

SUPPLEMENTAL REPORT
TO THE
DETAILED CONTROL ROOM DESIGN REVIEW
FINAL SUMMARY REPORT
FOR
R.E. GINNA STATION

Submitted by:
Rochester Gas and Electric Corporation

July 1987

8707220641 870714
PDR ADCK 05000244
P PDR

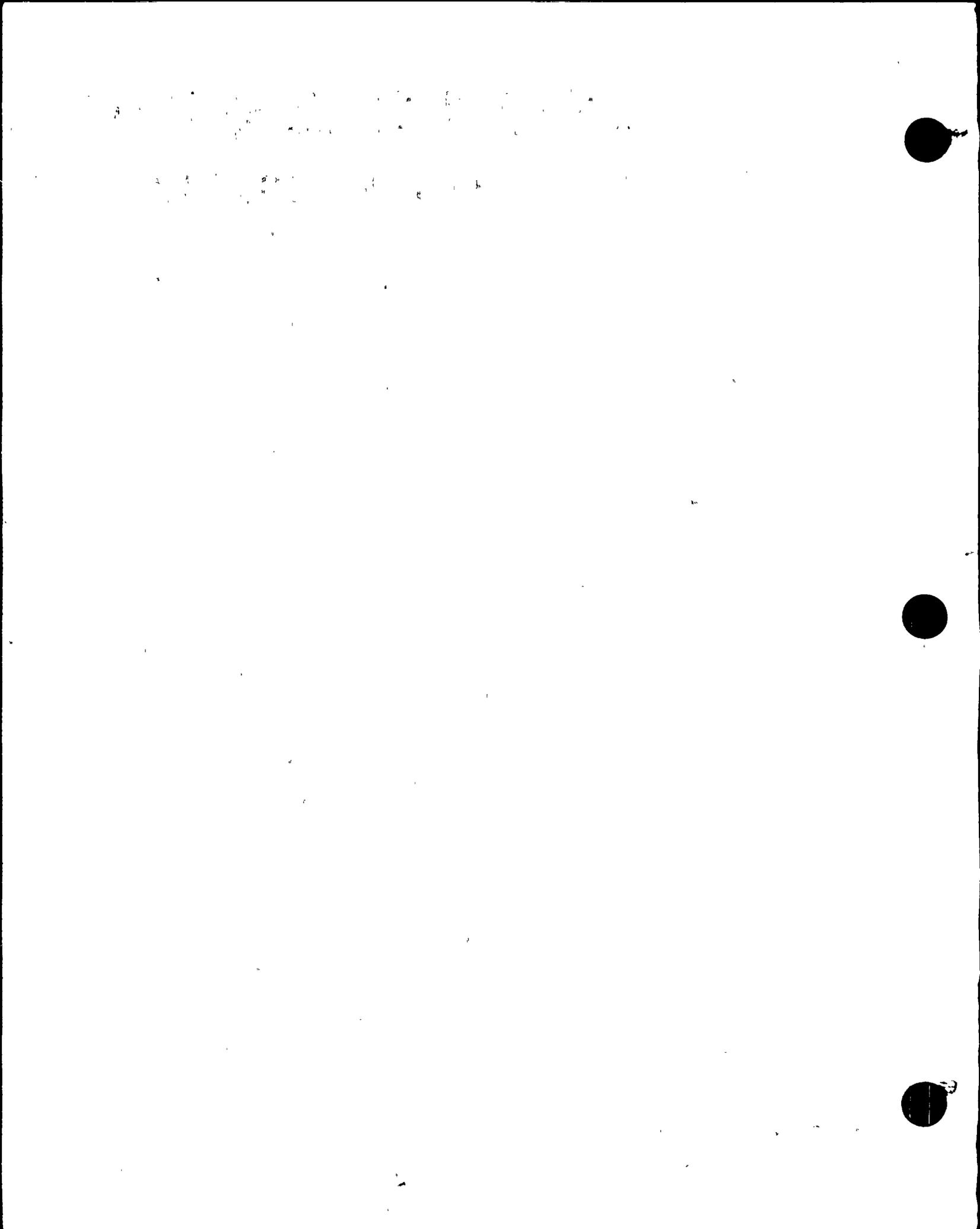


TABLE OF CONTENTS

1.0 INTRODUCTION 1-1

2.0 RESPONSES TO SER/TER CONCERNS 2-1

 2.1 In-progress Audit 2-1

 2.2 Assessment HEDs 2-4

 2.3 Status of Design Improvements 2-5

 2.4 Verification of Future Modifications 2-6

 2.5 Coordination of Control Room Improvements. 2-8

 2.6 Operator Survey Responses 2-9

3.0 CONFERENCE CALL ISSUES 3-1

 3.1 EOP Development 3-3

 3.2 Regulatory Guide 1.97 Modifications 3-4

 3.3 Colored Labels 3-4

 3.4 Foxboro Controllers 3-5

APPENDIX A. Revised HEDs A-1

SECTION 1

INTRODUCTION

This report describes the results of the supplemental Detailed Control Room Design Review (DCRDR) efforts for Rochester Gas and Electric's (RG&E) Ginna Station. Included is a description of the follow-on studies that have been completed since the Ginna Station Final Summary Report was submitted December 30, 1985.

The Safety Evaluation Report (SER), dated September 4, 1986, for Ginna recommends that certain actions be taken to fulfill the DCRDR requirements of Supplement 1 to NUREG-0737. This report addresses each of the NRC findings described in the SER, and the conclusions presented in the Technical Evaluation Report (TER). Table 1-1 lists the section of this report which covers each of the NRC findings. Included in Section 3 are complete explanations of all of the items discussed in the conference call held between RG&E and the NRC on November 12, 1986. As a result of the follow-on studies performed by RG&E, several Human Engineering Discrepancies (HEDs) were revised to more accurately reflect the current response. Each of these HEDs was presented to the DCRDR committee members for review. The Revision 1 HEDs are listed in Appendix A.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions.

2. It also highlights the need for regular audits to ensure the integrity of the financial data.

3. Furthermore, the document emphasizes the role of transparency in building trust with stakeholders.

4. In addition, it notes that clear communication is essential for the successful implementation of any financial strategy.

5. Finally, the document concludes by stating that a strong financial foundation is critical for long-term organizational success.

6. The following sections provide a detailed overview of the various financial metrics and indicators used to assess performance.

7. This includes a comprehensive analysis of the company's revenue streams and profit margins.

8. Additionally, it examines the impact of operational costs and the effectiveness of the budgeting process.

9. The document also explores the challenges faced by the organization in managing its financial resources.

10. Overall, the report aims to provide a clear and concise summary of the financial health of the organization.

11. It is intended to serve as a valuable resource for management and other key decision-makers.

12. The information presented here is based on the most current and reliable data available.

13. We believe that this analysis will provide a solid basis for future financial planning and strategic initiatives.



Table 1-1. SER and TER Conclusions Addressed in this Report

<u>CONCLUSIONS FROM SER-ACTIVITIES TO BE COMPLETED</u>	<u>SECTION</u>
Identify and discuss the disposition of specific HEDs that address the apparent omissions noted by the in-progress audit.	2.1
Final determination of adequacy of HED assessments awaiting RG&E response:	2.2
o Annunciator study should include all annunciators and evaluate the annunciator system as a whole	2.2.1
o Synopsis of lamp test procedure	2.2.2
o Identify which remote shutdown HEDs will be corrected by Appendix R modifications	2.2.3
o Details of the validation of the remote shutdown capability	2.2.3
o Continue search for alternative design solution that will overcome human engineering problems identified with the Steam Generator Water Level controller	2.2.4
Submit results, proposed corrective actions, and implementation schedule for the following engineering studies:	2.3
o Evaluation of the annunciator design	2.3.1
o Auditory alarms	2.3.2
o Volatile Treatment Bypass Valve controller	2.3.3
o Valve position indications for (a) Main Feedwater Regulation Valves (b) Feedwater Bypass Valves, and (c) MOV 738 A and B	2.3.4
o Inking system for strip chart recorders	2.3.5
o Status light system to improve operators ability to discriminate between bright and dim lamp illumination	2.3.6

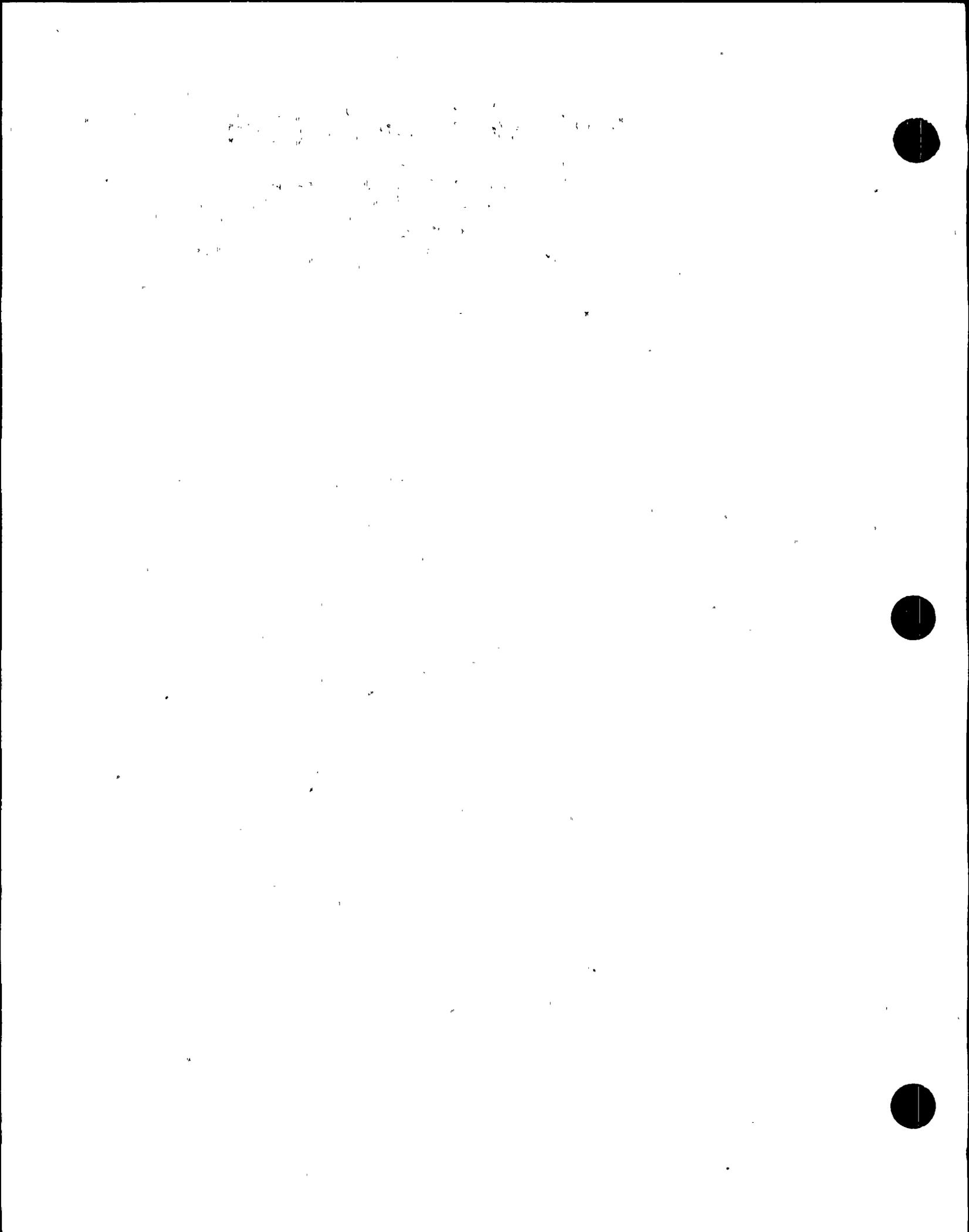


Table 1-1 (Continued).

- Verification that selected improvements will provide necessary correction and will not introduce new HEDs. 2.4
- Coordination of control room improvements with changes from other programs such as the Safety Parameter Display System (SPDS), operator training, Regulatory Guide 1.97 instrumentation, and upgraded Emergency Operating Procedures (EOPs). 2.5
- Address operator survey concerns not included as HEDs 2.6

CONCLUSIONS FROM TER

- Identify apparently overlooked HEDs that were identified by the in-progress audit team. 2.1
- Confirm that regular lamp checking referenced as the basis for not providing lamp test capability is controlled by procedure and that this procedure addresses checking normally deenergized lamps. 2.2.2
- Describe the validation of remote shutdown capability that was referenced as the basis for not correcting HEDs relating to remote shutdown capability. 2.2.3
- Respond to the need for integrated testing that evaluates the effectiveness of NUREG-0737, Supplement No. 1 control room initiatives when applied in the context of the Ginna control room and Ginna operator training. 2.5
- Describe the relationship between Ginna Regulatory Guide 1.97 Type A variables and the information identified by the task analysis as needed to implement the EOPs. 2.5
- Consider all annunciator HEDs as part of the engineering study of annunciator problems, not just those specific HEDs for which the study was referenced as the resolution. 2.2.1
- Review and address the operator survey comments not directly related to DCRDR efforts. 2.6



SECTION 2
RESPONSES TO SER/TER CONCERNS

This section provides specific responses to each of the NRC concerns expressed in the SER and the conclusions listed in the TER.

2.1 In-progress Audit HEDs

The Results of the In-progress Audit of the Detailed Control Room Design Review Report for Ginna nuclear power plant, dated August 9, 1985 listed several HEDs identified by the audit team that were not identified as part of the checklist survey. There were various reasons for these omissions in all cases. Either the items cited by the NRC audit team were not considered HEDs by the RG&E CRDR review team, or were considered generic and not specifically cited by RG&E, or, in the case of the control room lighting, the problem was considered marginal. A generic HED, such as indicator scale problems, evolved during the course of the design review when it was realized that many HEDs being generated were addressing a common problem. At this point a "study" of the common problem was identified and no further specific HEDs for the problem were initiated.



Nevertheless each item cited by the NRC audit team was reinvestigated by the CRDR review team. The following paragraphs address each of the NRC audit team's concerns.

- 2.1.1 "Unlabeled scales were noted on FI-2011 and FI-2012."
"Handwritten scales that do not meet legibility criteria were noted on FI-2011, FI-2012, TI-2091, and PR-420."

Several HEDs were written to identify problems with display scales and labeling. Both indicating scale problems and labeling problems became generic HEDs. In this particular case, the labeling deficiency was corrected during the course of the control room paint, label and tape (PLT) modification program. The PLT program has greatly enhanced the control board through a comprehensive effort involving repainting of all control cabinets, replacement or installation of new labels and demarcation of functional groupings. This effort was coordinated with efforts to provide unique, consistent identification of plant systems and components. Most of these modifications were made during the 1987 outage. The specific scale problems noted during the audit were addressed in the comprehensive study of all indicating scales. New scales to correct all deficiencies, including those identified by the audit team, have been ordered and are expected to be installed in September 1987 correcting in total the concerns of this HED.



2.1.2 "Protective covers over the valve control switches obscured the switch escutcheons. The controls for PCV-430 and PCV-431 are two examples of this HED."

This was not considered an HED by RG&E since it was felt that the very purpose of the cover plate was to cause the operator to purposefully lift the cover plate and read the escutcheon before initiating action. However, it was recognized during the course of performing a generic study of escutcheon plates that some plates had become worn over the years and also, that consistency of language on plates was a problem. This study resulted in installing 246 new escutcheon plates including those plates specifically mentioned in this NRC concern.

2.1.3 "A few J-handle switches were noted to be close to the front edge of the control panel benchboard, and subject to accidental activation."

The shafts of the cited J-handles are three inches from the edge of the benchboard which is in compliance with the NUREG-0700 guideline; therefore no HED was written. In the 18 years that the Ginna plant has been in operation, there has never been a problem with accidental activation of these J-handles.



2.1.4 "A few control switches, the Containment Depressurization Valve controls, for example; were noted to have open/closed positions reversed from other control switches."

The proper orientation and identification of switch positions has been carefully examined throughout the Ginna control room. New escutcheon plates have been installed on control switches to ensure that each switch position is clearly identified. In the process of performing the generic escutcheon plate study, all switch positions were examined for proper orientation to ensure that switch movement was consistent with the population stereotype. Exceptions to this human factors principle are the Foxboro controllers (Section 3.4) and the cited control switches (Containment Depressurization Valve Controls). These control switches are affected by a major modification to the containment mini-purge system and are scheduled to be removed from the control room in accordance with EWR 2504 during the 1988 refueling outage.

2.1.5 "The control room survey did not identify readily apparent problems with control room lighting levels and glare on displays. For example, high luminance ratios between information and veiling reflectance was noted by the audit team and the operator survey but not by the DCRDR lighting survey."



The original lighting survey determined that lighting levels were marginal in some areas of the control room. This was verified by the NRC audit team. The survey program was restructured and a new lighting survey performed. This survey indicated that the existing lighting system was inadequate in some areas. As a result, a completely new lighting system was installed in the control room which corrected the inadequacies.

2.1.6 "Lighting provided for access to and operation of safe shutdown equipment did not appear to be sufficient to provide the minimum illumination levels recommended by the IES handbook and NUREG-0800, Section 9.5.1."

Ginna safe shutdown panels are located in several areas of the plant. The lighting at the safe shutdown areas is sufficient to perform all required safe shutdown tasks. The lighting survey was conducted in conjunction with compliance efforts to meet 10CFR50 Appendix R and the lighting levels have been found to be acceptable. While RG&E is confident of Ginna's remote shutdown capability, it is our position that remote shutdown panels are not within the scope of the DCRDR.

2.1.7 "A valve control switch label that does not functionally describe the controlled device. Valve No. 350."
"Breaker control pushbuttons on panel 5, that did not describe the function of the control."



RG&E initiated a comprehensive labeling program to provide unique, consistent labels. This labeling program involved the changeout of every label on the main control board panels and the majority of the ancillary panels. Labels were color coded in accordance with a system color designation (See Section 3.3). In cases where dynotape was used to convey useful information to the operator such as set points, limits of operation, etc., permanent labels were installed utilizing a distinctive color. In all cases, the wording of the labels was reviewed to ensure that the function of the component was adequately described.

2.2 Assessment HEDs

The following sections describe the RG&E activities to resolve the cited assessment concerns.

2.2.1 Annunciator HEDs

All of the annunciator related HEDs were reviewed to determine the actions that must be taken to improve the annunciator system and resolve the HEDs. Two separate studies were conducted. The first study, performed by RG&E operations and engineering personnel, examined the operational design of the system. The only modification proposed as a result of the study was the installation of reflash capability. This proposal was rejected by the GARD* Committee.

The operators at Ginna have received much of their training at the Zion Station simulator which has reflash capability. The Ginna operators decided against installing a reflash capability because they feel that it contributes significantly to the number of nuisance alarms in the control room. The second annunciator study was performed by ARD with assistance from plant operations personnel. This study examined annunciator tile nomenclature and location. The study established a standardized format for the wording of annunciator tiles and utilized a standard abbreviations list to ensure consistency.

* The GARD Committee consists of five licensed Ginna operators selected from different working shifts. The purpose of the committee is to provide operations support in the development of control room design modifications and to represent the unified position of all control room operators in DCRDR Committee matters. The GARD Committee works with human factors specialists in the selection of a design from among alternative human factors solutions to a cited control room deficiency. Operator acceptance is essential to the effectiveness of any human factors-related modification; the existence of the GARD Committee assures acceptance of the modification because operators have had a significant input in the development of the modification.

An individual annunciator window identification system was determined to be appropriate and will be adapted to the annunciator system. All new annunciator tiles have been ordered. Approximately fifty percent of the tiles required a change because of nomenclature, format, and/or lack of information. All tiles are to be individually engraved with an identifying number. The resulting changes improve the annunciator system and meet accepted human engineering design requirements. The tile replacement is expected to be completed in September 1987.

2.2.2 Lamp Test Capability

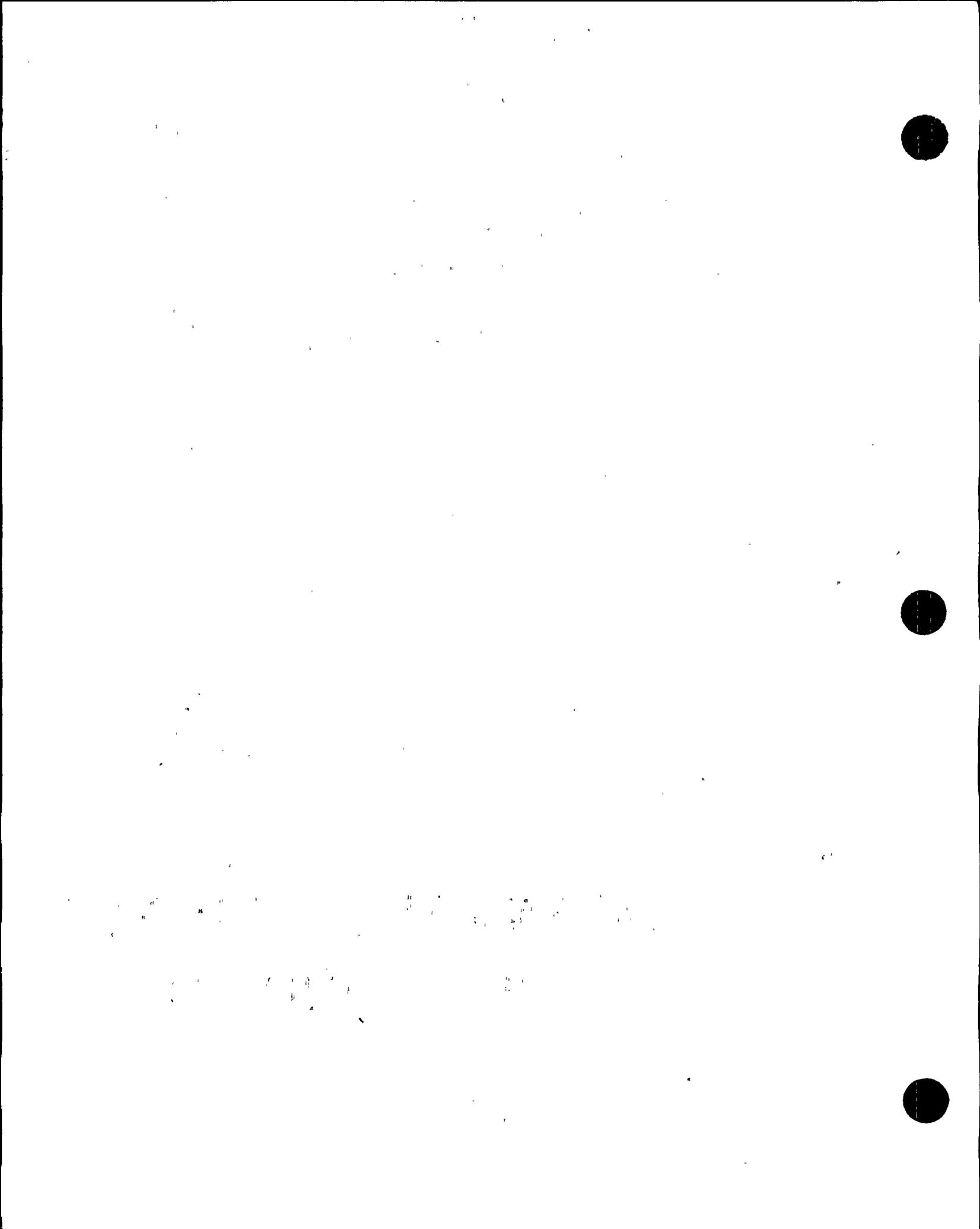
Lamp test in the Ginna control room is performed by Procedure No. 0-6.13, Daily Surveillance Log. This Procedure must be performed and logged by operators on each shift. The Daily Surveillance Log lists every safety-related component in the control room and the operator must check that the appropriate status light for each of these components is lit. The procedure also includes a check of the bistable status lights (these are constantly lit) and all annunciator tiles (these have a lamp test pushbutton). Performance of this procedure during each operating shift assures that all significant control room lamps have been observed as operational. If a lamp is burned out, the bulb is replaced immediately or a trouble card is submitted to assure the repair of the trouble source.

2.2.3 Remote Shutdown HEDs

Ginna safe shutdown panels are located in several areas of the plant. Because of the component level based configured design, RG&E does not consider the remote shutdown panels a part of the DCRDR. Nevertheless, lighting surveys and procedure walkdowns have been conducted throughout the plant in conjunction with 10CFR50, Appendix R compliance and the lighting levels have been judged acceptable.

2.2.4 Controller for Steam Generator Water Level During Startup

The RG&E Engineering Department and Ginna I&C have investigated many alternatives in trying to improve the steam generator water level control system. Different plant parameters such as nuclear power, steam generator level, feedwater flow, steam flow and reactor power, have been investigated in different combinations as controlling signals to the feedwater valve controllers with little improvement realized. Recently, during the last refueling outage, a new calibration procedure was utilized which appears to have improved steam generator level control considerably during startup.



RG&E is still pursuing the problem actively. RG&E is also an active participant in the Westinghouse WOG TRAP program and, if appropriate, will utilize the results of this program at Ginna.

2.3 Status of Design Improvements

The following sections list the status of the design improvement studies that RG&E committed to in the Final Summary Report.

2.3.1 Annunciator Design Study

The annunciator design studies, described in section 2.2.1 are complete. Replacement of annunciator tiles will take place in September 1987.

2.3.2 Auditory Alarms

An extensive sound level survey was performed in the Ginna control room. This effort required measurement and data recording of Sound Pressure Levels (SPLs) for determination of control room ambient sound level and acoustic profiles of the various alarm systems. Data was used for quantitative evaluations and decision-making. Tape recordings were used for assessing recognition, distinctive coding, and interaction/masking between alarm systems.



Ambient sound level surveys and alarm measurements were conducted in April and May 1987. Sound level data and alarm signals were measured or recorded at the center of the primary operating area.

The data was used to make recommendations to resolve the HEDs cited regarding the auditory alarms. NUREG 0700 recommends that alarm levels should be 10 dBA above ambient noise level. The Ginna annunciator alarm is 6 dBA above ambient and found to be acceptable as well as desirable. The external alarms are initiated and sound in the control room over the PA system. A variable muting will be installed on the PA system to allow the external alarms to be adjusted to a level within 2.5 dBA of the annunciator alarm. The fire panel alarms will be replaced by variable electronic chimes by June 1988. These electronic chimes, which are UL approved fire alarms, will be adjusted to be within 2.5 dBA of the annunciator alarm.

2.3.3 Volatile Treatment Bypass Valve Controller

The need for an All Volatile Treatment (AVT) Bypass Valve controller was reviewed by the GARD Committee. Their recommendation to the CRDR Committee was that no change be made. There is an annunciator in the control room to alert the operator of any



alarm at the AVT panel. Since an auxiliary operator must be dispatched to the AVT panel (which is a short distance away) whenever this annunciation alarms, it is no more of a burden to respond to a bypass valve activation than for any other AVT system alarm problem.

2.3.4 Valve Position Indications

A study to examine the need and feasibility of valve position indications for main feedwater regulation valves and feedwater bypass valves is complete. It has been determined that these indications will be helpful to the operators in some cases for controlling steam generator level. They are scheduled to be installed on the control boards in June 1988.

2.3.5 Improved Inking System for Chart Recorders

A study to determine the best method to improve the inking of strip chart recorders is complete. A new type of pen has been installed in all Foxboro chart recorders which alleviates the problem of smeared ink on the chart paper. The new inking system has been found to be reliable and to provide clean distinctive markings.



2.3.6 Status Light Discrimination

The problem of discrimination of status lights that show conditions by a bright or dim indication has been solved by removing and cleaning the lenses and by replacing the light bulbs with bulbs of the proper voltage rating. Bright or dim indication is now easily discernable. In addition, further studies have demonstrated that introducing a voltage dropping resistor into each status light circuit also improves discrimination. A few circuits have been modified with dropping resistors and it is intended that all circuits will be modified in the future. However, this enhancement is not required to provide an acceptable level of discrimination.

2.4 Verification of Future Modifications

A continuing human factors program is being developed and will include operations and engineering support in the human factors effort and a human factors design manual. All modifications affecting the control room are being reviewed by RG&E's human engineering consultant, until the design manual is implemented by RG&E.



The coordination of the CRDR with NUREG-0737, Supplement 1 initiatives, including Regulatory Guide 1.97 and SPDS has been assured by using a common basis for development of the personnel managing these programs. The new EOPs, developed from the Westinghouse Owner's Group Emergency Response Guidelines (ERGs) serves as the basis for all of these programs. The EOPs were used to perform the DCRDR task analysis. The development of the SPDS display parameters was also based upon EOP requirements. The DCRDR checklist survey was performed upon the SPDS displays. Regulatory Guide 1.97 instrumentation was included in the DCRDR task analysis verification of suitability and checklist survey. The new EOPs have been used for operator training in the new simulator since it has become operational.

The interrelation of all of these programs assures the coordination of control room improvements. The Ginna simulator now serves as the test vehicle for insuring that the implementation of all operational modifications is integrated as part of the RG&E human factors program.



The responses to the Operator Survey have been given careful consideration by RG&E. A copy of the operator survey responses was provided to the Ginna plant management to ensure that they were aware of the opinions of their operations staff.

Some of the operator concerns that were not cited as HEDs have been implemented (e.g., Tave display, modifications to control room door closer); however, many of their concerns will not be implemented for one of several reasons. In some instances, a concern was expressed by an operator but there was disagreement among the operators regarding the actual benefit of the suggestion. In other cases, the responses were "nice to have" suggestions that are not given high priority because they do not represent a safety concern. All responses were given to all operators to provide the opportunity to develop support for their individual ideas or concerns. No significant issues were developed from this informal review.



SECTION 3
CONFERENCE CALL ISSUES

A conference call was held between NRC licensing personnel and RG&E personnel on November 12, 1986 to discuss and clarify some of the items included in the SER. As a result of this call some of the studies identified in the CRDR Summary Report were accelerated. These studies, some of which were the Controller Study, Auditory Alarm Study, and Annunciator Study are now all complete. The call also raised new topics that the NRC requested that RG&E discuss in the supplemental summary report which are included in this section. Table 3-1 lists the topics discussed during the conference call and the sections of the supplemental summary report that addresses each of the issues.



Table 3-1. Conference Call Issues Discussed in this Report

<u>ISSUES TO BE DISCUSSED - ACTIVITIES TO BE COMPLETED</u>	<u>SECTION</u>
Provide evidence of the integration of the DCRDR with Regulatory Guide 1.97, SPDS, EOP development, and ERFs (as per Supplement 1 to NUREG-0737).	2.5
Provide evidence of the acknowledgement and corrective action of RG&E in meeting the concerns addressed in an August 1986 letter from the NRC on EOP development deficiencies.	3.1
Discuss Regulatory Guide 1.97 modifications in addition to modifications which resulted from HEDs. The primary purpose would be to effectively demonstrate that human factors problems have not only been solved, but also that new modifications have not resulted in new problems.	3.2
Provide a rationale for utilizing colored labels instead of background shading in the recent control room paint, label, and tape modification.	3.3
Discuss the recently written human factors manual, and its relationship and use in the assessment of equipment design and future modifications.	2.4.2
Discuss the operator survey remarks and provide evidence of management notification and action.	2.6
Provide information pertaining to the remote shutdown capability and discuss local versus control room application of human factors criteria as outlined in NUREG-0700.	2.2.3 2.2.4
Provide a synopsis of RG&E's continuing human factors program and how it will effect engineering design and operations in the future.	2.4
Discuss the auditory alarm survey results.	2.3.2
Discuss the results of the annunciator design review.	2.2.1
Discuss the AVT bypass controller modification and give the schedule of modification.	2.3.3



Describe the status light modification and future plans for this system. 2.3.6

Discuss schedule of installation of indicators for the main feedwater valves and the feedwater bypass valves. 2.3.4

Discuss the new strip chart inking systems. 2.3.5

Discuss the the approach being taken with the Foxboro controllers and provide a human factors review of the proposed replacement controllers. 3.4

Address the apparent oversights noted in the in-progress audit not addressed by any generic HEDs (e.g., protective covers obscure switch escutcheons, J-handle switches subject to accidental activation, and control switches with open and closed positions that are reverse of control room convention. 2.1



3.1 EOP Development

The new EOPs were subject to a detailed verification and validation process prior to their implementation. Operators use EOPs to perform their training in the Ginna simulator. This provides an ongoing validation of the EOPs, and assures that any deficiencies are identified through their continued use.

The August 1986 NRC Information Notice (and its supplement) on procedure development was the topic of a meeting of the Ginna Emergency Procedure Committee. The concerns expressed in the information notice were addressed by the committee to ensure that they were in full compliance with the guidelines discussed in the NRC Information Notice.

3.2 Regulatory Guide 1.97 Modifications

The Ginna review of Regulatory Guide 1.97 is based upon the EOPs which also provide a basis for the CRDR task analysis. Thus the two tasks have been closely coordinated and are based on the same operator actions and information requirements. All modifications, including those made relative to Regulatory Guide 1.97 are subject to human factors review. RG&E's ongoing human factors program, described in section 2.4, will ensure that modifications do not create new human factors problems in the control room.

3.3 Colored Labels

The use of colored labels instead of background shading to identify systems and functional grouping was carefully researched and tested. A background shading scheme was originally proposed and illustrated on a control panel mockup. Operator questionnaires and interviews regarding the background shading showed that operators disliked much of the background shading. Most operators admitted the utility of system identification but most thought that the background shading cluttered the control panels. Another attempt was made to develop better background shading. Templates, painted the colors of the proposed background scheme, were cut to fit the appropriate panel areas and applied to the simulator control panels. This was evaluated by operations and generally received a negative reaction because the contrast of the many colors was distracting to the eye.

It became apparent, at this point in time, that it was difficult to develop a unified position from the full complement of operators for selection and verification of enhancement modifications. A representative group, the GARD Committee (Section 2.2.1) was formed to assist in finalizing an enhancement program.

Reverse engraved colored labels were then tried as an alternative to background shading. The advantage of using reverse engraving is that the light lettering cannot accumulate dirt and it thus

maintains contrast. The background color of the labels and the color of the lettering (black or white) was carefully matched to ensure high contrast and visibility. Because of the concentration of controls and displays on the Ginna control panels the colored labels provide the perceptual cues to link together and identify instrumentation of individual systems at a glance. The operators are far more comfortable with the colored label identification scheme than with any of the proposed background shading schemes. A colored hierarchical labeling scheme coupled with demarcation lines is a very effective method of system and functional grouping, especially on small control panels such as those at Ginna Station. Operator response to the colored labels and demarcation has been positive. The combined program resolves the human factors concerns addressed in the original HED's.

HED responses which cite background shading as a corrective action have not been changed because it is felt that the colored label scheme is the equivalent to background shading.

3.4 Foxboro Controllers

A comprehensive human factors study of the controllers in the Ginna control room was performed by ARD in response to several HED's. The results of this study indicated that there was a lack of information on all controllers. In addition, I&C personnel investigated an alternative solution to the unconventional



indicator movement which consisted of replacing the present controllers on a one-for-one basis with a new controller. One of the new controllers was mocked up in a control loop to provide the Operators an opportunity to become familiar with its characteristics. The Operators found the new controller to be unacceptable, and from a human factors standpoint, it was unreasonably complicated. For example, since each controller has a self contained microprocessor, six control push buttons and three scales are located on the face of the controller. All scales and push buttons are required by I&C technicians for programming but only some of the push buttons and all scales are required by the operators for control. Based on these results, it was concluded that the appropriate action is to modify the present controllers by adding informational labels as suggested by the ARD study. Labels have been delivered and installation is to be completed by July of 1987.

APPENDIX A
REVISED HED'S



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0001
 UTILITY: RGE

ORIGINATOR: RK
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

Displays are not identified as to whether they reflect demand or actual status.

COMMENTS:

Displays should clearly indicate whether they reflect demand or actual status. Foxboro controllers have a demand indication that is not labeled as such.

RESPONSE:

Controllers will be labeled to indicate demand status by 7/87.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATIONCHECKLIST

5.1.1.B(1)

<u>PANEL</u>	<u>EQUIPMENT ID NUMBER</u>	<u>EQUIPMENT NAME</u>
5	9508D&G	RECIRC CONT VLVS
6		BORIC ACID FLOW CONTROL BLENDER
6		CHG PUMP #1 SPEED CONTROL
6		CHG PUMP #2 SPEED CONTROL
6		CHG PUMP #3 SPEED CONTROL
6		MAKEUP H2O BORIC ACID BLENDER
6	107	HOTWELL LEVEL
6	2HPC-431C	SPRAY VLV CONTROL
6	2HPC-431H	SPRAY VLV CONTROL
6	3359	
6	431K	VARIABLE HEATER CTL PRESSURIZER PRESS
6	484	
6	CV-56-3411	ATM STM DUMP PRESS CONT LOOP
6	CV-57-3410	
6	HCV-466	
6	HCV-476	
6	HCV-480	FW FLOW BYPASS VLV
6	HCV-481	FW FLOW BYPASS LOOP B
7	HCV-626	RESID HT REMOVAL LOOP RC RETURN
7	PCV-135	LETDOWN LINE CONTROLLER
7	TCV-130	NON-RUN HX LETDOWN TEMP
9		HYDROGEN TEMP CONTROL
9		TURBINE OIL TEMP CTL

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0004
 UTILITY: RGE

ORIGINATOR:RK
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING X Y

DESCRIPTION OF DISCREPANCY:

Operator is given display indication in percentage instead of some other units more appropriate to the parameter.

RESPONSE:

The recirc valves (V-9508D and V-9508G) addressed in this HED are calibrated in percent opening, which is a normal calibration for this type of valve and for the service it is used in. To calibrate these valves for some other parameter would be difficult and impractical. No change to these valves is intended at this time. New indicator scales measured in GPM for flow indicators FI-2011 and FI-2012 have been ordered. Installation will be completed in 9/87.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

5.1.2.C

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

5	V-9508D	Recirc Cont Vlv
5	V-9508G	Recirc Cont Vlv
6	FI-2012	Flow Indicator
6	FI-2011	Flow Indicator

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0006
 UTILITY: RGE

ORIGINATOR:RK
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

No indication on display or adjacent labels of units being measured.

COMMENTS:

Foxboro controllers contain meters with no label of units measured.

RESPONSE:

Controllers will be labeled with the proper units of measurement by 7/87.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

5.1.4.A

<u>PANEL</u>	<u>EQUIPMENT ID NUMBER</u>	<u>EQUIPMENT NAME</u>
5		CV Tracking Meter
5	9508D & G	Recirc Cont Vlvs
6		Drain Tank Cooling Water Ctl
6		Hotwell Level
6	2HPC-413C	Spray Valve Control
6	2PCV-431A	Spray Valve Control
6	2PCV-431B	Spray Valve Control
6	4297	Aux FW Bypass
6	4298	Aux FW Bypass
6	431K	Variable Heater Ctl Pressurizer Press
6	4480	Aux FW Bypass
6	4481	Aux FW Bypass
6	484	
6	CHC Pump#1	Speed Control
6	CHC Pump#2	Speed Control
6	CV-56-3411	ATM STM Dump Press Cont Loop
6	CV-57-3410	
6	FI-2011	
6	FI-2012	
6	HC-466	FW Flow Loop A
6	HC-476	FW Flow Loop B
6	HC-481	FW Flow Bypass Loop B

Revision 1

6	HCV-110A	
6	HCV-111	
7	AOV-836	Containment Spray Naoh Flow
7	HCV-123	
7	HCV-133	
7	HCV-142	Charging Flow Controller
7	HCV-624	
7	HCV-625	
7	HCV-626	Resid Ht Removal Loop RC Return
7	PCV-135	Letdown Line Controller
7	TCV-130	Non-run HX Letdown Temp

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0008
 UTILITY: RGE

ORIGINATOR: RK
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL C
 RATING X Y

DESCRIPTION OF DISCREPANCY:

More than 9 graduations separate major numerals.

COMMENTS:

No more than 9 graduation marks are supposed to separate numerals on a display. Too many graduations make it difficult to determine exact reading of the display.

RESPONSE:

All cited meter scales have been ordered for replacement, except the circular electrical meters which are an industry standard. The new meter scales have received human factors review and are in compliance with the NUREG-0700 guidelines to the extent practical to their application. The new meter scales will be replaced by September 1987.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

5.1.5.A(1)

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

5		125 VDC Bus A
5		125 VDC Bus B
5		A-C KV Bus #2
5	13	Sta Serv Trans Wattmeter
5	15	Sta serv Trans Wattmeter
5	17	Sta Serv Trans Wattmeter
5	18	Sta Serv Trans Wattmeter
5	PI-2151	Turbine Bearing Oil Press
5	PI2031	
5	PI2049	Turbine Exhaust Press
6	PI-2043	
6	PI-2044	
6	PI-2061	
6	PI-468	
6	PI-469	
6	PI-478	
6	PI-479	
6	PI-482	
6	PI-483	

Revision 1

6	TI-403	
6	TI-404	
6	TI-405A	
6	TI-405B	
6	TI-405C	
6	TI-421	
6	TI-422	
6	TI-423	
6	TI-424	
6	TI-425	
7	FI_128	Charging Line Flow
7	PI-135	Non-Regen HX Letdown Out Temp
7	PI-420	RX Cool Leep Low Range Press
7	PI-945	Containment Press 3A
7	PI-947	
7	PI-949	Containment Press 3A
7	TI-122	Excess Letdown HX Out Temp
7	TI-125	RCP 1B Seal Water Inlet Temp
7	TI-140	Vol Ctl Tank Out Temp
8	TI-418	
8	TI-621	



f



s

1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0009
 UTILITY: RGE

ORIGINATOR: RK
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>1</u>
	LEVEL	<u>C</u>
	RATING	<u>X Y</u>

DESCRIPTION OF DISCREPANCY:

Graduation sizes on vertical and round meters are too small.

COMMENTS:

The recommended sizes of scale graduations for a viewing distance of 3 ft are: Large=.40", Med=.28", Small=.17". The vertical meter graduations were measured to be: Large=.25", Med=.25", and Small=.19".

RESPONSE:

All cited meter scales have been ordered for replacement, except the circular electrical meters which are an industry standard. The new meter scales have received human factors review and are in compliance with the NUREG-0700 guidelines to the extent practical to their application. The new meter scales will be replaced by September 1987.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

5.1.5.B

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0010
UTILITY: RGE

ORIGINATOR: RK
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
LEVEL C
RATING X Y

DESCRIPTION OF DISCREPANCY:

Successive unit values indicated are different from those specified.

COMMENTS:

The recommended progression of numbers on a scale are:

1 2 3 4 5/ or
5 10 15 20 25/ or
10 20 30 40 50/ or
2 4 6 8 10/ or

Some power of ten of these numbers.

RESPONSE:

The scale divisions which differ from those recommended for use were selected because of their utility in listing range, setpoints, and/or having the median/normal value located in the exact middle of the meter. There does not appear to be sufficient justification to disregard these concerns in lieu of conforming to an a priori subjective set of numbers that are prejudged standard. The cited control rod indicators have been replaced with new control rod instrumentation.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

5.1.5.C

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

25	A RCP	Lower Bearing Oil Level
25	A RCP	Upper Bearing Oil Level
25	B RCP	Lower Bearing Oil Level
25	B RCP	Upper Bearing Oil Level
5		125 VDC Bus A
		125 VDC Bus B
5		General Elect Load
5		Incoming Voltmeter
5		Running Voltmeter
5	13	Sta Serv Trans Wattmeter
5	15	Sta Serv Trans Wattmeter
5	17	Sta Serv Trans Wattmeter

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0014
UTILITY: RGE

ORIGINATOR:RK
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

Zone markings are not used on displays.

COMMENTS:

A green banding system should be used. Displays should be marked with a green zone to indicate normal or safe operation, a yellow band to indicate marginal or borderline operation, and a red band on the display to indicate unsafe operation.

RESPONSE:

Zone banding improves the ease with which a display is read. Colors indicate whether the value is in the normal (green), borderline (yellow), or unsafe (red) condition. Zone banding will be implemented in the control room where applicable by July 1987.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

5.2.3



1



2



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0019
UTILITY: RGE

ORIGINATOR: RK
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
LEVEL A
RATING X

DESCRIPTION OF DISCREPANCY:

System equipment status is not always inferred by illuminated indicators.

COMMENTS:

There are 'bright/dim' white indicator lights that indicate different status conditions when they are lit brightly or dimly. The operators cannot always tell the difference between the two conditions.

RESPONSE:

The cited status light lenses have been replaced with new lenses and all lamps changed to lamps of the proper voltage rating. It is now easy to discriminate the bright from the dim status light conditions.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

5.3.1.C(1)

PANEL

EQUIPMENT
ID NUMBER

EQUIPMENT NAME

7

White Status Lights (97)



1

1



1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0026
UTILITY: RGE

ORIGINATOR: RK
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL B
RATING X

DESCRIPTION OF DISCREPANCY:

Green ink is smeared across recorder paper.

COMMENTS:

Pens, ink, and paper for chart recorders should provide clear, distinct, and reliable markings.

RESPONSE:

A new type of pen has been installed that alleviates the problem of smeared ink on the chart paper. The new inking system has been found to be reliable and to provide clean distinctive markings.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

5.4.1.A

PANEL

EQUIPMENT
ID NUMBER

EQUIPMENT NAME

6

BS RMW

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0039
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL B
 RATING Y

DESCRIPTION OF DISCREPANCY:

Response to the operator survey indicated a need for a rod stop (Auto Stop) when Bank D reaches 225 steps. This would prevent overstepping rods (greater than 230), thus invalidating the bank overlap.

COMMENTS:

Operations involving the rods are sensitive and an automatic stop would contribute to safe and reliable operations. Such a stop is in conformance to the human factors principle that operations are assured of timely and complete coverage of controls.

RESPONSE:

The auto rod stop capability was reviewed by the GARD and DCRDR committees and found to be unnecessary. It was felt that with the proper attention, the rods will not be overstepped. Further, overstepping does not affect the reactor trip function. No further action is required.

SOURCE OF DISCREPANCY

Operator Survey

EXPLANATORY INFORMATION

A1.3



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0043
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY	<u>2</u>
LEVEL	<u>B</u>
RATING	<u>Y</u>

DESCRIPTION OF DISCREPANCY:

In response to the Operator Survey, seven operators stated a need for an All Volatile Treatment Bypass Valve controller with indication in the control room. They stated that if there is a condensate system perturbation, it would be useful to know if the valve operated. Presently an auxiliary operator has to be sent down to check it out. Other reasons given include: 1) Being able to tell if the process of going open/closed is a cause of NPSH problems of MFP; and 2) on a steam generator tube rupture, the operator can bypass all volatile treatment beds to use steam dump without having an auxiliary operator going to another place outside the control room to do it.

COMMENTS:

The control and indications needed to detect abnormal conditions, and to correct the conditions should be available on the main control board.

RESPONSE:

An annunciator window in the control room alarms upon actuation of the All Volatile Treatment Bypass Valve and since this system is not critical an auxiliary operator can be dispatched in a timely manner to a local panel to monitor and control the system. Further, modifications to the condensate system have reduced system flow perturbations to a level where actuation of this valve is rare.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

A1.9



2
3

4



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0047
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>C</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

In response to the Operator Survey, operators indicated that it is unnecessary to have the SPING unit and its controls in the control room.

RESPONSE:

The SPING unit will be removed from the control room when its function can be transferred to the plant process computer system. Preliminary schedule for transfer is September 1988.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey	A2.4
Operator Survey	A4.1
Operator Survey	B8.2
Operator Survey	B8.3

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0053
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>C</u>
	RATING	<u>Y</u>

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated a need for an indication of Lube Oil Reservoir Vapor Extractor #1B since there is currently no indication on the MCB. There is an indication of operation for 1A, but not for 1B.

COMMENTS:

Human Factors guidelines recommend control room instrumentation for all displays needed for detecting abnormal conditions. The proposed indication would provide important information on generator bearings.

RESPONSE:

An evaluation of the necessity of displaying an indication of Lube Oil Reservoir Vapor Extractor 1B was conducted. It was determined that there was no operational benefit to be gained from this indication. The GARD committee reviewed the results of the evaluation and agreed that there is no need for modification.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

A3.13



1



2



Revision 1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0056
UTILITY: RGE

ORIGINATOR: RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated a need for a Pressure Relief Tank wide range pressure indicator to rupture disc pressure on the main control board.

RESPONSE:

A PRT wide range pressure indication will be installed in accordance with EWR 4346 by 6/88.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Operator Survey
Operator Survey

A3.18
B7.16

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0065
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

Response to the operator survey stated a need for an actual valve position indication for main feedwater and bypass control valves. There are demand signal indications for both of these valves, but the operators need actual position information for low flow conditions. During a reactor trip, these indications would be very useful.

COMMENTS:

There should be a visual display of actual system/equipment status for all important system parameters.

RESPONSE:

A study was conducted and the need for valve position indications was established. These indications will be installed in June 1988, in accordance with EWR 4350.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

A3.29

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0066
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>C</u>
	RATING	<u>W-Y</u>

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated a need for tank level indications from Auxiliary Building (i.e. CVS HUT, WHUT, and Gas Tank Pressures). Currently an auxiliary operator must be sent to get the readings and communicate them to the operator in the control room, creating slow feedback to the operator in critical situations.

RESPONSE:

EWR 4236 examined each of the cited alarms to determine the feasibility and necessity of inputting each of the parameters into the PPCS. It was determined that in each case, the alarmed situation was not time critical enough to require additional instrumentation in the control room. Sending an auxiliary operator to the affected panel to read, then communicate these readings, does not compromise operations personnel in critical situations. Further, the routine monitoring of these panels is the primary function of the auxiliary operators. No further action is intended.

SOURCE OF DISCREPANCY

Operator Survey

EXPLANATORY INFORMATION

A3.30

25



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0069
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>C</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

Responses (9) from the Operator Survey indicated that the (Hagan) power range detector voltage chart recorders are used only during periodic testing of power ranges. It was suggested that these charts could be removed and placed on the back of the MCB or on the NIS power range stacks themselves.

COMMENTS:

Extraneous information should not be displayed in the primary operating area, thus saving room for display of more critical information.

RESPONSE:

The cited recorders have been removed.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

A4.4

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0077
UTILITY: RGE

ORIGINATOR: RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated that the main feedwater bypass valve should be operated in auto during startup. It was stated that in auto it seems to respond too slowly for an operator to feel comfortable with it. During start up, it is operated for a relatively short time, and since feedwater control takes a dedicated operator anyway, it might as well be in manual for a brief period.

COMMENTS:

Controls should be selected to ensure ease of operation and to minimize operator errors.

RESPONSE:

An improved calibration procedure has improved the control of the operation of the generators. This is a generic PWR problem, RG&E will continue to explore other areas (i.e., WOG TRAP program) for greater improvement of control.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Operator Survey

B1.1



1

2



3



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0081
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL A
 RATING X

DESCRIPTION OF DISCREPANCY:

In response to the Operator Survey, three operators indicated that when in manual the feedwater controls require constant attention. Moreover, due to poor feedwater flow and steam flow indication, the main feedwater regulation valve and bypass valve control is difficult to operate at low power (20%).

COMMENTS:

Visual displays provided in the control room should give operators all the information about system status and parameter values that is needed to meet task requirements in emergencies. Each control should be selected to ensure ease of operation and to minimize operator errors.

RESPONSE:

An improved instrument calibration procedure and the availability of a plant-specific simulator for operator training has improved the level control of the steam generators. However, this is a generic PWR problem, RG&E will continue to explore other areas (i.e., WOG TRAP program) for greater improvement of control.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

B2.5

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0082
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

Responses to the Operator Survey (6) indicated that the hydrogen temperature controls are currently behind the boards and that they should be on the front boards. The operator could then readily see them when the controller is over ranged. This affects condensate pressure and turbine vibration, both important systems.

RESPONSE:

The consensus of the operators surveyed was that the controller should be left in its present location. However, Maintenance Work Request #86-2858 was issued to change the alarm setpoint of the associated annunciator for the hydrogen temperature controls to 80% instead of 70%. A Procedure Change Notice was issued to change the wording of the annunciator window (H-22) to H₂ CLR TEMP HI-BYPASS VLV <80% OPEN. These changes provide the operator with a clearer understanding of controller problems as well as providing a greater margin to take corrective action. This task has been completed.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey	B2.6
Operator Survey	B3.4
Operator Survey	B7.1



77



77



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0084
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>B</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

In response to the Operator Survey, ten operators indicated that Chemical Volume Control System (CVCS) is spread around the center and left sections of the control board. Charging pump flow, pressure, and temperature indications are on a different panel than the controls. When adjusting charging flow with the charging controller, the operator is 8 to 10 feet away from the flow indicator.

COMMENTS:

Within the constraints of grouping by task sequence, controls and displays are assigned to panels in functional groups related to system structure.

RESPONSE:

The control board labeling and enhancement program adequately addressed this problem by identifying all components within a system with the same color label to assist association. In addition, total charging flow is scheduled to be input to the PPCS, which will further facilitate charging flow control. This addition to the computer is scheduled under EWR 4118 to be completed by June, 1988. This HED addresses the same issue as HEDs 85, 309, 310, 345, 451, and 471.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

B3.1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0085
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

In response to the Operator Survey, operators indicated that charging pump flow, pressure and temperature indicators are on a different panel than the controls. Thus, when adjusting charging flow with the charging controller, the operator is 8-10 feet away from the flow indicator. Looking at the display from the side, at that distance, there is a lot of parallax.

COMMENTS:

Controls and displays should be assigned to work stations to minimize operator movements. Moreover, the maximum lateral spread of controls and displays at a single operator work location should not exceed 72 inches. Finally, within constraints of grouping by task sequence, controls and displays are assigned to panels in functional groups related to system structure.

RESPONSE:

The control board labeling and enhancement program adequately addressed this problem by identifying all components within a system with the same color label to assist association. In addition, total charging flow is scheduled to be input to the PPCS, which will further facilitate charging flow control. This addition to the computer is scheduled under EWR 4118 to be completed by June, 1988. This HED addresses the same issue as HEDs 84, 309, 310, 345, 451, and 471.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey	B3.2
Operator Survey	B4.8

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0092
UTILITY: RGE

ORIGINATOR: RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL B
RATING X

DESCRIPTION OF DISCREPANCY:

Response to th Operator Survey indicated that the 4160 buses and tie breaker buses for their respective bus should be grouped together.

COMMENTS:

Within the constraints of grouping by task sequence, controls and displays are assigned to panels in functional groups related to system structure. Also multiple controls or displays related to the same function are grouped together.

RESPONSE:

EWR 4522 was initiated to relocate 4KV bus switches as suggested by the GARD Committee. This work will be completed during the 1988 refueling outage.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Operator Survey

B4.4

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0093
UTILITY: RGE

ORIGINATOR: RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated that synchroscope switch positions to the breaker switch positions are different in layout.

COMMENTS:

Control-display or control-control relationship should be laid out consistently, so that the operator expectations are not confused.

RESPONSE:

EWR 4522 was initiated to relocate 4KV bus switches as suggested by the GARD Committee. This work will be completed during the 1988 refueling outage.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Operator Survey

B4.5

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0099
UTILITY: RGE

ORIGINATOR: RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
LEVEL A
RATING X

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated that the Boric Acid LO-LO reset button is too close to Safety Injection (SI) reset and manual SI buttons. Moreover, the SI reset and manual SI buttons do not have tubes around them. Accidental activation of the wrong button is possible.

COMMENTS:

Accidental activation of controls should be minimized by one or more the following methods: 1) proper location, 2) fixed protective structures, 3) moveable covers or guards, interlocking controls, 4) resistance to movement, 5) sequential activation, 6) choice of action.

RESPONSE:

The manual SI pushbutton has an extension placed around it so that it cannot be inadvertantly activated. The boric acid reset button was left unprotected intentionally for discriminatory purposes. A pushbutton color code will be implemented. Pushbuttons for reset are to be green, actuation pushbuttons are to be red, start pushbuttons will be yellow, and defeat pushbuttons are to be black. This will be done during the 1988 refueling outage.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Operator Survey

B5.10



1953

1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0102
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>C</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey of eight operators indicated that the control rod analog indicators are too high and the numbering is poor. They are almost impossible to read accurately from floor level. They read in strange increments and one needs a ladder to see them. Upper control rod position indications are hard to read because of position of meters, glare off lights and increments of meters.

COMMENTS:

For vertical panels, displays are placed in an area between 41 and 80 inches above the floor. Displays that are read frequently or precisely during emergency operations are placed in an area between 50 and 65 inches above the floor. Character height should subtend a visual angle of 15 minutes is preferred.

RESPONSE:

A new rod position indication system which corrects these problems has been installed.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

B6.2



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0114
 UTILITY: RGE

ORIGINATOR:RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

Response to the operator survey stated that the fire system bell and sonalert sound drown out the main control board auditory alarms when they are going off.

COMMENTS:

Specific principles for the auditory alert system that apply are 1) the signal intensity does not exceed 90 dB(A) and 2) all auditory signals are within (+/- 2.5 dB) of the average of all annunciator auditory signals.

RESPONSE:

An extensive study of the control room alarms has been completed. The cited alarms are initiated in the control room and sound in the control room over the PA system. A variable muting will be installed on the control room PA system so that the intensity of the alarms can be modified so that they are within 2.5 dB of the annunciator alarm. The work will be completed by 6/88.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

C1.3

00

1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0115
UTILITY: RGE

ORIGINATOR:RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL B
RATING X

DESCRIPTION OF DISCREPANCY:

Response to the operator survey indicated that other alarms (i.e., SPING, fire panel, fire system, radiation monitor) are too loud and sometimes cover the excessively loud annunciator alarm.

COMMENTS:

Principles for the auditory alert system that apply are: 1) signal has a value of at least 10 dBA above average ambient noise, 2) the signal intensity does not exceed 90 dBA, and 3) all auditory signals are within (+/- 2.5 dB) of the average of all annunciator auditory signals.

RESPONSE:

An extensive study of the control room alarms has been completed. For the cited alarms that are initiated in the control room and sound in the control room over the PA system, a variable muting will be installed on the control room PA system so that the intensity of the alarms can be modified so that they are within 2.5 dB of the annunciator alarm. The SPING unit will be removed from the control room. The remaining alarms will be modified so that they are within 2.5 dB of the annunciator alarm. This work will be completed by 6/88.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Operator Survey

C1.5



70



1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0116
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL A
 RATING X

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated there was no effective warning system for loop level change during low loop level maintenance conditions. It was stated that the RHR loop was blown to the reactor during S/G primary maintenance (decontamination job).

COMMENTS:

The principle involved is that plant parameters selected for inclusion in the annunciator warning system and the limits or alarm setpoints for those parameters should be established to ensure compliance with technical specifications and to allow the operator to monitor the status of plant and respond to out-of-tolerance conditions effectively.

RESPONSE:

The Reactor Vessel Level system is currently in operation with three alarm points: 1) eductor operation and steam generator maintenance, 16 inches; 2) center line operations, 8 inches; 3) RTD installation and steam generator channel head decontamination work, 4 inches.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

C2.2

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0117
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL A
 RATING Y

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey stated that the annunciator warning system was ineffective once when operators lost power to annunciator panels G and H and learned about it only after doing an alarm board check. It was suggested that a light or horn be installed so that when a panel's power supply is lost, a warning is given.

COMMENTS:

Two principles apply here: 1) a control to test the auditory signal and flashing illumination of all tiles in a panel is provided and 2) periodic testing of annunciators is required and controlled by administrative procedure, additionally, cues for prompt recognition of an out-of-service annunciator are designed into the system.

RESPONSE:

Annunciators are powered by station batteries A and B. These are the most reliable sources of power in the plant. If one of the batteries fail, the annunciator power automatically shifts to the other battery and an annunciator lights in the control room to indicate that one of the batteries has failed.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

C2.3

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0120
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING Y

DESCRIPTION OF DISCREPANCY:

Response to the operator survey stated that a poor feature of the annunciator system is that when a alarm window is left flashing after the horn is acknowledged, any other alarm in that section will not generate the audible alarm. Annoying alarm noise sometimes causes an operator not to acknowledge alarms (allow to flash) during frequent alarming, thus not being alert to the other alarms occurring.

COMMENTS:

If an automatically cleared alarm feature is not provided, a control is provided to reset the system after an alarm has cleared. Also, a reset control silences any audible signal indicating clearance and also extinguishes tile illumination.

RESPONSE:

A study of the operation of the annunciator system has been performed. The suggestion of an annunciator reflash capability was rejected by the GARD committee. Many of the Ginna operators received training at the Zion simulator which has reflash capability and they thought that it added significantly to the number of nuisance alarms.

<u>SOURCE OF DISCREPANCY</u>	<u>EXPLANATORY INFORMATION</u>
------------------------------	--------------------------------

Operator Survey	C2.5
Operator Survey	C2.7



11
11

11
11

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0121
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>B</u>
	RATING	<u>Y</u>

DESCRIPTION OF DISCREPANCY:

Response to the operator survey stated a desire to see the alarm panel system modified so that when an alarm condition clears the panel will flash and give a tone. Presently, after an alarm is acknowledged, the panel light goes out with no warning to the operator.

COMMENTS:

Human factors principles recommend that a control be provided to terminate the flashing tile and have it continue at steady illumination until the alarm is cleared.

RESPONSE:

The SILENCE annunciator pushbutton causes a flashing annunciator tile to continue at steady illumination. A study of the operation of the annunciator system has been performed. The suggestion of an annunciator reflash capability was rejected by the GARD committee. Many of the Ginna operators received training at the Zion simulator which has reflash capability and they thought that it added significantly to the number of nuisance alarms.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

C2.12



11

12



13



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0129
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>B</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated that low RCS pressure setpoint may be inappropriate. During solid plant operations with RCP running cold shutdown, the 1st indication of low RCS pressure is 200 PSIG #1 seal. There should be low RCS pressure alarm at 275-300 PSIG.

COMMENTS:

Setpoints should be set to give operators adequate time to respond to the warning condition before a serious problem develops.

RESPONSE

An alarm setpoint of 300 PSIG has been incorporated in the new PPCS in accordance with EWR 4344.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

C4.1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0130
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>C</u>
	RATING	<u>Y</u>

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated the E-20, R10A or B TRIP alarm has multiple inputs. R10A is normally tripped and therefore blocks the alarm should R10 trip. Alarm E-20, R10 A and B PUMP TRIP should have a separate alarm for each pump.

COMMENTS:

When multi-input annunciators are used, an alarm printout capability should be provided. In the current example, this is not done or possible.

RESPONSE:

An evaluation of the cited alarm determined that there was not sufficient justification to place an additional alarm in the control room. The current multiple-input alarm provides adequate indication of system status. These findings were reviewed and accepted by the GARD committee and the CRDR committee.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

C4.1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0131
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>B</u>
	RATING	<u>W-Y</u>

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated there are remote alarm stations for waste panel, hydrogen, water treatment, AYT, and 115 KV bus. The only response is to send an auxiliary operator to check local indications, which sometimes results in unacceptable time delay.

COMMENTS:

Principle involved states that alarms that require the control room operator to direct an auxiliary operator to a given plant location for specific information are avoided.

RESPONSE:

EWR 4236 examined each of the cited alarms to determine the feasibility and necessity of inputting each of the parameters into the PPCS. It was determined that in each case, the alarmed situation was not time critical enough to require additional instrumentation in the control room. Sending an auxiliary operator to the affected panel to read, then communicate these readings, does not compromise operations personnel in critical situations. Further, the routine monitoring of these panels is the primary function of the auxiliary operators. No further action is intended.

SOURCE OF DISCREPANCY

Operator Survey

EXPLANATORY INFORMATION

C4.2

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0132
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING Y

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated that the K-27 drainage pH panel alarm could be triggered by any of four factors. There is no ready method for determining which is causing the alarm. The causes could be 1) retention tank level, 2) retention tank pH, 3) lake pH, or 4) radiation waste storage building sump level.

RESPONSE:

Examination of the multiple-input alarm determined that it provided the information needed in the control room. The alarm alerts the operator to a condition on the pH panel. The cause of that condition is not critical enough to justify placing additional alarms in the control room. These findings were reviewed and accepted by the GARD committee.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

C4.7

0

0

1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0133
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>B</u>
	RATING	<u>W-Y</u>

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated that the K-28 waste panel alarm could be caused by any of approximately 100 alarms. As a result, when it comes on, the auxiliary operator has to investigate for five minutes to determine which it is. The current computer system could tell operators in control room which alarm it is, but the computer is in the Technical Support Center.

COMMENTS:

Alarms which require that the control room operator send an auxiliary operator to a given plant location for specific information are avoided.

RESPONSE:

EWR 4236 examined the cited alarm to determine the feasibility and necessity of inputting this parameter into the PPCS. It was determined that in this case the alarmed situation was not time critical enough to require additional instrumentation in the control room. Further, an auxiliary operator is assigned to routinely check this panel. No further action is required.

SOURCE OF DISCREPANCY

Operator Survey

EXPLANATORY INFORMATION

C4.8

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0134
UTILITY: RGE

ORIGINATOR: RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL B
RATING Y

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated operators had difficulty in determining which bus associated with annunciator L-8 was the source of the alarm.

COMMENTS:

When multi-input annunciators are used, an alarm printout capability is provided to the operator.

RESPONSE:

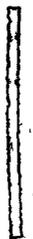
The cited multiple-input annunciator alerts the operator of an undervoltage condition on one of two buses. The operator can determine the cause of the condition through other indications, but the existing alarm effectively alerts the operator to the condition. These findings were reviewed and accepted by the GARD committee.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Operator Survey

C4.10



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0135
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING Y

DESCRIPTION OF DISCREPANCY:

Response to the operator survey indicated that annunciator H-29 Preseparator Tank Level does not indicate which of two separator tanks, heater drain tanks, or feedwater heater is alarming.

RESPONSE:

This alarm covers all high level and low level heater alarms except 4A and 4B heaters for which only high levels are addressed because they are dry heaters. Preseparators 1A and 1B high alarms and heater drain tank high and low alarms are alarmed on this annunciator. Of all alarm points included on this annunciator tile the only points without associated level indicators on the main control board are 4A and 4B heaters and 1A and 1B preseparators. A red light lights on the main control board for high level and either 4A or 1A preseparator is alarmed on the computer and printed out. A similar alarm scheme exists for 4B heater and 1B preseparator. In all cases, this annunciator alarm can be quickly identified by glancing at level indicators on the main control board or checking the computer.

<u>SOURCE OF DISCREPANCY</u>	<u>EXPLANATORY INFORMATION</u>
------------------------------	--------------------------------

Operator Survey

C4.12



0

1

1



Revision 1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0139
UTILITY: RGE

ORIGINATOR: RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING Y

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey indicated that the L-32, 24, and 16 A,B,C, CVCS Holdup Tank High Level alarms could be put on the waste panel in the auxiliary building.

COMMENTS:

If general alarms are used, they are only used for conditions that allow adequate time for auxiliary operator action and subsequent control room operator action.

RESPONSE:

The cited annunciators were examined to determine if they were needed in the control room. It was found that the alarms would be more useful if they remained in the control room. These findings were reviewed and accepted by the GARD committee.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Operator Survey

C5.3

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0140
UTILITY: RGE

ORIGINATOR: RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>3</u>
	LEVEL	<u>C</u>
	RATING	<u>Y</u>

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey recommended that AA16, AA24 and AA32 be placed in the Guard House or the central alarm station.

COMMENTS:

If general alarms are used, they are only used for conditions that allow adequate time for auxiliary operator action and subsequent control room operator action.

RESPONSE:

The cited annunciators were examined to determine if they were needed in the control room. It was found that the alarms would be more useful if they remained in the control room. These findings were reviewed and accepted by the GARD committee.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Operator Survey

C5.7

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0143
UTILITY: RGE

ORIGINATOR: RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL B
RATING X

DESCRIPTION OF DISCREPANCY:

Response to the operator survey stated that annunciator G2; Stm Flow is less than Feedwater Flow Loop A ($.8 \times 10^6$) and G18; SF is less than FW ($.8 \times 10^6$) S/G Level less than 30% Sig Chan alerts are often confused.

COMMENTS:

Visual tile legends are specific and unambiguous. Wording is in concise, short messages.

RESPONSE:

The annunciator study examined the wording, abbreviations and nomenclature of all annunciator tiles. The wording of the cited tiles will be changed to avoid any possible confusion. These changes will be completed in 9/87.

SOURCE OF DISCREPANCY EXPLANATORY INFORMATION

Operator Survey C6.2

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0144
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>B</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

Response to the Operator Survey revealed that as setpoints are changed, dyno tape is used to change alarm windows. Suggestion was that there is a need to have a system whereby new windows are engraved as windows change.

COMMENTS:

Legends should be engraved. They should be dark lettering on a light background.

RESPONSE:

All new alarm windows have recently been installed in the Ginna control room eliminating almost all the dynotape labels alluded to in this HED. Annunciator nomenclature modifications have been recommended. Upon implementing the recommendations, all dynotape labels will be removed. If in the future, setpoints are changed, the Operations Department will order new windows for permanent setpoint display.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

C6.4



5



1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0146
UTILITY: RGE

ORIGINATOR: RD
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL B
RATING X

DESCRIPTION OF DISCREPANCY:

Response to the operator survey indicated that the engravings of G-26 and G-31 annunciator tiles do not reflect all of the conditions that trigger the alarm (i.e., HI SF W/O Tave or HI-HI SF).

COMMENTS:

Visual tile legends should be specific and unambiguous.

RESPONSE:

An annunciator study which evaluated the wording of each annunciator tile has been completed. A standard abbreviations list and a standard nomenclature system was established and utilized. The new annunciator will include setpoint information. The new annunciator tiles will be installed by 9/87.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Operator Survey

C6.5

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0147
 UTILITY: RGE

ORIGINATOR:RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

In response to the operator survey, five operators found the following auditory signals, other than annunciator alarm, confusing. Fire system has two bells, depending on panel, it is difficult to tell which one is ringing and what it is for. Sometimes one will ring for just a second and the operator will not know for sure which one rang. These also interfere with normal plant alarms. Fire panel system sounds similar to the SPING system.

COMMENTS:

The meaning of each auditory signal should be clear and unambiguous. Auditory signals should be selected to avoid confusion with ambient control room noises. Auditory signals should be selected to avoid interference with other auditory sources, including verbal communication.

RESPONSE:

An extensive study of the control room alarms has been completed. For the cited alarms that are initiated in the control room and sound in the control room over the PA system, a variable muting will be installed on the control room PA system so that the intensity of the alarms can be modified so that they are within 2.5 dB of the annunciator alarm. The SPING unit will be removed from the control room. The fire panel alarms will be adjusted to allow discrimination between the alarms and eliminate the confusion. This work will be completed by 6/88.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

D1.1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0176
 UTILITY: RGE

ORIGINATOR: RD
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>1</u>
	LEVEL	<u>C</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

In response to the Operator Survey, three operators felt they had not received sufficient training on how to deal with a situation in which there is a loss of all alternating current.

COMMENTS:

Training should be given for all potential types of emergency situations.

RESPONSE:

This area has been covered in training during previous years. Approximately 2 years ago Ginna experienced a loss of offsite power emergency. During the course of this incident, the operators demonstrated sufficient understanding by maintaining the plant in operation.

In 1985, loss of all AC power was included in the training on the EOPs and again during mitigation core damage training. In addition, with the new plant simulator in operation since March 11, 1986, all types of potential emergencies have been extensively covered using the new EOP's.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Operator Survey

I1.5

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0180
UTILITY: RGE

ORIGINATOR: RCM
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING Y

DESCRIPTION OF DISCREPANCY:

Annunciator controls are not distinctively separated from other controls (by color coding; color shading; demarcation or shape coding).

RESPONSE:

The annunciator response buttons are distinctly separated by a color coding of red, green, and yellow. The annunciator response pushbuttons are all clearly labeled. The Plant GARD Committee decided that no other separation such as background shading or demarcation was necessary. No further action is required.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3..4.2.B

1

2

3



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0182
UTILITY: RGE

ORIGINATOR:
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

The space between lines is less than one half the character height for characters whose height is .28 inches.

RESPONSE:

All annunciator tiles are being replaced again in 9/87. The new tiles will have individual tile identification numbers, proper nomenclature, additional information such as setpoints, and will conform to the RG&E standard abbreviations list. The new tiles will conform to NUREG-0700 guidelines for character size, font and spacing.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.3.5.D.6

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0183
UTILITY: RGE

ORIGINATOR: CFW
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

Space between words is less than the width of one character.

RESPONSE:

All annunciator tiles are being replaced again in 9/87. The new tiles will have individual tile identification numbers, proper nomenclature, additional information such as setpoints, and will conform to the RG&E standard abbreviations list. The new tiles will conform to NUREG-0700 guidelines for character size, font and spacing.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.3.5.D.5

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0184
UTILITY: RGE

ORIGINATOR: CFW
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

The space between characters is less than one stroke width for characters with a stroke width of .06 inches.

RESPONSE:

All annunciator tiles are being replaced again in 9/87. The new tiles will have individual tile identification numbers, proper nomenclature, additional information such as setpoints, and will conform to the RG&E standard abbreviations list. The new tiles will conform to NUREG-0700 guidelines for character size, font and spacing.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.3.5.D.4

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0185
UTILITY: RGE

ORIGINATOR: CFW
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Letter width to height ratio is not between 1:1 and 3:5 for letters that are .28 inches high and are .22 inches wide (7:9).

RESPONSE:

All annunciator tiles are being replaced again in 9/87. The new tiles will have individual tile identification numbers, proper nomenclature, additional information such as setpoints, and will conform to the RG&E standard abbreviations list. The new tiles will conform to NUREG-0700 guidelines for character size, font and spacing.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.3.5.D.2

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0186
UTILITY: RGE

ORIGINATOR: CFW
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Stroke width to character height ratio is not between 1:6 and 1:8 for letters that are .28 inches high and have a stroke width of .03 inches (1:9.3).

RESPONSE:

All annunciator tiles are being replaced again in 9/87. The new tiles will have individual tile identification numbers, proper nomenclature, additional information such as setpoints, and will conform to the RG&E standard abbreviations list. The new tiles will conform to NUREG-0700 guidelines for character size, font and spacing.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.3.5.D.1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0188
UTILITY: RGE

ORIGINATOR: RCM
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

Type style for annunciators is not consistent.

RESPONSE:

All annunciator tiles are being replaced again in 9/87. The new tiles will have individual tile identification numbers, proper nomenclature, additional information such as setpoints, and will conform to the RG&E standard abbreviations list. The new tiles will conform to NUREG-0700 guidelines for character size, font and spacing.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.3.5.B

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0189
UTILITY: RGE

ORIGINATOR: RCM
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

Letter height is not identical for all tiles. There are two types of letters used on annunciators (heights of .28 inches and .1875 inches).

RESPONSE:

All annunciator tiles are being replaced again in 9/87. The new tiles will have individual tile identification numbers, proper nomenclature, additional information such as setpoints, and will conform to the RG&E standard abbreviations list. The new tiles will conform to NUREG-0700 guidelines for character size, font and spacing.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.3.5.A.2

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0190
UTILITY: RGE

ORIGINATOR:
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Letter height (there are two heights, .28 and .1875 inches) of the smaller letters on annunciators subtends a visual angle of less than 15 minutes at a viewing distance of 54 inches.

RESPONSE:

All annunciator tiles are being replaced again in 9/87. The new tiles will have individual tile identification numbers, proper nomenclature, additional information such as setpoints, and will conform to the RG&E standard abbreviations list. The new tiles will conform to NUREG-0700 guidelines for character size, font and spacing.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.3.5.A.1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0191
 UTILITY: RGE

ORIGINATOR: RCM
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

Some visual tile legends are not specific and unambiguous.

RESPONSE:

An annunciator study which evaluated the wording of each annunciator tile has been completed. A standard abbreviations list and a standard nomenclature system was established and utilized. The new annunciator nomenclature will provide a clear unambiguous message. The new annunciator tiles will be installed by 9/87.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

3.3.4.A

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

7-A

D2

Containment Isolation
SI Manual

7-C

A5

+/- Computer Alarm Rod Dev & Seq
NIS Pwr Range 7.5 Tilts In

23

1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0192
UTILITY: RGE

ORIGINATOR: RCM
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

The vertical and horizontal axes of the annunciator panels are not labeled with alphanumeric for ready coordinate designation of a particular tile.

RESPONSE:

Ginna employs a system where annunciators are identified by a letter to designate the annunciator box and a number to designate the tile within the box. The numbers assigned are from 1 to 32 left to right, top to bottom. Annunciator boxes are appropriately labeled and each tile will be engraved with an identifying number by 9/87.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.3.3.C.1



1

2

3



Revision 1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0200
UTILITY: RGE

ORIGINATOR: RCM
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Annunciator panel identification letter height subtends a visual angle of less than 15 minutes when viewed from a central position within the primary operating area.

COMMENTS:

Letter height is .665 inches. Viewing distance used was 160 inches. Visual angle is 14.25 minutes.

RESPONSE:

The annunciator box identification letters were changed as part of the control room labeling program. The new letters conform to NUREG-0700 guidelines.

SOURCE OF DISCREPANCY EXPLANATORY INFORMATION

Checklist

3.3.1.B.2



31

1



1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0202
UTILITY: RGE

ORIGINATOR: RCM
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

All auditory signals are not within 2.5 dB of the annunciator auditory signal. The fire system alarm is much louder than other auditory signals.

RESPONSE:

An extensive study of the control room alarms has been completed. The cited alarms are initiated in the control room and sound in the control room over the PA system. A variable muting will be installed on the control room PA system so that the intensity of the alarms can be modified so that they are within 2.5 dB of the annunciator alarm. The work will be completed by 6/88.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.2.1.D

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0206
UTILITY: RGE

ORIGINATOR: RCM
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING Y

DESCRIPTION OF DISCREPANCY:

A reflash capability is not provided to allow subsequent alarms (on shared alarms) to activate the auditory alert mechanism even though the first alarm has not been cleared.

COMMENTS:

On multi-channel or shared alarms, the first alarm must be acknowledged and cleared before subsequent auditory alarms can occur.

RESPONSE:

A study of the operation of the annunciator system has been performed. The suggestion of an annunciator reflash capability was rejected by the GARD committee. Many of the Ginna operators received training at the Zion simulator which has reflash capability and they thought that it added significantly to the number of nuisance alarms.

SOURCE OF DISCREPANCY EXPLANATORY INFORMATION

Checklist 3.1.2.C.3



1

2



3



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0207
 UTILITY: RGE

ORIGINATOR: RCM
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

Not all annunciator tile legends are engraved. Some tile legends make use of dyno-tape.

RESPONSE:

All annunciator tiles are being replaced again in 9/87. The new tiles will have individual tile identification numbers, proper nomenclature, additional information such as setpoints, and will conform to the RG&E standard abbreviations list. The new tiles will conform to NUREG-0700 guidelines for character size, font, and spacing.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

3.3.5.C.1

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

5-J	D7
5-K	A3
5-K	A6
-K	B3
-K	D5
5-L	A1
6-E	A3
6-E	C7
6-F	C3
6-G	A2
6-G	A7
6-H	A8
6-H	D5
7-B	C1
7-D	B5
7-D	B6



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 208
 UTILITY: RGE

ORIGINATOR: RCM
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

Some tile legends do not address one specific condition.

RESPONSE:

The annunciator study examined the wording, abbreviations and nomenclature of all annunciator tiles. The wording of the cited tiles will be changed to avoid any possible confusion.

<u>SOURCE OF DISCREPANCY</u>	<u>EXPLANATORY INFORMATION</u>
------------------------------	--------------------------------

Checklist

3.3.4.C

<u>PANEL</u>	<u>EQUIPMENT</u>	<u>EQUIPMENT NAME</u>
	<u>ID NUMBER</u>	
5-K	C4	
5-K	C5	
5-L	C5	
6-F	C1	
7-A	C8	
7-A	D8	
7-B	A8	
7-B	B7	
7-C	A3	
7-C	A4	

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0209
 UTILITY: RGE

ORIGINATOR: RCM
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING Y

DESCRIPTION OF DISCREPANCY:

A "dark" annunciator panel concept is used. However, several annunciators are lit during normal operation.

RESPONSE:

Operators are trained to identify the very small number of annunciators that are illuminated during normal conditions. No change appears warranted at this time.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

3.3.2.E

<u>PANEL</u>	<u>EQUIPMENT ID NUMBER</u>	<u>EQUIPMENT NAME</u>
6-E	A2	
C-E	C4	
6-E	D5	
7-A	D7	
7-AA	A1	
7-AA	C6	
7-AA	D7	
7-B	C3	
7-B	C4	
7-G	C1	

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0210
 UTILITY: RGE

ORIGINATOR: RCM
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING Y

DESCRIPTION OF DISCREPANCY:

Some annunciators are not located above the related controls and displays which are required for corrective or diagnostic action in response to each annunciator.

RESPONSE:

Due to the size of the Ginna control room, this is not a problem.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

3.3.1.A

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

6-F	C5	
7-AA	B1	
7-AA	B2	
7-AA	B5	
7-AA	C1	
7-AA	C5	
7-AA	D1	
7-AA	D5	
7-AA	D6	
7-C	B5	



6



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0211
 UTILITY: RGE

ORIGINATOR: RCM
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING Y

DESCRIPTION OF DISCREPANCY:

Alarms that require the control room operator to direct an auxiliary operator to a given plant location for specific information are not avoided. The specified alarms do not give specific indication of problems.

RESPONSE:

Examination of these multiple-input alarms determined that they provided the information needed in the control room. The alarm alerts the operators to a condition that they should be aware of. The cause of that condition is not critical enough to justify placing additional alarms in the control room. These findings were reviewed and accepted by the GARD committee.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

3.1.2.B

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

5-I	B3
5-I	C8
5-I	D7
5-J	B1
5-J	B8
5-J	C1
5-J	C8
5-J	D1
5-J	D5
5-K	A3
5-K	A8
5-K	B3
5-K	B6
5-K	B8
5-K	C4
5-K	C6
5-K	C8
5-K	D3
5-K	D4
5-K	D6

Revision 1

5-L	A8
5-L	C3
6-E	C7
6-E	D1
6-H	A5
6-H	B8
6-H	D8
7-AA	A2
7-AA	A4
7-AA	B8
7-AA	C8
7-AA	D8

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0213
 UTILITY: RGE

ORIGINATOR: RCM
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>B</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

The fire system alarm bell has an intensity which exceeds 90 dB(A) and causes operator discomfort when sounded.

RESPONSE:

An extensive study of the control room alarms has been completed. The intensity of the fire alarm was measured at 89 dB. The fire alarm is initiated in the control room and sounds in the control room over the PA system. A variable muting will be installed on the control room PA system so that the intensity of the alarm can be modified so that it is within 2.5 dB of the annunciator alarm. The work will be completed by 6/88.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist
 Checklist

2.2.6.B
 2.2.5.C



E

I



Revision 1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0214
UTILITY: RGE

ORIGINATOR: RCM
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

The meaning of auditory signals is not clear; there is confusion between various auditory signals (e.g., the fire system and SPING system alarms are similar, as are the containment evacuation and plant evacuation signals).

RESPONSE:

An extensive study of the control room alarms has been completed. The fire alarm is initiated in the control room and sounds in the control room over the PA system. A variable muting will be installed on the control room PA system so that the intensity of the alarm can be modified so that it is within 2.5 dB of the annunciator alarm. The SPING unit will be removed from the control room. The containment evacuation and plant evacuation alarms are similar, but the containment evacuation sounds only within containment. The work will be completed by 6/88.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

2.2.2.A

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0215
 UTILITY: RGE

ORIGINATOR: RCM
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

Auditory signals interfere with other auditory sources, including verbal communication. The fire protection system alarm is so loud that it is difficult for operators to speak in the primary operating area of the control room.

RESPONSE:

An extensive study of the control room alarms has been completed. The cited alarms are initiated in the control room and sound in the control room over the PA system. A variable muting will be installed on the control room PA system so that the intensity of the alarms can be modified so that they are within 2.5 dB of the annunciator alarm. The work will be completed by 6/88.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

2.2.1.C.2

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0216
UTILITY: RGE

ORIGINATOR: RCM
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL B
RATING X Y

DESCRIPTION OF DISCREPANCY:

Auditory signals do not provide localization cues that direct operators to those control room work stations where their attention is required.

COMMENTS:

It is difficult to discriminate between the alarms for the fire protection system and the SPING system. Also, there is no localization of annunciator tones to the appropriate panel.

RESPONSE:

The SPING system will be removed to eliminate that source of alarm confusion.

The Ginna control room is so small that there is no need for the localization of annunciator alarms.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

2.2.1.B

Revision 1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0234
UTILITY: RGE

ORIGINATOR: VJF
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 3
LEVEL C
RATING X Y

DESCRIPTION OF DISCREPANCY:

The computer panel/desk has a work space area that is used as a desk. There is less than 18 inches of knee room because of the angled vertical panel.

RESPONSE:

The computer desk was replaced. The new desk has only 13.5 inches of knee depth room. This cannot be improved because of the need to run computer cabling through the back of the desk. This lack of knee room is only a minor inconvenience.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

1.2.7.D.6

HC

U

1



Revision 1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0245
UTILITY: RGE

ORIGINATOR: VJF
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Each function control is not clearly labeled, some of the printing of the labels (white lettering on colored buttons) has been worn off with use. Some of the printing is hand printed with white paint.

RESPONSE:

New process computer terminals have been installed. All function keys are clearly labeled.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

REF 7.1.5.D.3

Revision 1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0247
UTILITY: RGE

ORIGINATOR: VJF
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Guidelines state that all displays, controls and other equipment items should be appropriately, clearly, and consistently labeled.

RESPONSE:

The process computer system and terminals have been replaced. The new keyboards and displays are clearly labeled.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

7.3.1.E.3

PANEL

EQUIPMENT
ID NUMBER

EQUIPMENT NAME

Process Computer

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0257
 UTILITY: RGE

ORIGINATOR: BK
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>3</u>
	LEVEL	<u>C</u>
	RATING	<u>Y</u>

DESCRIPTION OF DISCREPANCY:

The guideline states that an administrative procedure should be in place for the periodic cleaning of labels. The SRO was not aware of any such administrative procedure. The labels were dirty when observed. This guideline is stated to ensure the visibility and legibility of the labels.

RESPONSE:

All new labels have been installed in the control room. The new labels are reverse engraved, so that the surface is smooth. Dirt does not accumulate on the labels, and cleaning is no longer a problem.

SOURCE OF DISCREPANCY

Checklist

EXPLANATORY INFORMATION

REF 6.2.4.D

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0260
UTILITY: RGE

ORIGINATOR: BK
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 3
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

The guideline states that labels should be dark characters on a light background. The control room employs a color coding system of labels using white characters on colored (red, blue, green) labels. The labels on panel 7 are of different colors. The labels on the remainder of the panels are white lettering on black labels.

RESPONSE:

All control room labels have been replaced. The new labels are of different colors but the lettering has been carefully matched with the background color to ensure optimum contrast. The new labels are reverse engraved so that white lettering does not fill with dirt and reduce contrast.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Checklist

6.4.1.B(1)

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0277
 UTILITY: RGE

ORIGINATOR: DKB
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

The guideline states that where position indication is critical, a control knob with a distinctive pointer should be used. In the examples listed, J-handles and Star handles are used for discrete setting position controls.

RESPONSE:

All J-handles and Star handles have had white arrows painted on them to clearly show specific positions.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

<u>PANEL</u>	<u>EQUIPMENT ID NUMBER</u>	<u>EQUIPMENT NAME</u>
5	160-1	
5	180-0	Reheater condenser Dump VLV CV24
5	181-0	Reheater condenser Dump VLV CV24B
5	182-0	Reheater condenser Dump VLV CV25
5	183-0	Reheater condenser Dump VLV CV25B
5	186-1	
5	187-1	
5	188-1	
5	198-0	2404
5	199-0	2412
5	200-0	2420
5	201-0	2428
5	202-1	
5	203-1	
5	204-1	
5	205-1	
6	108-0	
6	109-0	
6	110-0	
6	111-0	
6	112-0	
6	113-0	
6	114-0	
6	115-0	

6	142-1	
6	143-0	
6	144-1	Tavg Tref
6	145-1	Delta Temp Actual
6	146-1	
6	147-1	
6	148-1	Pressurizer Pressure Recorder
6	149-1	Pressurizer Level Setpoint
6	150-1	Boric Acid Flow
6	151-2	Steam Flow
6	152-1	A S/G
6	153-1	Steam Flow
6	202-1	RMW
6	250-1	BA
6	276-1	Feedwater Flow Loop A HC 466
6	277-1	Feedwater Flow Loop B HC 476
6	282-1	Hotwell Level Controller
6	283-1	
6	284-1	
7	174-0	Fan 1A Low Air Flow
7	175-0	Charcoal Filter 1A Dampers Closed
7	176-0	Fan 1A Vibration
7	177-0	Fan 1B Low Air Flow
7	225-0	Red RC Pump Loop A Cont
7	226-0	Red RC Pump Loop A Cont
7	227-1	
7	228-0	Blue RC Loop Cold Leg Temp
7	360-1	
7	363-0	
7	364-0	
8	144-0	

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0309
 UTILITY: RGE

ORIGINATOR: DKB
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

A single control, multiple display relationship exists where the displays are located too far from the controls. No form of enhancement is used to associate the controls and displays.

COMMENTS:

The primary example of this HED is the charging pump system. The controls for the charging pumps are located in the center of panel 6, while the meters for charging pump flow, discharge press, and temperature are on the far left of panel 7. Also, because the control for the charging pump is a foxboro controller, no association between controller and displays is apparent.

RESPONSE:

The control board labeling and enhancement program adequately addressed this problem by identifying all components within a system with the same color label to assist association. In addition, total charging flow is scheduled to be input to the PPCS, which will further facilitate charging flow control. This addition to the computer is scheduled under EWR 4118 to be completed by June, 1988. This HED addresses the same issue as HEDs 84, 85, 310, 345, 451, and 471.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist	9.1.2.B(1)
Checklist	9.1.2.B(2)
Checklist	9.1.2.B(4)
Checklist	9.1.2.B(6)

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

6	269	Charging Pump 1A
6	270	Charging Pump 1B
6	271	Charging Pump 1C
7	146	Reg HX Charging Outlet Temp
7	147	Charging Line Flow
7	148	Charging Pump Discharge Press
7	192-0	

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0310
 UTILITY: RGE

ORIGINATOR: DKB
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

Controls and displays related to the same function are not grouped together.

COMMENTS:

The charging pumps' controls and associated displays are a good example of this HED. The controls are on panel 6, while the displays are on panel 7.

RESPONSE:

The control board labeling and enhancement program adequately addressed this problem by identifying all components within a system with the same color label to assist association. In addition, total charging flow is scheduled to be input to the PPCS, which will further facilitate charging flow control. This addition to the computer is scheduled under EWR 4118 to be completed by June, 1988. This HED addresses the same issue as HEDs 84, 85, 309, 345, 451, and 471.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Checklist

9.2.1.A

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

6	269	Charging Pump 1A
6	270	Charging Pump 1B
6	271	Charging Pump 1C
7	146	Reg HX Charging Outlet Temp
7	147	Charging Line Flow
7	148	Charging Pump Discharge Press

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0320
UTILITY: RGE

ORIGINATOR: DFT
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>C</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

The use of green is utilized for the reset function for round pushbuttons. However, blue has been used for reset on the BA Tank LO LO reset, and black has been used on the Bus 18 Breaker reset and Main Transformer Auxiliary Power Supply Bus reset.

RESPONSE:

A color convention will be established and implemented for round pushbuttons.



1

2

3

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0345
 UTILITY: RGE

ORIGINATOR: DFT
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

Charging flow and pressure indications needed for feedback for task 11 are located on Panel 7, while the charging pumps' controls and controllers are located on panel 6. Task grouping is not appropriate.

RESPONSE:

The control board labeling and enhancement program adequately addressed this problem by identifying all components within a system with the same color label to assist association. In addition, total charging flow is scheduled to be input to the PPCS, which will further facilitate charging flow control. This addition to the computer is scheduled under EWR 4118 to be completed by June, 1988. This HED addresses the same issue as HEDs 84, 85, 309, 310, 451, and 471.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Validation

Task #11

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

	199	Charging Pump
6	200	Charging Pump
6	201	Charging Pump
6	269	Charging Pump Speed Controller
6	270	Charging Pump Speed Controller
6	271	Charging Pump Speed Controller
7	147	Charging Line Flow

0

1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0367
 UTILITY: RGE

ORIGINATOR: DKB
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL C
 RATING Y

DESCRIPTION OF DISCREPANCY:

Controls/displays within the remote shutdown area are not grouped by sequence of use.

COMMENTS:

No effort was made when designing the remote shutdown stations to group controls/displays by sequence of use. This will need to be reviewed closely to determine if a need for sequence of grouping for these controls and displays is justified. At present controls and displays are grouped only by functional consideration.

RESPONSE:

At present, in order to accomplish a safe shutdown outside of the main control room, a number of areas, rooms, and/or panels must be accessed. Although not optimally configured for remote shutdown, it is adequate for the purpose. Ginna has successfully demonstrated the viability and validity of its current shutdown procedure. Because the equipment has a low probability of use and because the shutdown panels are outside the control room and are not within the scope of the DCRDR, no modifications are planned at this time.

SOURCE OF DISCREPANCY

Checklist

EXPLANATORY INFORMATION

8.2.1.B(2)

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0374
UTILITY: RGE

ORIGINATOR:JBW
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>2</u>
	LEVEL	<u>C</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

The task analysis called for this recorder to have a range of 0-650° and divisions of 5°.

COMMENTS:

The actual recorder has a range of 50-650° in divisions of 10°.

RESPONSE:

The scale on this recorder has been replaced with a scale of appropriate range and divisions.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Verification of Suitability

Task 76, 93, 176, 198

PANEL

EQUIPMENT
ID NUMBER

EQUIPMENT NAME

7

228

RCS Loop A&B Cold Leg Temp Recorder

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0393
 UTILITY: RGE

ORIGINATOR: JBW
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT:	CATEGORY	<u>1</u>
	LEVEL	<u>B</u>
	RATING	<u>X</u>

DESCRIPTION OF DISCREPANCY:

Separate annunciators were requested in the following form:

THERMAL BARRIER A LOW FLOW
 THERMAL BARRIER B LOW FLOW

COMMENTS:

At present the annunciator tiles read as follows:

HI TEMP 125	HI TEMP 125
RC PUMP 1A	RC PUMP 1B
COMP. COOL WTR	COMP. COOL WTR
RETURN HI TEMP	RETURN HI TEMP
OR LOW FLOW	OR LOW FLOW
LO FLOW 165	LO FLOW 165

Generally it is best to separate different parameters on annunciator tiles.

RESPONSE:

An annunciator study which evaluated the wording of each annunciator tile has been completed. A standard abbreviations list and a standard nomenclature system was established and utilized. The new annunciator nomenclature will provide a clear unambiguous message. The new annunciator tiles will be installed by 9/87.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Verification of Availability

Task 285

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0403
UTILITY: RGE

ORIGINATOR: JBW
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY

This indicator does not have units of measurement on the meter face. The task analysis called for PCT.

COMMENTS:

Any meter should have the proper units of measurement on it. Suggest placing PCT on the meter face.

RESPONSE:

This meter will be labeled to indicate that it measures in units of percent. This will be done by 9/87.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Verification of Suitability Task 33

PANEL

EQUIPMENT
ID NUMBER

EQUIPMENT NAME

7 361 Non-Regen HX Letdown Out Temp



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0416
 UTILITY: RGE

ORIGINATOR: DKB
 PLANT: GINNA

DATE: 5/22/87.

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

Verification has determined that the upper range for Steam Generator Feed Flow is inadequate.

COMMENTS:

The current meter has a high range of 3.8. SMEs have suggested a high range of 4.0.

RESPONSE:

This meter will receive a new scale by 9/87. The new scale has the upper range marked at 3.8×10^6 . This is the appropriate range, it includes the maximum value of SG Feed Flow.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Verification of Availability Task 276

<u>PANEL</u>	<u>EQUIPMENT ID NUMBER</u>	<u>EQUIPMENT NAME</u>
6	45	SG Feed Flow
6	46	SG Feed Flow
6	52	SG Feed Flow
6	53	SG Feed Flow

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0433
UTILITY: RGE

ORIGINATOR: DKB
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Verification has determined that the upper range on the Hotwell level meter is inadequate.

COMMENTS:

The current high range is 40, SME suggests a high range of 50.

RESPONSE:

The scales on these indicators will be replaced with scales with a range of 0-48 inches. This is the appropriate range for this indication. This will be done by 9/87.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Verification of Availability Task 159

<u>PANEL</u>	<u>EQUIPMENT ID NUMBER</u>	<u>EQUIPMENT NAME</u>
6	105	Hotwell Level
6	106	Hotwell Level



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0435
 UTILITY: RGE

ORIGINATOR: DKB
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING X

DESCRIPTION OF DISCREPANCY:

Verification has determined that labelling problems exist with the meter scale for RCS T_{ave}. At present units are not labelled on the meter, and the highest labelled numeral is 610°F.

COMMENTS:

The upper range should be 615°F and have units labelled.

RESPONSE:

The scale on this meter will be changed to show the appropriate range and units. This will be done by 9/87.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Verification of Availability Task 89

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

6

144

RCS T_{ave}

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0436
 UTILITY: RGE

ORIGINATOR: DKB
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

Verification has shown that labelled units are not available on the RCS pressure recorder. This recorder should have units of PSIG labelled on the recorder.

RESPONSE:

This recorder has been labelled with the appropriate units.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Verification of Availability	Task 10
Verification of Availability	Task 55
Verification of Availability	Task 68
Verification of Availability	Task 75
Verification of Availability	Task 88
Verification of Availability	Task 81
Verification of Availability	Task 95
Verification of Availability	Task 96
Verification of Availability	Task 82
Verification of Availability	Task 106
Verification of Availability	Task 86
Verification of Availability	Task 320
Verification of Availability	Task 136
Verification of Availability	Task 263
Verification of Availability	Task 46
Verification of Availability	Task 49
Verification of Availability	Task 54

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

6

148

RCS Pressure Recorder

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0437
 UTILITY: RGE

ORIGINATOR:DKB
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

Verification has determined that the scale divisions for the wide range scale of the RCS pressure recorder are inadequate for some tasks.

COMMENTS:

The current wide range scale has divisions of 50. SMEs suggest divisions of 20, 25, and 5 for various tasks. The narrow range scale on the same recorder has divisions of 10.

RESPONSE:

The scale on this recorder has been changed to a scale with appropriate range, divisions, and units.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Verification of Availability	Task 68
Verification of Availability	Task 95
Verification of Availability	Task 263
Verification of Availability	Task 82
Verification of Availability	Task 86
Verification of Availability	Task 136

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

6

148

RCS Pressure Recorder

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0438
UTILITY: RGE

ORIGINATOR: DKB
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Verification has shown that the recorder scale and recorder paper scale do not match on the Pressurizer Level recorder.

COMMENTS:

Recorder and paper should have scales with a range of 0-100% in divisions of 2%.

RESPONSE:

The scale on this recorder has been changed to a scale with the appropriate range, divisions and units. The chart paper will match the recorder scale.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Verification of Availability	Task 226
Verification of Availability	Task 263
Verification of Availability	Task 285
Verification of Availability	Task 46

PANEL

EQUIPMENT
ID NUMBER

EQUIPMENT NAME

6	149	Pzr Level Recorder
---	-----	--------------------

Revision 1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0444
UTILITY: RGE

ORIGINATOR: DKB
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
LEVEL C
RATING X

DESCRIPTION OF DISCREPANCY:

Verification has shown that a position label plate is not available for the EDG #1A and EDG #1B auto volt control rheostat. This is a continuous control and should have a position backplate to indicate current rheostat setting.

RESPONSE:

Switch position plates will be installed on these controls.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Verification of Availability Task 29

PANEL

EQUIPMENT
ID NUMBER

EQUIPMENT NAME

8
8

149
150

EDG #1A Auto Volt Rheostat
EDG #1B Auto Volt Rheostat

0

0j



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0451
UTILITY: RGE

ORIGINATOR: DKB
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
LEVEL B
RATING X

DESCRIPTION OF DISCREPANCY:

Verification has determined a need for a total charging flow indication. This indication is not currently available.

RESPONSE:

Total charging flow is scheduled to be input to the PPCS. This addition to the computer is scheduled under EWR 4118 to be completed by June, 1988. This HED addresses the same issue as HED 84, 85, 309, 310, 345, and 471.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Verification of Availability	Task 12
Verification of Availability	Task 44
Verification of Availability	Task 244



0

1

1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0452
 UTILITY: RGE

ORIGINATOR: DKB
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
 LEVEL C
 RATING Y

DESCRIPTION OF DISCREPANCY:

Verification has determined a need for an indication of component cooling water flow to the RCP thermal barrier. This indication is not presently available.

COMMENTS:

This indication should have a range of 0-100 GPM in divisions of 2 GPM.

RESPONSE:

An investigation of this parameter has been performed and it was determined that it was not needed in the control room. The results of this investigation were reviewed and accepted by the GARD committee. Component cooling water flow to the thermal barrier is set with a manual valve using local indication. Since the component cooling water system is a closed fixed flow system, there can be no change in flow to branch circuits except in a case of failure. Historically, failures in this system are rare. Therefore, control room flow indication of this branch circuit is unwarranted.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Verification of Availability Task 12
 Verification of Availability Task 63

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

CCW Flow to RCP A Thermal Barrier
 CCW Flow to RCP A Thermal Barrier

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0455
UTILITY: RGE

ORIGINATOR:DKB
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL B
RATING Y

DESCRIPTION OF DISCREPANCY:

Verification has determined a need for valve position meters for MOV 738A and MOV738B.

COMMENTS:

These do not exist, recommended placement is panel 7.

RESPONSE:

An investigation into the need for this indication has been performed. For several design base accidents, analyses are based upon the cooling rate of the RHR heat exchangers utilizing maximum component cooling water flow as the cooling medium. To install modulating valves in the coolant stream for the RHR system could restrict coolant medium flow in the event of a valve failure at less than 100% open. Although it is recongized that manual manipulation of these valves during cooldown of the plant is inconvenient, accident considerations preclude the change out of these valves for operator's convenience at this time. Because the capability to throttle the valves is not in the control room, there is little need for a valve position indication.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Verification of Availability

Task 162

Revision 1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0456
UTILITY: RGE

ORIGINATOR:DKB
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
LEVEL B
RATING Y

DESCRIPTION OF DISCREPANCY:

Verification has determined a need for a PORV open annunciator alarm.

RESPONSE:

An annunciator study has been completed. It was found that there was no need for this additional alarm, there are several other indications in the control room that notify the operators of this condition.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Verification of Availability

Task 83



2

1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0463
 UTILITY: RGE

ORIGINATOR: DKB
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL A
 RATING X Y

DESCRIPTION OF DISCREPANCY:

Verification has determined that several major trend maps and indications are needed on a safety parameter display system (SPDS).

COMMENTS:

The following SPDS indications are needed:

1. CCW flow to major components
2. CCW total flow
3. CCW flow from seal return HX
4. Thermocouple trend map
5. Subcooling trend map
6. SG radiation indication for blowdown
7. Steam line radiation
8. Cooldown trend map
9. CCW flow from RHR HX

RESPONSE:

The new SPDS provides all of the cited trend maps except CCW flow to major components, CCW total flow, and CCW flow from seal return HX. The CCW indications are not provided because they are manually set valves which do not change status.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Verification of Availability	Task 62
Verification of Availability	Task 66
Verification of Availability	Task 68
Verification of Availability	Task 91
Verification of Availability	Task 95
Verification of Availability	Task 107
Verification of Availability	Task 162
Verification of Availability	Task 176
Verification of Availability	Task 199
Verification of Availability	Task 198
Verification of Availability	Task 320
Verification of Availability	Task 296
Verification of Availability	Task 263

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0465
UTILITY: RGE

ORIGINATOR: DKB
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 2
LEVEL C
RATING Y

DESCRIPTION OF DISCREPANCY:

Verification has determined that an indication of excess letdown heat exchanger outlet flow is needed. This is not currently available.

RESPONSE:

An investigation of this parameter has been performed and it was determined that it was not needed in the control room. The results of this investigation were reviewed and accepted by the GARD committee.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Verification of Availability Task 12
Verification of Availability Task 277

PANEL

EQUIPMENT
ID NUMBER

EQUIPMENT NAME

Excess Letdown HX Outlet Flow

Revision 1

HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0471
UTILITY: RGE

ORIGINATOR: DKB
PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
LEVEL B
RATING X

DESCRIPTION OF DISCREPANCY:

Verification has determined that an indication for seal injection flow is needed.

RESPONSE:

Total charging flow is scheduled to be input to the PPCS. This addition to the computer is scheduled under EWR 4118 to be completed by June, 1988. This HED addresses the same issue as HED 84, 85, 309, 310, 345, and 451.

SOURCE OF DISCREPANCY

EXPLANATORY INFORMATION

Verification of Availability	Task 62
Verification of Availability	Task 285

PANEL

EQUIPMENT
ID NUMBER

EQUIPMENT NAME

Seal Injection Flow



0.

1



HUMAN ENGINEERING DISCREPANCY

HED NUMBER: 0472
 UTILITY: RGE

ORIGINATOR: DKB
 PLANT: GINNA

DATE: 5/22/87

ASSESSMENT: CATEGORY 1
 LEVEL B
 RATING X

DESCRIPTION OF DISCREPANCY:

Verification has determined a need for a meter indication of Feedwater and Feedwater Bypass Valve position.

COMMENTS:

This meter should have a range of 0-100% in divisions of 2%.

RESPONSE:

A study was conducted and the need for valve position indications was established. These indications will be installed in June 1988 in accordance with EWR 4350.

SOURCE OF DISCREPANCYEXPLANATORY INFORMATION

Verification of Availability Task 241
 Verification of Availability Task 303

PANELEQUIPMENT
ID NUMBEREQUIPMENT NAME

FCV-466
 FCV-467
 FD REG VLV POSITION
 V-4271
 V-4272

