602-10D2E1A, flow indicating switch for the Reactor enclosure cooling water radiation monitor (TS Table 4.3.7.1-1, Item 3); the General Electric (GE) Model No. 145C3284AAG001, radiation recorder for the reactor enclosure cooling water radiation monitor (TS Table 4.3.7.1-1, Item 3), and radiation indicating switch for the primary containment atmosphere gaseous radioactivity monitoring systems (TS SR 4.4.3.1.a) ; the GE, Model No. 238X660G007, radiation indicating switch for the main condenser offgas - noble gas activity monitor (TS Table 4.3.7.12-1, Item 4.a); the GE, Model No. 237X892G005, radiation indicating switch for the spent fuel storage pool criticality monitor (TS Table 4.3.7.1-1, Item 2.a.1); the General Atomic, Model No. RD-23, radiation elements for: (1) the main control room normal fresh air supply radiation monitor (TS Table 4.3.7.1-1, Item 1), (2) the primary containment isolation - north stack effluent radiation monitor (TS Table 4.3.2.1-1, Item 6.c), and (3) the north stack wide range accident monitor (TS Table 4.3.7.5-1, Item 12); and the General Atomic, Model No. RD-23-20, radiation element for the primary containment post - LOCA radiation monitors (TS Table 4.3.7.5-1, Item 11). The results of the analysis indicated that the projected 30 month drift values for these instruments do not exceed the existing surveillance test allowances. Based on the drift analysis, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling cycle will not affect these instruments with respect to drift.

The following instrumentation was evaluated based on justification other than the drift analysis.

United Electric flow switches, model J274D-232, provide input to the main condenser offgas-noble gas activity monitors (TS Table 4.3.7.12-1, Item 4.a). These switches presently have more frequent testing requirements which include a calibration check. Since the more frequent testing requirement remains unchanged, these switches do not require a 30 month drift evaluation.

The downscale and high voltage trip instrumentation manufactured by GE for the primary containment gaseous radiation monitor (TS SR 4.4.3.1.a) was not evaluated using the GE computer program based on the fact that insufficient data was available due to numerous setpoint changes. A review of the functional tests for these setpoints indicate that the setpoints have not been recalibrated over a period of 46 months. This historical data supports an increase in the calibration interval to 30 months.

GE's NUMAC microprocessor based instrumentation has replaced existing instrumentation associated with the following radiation monitoring loops: TS Table 4.3.1.1-1, Item 6 and TS Table 4.3.2.1-1, Item 1.b. The NUMAC instrumentation is a replacement with insufficient historical data to evaluate 30 month drift using the GE drift computer program. However, GE has provided us with documented data that supports the conclusion that 30 month drift values do not exceed existing surveillance test drift allowances. Therefore, based on GE's documentation, the calibration interval for the radiation monitoring loops using NUMAC instrumentation can be increased to support the 24 month refueling cycle.

GE radiation monitoring instrumentation, Model 129 series, is associated with the following radiation monitoring loops: TS Table 4.3.2.1-1, Item 6.e, 7.c.1, 7.c.2, and 7.d; and TS Table 4.3.7.1-1, Item 2.b. These monitor's setpoints are checked during a more frequent functional test, and if required, are recalibrated. Since this more frequent testing requirement is unchanged, a 30 month drift evaluation is not required.

Existing Bailey radiation monitoring recorders for the Unit 1 and Unit 2 refueling area ventilation exhaust duct radiation monitors (TS Table 4.3.2.1-1, Items 7.c.1 and 7.c.2 shall be replaced with Westronics recorders. The modification to replace the recorders provides justification that the accuracy, including drift for 30 months, shall meet existing surveillance test allowances. This has been confirmed by telecon with the vendor. Therefore, based on the replacement of recorders with 30 month accuracies that shall meet surveillance test allowances, the calibration interval for the recorders can be extended to accommodate a 24 month refueling cycle.

Based on the above evaluations, we have concluded that the impact on radiation/effluent monitoring instrument availability, if any, is small

as a result of the 24 month surveillance interval changes.
(5) Control Rod Block Instrumentation

TS Table 4.3.6-1; Item 5.a; page 3/4 3-61

TS SR 4.3.6 requires that each control rod block trip systems and instrumentation channels shall be demonstrated operable by performing a channel calibration at the frequency shown in TS Table 4.3.6-1. The calibration interval for the subject instrumentation in Table 4.3.6-1 is designated with an "R" which is defined in Table 1.1 of the Definitions Section of TS as "At least once per 18 months (550 days)." The "R" designation remains unchanged by this Change Request. However, since a change to the definition of "R" to accommodate a 24 month refueling cycle is proposed separately within a subsequent group in this Change Request, the impact of an increase in the calibration interval to accommodate a 24 month refueling cycle on the subject control rod block instrumentation is evaluated within this group. This evaluation is specific to the control rod block instrumentation channel listed below.

TS Table 4.3.6-1; Item

5. Scram Discharge Volume

   a. Water Level - high

The subject TS SR currently requires the calibration testing of the subject instrumentation nominally every 18 months. The calibration surveillance is performed to ensure that the instrument is properly aligned so that actuation takes place at the previously evaluated setpoint to provide the required safety function. By increasing the refueling cycle length, the time interval for calibration of the subject instrumentation will be increased. However, as currently required by LGS TS, functional tests are performed during the operating cycle at more frequent intervals than the calibration surveillance. These functional tests detect failures of the instrumentation channels, except for field devices, such as transmitters, that are only tested once every 18 months. Gross instrumentation failures are detected by alarms or comparison with redundant and independent indications.

The control rod block instrumentation is classified as safety related. Instrumentation purchased for this function is highly reliable and meets the stringent design criteria of safety related status. This includes redundancy and independent channels which ensures a high confidence of system performance even with the failure of a single component. Based on the above discussion, we have concluded that impact on instrument availability, if any, is small as a result of the change to 24 month surveillance intervals.

To verify the above conclusion, an evaluation of a historical search of the surveillance tests for each instrument was performed. The search identified all failed or partially failed tests, and then each failed or partially failed test was reviewed and evaluated. The purpose of this evaluation was to demonstrate that the increased calibration surveillance interval would not increase the period an instrument would be unavailable. The results of this search support the above conclusions that the impact on instrument availability, if any, is small as a result of the change in the subject surveillance interval.

A second evaluation performed an instrument drift analysis for the increase in the calibration interval to a maximum of 30 months. The purpose of this evaluation was to determine whether or not projected drift values for 30 months are within existing surveillance test drift allowances. The instrument drift analysis was performed using the GE methodology previously described in response to Item No. 2 under the generic discussion regarding NRC GL No. 91-04, Enclosure 2. The analysis was performed for the Magnetrol, Model No. 57-3003-006, level switch for the scram discharge volume high water level instrument channel (TS Table 4.3.6-1, Item 5.a). The results of the analysis indicated that the projected 30 month drift values for this instrument does not exceed the existing surveillance test allowances. Based on the drift analysis, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling cycle will not affect this instrument with respect to drift.

Based on the above evaluations, we have concluded that the impact control rod block instrument availability, if any, is small as a result of the 24 month surveillance interval changes.

(8) Recirculation Pump Trip Instrumentation

TS Table 4.3.4.1-1; Items 1 and 2; page 3/4 3-45
TS Table 4.3.4.2-1; Items 1 and 2; page 3/4 3-51

TS SR 4.3.4.1.1 requires that each anticipated transient without scram (ATWS) recirculation pump trip (RPT) system instrumentation shall be demonstrated operable by performing a channel calibration at the frequency shown in TS Table 4.3.4.1-1. TS SR 4.3.4.2.1 requires that each end-of-cycle (EOC) RPT system instrumentation channel shall be demonstrated operable by performing a channel calibration at the frequency shown in Table 4.3.4.2-1. The calibration interval in these tables is designated with an "R" which is defined in Table 1.1 of the Definitions Section of TS as "At least once per 18 months (550 days)." The "R" designation remains unchanged by this Change Request. However, since a change to the definition of "R" to accommodate a 24 month refueling cycle is proposed separately within a subsequent group in the Change Request, the impact of an increase in the calibration interval to accommodate a 24 month refueling cycle on the ATWS and EOC-RPT instrumentation is evaluated within this group. This evaluation is specific to the RPT instrumentation channels list below.

ATWS RPT Actuation; TS Table 4.3.4.1-1; Items

1. Turbine stop valve-closure
2. Turbine control valve -fast closure

EOC-RPT System; TS Table 4.3.4.2-1; Items

1. Turbine stop valve - closure

2. Turbine control valve - fast closure

The subject TS SRs currently require the calibration testing of the subject instrumentation nominally every 18 months. The calibration surveillance is performed to ensure that the instrument is properly aligned so that actuation takes place at the previously evaluated setpoint to provide the required safety function. By increasing the refueling cycle length, the time interval for calibration surveillance of the subject instrumentation will be increased. However, as currently required by LGS TS, functional tests are performed during the refueling cycle more frequently than the calibration surveillance. These functional tests detect failures of the instrumentation channels, except for field devices, such as transmitters, that are only tested once every 18 months. Gross instrumentation failures are detected by alarms or comparison with redundant and independent indications.

Instrumentation purchased for these functions are highly reliable and meet the stringent design criteria of safety related status. All RPT instrumentation (i.e., ATWS and EOC)is designed with redundant and independent channels which provide means to verify proper instrumentation performance during operation, and adequate redundancy to ensure a high confidence of system performance even with the failure of a single component. Based on the above discussion, we have concluded that the impact on instrumentation availability, if any, is small as a result of the change to 24 month surveillance intervals.

To verify this conclusion, an evaluation of a historical search of the surveillance tests for each instrument was performed. The search identified all failed or partially failed tests, and then each failed or partially failed test was reviewed and evaluated. The purpose of this evaluation was to demonstrate that the increased calibration surveillance interval would not increase the period an instrument would be unavailable. The results of this search support the above conclusions that the impact on instrument availability, if any, is small as a result of the change in the surveillance interval.

A second evaluation performed an instrument drift analysis for the increase in the calibration interval to a maximum of 30 months. The purpose of this evaluation was to determine whether or not projected drift values for 30 months are within existing surveillance test drift allowances. The instrument drift analysis was performed using the GE methodology previously described in response to Item No. 2 under the generic discussion regarding NRC GL No. 91-04, Enclosure 2. The analysis was performed for the GE, analog trip unit, (1) level switch for the ATWS RPT reactor vessel water level channel (TS Table 4.3.4.1-1, Item 1), and (2) pressure switch for the ATWS RPT reactor vessel pressure channel (TS Table 4.3.4.1-1, Item 2). The results of the analysis indicated that the projected 30 month drift values for these instruments do not exceed the existing surveillance test allowances. Based on the drift analysis, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling cycle will not affect these instruments with respect to drift.

The following instrumentation was evaluated based on justification other than the drift analysis.

Rosemount transmitters provide inputs for the following channels: TS Table 4.3.4.1-1, Items 1 and 2. Drift values for 30 months are published for Rosemount transmitters in Rosemount Report D8900126, and these published values are within the surveillance test drift allowances. Therefore, an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect these Rosemount transmitters with respect to drift.

Limit switches are mechanical devices that require mechanical adjustment only; drift is not applicable to these devices. Therefore, an increase in the surveillance interval to accommodate a 24 month fuel cycle does not affect limit switches with respect to drift.

The pressure switch for the main turbine control valve (MTCV) electro-hydraulic control (EHC) system pressure has been evaluated using the GE drift computer program. This evaluation showed that these instruments (ITT Barton pressure switches for Unit 1 and Barksdale for Unit 2) experienced significant drift. This drift was found to be 88 psi for the Barksdale pressure switches and 111 psi for the ITT Barton pressure switches. This drift exceeds the current allowable drift of 60 psi which is identified in NEDC 31336, and the more conservative 35 psi identified in the surveillance tests which reflects the TS requirement for the End-of-Cycle Recirculation Pump Trip (EOC-RPT). The function of this pressure input is to provide an anticipatory reactor scram and the EOC-RPT in the event of the fast closure of the MTCVs which could result in a significant pressure transient following a generator load reject.

After reviewing the accident scenario and considering the potential impact to the analysis performed for this event, we have concluded that the only impact from drift in the non-conservative direction would be to the response time of the reactor scram and EOC-RPT signal. As identified in the NEDC-31336, upon initiation of the event (i.e., generator load reject), the fast acting solenoid valve will energize allowing the trip oil to drain. The pressure will decrease from a nominal 1600 psi to 0 psi within 8-10 milliseconds. At approximately 400 psig, the disk dump valve will open to allow the MTCV to start to fast close. Since it takes approximately 10 milliseconds for pressure to reach zero, we have concluded that the 200 psi of drift would, in the worst case, cause an additional time delay of no greater that 3 milliseconds. This 3 millisecond time delay will be added to the overall response time of the trip. The "Transient Protection Parameters Verification Form" (GE Form OPL-3) identifies that the time between when the MTCV starts to fast close and the pressure switch actuates will be no greater than 30 milliseconds. OPL-3 also identifies an additional 250 milliseconds allowed for the RPS and control rods to start to insert. Historically, the response times for these functions has been in the order of 150 milliseconds, allowing significant margin to the input allowed for in OPL-3. The response time for the EOC-RPT is required to be 175 milliseconds as specified in TS. Again, historically these response times have been significantly lower than that input into the analysis.

In addition to the impact of drift on the response time, it should also be understood that the logic for these trips provides redundancy which would make it highly unlikely that all instruments composing a channel would drift to the same degree and in the same direction. Considering any potential drift in the conservative direction, it has been determined that this is not a concern since the coincident logic for these trips should prevent any spurious reactor scrams or EOC-RPTs, and any drift high will be identified during the operating cycle and require corrective action. When evaluating the maximum drift projected by the BWROG program and determining the potential impact on the plant's safety analysis, we have concluded that this potential drift has a negligible impact and does not increase the consequence of an accident previously evaluated in the SAR.

During the third refueling outage (1R03) for Unit 1 and the first refueling outage (2R01) for Unit 2 at LGS, modifications were performed on the EHC system to eliminate severe pressure oscillations and vibration of EHC piping. These modifications to the EHC system have only been in place for one full cycle of operation on Unit 1. Based on the results of the calibrations performed during the fourth refueling outage (1R04) for Unit 1, the instrument drift was reduced within the allowable surveillance test values. It is being postulated that the severe drift problem could have been caused by the EHC system vibration and pressure oscillations.

Based on the above observation, we have concluded that the surveillance interval can be increased to a nominal 24 months since data for one full cycle shows that the cause of the severe drift problem has been satisfactorily reduced and that the severe drift has a negligible impact on the accident analysis, Further, these instruments will continue to be monitored for drift using the trending program being established for instrument drift.

Based on the above evaluations, we have concluded that the impact on RPT instrument availability, if any, is small as a result of the 24 month surveillance interval changes.

(9) Electrical Protection Instrumentation

TS Table 4.3.3.1-1; Items 5.a and 5.b; page 3/4 3-41
TS SR 4.8.4.1.a.1; Items a, b, and c; page 3/4 8-21
TS SR 4.8.4.1.a.2; page 3/4 8-22
TS SR 4.8.4.3.b; page 3/4 8-28

TS SR 4.3.3.1 requires that each emergency core cooling system (ECCS) actuation instrumentation channel shall be demonstrated operable by performing a channel functional test and channel calibration at the frequency shown in TS Table 4.3.3.1-1. This evaluation is specific to the ECCS instrumentation channels listed below.

<u>TS Table 4.3.3.1-1; Items</u>

5. <u>Loss of Power</u>

a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)

The channel functional test interval for TS Table 4.3.3.1-1, Item 5.a and the calibration interval for TS Table 4.3.3.1-1, Item 5.b are designated with an "R" which is defined in Table 1.1 of the Definitions Section of the TS as "At least once per 18 months (550 days)." The "R" designation remains unchanged by this Change Request. However, since a change to the definition of "R" to accommodate a 24 month refueling cycle is proposed separately within a subsequent group in this Change Request, the impact of an increase in the functional test and calibration intervals for the subject ECCS instrumentation to accommodate a 24 month refueling cycle is evaluated within this group.

TS SRs 4.8.4.1.a.1.a, 4.8.4.1.a.1.b, and 4.8.4.1.a.1.c, require that each of the primary containment penetration conductor overcurrent protective devices shown in Table 3.8.4.1-1 be demonstrated operable at least once per 18 months. Medium voltage 4.16kV circuit breakers are verified to be operable by selecting, on a rotating basis, at least 10% of the circuit breakers and performing:

a) A channel calibration of the associated protective relays.

b) An integrated system functional test which includes simulated automatic actuation of the system and verifying that each relay and associated circuit breakers and overcurrent control circuits function as designed.

c) For each circuit breaker found inoperable during these functional tests, an additional representative sample of at least 10% of all the circuit breakers of the inoperable type shall also be functionally tested until no more failures are found or all circuit breakers of that type have been functionally tested.

TS SR 4.8.4.1.a.2 requires that the 480 VAC circuit breakers shown in Table 3.8.4.1-1 be demonstrated operable at least once per 18 months by selecting, on a rotating basis, a representative sample of at least 10% of each type of the circuit breaker.

Testing of these circuit breakers shall consist of injecting a current with a value equal to 300% of the pickup of the long time delay trip element and 150% of the pickup of the short time delay trip element, and verifying that the circuit breaker operates within the time delay bandwidth for that current specified by the manufacturer. The instantaneous element shall be tested by injecting a current equal to ±20% of the pickup value of the element and verifying that the circuit breaker trips instantaneously with no intentional time delay. Molded case circuit breaker testing shall also follow this procedure except that generally no more than two trip elements, time delay and instantaneous, will be involved; and for instantaneous magnetic only breakers the instantaneous element will be tested by injecting a current equal to -20%/+40% of the pickup value of the element. Circuit breakers found inoperable during functional testing shall be restored to OPERABLE status prior to resuming operation. For each circuit breaker found inoperable during these functional tests, an additional representative sample of at least 10% of all the circuit breakers of the inoperable type shall also be functionally tested until no more failures are found or all circuit breakers of that type have been functionally tested.

TS SR 4.8.4.3.b requires that the Reactor Protection System (RPS) electric power monitoring channels be demonstrated operable at least once per 18 months. This is verified by demonstrating the operability of the overvoltage, undervoltage, and underfrequency protective instrumentation by performance of a channel calibration including simulated automatic actuation of the protective relays, tripping logic, and output circuit breakers. The following setpoints shall be verified: overvoltage ≤132 VAC, undervoltage ≥109 VAC, and underfrequency ≥57 Hz. The proposed change involves changing the surveillance frequency from "at lease once per 18 months" to "at least once per 24 months."

The onsite electric power system for LGS Units 1 and 2 is divided into two major categories: Class 1E and non-Class 1E. This review evaluates the electrical protection devices for the 4kV emergency bus undervoltage relays, RPS output breakers, RPS electrical power monitoring relays, 4kV primary containment overcurrent protective relays, and 480-Volt primary containment circuit breakers. The Class 1E power system supplies all Class 1E loads that are needed for safe and orderly shutdown. The on-site Class 1E electric power system is divided into four independent divisions per unit. Any combination of three-out-of-four divisions of Class 1E power in each unit can shutdown the unit safely and maintain it in a safe shutdown condition.

The design of the electric power systems complies with position statements of Regulatory Guide 1.53, "Application of the Single Failure Criterion to Nuclear Power Plant Protection System." Consistent with the single failure criterion, only one failure is assumed to occur in the system following a design basis event. No single component failure results in the simultaneous loss of AC power to the four divisions. A single failure cannot propagate to another load division. Furthermore, each of the subject components required to be tested by the subject surveillance requirements is provided with redundant capability. Based on the designed redundancy and reliability of the subject systems, we have concluded that the impact, if any, on component availability is small from the change in the subject surveillance interval.

To verify this conclusion, an evaluation of a historical search of the surveillance tests for each instrument was performed. The search identified all failed or partially failed tests, and then each failed or partially failed test was reviewed and evaluated. The purpose of this evaluation was to demonstrate that the increased calibration surveillance interval would not increase the period an instrument would be unavailable. The results of this search support the above conclusions that the impact on instrument availability, if any, is small as a result of the change in the subject surveillance interval.

A second evaluation performed an instrument drift analysis for the increase in the calibration interval to a maximum of 30 months. The purpose of this evaluation was to determine whether or not projected drift values for 30 months are within existing surveillance test drift allowances. The instrument drift analysis was performed using the GE methodology previously described in response to Item No. 2 under the generic discussion regarding NRC GL No. 91-04, Enclosure 2. This analysis was performed for the Gould-Brown Boveri, Model Nos. 211T4175 and 211U4175, and GE, Model No. 12SFF31C1A, protective relays for the RPS electric power monitoring channels (TS SR 4.8.4.3.b); and the GE, Model Nos. 12HFC21B1A and 12IFC66KD1A, protective relays for the primary containment penetration conductor overcurrent protective devices (TS SR 4.8.4.1.a.1, Items a, b, and c). The results of the analysis indicate that the projected 30 month drift values for these instruments do not exceed the existing surveillance test drift allowances. Based on the drift analysis, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling will not affect these instruments with respect to drift.

The following instrumentation was evaluated based on justification other than the drift analysis.

The shunt coil devices associated with TS SR 4.8.4.3.b were not included in the drift study based on the fact that these components are not affected by drift. Therefore, an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect these devices with respect to drift. Protective devices associated with TS Table 4.3.3.1-1, Item 5.b, were not included in the drift study based on the fact that a more frequent functional test is performed for these relays which includes a calibration check. Since this more frequent testing requirement remains unchanged, a drift evaluation for an increase in the calibration interval to accommodate a 24 month refueling cycle is not required.

Based on the above evaluations, we have concluded that the impact on electrical protection instrument availability, if any, is small as a result of the 24 month surveillance interval changes.

(10) Miscellaneous Instrumentation

TS SR 4.1.3.5.b.1; Items a and b; page 3/4 1-10
TS SR 4.3.8.2.c; page 3/4 3-111
TS Table 4.3.9.1-1; Item 1; page 3/4 3-115

TS SR 4.1.3.5.b.1 requires that each control rod scram accumulator shall be demonstrated operable "at least once per 18 months" by performing: a) a channel functional test of the leak detectors, and b) a channel calibration of the pressure detectors, and verifying an alarm setpoint of equal to or greater than 955 psig on decreasing pressure. TS SR 4.3.8.2.c requires that the turbine overspeed protection system shall be demonstrated operable "at least once per 18 months" by performing a channel calibration of the turbine overspeed protection instrumentation. The proposed change involves changing the surveillance interval (i.e., for the channel functional test and/or the channel calibration, as specified) for this instrumentation to "at least once per 24 months."

TS SR 4.3.9.1 requires that each feedwater/main turbine trip system actuation instrumentation channel shall be demonstrated operable by performing a channel calibration at the frequency shown in TS Table 4.3.9.1-1. The calibration interval in TS Table 4.3.9.1-1 is designated with an "R" which is defined in Table 1.1 of the Definitions Section of the TS as "At least once per 18 months (550 days)." The "R" designation remains unchanged by this Change Request. However, since a change to the definition of "R" to accommodate a 24 month refueling cycle is proposed separately within this Change Request, the impact of an increase in the calibration interval to accommodate a 24 mont refueling cycle on the feedwater/main turbine trip system instrumentation is evaluated within this group. This evaluation is specific to the instrument channel listed below.

<u>TS Table 4.3.9.1-1; Item</u>

1. React vessel water level - high, level 8

The subject TS SRs currently require the calibration testing of the subject instrumentation nominally every 18 months. The calibration surveillance is performed to ensure that the instrument is properly aligned so that actuation takes place at the previously evaluated setpoint to provide the required safety function. By increasing the refueling cycle length, the time interval for calibration surveillance of the subject instrumentation will be increased. However, as currently required by LGS TS, functional tests are performed during the operating cycle more frequently than the calibration surveillance. These functional tests detect failures of the instrumentation channels, except for field devices, such as transmitters, that are only tested once every 18 months. Gross instrumentation failures are detected by alarms or comparison with redundant and independent indications.

The miscellaneous instrumentation evaluated in this group (i.e., turbine overspeed protection and feedwater/main turbine trip actuation) is classified as non-safety related. However, there are multiple and diverse instrument channels that provide backup information in the event of a single channel failure.

The functional surveillance test, required by TS SR 4.1.3.5.b.1.a, is performed to ensure that the instrument is operational within its design range. By increasing the refueling cycle length, the time interval for the functional surveillance test of the subject instrumentation will be increased. The level switch functions to indicate a leak in the HCU accumulator seal. This function is only to provide an indication of a potential failure of the accumulator seal which would prevent the HCU from performing its safety function. The switch serves no active safety function. Furthermore, during the operating cycle, these switches are only exposed to a nitrogen environment which should reduce the likelihood of any corrosive mechanism preventing the switches from providing accurate indication.

Based on the above discussion, we have concluded that the impact on instrument availability, if any, is small as a result of the change to 24 month surveillance intervals.

To verify this conclusion, an evaluation of a historical search of the surveillance tests for each instrument was performed. The search identified all failed or partially failed tests, and then each failed or partially failed test was reviewed and evaluated. The purpose of this evaluation was to demonstrate that the increased calibration surveillance interval would not increase the period an instrument would be unavailable. The results of this search supports the above conclusions that the impact on instrument availability, if any, is small as a result of the change in the subject surveillance interval.

A second evaluation performed an instrument drift analysis for the increase in the calibration interval to a maximum of 30 months. The purpose of this evaluation was to determine whether or not projected drift values for 30 months are within existing surveillance test drift allowances. The instrument drift analysis was performed using the GE methodology previously described in response to Item No. 2 under the generic discussion regarding NRC GL No. 91-04, Enclosure 2. The analysis was performed for the GE, Model No. 994D129G005, turbine overspeed protection instrumentation (TS SR 4.3.8.2.c); and Bailey, Model No. 745110AAAA1, level switch for the feedwater/main turbine trip reactor vessel water level instrumentation (TS Table 4.3.9.1-1, Item 1). The results of the analysis indicated that the projected 30 month drift values for these instruments do not exceed the existing surveillance test allowances. Based on the drift analysis, we have concluded that an increase in the surveillance interval to accommodate a 24 month refueling cycle will not affect these instruments with respect to drift.

The following instrumentation was evaluated based on justification other than the drift analysis.

Rosemount transmitters provide input to TS Table 4.3.9.1-1, Item 1. Drift values for 30 months are published for Rosemount transmitters in Rosemount Report D8900126, and these published values are within the surveillance test drift allowances. Therefore an increase in the surveillance interval to accommodate a 24 month refueling cycle does not affect these Rosemount transmitters with respect to drift.

Rosemount trip units are functionally checked and the setpoint verified more frequently, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the surveillance interval to accommodate a 24 month fuel cycle does not affect the Rosemount trip units with respect to drift.

The pressure switches for the hydraulic control unit (HCU) Accumulators (TS SR 4.1.3.5.b.1.b) have been evaluated using the GE drift computer program. This evaluation showed that the drift for an 18 month period exceeded the current surveillance test allowance. The drift problem was identified in GE Service Information Letter (SIL) No. 429. This SIL identified that a significant amount of drift was occurring with these pressure switches and recommended that the alarm setpoint for these switches be raised to allow for this drift. LGS evaluated this problem and submitted Technical Specification Change Request (TSCR) No. 89-12 to the NRC to lower the TS setpoint to equal to or greater than 955 psig on decreasing pressure. The NRC evaluated this change and determined that the change was acceptable. In this evaluation, the safety significance of these pressure switches was also discussed. This discussion identified that the pressure switches serve as a warning to the operators to ensure that with the loss of a control rod drive (CRD) pump, there is still sufficient pressure to ensure the control rods will be able to be scrammed. With 185 separate pressure switches, it is improbable that the majority of the pressure switches would drift significantly in the non-conservative direction. Therefore, the operator would still have a significant number of back-up indications of a potential loss of the control rod scram function.

Furthermore, as required by TS SR 4.1.3.5.a, the pressure in the scram accumulators is checked to be greater than or equal to 955 psig every 7 days. If an accumulator is found with low pressure less than 955 psig without the corresponding alarm, action will be taken to recalibrate the pressure switch. Finally, as shown in the drift study for these instruments, the substantial portion of drift occurs around the seven month interval. Between seven (7) months and 30 months, drift is not as significant. Based on the above discussion, the fact that the drift problem with these switches has been evaluated by GE in SIL No. 429, and that the TS change was approved by the NRC in the SER for TSCR No. 89-12, we conclude that the change for an increase to a 24 month calibration frequency is acceptable. Further, these instruments will continue to be monitored for drift using the trending program being established for instrument drift.

Based on the above evaluations, we have concluded that the impact on miscellaneous instrument availability, if any, is small as a result of the 24 month surveillance interval changes.

(11) Emergency Diesel Generators (EDGS)

TS SR 4.8.1.1.2.e; Items 1 through 13;
pages 3/4 8-4 through 3/4 8-7
Bases Sections 3/4.8.1; page B 3/4 8-2

TS SR 4.8.1.1.2.e, Items 2 through 7 and 9 through 13, require that the Emergency Diesel Generators (EDGs) be demonstrated operable "at least once each refueling cycle" by verifying the following.

- Each EDG has the capability to reject a load of greater than or equal to that of the RHR Pump Motor (992kW) for while maintaining voltage at 4285 ±420 volts and frequency at 60 ±1.2 Hz.
- Each EDG has the capability to reject a load of 2850 kW without tripping. The generator voltage shall not exceed 4784 volts during and following the load rejection.
- Upon simulating a loss-of-offsite power.
  - a) De-energization of the emergency busses is accompanied by load shedding from the emergency busses.

b) The EDG starts on the auto-start signal, energizes the emergency busses within 10 seconds, and energizes the auto-connected loads through the individual load timers and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4285 ±420 volts and 60 ±1.2 Hz during this test.

- The EDG starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes upon the initiation of an Emergency Core Cooling Systems (ECCS) actuation test signal, without loss-of-offsite power. The generator voltage and frequency shall reach 4285 ±420 volts and 60 ±1.2 Hz within 10 seconds after the auto-start signal; the steady-state generator voltage and frequency shall be maintained within these limits during this test.

- Upon simulating a loss-of-offsite power in conjunction with an ECCS actuation test signal.

  a) The load sheds and the emergency busses de-energize.

  b) The EDG starts on the auto-start signal, energizes the emergency busses within 10 seconds, energizes the auto-connected shutdown loads through the individual load timers, and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4285 ±420 volts and 60 ±1.2 Hz during this test.

- All automatic EDG trips, except engine overspeed and generator differential overcurrent, are automatically bypassed upon an ECCS actuation signal.

- The auto-connected loads to each EDG do not exceed the 2000-hour rating of 3100 kW.

- The EDG's capability to:

  a) synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

  b) transfer its loads to the offsite power source, and

  c) be restored to its standby status.

- The EDG operating in a test mode and connected to its bus, a simulated ECCS actuation signal overrides the test mode by:

  a) returning the EDG to standby operation, and

  b) automatically energizing the emergency loads with offsite power.

- The automatic loads sequence timers are operable with the interval between each load block within ± 10% of its design interval.

- The following EDG lockout features prevent the EDG from starting only when required:

  a) control room switch in Pull-to Lock (with Local/Remote Switch in Remote),

  b) Local/Remote Switch in Local, and

  c) Emergency Stop

The proposed change would reword the TS SR 4.8.1.1.2.e from "At least once each refueling cycle" to "At the following frequency." In addition, the proposed change would add the words "Every 24 months" to the beginning of TS SRs 4.8.1.1.2.e.2 through .7 and .9 through .13. The proposed change would also require a change to Bases Section 3/4.8.1 to indicate an exception to the 18 month testing interval guidance provided in Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, dated August 1977.

The standby AC power supply system consists of four EDGS per LGS unit. The EDGS are sized so that any three EDGS can supply all the necessary power requirements for one unit in the Design Basis Accident condition. The EDGS are designed to start and be able to accept load within 10 seconds. Four independent 4kV engineered safety feature switchgear assemblies are provided for each unit. Each EDG feeds an independent 4kV bus for each unit. In addition, each EDG starts automatically upon a Loss of Offsite Power (LOOP) or detection of a Loss-of-Coolant Accident (LOCA). The necessary safety related loads are applied in a preset time sequence. Each generator operates independently and without paralleling during a LOOP or LOCA signal. Because of the system redundancy, and the fact that any significant failures of the EDGS or associated components would be detected during the performance of TS required monthly surveillance testing, the impact on system availability, if any, is small. A historical review of surveillance test results did not identify any evidence of failures which would invalidate this conclusion.

TS SR 4.8.1.1.2.e, Items 1 and 8, currently require the EDGs be demonstrated operable "at least once each refueling cycle" by performing the following.

- Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

- Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to an indicated 2950-3050 KW and during the remaining 22 hours of this test, the diesel generator shall be loaded to an indicated 2700 - 2800 KW. Within 5 minutes after completing this 24 - hour test, perform Surveillance Requirement 4.8.1.1.2.e.4.b).

The proposed change would add the words "Every 18 months" to the beginning of TS SRs 4.8.1.1.2.e.1 and .8 due to the previously identified proposed change to the wording of TS SR 4.8.1.1.2.e, and because these TS SRs will continue to be performed on an 18 month basis. Therefore, this proposed change is considered to be an administrative change to maintain the current surveillance frequency for TS SRs 4.8.1.1.2.e.1 and .8.

Based on the above evaluations, we have concluded that the impact on system availability, if any, is small as a result of the 24 month surveillance interval changes.

(12) Define Group

TS Table 1.1; page 3/4 1-9
TS Table 4.3.7.2-1; Item 2.a; page 3/4 3-72
TS SR 4.1.5.d; page 3/4 1-20
TS SR 4.6.3.2; page 3/4 6-18
TS SR 4.8.1.1.1.b; page 3/4 8-3
TS SR 4.8.2.1.d; page 3/4 8-11
TS SR 4.8.2.1.e; page 3/4 8-12
TS SR 4.8.2.1.f; page 3/4 8-12
TS Bases; Section 4.0.2; page B 3/4 0-4

Table 1.1 of the Definitions Section of TS defines the "Surveillance Frequency Notation" used throughout the LGS TS. Table 1.1 currently defines the "R" surveillance frequency notation as "At least once per 18 months (550 days)." To accommodate a 24 month refueling cycle, the proposed change involves (1) adding the words "(Refueling Interval)" to the "R" notation, and (2) changing the definition of "R" to "At least once per 24 months (731 days)." This is considered a generic change to the TS based on the fact that each TS line item with a designated frequency of "R" will be impacted when the definition of "R" is changed. However, all line items impacted by the change to the definition of "R" have been individually evaluated in previous groups within this Change Request, and in TSCR No. 92-02-0. Based on the results of the evaluations performed for each individual affected TS line item, we have concluded that the impact, if any, on instrument availability is small as a result of the change to 24 month refueling cycles.

In addition, to accommodate those surveillance frequencies that remain unchanged by this Change Request but are currently designated with the "R" notation, the proposed change involves adding a new surveillance frequency notation of "E" with a corresponding definition of "At least once per 18 months (550 days)" to TS Table 1.1. Any specific changes to the individual TS line items have been identified and evaluated in previous groups within this Change Request. This change is considered an administrative change since it simply provides a mechanism for maintaining the current 18 month surveillance frequency for specific TS line items for which a change to accommodate a 24 month refueling cycle could not be or was not justified.

Table 4.3.7.2-1, Item 2.a is being changed as a result of the change to the Definitions Section of the TS. This proposed change is an administrative change which involves removing the asterisk and corresponding footnote, and replacing it with the standard designation of "R". This TS line item was changed as a result of TSCR No. 92-01-0. The change to a 24 month surveillance frequency to this item was evaluated and found acceptable by the NRC through the issuance of Amendment Nos. 56 and 21 for LGS , Units 1 and 2, respectively.

The following TS SRs specify "during shutdown" or "during COLD SHUTDOWN or REFUELING" as part of the surveillance frequency: TS SRs 4.1.5.d, 4.6.3.2, 4.8.1.1.2.b, 4.8.2.1.d, 4.8.2.1.e, 4.8.2.1.f. The changes being proposed remove these words in accordance with the guidance provided in NRC GL No. 91-04. GL No. 91-04 states that, "Because the terms "Hot" and "Cold Shutdown" are defined in the Technical Specifications as operating modes or conditions, the added restriction to perform certain surveillances during shutdown may be misinterpreted. This restriction ensures that a surveillance would only be performed when it is consistent with safe plant operation. However, this consideration is valid for other surveillances that are performed during power operation, plant startup, or shutdown, but is not addressed by restricting the conduct of these surveillances. The staff concludes that the TS need not restrict surveillances as only being performed during shutdown." The removal of the restriction to perform certain TS surveillances during shutdown has been evaluated. Based on the fact that the performance of all surveillances is administratively controlled to ensure they are performed during safe plant conditions, this change is considered to be a clarifying change to the LGS TS to make all requirements consistent and to avoid potential misunderstandings as indicated in GL No. 91-04.

Finally, a change to the Bases Section 4.0.2 is proposed to change "18 months" to "24 months." This change is considered only an administrative change based on the fact that the change is only being made to ensure the TS Bases remain consistent with the TS requirements. In addition, the sentence "Likewise, it is not the intent that REFUELING INTERVAL surveillances be performed during power operation unless it is consistent with safe plant operation." is proposed to be added to the Bases to provide clarification to TS Section 4.0.2 in accordance with the Guidance provided in GL No. 91-04.

Safety Assessment Summary

The proposed TS changes involve a change in the surveillance testing intervals from 18 months to 24 months to facilitate the current change in the LGS, Units 1 and 2 refueling cycles from 18 months to 24 months. The proposed changes are to the surveillance frequencies only, and do not involve a change to the TS surveillance requirements themselves or the way in which the surveillances are performed. Additionally, the impact of the proposed TS changes on the availability of equipment or systems required to mitigate the consequences of an accident, if any, is small based on other more frequent testing or the availability of redundant systems or equipment. A review of surveillance test history demonstrated that there was no evidence of any failures that would invalidate the above conclusions.

Information Supporting a Finding of No Significant Hazards Consideration

We have concluded that the proposed changes to the LGS TS, to facilitate a change from 18 month to 24 month refueling cycles, do not constitute a Significant Hazards Consideration. In support of this determination, an evaluation of each of the three standards set forth in 10CFR50.92 is provided below.

1. The proposed TS changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed TS changes involve a change in the surveillance testing intervals to facilitate the current change in the LGS Unit 1 and Unit 2 refueling cycles from 18 months to 24 months. The proposed TS changes do not physically impact the plant nor do they impact any design or functional requirements of the associated systems. That is, the proposed TS changes do not degrade the performance or increase the challenges of any safety systems assumed to function in the accident analysis. The proposed TS changes do not impact the TS surveillance requirements themselves nor the way in which the surveillances are performed. In addition, the proposed TS changes do not introduce any new accident initiators since no accidents previously evaluated have as their initiators anything related to the change in the frequency of surveillance testing. Also, the proposed TS changes do not affect the availability of equipment or systems required to mitigate the consequences of an accident because of other, more frequent testing or the availability of redundant systems or equipment. Furthermore, an historical review of surveillance test results indicated that there was no evidence of any failures that would invalidate the above conclusions. Therefore, the proposed TS changes do not increase the probability or consequences of an accident previously evaluated.

2. The proposed TS changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

   The proposed TS changes involve a change in the surveillance testing intervals to facilitate the current change in the LGS Unit 1 and Unit 2 refueling cycles from 18 months to 24 months. The proposed TS changes do not introduce nor increase the number of failure mechanisms of a new or different type than those previously evaluated since there are no physical changes being made to the facility. Additionally, the surveillance test requirements themselves, other than the frequency, and the way surveillance tests are performed will remain unchanged. Furthermore, an historical review of surveillance test results indicated that there was no evidence of any failures that would invalidate the above conclusions. Therefore, the proposed TS changes do not create the possibility of a new or different kind of accident from any previously evaluated.

3. The proposed TS changes do not involve a significant reduction in a margin of safety.

   Although the proposed TS changes will result in an increase in the interval between surveillance tests, the impact on system availability, if any, is small based on other, more frequent testing or redundant systems or equipment. Furthermore, a review of surveillance test history demonstrated that there is no evidence of any failures that would impact the availability of the systems. Therefore, the assumptions in the plant licensing basis are not impacted, and the proposed TS changes do not reduce the margin of safety of the affected equipment/components.

Information Supporting an Environmental Assessment

An environmental assessment is not required for the changes proposed by this Change Request because the requested changes conform to the criteria for "actions eligible for categorical exclusion," as specified in 10CFR51.22(c)(9). The requested changes will have no impact on the environment. The requested changes do not involve a significant hazards consideration as discussed in the preceding section. The requested changes do not involve a significant change in the types or significant increase in the amounts of any effluents that may be released offsite. In addition, the proposed changes do not involve a significant increase in individual or cumulative occupational radiation exposure.

Conclusion

The Plant Operations Review Committee and the Nuclear Review Board have reviewed these proposed changes to the TS and have concluded that they do not involve an unreviewed safety question, or a significant hazards consideration, and will not endanger the health and safety of the public.