ATTACHMENT

TECHNICAL EVALUATION REPORT

DETAILED CONTROL ROOM DESIGN REVIEW

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

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Technical Evaluation Report
Detailed Control Room Design Review
Nebraska Public Power District
Cooper Nuclear Station*

1. INTRODUCTION

Nebraska Public Power District (NPPD) submitted their "Cooper Nuclear Station Detailed Control Room Design Review Summary Report" [1] to the Nuclear Regulatory Commission on February 4, 1985. This report was submitted to the NRC in response to the requirements of NUREG-0737, Supplement 1.

Lawrence Livermore National Laboratory (LLNL) has evaluated the DCRDR Summary Report. The disciplines of human factors engineering, nuclear engineering, electrical engineering, and systems engineering were represented on the LLNL evaluation team. All team members were familiar with nuclear power plant control rooms and experienced in the evaluation of DCRDRs.

The Cooper Summary Report has been reviewed against the requirements of NUREG-0737, Supplement 1 and guidance provided by NUREG-0700 and Appendix A to NUREG-0800 Section 18.1

This Technical Evaluation also reflects the results of an in-progress audit of the Cooper DCRDR Program conducted November 27th through 30th, 1984, [2]. The written results of this audit were not available to NPPD prior to the submittal of the Summary Report, thus audit comments were not incorporated into NPPDs submittal. NPPD has committed to issue a supplement to the Summary Report responding to the audit comments. Response to the TER comments may also be included in the supplement.

2. DISCUSSION

2.1 DCRDR REVIEW TEAM

2.1.1 Requirement

Supplement 1 to NUREG-0737 requires the establishment of a qualified multidisciplinary review team to conduct a DCRDR. Guidelines for review team selection are found in NUREG-0700, Draft NUREG-0801, and Appendix A to Section 18.1 of the Standard Review Plan, NUREG-0800.

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* This work was supported by the United States Nuclear Regulatory Commission under a Memorandum of Understanding with the United States Department of Energy.

2.1.2 Assessment

The core of the Cooper DCRDR team consists of:

- The Station Operations Manager
- A shift Technical Advisor with previous experience as a Shift Supervisor
- A Senior Systems Engineer from General Electric
- A Human Factors Scientist as a Consultant to General Electric

Each member of this core team participated in the majority of DCRDR activities.

Individuals with expertise in the areas of operations, systems engineering, human factors engineering, and instrumentation, and control provided support to the core team.

DCRDR team management and administration is provided by the NPPD Operations Manager. The review team had access to personnel, information, equipment, and facilities required to support the DCRDR effort.

It was noted during the in-progress audit, that most DCRDR documentation is currently in the possession of General Electric.

NPPD has adequately complied with the DCRDR team requirements of NUREG-0737, Supplement 1.

NPPD should note that they will eventually be required to have copies of DCRDR documentation in the CNS files for quality assurance (QA) purposes. This documentation should also be made readily available to the individuals and organizations responsible for correcting HEDs.

2.2 FUNCTION AND TASK ANALYSIS

2.2.1 Requirement

Supplement 1 to NUREG-0737 requires the applicant to perform systems function and task analyses to identify control room operator tasks and to identify control room operator information and control requirements during emergency operations. Supplement 1 to NUREG-0737 recommends the use of function and task analyses that have been used as the basis for developing emergency operating procedures technical guidelines and plant-specific emergency operating procedures to define these requirements.

2.2.2 Assessment

The DCRDR team identified operator instrument and control needs to perform emergency operations tasks defined in the Cooper plant-specific Emergency Operating Procedures (EOPs). These EOPs were derived from generic symptom-based Emergency Procedure Guidelines (EPGs) developed by the BWR Owners' Group and included consideration of instrument loop accuracy during accident conditions in the establishment of operator action, control, and caution points. The Summary Report states that information and control requirements were defined for each step in the EOPs. The in-progress audit, however, determined that these requirements were defined to a varying degree of detail as determined necessary by the individuals conducting this effort. Characteristics related to indicator resolution or accuracy, and the availability of instrument and control loops under various plant power supply and environmental conditions, generally have not been identified.

Definition of information and control requirements and characteristics was carried through to emergency and normal procedures required to support the EOPs and explicitly referenced by the EOPs. This effort was not extended to the event-based Emergency Procedures currently in use, other than those referenced by the EOPs, or to Normal Procedures required to support the performance of the EOPs but referenced only implicitly. NPPD indicated that before the EOPs are finally implemented they may be revised to incorporate existing Emergency Procedures. They also expect to make procedure changes to account for installation of the Safety Parameter Display System (SPDS), Plant Management Information System (PMIS), and instrumentation to satisfy the requirements of Regulatory Guide 1.97 (R.G. 1.97).

As discussed in NUREG-0800, section 18.1, Appendix A, plant specific EOPs derived from BWR Owners Group EPGs provide a acceptable functional and systems basis for conducting task analysis. Nevertheless, the requirements of NUREG-0737, Supplement 1 have not been completely fulfilled since the Function and Task Analysis was not conducted for supporting procedures that were not derived from the ERGs. In Cooper's case these include, implicitly referenced normal operating procedures required to support performance of EOPs and existing Emergency Procedures to the extent they will be used as stand-alone procedures after the EOPs are in place. Station Blackout and Remote Shutdown Procedures are also considered to be emergency procedures, however, these were not addressed by the DCRDR. Revision of the EOP Task Analysis also may be required if the existing Emergency Procedures are incorporated into the EOPs or used in conjunction with the EOPs.

The Function and Task Analysis process must also be applied in the generation of SPDS and PMIS procedures that support emergency operations. It is suggested that NPPD apply this technique to all SPDS and PMIS procedures.

NPPD's Summary Report Supplement should address how resolution of these items has been or will be incorporated into the DCRDR program.

The methodology used to define the characteristics of information and controls required to perform the EOPs adequately addresses the requirement of NUREG-0737, Supplement 1 to identify operator information and control needs. As discussed in Ref. 5, however, this methodology was not consistently applied throughout the analysis and certain important information and control characteristics were not adequately addressed. Therefore, the requirements of NUREG-0737 Supplement 1 have not been completely fulfilled in this regard. NPPDs analysis should be supplemented as follows to resolve these concerns:

- Characteristics relating to operability requirements (e.g., power quality and equipment qualification) under accident conditions should be defined.

- Requirements relating to indicator resolution should be defined for tasks in which the operator must determine the value of a parameter or compare the value of a parameter against a action, control, or caution point.

- The level of detail in which required information and control characteristics are defined should be consistent throughout the analysis.

Evaluation of instrument operability during accident conditions may be conducted through coordination with the R.G. 1.97 program. However, the DCRDR must ensure that R.G. 1.97 indications required to support EOP tasks are suitably engineered from a human factors standpoint and are located in proper relationship to associated controls. We are unaware of other programs that will provide the required evaluation of control operability in support of the DCRDR.

2.3 COMPARISON OF CONTROL AND DISPLAY REQUIREMENTS WITH CONTROL ROOM INVENTORY

2.3.1 Requirement

Supplement 1 to NUREG-0737 requires the applicant to compare the operator display and control requirements determined from the task analyses with the control room inventory to determine missing controls and displays. Guidance in NUREG-0700 also calls for a review of the human factors suitability of instruments and controls used to satisfy operator information and control requirements.

2.3.2 Assessment

The information and control requirements, to the extent they were defined for the EOP steps, were compared against the instruments and controls available in the control room during a series of EOP walkthroughs. During these walkthroughs the human factors suitability of controls and displays supporting EOP steps was subjectively evaluated by the review team, as a backup to the control room survey.

The NPPD method for comparing operator control and information requirements with the control room inventory can be used to satisfy the requirements of NUREG-0737, Supplement 1. However, detailed information and control needs

were not consistently identified as part of the Function and Task Analysis. Thus, the NPPD method could not be used to make the rigorous and systematic comparison required by NUREG-0737, Supplement 1, to determine that installed instruments and controls are suitable to perform all operator tasks during emergency conditions. Consequently, as the Function and Task Analysis is revised to address the concerns raised in the previous section, this comparison of information and control requirements with the characteristics of installed instruments and controls should be repeated to ensure all requirements identified by the Function and Task Analysis have been addressed.

The evaluation of human factors suitability conducted as part of the comparison walkthroughs was a praiseworthy step as demonstrated by the large number of "survey type" HEDs identified during this effort.

2.4 CONTROL ROOM SURVEY

2.4.1 Requirement

Supplement 1 to NUREG-0737 requires that a control room survey be conducted to identify deviations from accepted human factors principles. NUREG-0700 provides guidelines and criteria for conducting a control room survey. The objective of the control room survey is to identify for assessment and possible correction the characteristics of displays, controls, equipment, panel layout, annunciators and alarms, control room layout, and control room ambient conditions that do not conform to good human engineering practices.

2.4.2 Assessment

The Cooper Control Room Survey was conducted in three parts:

1. A survey by a BWR Owners' Group (BWROG) team in 1981. This survey was conducted against the BWROG survey checklist and included most, but not all, control room panels.

2. Completion of the BWROG checklist by the NPPD DCRDR team for panels not included in the original survey, and review of significant human factors deviations identified by the BWROG survey. This effort took place in 1984. Items rated as low level nonconformances by the 1981 survey were not reviewed by the NPPD team.

3. NPPD team control room survey against a supplemental BWROG checklist developed to address topics included in the NUREG-0700 checklists, but not in the original Owners' Group checklist. This was also done in 1984.

The plant computer consoles were not included in the control room survey because the existing plant computer is to be replaced in the near future.

The BWROG checklist taken, together with its supplement, generally embraces the human factors principles contained in NUREG-0700. In many cases, however, the specific evaluation criteria are different and imprecise.

The 1981 BWROG and the 1984 NPPD survey evaluated each control room panel against the principles and criteria contained in the BWROG checklist and supplement. The level of conformance with each principle was assigned a rating between one and four for each panel evaluated by the reviewer. The number rating assigned represented the degree of conformance for the panel as a whole. Thus, a panel containing severe deviations from human factors principles could be deemed "nearly in compliance" by the reviewer if the number of deviations on the panel was small compared to the number of items to which the principle applied. Specifics regarding the observed deviations were generally not recorded except for items assessed to be significant HEDs. HED documentation, particularly by the 1981 survey, was not always detailed enough to allow clear identification of the problem by individuals outside of the review team.

As noted previously, the survey was supplemented by additional NPPD review team observations of human factors suitability during their comparison of information and control requirements with the control room inventory.

During the audit control room inspection, the audit team noted the following HEDs in areas where complete, or near complete, compliance with the corresponding checklist principles was indicated by the NPPD and BWROG surveys:

- Panels VBD-A and VBD-C: Several switch directions of movement are reversed from expected convention and from other switches on the boards.

- Panel VBD-A: Nonlinear, homemade, scale on Reactor Feed Pump Suction Temperature Indicator.

- Panels VBD-A and VBD-C: Round and T-shaped switch handles obscure view of position indices and labels on switch escutcheons.

- Panel VBD-C: No demarcation of Switchyard Annunciator Acknowledge, Test, Reset, and Ground Reset Switches.

As discussed in Refs. 2 and 3, the use of the BWROG Control Room Survey checklist, together with the supplement, constitutes an acceptable method that can be used to fulfill the survey requirements of NUREG-0737, Supplement 1. However, documenting the degree of compliance as an "average" for an entire panel, and failing to document observed deviations from human factors principles in sufficient detail to establish a basis for the degree of compliance ratings assigned, is a misapplication of the survey guideline. This averaging approach may have caused specific or individual items which should have been HEDs to be dropped without adequate assessment. This concern will be discussed in more detail in the next section.

Further, finding the HEDs noted above, that were neither identified by the NPPD survey nor the NPPD review of the 1981 BWROG survey, causes some concern about the consistency with which the Cooper Control Room Survey was conducted. NPPD should determine if the apparently undocumented HEDs indicate

a systematic problem with the Cooper survey process. We recommend that their findings and actions be discussed in the Summary Report Supplement.

Resolution of these items may require resurvey of the Cooper control room. Should NPPD conclude this to be the case, we suggest that use of the detailed criteria comparable to the NUREG-0700 checklists would form a basis for the survey that is superior to the BWROG checklist criteria.

Since the PMIS and SPDS are not yet installed and thus could not be included in the Control Room Survey, NPPD must ensure that human factors principles and conventions applied to the control room as well as the NUREG-0700 principles relating to computers are applied to these new additions.

The in-progress audit noted that a number of changes that may affect the control room environment and communications are anticipated. Also, new equipment that may be adversely affected by the environment is to be installed. After these modifications are completed, the environment and communications surveys should be repeated. Again, we suggest that the NUREG-0700 checklists would form a basis for these surveys that is superior to the BWROG checklist. During resurvey, the operator's communications ability while using self-contained breathing apparatus and respirators should be evaluated.

The audit also noted that the level of detail in the HED records appears insufficient to allow Engineering to develop modifications that will adequately correct HEDs without significant input from members of the DCRDR team. Given the three-to-four-year time period planned for corrections, it is possible that team input may not be available towards the end of the process. Therefore, the NRC audit team recommends that NPPD improve the level of detail in which HEDs are documented to the point where each HED can be clearly understood from the written documentation alone.

2.5 ASSESSMENT OF HEDs

2.5.1 Requirement

Supplement 1 to NUREG-0737 requires that HEDs be assessed to determine which HEDs are significant and should be corrected. NUREG-0700 contains guidelines for the assessment process.

2.5.2 Assessment

NPPD's DCRDR assessment of HEDs was conducted in two parts.

Deviations from human factors principles identified during the control room surveys were screened by multiplying a number (one to four) assigned to indicate the degree on noncompliance by a number (one to three) representing the likelihood that violation of the particular principle involved would result in operator error. If the resultant, the Evaluation Product, was greater than eight, the deviation was considered to be an HED and subject to

further assessment. Deviations with Evaluation Products less than eight were called Human Engineering Observations (HEOs) and dropped from further consideration. Discrepancies identified by the Task Analysis or Operator Surveys were considered to be HEDs and were not subject to the screening process.

Cooper's DCRDR team then split HEDs into two categories: those that can be corrected by enhancement and those that will require a design modification to correct. NPPD has committed to correction of all currently identified HEDs that can be corrected by enhancement.

HEDs that could only be fixed by modification were further divided into high, medium, or low/none safety importance categories based upon the HED's potential impact upon safe operations, potential for error, and cumulative and interactive effects among HEDs. The DCRDR Summary Report indicates that all HEDs of high or medium safety significance will be corrected and that many of the low significance HEDs will also be corrected. In particularly difficult cases, a feasibility study is planned as the first step towards HED correction.

NPPD's process for assessing HEDs once they were categorized as such is in compliance with the requirements of NUREG-0737, Supplement 1. We believe, however, that the safety significance of the lack of lamp test capability was understated and recommend that the decision not to correct this HED be reevaluated.

The methodology for segregating HEDs and HEOs during the control room survey does not fulfill the HED assessment requirement of Supplement 1 to NUREG-0737 for the following reasons:

- The assignment of the degree of noncompliance number based upon the surveyor's judgment of the "average" for an entire panel tends to mask significant HEDs.

- Failure to document the specifics of the HEOs identified made the screening process unauditable by NRC, NPPD Quality Assurance, or General Electric Quality Assurance.

- The screening process masks HEDs that should be corrected to conform with control room human engineering conventions.

NPPD may resolve this issue by documenting the specifics of each HEO in their supplement to the DCRDR Summary Report and providing, for review, justification for each item not corrected. This action will bring NPPD's program into conformity with the BWROG position that HEDs identified by the control room survey will be evaluated on an item-to-item basis [3].

2.6 SELECTION OF DESIGN IMPROVEMENTS

2.6.1 Requirement

Supplement 1 to NUREG-0737 requires selection of control room design improvements that will correct significant HEDs. It also states that improvements that can be accomplished with an enhancement program should be done promptly.

2.6.2 Assessment

NPPD has not identified details of the design improvements to correct the HEDs designated for correction by the assessment process.

NPPD has committed to correction of all high and moderate significance, and many of the less significant, HEDs. The following scheduling philosophy was noted in NPPD's submittal.

- Most enhancements should be completed before return to power from the current outage.

- The most safety significant HEDs should be corrected prior to return to power from the next refueling, if design and equipment lead times permit. All HEDs in this category are recommended for correction within two operating cycles.

- Correction of moderate significance HEDs is recommended prior to restart from the second refueling outage after the current one. A few items are deferred to the third refueling to allow coordination with other modifications.

- The less significant HEDs to be corrected are recommended for correction within three operating cycles.

- Construction of a plant specific simulator is recommended to be complete by the fourth refueling after the current outage.

In the case of particularly intractable HEDs, initiation of feasibility studies is planned to identify appropriate modifications. In these cases, the ultimate schedule for correction will be developed by the studies.

The general philosophy for selecting HEDs to be corrected and scheduling completion dates is in compliance with the requirements of NUREG-0737, Supplement 1.

The decision to build a plant-specific simulator is commendable. Training on this facility will provide further improvement in operator performance beyond that attainable by implementation of uniform control room conventions and correction of significant HEDs and HEOs.

NPPDs Summary Report Supplement should generally describe the modifications proposed. Where modification schedules are pending completion of feasibility studies, the ultimate choice of corrective action and schedule for installation must be submitted for NRC approval upon completion of the studies.

It is recognized that correction of HEDs relating to Engineered Safety Feature information and controls located on back panels will be particularly difficult. Consequently, we agree with the plan to conduct feasibility studies before committing to specific modifications and schedules. Nevertheless, timely modifications must be implemented to correct these items.

2.7 VERIFICATION OF CONTROL ROOM DESIGN IMPROVEMENTS

2.7.1 Requirement

Supplement 1 to NUREG-0737 requires verification that selected control room design improvements will provide the necessary corrections of HEDs, will not introduce new HEDs into the control room, and will not result in increased risk, unreviewed safety questions, or temporary reduction in safety.

2.7.2 Assessment

The Summary Report did not provide a sufficiently detailed discussion of the verification process to allow evaluation.

NPPD should submit the details of the verification process as part of the Summary Report Supplement. Particular emphasis should be given to identifying differences between the final program and that described by the Program Plan and to addressing the mix of personnel involved in the verification.

2.8 COORDINATION OF CONTROL ROOM IMPROVEMENTS WITH OTHER PROGRAMS

2.8.1 Requirement

Supplement 1 to NUREG-0737 requires that control room improvements be coordinated with changes from other programs; e.g., safety parameter display systems (SPDS), operator training, Regulatory Guide 1.97 (R.G. 1.97), and emergency operating procedures (EOPs).

2.8.2 Assessment

NPPD has developed an overall schedule for major NUREG-0737, Supplement 1 items. The most current version of this schedule was provided during the in-progress audit. The stated goal of this schedule is "to complete the SPDS design, Regulatory Guide 1.97 assessment, and writing of plant-specific emergency operating procedures at approximately the same time...including any supplementary work that is required as a result of the control room design review" [4].

Although the schedules for NUREG-0737 activities have been coordinated, it is not apparent that NPPD has a positive program to ensure these activities happen in a coordinated manner. Additional coordination and interaction at the working level for these projects may be necessary to make the schedule come together.

A schedule update for SPDS, PMIS, procedures, operator training, and R.G. 1.97 modifications required to support the EOPs should be included in the Summary Report Supplement to show coordination among these items. Items of particular interest are that: relabeling of control boards to establish nomenclature conventions happens concurrently with and are coordinated with procedure changes to ensure consistency between control boards and procedures; installation of R.G. 1.97 instrumentation required to support EOPs will be completed in time; and training will be adequately coordinated with procedure and hardware changes.

2.9 OTHER ITEMS

The DCRDR team conducted an operating experience review to identify HEDs that resulted in plant trips or reportable conditions. This review was limited to experience at Cooper Station and identified no HEDs. The in-progress audit team's review of CNS operating experience noted the good operating record of the plant. It is, therefore, not surprising that the DCRDR operating experience review identified no HEDs. We suggest that review of operating experience for other BWRs similar to Cooper may identify additional HEDs and provide insight that would result in changed priorities for certain HEDs.

NPPD is currently in the process of designing the remote shutdown capability for CNS. NPPD has committed to conduct a task analysis and human factors survey for the remote shutdown panel design. It is particularly important that consistent conventions and nomenclature be maintained between the control room and remote shutdown equipment.

For remote shutdown, PMIS, SPDS, and the Emergency Response Facilities, NPPD has a unique opportunity to infuse human factors principles and plant conventions during the original design phase.

3. CONCLUSIONS

NPPD's DCRDR process as described by the Summary Report does not completely fulfill all of the DCRDR requirements of NUREG-0737, Supplement 1.

The specific shortcomings of the DCRDR process are summarized below. NPPD's actions with respect to these items should be discussed as part of the DCRDR Summary Report Supplement.

1. The task analysis definition of information and control characteristics for the EOPs did not:

- o Define requirements for operability under accident conditions (e.g., power quality and qualification of portions of the instrument and control loops located in harsh environments).

- o Identify requirements on indicator resolution for tasks that require the operator to determine the value of a parameter or compare the value of a parameter against an action, control, or caution point.

- o Maintain a consistent level of detail throughout the analysis.

2. The Function and Task Analysis was not carried through to:

   - o Normal Procedures implicitly referenced in EOPs that are required to support performance of EOPs.

   - o Existing Emergency Procedures to the extent they will still be in use after implementation of the EOPs.

   - o Revised EOPs, if significant revisions are required prior to implementation.

   - o SPDS and PMIS procedures required to support performance of EOPs.

3. Apparent oversights exist in the Control Room Survey. These should be reviewed to determine if they are indicative of a systematic problem with the survey process, and appropriate action should be taken.

4. The control room environment and communications survey results may be invalidated by planned modifications that will affect the environment (e.g., PMIS, SPDS, and a new communications system).

5. It could not be determined that human factors principles, conventions and plant nomenclature consistent with that used in the control room will be implemented in the design of the SPDS and PMIS.

6. The safety significance of the lack of lamp test capability appears to have been misassessed.

7. The assessment process used to segregate HEDs and HEOs during the Control Room Survey was not documented and justification was not provided for HEOs that are not corrected.

8. It could not be determined that R.G. 1.97 instruments required for performance of EOPs will be available prior to EOP implementation and that relabeling of Control Boards and procedure changes are happening in a manner that ensures consistent nomenclature between the procedures and boards.

Certain portions of the DCRDR program were not sufficiently described by the Summary Report to allow assessment beyond that provided by the Program Plan

review. NPPD should ensure their Summary Report Supplement discusses the following items in sufficient detail to allow NRC review and determination whether the DCRDR requirements of Supplement 1 to NUREG-0737 have been met.

1. Modifications planned to resolve HEDs should be described and completion schedule commitments provided. A supplement to the Summary Report will be needed to provide descriptions and schedules for modification plans resulting from feasibility studies.

2. The details of NPPD's verification process for HED corrections should be included.

3. An updated schedule for NUREG-0737, Supplement 1, activities should be included. This update shows the interrelationships among these tasks.

Finally, the following suggestions are submitted for NPPD's consideration in areas not directly related to the DCRDR requirements of NUREG-0737, Supplement 1.

1. Copies of survey checklists, task analysis work sheets, and other DCRDR documentation should be obtained from General Electric and organized into a working file for use by NPPD team members and individuals and organizations responsible for HED correction modifications and other related efforts.

2. HED records should be upgraded so the written documentation alone is adequate to provide non-DCRDR team members a clear understanding of each HED.

3. Any portions of the Control Room Survey that are repeated or updated should make use of the NUREG-0700 checklists.

4. Further coordination of SPDS, PMIS, DCRDR, R.G. 1.97, and EOPs at the working level should be considered.

5. The operating experience review should be extended to include experience at other BWRs similar to Cooper.

6. Design conventions and nomenclature applied to remote shutdown equipment should be consistent with those used in the control room.

In view of NPPD's commitment to issue a Supplement to the DCRDR Summary report addressing the in-progress audit results, it is recommended that a decision regarding the need for a preimplementation audit be deferred pending review of the Supplement.

4. REFERENCES

1. Letter J. M. Pilant (NPPD) to D. B. Vassallo (NRC), "NUREG-0737, Supplement 1 - Detailed Control Room Design Review (DCRDR) Summary Report," dated February 4, 1985.

2. Letter D. B. Vassallo (NRC) to J. M. Pilant (NPPD), "Review of the Cooper Nuclear Station Detailed Control Room Design Review Program Plan Submittal," dated June 4, 1984.

3. Letter D. G. Eisenhut (NRC) to BWR Licensees, Applicants and Construction Permit Holders, "NRC Staff Review of the BWR Owners' Group (BWROG) Control Room Survey Program (generic letter 85-18), dated April 19, 1983.

4. Letter J. M. Pilant (NPPD) to D. G. Eisenhut (NRC), "Response to NUREG-0737, Supplement 1, Emergency Response Capability, Cooper Nuclear Station," dated April 15, 1983.

5. Letter D. B. Vassallo (NRC) to J. M. Pilant (NPPD), "Detailed Control Room Design Review In-Progress Audit Report," dated March 20, 1985.

ENCLOSURE 2

HFEB SER SALP INPUT

FOR

COOPER STATION NUCLEAR POWER STATION

1. Management involvement and control in assuring quality

   Limited management involvement resulted in a systematic problem with the survey processes. For example the control room environmental and communications survey results may be invalidated by planned modifications to the control room that will affect the operating environment (e.g., PMIS, SPDS, and a new communications system).

   Rating: Category 2

2. Approach to resolution of technical issues from a safety standpoint

   The function and task analysis effort was not satisfactorily completed to the extent that all operator actions required during emergency operations were not analyzed.

   The licensee documented the degree of compliance with human factors principles for an entire panel as an "average" and failed to document individual observed deviations from human factors principles in sufficient detail to establish a basis for the degree of compliance ratings it assigned. This is a mis-application of the survey guideline. This averaging approach may have caused specific or individual HEDs to be dropped without adequate assessment.

   The assessment process used to categorize safety significant HEDs and HEOs during the Control Room Survey was not adequately documented and justification was not provided for HEOs that are not corrected.

   Rating: Category 2

3. Responsiveness to NRC initiatives

   Although the licensee has made required submittals on a timely basis additional submittals are needed to fulfill the requirements of Supplement 1, NUREG-0737.

   Rating: Category 2