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RECIP. NAME RECIPIENT AFFILIATION
ADENSAM, E. G. BWR Project Directorate 3

SUBJECT: Forwards marked-up revised supplemental rept to DCRDR final summary rept, including checklist survey, response to NRC SER & study results since Sept 1985 final rept. Rept also addresses items in Haughey 860122 ltr & 860520 meeting.

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NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

June 9, 1986
(NMP2L 0737)

Ms. Elinor G. Adensam, Director
BWR Project Directorate No. 3
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Washington, DC 20555

Dear Ms. Adensam:

Re: Nine Mile Point Unit 2
Docket No. 50-410

Attached for your use and information are 28 copies of the revised Supplemental Report to the Detailed Control Room Design Review Final Summary Report for Nine Mile Point Unit 2 (Enclosure 1). Changes are marked in the right-hand margin. These changes are incorporated to address staff comments.

This report describes the results of the checklist survey, the responses to the Nuclear Regulatory Commission Safety Evaluation Report, and the results of the studies performed since the September 1985 final report. Also, the supplement report addresses each of the items identified in Ms. Haughey's January 22, 1986 letter and the results of our May 20, 1986 meeting.

Very truly yours,

C. V. Mangan
Senior Vice President

NLR:ja
1484G
Enclosure

xc: R. A. Gramm, NRC Resident Inspector
Project File (2)

A003
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
Niagara Mohawk Power Corporation	)	Docket No. 50-410
(Nine Mile Point Unit 2)	)	

AFFIDAVIT

C. V. Mangan, being duly sworn, states that he is Senior Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

C. V. Mangan

Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 9th day of June, 1986.

James P. Mears
Notary Public in and for
Onondaga County, New York

My Commission expires:
JANIS M. MACRO
Notary Public in the State of New York
Qualified in Onondaga County No. 4784555
My Commission Expires March 30, 1987

ENCLOSURE 1

Revised Supplemental Report to the Nine Mile Point Unit 2
Detailed Control Room Design Review

2.0 CHANGES TO EOPs

NRC CONCERN: Prior to NMP-2 reactor startup, NMPC should confirm that changes made since June 1985 in operator information and control requirements resulting from changes in the NMP-2 Emergency Operating Procedures (EOPs) and System Functional Task Analysis (SFTA), have been appropriately compared and reviewed for human factors suitability.

RESPONSE: All changes to the SFTA as a result of EOP changes have been evaluated by ARD using the methodology of the original DCRDR.

NMPC Procedure N2 EOP1 has been revised to require all new or revised EOPs to be reviewed for impact on the SFTA in accordance with the guidance provided in the NMPC Human Factors Manual. The Human Factors Manual contains a section devoted to writing and revising procedures. The Human Factors Manual describes the human factors concerns to be considered whenever changes are recommended. A checklist is also included to ensure that the applicable human factors concerns are addressed for any procedure addition or revision.

3.0 COMPLETENESS OF REVIEW

NRC CONCERN: Prior to NMP-2 reactor startup, NMPC should confirm that changes in control room equipment, resulting from control room design or equipment specifications, have been appropriately compared and reviewed for human factors suitability.

RESPONSE: ARD performed an independent Inventory Discrepancy Study (described in Section 6.5) in December 1985 that ensures that all control room components not installed at the time of the DCRDR review have been identified. Components identified by the Inventory Discrepancy Study have been reviewed for human factors suitability. Revision 1 to HEDs 171 and 243 identifies discrepancies found in this review. All DCRDR changes scheduled for fuel load implementation have also been reviewed by ARD for human factors suitability. Both of these reviews were performed using Engineering Design documents and/or actual panel hardware. Applicable portions of NUREG-0700 checklist were used.

not reviewed during the DCRDR, due to the status of construction of the control room at the time of the DCRDR. The study identifies changes that have been made to the control room since April 1985. It ensures that all components in the control room are addressed by the DCRDR. The study was performed using a computer search of the control room inventory, comparison of updated Stone & Webster panel layout drawings, and verification upon the actual panels.

6.6 Zone Banding Study

A Zone Banding Study will be performed by NMPC Engineering, Operations and ARD human factors specialists to identify the displays and scale ranges to be banded. The Zone Banding Study will be submitted to the NRC for review prior to fuel load. Temporary fixes will be implemented by 5% power with permanent fixes by the first refuel outage.

7.0 VERIFICATION METHODOLOGY

NRC CONCERN: Final determination and human factors evaluation of design changes to correct HEDs that required a design effort.

RESPONSE: A human factors review of all DCRDR design modifications scheduled for fuel load was performed by ARD. A second evaluation will be performed after incorporation of all nonsafety significant corrective actions scheduled for the first refuel outage. The purpose of the human factors review is to answer two questions: Did the corrective action resolve the existing HED? And, have any new HEDs been created by the design modification?

The human factors review of corrective actions did, and will, follow a methodology similar to that employed during the DCRDR. The applicable portions of the NUREG-0700 checklist will be performed; this ensures that the static condition of the control room meets all human factors guidelines.

The impact of the design changes upon the functional task analysis did, and will, be examined to ensure that the dynamics of the control room are acceptable. The same review of the task analysis will be performed whenever there is a change to

These individuals are responsible for ensuring that the human factors aspect of the final design conforms to the review team's preliminary design recommendation and to good human factors practice. Design changes affecting the center desk, annunciators, and labeling have additional human factors direction in the form of special studies. These studies were performed by human factors specialists as described in Section 6.0 of this report.

As a final verification, all DCRDR modifications scheduled for fuel load implementation were reviewed by a human factors specialist. This verification was performed as described in Section 7.0 and documented in the verification column of Attachment #5. The implementation dates for control room design modifications fall into two general time periods: implementation prior to fuel load for safety significant items and during the first refuel outage (for the remaining items), as specified on each HED. The HED verification will also be performed in two periods. The first occurred prior to fuel load and included all safety significant DCRDR changes. The second verification will be performed after incorporation of all corrective actions scheduled for the first refuel outage.

Revised Supplemental Report to the
Nine Mile Point Unit 2
Detailed Control Room Design Report

SECTION 2.1 COMPARISON OF CONTROL AND DISPLAY REQUIREMENTS WITH A CONTROL ROOM INVENTORY

Section 2.1.3

Conclusion:

NMPC has resolved the concern expressed in the technical evaluation report, however, NMPC will need to provide a date which is acceptable to the NRC, that indicates when all EOP changes and all control room design changes have been subjected to the comparison process. At this time, the NMP2 DCRDR Program will have demonstrated that it completely satisfies the inventory and comparison requirements of supplement 1 to NUREG-0737.

Response:

ARD has reviewed the latest revisions of the Emergency Operating Procedures originally included in the DCRDR. These EOPs were reviewed for impact to the system functional task analysis using the methodology of the original DCRDR. Attachment #1 identifies ARD's findings..

All control room design changes scheduled for fuel load implementation have also been reviewed by ARD. Included in this are those items identified in the inventory discrepancy study. Again, the methodology of the original DCRDR was employed for this review. Attachment #2 provides ARD's specific findings. All non-safety significant DCRDR changes will be verified prior to implementation.

The following section addresses LLNL specific concerns on the Control Room Survey.

SECTION 2.2 CONTROL ROOM SURVEY

Subsection 6.1.1.4.a.1

NRC Concern:

NMPC has limited to operating procedures the recommendation that all documents needed by the operators be conveniently available in the control room. This modification ignores the fact that operators must have ready access to many other types of documents such as top level drawings, technical specifications, surveillance and maintenance procedures, logs, and plant operating data. We find this modification to be unacceptable.

NMPC Response:

Documents needed by the operators are available in the control room, therefore, Nine Mile Two is in compliance with NUREG0700.

Subsection 6.1.2.3.a

NRC Concern:

The criterion of 18" maximum seat height taken together with the criterion of maximum console of 45" is not equivalent to the 27" maximum seat to console height recommended by NUREG 0700. Rather, it suggests a minimum seat to console height of 27". The seat and console height criteria used at NMPC is not equivalent to the NUREG 0700 criteria. The criteria used by NMPC imply a maximum console of height from the seat of 30". The supplemental TER suggests NMPC reconsider this criterion. We consider the NMPC criterion to be unacceptable.

NMPC Response:

Many chairs in the NMP2 control room are adjustable and meet the 18" maximum seat height. This provides the minimum seat to console height of 27". Therefore, the NMP2 control room meets the NUREG-0700 criteria.

Subsection 6.1.4.3.b

NRC Concern:

The requirement that emergency equipment be clearly marked was eliminated based upon operator training and familiarity. The high stress resulting from emergency operating conditions could result in confusion regarding the location of emergency gear. These locations should be clearly marked to ensure the necessary equipment will be rapidly accessed. We find this NMPC criterion to be unacceptable. Further clarification is provided on page 7 of the subject document as follows; emergency equipment storage locations away from the primary operating area are clearly marked.

NMPC Response:

Emergency equipment is stored in bright red cabinets to clearly identify location. This item is covered by HED 411.

Subsection 6.2.1.5.c

NRC Concern:

The intent of this NUREG-0700 checklist item is to ensure that plant personnel are aware of when they are in areas in which radio transmission may adversely (effect) the operation of instrumentation or control equipment. Simply making radio operations procedures to the plant staff does not satisfy this intent. As a minimum, NMPC should confirm that areas in which radio transmissions are not allowed are clearly posted. We find that the NMPC criterion to be unacceptable. Further clarification is provided on page 7 of the subject document as follows: control room and remote shutdown areas in which radio transmissions are not allowed are conspicuously posted.

NMPC Response:

NMPC will establish clearly marked, restricted zones, for equipment identified as RFI sensitive.

Subsection 6.7.3.2.a.2

NRC Concern:

The recommendation that all annunciator alarms be logged on the alarm printer was not included on the NMP2 Human Factors survey criteria. The justification provided for this change indicated that the NUREG-0700 guidance was misunderstood to apply to operator logging of alarms. We find this NMPC criterion to be unacceptable. Further clarification is provided on page 7 of the subject document, the alarm printer logs all annunciator alarms.

NMPC Response:

The NMP2 control room contains an alarm printer which logs all annunciator alarms. This meets the 0700 criteria.

SECTION 2.4 SELECTION OF DESIGN IMPROVEMENTS

Section 2.4.3

NRC Concern:

NMPC should, prior to power operation, submit for NRC review the results of the meter banding study, and a discussion of the planned modification.

NMPC Response:

NMPC will review all Category I instrumentation for possible zone banding. The results of this review will be included in a zone banding package submitted to the NRC for review prior to fuel load. Temporary fixes will be implemented by 5% power with permanent fixes by the first refuel outage.

Section 2.4.3, Appendix A

HED 403:

This HED was actually divided into two HEDs, 403.01 and 403.02. The latter of which deals with filing cabinets and bookcases obstructing of operators view of some control panels. As indicated in the supplemental report, these items will be removed prior to fuel load. HED 403.01 deals with an additional piece of equipment, emergency radios, and indicates that the shift supervisors view of the primary operating area are obstructed. This visual obstruction occurs only when the station shift supervisor is seated at his desk. NMPC feels the implementation date of the first refueling outage is prudent for the following reasons:

1. The radio equipment does not obstruct the operators view of the panels.

2. The station shift supervisor can overcome the visual obstruction by standing.

3. In order to properly locate the radio equipment, additional hardware will be removed from the control room. This is not the simple fix that it appears to be.

HED 405:

Addresses procedures that are stored in a large binder with tabs to identify them. The tabs are labeled on only one side.

NMPC Response:

Although the HED indicated that single tab binders are considered acceptable by operations, the tabs have been labeled on both sides.

HED 407:

Description of discrepancy: Documents do not remain open at the desired place without holding.

NMPC Response:

The HED identifies that the operators will use bookmarks as the need arises. This is in reference to the operating procedures. This does not apply to the emergency operating procedures which are in a flow chart format and laid out under plexiglass on the top of panels. In addition, the procedures are removable from the rack and can be situated to remain open.

HED 409:

Description of Discrepancy: Annunciators were surveyed during start up testing and most of the annunciators were illuminated. This refers to section 6.3.3.2.e and states that dark annunciator panels should be used. This means that under normal operating conditions no annunciators would be illuminated. All the visual tiles of the annunciator panels would be dark.

NMPC Response:

The HED indicates that for the most part, annunciator tiles were illuminated due to start up testing. A commitment was made that annunciators would be reevaluated during normal operation to ensure dark board concept. This is consistent with NUREG-0700 criteria. NMPC feels that HED 409 should remain unchanged.

HED 411:

NRC Concern:

Protective equipment (protective clothing and breathing apparatus) radiation and rescue equipment are not easily accessible in the control room.

NMPC Response:

HED 411 addresses this item with an implementation date of fuel load. Fire and emergency equipment has been installed 50' from the control room door.

HED 412:

Deals with 0700 criteria 6.3.1.2.a(1) which states that alarms should not occur so frequently as to be considered a nuisance by the operator.

NMPC Response:

NMPC feels that the real intent of 0700 was to eliminate nuisance alarms during normal operation. It is not felt that start up is the appropriate time to evaluate normal operating nuisance alarms since conditions may not exist which act adequately depict normal operations. NMPC has committed in HED 412 to evaluate nuisance alarms during normal operation.

HED 413:

NRC Concern:

Implementation data.

NMPC Response:

NMPC has revised the implementation date to fuel load.

HED 416:

NRC Concern:

The guideline limit of 65 db(a) for background noises exceeded in the control room around the printers. Two operators desks are located in this area. The NRC disagrees with the implementation date.

NMPC Response:

NMPC has revised the implementation date to Commercial Operation.

HED 418:

NRC Concern:

Deals with legend messages on some legend lights are ambiguous. This is a general problem with inop status lights.

NMPC Response:

NMPC has completed the labeling study and is in the process of implementing a legend light recommendations of this study. It is expected that an implementation date of Commercial Operation is possible. HED 418 has been revised accordingly.

HED·419:

Description of Discrepancy: Annunciator visual tile legends are ambiguous.

NRC Concern:

Implementation date.

NMPC Response:

The annunciator study has been completed by ARD. It is currently being implemented. All wiring associated with relocating the annunciator tiles is also complete. NMPC has revised the implementation date of HED 419 to fuel load.

HED 420:

Description of Discrepancy: Control switches for spring loaded rotaries selector controls are not large enough to be held against the spring torque without the fatigue.

NRC Concern:

Implementation date.

NMPC Response:

Implementation date of HED 420 has been revised to fuel load.

HED·422:

Description of Discrepancy: Fire extinguishers placed on the floor are a trip hazard.

NRC·Concern:

Implementation date.

NMPC·Response:

NMPC has revised HED 422 to a fuel load implementation date.

HED·424:

Description of Discrepancy: The number printing mechanism on the sited discreet channel recorders produce a smear across the page instead of readable channel numbers.

NRC Concern:

Implementation date.

NMPC Response

HED 424 has been revised to an implementation date of fuel load.

HED 425:

Description of Discrepancy: Data is not visible through the window of this discreet channel recorder. The recorder has non-glare glass that is not clear enough to allow channel identification numbers on the chart paper to be read.

NMPC Response:

HED 425 implementation date has been revised to fuel load.

HED 65:

Description of Discrepancy: The legend messages on the following pushbuttons contain more than the recommended three lines of lettering. All contain four lines of print.

NRC Concern:

Implementation acceptable if all cited systems are non-safety related.

NMPC Response:

Legend lights are all safety-related, however, the assessment category was C3 because the assessment team evaluated these legends as very readable and not posing a significant problem to the operators. In an effort to optimize the control room, NMPC included these inop legends in the labeling study to assure consistent nomenclature between panel labels, legend lights and annunciator tile. NMPC has revised the implementation date to Commercial Operation. Considering the low assessment category of C3 and the large impact to drawings, NMPC feels this date is prudent.

HED 909:

Description of Discrepancy: Verification has determined that the switch type and mode for the turbine trip and throttle valve (MOV-150) is inadequate. Task analysis requirements cite a need for a continuous mode control able to be used for throttling operations. The present control is discreet.

NRC Concern:

Explanation is not clear.

NMPC Response:

NMP2 has established a convention for the identification of throttleable valves. This convention has been incorporated in the Human Factors Manual and requires that valves with a throttleable capability be labeled THROTTLE on the last line of the component label. HED 909 identifies a need for a throttleable valve for the task analysis. Such a valve exists and is identified per the NMP2 standard. The confusion arises in a valve called a turbine trip and throttle valve (MOV-150). This is the industry standard designation or name for this valve and does not connote that the valve is throttleable.

Attachment #3 provides additional HEDs and revisions to HEDs resulting from ARD's verification of the inventory discrepancy study, or change to the implementation dates.

Attachment #4 provides answers to NRC questions dated 5/22/86.

Attachment #5 provides HED status sheets of fuel load items only. This is a sub sort of Appendix C of the supplemental report dated April 14, 1986.

ATTACHMENT #1

EFFECT OF CHANGES TO NMP2

EOPs UPON SYSTEM FUNCTIONAL TASK ANALYSIS

Changes to the Emergency Operating Procedures (EOPs) made since June 1985 were examined to determine their effect upon the System Functional Task Analysis (SFTA) and no new Human Engineering Discrepancies (HEDs) were found. The revised EOPs (Revision 1) were compared with the EOPs (Revision 0) originally used to generate the SFTA and with the SFTA task statements. The following new tasks were identified:

RQ 13.1
RQ 13.2
RQ 14.2
SPL 9.1.3
C2 - 1.2
C6 - 4

The new tasks were examined in the same manner as during the original SFTA. A human factors specialist asked a subject matter expert to describe the action steps required to perform each task. The information and control requirements for each step was determined. Verification of availability and suitability of the specified information and control requirements was completed in the NMP2 control room and plant and found to be adequate from a human factors perspective.

ATTACHMENT #2

VERIFICATION OF CORRECTIVE ACTIONS

ARD has performed a thorough human factors review of the corrective actions taken by NMP-2 to resolve Human Engineering Discrepancies (HEDs) that were generated during the Detailed Control Room Design Review (DCRDR). The review of the corrective actions involved either inspection of the change as it is installed in the control room or examination of the engineering documentation that will be used to make the fix. The following HEDs have been reviewed and the corrective actions found to be acceptable:

5.00	169.00	291.00
44.00	174.00	401.00
53.00	184.00	403.02
54.00	185.00	410.00
55.00	188.00	411.00
57.00	192.02	413.00
59.00	195.00	419.00
69.00	196.00	422.00
79.04	207.00	424.00
88.02	215.00	425.00
102.01	219.00	426.00
106.00	220.00	427.00
112.00	225.00	428.00
126.00	226.01	901.00
130.00	233.00	904.00
133.00	235.03	911.00
138.00	237.00	912.00
142.00	238.00	914.00
146.00	240.00	922.00
151.00	260.00	928.00
152.00	282.00	931.00
153.00	283.00	941.00
155.00	284.00	942.00
156.00	285.00	946.00
159.00	286.00	949.00
164.00	288.00	950.00
165.00	290.00	952.00
		978.00
		982.00
		984.00
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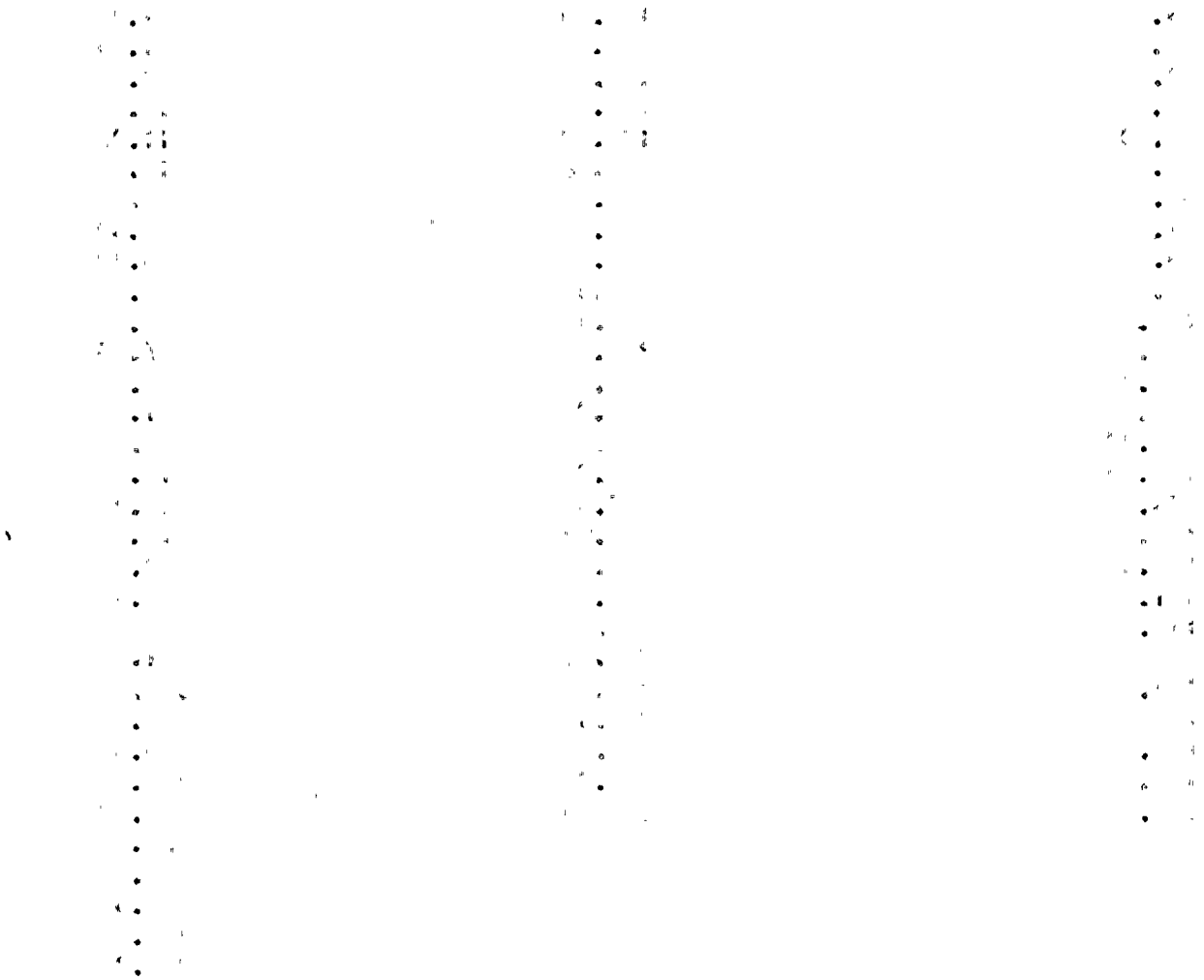

ATTACHMENT #2

REVIEW OF COMPONENTS IDENTIFIED
DURING INVENTORY DISCREPANCY STUDY

ARD performed an Inventory Discrepancy Study in December 1985 to identify components in the completed control room that were not reviewed during the DCRDR due to the construction state of the control room. The Inventory Discrepancy Study Report, submitted to NMPC in December 1985, details the methodology of the study and lists all identified components.

The DCRDR procedures were used to examine the components identified during the inventory discrepancy study for human factors acceptability. These components were surveyed using the applicable portions of the NUREG-0700 checklist and verified for suitability with the task analysis. All components met the information and control requirements of the task analysis. Table 1 presents the components that did not meet the checklist criteria. These will be verified upon completion.

ATTACHMENT #2

Table 1

PNL	EID	LABEL	COMMENTS
601	11 035 000	Nitrogen Purge Temp.	The scale on this vertical meter is in divisions of 2.5. This meter has been added to HED 243 to have the scale corrected.
601	21 001 000	ADS Logic A Manual Initiation	Rotary pushbutton does not have a position indicator on the front of the pushbutton. This component has been added to HED 171 to have this line added.
852	21 015 000	DG NEUT BRKR ABC 103-N1 INOP	This legend status light will be changed as part of the labeling study.
870	11 021 000	REFUEL FL A VENT EXH 2 HVR*AOD10A INOP	This legend status light will be changed as part of the labeling study.
875	23 006 000	Recombiner Reac Chamber Temp	The lower part of this controller was not yet installed when surveyed. An identical controller was found to be acceptable.
851	11 003 000	Turb Oil Reservoir Level	No units were indicated on this vertical meter. The engineering drawings showing the units of INCHES was found to be acceptable.
851	12 005 000	E1 A&B Disch Hdr Press	A temporary scale was on this scale when surveyed. The engineering drawings of the scale to be installed were reviewed and found to be acceptable.

ATTACHMENT #2

Table 1

PNL	EID	LABEL	COMMENTS
851	16 021 000	Blank	The vertical meters shown on the Stone & Webster panel layout drawings are to be eliminated.
851	16 022 000	Blank	
851	16 023 000	Blank	
603	25 008 000	Channel B	The escutcheon plate for this rotary pushbutton states MANUAL INITIATION, it does not indicate switch position labels. The engineering drawing of the escutcheon plate to be installed - ARM/ DISARM - was reviewed and found to be acceptable. There is no switch position indicator on the front of the pushbutton. This component has been added to HED 171 to have this line added.

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 65.00 ORIGINATOR: CFW DATE: 5/29/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

THE LEGEND MESSAGES ON THE FOLLOWING PUSHBUTTONS CONTAIN MORE THAN THE RECOMMENDED THREE LINES OF LETTERING. ALL CONTAIN 4 LINES OF PRINT.

COMMENTS

ASSESSMENT CATEGORY: 3C

DISPOSITION: FIX

EXPLANATION

THE LEGENDS OF THE INOP LEGEND LIGHTS WILL BE CONSIDERED DURING THE LABELING STUDY. THE LEGENDS WILL BE THREE LINES AND THE PRINT SIZE MADE LARGER FOR GREATER LEGIBILITY.

IMPLEMENTATION: COMMERCIAL OPERATION

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	4.3.3.B(5)

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER
602		CCP ISOL V MOV94A INOP	
602		CCP ISOL V MOV94B INOP	
602		H2 ANALYZER OUT ISOL V SOV65B INOP	
602		LOOP A HYDR FLUID CLOSE SOV65A INOP	
602		LOOP A HYDR FLUID CLOSE SOV65B INOP	
602		LOOP A HYDR FLUID DRAIN PILOT SOV66A INOP	
602		LOOP A HYDR FLUID OPEN SOV67A INOP	
602		LOOP A HYDR FLUID OPEN SOV67B INOP	
602		LOOP A HYDR FLUID PILOT SOV66A INOP	
602		LOOP B HYDR FLUID DRAIN PILOT SOV608B INOP	
602		LOOP B HYDR FLUID PILOT SOV66A INOP	
602		MNST LINE DR VLV 2MSS*MOV208 INOP	
602		MNSTM LINE DR VLV 2MSS*MOV111 INOP	
602		MSIV TRIP UNIT A IN CAL OR GRTOSO FAILURE	

602	MSIV TRIP UNIT B IN CAL OR GROSO FAILURE	
602	MSIV TRIP UNIT C IN CAL OR GROSO FAILURE	
602	MSIV TRIP UNIT D IN CAL OR GROSO FAILURE	
602	OUTBN MSIV UPST DR V 2MSS*MOV208 INOP	
602	RBCL CW ISOL MOV5B INOP	
602	RBCL CW ISOL V MOV21A INOP	
602	RBCL CW ISOL V MOV21B INOP	
602	RBCL CW ISOL V MOV4A INOP	
602	RBCL CW ISOL V MOV5A INOP	
602	RBCL CW ISOL V MOV5B INOP	
602	RWCU PMP SUCT ISOL VLV 2CWS*MOV112 INOP	
602	RWCU RTN ISL VLV 2CWS*MOV200A INOP	
603	A UPSC TR OR INOP/UPSC ALARM	
603	ALARM SET HI/ALARM SET INT	2
603	ALARM SET LO/PUSH TO SET UP	2
603	B UPSC TR OR INOP/UPSC ALARM	
603	C UPSC TR OR INOP/UPSC ALARM	
603	D UPSC TR OR INOP/UPSC ALARM	
603	E UPSC TR OR INOP/UPSC ALARM	
603	F PUSC TR OR INOP/UPSC ALARM	
603	FDW INLET SHUTOFF V 2FNS*MOV21A INOP	
603	FDW INLET SHUTOFF V 2FNS*MOV21B INOP	
603	G UPSC TR OR INOP/UPSC ALARM	
603	H UPSC TR OR INOP/UPSC ALARM	
603	INSERT BLOCK/WITHDRAW BLOCK	
603	OUT OF SEQUENCE/SYSTEM INITIAL	17F
603	RPS A MANUALLY OUT OF SERVICE	
603	RPS B MANUALLY OUT OF SERVICE	
603	UPSC TR OR INOP/UPSC ALARM	3
603	UPSC TR OR INOP/UPSC ALARM	3
603	UPSC TRIP/UPSC AL OR INOP	4
842	HIGH EXH HD TEMP-22 VDC LOST	
842	NO EHC DC INPUT PWR/LOAD UNBALANCE	
842	SHAFT PMP DIS LOW PR FAST CLSG DV'S	
842	SPD SIS LOST/MA TRIP BUTTON	
851	ELECTRICAL MALFUNCTION/PMG MALFUNCTION	
852	CSH DG CLR VLV *MOV94B INOP	
852	CSH DG CLR VLV *MOV94R INOP	
852	CSH DG CLR VLV *MOV95A INOP	
852	CSH DG CLR VLV *MOV95B INOP	
852	DG NEUT BRKR ACB103-NI INOP	
852	DG NEUT BRKR ACB103-NI INOP	
852	DIV 1 DSL GEN CLR *MOV66A INOP	
852	DIV II DSL GEN CLR *MOV66B INOP	
852	DS FUEL OIL X FOR P (MAN OUT OF SERVICE)	
852	DSL ENG CONT CKT CHANNEL A INOP	
852	DSL ENG CONT CKT CHANNEL B INOP	
852	EMER DG 1 AIR START SYS MNL OUT OF SVCE	
852	EMER DG 3 AIR START SYS MAN OUT OF SVCE	
852	EMER SW DIV II BLOCK DG(TRIP IN LOCA)	
852	EMER SWGR DIV 1 BLOCK DSL GEN TRIP ON LOCAL	
870	*AOD117*AOD120*AOD142 INOP	
870	A/C FAN DISCH DMPR 2HVC*AOD6A INOP	
870	A/C FAN DISCH DMPR 2HVC*MOD12A INOP	
870	AIR EXHAUST DAMPER 2HVP*MOD1C INOP	
870	AIR RECIRC DAMPER 2HVP*MOD6A	
870	AIR RECIRC DAMPER 2HVP*MOD6A	
870	AIR RECIRC DAMPER 2HVP*MOD6C INOP	

870	BAT RM A EXH FAN 2HVC*FN4A
870	BLDG SPLY ISOL DAMPR 2HVR*AOD9A
870	BSMT CABLE SPRDR AREA 2HVC*UC106 INOP
870	CHILL WTR MANUALLY OUT OF SERVICE INOP
870	CHILLED WTR CIRC PUMP 2HVK*P1A INOP
870	CHILLED WTR TEMP 2HVK*TV22A INOP
870	CHILLED WTR TEMP VALVE 2HVK*TV21A INOP
870	CONT BLDG CHILLER 2HVK*CHL 1A INOP
870	CONT RM A/C MANUALLY OUT OF SERVICE INOP
870	CONTROL RM A/C FAN 2HVC*ACU1A INOP
870	CROSS BLEED PIPE VALVE *MOV28A INOP
870	DECAY HEAT FLTR 1A V 2GTS*MOV4A INOP
870	EL261 MANUALLY OUT OF SERVICE INOP
870	ELEC TUNNEL NORTH UC 2HVC*UC104 INOP
870	EMER RECIRC INLET DAMPR 2HVR*AOD6A INOP
870	FILTER 1A DISCH VALVE 2GTS*MOV3A INOP
870	FILTER 1A ELEC HTR 2GTS*CH1A INOP
870	FILTER 1A INLET PRESS 2GTS*PV5A INOP
870	FILTER 1B INLET PRESS 2GTS*PV5B INOP
870	FILTER ELEC HTR 2GTS*CH1A INOP
870	GEN AREA EXH ISOL DAMPR 2HVR*AODA&P INOP
870	INLET AIR ISOL DMPR 2HVC*AOD61A INOP
870	INLET VALVE 2GTS*MOV1A INOP
870	OUTSIDE AIR DAMPER 2HVP*AOD4A INOP
870	OUTSIDE AIR DAMPER 2HVP*AOD4C INOP
870	OUTSIDE AIR DAMPPER 2HVP*AOD4C INOP
870	OUTSIDE AIR ISOLATION V 2HVC*MOV1A INOP
870	REFUEL FL A VENT EXH 2HVR*AOD10A INOP
870	RELAY RM A/C FAN 2HVC*ACU2A INOP
870	RELAY RM MANUALLY OUT OF SERVICE INOP
870	REMOTE SHTDN RM A/C 2HVC*ACU3A INOP
870	REMOTE SHUTDOWN RM A MANUALLY OUT OF SERVICE
870	SMK RMVL FN12 SUCT *AOD120*AOD142 INOP
870	SMK RMVL FN9 SUCT *AOD182 INOP
870	SMK RMVL MKUP AIR *AOD169 INOP
870	SMOKE REMOVAL DMPR 2HVY*AOD34A INOP
870	SPEC FLTR MANUALLY OUT OF SERVICE INOP
870	STBY SWGR A/C EQUIP RM 2HVC*UC103A INOP
870	STBY SWGR RM MKUP AIR FAN 2HVC*FN11A INOP
870	STBY SWGR ROOM 2HVC*AC101A INOP
870	SWP BAY MANAULLY OUT OF SERVICE
871	A/C FAN DISCH DMPR 2HVC*AOD6B INOP
871	A/C FAN DISCH DMPR 2HVC*MOD12B INOP
871	AIR EXH DAMPER 2HVP*MOD2A INOP
871	AIR EXH DAMPER 2HVP*MOD2B INOP
871	AIR EXHAUST DAMPER 2HVP*MOD1D INOP
871	AIR RECIRC DAMPER 2HVP*MOD6B
871	AIR RECIRC DAMPER 2HVP*MOD6B
871	AIR RECIRC DAMPER 2HVP*MOD6C INOP
871	AIR RECIRC DAMPER 2HVP*MOD7A INOP
871	BAT RM B EXH FAN 2HVC*FN4B
871	BLDG SLPY ISOL DAMPR 2HVR*AOD9B
871	BLDG SPLY ISOL DMPR 2HVR *AOD18 INOP
871	BSMT CABLE SPRDR AREA 2HVC*UC107 INOP
871	CHILLED WTR CIRC PUMP 2HVK*P1B INOP
871	CHILLED WTR TEMP VALVE 2HVK*TV21B INOP
871	CHILLLED WTR TEMP 2HVK*TV22A INOP
871	CONT BLDG CHILLER 2HVK*CHL 1B INOP
871	CONTROL RM A/C FAN 2HVC*ACU1B INOP
871	CROSS BLEED PIPE VALVE *MOV28B INOP

871	DECAY HEAT FLTR 1B V 2GTS*MOV4B INOP
871	ELEC TUNNEL NORTH UC 2HVC*UC1Ø5 INOP
871	EMER RECIRC INLET DAMPR 2HVR*AOD6B INOP
871	EMER RECIRC TEST DAMPR 2HVR*AOD34A INOP
871	FILTER 1B DISCH VALVE 2GTS*MOV3A INOP
871	FILTER 1B ELEC HTR 2GTS*CH1B INOP
871	FILTER 1B INLET PRESS 2GTS*PV5B INOP
871	FILTER 1B INLET VALVE 2GTS*MOV2A INOP
871	FILTER ELEC HTR 2GTS*CH1B INOP
871	HPCS SWGR RM UNIT COOLER 2VC*UC1Ø2 INOP
871	INLET AIR ISOL DMPR 2HVC*AOD61B INOP
871	INLET VALVE 2GTS*MOV1B INOP
871	MKUP AIR FAN SUCT DMPR 2HVC*AOD54B INOP
871	OUTSIDE AIR DAMPER 2HVP*AOD4B INOP
871	OUTSIDE AIR DAMPER 2HVP*AOD4B INOP
871	OUTSIDE AIR DAMPER 2HVP*AOD4D INOP
871	OUTSIDE AIR DAMPER 2HVP*AOD5A INOP
871	OUTSIDE AIR DAMPER 2HVP*MOD7B INOP
871	OUTSIDE AIR ISOLATION V 2HVC*MOV1B INOP
871	REFUEL FL B VENT EXH 2HVR*AOD1ØB INOP
871	RELAY RM A/C FAN 2HVC*ACU2B INOP
871	REMOTE SHTDN RM A/C 2HVC*ACU3B INOP
871	REMOTE SHUTDOWN RM B MANUALLY OUT OF SERVICE
871	ROOM 2 EXH FAN 2HVP*FN2A INOP
871	ROOM 2 EXH FAN 2HVP*FNB INOP
871	SMK RMVL FN1Ø SUCT *AOD192 INOP
871	SMK RMVL FN14 SUCT *AOD179 INOP
871	SMK RMVL MKUP AIR *AOD177 INOP
871	SMOKE REMOVAL DMPR 2HVY*AOD34B INOP
871	STBY SWGR A/C EQUIP RM 2HVC*UC1Ø3B INOP
871	STBY SWGR RM MKUP AIR FAN 2HVC*FN11B INOP
871	STBY SWGR ROOM 2HVC*AC1Ø1B INOP
873	CCP TO SFC HX INL V MOV14A INOP
873	CCP TO SFC HX RTN V MOV18A INOP
873	COOL WATER BLOOCK V SOOV1ØA INOP
873	COOL WATER DRAIN V SOV11A INOP
873	H2 ANALYZER INLET ISOL V SOV64A INOP
873	H2 ANALYZER OUT ISOL V SOV65A INOP
873	SFC FILTER INLET VALVE AOV18A INOP
873	SFC FILTER INLET ISOL V AOV153 INOP
873	SFC H.E. DISCH CROSSOVER CONN 25FC*HV37A INOP
873	SFC SURGE TK CROSSOVER V HV6A INOP
873	SWP TO SFC HX INL V MOV17A INOP
873	SWP TO SFC HX OUT V MOV1 8A INOP
875	CCP TO SFC HX INL V MOV14B INOP
875	COOL WATER BLOCK V SOV1ØB INOP
875	COOL WATER DRAIN SOV11B INOP
875	H2 ANALYZER OUT ISOL V SOV65B INOP
875	SFC FILTER INLET VALVE AOV19A INOP
875	SFC FLTR INL ISOL VALVE *AOV154 INOP
875	SFC H.E. DISCH CROSSOVER CONN 25FC*HV37B INOP
875	SFC SURGE TK CROSSOVER V HV6A INOP
875	SFC SURGE TK CROSSOVER V HV6B INOP
875	SUPPR CHAM SMPY V SOV65AB INOP
875	SWP TO SFC HX INL V MOV17B INOP

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 171.00 ORIGINATOR: RD DATE: 5/ 7/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

RESPONSE TO THE OPERATOR SURVEY INDICATED THAT FOR THE ISOLATION PUSHBUTTONS THE SAME PUSHBUTTON IS USED TO RESET OR ISOLATE SYSTEMS DEPENDING ONLY ON THE POSITION OF A ROTATING COLLAR OR THE PUSHBUTTON.

COMMENTS

CONTROLS SHOULD BE SELECTED TO ENSURE EASE OF OPERATION AND TO MINIMIZE ERRORS.

ASSESSMENT CATEGORY: 3D

DISPOSITION: FIX

EXPLANATION

THE DESCRIPTION REFERS TO THE 20 MANUAL ISOLATION BUTTONS ON PANEL 602. PROVIDE A MORE POSITIVE INDICATION OF THE FUNCTION OF THE PUSHBUTTON AS DICTATED BY THE POSITION OF THE COLLAR BY ENGRAVING A LINE ON THE BUTTON WHICH CORRESPONDS TO THE LINE ON THE COLLAR. THE BUTTON ROTATES WITH THE COLLAR THUS PROVIDING A MORE POSITIVE AND DISTINCTIVE INDICATION OF THE FUNCTION BEING PERFORMED WHEN THE BUTTON IS DEPRESSED. THE COLLAR POSITIONS ARE MARKED BUT MAY BE OVERLOOKED BY THE OPERATOR. THE POTENTIAL FOR ERROR IS REDUCED WITH A LINE ENGRAVED ON THE PUSHBUTTON POINTING TO THE SELECTED FUNCTION.

IMPLEMENTATION: FIRST REFUEL OUTAGE

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
OPERATOR SURVEY	B5.13

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER
601	21001000	ADS LOGIC A MANUAL INITIATION	
603	25005000	CHANNEL A	
603	25006000	CHANNEL B	
603	25007000	CHANNEL A	
603	25008000	CHANNEL B	
603	25009000	CHANNEL A	
603	25010000	CHANNEL B	
603	25011000	CHANNEL A	

603	25012000	CHANNEL B
603	25013000	CHANNEL A
603	25014000	CHANNEL B
603	25015000	CHANNEL A
603	25016000	CHANNEL B

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 243.00 ORIGINATOR: BK DATE: 5/ 7/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

THE CITED DISPLAYS DO NOT MEET THE GUIDELINE FOR SUCCESIVE VALUES FOR UNIT GRADUATIONS. THE CITED SCALES HAVE NUMERALS OF 2:5:3:6:9:12... MULTIPLIED BY SOME FACTOR OF 10.

COMMENTS

ASSESSMENT CATEGORY: 3C

DISPOSITION: FIX

EXPLANATION

CHANGE METER FACES SO THAT THEY ARE CONSISTENT WITH HF GUIDELINES.

IMPLEMENTATION: FIRST REFUEL OUTAGE

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	5.1.5.C

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER
405	2RSS/PI108		
405	RSS/PI109		
405	RSS/PI110		
405	RSS/PI111		
601	11035000	NITROGEN PURGE TEMP	

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 402.00 ORIGINATOR: RK DATE: 5/13/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

THERE IS NO CARPETING ON THE CONTROL ROOM FLOOR. THIS COULD CAUSE FATIGUE FROM STANDING AND WALKING ON THE HARD FLOOR.

COMMENTS

ASSESSMENT CATEGORY: 3C

DISPOSITION: FIX

EXPLANATION

CARPETING OR MATS ARE TO BE PLACED ON THE FLOOR IN THE AREAS IN FRONT OF THE CONTROL PANELS.

IMPLEMENTATION: COMMERCIAL OPERATION

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	1.5.7 A(5)

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 410.00 ORIGINATOR: RK DATE: 5/13/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

FLOOR TILES ARE UNEVEN AND PRESENT TRIP HAZARDS. IN SOME PLACES, FLOOR TILES ARE LOOSE AND MOVE WHEN STEPPED ON.

COMMENTS

ASSESSMENT CATEGORY: 2C

DISPOSITION: FIX

EXPLANATION

STAGE 1: LEVEL FLOOR PLATES AND INSTALL LOCKING MECHANISM TO ELIMINATE LOOSENESS.
STAGE 2: CARPETING OR MATS WILL BE INSTALLED IN THE AFFECTED AREA OF THE CONTROL ROOM.

IMPLEMENTATION: STAGE 1: FUEL LOAD STAGE 2: COMMERCIAL OPERATION

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	1.1.3 C(1)

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 413.00 ORIGINATOR: RK DATE: 5/29/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

THERE IS NO PROCEDURE CURRENTLY IN PLACE TO CONTROL THE PERIODIC TESTING OF ANNUNCIATORS.

COMMENTS

ASSESSMENT CATEGORY: 3C

DISPOSITION: FIX

EXPLANATION

OPERATIONS WILL INCORPORATE TESTING OF ANNUNCIATORS INTO PERIODIC OPERATOR CHECKLIST.

IMPLEMENTATION: FUEL LOAD

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	3.4.1 D(2)

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 416.ØØ ORIGINATOR: RK DATE: 3/19/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

THE GUIDELINE LIMIT OF 65 dB(A) FOR BACKGROUND NOISE IS EXCEEDED IN THE CONTROL ROOM AREA AROUND THE PRINTERS. TWO OPERATOR DESKS ARE LOCATED IN THIS AREA.

COMMENTS

ASSESSMENT CATEGORY: 3D

DISPOSITION: FIX

EXPLANATION

INSTALL NOISE REDUCTION DEVICES ON PRINTERS.

IMPLEMENTATION: FUEL LOAD

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	1.5.5 B

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 418.ØØ ORIGINATOR: RK DATE: 3/19/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

LEGEND MESSAGES ON SOME LEGEND LIGHTS ARE AMBIGUOUS. THIS IS A GENERAL PROBLEM WITH INOP STATUS LIGHTS.

COMMENTS

ASSESSMENT CATEGORY: 3C

DISPOSITION: FIX

EXPLANATION

LEGEND LIGHT MESSAGES ARE BEING CHANGED AS PART OF THE LABELING STUDY.

IMPLEMENTATION: FUEL LOAD

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	4.3.3 B(4)

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 419.00 ORIGINATOR: RK DATE: 5/29/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

ANNUNCIATOR VISUAL TILE LEGENDS ARE AMBIGUOUS.

COMMENTS

ASSESSMENT CATEGORY: 3C

DISPOSITION: FIX

EXPLANATION

ANNUNCIATOR TILE LEGENDS ARE BEING CHANGED AS PART OF THE ANNUNCIATOR STUDY.

IMPLEMENTATION: FUEL LOAD

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	3.3.4 A

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 420.00 ORIGINATOR: RK DATE: 5/29/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

CONTROL SWITCHES FOR SPRING-LOADED ROTARY SELECTOR CONTROLS ARE NOT LARGE ENOUGH TO BE HELD AGAINST THE SPRING TORQUE WITHOUT FATIGUE.

COMMENTS

ASSESSMENT CATEGORY: 3C

DISPOSITION: FIX

EXPLANATION

OPERATORS WILL BE PROVIDED WITH EXTENDER BARS TO FACILITATE SWITCH MOVEMENT.

IMPLEMENTATION: FUEL LOAD

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	4.4.5 F

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 422.00 ORIGINATOR: RK DATE: 5/29/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

FIRE EXTINGUISHERS PLACED ON THE FLOOR ARE TRIP HAZARDS.

COMMENTS

THESE FIRE EXTINGUISHERS ARE TEMPORARY EQUIPMENT.

ASSESSMENT CATEGORY: 3C

DISPOSITION: FIX

EXPLANATION

PROVIDE FOR PERMENENT MOUNTING OF FIRE EXTINGUISHERS.

IMPLEMENTATION: FUEL LOAD

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	1.1.3 C(1)

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 424.00 ORIGINATOR: RK DATE: 5/29/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

THE NUMBER PRINTING MECHANISM ON THE CITED DISCRETE CHANNEL RECORDERS PRODUCE A SMEAR ACROSS THE PAGE INSTEAD OF READABLE CHANNEL NUMBERS.

COMMENTS

ASSESSMENT CATEGORY: 3D

DISPOSITION: FIX

EXPLANATION

EVALUATE PRINTING MECHANISM FOR REPAIR OR REPLACEMENT.

IMPLEMENTATION: FUEL LOAD

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	5.4.2 B(3)

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER
873	2 3 005	DRYWELL UNIT COOLER TEMP	
873	3 3 001	DRYWELL UNIT COOLER TEMP	

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 425.00 ORIGINATOR: RK DATE: 5/29/1986
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

DATA IS NOT VISIBLE THROUGH THE THE WINDOW OF THIS DISCRETE CHANNEL RECORDER. RECORDER HAS NON-GLARE GLASS THAT IS NOT CLEAR ENOUGH TO ALLOW CHANNEL IDENTIFICATION NUMBERS ON THE CHART PAPER TO BE READ.

COMMENTS

ASSESSMENT CATEGORY: 3D

DISPOSITION: FIX

EXPLANATION

REPLACE GLASS IN CHART RECORDER DOOR.

IMPLEMENTATION: FUEL LOAD

SOURCE OF DISCREPANCY	EXPLANATORY INFORMATION
CHECKLIST	5.4.1 K

PANEL	EQUIPMENT ID NUMBER	EQUIPMENT NAME	OTHER
614		PUMP MOTOR A & B TEMP	

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 429 ORIGINATOR: RK DATE: 6/5/86
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

J-Handles are less than 3" from edge of panel 852.

COMMENTS

J-Handle switches are 2-1/4" from the edge of the panel.

ASSESSMENT CATEGORY: 3C

DISPOSITION: NO FIX

EXPLANATION

This HED is considered a no fix for the following reasons:

1. The J Handles in question are SBM models which are not easily, inadvertently moved.
2. The anthropometrics of the panels are such, that the operators are not required to bend over the panels, to read indications or operate controls.
3. No known inadvertent operation has occured either on the simulator or on the control room panel.

IMPLEMENTATION:

Source of Discrepancy	Explanatory Information
Explanatory Information	
NRC Walkdown	

Panel	Equipment ID Number	Equipment Name
852		

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 430 ORIGINATOR: RK DATE: 6/5/86
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

A KW load-set meter scale on one panel had calibration below zero.

COMMENTS

This meter is located on the LSTG insert of P851

ASSESSMENT CATEGORY: 3D

DISPOSITION: FIX

EXPLANATION:

Replace meter scale in accordance with GE recommendations and the Human Factor's Manual.

IMPLEMENTATION: First Refuel Outage

Source of Discrepancy	Explanatory Information
Verification of suitability	
NRC Walkdown	

Panel	Equipment ID Number	Equipment Name
851	LSTG Insert	KW Load-set

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 431 ORIGINATOR: RK DATE: 6/5/86
UTILITY: NMP PLANT: NMP UNIT: 2

DESCRIPTION OF DISCREPANCY

Label character size and scale markings were not consistent between the A and B meters of Main Steam Pressure and Pressure set points.

COMMENTS

These meters are located on the LSTG insert of P851

ASSESSMENT CATEGORY: 3D

DISPOSITION: FIX

EXPLANATION:

Replace meter scales in accordance with GE recommendations and the Human Factor's Manual.

IMPLEMENTATION: First Refuel Outage

Source of Discrepancy	Explanatory Information
Verification of suitability	
NRC Walkdown	

Panel	Equipment ID Number	Equipment Name
851	LSTG Insert	Meter

ATTACHMENT #4

This memo addresses the eight NRC concerns resulting from the in-progress audit.

CONCERN: J-Handles are less than 3" from the edge of P852.

RESPONSE: This item has been evaluated in HED 429.

CONCERN: There is excessive use of key switches.

RESPONSE: This item has been addressed in HED 121.

CONCERN: There is a possibility of inadvertent activation when changing light bulbs of back lit legend pushbuttons.

RESPONSE: The vast majority of back lit legend pushbuttons are used only as status lights, with the pushbutton function serving as a "lamp test." However, the operators are cognizant of this concern and exercise caution when changing bulbs. The training department has been requested to emphasize this concern.

CONCERN: Some controls on P601 are more than 25" from the edge of the panel.

RESPONSE: The benchboard depth of the NMP2 control panels is 28.5 inches. This distance meets the functional reach limits of every anthropometric criteria cited except NUREG-0700. MIL-STD-1472C (the source for the NUREG-0700 guideline) lists two functional reach criteria. The functional reach criteria is 25.2 inches for the 5th percentile female and the extended functional reach criteria, which is measured with the shoulder extended forward, is 28.9 inches for the 5th percentile female. This posture can be used to operate the control panels without leaning. The NASA Handbook of Anthropometric Data lists the 5th percentile female functional reach 29.1 inches for stewardesses, 29.7 inches for pilots, and 28.9 inches for nurses.

CONCERN: On P601, two meters have unmarked scales and two meters are missing from the panel.

RESPONSE: All displays not present in the control room at the time of the checklist survey were identified during the inventory discrepancy study and surveyed at a later date. Unmarked scales have been identified and are to be corrected as part of the labeling study.

CONCERN: On P601, mimics do not indicate end points.

RESPONSE: Construction on the P601 mimics has been completed to reflect the drawings. End points are clearly marked.

CONCERN: A KW load-set meter scale on one panel had calibrations below zero.

RESPONSE: This item has been evaluated in HED 430.

CONCERN: One panel contains Main Steam Pressure meter A&B and Pressure Set Point indications A&B. Label character sizes and scale markings were not consistent between the A and B meters.

RESPONSE: This item has been addressed in HED 431.

HUMAN ENGINEERING DISCREPANCY STATUS SHEET

HED NO.	REV.	CAT.	APPEN.	RESPONSIBILITY	RESTRAINTS	DATE	TRANSMITTAL	WORK PKG.	STATUS	VERIFIC.
0005.00		2C	H	D. Kent	-	FL	SPR IHC-163		Working	Eng.Ver.
0044.00		2C	K	Buttacavoli	-	FL	NMPC 10,403	NMP2L-0565	Closed	Verif.
0053.00		2C	J	Weimer	-	FL	NM 1311E 3/5/86	NMP 17112	Closed	Verif.
0054.00		2C	B	Jones	-	FL	NM 1311E 3/5/86	AP-3.3.2	Closed	Verif.
0055.00		2C	E	Buttacavoli	-	FL	NMPC 10,403	Z51,051B/Z50,251	Working	Eng.Ver.
0057.00		2C	B	Jones	-	FL	NM 1311E 3/5/86	AP-3.3.2	Closed	Verif.
0059.00		2C	J	Weimer	-	FL	NM 1311E 3/5/86	NMP 17112	Closed	Verif.
0069.00		2C	B	Buttacavoli	-	FL	NMPC 10,403	Z50,551	Closed	Verif.
0079.04	1	3C	S	Weimer	-	FL	-	NMP 17112	Closed	Verif.
0088.02		2C	F	Buttacavoli	-	FL	NMPC 10,403	Z50,651	Working	Eng.Ver.
0102.01		2C	F	Buttacavoli	-	FL	NMPC 10,403	Z50,851A PR4285	Working	Eng.Ver.
0106.00		2C	B	Jones	-	FL	NM 1311E 3/5/86	NMP 16,851	Working	Eng.Ver.
0112.00		2C	A	Buttacavoli	-	FL	NMPC 10,403	Z50,901/Z50,901A/Z51,251	Working	Eng.Ver.
0126.00		2C	A	Buttacavoli	-	FL	NMPC 10,403	Z51,051B	Working	Eng.Ver.
0130.00	1	2C	S	Kent	Stage 1	FL	NM 1511E 4/18/86	Site ECN IHC-558	Closed	Verif.
0133.00		2C	A	Buttacavoli	-	FL	NMPC 10,403	Z51,251	Working	Eng.Ver.
0138.00		2C	D	Buttacavoli	Label Study	FL	NMPC 10,403	NMP 1581E 5/7/86	Closed	Verif.
0142.00		2C	I	Buttacavoli	Label Study	FL	NMPC 10,403	Z51,351/Z51,351A	Closed	Verif.
0146.00		2C	K	Vierling	Environmental	FL	NM 1311E 3/5/86	NMPC 1377E 3/14/86	Closed	Verif.

HUMAN ENGINEERING DISCREPANCY STATUS SHEET

HED NO.	REV.	CAT.	APPEN.	RESPONSIBILITY	RESTRAINTS	DATE	TRANSMITTAL	WORK PKG:	STATUS	VERIFIC.
0151.00		2C	I	Buttacavoli	Label Study	FL	NMPC 10,403	Z51,551	Closed	Verif.
0152.00		2C	C	Buttacavoli	-	FL	NMPC 10,403	Z51,451B/Z51,451A/	Working	Eng.Ver.
0152.00		2C	C	Buttacavoli	-	FL	NMPC 10,403	Z93,271, Z51,401A,B,C	Working	Eng.Ver.
0153.00		2C	I	Buttacavoli	Label Study	FL	NMPC 10,403	Z51,551	Closed	Verif.
0155.00		2C	C	Buttacavoli	-	FL	NMPC 10,403	Z51,451/Z51,451A	Working	Eng.Ver.
0155.00		2C	C	Buttacavoli	-	FL	NMPC 10,403	Z93,271, Z51,401A,B,C	Working	Eng.Ver.
0156.00		2C	E	Buttacavoli	-	FL	NMPC 10,403	Z51,051B/Z50,251	Working	Eng.Ver.
0159.00		2C	J	Weimer	-	FL	NM 1311E 3/5/86	NMPC 17112	Closed	Verif.
0164.00		2C	B	Buttacavoli	-	FL	NMPC 10,403	Site 10C PG 1837	Closed	Verif.
0165.00		2C	A	Buttacavoli	-	FL	NMPC 10,403	Z50,051/Z50,051A	Closed	Verif.
0169.00		2C	D	Buttacavoli	Label Study	FL	NMPC 10,403	Z52,351	Closed	Verif.
0174.00		2D	F	Buttacavoli		FL	NMPC 10,403	Site 10C PG 1837	Closed	Verif.
0184.00		2C	B	Buttacavoli	-	FL	NMPC 10,403	Site 10C PG 1837	Closed	Verif.
0185.00		2D	D	Buttacavoli	Label/Dema	FL	NMPC 10,403	Z72,612	Working	Eng.Ver.
0187.00		2C	J	Weimer	-	FL	NM 1311E 3/5/86	NMP 17112	Closed	Verif.
0188.00		2C	E	Buttacavoli	-	FL	NMPC 10,403	Site 10C PG 1837	Closed	Verif.
0192.02		2C	H	Buttacavoli	-	FL	NMPC 10,403	Site AOD	Working	Eng.Ver.
0192.02		2C	H	Kent	-	FL	NM 1409E 4/2/86	NM 9/30/86 1651E	Working	Eng.Ver.
0195.00		2C	J	Weimer	-	FL	NMPC 10,403	NMP 17121	Closed	Verif.

HUMAN ENGINEERING DISCREPANCY STATUS SHEET

HED NO.	REV.	CAT.	APPEN:	RESPONSIBILITY	RESTRAINTS	DATE	TRANSMITTAL	WORK PKG:	STATUS	VERIFIC:
0195.00		2C	J	Buttacavoli	-	FL	NM 1311E 3/5/86	Z51,051B/Z50,251	Working	Eng.Ver.
0196.00		3C	K	Jones	-	FL	NM 1311E 3/5/86	AP-4.1	Closed	Verif.
0207.00		2D	F	Buttacavoli	-	FL	NMPC 10,403	Z53,251	Closed	Verif.
0215.00		2C	D	Buttacavoli	Label Study	FL	NMPC 10,403	Z52,351	Closed	Verif.
0219.00	1	2C	S	Kent	Stage 1	FL	NM 1511E 4/18/86	Site ECN IHC-558	Closed	Verif.
0220.00	1	2C	S	Kent	Stage 1	FL	NM 1511E 4/18/86	Site ECN IHC-558	Closed	Verif.
0225.00		2C	A	Buttacavoli		FL	NMPC 10,403	NM 1582E 5/7/86	Closed	Verif.
0226.01		2C	I	Buttacavoli	Label Study	FL	NMPC 10,403	Z51,351/Z51,351A	Closed	Verif.
0233.00		2C	F	Buttacavoli	Label Study	FL	NMPC 10,403	PG-2008/Z56,551A	Working	Eng.Ver.
0235.03		3D	A	Buttacavoli	-	FL	NMPC 10,403	Z51,251	Working	Eng.Ver.
0237.00		3D	D	Vierling	Label Study	FL	NM 1311E 3/5/86	PR 04279	Working	Eng.Ver.
0238.00		2C	B	Buttacavoli	-	FL	NMPC 10,403	Site ICC 12/10/85	Closed	Verif.
0240.00		2C	D	Buttacavoli	Label Study	FL	NMPC 10,403	Z54,151A/Z85,452	Working	Eng.Ver.
0260.00		2C	D	Buttacavoli	Label Study	FL	NMPC 10,403	Z48,271C	Const.Comp.	Verif.
0282.00	1	2C	S	Jones	-	FL	NM 1510E 4/18/86	EOP-RQ	Closed	Verif.
0283.00		1B	J	Jones	-	FL	NM 1311E 3/5/86	NMP 16,851	Closed	Verif.
0284.00		1B	J	Jones	-	FL	NM 1311E 3/5/86	NMP 16,822	Working	Eng.Ver.
0285.00		1B	J	Jones	-	FL	NM 1311E 3/5/86	NMP 16,851	Closed	Verif.
0286.00		1A	J	Jones	-	FL	NM 1311E 3/5/86	NMP 16,851	Closed	Verif.

HUMAN ENGINEERING DISCREPANCY STATUS SHEET

HED NO.	REV:	CAT:	APPEN:	RESPONSIBILITY	RESTRAINTS	DATE	TRANSMITTAL	WORK PKG:	STATUS	VERIFIC.
0288.00		2D	I	Buttacavoli	-	FL	NMPC 10,403	Z54,451	Const.Comp.	Verif.
0290.00		2C	D	Buttacavoli	Label Study	FL	NMPC 10,403	Z54,551	Closed	Verif.
0291.00		2C	C	Buttacavoli	-	FL	NMPC 10,403	Z54,651/Z54,651A	Working	Eng.Ver.
0401.00		2D	S	Jones	-	FL	NM 1524E 4/21/86	NMP 16,851	Closed	Verif.
0403.02		2C	S	Jones	-	FL	NM 1524E 4/21/86	NM 6/3/86 (1672E)	Working	Eng.Ver.
0410.00	1	2C	L	Vierling	-	FL	-	C47133	Working	Eng.Ver.
0411.00		3C	S	Jones	-	FL	NM 1524E 4/21/86	NM 16,851	Working	Eng.Ver.
0413.00	1	3C	L	Jones	-	FL	NM 1524E 4/21/86	NM 16,851	Working	Eng.Ver.
0419.00	1	3C	L	Vierling	Annun. Study	FL	-	CP37,40,60,65	Working	Eng.Ver.
0420.00	1	3C	L	Jones	-	FL	NM 1524E 4/21/86		Working	Eng.Ver.
0421.00		2C	S	Vierling	Label Study	FL	-	PR 04276	Working	Eng.Ver.
0422.00	1	3C	L	Jones	-	FL	NM 1524E 4/21/86	Dwg. EB22-EE,FF	Working	Eng.Ver.
0424.00	1	3D	L	Vierling	-	FL	-	DR 19998, 19999	Working	Eng.Ver.
0425.00	1	3D	L	Vierling	-	FL	-	DR 6/2/86	Working	Eng.Ver.
0426.00		2C	S	Jones	-	FL	NM 1524E 4/21/86	NM 1667E 6/2/86	Working	Eng.Ver.
0427.00		2C	S	Jones	-	FL	NM 1524E 4/21/86	NM 1667E 6/2/86	Working	Eng.Ver.
0428.00		2C	S	Jones	-	FL	NM 1524E 4/21/86	NMP #16,851	Closed	Verif.
0901.00		2C	F	Buttacavoli	-	FL	NMPC 10,403	Z54,851	Closed	Verif.
0904.00		2D	I	Buttacavoli	-	FL	NMPC 10,403	Z53,251	Closed	Verif.

HUMAN ENGINEERING DISCREPANCY STATUS SHEET

HED NO.	REV:	CAT:	APPEN:	RESPONSIBILITY	RESTRAINTS	DATE	TRANSMITTAL	WORK PKG.	STATUS	VERIFIC:
0911.00		2C	F	Buttacavoli	-	FL	NMPC 10,403	Z54,851	Closed	Verif.
0912.00	1	2C	S	Buttacavoli	-	FL	NM 1511E 4/18/86	Z54,851	Closed	Verif.
0914.00		2D	F	Vierling	GE Input	FL	NM 1353E 3/7/86	HHE 86-958A FDDR 4626	Closed	Verif.
0922.00		2D	F	Buttacavoli	-	FL	NMPC 10,403	Site IOC PG 1837	Closed	Verif.
0928.00		2C	F	Buttacavoli	-	FL	NMPC 10,403	Z56,451A	Working	Eng.Ver.
0931.00	1	2C	S	Kent	Stage 1	FL	NM 1511E 4/18/86	Site ECN IHC-558	Closed	Verif.
0941.00		2C	F	Buttacavoli	-	FL	NMPC 10,403	Z55,551	Working	Eng.Ver.
0942.00		2C	A	Buttacavoli	-	FL	NMPC 10,403	Site IOC PG 1837	Closed	Verif.
0946.00		2C	A	Buttacavoli	-	FL	NM 1311E 3/5/86	Site IOC 11/19/85	Closed	Verif.
0949.00		2C	A	Buttacavoli	-	FL	NMPC 10,403	Site IOC	Closed	Verif.
0950.00		2C	A	Buttacavoli	-	FL	NMPC 10,403	Site IOC	Closed	Verif.
0952.00	1	2C	S	Buttacavoli	-	FL	NM 1511E 4/18/86	Z54,851	Closed	Verif.
0978.00		2C	F	Buttacavoli	-	FL	NMPC 10,403	256,451A	Working	Eng.Ver.
0982.00		2C	F	Buttacavoli	-	FL	NMPC 10,403	Z56,551A PR 4277	Working	Eng.Ver.
0984.00		2C	F	Vierling	GE Input	FL	NM 1353E 3/7/86	HHE 86-958A FDDR 3754	Closed	Verif.
0993.00		2C	A	Buttacavoli	-	FL	NMPC 10,403	Site IOC	Closed	Verif.
0994.00		2C	F	Buttacavoli	-	FL	NMPC 10,403	Z56,551A	Working	Eng.Ver.

CODES

HED NO.	- HUMAN ENGINEERING DISCREPANCY NUMBER
REV	- REVISION NUMBER
CAT	- ASSESSMENT CATEGORY AND LEVEL (I = INVALID)
APPEN	- APPENDIX OF SUMMARY REPORT WHERE HED CAN BE FOUND (NOTE "S" DESIGNATES SUPPLEMENTAL REPORT, "L" REV 1 OF SUPPLY REPORT)
RESPONSIBILITY	- PERSON RESPONSIBLE FOR HED RESOLUTION
RESTRAINTS	- RESTRAINTS PREVENTING HED IMPLEMENTATION
DATE	- REQUIRED IMPLEMENTATION DATE (EG "FL" FUEL LOAD, "CO" COMMERCIAL OPERATION, "RO" FIRST REFUEL OUTAGE)
TRANSMITTAL	- NMPC DOCUMENT PROVIDING AUTHORITY TO PERFORM WORK TO CORRECT HED
WORK PACKAGE	- END PRODUCT PROVIDING SOLUTION (I.E. E&DCR, FDDR, CONFIRMING LETTER, PROCEDURE NUMBER, ETC.)
STATUS	- TO BE COMPLETED BY ACTION PARTY AT REQUIRED INTERVALS (CONST. COMP. = ALL PHYSICAL WORK IS COMPLETE; CLOSED = ALL PAPERWORK ENG., QC, IS COMPLETE)
VERIFIC	- HUMAN FACTORS VERIFICATION (VERIF = HARDWARE OR FINAL PRODUCT VERIFIED; ENG. VER. = ENGINEERING VERIFIED)

NOTE: 2,000 SERIES HEDs ARE ACTION ITEMS FOR DCRDR COMPLETION, NOT HEDs

(0390K)