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Date: 07/21/2006 5:51:20 PM
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TSTF 360/NRC

Meeting

7/12/06

I. INTRODUCTION

II. PURPOSE OF MEETING

Matt McConnell

- A. NRC has some concerns with TSTF 360 they want to resolve

III. INDUSTRY PRESENTATION

- A. TSTF Desired Outcome

- B. Battery Tech Spec History

1. 1984 TS BWR STS
2. ITS RO 9/92
3. ITS R3 3/04

- C. Staff Concern #1

1. Alternate battery charger could be non-Class 1E charger but must have an equivalent capability as the 1E charger to maintain defense in depth
2. NRC is very concerned regarding some event occurring during the AOT of the battery charger being inoperable
3. NRC believes the risk is significant – the industry believes it is very low because the battery is required for only 2 accident scenarios (LOOP and SBO).

- D. Staff Concern #2

1. Float Current (FC) as a meaningful indicator of State of Charge (SOC) of the battery
2. NRC Concerns (3)
 - a) #1 Apparent discrepancy of battery manufacturers manuals versus the IEEE 450 recommendations regarding use of FC over Specific Gravity (SG) and NRC is normally consistent with battery manufacturers recommendations
 - (1) NRC trying to get battery manufacturers to express their support
 - (2) Industry response is on page 6 of 14 of our response
 - (3) C&D Battery Manufacturer recommends SG be a troubleshooting measure and using float current as the primary indicator of SOC
 - (4) Energys Battery Manufacturer would agree with C&D
 - (5) Only GNB has not responded as of yet
 - (6) Steve Clark reported NLI (GNB Qualifying Vendor) has agreed with FC for monitoring SOC and SG for troubleshooting.

- (7) Battery manufacturers agree on continuing to do SG for troubleshooting but using float current for SOC
- (8) George Morris not sure FC shows all 60 cells are being charged
- (9) Steve Clark addressed this and George seemed satisfied
- b) #2 Apparent downplaying of Specific Gravity (SG) readings not being the most significant indicator of State of Charge (SOC) and Operability
 - (1) NRC would be concerned that the plants using SG really know the SOC of their batteries using SG now
 - (2) Agree that SG readings should be taken still for troubleshooting and definitely for lead antimony battery
- c) #3 How to capture the most conservative value of float current as a basis of SOC
 - (1) Each plant would need to justify their specific value
 - (2) NRC would like to:
 - (a) Get battery manufacturer acceptance/recommendation of FC as the best indicator of SOC
 - (b) Have Bases or other document specifically state what the capability of the monitoring equipment measuring the FC should be
 - (c) Have SG still be addressed in the Battery Maintenance and Monitoring Program

E. Staff Concern #4

- 1. NRC believes we need to remove the references to IEEE 450 from the Tech Specs to the Bases
 - a) NRC concerned to not endorse the IEEE Standard without doing so through a RG as the normal process would require
 - b) Office of Research working to develop a RG to endorse the latest version of IEEE 450
 - c) Licensees can use the latest version of IEEE 450
- 2. Industry agrees that plant specific justification needs to be provided not just consistent with TSTF 360 or IEEE 450
- 3. NRC wants a commitment that the portions of the TS being relocated are incorporated into the Battery Maintenance and Monitoring Program in the LAR cover letter
- 4. NRC finds acceptable the responses with these clarifications

F. Staff Concern #5

- 1. NRC finds acceptable the responses except

2. NRC would like to see the alternate charger described in the UFSAR if it is a permanent modification
3. This would be described in the UFSAR and addressed by 50.59 if a permanent modification

G. New Question from NRC

1. What is the definition of the “minimum design electrolyte level”?
 - a) The Category A limit or the Low Level mark on the side of the Jar ÷ not the top of the plates
 - b) (**Action**) Industry agreed to clarify this definition in the Bases and/or the Battery Maintenance and Monitoring Program

H. NRC Concern #3

1. 5EF Difference Bounding Analysis
 - a) The NRC accepted the 5EF Bounding Analysis as modified to require plants not meeting the analysis to submit plant specific information. NRC wants verification that credit can be taken for one cell to be representative of the entire battery and (1) will accept operational data of the surveillance data on the cell temperatures that shows the plant meets the 5°F Bounding Analysis or (2) The plant may perform a sampling of the cells to show the number of cells identified are representative
 - b) NRC wants some statement of how the plant supports meeting the 5°F differential or if not bounded by the 5°F analysis how the cells are to be representative of the like battery as a means of ensuring the differential is known and evaluated
2. Reduce Pilot Cell Voltage Limit
 - a) NRC agrees 2.07 volts is the operability limit
 - b) However if the pilot cell is < 2.13 volts, should not more than just restoring the voltage in that pilot cell be performed – The Industry agrees and stated that the Battery Maintenance and Monitoring Program will address this
 - (1) Need to revise the Battery Maintenance and Monitoring Program and the 5.5.14 working to address the NRC concerns
 - c) The pilot cell is supposed to be representative of the average – so if the pilot is < 2.13 volts, the first action should be to verify that battery terminal voltage is above the minimum limit

IV. SUMMARY POSITIONS OF NRC/INDUSTRY AND ACTIONS/ PATH FORWARD

A. Staff Concern #1

1. NRC Actions/Position

- a) NRC will consider the time (AOT) for restoring the battery charger
- b) NRC will to consider whether the alternate charger needs to be powered by an independent power source
- c) NRC seems to accept 72 hours on deterministic basis since the entire DG can be inoperable for 72 hours
- d) Electrical Branch will continue to interface with TSTF to resolve these issues

B. Staff Concern #2

- 1. NRC Actions/Position
 - a) Clarify the instrumentation and monitoring
 - b) Manufacturer support is necessary
 - c) Effects of aging on the float current management
- 2. NRC will accept Float Current as the preferred method of determining the SOC of the Battery providing:
 - (1) **(Industry/NRC Action)** Industry gets manufacturer agreement of FC being the best/preferred indicator of SOC – NRC to provide guidance on an acceptable way to document manufacturer agreement
 - (2) **(Industry Action)** Industry to address in the amendment application the capability/sensitivity of the instruments to measure the FC
 - (3) **(Industry Action)** Industry clarify in the TSTF Traveler that the FC does is not completely eliminate SG monitoring. SG monitoring is appropriate for certain troubleshooting activities and periodic trending
 - (4) **(Industry Action)** Industry revises the responses to the NRC questions to address how the affects of aging for FC are addressed and the basis for the selection of the FC limit. Appropriate discussions to be included in the Amendment Application.

C. Staff Concern #3

- 1. 5°F Difference Bounding Analysis
 - a) **(Industry Action)** NRC wants verification in the Amendment Application that credit can be taken for one cell to be representative of the entire battery and (1) will accept operational data of the surveillance data on the cell temperatures that shows the cell is representative OR (2) The plant may provide historical sampling of the cells to show the number of cells identified are representative in the OR (3) The plant may provide historical sampling of the cells to show 5°F differential bounding analysis would be applicable.
- 2. Reduce Pilot Cell Voltage Limit
 - a) NRC agrees 2.07 volts is the operability limit

- b) **(Industry Action)** However if the pilot cell is < 2.13 volts, the Battery Maintenance and Monitoring Program will require further evaluation
 - (1) **(Industry Action)** Need to revise the TS Battery Maintenance and Monitoring Program and to address the NRC concerns above
- D. Staff Concern #4
 - 1. **(Industry Action)** Revise the reference to IEEE 450 in the TS to not specify the revision
- E. Staff Concern #5
 - 1. Staff Ok with responses

V. PATH FORWARD

- A. NRC Actions/Priorities

The 6 TSTF 360 LARs currently in the NRC for review:

 - Susquehanna
 - SONGS
 - STP
 - Columbia
 - Fitzpatrick
 - LaSalle
 - 1. NRC has to work with these plants quickly to avoid exceeding the 2 years
 - 2. The first is the 2 year date on LaSalle/Susquehanna of September 2006
 - 3. **(Industry/NRC Action)** The only open issue is the AOT for the inoperable charger and the pedigree of the alternate charger
 - 4. The best course of action is for the 6 current LARs to work closely with the generic resolution
- B. Industry Action
 - 1. Develop the modification of the TSTF 360 package in the next several months
- C. NRC will focus in the 6 LARs but will work with the Industry on the generic change and will attempt to maintain consistency of the plant specific LARs with the generic change package
- D. Late July – NRC and TSTF begin working on the resolution of the remaining issues