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**Jerry C. Roberts**
Director, Nuclear Safety Assurance

RBG-47321

January 9, 2013

U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Response to Request for Additional Information on License Amendment Request 2011-05
River Bend Station – Unit 1
Docket No. 50-458
License No. NPF-47

REFERENCES:
1. Entergy letter to NRC, dated December 8, 2011, License Amendment Request 2011-05, Degraded Voltage Surveillance Frequency Extension and Allowable Value Changes (Letter No. RBG-47193)

2. NRC letter to Entergy (via email), dated December 5, 2012, Request for Additional Information

RBF1-13-0003

Dear Sir or Madam:

On December 8, 2011, Entergy Operations, Inc. (Entergy) submitted a request to extend the frequency of a surveillance requirement and revise the allowable value for degraded voltage relays (Reference 1). During their review, the NRC staff determined that additional information is needed to complete the processing and approval of Entergy's request. The request for that information was transmitted to Entergy per Reference 2. The attachments to this letter contain the requested information.

This letter contains no commitments. If you have any questions on this matter, please contact Joey Clark, Manager – Licensing, at 225-381-4177.

I declare under penalty of perjury that the foregoing is true and correct. Executed on January 9, 2013.

Sincerely,

JCR/dhw

A001
NRR

Attachment 1: Response to Request for Additional Information
Attachment 2: Surveillance Test Procedure Markup (Example)

cc: U. S. Nuclear Regulatory Commission
Region IV
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Arlington, TX 76011-4511

NRC Senior Resident Inspector
River Bend Station

U. S. Nuclear Regulatory Commission
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Public Utility Commission of Texas
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Attachment 1
RBG-47321

Response to Request for Additional Information

REQUEST No. 1:

In Calculation No. G13.18.6.2-ENS_007_EC40339 the licensee calculated the as-left tolerance (ALT) as 80% of the as-found tolerance (AFT) of ± 1.685 seconds because the ALT calculated based on vendor provided data was greater than the AFT calculated based on plant specific drift evaluation data. For three other calculations (G13.18.6.2-ENS_002_EC40339, G13.18.6.2-ENS_004_EC40339, and G13.18.6.2-ENS_006_EC40339), the ALT's were determined to be significantly less than 80% of the AFT values for the same instruments.

Provide justification for selecting ALT to be 80% of AFT in the first calculation. Include in your justification a description regarding how the effects of device accuracy (including repeatability, linearity, and hysteresis), measurement and test equipment (M&TE) accuracy, and M&TE readability have been enveloped in the 80% of AFT value calculated. Show that for the calculation of AFT, the magnitude of AFT is sufficient to account for the value of ALT plus the drift between scheduled surveillance intervals calculated, such that if the instrument was left at the non-conservative endpoint of the ALT, there is sufficient margin to account for the drift calculated.

RESPONSE:

The deviation around the desired setpoint (calculated plant specific drift) is considered the limiting value for instrument performance. In this specific case the actual performance of the device was significantly better than the vendor's stated reference accuracy or repeatability. Using the vendor's stated values of reference accuracy as had historically been done with other devices would have resulted in as-left tolerance values that would not have detected equipment degradation. Therefore, the project selected the calculated plant specific drift value as the limit of acceptability (as-found tolerance). To select an as-left value, the historical calibration data (which accounts for device accuracy, M&TE accuracy, and readability) was reviewed and a value of 80% of the AFT was selected as the As-Left tolerance. This value was readily achievable during the calibration process and provided sufficient margin to allow for detection of instrument or channel degradation.

REQUEST No. 2:

Please provide example marked-up procedure sections that identify the values for TS, TRM, as-found, as-left and define the source for these values. The example may be limited to one markup of a table that has TS and TRM limits and a table with only TS limits. For the markup describe the site actions when as-found value is outside each of the expected limits. Describe the actions if the item cannot be reset to within the as left conditions.

RESPONSE:

Attachment 2 provides an example of a markup to current surveillance test procedure STP-302-1605 indicating the changes for relay E22-S004-ACB1-62S6 that will be

needed for implementation of the requested amendment. Calculation G13.18.6.2-ENS*007 Section 8.11 provides the inputs for the test acceptance criteria.

The additional actions that would be taken based on the calibration as-found value are:

a. Calibration as-found value within the ALT minimum and maximum: no action is required, as-found equal to as-left and surveillance is complete.
b. Calibration as-found value outside ALT minimum and maximum but within AFT minimum and maximum: calibrate the relay to within ALT minimum and maximum, and surveillance is complete.
c. Calibration as-found value outside AFT minimum and maximum but within Technical Specification Allowable Values: calibrate relay to within ALT minimum and maximum. Evaluate relay to verify that it is functioning as expected and would be expected to pass the next surveillance test. Initiate a Condition Report for engineering evaluation of component future operation. Surveillance is complete.
d. Calibration as-found value outside Technical Specification Allowable Values: channel is inoperable and required Technical Specification actions are taken.
e. If the relay as-left value cannot be returned to within ALT, then the device will be declared inoperable.

REQUEST No. 3:

Justify the assumption that vendor data (as found in specifications sheets or manuals) is bounding for the 95/95 tolerance limits of supplied component parameters.

RESPONSE:

The calculation of plant specific drift validates that the Reference Accuracy, Measurement and Test Equipment Uncertainty, drift and other calibration related uncertainties are smaller than the vendor provided value. This verification indicates that the vendor values are more on the order of 99/99 limits. The verification of plant specific performance is sufficient justification to identify the input values as at least 95/95.

Attachment 2
RBG-47321

Surveillance Test Procedure Markup (Example)

*G12.1.15

ENTERGY

RIVER BEND STATION
STATION OPERATING MANUAL
*SURVEILLANCE TEST PROCEDURE

# *HPCS DEGRADED VOLTAGE CHANNEL CALIBRATION AND LOGIC SYSTEM FUNCTIONAL TEST

| | |
|---|---|
| **PROCEDURE NUMBER:** | ***STP-302-1605** |
| **REVISION NUMBER:** | ***25** |
| **Effective Date:** | ***** |

**NOTE : SIGNATURES ARE ON FILE.**

**TemRev 2 AddCounter 1 Att Enc DS MSet REGULAR KWN OFF**
**CONTINUOUS USE**
*INDEXING INFORMATION

## 4 EQUIPMENT

4.1 Measuring and Test Equipment:

**NOTE**

*Equivalency should be established based on the accuracy of a Fluke Model 45 set on 0-300VAC Range and Medium Resolution. Fluke 45 not needed if utilizing Doble F6000 series test set.*

- Multimeter, Fluke 45 or equivalent with an accuracy of plus or minus 0.29% voltage reading
- Multi-Amp EPOCH 10 series, three phase test set or equivalent
- Multi-Amp EPOCH 40 series, DC/Timer test set or equivalent
- Doble F6000 or F2000 series test set or equivalent

**NOTE**

*Only need 3 phase test system if bus is deenergized.*

- Doble F3C, 3 Phase Test System or equivalent

4.2 Additional Equipment:

- Relay tool kit
- Burnishing tool
- ITE Circuit Card Extender Board, Catalog No. 200X0018 or 609887-T6

## 5 PRECAUTIONS/LIMITATIONS

**NOTE**

*Equivalency should be established based on the accuracy of a Fluke Model 45 set on 0-300VAC Range and Medium Resolution.*

5.1 Unless otherwise noted, all recorded voltage data should be obtained using a digital multimeter, Fluke 45 or equivalent. Fluke 45 not needed if utilizing Doble F6000 series test sets.

5.2 Where indicated, the relay should be energized for approximately 15 minutes prior to obtaining data, to allow circuits to stabilize. Momentarily deenergizing relay will not affect data.

5.3 As-Found Section should be completed prior to any adjustments or calibrations.

**NOTE**

*Residual magnetism is defined as when the relay does not drop out when deenergized.*

C 5.4 IF any DC relay is found to have failed due to residual magnetism, THEN a CR describing the relay application, mark number and manufacturer part number should be generated.

C 5.5 Ensure a Condition Report is written IF the Degraded Voltage Relay (62-2) time delay (NO LOCA) setpoint is found above STP MAX. Engineering evaluation is required IF the As-Found setpoint values are above the STP MAX limit.

C 5.6 Relays that are installed horizontally shall be tested horizontally. Relays that are installed vertically shall be tested vertically.

5.7 Removable circuit boards of solid state relays should insert smoothly. Do not use force when reinstalling.

5.8 When removing/installing relay cover, inadvertent trip of relay could occur. Do not manipulate target reset lever when removing/installing relay cover.

5.9 When removing energized relays, components could be at elevated temperatures. Caution should be taken to prevent personnel injury.

5.10 Performance of this procedure causes Annunciator P601-16A-G01, DIVISION III DEGRADED VOLTAGE, alarm 4104 to alarm multiple times.

5.11 If Doble ProTest software is utilized to perform testing, then data can be captured electronically and transferred to surveillance.

5.12 IF E22-S004 is deenergized, THEN Sections 7.4 thru 7.7 can be performed concurrently.

C 5.13 Ensure a Condition Report is written IF the Degraded Voltage Relay (62S5 or 62S6) time delay (NO LOCA) setpoint exceeds the AFT- MAX or MIN limit but is within the Technical Specification Allowable MAX or MIN limit. Engineering evaluation is required to determine if the relay is functioning as expected.

7.7 Timing Relay 62S6

**WARNING**

**Equipment can remain energized during performance of this section of procedure. This creates the possibility of electrical shock or equipment damage. Do not perform this test without taking all necessary safety precautions for working on or near energized equipment.**

7.7.1. At HPCS Bus E22-S004, Aux. cubical, remove relay 62S6. _____ *(Initials)*

1. Remove locking spring from relay.
2. Remove relay from socket.

**NOTE**

*Attachment 2, Agastat ETR Relay Test Connections, provides contact and connection points.*

*Orientation of relay to be tested should be the same as installed in panel.*

7.7.2. As-Found Test

1. Connect a 125VDC power supply to relay as follows:
   *1.* Terminal B1 positive. _____ *(Initials)*
   *2.* Terminal B4 negative. _____ *(Initials)*
2. Connect a timer to start when DC voltage is applied to relay terminals B1 & B4 and to stop automatically when relay contact M1 & T1 closes. _____ *(Initials)*
3. Reset timer start circuit. _____ *(Initials)*
4. Energize 125VDC power supply. _____ *(Initials)*

**NOTE**

*Technical Specification Allowable value is a calculated value from relays 27/62-2 and 62S6.*

TS 5. WHEN timer has stopped, THEN record As-Found pickup time delay.

*(Initials)*

| Desired (sec) | Tech Spec Allowable (sec) | ~~MIN~~ AFT MIN (sec) | As-Found Time Delay (sec) | ~~MAX~~ AFT MAX (sec) | Tech Spec Allowable (sec) |
|---|---|---|---|---|---|
| ~~54.90~~ 45.24 | ~~≥48.90~~ ≥40.2 | ~~≥51.90~~ ≥43.56 | | ~~≤57.90~~ ≤46.92 | ~~≤60.90~~ ≤49.12 |

6. Deenergize test circuits.

*(Initials)*

7.7.3. Inspect relay 62S6 and record inspection result below:

| Sat | Unsat |
|---|---|
| | |

- Check that there are no cracked, broken or loose parts.
- Check that there are no signs of excessive overheating.
- Verify cleanliness.

7.7.4. Time Delay Data Comparison

1. Check As-Found Data is within Non-Calibration limits listed below:

| ALT MIN (sec) | ALT MAX (sec) | Sat | Unsat |
|---|---|---|---|
| ~~≥51.90~~ ≥43.89 | ~~≤57.90~~ ≤46.59 | | |

2. IF As-Found data is within Non-Calibration limits, THEN Go To Step 7.7.6, As-Left Test.

*(Initials)*

3. IF As-Found data is not within Non-Calibration limits, THEN Go To Step 7.7.5, Relay Calibration.

_____
*(Initials)*

7.7.5. Relay Calibration

**NOTE**

*Internal timing adjustment potentiometer is accessible through top cover of relay.*

1. Adjust internal potentiometer.

_____
*(Initials)*

2. Reset timer start circuit.

_____
*(Initials)*

3. Energize 125VDC power supply.

_____
*(Initials)*

4. WHEN timer has stopped, THEN note pickup delay time.

_____
*(Initials)*

5. Deenergize test circuits.

_____
*(Initials)*

6. Repeat Steps 7.7.5.1 thru 7.7.5.5 until pickup time delay is within tolerance.

_____
*(Initials)*

| Desired (sec) | ALT MIN (sec) | ALT MAX (sec) |
|---|---|---|
| ~~54.90~~ 45.24 | ~~≥51.90~~ ≥43.89 | ~~≤57.90~~ ≤46.59 |

**NOTE**

*As-Left tests are performed to verify that adjustments made during relay inspection/calibration have not caused any changes to previous satisfactory data.*

7.7.6. As-Left Test

1. Reset timer start circuit.

_____
*(Initials)*

2. Energize 125VDC power supply.

*(Initials)*

TS 3. WHEN timer has stopped, THEN record As-Left pickup time delay.

*(Initials)*

| Desired (sec) | Tech Spec Allowable (sec) | ALT MIN (sec) | As-Left Time Delay (sec) | ALT MAX (sec) | Tech Spec Allowable (sec) |
|---|---|---|---|---|---|
| ~~54.90~~ 45.24 | ~~≥48.90~~ ≥40.2 | ~~≥51.90~~ ≥43.89 | | ~~≤57.90~~ ≤46.59 | ~~≤60.90~~ ≤49.12 |

4. Deenergize test circuits.

*(Initials)*

5. Disconnect relay from test equipment.

*(Initials)*

7.7.7. Relay Installation

1. At HPCS Bus E22-S004, Aux. cubical, inspect 62S6 relay socket and record inspection result below:

| Sat | Unsat |
|---|---|
| | |

- Check that there are no signs of excessive overheating.
- Check that there are no cracks or other physical damage.
- Verify cleanliness.
- Verify all accessible fasteners are tight.

2. Reinstall relay in socket and latch locking spring on relay.

*(Initials)*

***(CON VERIF)***