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December 27, 1989

Document Control Desk  
U. S. NUCLEAR REGULATORY COMMISSION  
Mail Station Pl-137  
Washington, D.C. 20555

Gentlemen:

**DOCKET NOS. 50-266 AND 50-301**  
**TRANSMITTAL OF UPDATED INFORMATION ON DCRDR**  
**POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2**

This letter is being written to provide you with an update on the status of the implementation of resolutions to Human Engineering Discrepancies (HEDs) documented during the Detailed Control Room Design Review (DCRDR) performed at Point Beach Nuclear Plant (PBNP). An HED resolution schedule, along with all of the HEDs, was submitted with the PBNP DCRDR Summary Report on March 31, 1987. The resolution schedule and selected HEDs were revised and submitted in response to the NRC audit of the Point Beach DCRDR on March 29, 1988 (VPNPD-88-186 and NRC-88-003). This submittal provides information on the status of the implementation of HED resolutions and includes a revised resolution schedule. Also being provided is information on HED resolutions that have changed since the last submittal in 1988.

The attached information has been organized by HED resolution category. All HEDs were categorized by the general form of their resolution and the resolution schedule was then based on these categories. The attached Table 1 provides a summary of the status of each of the different categories, based on the total number of HEDs in each category. Although dealing with numbers of HEDs does not really give a clear picture of the amount of work completed because (1) the scope of a HED can vary significantly, and (2) the same discrepancy may be repeated on several HEDs, the table does give an indication that substantial work has been accomplished in each category. Detailed information regarding the resolution status in each category is provided in Attachment A.

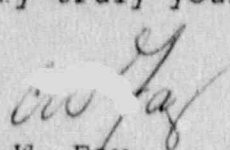
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We would be pleased to answer any questions you may have regarding the above information.

Very truly yours,

  
C. W. Fay  
Vice President  
Nuclear Power

Attachments

Copies to NRC Regional Administrator, Region III  
NRC Resident Inspector





TABLE 1

<u>Resolution Category</u>	<u>Scheduled Completion Date</u>	<u>HEDs Resolved/ Total HEDs(1)</u>	<u>Revised Completion Date for Remaining HEDs</u>
Lighting	12/31/88	9/11	12/31/91
Computer	12/31/88	11/14	12/31/91
Training	12/31/88	24/31	12/31/90
Procedural Change	12/31/89(2)	101/112	12/31/90
Enhancement	12/31/89	21/34	12/31/90
Annunciator	12/31/89	19/30	12/31/90
Instrument Air Mod	12/31/89	7/7	12/31/89
Labeling	12/31/89	50/86	12/31/90
Relocation	12/31/90	5/8	12/31/90
Control Room Mod	12/31/90	18/28	12/31/90
Meter Face Mod	12/31/90	1/58	12/31/91
Communication	12/31/90	2/12	12/31/90
New Instrumentation	12/31/91(3)	9/43	12/31/90(3)
Control Mod	12/31/93(4)	25/41	12/31/93(4)
Total		302/515	

NOTES

- (1) Total numbers used are as of 3/29/88, the date of our latest DCRDR submittal.
- (2) Procedural changes were expected to be implemented by 12/31/88 with the exception of a possible change which requires an electrical loading study to be completed. The loading study and associated procedure change were expected to be completed by the end of 1989 (see HED No. 457).
- (3) New Instrumentation was expected to be installed by 12/31/90 with the exception of controls and instrumentation for the modified 13.8 kV system (see HED Nos. 290, 295 and 355). However, the 13.8 kV system modifications have been completed and all New Instrumentation HED resolutions should be implemented by the end of 1990.
- (4) Control modifications are expected to be implemented by 12/31/90 with the exception of installation of instrument bus static transfer switches (see HED No. 321).

ATTACHMENT A

STATUS OF DCRDR HED RESOLUTIONS  
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

Lighting

The basic intent of the Lighting HEDs was to document any deficiencies (based on NUREG-0700) in normal and/or emergency lighting levels at control room work areas. The survey performed during the initial review indicated that lighting levels were below NUREG-0700 levels in just about all work areas. An additional survey performed just prior to submission of the DCRDR Summary Report indicated that acceptable levels could be attained in all work areas by insertion of additional lighting tubes in existing fixtures. This led us to state in the Summary Report that we expected to have all Lighting HEDs resolved by the end of 1988.

A followup survey was performed by our human factors consultant in January 1988 to ensure that the new lighting arrangement satisfied NUREG-0700. Levels were acceptable in all locations but in front of the Auxiliary Safety Instrumentation Panels (ASIPS). This new arrangement seemed to be acceptable to all of the operators. In July 1989, an additional survey was performed by WE personnel. The results of this survey showed the lighting levels to be slightly below NUREG-0700 minimum levels, although we are fairly certain that the lighting arrangement did not change. After this latest survey, lighting levels were increased to bring them above NUREG-0700 minimum levels. A two-week trial of this arrangement was judged by the operators to cause excess glare, eye fatigue, and headaches.

As a result of the operator feedback, we are going to keep the normal lighting levels as they are now, with the exception of the areas in front of the ASIPs. We are planning to install additional fixtures in front of the ASIPs, which was an unanticipated addition to DCRDR workload, by the end of 1991. In addition, we intend to power a string of fixtures from the second emergency diesel generator (one string is already powered from an EDG) to improve emergency lighting levels. We expect to complete this modification by the end of 1991 as well.

Computer

Eleven of the 14 computer HEDs have been resolved. Further action will be taken on the following HEDs:

- o HED 786: requires additional software changes, which are scheduled for completion in early 1990.



- o HED 793: requires software changes that could not be completed until the annunciator data base was recently finalized. We expect this to be completed by the end of 1990.
- o HED 794: requires hardware changes, which will be handled with the changeout of computer consoles in 1991.

### Training

Thirty-one HEDs were categorized as Training. Twenty-four have been satisfactorily resolved. Of the remaining seven HEDs:

- o HED 655 should have been categorized as Procedural Change. It will be addressed with the other remaining Procedural Change HEDs.
- o The need for or scope of training for six HEDs has not been resolved to the satisfaction of the DCRDR team. These HEDs are expected to be fully resolved by December 1990.

### Procedural Change

A total of 112 HEDs were categorized as Procedural Change. Resolutions to 101 HEDs have been implemented satisfactorily. However, the remaining HEDs were either not completely resolved by the associated procedure changes, or require the results of an electrical loading study, which has been delayed into 1990. We expect that the rest of the HED resolutions will be implemented by December 1990.

### Enhancement

Prior to this submittal, there were 34 HEDs in the Enhancement category. After the Summary Report was submitted, the following changes were made:

- o The resolution of HED 339 was changed from enhancing the existing C67 ventilation control panel to fabricating a new panel. Fabrication of this new panel, which was an unanticipated addition to DCRDR workload, will not be able to be completed until the end of 1991.
- o HEDs 10, 563, and 766 would be more appropriately categorized as Meter Face Modification HEDs and will be handled as such, with completion expected in 1991.

Of the remaining 30 HEDs, nine have not been resolved. Of these nine, eight address the control board mimics. Resolution of these HEDs has been delayed because of the PBNP simulator, which is currently under construction. Because the simulator vendor could not match some of the existing mimic colors, it was decided that some new colors would be used and the existing control room mimics would be totally replaced. Resolution of mimic HEDs will be handled along with mimic replacement in 1990. The ninth

unresolved Enhancement HED requires some demarcation around four control switches and will be installed in early 1990.

### Annunciators

As of March 29, 1988, the date of our previous submittal, there were 30 HEDs in the Annunciator category. Since then, the following changes have been made:

- o The resolution and category of HED 229 were changed after it was decided that no further action was necessary (a copy of HED 229 is included in Appendix 1 to this attachment).
- o The categories of HEDs 293, 327, and 353 were changed to Control Room Modifications because the resolutions of the HEDs primarily concern plant modification such as control circuitry changes, cable pulls, etc., with the associated changes in the annunciator tiles being relatively minor parts of the overall modifications.

Of the remaining 26 HEDs, eight will not be resolved by the end of 1989. All eight of these HEDs are to be resolved by the replacement of the existing annunciator tiles. Replacement has been delayed because of several revisions to the annunciator tile legends data base and an additional delay in annunciator tile fabrication. We expect to have the new tiles in place by December 1990.

### Instrument Air Modification

All seven Instrument Air HEDs were to have been addressed by MR 85-243, a modification request initiated in 1985 and expected to be completed by the end of this year. This modification was completed on schedule, so these HEDs are resolved.

### Labeling

Eighty-six HEDs were categorized as Labeling. Resolutions to 50 HEDs have been or will be implemented by the end of 1989 with the essential completion of the control room relabeling project. The project included a review of the contents of all component labels to ensure the use of a consistent format, accurate and consistent nomenclature, and standard abbreviations. Essentially all component labels (approximately 1500) were or will be replaced by the end of the year. A hierarchical labeling scheme was also installed. Regarding the HEDs whose resolutions have not yet been implemented:

- o Nine HEDs address meter face legends and are more properly categorized as Meter Face modifications. These will be resolved with the implementation of new meter faces by 1991.
- o Seven HEDs address mimic labeling and will be resolved when new mimics are installed in 1990.



- o Seven HEDs call for the implementation of operator aids (administratively controlled information labels), which was not part of the relabeling project. These should be resolved in 1990.
- o Five HEDs document locations where permanent labels are recommended to be installed. These labels were not included in the relabeling project data base. Labels for these locations will be fabricated and installed in 1990.
- o Three HEDs document operator comments on existing labels that were not included in the relabeling project data base. The applicable labels will be revised and installed in 1990.
- o Two HEDs address annunciator tile type styles and are more appropriately categorized as Annunciator HEDs. These will be resolved when the new annunciator tiles are installed in 1990.
- o One HED will be resolved when modifications involving relocation of steam generator controls are completed in 1990.
- o One HED notes that a red "caution" label should be yellow. This HED will be resolved in 1990.
- o One HED calls for the placement of labels indicating which power supply or supplies serves every control. For a majority of controls, this has been accomplished by the incorporation of power supply information into the new component labels. However, the required information for all of the applicable controllers has not yet been obtained. We expect to completely resolve this HED in 1990.

#### Relocation

Eight HEDs were categorized as Relocation. Resolutions to five of these HEDs have already been implemented, and we expect all resolutions to be implemented by the end of 1990, as originally scheduled.

#### Control Room Modification

Twenty-eight HEDs were categorized as Control Room Modifications. Resolutions to 18 HEDs have already been implemented, and we expect all resolutions will be implemented by the end of 1990, as originally scheduled.

#### Meter Face Modification

Fifty-eight HEDs were originally categorized as Meter Face Modification. Resolution to one HED has already been implemented. Resolution of the rest of the HEDs will not be completed until the end of 1991. Resolution of these HEDs involves the replacement of every meter face on the main control boards.

Finalizing of the new meter face legends and scale designs took longer than originally anticipated. Difficulties were then encountered in finding a legend type size that was satisfactory to WE and that was available from the meter face manufacturer. To date, we have obtained meter faces that are not all suitable for installation. Higher priority work has also precluded personnel from developing installation procedures and, in some cases, instrument loop modification or recalibration procedures, that are necessary for this work. For these reasons, resolution of meter face HEDs has been delayed until 1991.

#### Communication

Twelve HEDs were categorized as Communication. Resolutions to two HEDs have already been implemented, and we expect all remaining resolutions will be implemented by the end of 1990, as originally scheduled.

#### New Instrumentation

Forty-three HEDs were categorized as New Instrumentation. Resolutions to nine HEDs have already been implemented, and we still expect to meet our proposed schedule for the remaining 34 HEDs.

#### Control Modification

Forty-one HEDs were categorized as Control Modification. Resolutions to 25 HEDs have already been implemented, and we expect all remaining resolutions will be implemented by the end of 1990, as originally expected.



December 27, 1989

ATTACHMENT 1

HED 229 - RESOLUTION CHANGED TO "NO ACTION"  
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

HUMAN ENGINEERING DISCREPANCY RECORD  
POINT BEACH NUCLEAR PLANT  
HED NO.: 229

I. IDENTIFICATION

Date of Printout: 12/20/89

ORIGIN: CONTROL ROOM SURVEY - NUREG 0700

GUIDELINE/CHECKLIST NO.: 6.3.2.1F

GUIDELINE AREA: ANNUNCIATOR WARNING SYSTEMS

PROBLEM CATEGORY: AUDITORY ALERT SUBSYSTEM

PROBLEM SUB-CATEGORY: SIGNAL DETECTION

LOCATION :

CONTROL ROOM AREA: MAIN CONTROL ROOM

PANEL: NOT LOCATION APPLICABLE

SYSTEM: ANNUNCIATOR

EQUIPMENT: ANNUNCIATORS

DESCRIPTION OF DISCREPANCY:

THE ANNUNCIATOR SYSTEM DOES NOT PROVIDE SEPARATE AUDITORY ALERT SIGNALS FOR DIFFERENT WORK STATIONS.

PREPARED BY: SCHMIDT DATE: 06/26/85

PROPOSED RESOLUTION:

THERE ARE CURRENTLY 2 SIGNALS IN THE CONTROL ROOM, ONE ON THE UNIT 1 SIDE AND ONE ON THE UNIT 2 SIDE. BECAUSE OF THEIR DIFFERENT LOCATIONS, OPERATORS CAN TELL WHICH SIGNAL HAS SOUNDED. PBNP WOULD RATHER HAVE OPERATORS SCAN ALL BOARDS ... (SEE "NOTES")

RECOMENDATION BY: CRDR TEAM

II. EVALUATION

HED EXPERIENCED BEFORE? NO  
ACCIDENT RELATED? NO  
TECHNICAL SPECIFICATIONS? NO  
ERROR RECOGNITION / RECOVERY EXPECTED? YES

SUBJECTIVE PRIORITY RATING: 7.5

HED PRIORITY: 9

HED CATEGORY: NO ACTION

REVIEWED AND APPROVED - CRDR TEAM: *R.K. Hammer* DATE: *12/22/89*

NOTES:

WHEN AN ALARM COMES IN INSTEAD OF RELY ON AUDITORY SIGNALS. NO SIGNIFICANT



HUMAN ENGINEERING DISCREPANCY RECORD

POINT BEACH NUCLEAR PLANT

HED NO.: 229 CONTINUED

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PROBLEMS HAVE BEEN EXPERIENCED IN RELATION TO THIS ISSUE AND NO FURTHER ACTION WILL BE TAKEN. ("PROPOSED RESOLUTION" AND "HED CATEGORY" REVISED 11/14/89)