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August 24, 1982
Fort St. Vrain
Unit No. 1
P-82344

Mr. George Kuzmycz
U. S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, MD 20034

SUBJECT: PSC Comments on ORNL Review of FSV Emergency Procedures

REFERENCE: ORNL Letter, Feb. 16, 1982, S. J. Ball to Eisenhut

Dear Mr. Kuzmycz:

As part of our responses to the Emergency Preparedness Appraisal Audit conducted by the NRC onsite in January, 1982, we undertook large scale revisions to the FSV Emergency Procedures. The purpose of these revisions was to provide a direct link from each Emergency Procedure into the appropriate RERP implementing procedures, and to assist plant operators in properly classifying an event when it occurs. This task was completed by the release of revised Emergency Procedures, effective May 14, 1982.

The comments received from Syd Ball's group at Oak Ridge were also factored in during the revision process. In order to conclude that effort, we are providing to you a detailed listing of all Oak Ridge comments with a concise PSC response describing our interpretations, actions, explanations, and/or planned responses. The comments which we received were provided in two (2) attachments. Attachment A was comprised of Syd Ball's technical comments/questions. Attachment B consisted primarily of editorial comments from A. M. Fullerton of the Social Impacts Analysis Group of the Energy Division at ORNL.

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ADD: G. Kuzmycz

We trust that review of the PSC comments will result in acceptance of the PSC response to item I.C.1 of NUREG-0737. If you have questions regarding the content of the PSC responses, please feel free to contact Mr. C. H. Fuller of the Technical Services Department at (303) 785-2224.

Very truly yours,

D. W. Warembourg

D. W. Warembourg
Manager, Nuclear Production

cc: Darrel G. Eisenhut
Robert A. Clark
John T. Collins
Tom Westerman
Bill Dickerson
S. J. Ball, ORNL

ATTACHMENT A COMMENTS

1. ORNL COMMENT

INTRO, page 4 of 4, VI: In general, and especially in cases where the Radiological Emergency Plan (RERP) is not activated, the EP should indicate when the (Shift) Technical Advisor (S)TA should be called in.

PSC RESPONSE

This item is specifically addressed in Emergency Procedure G, Extended Loss of Active Core Cooling, where prompt calculations by the Technical Advisor could allow better consideration of decay heat generation rate, and, hence, the time remaining to carry out various actions.

However, it is the administrative policy at FSV that the Technical Advisor be contacted in the event of any plant transient. Operations personnel are aware of this policy, and it is felt that specific reference in each Emergency Procedure is not required.

2 ORNL COMMENTS

EP A, page 2 of 4, Matrix: It should be made clear, in general, whether the listed "actions" should be taken if only one listed symptom appears or if more than one is needed. Also, if any precedence should be given to the order of the actions depending on the sequence or timing of the symptoms, this should be factored into the matrices.

PSC RESPONSE

The latest procedure revisions (generally, mid-May, 1982) attempted to embrace the nature of this comment. However, it is quite difficult for an Emergency Procedure to address all possible contingencies. In cases where many variables affected the flow of events, this was addressed in the appendix to the procedure.

3. ORNL COMMENT

EP APP A, page 2 of 6, paragraph 3: It should be made clear that a loop should not be dumped (during a moisture inleakage event) unless the reactor has scrammed.

PSC RESPONSE

Dumping of a loop does not, in itself, mandate the scram of the reactor, only a reduction of power. However, the context of this item refers to a Reactor Pressure High scram followed by a dump of the pre-selected loop. Step 2.1 of the immediate actions, preceeding the item generating this comment, does state to ensure that the plant has scrammed.

4. ORNL COMMENT

EP APP A: Here, and in general, it is not made clear what coordination and communication is required between the west (reactor) and east (turbine) operators, i.e. can they go off and do their own things independently?

PSC RESPONSE

The need for coordination and communication between the operators is stressed as part of the operator training and in job descriptions. However, a precautionary note to this effect in the introduction to the Emergency Procedures would provide additional reassurance of stressing the importance of such coordination, and will be added.

5. ORNL COMMENT

EP APP B-1, page 3 of 18, paragraph 2: The comment that a high hot reheat steam temperature (HRST) can be due to, among other things, a decrease in primary coolant flow, may be misleading, since with other parameters (reactor power and feedwater flow) held constant, the reverse would be true. It may be that for some normal-control situations the HRST would increase when the primary flow is decreasing, but it is not a cause-and-effect relation and should not necessarily be expected during off-normal transients.

PSC RESPONSE

The comment in the Emergency Procedure refers to the configuration of the basic steady-state control system. As the control system is designed, the most probable cause for a high hot reheat steam temperature is a decrease in primary coolant flow, as stated.

6. ORNL COMMENT

EP APP B-1, page 4 of 18, 1.8: Why is the reactor building high temperature limit (175°F) so high? Considering the probable long response time of a building air sensor and the possibility of uneven mixing, the actual trip point may even be a lot higher.

PSC RESPONSE

The reactor building high temperature scram acts as a backup to the PPS actions which would normally serve to detect steam or helium leaks into the reactor building. There are several PPS actions which would be expected to detect such leaks long before this trip occurs (e.g. Pipe Rupture logic, Mainsteam Pressure Low, Reactor Pressure Low, etc.). In particular, for the pipe rupture sequence, a pipe cavity or below PCRV temperature of 130°F (or high pipe cavity or high below PCRV pressure) in symphony with ultrasonic sensors would detect a pipe rupture not otherwise detected by the PPS. If this sequence failed, a building temperature of 175°F, in the same general vicinity as pipe rupture detectors, would result in a scram. It is felt that this temperature, in light of high seasonal temperatures in the reactor building, is extremely conservative, in addition to providing a generous margin of conservatism beyond what is specified in Technical Specifications.

7. ORNL COMMENT

EP APP B-1, page 7 of 18, 2.2, paragraph 3: Since it is such a crucial point that a loop's circulators should not be run if its feedwater flow is lost, it should be noted in the matrix.

PSC RESPONSE

This item is a fundamental part of FSV operator training. The comment was not necessarily provided for the benefit of an operator, but as means for explanation of certain operator actions.

8. ORNL COMMENT

EP APP B: Somewhere in the Reactor Scram section (matrix and appendix) there should be guidance about symptoms requiring actuation of the reserve shutdown system (boron balls). Likewise, quantitative guidelines should be given in EP APP E, page 4 of 4, 3.6.

PSC RESPONSE

Emergency Procedure E states that if the reactivity anomaly places the reactivity at a point where an adequate shutdown margin is not achievable, as defined by Technical Specifications, actuation of the Reserve Shutdown System is appropriate. If the positive insertion of reactivity is so large that reactor control is not possible, it will be readily apparent from neutron count rates. If the positive reactivity insertion simply does not allow an adequate shutdown margin, this will be determined by the plant staff after the scram, and at that time, addition of sufficient Reserve Shutdown material to provide an adequate shutdown margin can be accomplished in accordance with calculated reactivity values.

Quantitative guidelines for an adequate shutdown margin are stated in both SOP 12-02, and SR 5.1.4-W-P.

9. ORNL COMMENT

EP APP D-1, page 4 of 6, 1.6: It is assumed that this will be updated as required after the 2-loop split modifications.

PSC RESPONSE

Emergency procedures have been modified to include any changes to circulator operating parameters/procedures/valving. However, the loop-split modification does not alter the specified procedure, as written.

10. ORNL COMMENT

EP APP D-2, page 1 of 2, Introduction: The introduction implies that one might try to hang around 32% power (after a 3-circulator trip) for a while, apparently to try and get more circulators running, before going down to 2% power. The EP should make it clear how much time can be spent trying.

PSC RESPONSE

The comment with regard to 32% power describes PPS actions. This is described in immediate action 2.1. Step 2.3 makes it clear that further operator action to lower reactor power to 2% is required in accordance with FSV Operational Orders and Overall Plant Operating Procedures (OPOPs), and instructs the operator to perform the required actions.

11. ORNL COMMENT

EP APP E, page 1 of 4, paragraph 1: Other "credible" sources of significant changes in reactivity are major fuel block shifts and coolant channel blockage that causes local overheating.

PSC RESPONSE

Major fuel block shifts of a magnitude to cause a significant change in core reactivity are not credible. The core configuration precludes the possibility of large shifts. With regard to small shifts, as were experienced prior to installation of the Region Constraint Devices, only very minute changes in core reactivity were detectable.

12. ORNL COMMENT

EP APP E, page 2 of 4, 4): Should read "Insertion of a small amount of reserve shutdown poison." If all the boron balls were inserted, the reactor would go subcritical even with the control rods out (I hope).

PSC RESPONSE

This comment was incorporated into Issue 50 of Emergency Procudure E. The Reserve Shutdown System is adequate to bring the reactor subcritical and maintain an adequate shutdown margin in the event of all rods stuck in the withdrawn position.

13. ORNL COMMENT

EP G, page 2 of 2, 3.4: It is especially important to call in the (S)TA on this one.

PSC RESPONSE

This comment was incorporated into Issue 50 of Emergency Procedure G.

14. ORNL COMMENT

EP APP G, page 1 of 9, Introduction: It should be clarified that "active core cooling could be lost if ANY of the following 4 conditions occurs" (a-d). In item c., how many of the 6 modules in each loop (or one given loop) would be sufficient to effect a core cooldown? It should be noted that "complete loss of water to drive the circulators and cool the steam generators" is more "highly unlikely" than "incredible", and that temporary, rather than extended, loss periods are quite credible.

PSC RESPONSE

The clarification regarding use of the word "any" has been incorporated into Issue 50 of Emergency Procedure G. With regard to the question regarding cooling on less than six (6) modules per loop, there is no way to isolate individual modules without a major design modification.

15. ORNL COMMENT

EP APP G, page 7 of 9: The Table gives expected values of PCRV pressure and low temperature absorber (LTA) activity for the 7-hour depressurization period. What is the operator expected to do if the actual behavior is much different?

PSC RESPONSE

The activity buildup assumptions include a 5% failed fuel fraction, far in excess of that reasonably anticipated. With regards to options available if conditions require reconsideration of the depressurization path, four (4) options are specified on page 8 of 9 of EP-G, in the previously referenced section.

16. ORNL COMMENT

EP APP G, page 9 of 9, 4.2.3: Extending the range of the PCRV liner cooling system temperature instrumentation before, rather than during, an accident is recommended (ref. TMI-2).

PSC RESPONSE

The current instrumentation is configured to maintain adequate surveillance of Technical Specification Limits on PCRV temperature. Extended range instrumentation would lessen the degree of accuracy in these temperature measurements and provide benefit only under extremely degraded conditions.

17. ORNL COMMENT

ATTACHMENT EP APP G-1, page 1 to 5 of 5: It is assumed that these figures (showing times available to start depressurization and to restart active core cooling vs operating conditions at t = 0 and time after shutdown) were derived by assuming that power was constant at $P_o$ for a long time before shutdown. However, FSV could have a complex power history just before shutdown, in which case a non-trivial after heat calculation would be required to get a good estimate of the limits. If afterheat is overestimated, the additional risks of depressurizing or <u>not</u> restarting cooling unnecessarily would put the plant in a mode where there is less control over and fewer

options available for a core cooldown. A running calculation of "percent of full power effective equilibrium afterheat" should be kept by the DAS and factored into the figures. Note also that the limits in Figures G-2 and G-3 are such that there could be a large discontinuity in available time to depressurize for a small difference in power level (near 25%).

PSC RESPONSE

This comment has received general concurrence from the Technical Services staff at FSV, and the feasibility of incorporating ongoing afterheat calculations onto the plant data logger will receive further review.

18. ORNL COMMENT

EP APP I: This section refers to "fire detectors" but not smoke detectors. If they aren't already, smoke detectors should be installed where appropriate.

PSC RESPONSE

The fire detection system has heat detectors, rate of heat rise detectors, and smoke detectors.

19. ORNL COMMENT

EP APP I & K (Fire and Quake): Note that the fire water cooldown (FWCD) system is FSV's earthquake-proof circulator drive and heat dump mechanism for a hypothetical LOFC-FWCD accident, and that "fires tend to accompany earthquakes". How would the use of the firewater system on a fire affect its performance in a LOFC-FWCD accident?

PSC RESPONSE

The performance of the firewater system for turbine water drive is tested with the firewater system loaded down to provide only 35 psig to the firewater header upstream of the emergency water booster pumps (P-2109, P-2110) on an annual basis to verify the capability to provide turbine water drive to the circulators utilizing the firewater system while under load. This is performed as part of SR 5.2.7.a-A.

20. ORNL COMMENT

EP K-1, page 2 of 2, 3.1 for 1.3 or 1.5: If there is a real large earthquake and any indication of core dislocation, the boron balls should be dropped as soon as possible, since if the core drops and the control rods hang up, there would be a large increase in reactivity.

PSC RESPONSE

This decision would be based upon circumstances at the time of the incident.

21. ORNL COMMENT

EP APP K-1, page 3 of 18, 3.5: It's not clear why a scram would "aggravate the situation" during a large quake. The claim is made that "mechanical damage, if any, is already done", but what about aftershocks and post-quake fires? How much time is required to determine if a quake exceeds the 0.10g - horizontal design basis acceleration?

PSC RESPONSE

The emergency procedure calls for an orderly shutdown, which would be the best method to prevent further aggravation of any mechanical damage which might already exist. The time required to determine large scale ground acceleration utilizing the seismoscope is on the order of two hours.

22. ORNL COMMENT

EP M, page 2 of 4, 2.4: For hydraulic leaks, there should be special precautions taken because of the possiblity of fire.

PSC RESPONSE

A precautionary note to this effect will be added to the explanatory appendix to the emergency procedure.

ATTACHMENT B COMMENTS

1. General Comments

ORNL COMMENT

In general, these procedures are written very clearly and do not make undue cognitive demands on the operator. While the use of the matrix format for looking up actions for given symptoms is basically a good idea, some of the matrices appear to be unnecessarily complex. Of special concern are those that have too many symptoms to fit on one page. In general, a better method of organizaing (e.g. alphabetically) or grouping the symptoms would be desirable. Immediate and Follow-up actions should be on separate pages. It is assumed that tabs are used in the operators' copies of the Emergency Procedures (EP) so that they don't have to plow through many pages of description to find the right topic. Otherwise, separate booklets with just the matrices should be available to them.

Other relatively simple changes could also make the matrices more readily understandable. For example, the X's in the left and right of the boxes representing reactor and turbine plant operators, respectively, could be changed to R's and T's. Also, the more complex instructions (such as EPA, page 2 of 4, followup action item 3.2) could be broken out of paragraph format to make them more readable.

Most of the specific comments on the EP are editorial. However, syntax mistakes are, and should be, stressed and corrected to avoid confusion over what is to be done and how many actions or systems are involved.

PSC RESPONSE

The complexity of the matrices is most certainly, not "unnecessary." The matrix approach was selected as a means to streamline and simplify the presentation of the immediate and follow-up actions on the Emergency Procedures. More detailed descriptive information regarding the specified operator actions is presented in the Appendix to each procedure. Procedures in all controlled distribution copies are tabbed for rapid access.

Comments regarding the use of "R"s and "T"s to denote west and east end operator actions are duly noted. However, it is our experience that the operators are well aware of the meaning of right, left, or centered labelling with "X"s on the matrix, as well as with the physical location of instruments that they are responsible for. Changes to the document would serve only to increase confusion over meaning of the new denotations.

2. Specific Comments

Table of Contents

ORNL COMMENT

Any reason for not alphabetizing?

PSC RESPONSE

The previous designation of emergency procedure titles was retained to avoid useless, potentially harmful confusion in rapid access to emergency action information.

ORNL COMMENT

"Other material" access list - second line - "need not be or identified by..." What does this mean?

PSC RESPONSE

We are unable to determine what this comment is in reference to.

Introduction

ORNL COMMENT

Intro page 2 of 4 - first paragraph: "...are few and as brief as possible to stop..." - should be? "...are few and as brief as possible. They are intended to stop..."

PSC RESPONSE

Revised to read:

> "The immediate actions are few, and as brief as possible to stop the degradation of conditions, mitigate their consequences, and allow the operators time to evaluate the situation."

EP-APP-A

ORNL COMMENT

Page 2 of 6, first paragraph, line 7 - "circulator is tripped...?; "actions" - "action"?

PSC RESPONSE

Changed to:

> "When a circulator seal malfunction occurs and the circulator trips, further automatic actions by the moisture detection system are inhibited." This will be additionally clarified to indicate that the protective actions begun by low level moisture detectors will be inhibited. High Level Moisture protective actions remain intact (scram/no loop shutdown).

ORNL COMMENT

Second paragraph, line 5 - "level detector (100 VPM.." - "level detectors (100 VPM..."

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Fourth paragraph - line 1 - "actions" - "action"? or line 2 - "presumes" - "presume"

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Page 4 of 6 - 3.1, lines 5-8 - phrase "if not already tripped" should perhaps be "(if this monitor has not already tripped)" - difficult to comprehend in present form.

PSC RESPONSE

No change felt necessary.

ORNL COMMENT

3.3 - What happens if scram has not occurred? i.e., there seems to be another possible line of actions which is not indicated here.

PSC RESPONSE

The PPS will automatically scram the reactor on high moisture after completion of low trips accompanied by high trip of a single channel at 67°F dewpoint, 500 VPM. If this did not occur, and no other automatic or operator actions were taken, a scram on Reactor Pressure High would occur.

If the loop were manually dumped, and the reactor had not been scrammed, the loop shutdown logic would result in a turbine runback with regulating rod insertion.

ORNL COMMENT

3.8 Unclear why step 3.9 is skipped - Perhaps 3.9 should be renumbered and put in some other sequence.

PSC RESPONSE

This item is quite clear to the operating staff and appears self-explanatory.

ORNL COMMENT

Page 6 of 6 - 3.10, line 3 of explanatory paragraph - "generator <u>are</u>" should be "generator <u>is</u>".

PSC RESPONSE

Revised as indicated.

EP-APP-B-1

ORNL COMMENT

Page 3 of 18 - fourth paragraph, third line - "actionis" - "action is"

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Page 4 of 18 - fourth paragraph (1.8) - line 6-7 - "high pressure or high temperature"?

PSC RESPONSE

No change necessary.

ORNL COMMENT

Page 5 of 18 - first paragraph, lines 2-4 - "Actuation of 2 of the 3 switches trip their respective scram channels and cause scram" - for verb agreement: "trips" and "causes".

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Second paragraph - lines 9 - instead of "temperature but constant" - it would be clearer to say "temperature in combination with a constant..."

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Fourth paragraph - line 1 - "inconceivable" - contradiction in terms - perhaps "extremely unlikely"?

PSC RESPONSE

There is no physical means conceivable for such an event to occur. This fact has been made clear in the FSV Final Safety Analysis Report (FSAR).

ORNL COMMENT

Page 6 of 18 - 1.11, lines 3-4 - "two of the three channel trips cause a scram". Does this mean, "If any 2 of the three channels trip, a scram occurs"?

PSC RESPONSE

Tripping of any two of these channels will complete the scram logic and result in a plant scram.

ORNL COMMENT

Page 7 of 18 - line 1 - should this be: "the Pelton wheel which drives the helium circulators is automatically started.."? If this is not the correct interpretation, this sentence should be rewritten in some other way.

PSC RESPONSE

The sentence has been revised as follows for clarification: "The Pelton Wheel drives on the helium circulators are automatically started by shutting down all circulator steam drives." This is a PPS action and is referred to as an "AUTO WATER TURBINE START." This sentence will be further clarified to indicate that the AUTO WATER TURBINE START takes place for the last loop operating prior to completion of steam turbine drive trips.

ORNL COMMENT

2.1 - lines 1-2 - I'm not sure what this sentence means. Does "when called for" refer to symptoms 1.1 to 1.12 or to other situations?

PSC RESPONSE

The situations when a manual scram is required are shown in Table B-1. This clarification has been added to the procedure.

ORNL COMMENT

2.2 - lines 3-4 - "generator has tripped"?

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Third paragraph, line 2 - relationship between feedwater flow and circulator speed"?

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Page 9 of 18 - 2.4, second paragraph lines 1-2: "at 1% per second to 10% followed 120 seconds..." - unclear - does it mean: "runback at 1% - 10% per second..."?

PSC RESPONSE

Revised to read:

> "Most of the scrams result in turbine runback at 1% per second to 10% load, followed 120 seconds after scram by a turbine trip."

ORNL COMMENT

Page 11 of 18 - 3.3, second paragraph line 2 - "8000 rpm To obtain..." Shouldn't this be: "8000 rpm. to obtain..." or should there be a comma after "flow" (line 3) to lead into 3.4.

PSC RESPONSE

Revised to read:

> "If any core region outlet temperature exceeds 2200°F, increase circulator speed to 8000 rpm to obtain maximum available primary coolant flow."

ORNL COMMENT

Page 12 of 18, first paragraph (3.5), line 4 - Should this be: "Because the helium leakage..." and it's not clear what the "they" in line 6 refers to - should it perhaps be "that the louvers be closed..."?

Also, it would be clearer if RERP were spelled out somewhere.

PSC RESPONSE

This entire section was completely revised to allow more rapid accident classification. Refer to section 4.4 of the revised EP B-1. RERP is spelled out in section I of the introduction to the Emergency Procedures (EP-INTRO).

ORNL COMMENT

Page 14 of 18, 2) a), second paragraph, lines 11-12... "valves a condensate..." Shouldn't this be: "valves. A condensate..."?

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Page 15 of 18, 4) line 4 - "atmoshpere" - (same on page 18 of 18, line 7).

PSC RESPONSE

Transpositions corrected.

ORNL COMMENT

Table B-1, page 1 of 1 - Title - "Contitions" - "Conditions" this table might be more useful placed in front of the Symptom-Action Matrix B-1.

PSC RESPONSE

Revised as indicated.

EP B-2

ORNL COMMENT

Even though operators are required to memorize immediate actions, it would be better to include all B-1 requirements on specific matrices (e.g., B-2) instead of merely saying "Insure immediate actions per reactor scram complete" - It's difficult to predict cognitive effects of stress, so any aides that can be provided should be.

PSC RESPONSE

For the sake of brevity and avoiding repetition, specific actions already specified elsewhere need not be repeated here. EP B-1 is located immediately adjacent to EP B-2 in the Emergency Procedures.

ORNL COMMENT

Page 1 of 3, first paragraph, line 4 - "loopis" - "loop is"

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

1.1, line 1 - "cause from" - should this be "causes ranging from" or causes due to"

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Page 2 of 3, 3.2 "If possible" - Is there an alternate action if this is not possible?

PSC RESPONSE

The alternative is to proceed to step 3.5, and that has been added in the current issue.

ORNL COMMENT

Page 3 of 3, 3.3, line 3 "to, both" - eliminate comma.

PSC RESPONSE

Revised as indicated.

EP APP C

ORNL COMMENT

Page 1 of 8, 1), line 2 - "drives, ISS" - Isn't something missing here?

PSC RESPONSE

This refers to the fact that with the Interlock Sequence Switch (ISS) in the POWER position, closing the hot reheat stop check valve will cause a PPS trip of a loop's circulator steam drives.

ORNL COMMENT

Page 2 of 8, first paragraph, line 8, "compatable" - spelling.

PSC RESPONSE

Spelling corrected in revision.

ORNL COMMENT

Page 5 of 8, first paragraph, line 13 - for clarity, it's best to repeat nouns - that is "pressure detectors or 2 of the 3..."

PSC RESPONSE

Revised as indicated.

EP APP D-1

ORNL COMMENT

Page 4 of 6, 1.6, second paragraph, lines 7-11 - this sentence is unclear

PSC RESPONSE

The sentence, as written, is clear to staff with an understanding of the PPS. The reason that the Primary Coolant Moisture High trip is disabled on a Helium Circulator Buffer Seal Malfunction is to prevent a loop shutdown, steam/water dump, and two loop trouble scram from occurring unnecessarily as a result of a buffer helium upset.

ORNL COMMENT

Page 5 of 6, 1-7, first paragraph, line 2 - Should "actuate" be "actuates"? If not, sentence is unclear

PSC RESPONSE

The sentence, as written, is quite clear to the operating staff.

EP APP E

ORNL COMMENT

Page 1 of 4, paragraph 1, line 6 - "poisons"? (also line 11).

PSC RESPONSE

Unable to determine the nature of the reviewer's comment. Word choice is correct, as written.

ORNL COMMENT

Page 1 of 4, paragraph 2, line 10 "effect" should be "affect".

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Page 1 of 4, paragraph 2, line 18 "hald" should be "held".

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Page 3 of 4, 1.3, line 1 - it would be clearer to say: "the purpose of the slack cable alarm system is..."

PSC RESPONSE

"system" altered to "system's".

ORNL COMMENT

Page 3 of 4, 1.4, line 6 - "judgement" should be "judgment" - "oprator's" should be "operator's".

PSC RESPONSE

Either "judgement" or "judgment" is grammatically acceptable according to Webster's Dictionary. Mispelling of "operator's" corrected.

ORNL COMMENT

Page 4 of 4, 3), line 3 - "or equivalent time" - Is there a way to quantify this phrase?

PSC RESPONSE

The rods, when driven in, move at approximately one (1) inch per second.

ORNL COMMENT

3.5), lines 3-5 - awkward sentence.

PSC RESPONSE

Revision not appropriate.

ORNL COMMENT

3.6), line 9 - instead of "do it", it might be better to say "actuate the system".

PSC RESPONSE

Revised to:

> "However, if there is any doubt in the operator's mind about the ability of the control rod system to shutdown the reactor and maintain an adequate shutdown margin, it is appropriate to activate the reserve shutdown system."

EP-APP F-2

ORNL COMMENT

Page 1 of 2, 3.1), line 9-10 - Should "high temperature" and/or "high humidity" be quantified?

PSC RESPONSE

The important fact is that it is most likely that loss of one of the 43% circ water pumps would create a serious problem for condenser vacuum, whereas, loss of a 7% capacity circ water pump most likely would not create a serious problem.

EP-APP F-3

ORNL COMMENT

Page 2 of 4 3.3) lines 5-6 - these 2 lines seem out of place - also, if a) and b) are done, does the operator proceed with 3.4? If not, what does he do? (Same for EP APP F-4, page 2 of 3, 3.4)

PSC RESPONSE

There was a typographic/editorial error in the procedure which has since been corrected. Refer to Issue 50 of Emergency Procedure F-3.

ORNL COMMENT

What is the rationale for sometimes using "Insure" and sometimes "Ensure"?

PSC RESPONSE

With regards to use of "insure" in some cases, and "ensure" in other cases, this was a question of style among the individuals working to prepare the emergency procedure issues which were reviewed by ORNL. In a subsequent review, it has been the editor's attempt to consistently use the word "ensure".

EP APP F-4

ORNL COMMENT

Page 3 of 3, 3.11), line 8 - Should "when the above limits" be "any of the above limits"...?

PSC RESPONSE

Revised as indicated.

EP G

ORNL COMMENT

Page 2 of 2, Followup Action, Caution 1): Should read "One circulator or condensate or boosted firewater..."

PSC RESPONSE

Revised to read as indicated, with the exception that the text says "circulator on condensate," not "circulator or condensate."

EP APP G

ORNL COMMENT

Page 1 of 9, c) - awkward sentence - does it mean: "neither the e-e-s nor the reheater sections of both steam generators..."?

PSC RESPONSE

Revised to read:

> "Both the economizer - evaporator - superheater and the reheater sections of both steam generators are not available, or"

ORNL COMMENT

Page 2 of 9, 2.2) "Primray" should be "primary"

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Page 3 of 9, 3.3 Should read "three additional options...The PCRV liner cooling system."

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Instead of "don't" in various places, it would be better to use "do not".

PSC RESPONSE

We agree with the comment, and have attempted to revise in subsequent revisions.

ORNL COMMENT

Page 4 of 9, - Are A 1) and A 3) mutually exclusive?

PSC RESPONSE

A 1) and A 3) are mutually exclusive.

ORNL COMMENT

Page 6 of 9, 4.2, lines 9-11 - Should this read: "while the following discussions..."?

PSC RESPONSE

Revised to read:

> "the following discussions deal with the sequence of events, as predicted by FSAR analytical models. The ability of operators to verify that the actual sequence of events is consistent..."

ORNL COMMENT

Line 13, "maybe" should be "may be"

PSC RESPONSE

Revised as indicated.

ORNL COMMENT Page 8 of 9, 3), lines 7-9 - awkward sentence.

PSC RESPONSE

Rewritten as follows:

> "If a blockage exists in the LTA, another depressurization path is to vent through the regeneration train to the Gas Waste System."

EP APP I

ORNL COMMENT

Page 1 of 8, 1.4) "these provide alarm only SC45153"??

PSC RESPONSE

Revised to:

"These provide alarms only at XC-45153."

ORNL COMMENT

Page 2 of 8, 1.5), line 3 "...provide alarm signals a SC45153..."??

PSC RESPONSE

Revised to:

"These detectors provide alarm signals only at XC-45153 in the Control Room."

ORNL COMMENT

Page 3 of 8, 1.12), line 5, "actuaction" should be "actuation"

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

1.15), line 2 "protect" should be "protects"

PSC RESPONSE

Revised as follows:

"A wet pipe system with thermal activated spray nozzles protects the aux boiler room."

ORNL COMMENT

Page 5 of 8, 1.19) line 3 "transfomer" should be "transformer".

PSC RESPONSE

Revised as indicated.

ORNL COMMENT

Page 6 of 8, 3.1) Comment line seems gratuitous - Perhaps a list of people who might be called would be better.

PSC RESPONSE

The Emergency Procedures were revised to more clearly reference the appropriate RERP implementing procedure to be utilized.

EP APP K-1

ORNL COMMENT

Parameter check list - why has this not been used in other procedures? This kind of device acts as a good memory aid for the operator.

PSC RESPONSE

The referenced list refers to an unusually complex list of actions required to be performed in order to be able to verify that, despite a large earthquake, the plant is safely shutdown and no severe damage has occurred.

EP APP L

ORNL COMMENT

Page 2 of 10, 2.3, line 2 - "affeced" should be "affected"

PSC RESPONSE

Revised as indicated.

EP APP M

ORNL COMMENT

Page 3 of 5, 2.1, line 3 - "Adequacy and of ..."??

PSC RESPONSE

Revised as follows:

"With any upset in the hydraulic system, adequacy of system pressure needs to be determined."

EP APP R

ORNL COMMENT

Page 1 of 3, line 4 - Shouldn't "inhabitable" be uninhabitable"?

PSC RESPONSE

Revised as indicated.