



Wisconsin Electric POWER COMPANY
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May 21, 1985

Mr. H. R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. NUCLEAR REGULATORY COMMISSION
Washington, D. C. 20555

Attention: Mr. J. R. Miller, Chief
Operating Reactors, Branch 3

Gentlemen:

DOCKET NOS. 50-266 AND 50-301
RESOLUTION OF NRC CONCERNS REGARDING THE
CONTROL ROOM DESIGN REVIEW PROGRAM PLAN
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

On July 31, 1984, we submitted a program plan describing our methodology for conducting a detailed control room design review (CRDR) of the Point Beach Nuclear Plant control room. This plan was prepared to comply with the requirements of Supplement 1 to NUREG-0737, as contained in NRC Generic Letter 82-33. In your letter to us dated January 22, 1985, the Staff transmitted the results of their evaluation of our CRDR program plan. Although the plan generally meets NRC requirements, the Staff identified ten concerns which they believed "if resolved, would increase the benefits of the CRDR and the likelihood that the Supplement 1 requirements would be met." A meeting was held with Messrs. Colburn and Serig of your staff on April 3, 1985 to resolve these concerns and to discuss the status and schedule for conduct of the CRDR at Point Beach. A subsequent telephone conversation was held with Messrs. Colburn and Serig on April 16, 1985 to further clarify our responses to the staff concerns.

The purpose of this letter is to confirm our responses to the staff concerns and to provide an updated schedule regarding the conduct of the CRDR at Point Beach.

Our responses to the concerns are provided in Attachment 1 to this letter. Most of the responses involve clarifications or minor modifications of our program plan. Two significant areas of concern involved our proposed use of a control room survey checklist, which was significantly different from the NRC's NUREG-0700 Section 6 checklist, and the use of a

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cost/benefit analysis in the assessment of human engineering deficiencies (HEDs). Based on a detailed comparison of the control room survey checklists contained in both our program plan and NUREG-0700, Wisconsin Electric has decided to use the reformatted NUREG-0700 control room survey checklist and to add several items from our program plan checklist not found in NUREG-0700. Regarding the use of a cost/benefit analysis in evaluating HED resolutions, Wisconsin Electric believes that this is an appropriate technique to use in comparing and assigning priorities to proposed HED resolutions. However, we are committed to correcting all accident-related HEDs regardless of the results of a cost/benefit analysis. We trust that our responses address each of the concerns.

In a Commission Order dated July 2, 1984 (revised February 5, 1985) Wisconsin Electric was requested to submit a summary report of the results of our CRDR at Point Beach no later than October 31, 1985. We are presently conducting the CRDR and have reevaluated the schedule which was included in the program plan submitted to the NRC on July 31, 1984. As discussed at the April 3 meeting, we now believe that the October 31, 1985 date is not feasible if a thorough and effective CRDR is to be conducted. A revised schedule for the conduct of the CRDR at Point Beach is provided in Attachment 2 to this letter. We request that the required submission date for the summary report be revised to March 31, 1986.

Additionally, since our schedule has been shifted, we request that the in-process audit, tentatively scheduled for May 1985, be changed to November 1985. This will allow the NRC to audit the CRDR at the same relative point as requested in your January 22, 1985 comment letter.

There are three reasons which we believe justify requesting these delays. First, the completion of planning phase tasks, specifically the fabrication of a full-scale photographic mockup of the Point Beach control room and the selection of a human factors consultant to assist us in the conduct of the CRDR, was delayed by unanticipated problems during the fall 1984 refueling outage of Unit 2. Resolution of the outage problems tied up the personnel evaluating bids on those projects. The photography work for the mockup was delayed until December 1984 due to unanticipated delays in the installation of the new auxiliary safety instrumentation panels (ASIPs) in the Point Beach control room. We wanted the mockup to include the latest configuration of the ASIPs which contain readouts for several new post-accident monitoring instruments installed in response to NUREG-0737.

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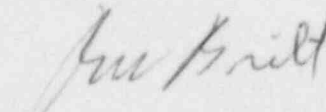
The mockup was completed in late March 1985, approximately five months later than originally anticipated. The selection of General Physics Corporation as our human factors consultant was completed in December 1984. Following several planning meetings with General Physics, the human factors orientation of the CRDR team was conducted in March 1985, approximately two months later than originally anticipated.

Second, the CRDR is very closely linked to the Emergency Operating Procedure (EOP) upgrade effort. We are requiring that the upgraded EOPs be used as a basis for the system function review and task analysis (SFRTA) portion of the detailed CRDR. The final drafts of the upgraded EOPs will not be available to start the SFRTA until the end of May 1985. The delays in the EOPs were discussed in our letters to you dated October 26 and December 6, 1984. This is a significant delay from the original schedule for the SFRTA and causes a corresponding delay in two other execution phase tasks; namely, verification of required instrumentation and validation of control room functions. These two tasks are now scheduled to be completed in November 1985, approximately six months later than originally anticipated.

Third, the concerns identified in your January 22, 1985 letter required us to review and modify our CRDR program plan. We did not launch fully into the execution phase tasks until we had developed proposed resolutions to the staff concerns, thus avoiding potential duplicate or wasted effort. Experience at other power plants indicates that a comprehensive and effective CRDR typically takes a minimum of one year to complete. Work on CRDR execution phase tasks for Point Beach began in March 1985 and is now proceeding at a strong pace. Therefore, we believe that the requested March 31, 1986 deadline for submittal of a summary report is both reasonable and realistically attainable.

If you have any questions regarding this matter, please contact us.

Very truly yours,



President

R. W. Britt

Attachments

Copy to NRC Resident Inspector

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Attachment 1

RESPONSE TO NRC CONCERNS REGARDING
THE POINT BEACH NUCLEAR PLANT
CONTROL ROOM DESIGN REVIEW PROGRAM PLAN

1. Many of the tasks of the control room design review (CRDR) appear to be assigned solely to the human factors consultant (HFC) rather than to some appropriate combination of Point Beach and HFC personnel.

RESPONSE

The distribution of work in Table 5.1 of the program plan does not accurately reflect the actual participation in the work. It is planned and expected that Wisconsin Electric (mainly licensed Point Beach personnel) will be involved in the system function review and task analysis (SFRTA) and validation of control room function tasks. The control room inventory and verification of instrumentation are simply data compilation and comparison work that can be done by General Physics Corporation (GPC) and will receive normal supervisory and review participation by Wisconsin Electric personnel. The assessment phase will require considerable Wisconsin Electric involvement by the CRDR team and others. A better defined level of participation summary table is attached.

2. A plant orientation for HFC members unfamiliar with Point Beach did not appear to be part of the proposed orientation program.

RESPONSE

The plant orientation of HFC members unfamiliar with Point Beach was inadvertently left out of the program plan. As part of the CRDR team orientation on March 8, 1985, an introduction to and tour of Point Beach was provided to HFC personnel. Any HFC personnel not at the orientation will receive the same basic plant orientation, if necessary to perform their assigned functions. In addition, an introduction and overview of human factors engineering, systems analysis techniques, and related CRDR review and assessment processes were presented by the HFC to the Wisconsin Electric personnel as part of the orientation. This orientation will be added to a revision of the CRDR program plan.

3. The program plan does not address CRDR team validation of Emergency Operating Procedures (EOPs) that are revised as a result of the validation activity.

RESPONSE

The proposed revisions to EOPs as a result of CRDR effort will require that the normal process for review and approval of changes to procedures be followed. Note that Figure 2-1 of the program plan requires human engineering deficiency (HED) resolutions to be verified for correction of a problem without introducing other HEDs. It is intended to use the photographic mockup for this verification activity. Also, all solutions are validated in the effectiveness phase of the program plan, which would include any revised EOPs. No specific procedures for HED resolution, verification, or validation are discussed in the program plan, since it is not known exactly what form those resolutions may take at this time. As this becomes apparent during the execution phase, validation methods will be defined and procedures described in a revision of the CRDR program plan.

4. Use of the control room survey checklists will probably not result in a successful control room survey.

RESPONSE

Wisconsin Electric has decided to use the reformatted NUREG-0700 Section 6 control room survey checklist rather than the program plan checklist. However, fifteen items from the Wisconsin Electric program plan checklist will be added to the NUREG-0700 checklist. In addition, the specific anthropometric limits from the program plan checklist will be substituted into the NUREG-0700 checklist in place of the references to 95% male and 5% female.

5. The Point Beach program plan assessment methodology does not describe what criteria will be used to determine the "accident-related potential" of an HED.

RESPONSE

If a HED affects the performance of a task identified in the accident response-based SFRTA, it is considered to have "accident-related potential". Similarly, if a HED could result in violation of a Technical Specification, it is "Tech Spec-related" (see revised Figure 4-1). These criteria will be included in a revision of CRDR the program plan.

6. The assessment process does not appear to consider the aggregate effects of HEDs.

RESPONSE

All HEDs are to be screened for resolution. By reviewing HEDs against design conventions and cross listing HEDs on a computerized data base (IBM AT using Ashton-Tate's dBase

III data base handling software) by guideline or checklist item, control room area, panel, system, equipment, and component (as applicable) to check for patterns, aggregate effects of HEDs should be recognizable and will be handled accordingly. General Physics will document this process as part of their normal HED review. The revised HED record form (attached) will be used to document all HEDs so that an integrated assessment and resolution of these related HEDs can be performed.

7. It appears that several of the criteria for determining the validity of a HED could remove HEDs from consideration for correction without adequate assessment.

RESPONSE

The methodology for screening of HEDs has been revised to eliminate the flow-path item which allows dismissal of a HED before it is adequately assessed for safety significance. All HEDs will be assessed for safety significance, i.e., accident-related and Tech Spec-related, per the attached revised flow chart (Figure 4-1). This assessment will be documented on the attached revised HED record form.

8. It appears that a cost/benefit analysis may be used as the sole basis for determining whether some HEDs should be corrected.

RESPONSE

As noted above, the methodology for HED assessment has been revised. While in some cases the NRC concern is accurate, it should be noted that a cost/benefit analysis alone does not result in non-implementation for a number of HED evaluations. Assignment of dollar values to "benefits" is very subjective. Hence, while a higher cost than benefit situation may occur, the HED may still be corrected. For example, all accident-related HEDs have a resolution priority of 1, 2, or 3 and should be corrected. This will occur as a result of the "HED priority" screening to be done under the revised methodology. See attached HED assessment flowchart (Figure 4-1) and attached revised HED record form.

9. A HED-by-HED approach to selection of design improvements may result in piecemeal improvement of the control room.

RESPONSE

By utilizing the design conventions established in the control room inventory and through common supervision of improvement design work, we can minimize or eliminate this problem. With the intended use of the photo mockup for both

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design and verification, interactions will be recognized and any piecemeal work will be prevented, as much as possible, resulting in an integrated solution. In addition, as discussed in our response to Item 6, all HEDs will be cross-listed and sorted by design review attribute, as appropriate, so that they can be assessed and resolved in an integrated manner.

10. Mechanisms for verifying that selected design improvements will provide for necessary corrections and will not introduce new HEDs were not described.

RESPONSE

The program plan does not spell out a specific procedure for verifying the impact or effectiveness of resolutions. A procedure which documents this methodology is committed to be developed during the execution phase and put in place to evaluate proposed resolutions. It is our intention, however, to use the control room photo mockup to test resolutions and then to verify and validate HED resolutions. The methodology developed will be incorporated into a revision of the CRDR program plan. This process will be documented on the attached revised HED record form.

LEVEL OF PARTICIPATION SUMMARY

Attachment 1 Enclosure

Phase/Activity	CRDR Team Leader	HFC	CRDR Team I&C Engineer	CRDR Team SRO	CRDR Team Nuc. Syst. Eng.	CRDR Team Plant Engineer	CRDR Team Support Training	CRDR Team Support Licensing	CRDR Team Support Procedures	CRDR Team Support Operations (PBNP)	Project Engineer EOP V&V	NSEAS Staff	Other Depts./Sections Staff	General Supt. NSEAS	Vice President Nuc. Pwr. Dept.
1.0 PLANNING PHASE															
1.1 Select HFC	C/RC				W									RC	RA
1.2 Procure CR Mockup	C/RC				W									RC	RA
1.3 Conduct HF Orientation	C/W	W	W	W	W	W									
2.0 EXECUTION PHASE															
2.1 Historical Document Review	C/RA	W	RC	RC	C/RC	RC								RA	
2.2 Operating Personnel Survey														RA	
2.2.1 Operator Questionnaire	C/RA	W	RC	RC	RC	C/RC				W					
2.2.2 Operator Interview	C/RA	W	RC	RC	RC	C/RC				W					
2.3 CR Survey	C/RA	W	W/RC	W/RC	RC	W/RC						W		RA	
2.4 SFRTA	C/RA	W	W/RC	W/RC	W/RC	W/RC	T		T		W/RC			RA	
2.5 CR Inventory	C/RA	W	RC	RC	RC	RC								RA	
2.6 Verify Instruments	C/RA	W	RC	RC	RC	RC					RC			RA	
2.7 Validate CR Functions	C/RA	W	W/RC	W/RC	W/RC	W/RC			T	W	W/RC			RA	
2.8 Compile HEDs	C/RA	W	RC	RC	RC	RC									
3.0 ASSESSMENT PHASE															
3.1 HED Evaluation	C/RA	W	W	W	W	W	T	T	T		T				
3.2 Resolution of HEDs	C/RA	W	W	W	W	W	T	T	T	RA	T	T	T	T/RA	
3.3 Definition of Relative Costs	C/W/RA	W	W	W	W	W	T	T	T			T	T	T/RA	
3.4 Verify HED Resolutions	C/W/RA	W	W/RC	W/RC	W/RC	W/RC	T	T	T		T	T	T	RA	
3.5 Scheduling HED Correction	C/W/RA	RC	W/RC	RC	W/RC	W/RC	T	T	T	RA		T	T	RA	
4.0 DOCUMENTATION PHASE															
4.1 Task Reports	C/RA	W	RC	RC	RC	RC								RA	
4.2 Summary Report	C/RA	W	RC	RC	RC	RC		RC						RA	RA
4.3 General Documentation	C/W/RA	W	RC	RC	RC	RC								RA	
5.0 CORRECTION PHASE							W		W			W	W	C	
6.0 EFFECTIVENESS PHASE															
6.1 Prepare HF Procedure	C/RA	W	RC	RC	RC	RC							RC	RA	
7.0 SPECIAL STUDIES															
7.1 SAS Location Study	C/RA	W	W/RC	W/RC	W/RC	W/RC				RC				RA	RA
7.2 Operator Staffing	C/RA	W	RC	W/RC	RC	W/RC		T/RC		RC/T				RA	RA

Key:
C Coordinate
W Working
Participation
RC Review & Comment
RA Review & Approval
T Technical Support

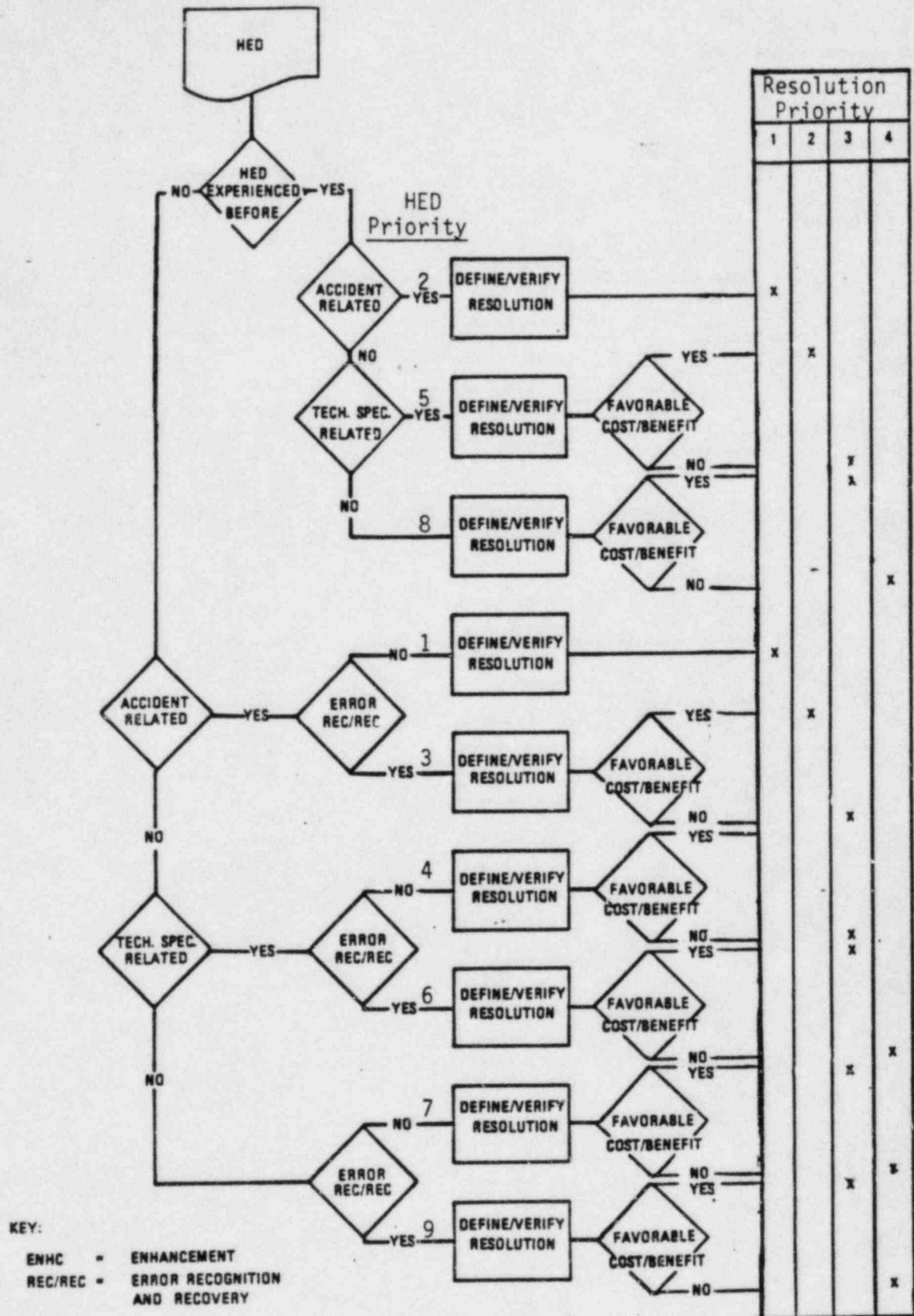


FIGURE 4-1. HED ASSESSMENT FLOW

Priority Key:

1. Correct ASAP.
2. Correct as soon as practicable.
3. No specific completion date.
4. Correction not recommended

HUMAN ENGINEERING DISCREPANCY RECORD
POINT BEACH NUCLEAR PLANT

No. _____

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I. IDENTIFICATION

Origin:

Guideline / Checklist:

Location:

Control Room Area:

Panel:

System:

Equipment:

Component:

Description of Discrepancy:

Proposed Resolution:

Prepared By: _____ Date: ____/____/____

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II. EVALUATION

HED Experienced Before?

YES

NO

Accident Related?

YES

NO

Technical Specification Related?

YES

NO

Error Recognition / Recovery Expected?

YES

NO

N/A

Comments:

HED PRIORITY: _____

Reviewed and Approved - CRDR Team: _____ Date: ____/____/____

=====

Notes:

HUMAN ENGINEERING DISCREPANCY RECORD
POINT BEACH NUCLEAR PLANT

No. _____

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III. RESOLUTION / VERIFICATION

Definition:

Verified?

YES

NO

Description / Documentation:

Related Effects:

Procedures

Training

Task Analysis

Crew Interaction

Related HEDs

Favorable Cost / Benefit?

YES

NO

Description / Documentation:

Resolution Priority:

1

2

3

4

Schedule:

Reviewed and Approved - CRDR Team: _____

Date: ____/____/____

Approved - PBNP Manager: _____

Date: ____/____/____

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IV. CORRECTION / VALIDATION:

Correction Completed: _____

Date: ____/____/____

Documentation:

Attachment:

Effective?

YES

NO

New HEDs Created?

YES

NO

Comments:

Reviewed and Approved - CRDR Team: _____

Date: ____/____/____

Attachment 2

**POINT BEACH NUCLEAR PLANT
CONTROL ROOM DESIGN REVIEW SCHEDULE**

