June 3, 1985

To Hugh Thompson
From Henry Myers

This is a revised draft of my May 28 memorandum concerning the B&V review of the Watts Bar Auxiliary Feedwater System (AFW).

The bottom line questions are:

-Did the B&V review satisfy TVA's commitment as stated in its letter of September 9, 1982?

-Did B&V prepare a "final report ... summarizing the work accomplished, the procedures used ... and a complete list and description of all findings from the review" as stated in the SCOPE OF WORK statement attached to the September 9, 1982 letter from TVA to NRR? Did this report contain the information described under PHASE 4 - REPORTING? Did the report discuss each of the items detailed under PHASE 3 - REVIEW?

-Among other things, did B&V or some other entity conduct an adequate construction audit of the AFW including an assessment of the consistency of the as-built AFW system with the design?

-Did the B&V review substantiate that the AFW system was built substantially in accord with the FSAR design and construction commitments?

-Did TVA determine adequately the extent to which the B&V findings extended to systems other than the AFW system?

-Did TVA's corrective actions generally extend to items beyond the specific defects enumerated in the B&V findings?

-Did TVA implement a program to correct hardware and system deficiencies resulting from design and construction errors that had been made prior to the B&V review?

-Did TVA's April 9, 1984 presentation of the results of the B&V review accurately represent the totality of the B&V findings and resolution thereof?

-Does there now exist a basis for making a determination that Watts Bar was constructed in accord with the FSAR commitments as amended?

The remainder of this memorandum relates to the specifics of the <u>NSRS Assessment of the Results of the B&V Independent Design Review of the Watts Bar Nuclear Plant Auxiliary Feedwater System</u> and related NRC reviews. Note that NSRS refers to a <u>design</u> review whereas TVA staff in its April 9, 1984 presentation to NRC staff refers to a review of <u>design and construction</u>. (See second page of April 9 handout.)

The following discussion concerns TVA's April 9, 1984 briefing and the NRC review of B&V review, the B&V findings and response thereto, and the NSRS B&V review:

> Note that of 39 categories of finding listed in the NSRS report, 14 are not described. Of the 25 that are discussed, only 7 are the subject of recommendations in the Recommendations Section. Note also that in its April 9, 1984 briefing, TVA said that "All except three of the 328 items form the initial review were closed out as completely resolved." The NSRS report which was issued in July 1984 lists recommendations for 7 categories, only one of which (cable ampacity, Category 39) seems to be among the 3 unresolved issues mentioned at the April 9 briefing. It is not clear that the other two April 9 items (F508, baseplate design and F511, Peak Broadening) are even mentioned in the NSRS report.
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> WHAT MEETINGS, IN ADDITION TO THAT HELD ON APRIL 9, 1984, WERE HELD BETWEEN NRC AND TVA FOR THE PURPOSE OF DISCUSSING THE B&V REVIEW AND RESPONSE THERETO? WHEN DID NRC RECEIVE THE NSRS REPORTS R-84-19-WBN AND R-84-26-WBN? WHEN DID NRC BECOME AWARE OF THE DIFFERENCES BETWEEN NSRS VIEWS OF THE STATUS OF WATTS BAR DESIGN AND CONSTRUCTION AND THOSE OF THE TVA LINE STAFF?
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> HAS NRC STAFF PREPARED A REPORT CONTAINING ITS ASSESSMENT OF THE B&V REVIEW AND RESPOSNE THERETO? HAS NRC STAFF DETERMINED WHETHER NCR'S, IN ADDITION TO THE 27 RESULTING FROM THE B&V REVIEW, SHOULD HAVE BEEN PREPARED AS A RESULT OF THE B&V REVIEW AND ASSOCIATED FINDINGS? HAS NRC REVIEWED THE 27 NCR'S RESULTING FROM THE B&V REVIEW? HAS NRC REVIEWED THE DISPOSITION OF THE 27 NCR'S RESULTING FROM THE B&V REVIEW? HAS NRC REVIEWED EACH B&V FINDING AND RESOLUTION THEREOF? WHERE IS REVIEW OF ANY OF THE FOREGOING DOCUMENTED?

NSRS R-84-19-WBN contains the following general comments based on its review of B&V and the TVA line organization response thereto:

> The Final Report, p.2 states: "A weakness in the B&V review was the lack of detailed examination of the consequences of [B&V] findings by onsite verification. ... the degree of conformance with current regulatory positions could not be determined. This could lead to continuing direction from NRC as the plant begins operation..."
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> WHAT HAS BEEN DONE BY TVA AND NRC TO DETERMINE THE "CONSEQUENCES OF FINDINGS BY ONSITE VERIFICATION?" TO THE EXTENT TVA HAS DETERMINED SUCH CONSEQUENCES OR LACK THEREOF, WHERE IS THIS DETERMINATION DOCUMENTED? WHAT REVIEW HAS NRC STAFF CONDUCTED OF ANY SUCH TVA DETERMINATION? IN WHAT SPECIFIC NRC DOCUMENTS HAS THIS REVIEW BY NRC STAFF BEEN DOCUMENTED? DOES NRR POSSESS SUCH DOCUMENTS?

The Final Report, p.2 states: "In addition to the specific technical disagreements, NSRS found the definition of safety impacts of the findings to be inconsistent with the basic engineering and safety reasons for having the features in place. A second weakness was that the record of resolution of the findings was not uniformly and completely documented."

THIS SUGGESTS THAT NSRS DID NOT AGREE WITH TVA LINE STAFF'S ASSESSMENT OF THE SAFETY SIGNIFICANCE OF B&V FINDINGS. HAS NRC STAFF REQUESTED NSRS TO PROVIDE ADDITIONAL INFORMATION ON ITS ASSESSMENT OF THE SAFETY SIGNIFICANC OF B&V FINDING? WHAT REVIEW OF B&V FINDINGS HAS BEEN CONDUCTED BY NRC STAFF TO DETERMINE WHETHER TVA DID PROPERLY ASSESS THE SAFETY SIGNIFICANCE OF THE B&V FINDINGS?

The Final Report, p. 2., states that NSRS assesments support the conclusion that "there is no direct indication that any affected structure, system, or component would not have performed its safety function. .. However it is the assessment of NSRS that some of the identified deficiencies could lead to inueterminant (sic) conditions or conditions adverse to quality and to safety which reduce the margin of safety. Further actions were and are required to assure the margin of safety committed in the FSAR are met."

HAS TVA DETERMINED WHICH "IDENTIFIED DEFICIENCIES COULD LEAD TO INDETERMINATE CONDITIONS OR CONDITIONS ADVERSE TO QUALITY AND TO SAFETY WHICH COULD REDUCE THE MARGIN OF SAFETY?" WHAT ACTIONS HAS TVA TAKEN TO ASSURE THE MARGINS OF SAFETY COMMITTED TO IN THE FSAR ARE MET?" HAS NRC REVIEWED SUCH ACTIONS TO DETERMINE WHETHER THEY WERE ADEQUATE TO ELIMINATE OR COMPENSATE FOR THE IDENTIFIED DEFICIENCIES? DOES NRC HAVE ASSEMBLED IN ONE DOCUMENT A LISTING OF THE "IDENTIFIED DEFICIENCIES?" HAS THE NRC DETERMINED THAT SUCH DEFICIENCIES DO NOT REDUCE THE MARGINS OF SAFETY BELOW A MINIMUM LEVEL? IF SO WHERE IS THIS DETERMINATION DOCUMENTED?

The Final Report, p.5, states as General Observations: "Although there were a number of instances where the licensing commitments and licensing bases were not satisfied, further evaluations showed no cases where the ability to safely shutdown the plant was defeated. The deficiencies for the most part were failures to provide the margins of assurance committed in the FSAR. The basic causes for the deficiencies involved lack of or poor training, failure to follow procedures, poor understanding of the commitments and lack of clear procedural definitions of commitments. ... The impacts of the reduced margin on overall plant safety and the effects of failure to implement the criteria for protective devices for plant equipment were not assessed."

HAS TVA SOUGHT NRC APPROVAL FOR NOT SATISFYING "LICENSING COMMITMENTS AND LICENSING BASES?" HAS NRC GRANTED SUCH

APPROVAL? IF SO, IN WHAT DOCUMENTS WAS SUCH APPROVAL GRANTED? WHAT ARE THE SPECIFIC LICENSING COMMITMENTS AND LICENSING BASES WHICH WILL NOT BE SATISFIED? WHO HAS DETERMINED THE "IMPACTS OF THE REDUCED MARGIN ON OVERALL PLANT SAFETY AND THE EFFECTS OF FAILURE TO IMPLEMENT THE CRITERIA FOR PROTECTIVE DEVICES FOR PLANT EQUIPMENT? WHERE IS THE TVA DOCUMENTATION FOR ANY SUCH DETERMINATION? HAS NRR REVIEWED ANY SUCH DOCUMENTATION? IF SUCH ASSESSMENTS WERE NOT MADE, WHAT IS THE BASIS FOR DETERMINING THAT THE SAFETY MARGINS HAVE NOT BEEN REDUCED BELOW THE MINIUM ACCEPTABLE LEVEL?

In its Draft report, p.4, in language that does not appear in the Final report, says (after a sentence saying the TVA task force safety evalaluation supported the conclusion that the safety functions would be performed): "However, it is the assessment of NSRS that the safety evaluations are incomplete and could lead one to conclude that WBN would have been acceptable had the B&V activity not taken place. Some of the TVA practices could lead to indeterminate conditions or conditions adverse to safety. <u>It is not clear ... that all the identified conditions will be corrected or even that the conditions can be corrected. In addition, safety evaluations were not performed on two categories of findings which NSRS deems to have been serious deficiencies."</u> [Underline Added.]

WHO DECIDED TO INCORPORATE SUCH STATEMENTS IN THE DRAFT NSRS REPORT? WHO DECIDED TO ELIMINATE THE FOREGOING LANGUAGE FROM THE NSRS REPORT? DID THE AUTHOR OF THIS LANGUAGE AGREE THAT IT SHOULD BE ELIMINATED? IF SO WHAT WAS THE BASIS FOR MAKING SUCH STATEMENTS IN THE FIRST PLACE? DOES THE AUTHOR (AND NSRS) NOW BELIEVE THAT THE SAFETY EVALUATIONS ARE COMPLETE? DOES THE AUTHOR (AND NSRS) BELIEVE THAT TVA PRACTICES DID NOT LEAD TO INDETERMINATE CONDITIONS OR CONDITIONS ADVERSE TO SAFETY? DOES THE AUTHOR (AND NSRS) NOW BELIEVED THAT THE "IDENTIFIED CONDITIONS CAN AND WILL BE CORRECTED? IF SO, WHAT DOCUMENTATION SUPPORTS THIS BELIEF? HAS NRC STAFF REVIEWED THIS SECTION OF THE DRAFT? HAS IT DETERMINED WHAT THE AUTHORS OF THE DRAFT HAD IN MIND WHEN THEY WROTE THE FOREGOING STATEMENTS? HAS THE NRC STAFF DOCUMENTED ANY SUCH REVIEW?

The following discussion is keyed to categories of B&V findings as designated by TVA. [Numbering convention: First Group, TVA Finding Category; Second Group, Pages on which NSRS Draft Recommendations/Draft Discussion appear; Third Group, Pages on which NSRS Final Recommendations/Final Discussion appear. NONE means an absence of a recommendation associated with the finding category.]

CATEGORY 3, 5/9-11, 3/05

B&V found 25 instances where "logic/control drawings did not agree with electrical drawings. ... The task force concluded the problems were generic to logic, control,

schematic and connection diagrams throughout WBN units 1 and 2. ... It was determined that corrective action was required for both past and future work. .. problems included instances where as many as 13 wires shown on one drawing were installed on the wrong terminals .. Finding F805 identified a crosstie between normal and emergency 125 V. D.C. systems." [WAS THE LATTER A PROBLEM. WHICH IF UNCORRECTED, COULD HAVE PREVENTED SAFE SHUTDOWN?]

Id. "NSRS agrees with the TVA line actions to the point of correcting known wiring errors. We do not agree that their corrective action for past and future work is adequate. Since the problems have been demonstrated to be common in the four systems reviewed, it is reasonable to assume the deficiencies are institutional and all the plant systems should be reviewed and corrected." [Underline added.]

DRAFT NSRS Report (p.10-11) version of foregoing: "No further reviews of other systems is planned to determine if other systems have the same problems, in spite of the widespread problem identified in four systems. .... NSRS recommends that all known drawing discrepancies be corrected and that a review and corrective action program be initiated TVA wide to fix all such problems.

WHAT WAS THE NATURE OF THE WIRING ERRORS? WHAT NCR'S WERE WRITTEN PERTAINING TO SAME? WHAT WAS DONE TO SATISFY THE NSRS CONCERNS? IF TVA DECIDED THAT THIS PROBLEM MIGHT NOT PERTAIN TO SYSTEMS BEYOND THE AFW, WHAT WAS THE BASIS FOR THIS DECISION? WHAT NRC DOCUMENTS EXIST WITH RESPECT TO WIRING ERRORS AND CORRECTION OF SAME? HAS NRC APPROVED TVA'S RESPONSE TO THE FINDING OF THE WIRING ERRORS? IF SO, WHEN WAS SUCH APPROVAL GRANTED AND BY WHOM? WHAT DOCUMENTATION EXISTS TO DEMONSTRATE NRC APPROVAL?

Category 4, NONE/11-15, NONE/6-7

[illegible] B&V findings describe a failure to maintain records for the AFW system as specifically described in the FSAR.

In discussion of Category 4 findings, the Draft NSRS Report, p. 11-12, refers to a special engineering procedure (SEP 83-05) written to verify the accuracy of the Watts Bar FSAR: "the review was restricted to FSAR; questions, responses to IE bulletins, NRC generic letters, etc. were not included in the review. The degree of formality and traceability of the reviews was left to each organization, thus the accuracy of the review may not be verifiable. ... The SER review resulted in 1400 pages of text and 600 drawings being changed in the FSAR. No NCR's have been written as a result of the review. The B&V review resulted in 27 NCR's. NSRS is concerned that the review was not thorough enough to address adequately concerns of the degree of the B&W review when considered generically."

WHAT IS THE NRC STAFF POSITION AS TO ADEQUACY OF THE REVIEW UNDERAKEN PURSUANT TO SEP 83-05? WHAT WERE THE OBJECTIVES OF SEP 83-05? WHAT ANALYSIS OF SEP 83-05 HAS BEEN CONDUCTED BY THE NRC? DOES NRC AGREE THAT THE REVIEW WAS SUFFICIENTLY COMPREHENSIVE? DOES NRC AGREE WITH NSRS COMMENTS NOTED ABOVE? WHERE IS THE NRC REVIEW DOCUMENTED?

Category 4. (Draft report, p. 12) Finding F118 relates to a problem which, if it had not been discovered, would have made it such that "the plant would not operate in a safe manner in some events since the turbine-driven AFW pump would not operate on an assured source of water. .. The failure of the W-2 switch contacts should not be considered a single failure since it is a design deficiency already in the system if left uncorrected. "

HAS NRC STAFF REVIEWED THE FOREGOING WHICH DOES NOT APPEAR IN THE FINAL NSRS REPORT? HAS NRC STAFF DETERMINED WHY THE DISCUSSION RELATING TO F118 WAS DROPPED? WHERE IS THE DOCUMENTATION WHICH PROVIDES THE BASIS FOR ELIMINATION OF THIS DISCUSSION? DOES THE NSRS AUTHOR OF THE F118 DISCUSSION HOLD TO HIS VIEW THAT THE F118 PROBLEM, IF NOT DISCOVERED BY B&V, WOULD HAVE RESULTED IN A SITUATION WHERE "THE PLANT WOULD NOT OPERATE IN A SAFE MANNER IN SOME EVENTS?" WHAT IS THE NATURE OF THE "EVENTS" REFERRED TO BY THE NSRS AUTHOR? ARE SUCH "EVENTS" WITHIN THE DESIGN BASIS?

Category 5, NONE/15, NONE/07

This category had 10 findings where procurement forms and flow diagrams specified different requirements for various valves and qualification documentation was not tied to the design and procurement process. The task force concluded this category required corrective action for future work and for past work as appropriate.

NSRS stated that the underalying problem for this category was a breakdown in the ECN process.

NOTE THE ABSENCE OF AN ITEM IN THE RECOMMENDATIONS SECTION ASSOCIATED WITH THIS CATEGORY OF FINDING ALTHOUGH THE DISCUSSION SECTION DOES RECOMMEND CORRECTIVE ACTION. WHAT CORRECTIVE ACTION DID TVA TAKE? WHAT REVIEW OF THIS ITEM HAS BEEN MADE BY THE NRC? WHERE IS ANY SUCH REVIEW DOCUMENTED?

Category 6, NONE/16, NONE/07

7 B&V findings involved discrepancies between documents used in piping systems design. The task force found this category required corrective action for both past and future work.

NSRS stated that there existed a generic problem of implementation of procedures, attention to detail and lack of a really idnependent review process.

NOTE THE ABSENCE OF AN ITEM IN THE RECOMMENDATIONS SECTION ASSOCIATED WITH THIS CATEGORY OF FINDING ALTHOUGH THE DISCUSSION SECTION DOES RECOMMEND CORRECTIVE ACTION. WHAT CORRECTIVE ACTION DID TVA TAKE? WHAT REVIEW OF THIS ITEM HAS BEEN MADE BY THE NRC? WHERE IS ANY SUCH REVIEW DOCUMENTED?

Category 7, NONE/16, NONE/08

17 findings involved nonconforming condition in construction of previously inspected and accepted pipe supports. ... The pipe supports would have been inspected (per 79-14 program), and the ones with problems would have been found.

WHAT INSPECTIONS HAVE BEEN DONE OF OTHER SYSTEMS TO FIND WHETHER SUCH NONCONFORMING CONDITIONS EXIST PLANTWIDE? NOTE THE ABSENCE OF AN ITEM IN THE RECOMMENDATIONS SECTION ASSOCIATED WITH THIS CATEGORY OF FINDING ALTHOUGH THE DISCUSSION SECTION DOES RECOMMEND CORRECTIVE ACTION. WHAT CORRECTIVE ACTION DID TVA TAKE? WHAT REVIEW OF THIS ITEM HAS BEEN MADE BY THE NRC? WHERE IS ANY SUCH REVIEW DOCUMENTED?

Category 9, 5/17-20, 3/8-10

Category 9 involves 8 findings of failure to adequately control and evaluate embedded plate capacity when multiple attachments were made to the plate by construction.

Discussion of this item refers to a failure to adequately control and evaluate embedded plate capacity when multiple attachments were made to each plate. Draft (p.18) states: "The initial NSRS review and discussions with cognizant EN DES designers concluded these findings would not have been corrected nor would have been corrected by the plan at that time. There is no control system to identify and maintain records of as built loads on the plates. With this lack of record or system, there is no way of knowing whether plates are overloaded." The discussion in the draft goes on to say "There is no bookkeeping system to keep track of the cumulative load on any individual embedded plate." Construction Specification N3C-928 was supposed to control locations of attachments but did not deal with installations prior to February 1983 when N3C-928 went into effect. NSRS noted (Draft, p. 19) "there was still [after N3C-928] no cumulative load kept on each plate. .. The only way to ensure that plates do not fail is to do an analysis for actual loads and analysis."

WHAT HAS TVA DONE TO ADDRESS THIS PROBLEM OTHER THAN TO REVIEW 69 PLATES? DOES NRC ACCEPT THIS DISPOSITION? IF SO WHAT IS THE BASIS FOR DOING SO? FOR EXAMPLE, WHAT IS THE RATIONALE FOR ACCEPTING, IN LIEU OF LOAD DATA AND ANALYSES ON ALL EMBEDDED PLATES, AN ANALYSIS OF 69 PLATES, ONE OF WHICH WAS OVERSTRESSED? IS IT THE NRC POSITION THAT IT IS

ACCEPTABLE FOR 1% (OR SOME OTHER PERCENTAGE) OF EMBEDDED PLATES TO BE OVERSTRESSED? IF SO, WHAT IS THE ORIGIN OF AND LEGAL AND TECHNICAL BASIS FOR ANY SUCH POSITION?

Category 11, 5/20-21, NONE/10

2 B&V findings involved inadequate documentation of operational modes data used in the analyses of piping systems.

WHAT NRC REVIEW OF THIS ITEM HAS BEEN CONDUCTED TO DETERMINE THE POSSIBLE GENERIC SIGNIFICANCE OF THIS FINDING CATEGORY?

Category 12, NONE/21, NONE/10

One B&V finding involved a failure to properly implement and document alternate analysis criteria for seismically supported piping.

WHAT NRC REVIEW OF THIS ITEM HAS BEEN CONDUCTED TO DETERMINE THE POSSIBLE GENERIC SIGNIFICANCE OF THIS FINDING CATEGORY?

Category 13, NONE/21-22, NONE/10

One B&V finding involved termination documentation which did not reflect actual configuration. The Task Force found this was an isolated instance.

DOES OTHER DOCUMENTATION SUPPORT THIS BEING AN ISOLATED INSTANCE? WHAT NRC REVIEW OF THIS ITEM HAS BEEN CONDUCTED TO DETERMINE THE POSSIBLE GENERIC SIGNIFICANCE OF THIS FINDING CATEGORY?

Category 14, NONE/22-23, NONE/11

22 B&B findings involved AFW supports that had not been modified, redesigned, or intially designed per ECN 2576. Task Force concluded the findings were departures from licensing commitments and licensing bases. Task Force concluded that problem was substantially isolated to ECN 2576, wherein approximately 8% of the covered supports required some construction modification. (See Final, p.11.)

WHAT DOCUMENTATION EXISTS TO DEMONSTRATE THIS? WHAT NRC REVIEW OF THIS ITEM HAS BEEN CONDUCTED TO DETERMINE THE POSSIBLE GENERIC SIGNIFICANCE OF THIS FINDING CATEGORY?

Category 16, NONE/23, NONE/11

One finding involved a technical note on a pipe support drawing was found to be invalid for some applicatons. This involved a deviation from a licensing commitment, but the Task Force found that the licensing basis was

met. Corrective action for future work was required; no modifications to existing support bolting was required.

WHERE ARE THESE FINDINGS AND CORRECTIVE ACTIONS DOCUMENTED? WHAT REVIEW HAS BEEN UNDERTAKEN BY NRC? NOTE THAT THE RECOMMENDATION FOR CORRECTIVE ACTION APPEARS IN THE DISCUSSION SECTION, NOT THE RECOMMENDATION SECTION.

Category 19. NONE/23-24, NONE/11

Two findings involved equipment that could not be determined to be environmentally qualified pursuant to NUREG-0588. This was a deviation from the licensing commitment. NSRS stated that TVA already had a program which "could have reasonably been expected to correct the problems." The Final (p. 11) states that NSRS agrees with the Task Force that the problem would have been found without B&V. The Draft (p.23) concludes that "the environmental requirements are of a sufficiently high visibility that even if the TVA program had not correcrted the problems, someone else would have eventually found them and corrected the shortcomings."

DOES NRC STAFF AGREE THAT TVA'S PROGRAM HAS BEEN EFFECTIVE AT FINDING AND CORRECTING EQ DEFICIENCIES? WHERE IS NRC REVIEW OF THIS ITEM DOCUMENTED?

Category 20, 6/24-25, 3/11-12

Five findings involved circumstances where no procedure existed for documenting preoperational testing determined time delay relay settings and the preoperational test scoping document did not identify or require documenting the settings. The NSRS evaluations of the problem showed the scope to be greater than addressed by the task since there appears to have been no effective control over time delay relays. "The existing relays would not allow setting the time called for on logic diagrms, hence the logic had not been properly implemented. .. The extent of the generic applicablity for this category is not clear to NSRS." [Final, p. 12.]

NSRS recommended that "The methods and procedures for determining the proper values, physically setting, and verifying time delay relay settings should be reevaluated and indicated changes should be expeditiously made TVA-wide.

Parris response misquotes NSRS recommendation, implying that the NSRS recommendation covered only WB and Bellefonte. NSRS R-84-26 accepts that the problem had been corrected, without saying what was done at Sequoyah and Browns Ferry.

THIS WAS AN OUTSTANDING ISSUES AS OF APRIL 9, 1984, THE DATE ON WHICH TVA BRIEFED NRC STAFF. WAS THIS MATTER REPORTED TO THE NRC? WHAT NRC REVIEW OF CORRECTIVE ACTION HAS BEEN CONDUCTED?

Category 23, NONE/25-28, NONE/12

This involved 2 findings related to the AFW turbine pump trip and throttle valve not being included on the active valve list and the valve schematic not including the required control room by-pass and test indication nor automatic by-pass of the open torque switch. EN DES concluded that safety of the plant would not have been reduced if the deficiency had not been corrected. In its final report, NSRS appears to agree with the EN DES evaluation. In its draft report, however, NSRS says that while the hardware corrective action was acceptable, "the EN DES safety evaluation contains a very serious and disturbing set of thought process faults." NSRS then appears to question whether EN DES had properly interpreted the single failure criteria and, counter to EN DES, concluded that "the plant safety is [i.e. would have been] impacted albeit by an undetermined amount" if the corrective actions had not been taken.

NOTE ABSENCE OF RECOMMENDATION ASSOCIATED WITH THIS DISCUSSION. THE NSRS POSITION, AS STATED IN THE DRAFT, CONFLICTS WITH APRIL 9, 1984 STATEMENTS TO NRC STAFF;E.G. STATEMENTS ON FAILURE/SAFETY EVALUATION RESULTS AND TASK FORCE CONCLUSION CHARTS TO EFFECT THAT B&V IDENTIFIED DEFICIENCIES WOULD NOT HAVE PREVENTE ANY NUCLEAR SAFETY FUNCTION WHICH IS PART OF THE LICENSING BASES.

DOES THE NSRS POSITION RE "SINGLE FAILURE" REMAIN AS DESCRIBED IN DRAFT, P. 25 - 30? IF THE NSRS POSITION HAS CHANGED, WHERE IS THE CHANGE DOCUMENTED? WHAT IS THE NRC STAFF POSITION ON THE NSRS INTERPRETATION AS DESCRIBED IN THE NSRS DRAFT, P. 25-30?

Category 25, NONE/28, NONE/13

One finding involved flange evaluations being omitted in some analysis calculations. The task force concluded that the licensing commitment had not been met but evaluation showed the licensing basis was met. NSRS agreed with EN DES corrective actions and conclusions.

Category 30, NONE/29-30, NONE/13

Two findings involved a failure to satisfy design criteria: (1) monitoring operability and (2) providing adequate electrical protective devices for the motor driven AFW pump lube oil pump. NSRS states that in reviewing other equipment, only one additional instance of failure to provide electrical protection was found. [WHAT OTHER ELECTRICAL EQUIPMENT WAS REVIEWED, BY WHOM, WHERE IS THE DOCUMENTATION?] NSRS agreed with the "specific corrective actions for the identified problems." In language that appears in the draft report (p.29-30) but not in the final, NSRS states that it found "the safety evaluation logic to be

faulty. .. As in Category 23, the evaluation [by EN DES] concluded that the AFW system would function with a single failure and safe operation and shutdown of the plant would not be jeopardized. The impact of the safety defects was not evaluated." NSRS then goes on [in the draft report but not in the final rereport] to criticize the EN DES interpretation of the single failure criteria.

NOTE THAT RECOMMENDATIONS CONCERNING THIS CATEGORY WERE NOT MADE IN THE RECOMMENDATIONS SECTION. HAS THIS FINDING, ITS POSSIBLE GENERIC APPLICABILITY, AND THE EN DES RESOLUTION OF SAME BEEN REVIEWED BY NRC STAFF? IF SO, WHAT DOCUMENTS DESCRIBE SUCH REVIEW?

Category 31, NONE/30-31, NONE/13

Two findings involved editorial discrepancies in licensing documents. The TVA task force concluded that these findings wer not significant and did not call for a response other than correction of the identified errors. NSRS agreed.

WHAT WERE THE ERRORS? HAS NRC STAFF REVIEWED THIS ITEM?

Category 32, NONE/31, NONE/13-14

Nine findings involved incompatible hanger drawings and piping isometrics. NSRS concluded that these findings did not impact on safety since "much of the work was not complete and system walkdowns could be expected to identify any incorrectly placed or installed supports."

IS IT THE CASE THAT MUCH OF THE WORK ON AFW SUPPORTS HAD NOT BEEN COMPLETED BY MID-1982? WHAT WAS THE NATURE OF THE DISCREPANCIES? WHAT REVIEWS BY TVA AND NRC HAVE BEEN UNDERTAKEN TO DETERMINE THE COMPATIBILITY OF HANGER DRAWINGS AND PIPING ISOMETRICS? WHERE ARE ANY SUCH REVIEWS BY TVA AND NRC DOCUMENTED? WHAT IS THE BASIS FOR A CERTIFICATION THAT HANGER DRAWINGS ARE COMPATIBLE WITH PIPING ISOMETRICS? NOTE THAT THERE IS NO RECOMMENDATION ASSOCIATED WITH THIS CATEGORY.

Category 33, NONE/31, NONE/14

Two findings pertained to inadequate cable tagging. The TVA task force concluded that this was not a significant problem. NSRS agreed.

WHAT REVIEWS OF THIS MATTER HAVE BEEN CONDUCTED BY THE NRC? WHERE ARE SUCH REVIEWS DOCUMENTED?

Category 34, NONE/32, 4/14

Eleven findings were made where "out of function" features of drawings were not in agreement with the latest design drawings showing the detailed design of the "out of function" features. The TVA task force concluded that these

"out of function" features do not impact upon the technical adequacy of the drawings. NSRS agreed with the technical impact conclusions reached by the task force. NSRS stated in the draft (but not the final) report that "it does not appear to be good engineering practice to allow incorrect or out of date information to remain in plant documentation. If the inforamtion is not used for design, construcion or operation purposes, it is not clear what purpose it serves. If it serves no purpose the information should be deleted from the documents."

WHAT REVIEWS OF THIS CATEGORY HAVE BEEN CONDUCTED BY THE NRC? WHERE ARE ANY SUCH REVIEWS DOCUMENTED?

Category 35, 6/33-35, 4/14-16

One finding involved instantaneous trip settings for operated valve breakers that were not in accordance with En DES criteria and vendor recommendations. The TVA task force concluded that the licensing commitment and licensing basis were not met and that corrective action was required. EN DES stated that the deficiencies would not prevnet safe operation or safe shutdown of the plant and that a cause of the deficiencies were "expedient decisions not correct deficiencies when the requirements were known not to have been met." NOTE THAT THE LATTER QUOTE APPEARS IN THE DRAFT BUT NOT THE FINAL REPORT.

NSRS disagreed with the EN DES and task force resolution of this finding category. NSRS states: "The expressed EN DES electrical design practice and philosophy are not in concert with present day nuclear design logic or common industrial practice. By NSRS reading, the stated EN DES positions do some injustice to the reasons for having protective devices of any sort. ... The EN DES safety evaluation is incomplete in that the consequences of the pervasive nature of the deficiencies was not thoroughly considered."

NSRS stated concern that EN DES reached broad conclusions on the basis of a narrow failure analysis. "The misapplication of the breakers exposes equipment to unnecessary challenge. These challenges can cause undetected failures which would nto be seen during periodic testing. At the best, the deviations would have reduced safety margins even though single failure criteria may have been met; therefore, the deviations were significant to safety.

DOES NSRS CONTINUE TO BELIEVE THAT THE EN DES SAFETY EVALUATION IS INCOMPLETE WITH RESPECT TO CATEGORY 35? IF NSRS HAS CHANGED ITS POSITION, WHAT IS THE BASIS FOR SUCH CHANGE? WHERE IS THE BASIS FOR THE CHANGE DOCUMENTED? WHAT REVIEW HAS NRC STAFF CONDUCTED BASED ON THE FOREGOING STATEMENT FROM NSRS R-84-19 WBN.

NSRS states in R-84-26-WBN (p.2-4.) that it continues to disagree with the EN DES response to this item. NSRS stated

that its concern was based on the fact that "480-volt motor branch protection is not being performed in accordance with the National Electrical Code. ... NSRS considers it to be inappropriate to change a design standard to a design guide to resolve the conflict and leave compliance to the discretion of the designer. ... "

NOTE THAT THIS MATTER WAS NOT MENTIONED AS AN UNRESOLVED ITEM AT THE APRIL 9, 1984 TVA BRIEFING OF NRC STAFF. WHY WAS IT NOT MENTIONED? WHEN DID NRC STAFF FIRST BECOME AWARE THAT THIS WAS AN ITEM OF CONTINUING CONCERN TO NSRS?

WHAT IS NRC'S POSITION WITH REGARD TO DECISIONS NOT TO CORRECT KNOWN DEFICIENCIES BECAUSE IT WAS NOT EXPEDIENT TO DO SO? HOW HAS THE NSRS CONCERN BEEN RESOLVED? WHERE IS IT DOCUMENTED? WHAT REVIEWS OF THIS MATTER HAVE BEEN CONDUCTED BY NRC? WHERE ARE SUCH REVIEWS DOCUMENTED?

Category 36, 7/35-37, 4/16-17

One finding was that cable tray fill criteria are not assured of being met because of the less than conservative nominal values used for cable cross sectional areas in the cable routing program. EN DES concluded that licensing requirements had been met. NSRS did not agree. NSRS noted that the computerized routing system was inadequate for several reasons. NSRS also noted that there was no formal feedback procedure for circumstances wherein construction "vagaries" led to full trays before all the cables designated for those trays had been installed. NSRS also found "excess cable coiled and hanging from edges of cable trays: excess calbe coiled and lying on the floor; no record of pull tension for cables; no record of meggar results for cables' and supports fabricated form "Unistrut" type material which is not seismically qualified unless embedded in concrete.

In its associated recommendation, NSRS stated that there should be a system for construction forces to communicate with designers in order to avoid overfill problems. NSRS stated (draft, p.7) that "Although the problems at WBN 1 are probably beyond fixing, expeditious action should be taken to upgrade the system for WBN 2 and Bellefonte." [In the final report, <u>are probably</u> has been changed to <u>may be</u>.]

NSRS also stated: "The additional problems [noted] above must be resolved. Until these deficiencies are correcterd, TVA can not adquately justify that the licensing requirements are satisfied in full. NSRS believes safety evaluations should be made of the conditions described prior to substantial plant operation."

EN DES did not concur with certain of the NSRS findings and recommendation. NSRS stated its continuing disagreement in 84-26-WBN, p. 4-5. NSRS recommended, among other things, that a TVA QA organization "should, through an inspection

and/or audit process, determine if the existing installation meets the established criteria. ..[and] .. Where deviations from the FSAR commitments are made. TVA should peform a safety analysis to justify the deviations. Such deviations should be examined for reportability to the NRC."

DOES NSRS CONTINUE TO BELIEVE THAT THE EN DES SAFETY EVALUATION IS INCOMPLETE IN THIS RESPECT? IF NSRS HAS CHANGED ITS POSITION. WHAT IS THE BASIS FOR SUCH CHANGE? WHERE IS THE BASIS FOR THE CHANGE DOCUMENTED? WHAT REVIEW HAS NRC STAFF CONDUCTED BASED ON THE FOREGOING STATEMENT FROM NSRS R-84-19 WBN?

WHAT IS THE CURRENT NSRS POSTION WITH REGARD TO THE MATTERS DESCRIBED ABOVE? WHAT NCR'S HAVE BEEN PREPARED? WHAT CORRECTIVE ACTIONS HAVE BEEN UNDERTAKEN? WHAT REVIEWS HAVE BEEN UNDERTAKEN BY TVA TO ASSURE RETROSPECTIVE AND COMPREHENSIVE RESOLUTION OF THE CATEGORY 36 ISSUES? WHERE ARE SUCH TVA REVIEWS DOCUMENTED? WHEN DID NRC LEARN OF THE NSRS POSITION AS STATED IN 84-10 AND 84-26? WHAT REVIEWS OF THE CATEGORY 36 ITEMS HAVE BEEN CONDUCTED BY THE NRC? WHERE ARE SUCH REVIEWS DOCUMENTED?

Category 37, NONE/37-38, NONE/18

One finding involved valve wiring that would lead to ambiguous indications in the event of certain switch malfunctions. EN DES said that the potential operator confusion caused by this defect was "undesirable." NSRS stated it considers "confusion or potential confusion to the operator to be not only undesirable but unsafe as well." The latter quote appears in the draft NSRS report but not the final.

WHAT REVIEW OF THIS CATEGORY HAS BEEN CONDUCTED BY THE NRC? WHERE IS IT DOCUMENTED?

Category 38, 7/38-40, NONE/18

Two findings involved failure of the thermal overload bypass circuit design to meet requirements of RG 1.106 and IEEE 279-1971. The TVA task force concluded that the licensing basis had been met and no corrective action was required.

In its draft report, NSRS did not agree with the task force resolution. It states that the EN DES evaluation "is confusing and does not address the issue in one instance." NSRS also questioned whether the NRC review had missed the point and that it was, in any case, not clear what NRC had agreed to. In stating that TVA design should be in strict compliance with R.G. 1.106 and IEEE 279, NSRS suggested that at the time of its review such compliance had not been achieved. In its final report, NSRS stated agreement with the EN DES resolution of this matter.

WHAT WAS THE BASIS FOR THE NSRS CHANGE IN POSITION? WHAT

REVIEWS WILL BE CONDUCTED BY NRC STAFF IN LIGHT OF THE NSRS CONCERNS REGARDING CATEGORY 38?

Category 39, NONE/40, NONE/18

One finding involved cables that had not been tested for the effects of fire retardant coating on the ampacity of the cable. This condition was evaluated and the conclusions presented to NRC for approval. NSRS agreed with EN DES conclusions and actions.

WHERE IS THE DOCUMENTATION OF THE NRC REVIEW AND APPROVAL?