UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 30, 2001

MEMORANDUM TO: Robert A. Gramm, Chief, Section 1
Project Directorate IV
Division of Licensing Project Management

FROM: Jane C. Chimood, Secretary, Section 1
Project Directorate IV
Division of Licensing Project Management

SUBJECT: DRAFT INFORMATION FOR JULY 6 TO AUGUST 21, 2001

The U. S. Nuclear Regulatory Commission (NRC) staff has received and/or transmitted the attached draft information and draft request for additional information. This information was received and/or transmitted for the purpose of facilitating ongoing, unrelated, reviews and was not used by the NRC staff for any regulatory decisions. The purpose of this memorandum is to place the information in the Public Document Room.

Docket Nos. 50-458, 50-298, 50-445, 50-446, 50-368

Attachment: As stated

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Attachment: As stated

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Accession No.: ML012360457 *See previous concurrence

OFFICE	PDIV-1/SEC	PDIV-1/PM	PDIV-1/PM	PDIV-1/PM	PDIV-1/PM
NAME	JChimood	DJaffe*	RMoody	MThadani*	TAlexion
DATE	8/30/01	08/29/01	8/30/01	08/29/01	08/30/01

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MEMORANDUM TO: Robert A. Gramm, Chief, Section 1
Project Directorate IV
Division of Licensing Project Management

FROM: Jane C. Chimood, Secretary, Section 1
Project Directorate IV
Division of Licensing Project Management

SUBJECT: DRAFT INFORMATION FOR JULY 6 TO AUGUST 16, 2001

The U. S. Nuclear Regulatory Commission (NRC) staff has received and/or transmitted the attached draft information and draft request for additional information. This information was received and/or transmitted for the purpose of facilitating ongoing, unrelated, reviews and was not used by the NRC staff for any regulatory decisions. The purpose of this memorandum is to place the information in the Public Document Room.

Docket Nos. 50-458, 50-298, 50-445, 50-446, 50-368

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OFFICE	PDIV-1/SEC	PDIV-1/PM	PDIV-1/PM	PDIV-1/PM	PDIV-1/PM
NAME	JChimood	DJaffe	RMoody	MThadani	TAlexion
DATE	8/24/01	8/29/01		8/29/01	

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From: "NORRIS, GREGORY P" <GNORRIS@entergy.com>
To: "'Pat Sekerak'" <pxs1@nrc.gov>
Date: 7/6/01 2:05PM
Subject: Draft response to Inclined Fuel Transfer RAI - For Information Only

Mr. Sekerak,

Attached is an information only copy of EOI's draft response to the subject RAI. This information is provided for the Staff's review prior to our forthcoming meeting scheduled Monday, July 9th, 2001.

Also, the EPlan and Containment Hatch / Irradiated Fuel submittals were not completed this week as expected. I will contact Bob Moody on Monday with the current status.

Gregory P. Norris

Nuclear Safety & Licensing,
River Bend Station

225/336-6391 (voice)
225/635-5068 (fax)
8.558.6391 (internal)

CC: "BYRD, RONALD W" <RBYRD@entergy.com>, "'Moody, Bob'" <rem2@nrc.gov>

Draft response regarding RAI for LAR 2000-27 "IFTS Operation in Mode 1,2,3"

DRAFT - For Information Only

FOR INFORMATION ONLY

The information contained in this document has not yet been verified nor certified by Entergy Operations, Inc.

This draft document is provided as information only in preparation for the forthcoming meeting scheduled with the NRC on July 9, 2001.

Draft response regarding RAI for LAR 2000-27 "IFTS Operation in Mode 1,2,3"

DRAFT - For Information Only

Draft response regarding RAI for LAR 2000-27 "IFTS Operation in Mode 1,2,3"

DRAFT - For Information Only

1. **It is possible that the IFTS bottom gate valve would be open at the onset of a severe accident, with the fuel transfer carriage or cables part way through the open valve. In this regard please:**

   a. Identify systems required to move the fuel transfer carriage and close the IFTS bottom gate valve, and discuss the availability of these systems (or manual back-up systems) in frequency-dominant sequence;

   b. Provide an estimate of the core damage frequency for those events that involve loss of systems needed to operate the carriage or close the valve, based on the latest probabilistic safety analysis; and

   c. Confirm whether and how the carriage can be moved and the open valve can be closed in the frequency dominant core damage events at RBS, including events that involve loss of power to the carriage or valve and loss of lighting. Identify any plant procedures that would govern such actions.

   Response:

   a. The IFTS system is controlled by two control panels, one in the fuel building and one in the containment. These control panels control normal manipulation of the winch and the bottom valve. Failure of the control panels would cause the failure of the winch and the lower valve. Aside from the failure of the individual panel components, failure of the station power would cause the failure of these panels and therefore failure of the valve and winch. River Bend Station (RBS) station power is fed by two independent 230 KV lines, RSS1 and RSS2. Approximately half of the station loads are fed off of RSS1 and the other loads are fed from RSS2. During a loss of one of the 230 KV lines, the remaining line can be lined up to feed the required station loads, per the loss of offsite power abnormal operating procedure.

   Currently, the power to the essential components for the IFTS system are spilt between RSS1 and RSS2. Loss of either offsite power line will cause loss of some or all of the IFTS function. Therefore, in a partial or full loss of offsite power event, the IFTS system would likely fail as is. The current core damage frequency at River Bend is 9.46-06/yr. Loss of RSS1 and RSS2 contribute to 2.38E-07/yr and 2.17E-07/yr, respectively. The total LOSP initiator contributes to 79.3 percent of the total core damage. This accounts for a core damage frequency for LOSP events of 7.49E-06/yr.

   b. The only system modeled in the River Bend Station (RBS) Probabilistic Safety Assessment (PSA) which affects the Inclined Fuel Transfer System (IFTS) is the electrical distribution system. Loss of the offsite power lines RSS1 and RSS2 contribute to 2.38E-07/yr and 2.17E-07/yr, respectively. The total LOSP contributes to 79.3 percent of the total core damage. This accounts for a core damage frequency for LOSP events of 7.49E-06/yr. It can be seen that a total LOSP is the dominant contributor to CDF that could also prevent the closure of the bottom valve. Therefore, only a total LOSP will be discussed further.

   If the bottom valve was open at the initiation of a full or partial LOSP event, the bottom valve would have to be closed using a manual hydraulic actuator and portable lighting. (Minor modifications to the IFTS bottom valve hydraulic system may be required.) If the carriage is in the lower IFTS pool at the time of the LOSP, then the carriage would have to be manually winched up before the lower valve could be completely closed. This would require a containment entry, which would have to be coordinated by the emergency

response organization. During a severe accident, it is not likely that a containment entry will be feasible. However, the probability that a LOSP would occur while the carriage is in the lower pool is minute.

The IFTS blind flange will only be removed a maximum of 60 days per operating cycle. Due to the short allowed outage time for the IFTS blind flange, the probability of LOSP resulting in core damage while the blind flange is removed is only 8.21E-07/yr (7.49E-6/yr * 60 days/cycle * 1 cycle/1.5 years * 1 year/365 days = 8.21E-7/year). As stated above the only time that the lower valve could not be closed manually during an LOSP is if the carriage is in the lower pool at the initiation of a LOSP event. The carriage is not expected to be in the lower pool for longer than 40 hours during the 60-day allowable removal time. Therefore, the core damage frequency for LOSP events while the carriage is in the lower position is expected to be no more than 2.28E-08E-07/yr (7.49E-6/yr * 40 hours/cycle * 1 cycle/1.5 years * 1 year/365 days*1day/24hours = 2.28E-08/year).

c. If the bottom valve was open at the initiation of a full or partial LOSP event, the bottom valve would have to be closed using a manual hydraulic actuator and portable lighting. (Minor modifications to the IFTS bottom valve hydraulic system may be required.) If the carriage is in the lower IFTS pool at the time of the LOSP, then the carriage would have to be manually winched up before the lower valve could be completely closed. This would require a containment entry, which would have to be coordinated by the emergency response organization. During a severe accident, it is not likely that a containment entry will be feasible.

River Bend procedure AOP-027 FUEL HANDLING MISHAPS contains contingency actions for manual operation of the IFTS winch. The contingency actions in this procedure are provided for the purpose of manually moving the carriage containing irradiated fuel during the recovery from a malfunction of IFTS. Instructions for manual operation of the IFTS bottom valve do not currently exist.

2. **Please confirm that the structural analyses performed in support of the LAR adequately address the pool hydrodynamic loads associated with release of containment atmosphere through an open IFTS bottom valve in those sequences that can clear the IFTS water seal (e.g., small break loss-of-coolant accidents (LOCAs) with suppression pool bypass and short-term station blackout events). This includes loads on the IFTS transfer tube, the spent fuel storage pool, and adjacent spent fuel racks.**

Response:

The IFTS water seal in the lower pool has the capability to withstand accident containment pressure from a LBLOCA and SBLOCA. This is based on historically low values of actual drywell bypass leakage < 10% of the design value.

In the unlikely event that the value of drywell bypass leakage degrades to > 10% between measurements, the effects of the release into the lower pools is considered inconsequential. This is based on the slow rate of development of the pressure (low flow, slow volume displacement) due to the limited size of the piping delivering the release (4" diameter) to the larger IFTS tube in the lower pools.

Draft response regarding RAI for LAR 2000-27 "IFTS Operation in Mode 1,2,3"

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3. **Please justify why the current commitment to close the upper gate valve and both IFTS drain line isolation valves during periods when the system is not in use should not be extended to include the IFTS bottom gate valve as well, and why this commitment should not be incorporated in the RBS TSs.**

Response:

In order to comply with the current commitments for closing the IFTS upper gate valve and drain valves, the system must be configured with the bottom gate valve closed. Extending the commitments to also include the IFTS bottom gate valve was not believed to be necessary given the interlocks described below.

During the periods when the Inclined Fuel Transfer System (IFTS) is not in use, the IFTS carriage must be stored in the containment (raised position) to enable closure of the upper gate valve. With the IFTS carriage is in this raised position, it is located above the upper gate valve, but still extends through the IFTS sheave box and open flap valve. IFTS system interlocks prevent opening of the IFTS bottom gate valve when the IFTS flap valve is open to prevent the creation of a drain pathway from the upper containment pools via IFTS into the lower pools. Interlocks also exist that prevent the IFTS bottom valve from opening when the IFTS tube is flooded, using head pressure of the water column above the bottom gate valve to operate a blocking valve in the bottom valve hydraulics.

Entergy believes that the current commitment to close the upper gate valve and the drain valves whenever the IFTS system is not in use should not be incorporated into the TS. This position is based on existing regulatory guidance as explained below:

NRR Office Letter 803, Rev. 3, states in part:

> "The escalation of commitments into license conditions, requiring prior NRC approval of subsequent changes, should be reserved for matters that satisfy the criteria for inclusion in technical specifications by 10 CFR 50.36 or inclusion in the license to address a significant safety issue. Routine commitments on technical matters that do not satisfy the above criteria for license conditions should be discussed in the staff's safety evaluation but should not be escalated into formal license conditions...For the time being, the staff should continue imposing conditions on license amendments that involve, as a vital element of the staff's approval, the subsequent placement of information in a particular mandated licensing-basis document. Commonly, this type of amendment relocates requirements from a facility's technical specifications to its UFSAR. "

Entergy does not believe the subject commitment meets the criteria of 10 CFR 50.36 for inclusion into the TS or as a license condition. However, Entergy understands the current commitment is an important element of the staff's approval and intends to place that commitment in the RBS commitment tracking system, station procedures, and in the Bases of the TS once the proposed amendment is approved by the staff. A mark-up of the Bases change that Entergy will make in accordance with the Bases Control Program is provided for your information as [Attachment 2].

The four criteria that specify items for which an LCO must be established are provided in 10 CFR 50.36. The criteria are:

1. installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary;
2. a process variable, design feature, or operating restriction that is an initial condition of a Design Bases Accident or Transient analysis that either assumes the failure of or

Draft response regarding RAI for LAR 2000-27 "IFTS Operation in Mode 1,2,3"

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presents a challenge to the integrity of a fission product barrier;

3. a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a Design Bases Accident or Transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier;
4. a structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety.

The commitment to close of the upper gate and the two drain valves while the IFTS system is not in use are not initial conditions of a DBA or transient analysis. The commitment is an operating restriction intended to lower the probability of a LERF even lower than that evaluated for the 60 day LCO period. The upper gate valve closure is not credited in the LOCA dose analysis supporting removal of the IFTS blind flange. The IFTS drain line, however, is required to have a containment isolation provision to support the LOCA dose analysis for removal of the IFTS blind flange. This is accomplished by a dedicated operator manually closing the IFTS drain valve when directed. As committed, the drain valve will be treated as a primary containment isolation valve and will be maintained in accordance with the primary containment leakage rate testing program (TS 5.5.13) to ensure its leak tightness. Therefore, since the commitment to close the valves whenever the IFTS system is not in use is more restrictive than the LOCA dose analysis assumptions, the commitment should only be reflected in the TS Bases for the LCO time limit rather than in the TS itself or as a license condition. This approach is consistent with NRC regulations and policy described in OL 803.

4. **With a full utilization of the IFTS during power operation, the IFTS tube and drain lines will become a part of the containment pressure boundary and radiation barrier. Provide a summary of the evaluation of the IFTS tube and drain lines, including online components and supports, to demonstrate their design adequacy in sustaining the plant operational transients, design basis accident loads and load combinations.**

Response:

The following documents contain the evaluation of the IFTS tube and drain line components which are part of the containment boundary, for the loadings specified above:

IFTS Tube {Calc. G13.18.10.0*015 (ER 99-0700)}

The IFTS Tube may be subjected to potential accident environmental temperatures and pressures in the containment, resulting from removal of the IFTS blind flange during modes 1, 2 and 3. The IFTS Tube was evaluated for a temperature 285º F and 40 psig (90 psig including water column), corresponding to severe accident conditions.

IFTS Penetrations {Calc. 219.710-FAD-1021 (ER 99-0700)}

The IFTS Containment penetrations are a currently part of the containment pressure boundary and do not experience any change in conditions as a result of removal of the IFTS blind flange.

IFTS Containment Bellows {Calc. 219.710-FAD-1021 (ER 99-0700)}

The IFTS Containment bellows are a currently part of the containment pressure boundary and do not experience any change in conditions as a result of removal of the IFTS blind flange.

IFTS Bottom Valve (F42-HYVF004) {Doc. 223.336-000-025A}

The IFTS transfer tube bottom valve F42-HYVF004 has rated pressure of 500 psig, which is sufficient to retain the maximum containment design pressure of 15 psig and 50 psig (maximum) water column.

IFTS Drain Line {Calc. AX-144B (ER 99-0922)}

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The IFTS drain was reanalyzed to include the effects of potential post accident containment pressures and temperatures. A temperature and pressure value of 285º F and 90 psig, respectively, were used in the piping analysis. Additionally, dynamic effects of seismic, SRV actuations and LOCA events on the piping stresses and pipe supports were also evaluated.

IFTS Drain Valves (MOV-101) {Calc. AX-144B (ER 99-0922); Doc. 0228.216-050-004}

Valve SFT-MOV101 on the drain line is rated at 150 psig, which is sufficient to retain the maximum containment design pressure of 15 psig and 50 psig (maximum) water column. Additionally, the accelerations imposed on the valve and actuator due to seismic and hydrodynamic effects of SRV actuations and LOCA were determined to be within the allowable limits.

IFTS Drain Valves (F42-F003) {Calc. AX-144B (ER 99-0922); Doc. 0223.336-000-043}

Valve F42-MOVF003 on the drain line is rated at 150 psig, which is sufficient to retain the maximum containment design pressure of 15 psig and 50 psig (maximum) water column. Additionally, the accelerations imposed on the valve and actuator due to seismic and hydrodynamic effects of SRV actuations and LOCA were determined to be within the allowable limits.

The additional loadings resulting from movement of fuel through the IFTS tube during modes 1, 2 & 3, concurrent with a DBA, include increased temperatures of up to 285º F and containment pressures up to 55 psia, corresponding to severe accident condition. Effects of concurrent loading due to seismic and hydrodynamic events are also considered.

5. **Confirm whether the spent fuel pool analysis accounts for the slushing effect during an safe shutdown earthquake to ensure that the depth of water above the fuel is at 23', as a minimum, to provide sufficient hydraulic pressure overcome the containment peak pressure. Also provide a summary of the analysis.**

   Response:

   The River Bend spent fuel pool low water level alarm setpoint is at elevation 112' 1". The River Bend pool wall curb is at elevation 113' 4". This gives a normal free board height of the spent fuel pool of 1' 3". The minimum water level to maintain the Tech Spec minimum water coverage of 23' over the spent fuel is only 108' 4". At this water level the free board height of the spent fuel pool would be 5' 0". The RBS spent fuel pool structural analysis accounts for all loading during a seismic event, but the maximum swell height was not analyzed. However, the maximum suppression pool sloshing was evaluated and it was determined to be a maximum of 2' 3". The maximum swell height in the fuel pool is expected to be less that that seen in the suppression pool. However, if the spent fuel pool swell is assumed to be equal to that of the suppression pool, water loss from the pool at normal pool level would be minimal since the normal free board height is 1'3" and the duration of an SSE is only 15 seconds. Additionally, there would be no water loss at the Tech Spec minimum water level of 108' 4" since the free board height of 5' 0" is greater that the expected swell height. Therefore, during a seismic event the water level in the spent fuel pool would not drop below the minimum Tech Spec level of 23 feet above the spent fuel.

6. **With the proposed full utilization of the IFTS, discuss the effects of the addition of new fuel**

bundles on the existing dynamic analytical model and the existing structural responses to LOCA and seismic events.

Response:

While in the process of fuel transfer during Modes 1, 2 and 3, the IFTS tube could potentially be subjected to seismic, hydrodynamic loadings and effects of containment post-LOCA environment. Therefore, in addition to the loadings discussed in Item 4, above, the IFTS tube qualification includes the effects of two fuel bundles located in the most adverse location within the IFTS tube, in conjunction with loadings associated with plant modes 1, 2 and 3 (seismic, hydrodynamic and post-LOCA environment). This evaluation, documented in Calculation G13.18.10.0*015, ensures IFTS tube pressure integrity under the most adverse loading. No other IFTS system components associated with the containment pressure boundary will be affected as a result of fuel transfer during modes 1, 2 and 3.

7. **With the proposed full utilization of the IFTS during the plant power operation, substantial weight of new fuel bundles will be added to the upper pool during plant power operation. Provide an evaluation of the upper pool structure and the upper pool fuel rack to demonstrate that these components are adequate to sustain the combination of seismic and LOCA loads, and other operational transients (such as transients involving safety relief valves).**

Response:

Existence of new non-irradiated fuel in the containment building fuel racks during plant modes 1, 2 and 3, could subject the fuel rack and associated civil structures to increased dynamic loading resulting from SRV actuations and LOCA. Evaluation of the fuel racks and associated civil structures for loadings imposed under plant modes 1, 2 and 3 will be documented in ER-RB-2000-0836-000.

8. **Discuss the consequences resulting from failure of the transport mechanism for the new fuel bundles in the IFTS tube during LOCA and earthquake events.**

Response:

Since new fuel has little radioactivity to escape if it should be damaged, there is no fuel handling accident with new fuel which requires isolation of the containment. Thus, the seal provided by the water in the IFTS is not required to mitigate the consequences of any fuel handling accident. Since there is no irradiated fuel, before initial criticality, there are no design basis accidents which could result in the release of radioactivity to the environment. Thus, the seal provided by the water in the IFTS is not required to mitigate the consequences of any design-basis accidents before initial criticality. (Ref. RBS SER Supplement 3 Section 9.1.4)

From: Mohan Thadani
To: McCutchen, Edward L.
Date: 8/1/01 11:21AM
Subject: DRAFT RAI FOR FUEL HANDLING ACCIDENT

Ed:

In reviewing the methodology for fuel handling accidents, the staff has identified the following draft request for additional information. Please review the draft RAI and arrange a conference call with the NRC staff to discuss your responces. We will submit formal RAI if needed.

Thanks.

Mohan Thadani

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Draft Request for Additional Information

Cooper Dose Calculation Methodology
for
Fuel Handling Accidents

1. Calculation NEDC 99-032, "Control Room Habitability and Offsite Dose for a Fuel Handling Accident," which was included in the February 28, 2001 submittal, takes credit for 67 hours of decay. By what means is the decay time controlled to be 67 hours or greater before moving fuel?

2. Does the reactor building achieve 0.25" w.g. negative pressure within 90 seconds after the onset of an FHA? Has this operation of the secondary containment under postulated FHA conditions been tested?

3. You proposed to take credit for a reduced Control Room Emergency Filtration system initiation time of 11 seconds. Has this initiation time been verified through testing?

4. In NEDC 99-032, Section 4.2, "Release Rate from the Refueling Area," you discuss the reactor building release rate as a function of time, considering factors such as the 90-second reactor building isolation damper closure period, fan coastdown, radiation monitor detection time and the effective hold-up time in ductwork. A summary was provided in this discussion of the calculations performed in another calculation not provided in the February 28, 2001 submittal. With regard to the calculations:

A. What was used in the calculations for the fan speed as a function of time during coastdown?

B. Was this information provided by the equipment manufacturer or from another means?

CC: Michelle Hart

Mail Envelope Properties (3B681E92.533 : 15 : 21310)

Subject:	DRAFT RAI FOR FUEL HANDLING ACCIDENT
Creation Date:	8/1/01 11:21AM
From:	Mohan Thadani
Created By:	MCT@nrc.gov

Recipients	**Action**	**Date & Time**
nppd.com	Transferred	08/01/01 11:22AM
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MESSAGE	3551	08/01/01 11:21AM

Options

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Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard
To Be Delivered:	Immediate
Status Tracking:	Delivered & Opened

Mail Envelope Properties (3B7AB7B3.4D3 : 16 : 19768)

Subject: RAI
Creation Date: 8/15/01 1:56PM
From: Michael Davis

Created By: MJD1@nrc.gov

Recipients
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DHJ (David Jaffe)

Post Office	Route
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Options
Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

From: Michael Davis
To: David Jaffe
Date: 8/15/01 1:56PM
Subject: RAI

I was writing up the Financial Qualifications section of the CPSES transfer SE and found that I need a bit more information. Mike Dusaniwskyj also requested this same information from John Matthews at Morgan & Lewis for his review of South Texas' restructuring.

The proprietary Attachment 6a income data for the next 5 years included income from all of the generating sources. I'm more interested in whether the nuclear units will be profitable selling power on the open market.

Need to have them send us:

1. A statement of projected income & expenses for the next 5 years for the CPSES. (give assumptions - price, capacity factor)

2. Same forecast with a 10 % reduction in market price of electricity.

I'm doing fairly well with the review. The Financial Qualifications section is the last one I have left to complete. I sould be able to get a SE to you fairly soon after receiving the above info.

Mail Envelope Properties (3B7BED38.904 : 8 : 36942)

Subject:	Comanche Peak Sleeving Meeting to discuss proprietary test data on 8/16/01
Creation Date:	8/16/01 11:56AM
From:	Warren Lyon
Created By:	WCL@nrc.gov

Recipients

nrc.gov
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FMA CC (Frank Akstulewicz)

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MESSAGE	2762	08/16/01 11:56AM

Options

Expiration Date:	None
Priority:	Standard
Reply Requested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

From: Warren Lyon
To: David Jaffe
Date: 8/16/01 11:56AM
Subject: Comanche Peak Sleeving Meeting to discuss proprietary test data on 8/16/01

I met with Obaid Bhatty of TXU at the Westinghouse offices in Rockville to discuss proprietary information contained in "Sleeve Code Multiplier for Excess Conservatism," Calculation Note Cover Sheet, Calc. No. TH-97-08, Rev 0, (Pages 1 - 69), Westinghouse, September 2, 1997. I examined the referenced document at the Westinghouse office and did not remove it from the Westinghouse office.

All of the information I have examined to date is for laser-welded sleeves. I understand from the meeting that TXU will probably use TIG welds, a CE methodology. TXU will provide us with a comparison of the two and an assessment of the effect on sleeve to plugging equivalency. They will also tell us by Tuesday whether they want us to wait and provide an SER for both methods or whether we should go ahead with the laser review now with a separate review later. This does not impact my review of the laser methodology.

My review resulted in several questions. Obaid Bhatty has a hand-written copy of the following questions that he plans to have addressed:

1. Page 19. The reason for the SLEEVE code - test data multiplier being different is stated to be unknown. Since the difference is somewhat surprising, could this be an indication of a code error or an unrecognized test anomoly? What are the implications?

2. Similarly, Page 18 shows a reversal of the multipliers between the hot leg side and the cold leg side. The 30" sleeves multipliers are larger for the former. The reverse occurs for the latter. Why?

3. Page 34 illustrates a coupling in the unsleeved test section. This appears to introduce a non-conservatism in the test results. (See Page 13. The effect is the opposite of the conservatism introduced there.) On Page 36, new tests are identified without the coupling (last sentence). How was the coupling addressed and what is its effect?

My review results will be factored into the SRXB contribution to the SER.

CC: Frank Akstulewicz

Mail Envelope Properties (3B7C3740.8B7 : 2 : 55479)

Subject: Information on LAR for Extended completion time on XST2
Creation Date: 8/16/01 5:01PM
From: "Dennis Buschbaum" <dbuschb1@txu.com>

Created By: dbuschb1@txu.com

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DHJ (David Jaffe)

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Options
Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

From: "Dennis Buschbaum" <dbuschb1@txu.com>
To: <dhj@nrc.gov>
Date: 8/16/01 5:12PM
Subject: Information on LAR for Extended completion time on XST2

sorry to take so long, hope this hits the point. (See attached file: XST2response.doc)

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TXU Electric Response to NRC Request concerning Licensing Amendment Request (LAR) 01-06 Supplement 1

The following information is provided in response to the NRC's RAI regarding the proposed outage schedule for maintenance on CPSES Startup Transformer XST2.

Per reference 1, TXU Electric has requested approval of a one-time only change to the CPSES Technical Specifications to extend the required Completion Time (CT) for restoration of an inoperable offsite circuit from 72 hours to 21 days. This change would allow for a one time preventive maintenance outage on Startup Transformer XST2 to be completed by February 28, 2002, prior to the start of the Unit 2 spring refueling outage, 2RF06. This change is needed to ensure the continued long term reliability of 345 kV offsite circuit Startup Transformer XST2 which is common to both CPSES units. NRC approval of this request would allow sufficient time to perform preventive maintenance on the XST2 transformer while both units remain at power.

Overall CPSES has a good history in regards to transformer events as there have been no catastrophic incidents. However, TXU Electric is well aware that since 1990 there have been a significant number of transformer events at nuclear stations in the United States. INPO reports in its Operations and Maintenance Reminder (O&MR) 430 that there are an average of 23 events per year relating to power transformers. Additionally, between January 1997 and June 1999, there have been nine manual or automatic reactor scrams, six off-site power failures, two extended plant outages, and a plant shutdown related to transformer events. As such, Electrical Maintenance personnel have reviewed the significant transformer events since January 1997 until present to determine their root cause(s) and to identify any vulnerability to a similar events.

From these operating experience reports, transformer events have occurred with little or no warning, with generally seriously impact to plant operations, and that can have major financial impact. These events serve to heighten the level of awareness of the importance of proper maintenance and monitoring of transformers here at CPSES, as well as to emphasize the need to review strategic plans for CPSES transformers, maintenance processes, and contingency planning.

Regular inspections of site transformers by CPSES Electrical Maintenance personnel have identified several current oil leaks, though minor, from offsite circuit Startup Transformer XST2 (alternate Startup Transformer XST1 is a different manufacturer and type and is not exhibiting similar leakage) and suspect that the XST2 transformer low side bushings are a likely source of the oil leakage. TXU Electric has gained experience with similar type transformers installed in the TXU transmission system and has identified the need to perform preventive maintenance on offsite circuit Startup transformer XST2. Based on this experience, the low side bushings now in service on transformer XST2 would be replaced to insure the long term reliability of the transformer. TXU Electric has successfully performed the recommended maintenance on similar transformers in the TXU transmission system.

Under current TS requirements, however, both CPSES units would need to be placed in the cold shutdown state simultaneously for an extended period of time in order to perform maintenance on Startup Transformer XST2. This is due to the fact that Startup Transformer XST2 provides one of the two TS required offsite power source to both Unit 1 and Unit 2 and both units are required to maintain two offsite power sources when above cold shutdown conditions. Based on experience with similar transformers, the proposed preventive maintenance could not be completed in the relatively short duration currently allowed by TS. CPSES TS allow 72 hours to restore the transformer to an operable status. A plant shutdown to cold shutdown is required if the transformer is not restored to an operable status within the Completion Time limits. Little preventive maintenance could be performed in such a short period of time. Also, due to power generation demands and overall economic considerations, it is not anticipated that planned outage schedules would include overlapping, or simultaneous shutdown of both units.
Given the importance of the offsite power sources, TXU recognizes that it is prudent to maintain them in a highly reliable condition while minimizing their unavailability. In support of performing preventive maintenance on Startup Transformer XST2 at the earliest opportunity, TXU Electric has completed probabilistic risk based evaluations and obtained results that support the requested offsite circuit Completion Time extension and indicate that the proposed maintenance activities may be performed with both units at steady state power while resulting in an insignificant impact to overall station risk.

In preparing this request, extensive pre-planning has been performed to ensure the selection of an optimum performance window to minimize overall risks for the full duration of the XST2 outage. Pre-planning includes confirming the needed equipment and the availability of qualified personnel to perform the maintenance prior to the commencement of the work and taking the transformer out of service. Work Scheduling has also determined that routine testing and preventive maintenance activities, which are normally performed on a 12 week rotating basis, can be adjusted to insure that surveillance testing of equipment identified as important to Loss of Offsite Power and Station Blackout considerations is demonstrated current prior to the start of the XST2 outage work window, and that additional routine testing and preventive maintenance should not be required on the equipment for the duration of the planned XST2 outage.

Based on these considerations, the CPSES Work Planning and Scheduling group has recommended that the XST2 transformer outage be implemented during a two week window in the fall months of October or November 2001.

Considerations for Startup Transformer XST2 outage at power rather than during a planned outage on one of the units:

1. Risk consideration.

There are some differences in risk, however, as discussed below, the conclusions do not change. That is, the risk associated with performing the maintenance at power is less than the risk of performing the same maintenance during either a planned refueling outage or a forced shutdown.

A typical outage involves diesel generator maintenance. The diesel generators are taken out of service on a scheduled basis, the first immediately upon entering mode 5. This is the same period when XST2 would be worked. Thus, for a significant period of time, both XST2 and one of the unit's diesel generators are out of service simultaneously. This assumes that the diesel generator and XST2 work can proceed in parallel. While most of the configuration risk in mode 5 is due to things other than availability of electric power, there is an increase in risk with this configuration.

It is expected that the transformer work can be completed within the mode 5 to mode 4 timeframe, assuming the transformer and the diesel generators can be worked in parallel. However, there may be reasons based on configuration risk management that will dictate that such work not be done in parallel but rather in series. If these activities must be worked in series, or if the length of the transformer repair becomes longer than the typical mode 5 to mode 4 duration, then additional time would be required in mode 5 or mode 6 (most likely mode 5) awaiting completion of the transformer or other work. This involves added risk to the normal outage. Because the risk levels in shutdown modes are generally higher that at-power levels, and because the risk of performing the maintenance at power is relatively small, an extension of time in mode 5 adds risk greater than the at-power risk.

In summary, the following are the conclusions of the submittal with regard to comparative risk:

- The risk of performing the transformer maintenance at power is small absolutely, meeting the requirements of the applicable regulatory guide.
- The at-power maintenance risk is the same order of magnitude as the transition risk for a shutdown to perform the maintenance, not even considering the mode 5 or 6 risk, the modes when the maintenance on the transformer will be done.
- The shutdown maintenance risk is dominated by the mode 5 risk and is significantly higher than the at power maintenance risk.
- Whether the transformer maintenance is conducted during a forced or planned shutdown, or during a planned outage, the maintenance risk for these conditions is higher than the at-power risk. This is because there are either higher risk levels, or because working transformers in series with other outage work extends the time in higher risk configurations.

2. CPSES refueling outages are planned for either the spring or fall during lower power demand periods. Reduced atmospheric stability during spring weather conditions contributes to decreased grid stability and increase risk of LOSP. This would suggest waiting for the fall outage as the single available work window. This would further defer the maintenance another year. The fall time frame is also prior to harsh winter weather that may include severe ice storms with impact on the transmission system. The proposed November 2001outage schedule anticipates the most favorable weather conditions, 24 hours a day and 7 days a week for the duration of the work conducive to the performance of the mostly outdoor transformer maintenance tasks. Expected favorable weather conditions during this period also would be advantageous to equipment protection needs, minimized job interruptions, and overall good worker conditions.

3. During an outage there are increased coordination demands on plant operations and outage personnel due to rapidly changing plant and equipment conditions, and due to multiple competing tasks all occur in a relatively short time frame. This could result in an increased potential for challenges to the availability of important LOSP mitigating equipment. The transformer outage would occur during a time frame when no major competing plant modifications or other outage activities are planned. By performing the XST2 transformer maintenance on line when no other significant activities are taking place the plant operators, maintenance personnel, and plant management would be able to provided added focus on ensuring that risks and challenges to supporting equipment are minimized. during this activity. Performance of this significant activity while remaining at power would receive specific management attention and overall heightened plant awareness.

4. Transformer work is performed by a select, trained group of personnel. Typically, work on two transformers is within the work group capability within an outage without impacting the outage critical path and the possibility of extending the outage. Any increased outage duration impacts the risk as indicated in item 1 above. Competing demands on available resources results in less focus and attention on XST2 work if performed during an outage. The transformer outage at power this fall would ensure the availability of experienced manpower and technical support personnel and reduced the potential for distraction due to competing job demands

REQUEST FOR ADDITIONAL INFORMATION ON REQUEST TO
MODIFY EMERGENCY DIESEL GENERATOR SURVEILLANCE
ARKANSAS NUCLEAR ONE, UNIT 2

1. The proposed change to TS 4.8.1.1.2.c.1 will delete the requirement to subject the emergency diesel generator (EDG) to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations. Please indicate that plant procedures include the requirement that the EDGs will be inspected in accordance with procedures prepared in conjunction with its manufacturer's recommendations, and any changes to these procedures will be subject to a 10 CFR 50.59 review.

2. TS 4.8.1.1.2.c.9 requires that during the first two hours of the 24-hour endurance run of the EDGs, the EDGs are loaded to an indicated 3000 to 3200 kW (the 2-hour rating) during the first 2 hours of the test. The proposed change will allow the test at the 2-hour rating to be performed at anytime during the endurance run. Explain why loading to the 2-hour rating in the first 2 hours of the endurance run is detrimental to the EDG. Also, provide relevant manufacturer recommendations, if available, that indicates that loading to the 2-hour rating in the first 2 hours of the endurance run is detrimental to the EDG.

3. It is also proposed that TS 4.8.1.1.2.c.9 be revised to remove the "during shutdown" requirement related to performing the 24-hour endurance run on the EDGs. Explain how the EDG output breaker responds to a loss-of-offsite power signal alone when the EDG is in parallel with the offsite power. Also, indicate where the loss-of-offsite power signal comes from when the EDG is powering the safety bus.

REQUEST FOR ADDITIONAL INFORMATION ON
METEOROLOGICAL DATA
EXTENDED POWER UPRATE LICENSE AMENDMENT APPLICATION
ARKANSAS NUCLEAR ONE, UNIT 2

1. Quality of meteorological data: Confirm that, overall, the meteorological data used in the assessment are of high quality and suitable for use in the assessment of atmospheric dispersion to which it was applied. During the period of data collection, was the tower base area on the natural surface (e.g., short natural vegetation) and the tower free from obstructions (e.g., trees, structures) and micro-scale influences to ensure that the data were representative of the overall site area? Did the measurement program meet the guidelines of Regulatory Guide (RG) 1.23, "Onsite Meteorological Programs," including factors such as maintaining good siting, instruments within specifications, and adequate data recovery and quality assurance checks? If deviations occurred, describe such deviations from RG 1.23 guidance and why the data are still deemed to be adequate. What types of quality assurance checks were performed on the meteorological measurement systems prior to and during the periods of collection to assure that the data are of high quality? Were calibrations properly performed and systems found to be within guideline specifications for the use of the data? What additional checks and at what frequency were the checks performed on the data following collection and prior to input into the atmospheric dispersion calculations to assure identifying any problems in a timely manner and flagging data of questionable quality? Were the data compared with other site historical or regional data and, if so, what were the findings? The intent of these questions is to assess the overall quality of the meteorological data. A detailed response for each individual data point is not expected.

2. Provide meteorological data: Provide an electronic copy of the meteorological data used to calculate the relative concentration (X/Q) values. Data should be provided either in the format specified in Appendix A to Section 2.7, "Meteorology and Air Quality," of draft NUREG-1555, "Environmental Standard Review Plan," or in the ARCON96 format described in NUREG/CR-6331, "Atmospheric Relative Concentrations in Building Wakes." Data may be provided in a compressed form, but a method to decompress the data should be provided. If the ARCON96 format is selected when providing data, the atmospheric stability categorization should be based on the delta-T methodology. Any missing data should be designated by completely filling the field for that parameter with 9's.

3. Describe inputs, assumptions and bases: From where are the emergency core cooling system (ECCS) releases assumed to occur. Also, for the fuel handling accident and ECCS releases, provide the release heights and distances and directions from the intake location to the release locations, and assumptions and bases used with the ARCON96 methodology so as to result in the limiting dose for the accident scenario. A copy of the ARCON96 printouts is acceptable to show inputs. Were the physical heights of the fuel building exhaust fan and ECCS release locations assumed? Are distances for these postulated releases the shortest distance from the postulated release location to the intake location?

4. Provide references to figures showing structures, dimensions, and distances helpful in describing the postulated transport of the effluent. Are all directional inputs defined in terms of true north? If the figures are drawn to plant or magnetic north, what is the relationship to true north? If more than one release to the environment/transport scenario could occur (e.g., loss of offsite power and non-loss of offsite power, single failure), were comparative X/Q calculations made to ensure consideration of the limiting dose?

5. Reference 7.3-8 of the enclosure to the December 19, 2000, letter states that the stability categorization is based upon methods described in Regulatory Guide 1.23. Does this mean that the delta-T method was used? Also, that reference notes that use of the ground level release option when using the ARCON96 computer code does not require input of vertical velocity, stack flow or stack radius. However, if stack flow values were input, what values were used and what is the justification for assuming that the flows can be maintained during the course of the accident assuming the occurrence of problems such as lose of off-site power or single failure?

6. Control room X/Q values in Table 2.2-11B, p.12, of Attachment 4 to the July 3, 2001, submittal do not match X/Q values referenced in some other parts of the submittals provided to support the power uprate amendment. Were the X/Q values cited in Attachment 4 used in the dose assessment? If so, how were they used and what are the inputs and assumptions upon which they are based?