

Public Service Company of Colorado

16805 WCR 19 1/2, Platteville, Colorado 80651

May 16, 1986 Fort St. Vrain Unit No. 1 P-86366

Director of Nuclear Reactor Regulation U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Attention: Mr. H. N. Berkow, Director

Standardization and Special

Projects Directorate

Docket No. 50-267

SUBJECT: Fort St. Vrain Control

Room Design Review Summary Report

REFERENCE: 1) NRC Letter (G-85363)

Hunter to Lee Dated 8/27/85

2) PSC Letter (P-85384) Warembourg to Butcher

Dated 10/29/85

Dear Mr. Berkow:

The purpose of this letter is to provide you with Public Service Company's sixth submittal in response to the requests of Reference 1 above.

The purpose of these submittals is to provide you with specific information relative to the proposed Control Room Design Changes. This information is submitted as Attachments 6b-17 through 6b-19 with supplements to Attachment 9 as referenced by "Public Service Company's Response to the Nuclear Regulatory Commission's 'request for additional information'" included with reference 2.

If you have any questions, please contact M. H. Holmes at (303) 480-6960.

Very truly yours,

D. W. Warembourg
Manager, Nuclear
Engineering Division

DWW: DJG/asa

Attachments

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ATTACHMENT 6b-17

SUMMARY OF THE
CONTROL ROOM IMPROVEMENT
DESIGN PROCESS
AS APPLICABLE TO
I-7507X HVAC PANEL

FOREWORD - NUREG-0737 Supplement 1, Section 5.1b requires that a Control Room Design Review (CRDR) be conducted to identify human engineering discrepancies. Section 5.1c requires that these discrepancies be assessed and design improvements selected to correct these discrepancies.

Public Service Company (PSC) has conducted the required review of the Fort St. Vrain Control Room. Approximately eight hundred forty eight (848) discrepancies or classes of discrepancies were cited. These discrepancies were assessed to determine their potential for causing an operating error and the potential effect of any error. (Certain discrepancies are known to have caused errors). An improvement program has been selected which meets the regulatory requirements and proposes to improve the operability and functionality of the Control Room.

The regulatory requirement for the CRDR and the follow-on improvement program was directed toward the improved handling of emergencies and not specifically toward improved production. Public Service Company's improvement program is directed toward both normal operation and the handling of emergencies.

BACKGROUND - Public Service Company has initiated an integrated improvement program based on functionality rather than particular classifications of problems. This approach is first, one of determining functional groupings, followed by demarcating, hierarchial labeling, correcting indicator scaling, complying with established conventions (color coding, switch positions, etc.).

The following steps constituted the planning portion of the integrated improvement program.

- An Elevation drawing of each panel was color coded or marked to show all applicable HEDs as relabeling, relocations, scaling, deletions, or equipment change-out. This scheme provided an overview of the problems documented on each control board or panel.
- All HEDs involving alarms were reviewed.
 System function and operator responses were considered in grouping or deleting alarms.
- Operator interviews were conducted to determine their interpretations or actions to each component or mimic display on the panel.
- Controls and indications were arranged functionally. Associated alarm locations were rechecked to verify that the more desirable locations were selected.

- A drawing was prepared to show the proposed arrangement.
- A Change Notice (CN) number was assigned to each effort identified above.

IMPROVEMENT PROCESS METHODOLOGY APPLICABLE TO I-7507X

The Improvement Process starts with the documentation and drawings produced during the improvement planning process described in the BACKGROUND presentation portion of this summary. An individual designer was assigned the responsibility of evaluating I-7507X. Since this individual had not participated in previous efforts, an educational process was initiated to acquire a thorough understanding of the system, subsystems and components represented on the assigned panel. System descriptions, Piping & Instrument diagrams, electrical drawings, operating procedures are studied to gain this thorough understanding of the system and component functions. An operational analysis was conducted for the system and components. (This in-depth analysis is in addition to that completed for the CRDR and planning purposes.) This Operational Analysis provided additional basis for determining any changes to functional groupings.

Operating and training personnel were interviewed to solicit operational philosophies. The Operational value and function of each control and indication was addressed. Informational requirements were again discussed. (This informational requirements effort is in addition to that conducted for Emergency Operating Procedures task analysis). These interviews are documented and samples are being submitted as an attachment to this design package.

All HEDs (see Attachment A) applicable to the I-7507X panel were reviewed and the tentative fix evaluated for its corrective value within the integrated approach. Any previously prepared investigative information was studied. All factors were evaluated in considering any changes to I-7507X.

<u>SPECIFIC - I-7507X Redesign Synopsis - (Change Notice (CN)-1894 preparation package.)</u>

Research - During this phase, a study was conducted on the HVAC system as related to the I-7507X panel. This panel primarily provides indication and control of the three room control complex HVAC systems. In addition, I-7507X includes provision for the manual control of the Turbine Building Supply & Ventilation Dampers and the Access Control Bay Exhaust Fan for use during a fire. A system study was done using the related System Description, System Abstract, System Operating Procedure, Technical Specifications, and System Drawings.

Other research included discussions with operators, and engineering support personnel. This interaction with other sectors continued throughout the Research and Design phases.

A review of the HEDs and a physical study of the panel confirmed problems in labeling, grouping and the physical location of controls and indications. The original panel layout is included as Attachment B.

Conceptual Design - After the existing design was reviewed, preliminary redesign proposals were made using elevation drawings modified to show proposed changes. Several iterations of these drawings were used to develop a new layout that answered all of the design problems encountered during the research phase. As the functional group was defined, its operational relationships were evaluated to make certain that the arrangement provided the best manmachine interface.

This design provided for placement of controls and displays within the functional group.

As the design became more viable and appeared to resolve most or all of the known problems, interviews were conducted to determine if all of the operational requirements were met. Sample copies of the Interview records are included as Attachment C. These interviews were conducted in the following manner:

- The final iteration of a proposed layout was presented to an operator.
- The operator was asked to comment on the layout in relation to various tasks that he would perform.
- Information and control needs were reviewed.

The interview phase brought forth several concerns; some of which proved to be valid. As a direct result, the finalized proposed layout includes: lamp test buttons for damper position indicating lights, and status "Run" legend lights above fan symbols on the mimic layout.

Investigations failed to establish a need for filter high temperature alarms other than those which exist.

Operations personnel concurred that although there is a need for an hour meter to show control room HVAC filter use, it should not be located in the control room but rather local to the filter or on panel I-7501X.

During a "table top" discussion on the I-15 panel, it was decided that indicators TI-7553, MI-7554, TI-7555, PDI-7556, and TI-7557 should be relocated to panel I-7507X for functional grouping.

Reevaluation of the HEDs indicates HED 0354 is no longer valid since it refers to the labeling of a fan symbol on the 480V switchgear room mimic. Since the 480V switchgear room mimic is being deleted, the

HED is no longer valid. HED 0461 refers to the labeling of an alarm for the Technical Support Center HVAC filter. This alarm will be relocated to the I-15 Alarm panel.

The finalized proposed layout is included as Attachment D and a summary of proposed changes is included as Attachment E.

The final step in this conceptual design phase was to determine the final text content for functional labels. Prior operator interviews and operational efforts provide the basis for these determinations. See Attachment F for Sample Functional label legends.

The following Design Directives apply to the redesign of I -7507X:

| | NUMBER I | SSUE | DESCRIPTION |
|----|----------------------------------|--------|---|
| | DD-AAS-1 DD-APL-1 DD-ASP-1 | A A | ABBREVIATION, SYMBOL, AND ACRONYM SELECTION ANNUNCIATOR PANEL LEGENDS ANNUNCIATOR SELECTION AND PLACEMENT |
| ** | DD-CBL-1 | ^ | CONTROL BOARD LAYOUT |
| | DD-ILS-1 DD-LAB-1 | A B | INDICATOR LIGHT SELECTION AND LOCATION PANEL AND COMPONENT LABELING |
| | DD-SWI-1 ** IN DRAFT | FORM | SWITCH SELECTION |

ATTACHMENTS TO SUMMARY OF THE CONTROL ROOM IMPROVEMENT DESIGN PROCESS

- A List of all I-7507X HEDs & Copies of I-7507X HEDs
- B Original Control Panel Layout
- C Sample Copies of Operator Interview Records
- D Final Control Panel Layout
- E Summary of Changes to Panel
- F Label List

ATTACHMENT A
List of All 1-7507X HEUS
&
Copies of 1-7507X HEDS

| | PROBLEM CLASSIFICAT | | LOCATION | | 1 | DISPOSITION | | |
|-----|---------------------|-----------|----------|--------------|----------|-------------|--------|---|
| HED | | | | INSTRUMENT | 1 | | CHANGE | |
| 10. | IGROUP | FIGURE 1) | | | CATEGORY | RESOLUTION | | IREMARKS |
| 235 | Instrument | 2n | | HS-75202 | 11 | Change-out | 11894 | Change indicating light lens colors per |
| 235 | Instrument | 2n | 1-7507X | HS-75203 | 1 | Change-out | 11894 | Change indicating light lens colors per |
| 351 | Labeling | 1b | | T1-75191 | 11 | Label | 11894 | Label per DD-LAS-1 to show actual |
| 352 | Labeling | 1b | 1-7507X | V-75450 | 11 | Relabel | 11894 | Number changed to DV-75331 by CN-1295 Relabel indicating lights per DD-LAB-1 Delete DV-75331 mimic symbol |
| 352 | Labeling | 1b | 1-7507X | IV-75451 | 1 | Relabel | 1894 | Number changed to DV-75332 by CN-1295 Revabel indicating light per DD-LAB-1 Delete DV-75332 mimic symbol |
| 352 | Labeling | 1b | 1-7507X | V-75452 | ' | Relabel | 1894 | Number changed to DV-75333 per CN-1295 Relabel indicating light per DD-LAB-1 Delete DV-75233 mimic symbol |
| 352 | Labeling | 1b | 1-7507X | V-75453 | 1 | Relabel | 1894 | Number changed to DV-75334 by CN-1295 Relabel indicating light per DD-LAB-1 Delete DV-75334 mimic symbol |
| 352 | [Labeling | 1b | 1-7507X | V-75483 | 1 | Relabel | 1894 | Number changed to DV-75364 per CN-1295 [Relabel indicating light per DD-LAB-1 [Delete DV-75364 mimic symbol |
| 352 | Labeling | 16 | 1-7507X | V-75484 | 1 | Relabel | 1894 | Number changed to DV-75365 per CN-1295 Relabel indicating light per DD-LAB-1 Delete DV-75365 mimic symbol |
| 353 | ILabeling | 11b | 1-7507X | HS-75202 | iı | Relabel | 1894 | Relabel per DD-LAB-1 |
| 353 | Labeling | | 1-7507X | | | Relabel | | Relabel per DD-LAB-1 |
| 354 | Labeling | | 1-7507X | | | Reevaluated | | Delete mimic - HED no longer valid |
| 355 | Labeling | | 1-7507X | | | Relabel | | Number changed to DV-75300 by CN-1295 Relabel per DD-LAB-1 |
| 356 | Labeling | 11b | 1-7507X | HS-7547 | 11 | Relabel | 1894 | Relabel per DD-LAB-1 |
| 356 | ILabeling | 1b | 1-7507X | HS-7549 | | | | Relabel per DD-LAB-1 |
| 356 | Labeling | | 1-7507X | | | | 1894 | Number changed to DV-75298 by CM-1295 [Relabel per DD-LA8-1 |
| 356 | Labeling | 116 | 1~7507X | | 11 | Relabel | 1894 | Number changed to DV-75299 by CN-1295 Relabel per DD-LAB-1 |
| 356 | Labeling | 1b | 1-7507X | | | Re'abel | | Number changed to DV-75323 by CN-1295 Relabel per DD-LAB-1 |
| 356 | Labeling | 11b | 1-7507X | | 1 | Relabel | 1894 | Number changed to DV-75324 by CN-1295 Relabel per DD-LAB-1 |
| 356 | Labeling | 1b | 1-7507X | V-75446 | 1 | Reisbel | 1894 | Number changed to DV-75327 by CN-1295 Relabel per DD-LAB-1 |

| | I PROBLEM CLASSIF | ICATION | [LOCATION] | | IDISPOSITION | | | |
|------|-------------------|------------|------------|----------------|--------------|------------|---------|---------------------------------------|
| HED | | | | INSTRUMENT | | | CHANGE | |
| NO. | IGROUP | [FIGURE 1] | | | CATEGORY | | INOTICE | |
| 0356 | Labeling | 116 | 1-7507X | IV-75449 | 11 | Relabel | 11894 | Number changed to DV-75330 by CN-1295 |
| | 1 | 1 1 | | 1 | 1 | | 1 | Relabel per DD-LAB-1 |
| 0357 | Labeling | 1b | 1-7507X | IHS-7548 | 11 | Relabel | 11894 | Relabel per DD-LAB-1 |
| 0357 | Labeling | [1b] | 1-7507X | IV-75407 | 11 | Relabel | 11894 | Number changed to DV-75303 by CN-1295 |
| | 1 | | | | 1 | | 1 | Relabel per DD-LAB-1 |
| 0357 | Labeling | 1b | 1-7507X | IV-75444 | 11 | Relabel | 11894 | Number changed to DV-75325 by CN-1295 |
| | | | | | | | 1 | Relabel per DD-LAB-1 |
| 0357 | ILabeling | [1b] | 1-7507X | IV-75445 | 1 | Relabel | 11894 | Number changed to DV-75326 by CN-1295 |
| | 1 | 1 | | | | | 1 | Relabel per DD-LAB-1 |
| 0357 | Labeling | 1b | 1-7507X | IV-75447 | 11 | Relabel | 11894 | Number changed to DV-75328 by CN-1295 |
| | 1 | 1 | | | | | 1 | Relabel per DD-LAB-1 |
| 0357 | Labeling | 11b | 1-7507X | IV-75448 | 1 | Relabel | 11894 | Number changed to DV-75329 by CN-1295 |
| 0331 | 10001119 | | 12011 | 1 | | 1 | 1 | Relabel per DD-LAB-1 |
| 0357 | Labeling | 11b | 1-7507X | V-75482 | 11 | Relabel | 11894 | Number changed to DV-75363 by CN-1295 |
| 0321 | Lubering | 1.0 | 1 2011 | 1 13152 | | 1 | 1.024 | Relabel per DD-LAB-1 |
| 0358 | Labeling | 11b | 1-7507X | HS-75161 | 1 | Relabel | 11894 | Relabel per DD-LAB-1 |
| 0358 | Labeling | | | IHS-75184 | ii | Relabel | 11894 | Relabel per DD-LAB-1 |
| 0358 | Labeling | | | HS-75186 | ii | Relabel | 11894 | Relabel per DD-LAB-1 |
| 0358 | Labeling | 116 | | HS-75187 | 11 | Relabel | 11894 | Relabel per CD-LAB-1 |
| 0373 | Labeling | | 1-7507X | | 11 | Relabel | 11894 | Relabel per DD-LAB-1 |
| 0373 | Labeling | | 1-7507X | | 1 | Relabel | 11894 | Relabel per DD-LAB-1 |
| | | 11b | 1-7507X | | 11 | Relabel | 11894 | Relabel per DD-LAB-1 |
| 0373 | Labeling | 11b | 1-7507X | | i | Relabel | 11894 | Number changed to DV-75296 by CN-1295 |
| 0373 | Labeling | 110 | 1-15018 | 14-75400 | , | reraber | 11094 | |
| 0277 | li abatian | 11b | 1-7507X | W 75 h01 | 1 | Relabel | 11894 | Relabel per DD-LAB-1 |
| 0373 | Labeling | IID | 1-15018 | V-75401 | 1 1 | Relabel | 11894 | Number changed to DV-75297 by CN-1295 |
| 0272 | | 11b | 1 75077 | TENOE | 1 | Relabel | 11894 | Relabel per DD-LAB-1 |
| 0373 | Labeling | 110 | 1-7507X | V-15405 | | Relabel | 11894 | Number changed to DV-75301 by CN-1295 |
| | | 1.11 | 1 75074 | 25006 | 1 | In-t-b-1 | 1.000 | Relabel per DD-LAB-1 |
| 0373 | Labeling | 1b | 1-7507X | 14-75406 | | Relabel | 11894 | Number changed to DV-75302 by CN-1295 |
| | | 10 | 7507 | | | I Dalassa | 11001 | Relabel per DD-LAB-1 |
| 0385 | Instrument | 12cx | 1-7507× | | 13 | Relocate | 11894 | Relocate on 1-7507X per DD-CBL-1 |
| 0459 | Alarms | 18d | 1-7507X | | 11 | Relabel | 11894 | Relabel per DD-LAB-1 & DD-APL-1 |
| 0461 | Alarms | 18d | 1-7507X | 11-7901 | 11 | Relocate | 11924 | Relocate to 1-15 control board and |
| | | | | | | | | relabel to reflect actual function |
| 0478 | Alarms | 18d | 1-7507X | | 12 | Change-out | 1894 | Alarm P.B. Switches to be changed and |
| | | | | | | | | functionally grouped per DD-CBL-1 and |
| | | | | | | | | IDD-SWI-1 |
| 0648 | Instrument | | | T1-75191 | 12 | Rescale | 11894 | Rescale per DD-AIS-1 |
| 0691 | Instrument | | | IIndica Lights | 12 | Addition | 11894 | Install lamp test button on I-7507X |
| 0771 | [Labeling | 110 | 1-7507X | HS-75202 | 11 | Relabel | 11894 | Relabel per DD-LAB-1 to show actual |
| | 1 | 1 | | | | | 1 | function |

HUMAN ENGINEERING DISCREPANCIES LISTED FOR HVAC PANEL 1-7507X

| | I PROBLEM CLASSIF | ICATION | LOCATION | 1 | 1 | DISPOSITION | E | |
|------------|-------------------|------------|----------|------------|-----------|-------------|--------|--|
| HED NO. | IGROUP | CODE (SEE! | | INSTRUMENT | ICATEGORY | RESOLUTION | CHANGE | |
| 0771 | Labeling | 10 | | HS-75203 | 11 | Relabel | 1894 | Relabel per OD-LAB-1 to show actual function |
| 0814 | Instrument | 2n | 1-7507X | IHS-7549 | 11 | Change-out | 11894 | Change indicating lights per DD-ILS-1 |
| 0814 | Instrument | 2n | 1-7507X | HS-7547 | 11 | Chang-out | 11894 | Change indicating lights per DD-ILS-1 |
| 0814 | Instrument | 12n | 1-7507X | IHS-7548 | 11 | Change-out | 11894 | Change indicating lights per DD-ILS-1 |
| 0814 | Instrument | 12n | 1-7507X | IHS-75161 | 11 | Change-out | 11894 | Change indicating lights per DD-ILS-1 |
| 0814 | Instrument | 12n | 1-7507X | HS-75184 | 11 | Change-out | 11894 | Change indicating lights per DD-ILS-1 |
| 0814 | Instrument | 2n | 1-7507X | HS-75187 | 11 | Change-out | 11894 | Change indicating lights per DD-iLS-1 |
| 0815 | Labeling | 1c | 1-7507X | HS-75184 | 11 | Relabel | 11894 | Relabel per DD-LAB-1 to show actual function |
| 0815 | Labeling | 110 | 1-7507X | HS-75186 | 1 | Relabel | 11894 | [Relabel per DD-LAB-1 to show actual function |
| 0840 | Labeling | 110 | 1-7507X | HS-75202 | 11 | Relabel | 11894 | Relabel per DD-LAB-1 to show actual function |
| 0840 | Labeling | 110 | 1-7507X | IHS-75203 | 1 | Relabel | 1894 | Relabel per DD-LAB-1 to show actual |
| 0841 | Labeling | 110 | 1-7507X | General | 11 | Relabel | 11894 | [Relabel per DD-LAB-1 to show actual function |
| 0841 | Labeling | l 1c | 1-7507X | Mimic | 11 | Relabel | 11394 | Relabel per DD-LAB-1 to show actual Ifunction on mimic |
| 0841 | Labeling | 10 | 1-7507X | HS-75184 | 11 | Relabel | 11894 | Relabel per DD-LAB-1 to show actual Ifunction |
| 0841 | Labeling | i 1c | 1-7507X | HS-75186 | 11 | Relabel | 1894 | Relabel per DD-LAB-1 to show actual |



FORT ST. VRAIN NUCLEAR GENERATING STATION

200

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

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| | NTION | |
| ITEMS IN | VOLVED | |
| NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
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| H. CORRECTIVE ACTION OPTIONS | | |
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| TEAM ACTION | | |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | DATE |
| Team Manager | | |
| CRDR Coordinator | | |
| | | 17 1 12 1 |
| Human Factors Spec. | | |
| Senior Reactor Operator | | |
| | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 035/

HUMAN ENGINEERING DISCREPANCY EVALUATION

Form 344-22-4228 REVIEWER NAME 7-27-83 Labeling and Tagging Convention ITEMS INVOLVED 8. INSTRUMENT DATA FILE NO. NOMENCLATURE LOCATION ITEM TYPE PHOTO NO. I-7507 X 1-75/91 a problem descriptions (Guidelines VIOLATED) needer function tage D. LIST THE PROCESURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

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FORT ST. VAAIN NUCLEAR GENERATING STATION

Log Number 0352

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

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| | ITEMS IN | VOLVED | |
|--------------------|--|---------------------------------|-------------------------|
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO PHOTO NO. |
| V-75450. | 480 VOIT SWITCH GER | I-7507 X | |
| 1-75452. | to out doors | 1-7507X | |
| V- 75 45 / . | to outdoors | I-7574 | late Landau to the same |
| 1-75453 . | 1480 Volt swith gear A | Poen I-7507X | |
| V- 754 83. | +0 TRB BIDG | I-75074 | |
| V-75' 4 84 | to out doors | I. 73'07X | |
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| G. CLASSIFICATION | | | |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0354

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0355

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0356

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

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| | ITEMS INVO | LVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
| 45-7549 | Filter Fan | 1.7507X | |
| HS-7547 · | supply Fan | I. 7507X | |
| V - 75 446 . | Exhaust Fan Engineers | I-7507X | |
| 1- 75 449 . | toilet Exhaust Fan | I-75'07X | |
| 1-75443 · | Control Room | I-7507X | |
| V-75 442 . | control Room | I-7507X | |
| V-75403. | Reguler Pilter | I-7507X | |
| V-75402. | outside air | I-7507X | |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0357

HUMAN ENGINEERING DISCREPANCY EVALUATION

HEDE - 1 Form 344-22-4228 REVIEWER NAME DATE Llana 7-27-87 Tagging Convention ITEMS INVOLVED 8. INSTRUMENT TEM TYPE NOMENCLATURE LOCATION DATA FILE NO. PHOTO NO. CHANGED TO - DY-75303 V-75407. T-75'078 to access cont Ba CHANGED TO DY-75363 25071 V-75482 to out doors CHANGED TO DV. 75325 V-75 444. 75071 CHANGED TO OV-75324 1-75071 V-75445. CHANGED TO OV. 75328 V- 75 447. 45- 75 448. T-7507X Control Room I-7507X CHANGED TO DV-75329 fettering instrument and C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) unster tags are the small should D. LIST THE PROCESURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0358

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| -75 184 · 5 | NOMENCLATURE | LOCATION | DATA FILE NO |
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| -75184. | | | 7 |
| | 20nes landa | I-7507x | |
| -75/86 . 2 | cones 3 | I-7507X | |
| 75/87 | 480 V SWGR RM Exhaust | Fax I-7507X | |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0373

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

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| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. |
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| F-7503. | | I-75'07X | |
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| Tea | TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0385

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22-4338 DATE REVIEWER NAME 8-5-83 A HED TITLE Control Elevations ITEMS INVOLVED 8. INSTRUMENT LOCATION ITEM TYPE NOMENCLATURE DATA FILE NO. PHOTO NO. see a Hacked sheets C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) all instruments lised on the attached 22 sheets of survey Checklist number CRS-11 are either too high or too Low on panels I -7507x I-09 I-10, I-13, I-14 and I-15 D. LIST THE PROCESURES OR OPERATIONS THAT USE THE LISTED ITEMS IN AMANNER TO INDUCE THE OPERATOR ERROR

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| | awe The contrals are hand switched 4". The existing discrepancy is not action required CN-1883 WH 41/86 I-7507X CONTROLS & INDICATIONS, RED-CRL-1. Radio 22 April 86 ON 1894 T-10 instruments to remain at proceed required CN-1895 WCH & TEAM ACTION TEAM MEMBER SIGNATURE | ELOCATER ON I-7507X ELOCATER ON I-7507X ESANT JOEATIONS - 11 CONCURRENCE OR | re above rther rea further rtany |
| RI | awe The contrals are hand switched. 34". The existing discrepancy is not action required CN-1881 WHI 41/86 I-7507X CONTROLS & INDICATIONS, REDO-CRL-1. Ride 22 APRILAG ON 1894 T-10 instruments to remain at proceed chier required CN-1895 WCH STEAM ACTION TEAM MEMBER SIGNATURE | ELOCATER ON I-7507X ELOCATER ON I-7507X ESANT JOEATIONS - 11 CONCURRENCE OR | re above rther rea further rtany |
| - RI | The existing discrepancy is not action required CN-1883 WEN 41/86 I-7507X CONTROLS & INDICATIONS, RED-CRL-1. Ride 22 April 86 ON 1894 T-10 instruments to remain at proceed and required CN-1895 WCH STEAM ACTION TEAM MEMBER SIGNATURE THE COORDINATOR | ELOCATER ON I-7507X ELOCATER ON I-7507X ESANT JOEATIONS - 11 CONCURRENCE OR | per further |



CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

| File | # | 048 | |
|------|---|-----|--|
| | | | |

CRS - 11

Sheet / of 22

PRINCIPLE:

3.2.2.5 Controls should be located so they are reachable and accessible.

| SEQ. | PANEL | Record Instr. Numbers | Dist. if No | Are there controls located below a Panel Elevation of 70"? | | Are the controls located above a Panel Elevation of 34"? | | REMARKS |
|------|--------------|-----------------------------|-------------------|--|----------|--|----------------------|----------|
| | | if NO | | YES | NO | YES | NO | |
| | | | | AS-10 | HED# | AS-9 | HED# | |
| | | | | | | | NO | 0(.1) |
| | I-09 | | | | HEI | HED# 0385 | SEE SURVEY CHECKLIST | |
| | | | | | NO | | | |
| | I-7507X | | | | HED 0385 | | | |
| | | | | | | | NO | |
| | I-7507 X | | | | | | HEO #03.85 | |
| | | | | | | | 1,00 | |
| | I-/3 | | | | | | 1 | |
| | | | | | NO | | | |
| | I-13 | | | | HED#0385 | | | |
| | | | | | | | NO | |
| | I-14 | | | | | | HED# 0385 | |
| | | | | | | | 1 20 | |
| | I-10 | | | | | | V | |
| | | | | | 000 | | | |
| | I-10 | | | | HED#0385 | | | |
| | | | | | | | NO | * |
| | I-15 | | | | | | NED#0385 | |
| | I-49 + I-498 | | | · | | yes | | |



CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

| File # | 0 | 49 | |
|--------|---|-------|----|
| Sheet | 2 | _ of_ | 22 |

CRS - 11

PRINCIPLE:

3.2.2.5 Controls should be located so they are reachable and accessible.

| SEQ. | PANEL | Record Instr. Numbers | Dist. if No | Are there controls located below a Panel Elevation of 70"? | | Are the controls located above a Panel Elevation of 34"? | | REMARKS | |
|------|---------|-----------------------------------|-------------------|--|------------------|--|----------|------------------|--|
| | | if NO · | | YES | NO | YES | NO | | |
| | | | | AS-10 | HED# | AS-9 | HED# | | |
| | 0 | BUS SELECTOR SUITCH | | | | | NO | | |
| | I-09 | | 24* | | | | HED#0385 | NO INSTR. NUMBE | |
| | I-09 | BUS SELECTOR SWITCH | 24" | | | | I NO | | |
| | I-09 | BUS SELECTOR | 24" | | | | NO | - | |
| | 1-09 | HS-7378-11 THRU. HS-7378-20 | 323/4 | | | | NO | | |
| | I-09 | (WELD) RECLOSURE | | | | | ,00 | NO INSTR. NUMBER | |
| | I-09 | (PRPA) RECLOSURE | | | | | NO | - 1 | |
| | T-09 | (LOOKOUT) RECLUSURE | " | | | | 20 | | |
| | 1-09 | (PAWNEE) RECLOSURE | 2934 | | | | NO | | |
| | Z-09 | (SMOKY HILL) RECLOSURE | | | | | 100 | 1 | |
| | I-7507X | HS-75202 | 71/2 | | NO HED = 0385 | | | | |



CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

| File | # | 050 | |
|------|---|-----------------------------------|---|
| | | THE RESERVE AND PERSONS ASSESSED. | - |

CRS - 11

Sheet _ 3 _ of _ 22

PRINCIPLE:

3.2.2.5 Controls should be located so they are reachable and accessible.

| SEQ. | PANEL | Record Instr. Numbers | Dist. if No | Are there controls located below a Panel Elevation of 70"? | | Are the controls located above a Panel Elevation of 34"? | | REMARKS |
|------|----------|-----------------------------|-------------------|--|------------|--|------------|------------------|
| | | if NO · | | YES AS-10 | NO HED# | YES AS-9 | NO HED# | |
| | | | 712 | | NO. | | | |
| | I-7507X | HS-75203 | 112 | | HED # 0385 | | NO | |
| | I-7507X | HS-75161 | 3334 | | | | HED #0385 | |
| | I- 7507X | TEST PASH-BUTTON | 297/8 | | | | 100 | NO INSTR. NUMBER |
| | I-7507X | | 303/4 | | | | 100 | |
| 4 | I-7507X | HS-75186 | 303/16 | | | | NO | |
| | I-7507X | SILENCE PUIN-BUTTON | 30" | | | | NO | NO INSTR. NUMBER |
| | I-13 | HR-4601 | 171/8 | | | | NO | |
| | I-13 | HR-4602 | 17% | | | | NO | |
| | I-13 | H5-11260 | 27% | | | | NO | |
| | I-13 | HS-11264 | v | | | | NO | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0459

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| The same of | Eisen/Ston/Hor | lues | 9/23/83 |
|--|--|-------------|-------------------------|
| HED TITLE AL | um Tile legen | P. | |
| | 0 | | |
| | ITEMS INVO | LVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. |
| XC-48153P | Fire Control alam | Pul C.R | |
| I-7507X | | | |
| | SEE HED-6 | 0478 | |
| * 1 to 1 t | 7. A 4000 A 400 | | |
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| PROBLEM DESCRIPTION | S (GUIDELINES VIOLATED) | | |
| PROBLEM DESCRIPTION | Marking are | temporary - | Dyuno lap |
| PROBLEM DESCRIPTION | marking are | | |
| PROBLEM DESCRIPTION | marking are | HED 0478) | |
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| Claure LIST THE PROCESS ASS | marking are | HED 0478) | |
| Claure LIST THE PROCESS ASS | Marking are See | HED 0478) | |
| Claure LIST THE PROCESS ASS | Marking are See | HED 0478) | |
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| Clause LIST THE PROCESS ASS | Marking are See | HED 0478) | |
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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | | |
| CLASSIFICATION | | |
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| 00 7 0 | 1 9 000 | 2. |
| Change to Permonent | vigend pres | |
| | | |
| DD-APL-1 Steel in accordance | | |
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| DISPOSITION Fabel in accordance DO-APL-1 Ste 2/13/81 | | |
| DISPOSITION Fabel in accordance DD - APL-1 Apr-2/13/81 | with DD-CAB | |
| DISPOSITION Fabel in accentonice DD-APL-1 Apr-2/13/81 | | |
| DISPOSITION Fabel in accentonice DD - APL-1 April 2/13/81 TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | -1, \$ |
| DISPOSITION Fabel in accordance DD - APL-1 Apr-2/13/81 TEAM ACTION | CONCURRENCE OR | -1, \$ |
| DISPOSITION Fabel in accerdance DO - APL-1 Specification TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | -1, \$ |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 046/

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22-4228 REVIEWER NAME 9/23/83 B. ITEMS INVOLVED INSTRUMENT ITEM TYPE NOMENCLATURE LOCATION DATA FILE NO. PHOTO NO. I-7507X-3-4 F-7901 Nightemp SEE HED-0478 C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) Legend is not descriptione enough D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE CUERATOR ERROR

| Confusion factor in execute action - Require Outside investigate and manual delugh system in event of Operator interview with star & lack of understanding as I LIST THE CONSEQUENCES OF OPERATOR ERROR CLASJIFICATION | True. The solution of the sol | |
|---|--|--------|
| Operato intermine with story of last of understanding on the last of understanding on the list the consequences of operator error CLASSIFICATION | True. The solution of the sol | |
| Operato intermine with story of last of understanding on the last of understanding on the list the consequences of operator error CLASSIFICATION | True. The solution of the sol | |
| Operato intermine with story of last of understanding on the last of understanding on the list the consequences of operator error CLASSIFICATION | True. The solution of the sol | |
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| CLASSIFICATION | % : | |
| CORRECTIVE ACTION OPTIONS Charge legent | t : | |
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| CORRECTIVE ACTION OPTIONS Charge legent | t : ilter | |
| "T.S.C. Sitahe 7 High Temp. | iller | |
| High Temp. | rller | |
| High lemp. | | |
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| DISPOSITION Label to reflect actual | Function | |
| RELIXATE TO I-15 AMOUNT FOR ALAEM F | ANEL 100 /13 2/13/ | 186 |
| FUNCTIONAL GROUPING ON 9 MAY86 | | |
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| TEAM ACTION | CONCURRENCE OR | DAZE |
| TEAM MEMBER SIGNATURE | NON-CONCURRENCE | DATE |
| n Manager | | |
| DR Coordinator | | |
| nan Factors Spec. | | |
| | | |

FORT ST. VRAIN NUCLEAR GENERATING STATION ... Log Number 0478

HUMAN ENGINEERING DISCREPANCY EVALUATION SEE HED 0316

| | and | marking | Controls Lay | 459,461, \$ | 316 2 |
|-------------------------|----------------|--------------------|--|---------------|--------------------|
| 8. | | | ITEMS INVOLV | ED \$ 0740 | , |
| ITE | M TYPE | Ar ra | OMENCIATURE | LOCATION | DATA FILE NO. |
| alas | P.B. | | Control Butters | I-cl | |
| | 1 | 1 | | I-02 | A-70 |
| | | | | I-03 | D-77 |
| | | | | I-05 | A-25, 442 |
| | | | | Z:06 | 7-88 |
| | Mill mark | S. Carrie | | Z-09 | |
| | 5 15 | | ** | I-13 | Salar Age I for a |
| | 4 | 1 | V V | 4C-45133P | |
| 130 1 | Buttons ; | Bration for 2nd | alun ponel | on I-7507X au | I not functionally |
| (4) e (5) e (6) a | Law PRODUCTION | SOR OPERAT | ONS THAT USE THE UCE THE OPERATOR ERRO | R | equip, cont |

| E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT F | ROM HED | |
|--|--------------------------------|--|
| 1) (4) Confusion in silvaning and a | sterowledging day | - |
| 5 Failure execute pro | in class to | |
| (3) Clearly actionsting | Tiele la micha | alionally |
| (7) Parel in the Townston | limition to calo | 0.1. |
| (4) (b) actual exemples (7) Confusion in l'interpreting | process of the | 1 |
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| F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| actuating in tryping crising in steam on I as. | tid equipment i | nadveilently |
| i. e. water and or steam | n turbine PPS L | rip 1 |
| inputs on I-05. | | |
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| G. CLASSIFICATION | | |
| H. CORRECTIVE ACTION OPTIONS (1) Change all | Claren Rittarata cat. | a love Klank |
| (2) Establish & apply a consistent | | |
| (3) forate alarm Control P. Bo C | mustantly (4) | tot d |
| Silene Rushbuttons with alar | weether assess | 7-2577X |
| (5) Establish & apply consistent | Test seawners | TIOTA |
| (6) After consistently locating of groups | | domarata |
| These grows of land, Robert ton | la colo (8) Bonido | 200 2000 |
| These groups. (1) lipply begind tag es | P. Bon the east es | dof I-06 |
| T-01 T-02 T-03 T-05 I-06 and I-13 | annunciator control | awitch |
| I-01, I-02, I-03, I-05, I-06 and I-13 operators changed to conform to DD | 1-SWI-1 per CN-1879. | I-01, I-02, |
| 1-03. I-05 and I-06 annunciator contr | 4 | y labeled |
| 7 | 1 1 1 - 1 5 | 9/85 |
| Y 45153 De Contra Fortis | til si it la so to | 00 1 - 06 - 0 |
| + a - / + > 00 | 0 = 0 0 0 0 0 0 | CN 1924 8 4.11 0 |
| I-7507X SWITCHES TO BE CHARGED FUNCTIONING | Server PER DO-SWI-1 ON CA | 11894 RUBAN 41 |
| TEAM ACT | | ion was |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR NON CONCURRENCE | DATE |
| Team Manager | | The state of the s |
| CRDR Coordinator | | |
| Human Factors Spec. | | THE STATE OF |
| Senior Reactor Operator | | |
| Senior reactor Operator | | |
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PANEL I-7507X BETA ALARM WINDOW BOX Dymo HORN SIL RESET ACK Centered Between alaims Butters de not However Buttons Conform to DD-SWI-1 onlower alaim Bix W/ Tan INDIVIQUAL ALARM CUBICLES Harm assy winds Buttons are remote blank 14 "LETTERS TEST 4" Letters SILENCE



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0648

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| REVIEWER NAME | 163 | | DATE |
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| DE KELEMEN | P P | | 2/27/84 |
| A HED TITLE INSTRU | MENT SCALING | | |
| | | | |
| 3. | ITEMS IN | VOLVED | - |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
| TI-75191: IN | DIGATING METER DISPLAY | I-7507 X | |
| FI-2205 | 1 | I-49 | |
| FI-2206 . | | 1 | |
| LI-3/92-2 ' | 1 | I-49 | |
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| NUMERALS ON E | SOTH ENDS (REF. CRS | -46). | |
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| D. LIST THE PROCESURES | OR OPERATIONS THAT USE THE | and the second | |
| LISTED ITEMS IN A MAN | INER TO INDUCE THE OPERATOR | ERROR | |
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| THE THE CONTROL FLORE OF ORE | CRATOR ERROR | |
| LIST THE CONSEQUENCES OF OPE | ERATOR ERROR | |
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| CORRECTIVE ACTION OPTIONS | | |
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| Descrit Per | DD AIS-1 and CW-1894 PAD 22 March 80 | 5 |
| DISPOSITION RESCALE PER | DD-A15-1 ON CN-1894, RXX 22 MARIL 80 | 5 |
| DISPOSITION RESCALE PER | DD-A15-1 ON CW-1894, RXX 22 MARCIL 80 | 5 |
| DISPOSITION RESCALE PER | DD-A15-1 ON CW-1894, RXX 22 MARCIL 80 | 5 |
| DISPOSITION RESCALE PER | DD-A15-1 ON CN-1894, RAS 22 MARIL 80 | 6 |
| DISPOSITION RESCALE PER | DD.A15-1 ON CN-1894, RXX 22MARIL 80 | 5 |
| DISPOSITION RESCALE PER | DD. AIS-1 ON CW-1894, RXX 22 MARIL 80 | 5 |
| DISPOSITION RESCALE PER | | 5 |
| | TEAM ACTION CONCURRENCE OR | DATE |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 069/

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

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|-------------------------|---|-----------|--|
| HED TITLE | AINTENNIE MEMOUS - | | 450+ |
| | ITEMS IN | VOLVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
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| CORRECTIVE ACTION OPTIONS | | | |
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| is not otherwise de | deissioned Bull i | eplecement and a | æ |
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| are roulinesse del | they and replaced. | moure course | |
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| are aring replaced or | all boards wir | the ligeral conducato | ox pase |
| are a test pating | all boards with team action | | ox pure |
| are a test pating | | CONCURRENCE OR | |
| Ane a test pating TEAM MEMBER | | CONCURRENCE OR | X 60 30 April 10 |
| eam Manager | | CONCURRENCE OR | X 60 30 April 10 |
| eam Manager RDR Coordinator | | CONCURRENCE OR | X 60 30 April 10 |
| | | CONCURRENCE OR | 7 10 April 10 |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 077/

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

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|----------------------------|--|-------------------|------------------------------|
| A HED TITLE LAUDIN | - Functional | | and the second second second |
| | 2 | | |
| 8. | ITEMS INV | OLVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. |
| HS-75ZUZ | | I7507X | |
| HS-75203 | | ITSOTX | |
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| | | | |
| C. PROBLEM DESCRIPTIONS | (GUIDELINES VIOLATED) | nctional Labeling | is deficient |
| | | | |
| D. LIST THE PROBLEMENTS OF | R OPERATIONS THAT USE THE ER TO INDUCE THE OPERATOR E | RROR | * |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0814

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| REVIEWER HAMER | + - | | DATE |
|-------------------------|--|-----------------|---------------|
| | et Team | - 11 | 4/4/84 |
| A HED TITLE Question | ment - undicating I | ight convertion | |
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| 8. | ITEMS INV | OLVED | r |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NG. |
| HS 7549 . | | INT 1507H | NA |
| HS 7547 . | | | 4/4 |
| HS 7548 . | | | N/A |
| HS 75161. | | | N/R |
| HS 75184 | | | N/3 |
| HS 75187 | | 1 | NIA |
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| convention | S (GUIDELINES VIOLATED) | year on his | follow |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 3815

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| ADAGA | nent Team | | | 4/4/84 |
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| A HED TITLE Lalel | | | | |
| в. | ITEMS INV | OLVED | | |
| ITEM TYPE | NOMENCLATURE | Loc | ATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
| HS-75184 · | | 10d | I-7507X | N/A |
| 45-75186 | | 109 | I-7507X | N/A |
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| insufficient | S (GUIDELINES VIOLATED) | | | 7 |
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| D. LIST THE PROCEDURES O | OR OPERATIONS THAT USE THE NER TO INDUCE THE OPERATOR E | RROR | | |
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| 1.49-1.1 | | | | |
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| | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT F | ROM HED | |
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| F. | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | CLASSIFICATION | | |
| H. | CORRECTIVE ACTION OPTIONS | | |
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| | | | D.J I SMAYS |
| l. | DISPOSITION PELAGE PER DD-LAG-1 TO | SMEN ACTUAL FUNCTION | AT 0 1899 |
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| CRC | TEAM ACT TEAM MEMBER SIGNATURE In Manager OR Coordinator | CONCURRENCE OR | DATE |
| CRC | TEAM ACT TEAM MEMBER SIGNATURE n Manager | CONCURRENCE OR | DATE |
| CRC | TEAM ACT TEAM MEMBER SIGNATURE In Manager OR Coordinator | CONCURRENCE OR | DATE |

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PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0840

HUICAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| 1 | A HED TITLE Labeling Instrument | | | | | | | |
|-------------------------|--|--|---|---|--|--|--|--|
| - | - acronym | | | | | | | |
| | B: | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. | | | | |
| | HS-75203. | Frie turb Bld | I-7507X | none | | | | |
| 2 | | 24 | 7-7507 X | ume | | | | |
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| | | Ref 45-75203 | E1203 | PZSZ | | | | |
| | | 45-75 202 | E1503 | P1323, 135 | | | | |
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| The same of the same of | | ONS (GUIDELINES VIOLATED) DHS | | | | | | |
| | Swith Lune | tin is: Bypass PS- | 1593× sunt | al ii | | | | |
| | Swith fune C-7525 | Control Circuit . | 280 Bld a | of in | | | | |
| | Switch func C-7525 acceptable babel is 20 | Control circuit. abbuniation Bu Is n descript. Switch | 280 Bld a Culling E Byposes 7 | 1 in 1 and 1 and 1 45-75202 5-75172-2x | | | | |
| | Switch func C-7525 acceptable babel is 20 | Control circuit . abbunation Br B | 280 Bld a Culling E Byposes 7 | 1 in 1 and 1 and 1 45-75202 5-75172-2x | | | | |
| | Switch func C-7525 acceptable babel is 20 | Control circuit. Control control of Buttel | Also Blod a Culding E Byposses 7 Dompus (S | 1 in 1 and 1 and 1 45-75202 5-75172-2x | | | | |
| | Switch func C-7525 acceptable babel is 20 | Control circuit. abbuniation Bu Is n descript. Switch | Also Blod a Culding E Byposses 7 Dompus (S | 1 1 in 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | | |
| | Switch func C-7525 acceptable babel is 20 | Control circuit. Control control of Buttel | Also Blod a Culding E Byposses 7 Dompus (S | 1 in 1 am 1 H5-75202 15-75172-2x | | | | |
| | Switch func C-7525 acceptable babel is 20 | Control circuit. Control control of Buttel | Also Blod a Culding E Byposses 7 Dompus (S | 1 in 1 am 1 H5-75202 15-75172-2x | | | | |
| | Switch func C-7525 acceptable babel is 20 | Control circuit. Control control of Switch | Also Blod a Culding E Byposses 7 Dompus (S | 1 1 in 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | | |

| E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HE | ED | |
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| | | |
| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| | | |
| G. CLASSIFICATION | | |
| DISPOSITION RELABEL OPER DD- LAB-1 ON C | WIBH RELEZZAME | LAC |
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| | | |
| TEAM ACTION | CONCURRENCE OR | DATE |
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| Tearn Manager | | |
| | | |
| Team Manager CRDR Coordinator Human Factors Spec | | |
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PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

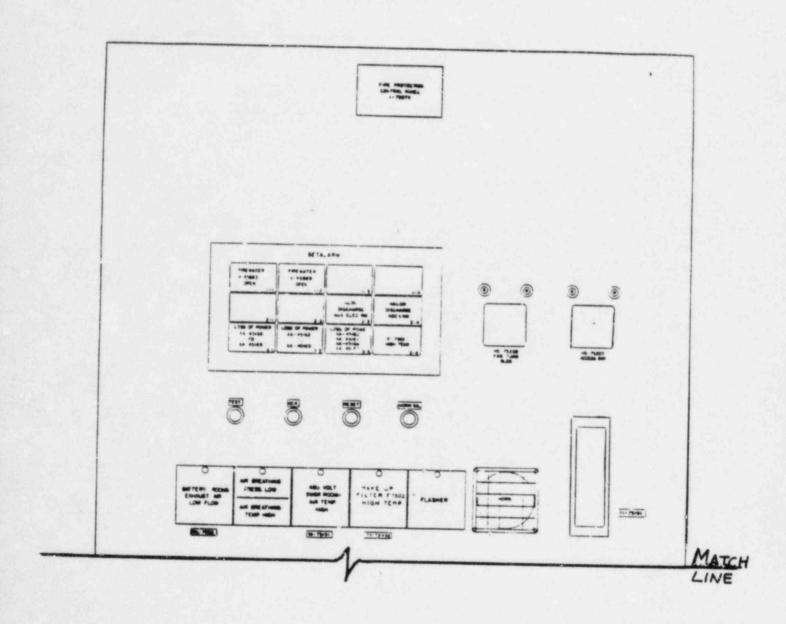
Log Number 0841

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

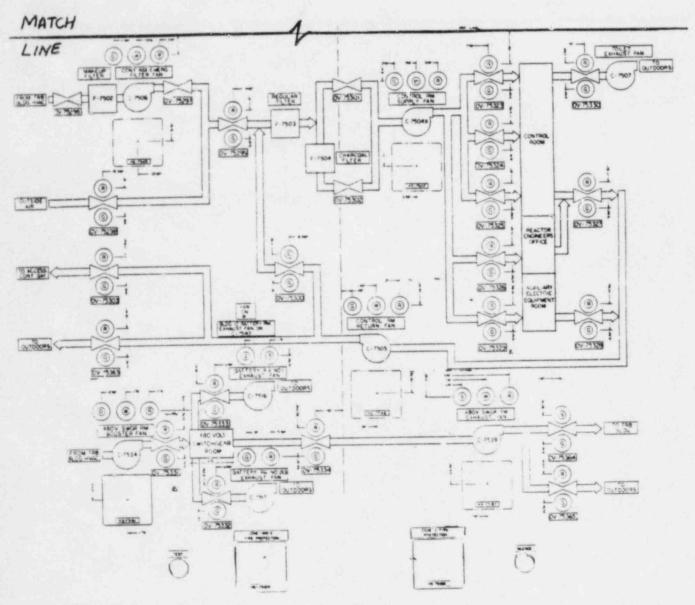
| | Glenn gustument | | 5-25-84 |
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| HED TITLE | Anel Fabeling | | |
| HED THEE | | | |
| | ITEMS INVO | LVED | *************************************** |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
| PIS | Vestilation But of | I-7507x(C.8) | wne |
| HS-7518 4 | 3 you 142 Fire Protection | I-7507X | none |
| HS-75/86 | 5 300 3 Fire Rivlection | | none |
| minie | · Reneta Engineering of | 17-7507X | Zene |
| | 110 | | * |
| | | | - |
| | Roferene | e 71-75-9 | |
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| SOORI EN DESCRI | DTIONS (CUIDELINES VIOLATED) | | |
| - | TI- 7507 Y & La Pale | led as "File ! | Protectio- |
| O fanel | I-7507X is labe | | |
| Control | I- 7507 x is labe Cabinet" This is | moveet. Co | utul |
| Control on Pane | I-7507X is labe Cabinet" This is I affect contilation | - (exhaust - | sepply |
| Control on Pane air) | I-7507X is labe labined" This is I affect translitates and isn't necessar | - (exhaust - | sepply |
| Control on Pane | I-7507X is labe labined" This is I affect translitates and isn't necessar | - (exhaust - | sepply |
| Control con Pane air) funial LIST THE PROPERTY | I-7507X is labe Cabinet "This is I affect translitation and isn't necessarions. URES OR OPERATIONS THAT USE THE | exclused. Co. | sepply tection |
| Control con Pane air) funial LIST THE PROPERTY | I-7507X is labe Cabinet "This is I affect translitation and isn't necessarions. URES OR OPERATIONS THAT USE THE | exclused. Co. | sepply tection |
| Control Control on Pane air) funial LIST THE PROPERO LISTED ITEM 188 | Cabinet This is laber and cont mecessarions. URES OR OPERATIONS THAT USE THE MANNER TO INDUCE THE OPERATOR ERES 25/84/6 Pabelod as in fact these Switches | exclused. Co. | sepply tection |
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| Control Control On Pane air) funial LIST THE PHOTOD LISTED ITERIOR When HUAC | Cabinet This is laber and cont mecessarions. URES OR OPERATIONS THAT USE THE MANNER TO INDUCE THE OPERATOR ERES 25/84/6 Pabelod as in fact these Switches | exclused. Co. ily a tree gra ily a tree gra on Frie Rote control 3 room | styply testion the Congress |

| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
|--|-------------------------------------|-------|
| | | |
| CLASSIFICATION | of Hiller Son Team | , |
| CORRECTIVE ACTION OPTIONS 3 Rm Cont Comple D Lobel as 3 Rm Complex Bontils D Label appropriate to function B Label as record from a other | tion System or at | title |
| SHA PROPERTY CONS | | |
| DISPOSITION RELABELA PER DD- LAB-1 ON RECASEL MINIC TO TO ACTUAL | CNIB94 PXH 22 FUNTION PER DOLORS | |
| | | |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR | DATE |
| m Manager | NON-CONCURRENCE | DATE |
| DR Coordinator | | |
| man Factors Spec. | 7. | |
| nior Reactor Operator | | |
| | | |

ATTACHMENT B (Page 1 of 2)
Section of Elevation
Drawing Showing Existing
Configuration of I-7507X



ATTACHMENT B (Page 2 of 2)
Section of Elevation
Drawing Showing Existing
Configuration of I-7507X



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ATTACHMENT C

SAMPLE COPIES

OF

OPERATOR INTERVIEWS

FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number_083

| USESTIONS: L.SINCE THE 480 V. SWER RM HVAC IS A RELATED SPACE ON PANEL DOES PERSONNE THIS SYSTEMS MADE LINE IN THE THE MUSIC LINES FOR THE 3-ROOM COMPLEX ADEQUATE? TO PROPOSED TO DELETE / AMMINIATION AS SHOWN AND A SESSIONS (Include Respondent's Name) L. "No Problem Deleting 480 V Rm Music Lines" "WE ONLY NEED STATUS LIGHTS FOR Dampers | 1203 THE SIMME SYSTEMS AND SHOPE ARE LEGENDS AND | P & I NO. |
|--|--|------------|
| ITEMS INVOLVED ITEM LOC. DESCRIPTION E. 1.7507X UESTIONS: L.SINCE THE 480 V. SWER RM HVAC IS A READ SPACE ON PANEL DOES REMINING THIS SYSTEMS MUSIC LINE IN A READ LEMANNING FOR THE 3-ROOM COMPLEX ADEQUATE? 1. 12 PROPOSED TO DELETE / RAMINICATION AS SHOWN AND IN ESPONSES (Include Respondent'S Name) L. "No Problem Deleting 480 V Rm MUNIC LINES" WE ONLY NEED STRTUS LIGHTS FOR DAMPERS | 1203 THE SIMPLE | P & I NO. |
| LOC. DESCRIPTION TOTSOTX UNESTIONS: L'SINCE THE 480 V. SWAR RM HVAC IS A RELATE SPACE ON PANEL DOES PROGRAMS THIS SYSTEMS MADE LINE ALMAINING FOR THE AMERICANA FOR THE 3-ROOM COMPLEY ADEQUATE? TO PROPOSED TO DELETE / AMERICATION AS SHOWN AND IN ESPONSES (Include Respondent'S Name) L. "No Problem Deleting 480 V Rm Municipation WE ONLY NEED STATUS LIGHTS FOR DEMPERS | RESENT ANY F | Programs ? |
| LISOTX Destions: LSINCE THE 480 V. SWAR RM HVAC IS A RELATE SPACE ON PANEL DOES PEMERONS THIS SYSTEMS MADE LINE LEMANNING FOR THE 3-ROOM COMPLEX ADEQUATE? LIS PROPOSED TO DELETE / AMMINIATION AS SHOWN AND A ESPONSES (Include Respondent'S Name) L. "No Problem Deleting 480 V Rm Munic Lines" "WE ONLY NEED STATUS LIGHTS FOR Dampers | RESENT ANY F | Programs ? |
| SPACE ON PANEL DOES PERSONNE THIS SYSTEMS MADE LINE STATES ADEQUATE? TO PROPOSED TO DELETE / RAMPHILATIONE AS SHOWN AND ASSOCIATION AS SHOWN AND ASSOCIATION AS SHOWN AND ASSOCIATION OF PROPOSED IN PROPOSED TO PROPOSED TO DELETING ABOV RM MUNICIPALITY OF THE STATES ASSOCIATED STATUS AIGHTS FOR DAMPERS | AKE LEGENDS AND | Prosens? |
| SPACE ON PANEL DOES PERSONNE THIS SYSTEMS MADE LINE I NEW THE MUNIC LINES FOR THE 3-ROOM COMPLEX ADEQUATE? TO PROPOSED TO DELOTE / AMPLICATION AS SHOWN AND I SESPONSES (Include Respondent'S Name) L. "No Problem Deleting 480 V Rm MUNIC LINES" "WE ONLY NEED STATUS LIGHTS FOR Dampers | AKE LEGENDS AND | Prosens? |
| HOWE SHOWN "(KEN EINIG) | & BXHAUST FA | NS AS YOU |
| (BOD KEVAN & KEN EINIG) (INTERVIEWER - "DO YOU NEED | | |
| "THE OTHER LIGHTS (MINILIGHTS AT THE SWITCHE | | |
| WE NEED TO SEE THEN FORM ACCOSS THE R | em" (KEN ! | EINIG) |
| YES, THE OLD LEGENES WEREN'T ANY GOOD (| Bos & Ken |) |
| rovide Conclusion on separate or final sheep. | | |

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PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 083

INVESTIGATIVE INFORMATIONAL RECORD

| LOC. DESCRIPTION I-7507X LOC. DESCRIPTION I-7507X LUCSTON LAY OUT? LAY OUT? LESPONSES (Include Respondent's Name) A. OTHER THAN THE STATE PROBLEM (Bos KEUAN & KE | TEMS INVOLVED | E-1203 RITICISMS | |
|--|---------------|-------------------|------------|
| LAY OUT? esponses (Include Respondent's Name) A OTHER THAN THE STATE | MENTS OR C | RITICISMS | ON I-7507X |
| LAY OUT? esponses (Include Respondent's Name) A OTHER THAN THE STATE | MENTS OR C | RITICISMS | ON I-7507X |
| LAY OUT? esponses (Include Respondent's Name) OTHER THAN THE STATE | 45 416475 1 | RITICISMS | ON I-7507X |
| LAY OUT? Esponses (Include Respondent's Name) OTHER THAN THE STATE | US 416475 1 | | |
| esponses (Include Respondent's Name)_ OTHER THAN THE STATE | US 416475 1 | | |
| sponses (Include Respondent's Name)_ OTHER THAN THE STATE | US 416475 1 | | |
| sponses (Include Respondent's Name)_ OTHER THAN THE STATE | US 416H75 1 | T LOOKS | FINE, NO |
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| OTHER THAN THE STATE | US 416H75 1 | TLOOKS | FINE, NO |
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| PROBLEM (BOD KEUAN & KE | (ENIG) | | |
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| ovide Constusion on servere on Stan | / | | |
| ovide Conclusion on separate or | NIMERI I | | 7 April 86 |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 083

INVESTIGATIVE INFORMATIONAL RECORD

Sht 3 of 4

| Investigator' | s Name . Bet | GORNEAULT | | H APRIL 86 |
|-----------------|--------------|----------------------|-------------------|-------------------|
| Problem Descr | 1pt1on: | PROPOSED LAYOUT | I- 7507 PANE | L |
| | | | | |
| | | ITEMS IN | OLVED | |
| ITEM | LOC. | DESCRIPTION | E-1203 | P&I NO. |
| | I-7507× | | | |
| Questions: 1. I | ess Removie | y the V swee Rn | MIMIC LINE POSSEN | T A PROBLEM ? |
| | | Room MIMIC LINES A | | |
| 3. Is THE | VEW ANNU | ALCIATOR LAYOUT CO | MOINE 2 INTO 1) | ACCEPTABLE? |
| 4. GENERAL | COMMITS | ON NEW PANEL | LAYOUT? | |
| Responses (Inc | lude Respond | dent's Name) | | |
| | | Ilmics . (D.E. Joi | | |
| 2. Yes | YOU'RE NO | GETTING RID OF | TRIP LIGHTS | ON FANS ? "(NO" |
| INTERVIEW | VER) G | ODD! (DE. JOHN | saw) | |
| 3. CNODS H | END YES) | (D.E. JOHNSON) | | |
| 6. O.K. | I'DLIKE ! | TO KEEP MUNKS, | TO BAD ORIGIN | VAL LAYOUT WASN'T |
| ANY GOOD | , IT'S A | FAIRLY NEW PANEL | HASN'T BEEN | N THAT LONG" |
| D.E. | JANNSON) |) | | |
| | | | | |
| | | | | |
| | | | | |
| Descrite Court | | | | |
| rrovide Conclu | sion on sepa | rate or final sheet. | of the | |
| | | investigator | s Signature | 11 April 86 |

CONCLUSION :

LAYOUT WILL BE KEPT AS PROPOSED EXCEPT LEGEND
LIGHTS WILL BE ADOED ABOVE SYMBOLS FOR ; RETURN, SUPPLY,
& MAKE UP FILTER FANS.

Charles &

G STATION

Log Number 084

NAL RECORD

| | POBLIC | 3 5 | HAIC | E COM | TO IN T | 0 |
|----|--------|-----|--------|---------|----------|-----|
| 1 | FORT | ST | VRAIN | NUCLEAR | GENERA | TIN |
| V) | | | INVEST | IGATIVE | II:50RMA | TID |

| | Name R.L. | GORNEAULT | | ZA APPIL 86 |
|---|-------------|--|--------------------|------------------|
| Problem Descr | fptfon: | PROPOSED LAYOUT | FOR I-7507X | |
| | | | | |
| | | ITEMS INV | OLVED | |
| ITEM | LOC. | DESCRIPTION | E-1203 | P & I NO. |
| | I-7507X | | | |
| uestions: 1. I | S THIS NEW | LAYOUT FOR I-7507X AC | CEPTASLE? | |
| BECAUSE O | F SPACE LA | THE TIME S I PROPOSE | ROWING 1800 | Pm mmics, 15 TH |
| PROBLEM | 2 | | | |
| | | 5 INDICATORS FROM I | | |
| esponses (Inc | lude Respon | dent's Name) 1. OTHERT | HAN A FEW CHANGE | THE MIMICS ARE |
| ASICALLY TH | E SAME, G | pap" (FONY VIGIL) | | |
| | (72 n | BECAUSE OF THE | | |
| -00K3 G000 | 10m DIC | , | MODULATING DAMP | ES I HOULD LAN |
| 00K3 G000 | MP TEST L | PUTTON" (TOM DICE) | EXISTING BATT. R. | LASTES ARE WRONE |
| TO SEE A LA | ONY VIGIL | OTTON" (TOM DICE) | "EXISTING BATT. RE | LASTIS ARE WRONG |
| TO SEE A LA | ONY VIGIL | OTTON" (TOM DICE) | "EXISTING BATT. RE | LASTIS ARE WRONE |
| TO SEE A LA | ONY VIGIL | OTTON" (TOM DICE) | "EXISTING BATT. RE | LASTIS ARE WRONE |
| TO SEE A LA | ONY VIGIL | RUTTON" (TOM DIKE) | "EXISTING BATT. RE | LASTIS ARE WRONE |
| TO SEE A LA | ONY VIGIL | OTTON" (TOM DICE) | "EXISTING BATT. RE | LASTIS ARE WRONG |
| TO SEE A LA | ONY VIGIL | OTTON" (TOM DICE) | "EXISTING BATT. RE | LASTIS ARE WRONG |
| TO SEE A LA | ONY VIGIL | OTTON" (TOM DICE) | "EXISTING BATT. RE | LASTIS ARE WRONE |
| TO SEE A LA | ONY VIGIL | OTTON" (TOM DICE) | "EXISTING BATT. RE | LASTIS ARE WRONG |
| Gaan Io | TONY VIGIL | PUTTON" (TOM DIKE,) "IT LOOKS FINE IT HELPS YOU DON (GIL) YES, IT LOOK | "EXISTING BATT. RE | LASTIS ARE WRONG |
| TO SEE A LA E, NO; (7 Gaan Io ANYMARE" | TONY VIGIL | OTTON" (TOM DICE) | "EXISTING BATT. RE | LASTIS ART WRONG |

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PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 084

INVESTIGATIVE INFORMATIONAL RECORD

| | PI | GORNEAULT | | OATE 20 Ac - A |
|--|-------------|-----------------------|-----------------|--|
| 1 0 | | PROPOSED LAYOUT | G- T-7500 | 29 APRIL8 |
| roo lem Descr | iption: | KUPUSED LATOUT | PAR 1-1307) | |
| | | | | |
| | | | | |
| | | ITEMS INV | DLVED | |
| ITEM | LOC. | DESCRIPTION | E-1203 | P&I NO. |
| | 1-7507 | (| | 1 CALLES |
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| sponses (Inc | lude Respon | dent's Name) 4. "IL | KÉ THATIDEA (DA | PREC JAMARGA) |
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| The state of the s | | THE STATUS RUN | LIGHTS WILL HE | עף דסם לנסידונים |
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| T. "No" (| ALL) | To the House | | |
| T. "No" (| ALL) | | | |
| T. "No" (| ALL) | | | |
| 5. "No" (| ALL) | | | |
| 5. 'No" (| ALL) | | | |
| 5. 'No" (| ALL) | | | |
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| 5. 'No" (| ALL) | | | |
| | | arate or final sheet. | | |

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PUBLIC SE VICE COMPANY CF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 084

INVESTIGATIVE INFORMATIONAL RECORD

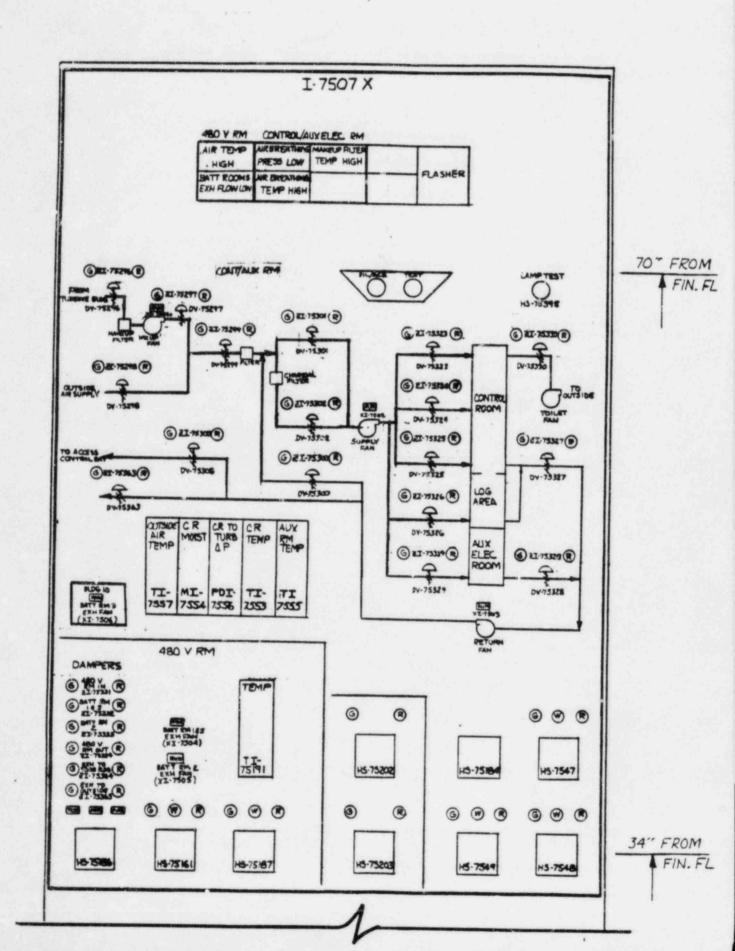
sht 3 of 4

| STREET, SQUARE, SQUARE | Rame R | L. GORNEAUT | | 29 April 85 |
|--|-------------|------------------------|---------------------|---------------------|
| roblem Descri | lption: | T-7507X PROPOSE | D LAYOUT | |
| | | | | |
| | | TEMS INV | OLVED | |
| ITEM | LOC. | DESCRIPTION | E-1203 | P&I NO. |
| | 7-7507X | | | |
| | | BEEN SOME DISCUSSION P | | |
| | | IT IS FOR MANTENAN | | |
| | | | | TOSC MAKING IT FEA |
| | | IT IN THE CONTROL | | |
| . HAVE YOU | FUER HAD A | MY NEED OR CHUSE A | SE CONTEOL RM. CHAR | COOL FILTER HIGHTEM |
| esponses (Inc | lude Respon | dent's Name) 6. No | UN NEED FOR IT | IN CONTRACT DOOR" |
| | | 15 GOOD " (DARR | | |
| | | | C VOHNSON) | |
| 100, | NO KEASO | N FOR IT." (ALL) | | |
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| rovide Conclu | ston on sep | arate or finallysheet. | | |

Conclusions:

- 1. LAYOUT IS ACCEPTABLE AS PROPOSED
- 2. A LAMP TEST BUTTON WILL BE APPED FOR DAMPER POSITION INDICATORS
- 3. FILTER HOUR METERS SHOULD BE LOCAL, NOT IN CONTROL ROOM
- 4. THERE IS NO NEED FOR HIGH TEMP ALARMS ON CONTROL ROOM CHARCOAL FILTERS

Fort Sommet 29 April 25



ATTACHMENT E

SUMMARY OF PROPOSED CHANGES TO I-7507X CONTROL BOARD

- 1. Relocates: to other boards.
 - Relocate Betalarm Annunciator Panel and associated pushbuttons to XC-45153P, Fire Alarm Panel.
 - Relocate F-7901 High Temperature Alarm to I-15 Alarm panel.

2. Additions:

- Indicators TI-7557, MI-7554, PDI-7556, TI-7553, and TI-7555 are relocated from I-15 to I-7507X.
- Position indicator lights added to mimics for DV-75301 and DV-75302 to show use of charcoal filter.
- Position indicator lights added to mimics for DV-75296 and DV-75297 to show use of make-up filter.
- Lamp test button for indicating lights.
- Summary lights for 480V Room Damper Modes.
- 3. Functionally group all controls, related indicators, and alarms.
- 4. Rescale indicators.
- 5. Revise Control/Aux Electric Rooms Mimics:
 - Damper symbols to replace valve symbols.
 - Position indicators for Dampers to follow conventions.
 - Due to additional space needed for Control/Aux Rooms Mimic, 480 V Switchgear Room Mimic will be deleted. Damper position indicators will be relocated on I-7507X to show Damper line-up.

6. Label:

- Panel, instruments, controls, and mimic layout.
- 7. Demarcate

ATTACHMENT F

SAMPLES OF LABEL LIST

(Control Panel I-7507X)

LABELING LEGEND LIST

| CONTROL BOARD # | INSTRUMENT # | STYLE | FUNCTIONAL LABEL | STYLE | HED # |
|--------------------|--------------|-----------|-----------------------|-----------|-------|
| I-7507× | | | I-7507X | 1 BLK | -84/ |
| | | | FROM TURBINE BUILDING | 6a BLK | |
| | | | OUTSIDE AIR SUPPLY | 69 BLK | |
| | | | TO ACCESS CONTROL BAY | 6a BLK | |
| | | | TO OUTSIDE | 8rK | |
| | | | TO | Ge BLK | |
| | Dr-75296 | B1K | | | 4373 |
| | ZT-75296 | 84K | | | |
| | | | MK UP FAN | 8a 8hK | |
| | Dr-75299 | BLK | | | 0356 |
| | ZI-75299 | 11 8LK | | | |
| | | | FILTER | BLK BLK | 0373 |
| | | | CHARCOAL FLTR | 8a BLK | 0373 |
| | DV-75301 | BLK | | | 0373 |
| | ZI-75301 | BLK | | | |
| | DV-75302 | BLK | | | 0373 |
| | 21-75302 | Bik | | | |
| | | | SUPPLY FAN | BLK | |
| | DV-75323 | BLK | | | 0356 |

| CONTROL BOARD # | INSTRUMENT # | STYLE | FUNCTIONAL LABEL | STYLE | HED # |
|--------------------|--------------|-----------------------|---------------------------------|----------------|------------|
| I-7507X | | | TOILET FAN | BLK | |
| lean Fe | | | RETURN FAN | 8 8 8 | |
| | DV-75303 | 11 | | | 0357 |
| | 21-75303 | GLK | | | |
| 1.4 | | | 480 V Room | BLK | |
| | | | 180 V RM IN 21-75331 | SPECIAL | 0352 |
| | | | BATT RM 185 21-75332 | Special | 0352 |
| | | | BATTRM 21-75333 | SPECIAL | 0352 |
| 15. | | | 180V Rm. out ZI-75334 | SPECIAL | 0352 |
| | | | EXH TO TURE BLDG 21-75364 | SPECE | 0352 |
| | | | EXH TO OUT 3 10E 21-75365 | SPECIAL | 0356 |
| | HS- 75186 | SWITCH PLATE | DAMPER MODE | 5 BLK | 0350,0941, |
| 1 4 | HS-75161 | ON SWITCH PLATE | BOOST FAN | - | 0358 |
| | HS-75395 | ON SMITCH PLATE | LAMP TEST | specime BLK | |
| | | | BLOG 10 | BLK | . |
| | TI- 7557 | SPECIAL | OUTSIDE TEMP | 9 BLK | 0214 |
| | MI-7559 | SPECIAL | CONT RM MOISTURE | 9 36K | |
| | PDI - 7556 | SPECIAL | CONT RM TO TURB AP | 8 k K | 0214 |
| | | | CONT/AUX RM | 3 Bex | |

| CONTROL BOARD # | INSTRUMENT # | STYLE | FUNCTIONAL LABEL | STYLE | HED # |
|--------------------|--------------|-----------|------------------|-------|-------|
| T-7507X | ZI-75323 | 11 BLK | | | |
| | Dr- 75324 | BLK | | | 0356 |
| | 21-75324 | BLK | | | |
| | DY-75325 | BLK | | | 0356 |
| | ZI-75325 | BLK | | | |
| | DV-75326 | BYK | | | 0357 |
| | ZI-75326 | BLK | | | |
| | Dr-25327 | 8LK | | | 0356 |
| | 21-75327 | FI | | | |
| 4 | DY-75328 | BLK | | | 0357 |
| | ZI-75328 | BK | | | |
| | DV-75329 | BLK | | | 0357 |
| | ZI-75329 | BLK | | | |
| | DY-75330 | BLK | | | 0356 |
| | ZI-75330 | BLK | | | |
| | DV- 75300 | BLK | | | 0355 |
| | ZI-75300 | BLK | | | |
| | ZZ-75363 | BLK | | | |
| | DV- 75363 | BLK | | | 0357 |

| CONTROL BOARD # | INSTRUMENT # | STYLE | FUNCTIONAL LABEL | STYLE | HED # |
|--------------------|--------------|------------------------|-------------------------------------|-------------------------|-----------|
| -7507X | HS -75187 | SWITCH PLATE | EXH FAN | SPECIAL BLK | 0358 |
| | HS-75202 | ON SWITCH PLATE | STACK | 5 BLK | 0353,0771 |
| | HS-75203 | SWITE PLATE | ACCESS BAY EXH FAW | 5 BLK | 0353,0771 |
| | HS 75184 | ON SWITCH PLATE | DAMPER MODE | 5 BLK | 0358,0841 |
| | H5-7547 | ON SWITCH DLATE | SUPPLY FAN | 5 BLK | 0356 |
| | HS-7548 | ON) SWITCH PLATE | RETURN FAN | 8LK | 0357 |
| | HS-7549 | ON SWITCH PLATE | MK UP FAN | 5. BUK | 0356 |
| | | | BATT Rm 185 EXH FAN (XI-7504) | SPECIAL | |
| | | | RIN | 90 K LEBEND | |
| | | | BATT Rm 2 FXH FAN (XI-7504) | SPECIAL | |
| | | | RUN | 90 K LEGEND LIGHT | |
| | | | BATT PM 3 EXH FAN (XI-7506) | SPECIAL | |
| | | | RUN | 40 K LEGEND | |
| | DY-75297 | 8LK | | | 0373 |
| | ZI-75297 | II BLK | | | |
| | DV-75298 | BLK | | | 0356 |
| | 21-75298 | BLK | | | |
| | | | MAKEUP FILTER | Ba BLK | 0373 |
| | | | DAMPERS | 4 BLK | |

| CONTROL BOARD # | INSTRUMENT # | STYLE | FUNCTIONAL LABEL | STYLE | HED # |
|--------------------|--------------|---------|------------------|----------|-------|
| | 71-7553 | SPECIAL | CONT RM TEMP | 9 OCK | 0214 |
| | 71-7555 | Special | AUX RM TEMP | BLK | 0214 |
| | 71-75191 | SPECIAL | TEMP | BCK | 0351 |
| | | | 3 RM HVAC | 2 BLK | 0841 |
| | | | | | |
| | | | | | |
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SUPPLEMENT

to

ATTACHMENT 9

ATTACHMENT 9 HEDS Having Final Dispositions Different From The Proposed Disposition Shown In Attachment B Of The Summary Report

| HED | PROBLEM CLASSIFICATION | ORIGINAL DISPOSITION | FINAL DISPOSITION | REMARKS |
|------|------------------------|----------------------|-------------------|--|
| 0354 | Labeling | Relabel | Reevaluated | Delete 480V switchgear room mimic |
| 0461 | Alarms | Relabel | Relocate | Relocate alarm to 1-15 control board for functional grouping and relabel to reflect function |
| 0691 | Instrument | None | Addition | Install lamp test button on I-7507X |

ATTACHMENT 6b-18

SUMMARY OF THE
CONTROL ROOM IMPROVEMENT
DESIGN PROCESS
AS APPLICABLE TO
I-10 CONTROL BOARD

FOREWORD - NUREG-0737 Supplement 1, Section 5.1b requires that a Control Room Design Review (CRDR) be conducted to identify human engineering discrepancies. Section 5.1c requires that these discrepancies be assessed and design improvements selected to correct these discrepancies.

Public Service Company (PSC) has conducted the required review of the Fort St. Vrain Control Room. Approximately eight hundred forty eight (848) discrepancies or classes of discrepancies were cited. These discrepancies were assessed to determine their potential for causing an operating error and the potential effect of any error. (Certain discrepancies are known to have caused errors). An improvement program has been selected which meets the regulatory requirements and proposes to improve the operability and functionality of the Control Room.

The regulatory requirement for the CRDR and the follow-on improvement program was directed toward the improved handling of emergencies and not specifically toward improved production. Public Service Company's improvement program is directed toward both normal operation and the handling of emergencies.

BACKGROUND - Public Service Company has initiated an integrated improvement program based on functionality rather than particular classifications of problems. This approach is first, one of determining functional groupings, followed by demarcating, hierarchial labeling, correcting indicator scaling, complying with established conventions (color coding, switch positions, etc.).

The following steps constituted the planning portion of the integrated improvement program.

- Elevation Drawings of each control panel were color coded to show applicable HEDs as either, relabeling, relocations, scaling, deletions, or equipment change-out. This scheme provides an overview of the problems documented on each control board.
- All HEDs involving alarm locations, and multipoint alarms were reviewed. System function and operator response were considered in grouping, deleting and adding alarms. Paste-ups of all alarm panels were completed to show proposed rearrangements.
- Functional grouping of controls and indications was approached by first preparing point interaction sketches for various systems or by direct reference to system P&Is. This effort was, in effect, an extensive operational analysis which considered the dynamic considerations of control groups and

arrangements. This activity reviewed the purpose and use of each and every component on the main control boards. Interviews with operators and training personnel were conducted to determine interpretations and actions. Controls and indications were then arranged in functionally related groups. Associated alarm locations were rechecked to verify that the more desirable locations were selected. The function relationship of adjacent indicator and control groupings were reviewed. Revised drawings were prepared to show the proposed arrangements. Certain of these drawings were color coded to aid in differentiating between groupings. These drawings were then utilized to determine the scope of each change package (change notice).

> Change Notice (CN) numbers were assigned to each effort identified above.

IMPROVEMENT PROCESS METHODOLOGY

The Improvement Process starts with the documentation and drawings produced during the improvement planning process described in the BACKGROUND presentation portion of this summary. An individual designer is assigned the responsibility of evaluating a particular board. Since this individual may not have participated in previous efforts, an educational process is initiated to acquire a thorough understanding of each system, subsystem and component represented on the assigned control board. System descriptions, Piping & Instrument diagrams, electrical drawings, and operating procedures are studied to gain this thorough understanding of each system. (This in-depth analysis is in addition to that completed for the CRDR and planning purposes.) This Operational Analysis provides additional basis for determining any changes to functional groupings.

Operating and training personnel are interviewed to solicit operational philosophies. The Operational value and function of each control and indication is addressed. Informational requirements are again discussed. (This informational requirements effort is in addition to that conducted for Emergency Operating Procedures task analysis). Samples of these Investigative Informational Records are submitted as Attachment B to this design package.

All HEDs applicable to a particular control board are reviewed and the tentative fix evaluated for its corrective value within the integrated approach. HEDs written against instruments and controls recorded by the Emergency Operating Procedure task analysis "Information and Control Requirements" effort, are reviewed with

particular attention to any potential safety considerations. Any previously prepared investigative information is studied. All factors are evaluated in considering any changes to the control board.

SPECIFIC - I-10 (I-9310) Redesign Synopsis - (Change Notice (CN)-1895 preparation package.)

The system review process for I-10 was like other segments of the control room redesign effort, approached in phases. The outstanding difference for this panel is that it mainly contains the electronics for the Plant Protection System (PPS) and is located on the back side of the main control boards. The function of this equipment is one of monitoring plant parameters and providing protective action when certain setpoints are exceeded. Personnel interface with this panel may be classified as follows:

- Operational use (normal and emergency)
- Surveillance (operating recording of data)
- Maintenance (repair and testing)

Of these three, only operational use during emergency operations requires timely operator recognition to assure resetting certain tripped bistables during core cooling restoration procedures.

Most of the HEDs initiated against this board were for control sizes, control physical configurations, meter scaling, labeling text, and label character sizes. Due to space limitations, it is not possible in most cases and not reasonable in others, to increase the size of labels and controls associated with the PPS system. The controls and indications utilized by the operators during emergency operations were identified and improvement options evaluated.

Miniature meters installed in the NIM bins of I-9310 are in fact primarily for surveillance and maintenance use. Critical parameter values displayed on the NIM bin miniature indicators are also displayed on the main control boards for operator use. (No additional changes are planned in response to those HEDs citing meter scale problems on I-9310.)

Research - During this phase, the systems represented by I-9310 were studied using the applicable System Descriptions, System Operating Procedures, Emergency Procedures, System Drawings, and the Control Room Design Review Task Analysis to determine the controls needed for emergency operation.

Other research included discussions with operators, trainers, and engineering support personnel. A review of all related HEDs was performed and each design problem was reviewed in order to find a solution within the space confines of the board (see Attachment A).

It was determined that the only controls utilized by the operator during an emergency situation are eight bistable resets required for restoration of adequate core cooling. These resets are located on bins 402, 602, 1002, and 1202 position P1/2, and bins 404, 604, 1004, and 1204 position P5/6. Numerous other labeling improvements are feasible within the room constraints of this board. These improvements support routine operation and monitoring activities.

Conceptual Design - Detail drawings were made of the modules required during emergency operations. The original design did not provide for a reset button conforming to recommended sizes nor adequate labeling to enable timely operator identification. The proposed improvement will demarcate around the control, color patch and provide a "reset" label. Additionally, the module will be provided with adequate functional labeling. These "location aids" are shown on Attachment C. Details B & C.

The XCR relay drivers are not required for operator use during an emergency situation, but are used as a diagnostic tool to determine the cause of a trip. The present instrument labeling under the module is confusing since the lights on the module for the XCRs are in a vertical array and the label is in a two-line configuration reading left to right. Operator aids are presently posted near the modules and provide a location key, function and reset information. An attempt was made to label each XCR with the instrument number and function. Due to space constraints, letter sizes would be compromised to the degree of not being legible from the operating position for all operators. The optimum solution was found to be that of labeling each set of indicating lights with instrument numbers (see Attachment C, Detail A), enlarging the operator aid, and possibly moving these operator aids to a more convenient location.

The present labeling on the nuclear instrumentation uses Roman numerals on the front of the $I\!-\!03$ section of the main control board and Arabic numerals on $I\!-\!10$.

All nuclear instrumentation channels are to be labeled with Roman numerals for consistency, in accordance with industry convention. By increasing the size of the label under these bins to the maximum physical size allowed, the letter size may be increased to a size close to compliance with DD-LAB-1.

Other changes to the board are detailed in the individual HED dispositions on Attachment A and the summary of changes on Attachment D.

Reevaluation of HED-0589 and 0590 resulted in the determination that no additional action was required.

 HED-0589 cites the number of graduation marks on an indicating meter between numerals.
 These meters are used for calibration purposes. Duplicate indication is available to the operator on the main control panel, I-03.

 HED-0590 was initiated in response to a standard checklist item. It is not applicable to the log scale meters cites.

The final step in this conceptual design phase was to determine the final text content for functional labels (see Attachment E for an example of the Label List.)

The following Design Directives apply to the relabeling and demarcation of the I-10 control board:

| | NUMBER | ISSUE | DESCRIPTION |
|----|--|-------|---|
| ** | DD-AAS-1 DD-AIS-1 DD-CBL-1 DD-ILS-1 DD-LAB-1 | | ABBREVIATION, SYMBOL, AND ACRONYM SELECTION SELECTION OF ANALOG INDICATORS CONTROL BOARD LAYOUT INDICATOR LIGHT SELECTION AND LOCATION PANEL AND COMPONENT LABELING |
| | DD-SWI-1 | A | SWITCH SELECTION |

^{**} IN DRAFT FORM

ATTACHMENTS
TO
SUMMARY OF THE
CONTROL ROOM IMPROVEMENT
DESIGN PROCESS

- A Lis. f all I-10 HEDs & Copies of I-10 HEDs
- B Sample Copies of Investigative Informational Records
- C Examples of Proposed "Location Aids" and "Labeling"
- D Summary of Changes to Board
- E Label List

ATTACHMENT A
List of Ali I-10 HEDs
&
Copies of I-10 HEDs

| | PROBLEM CLASSIF | ICATION | LOCATION | | 1 | IDISPOSITION | | |
|------|-----------------|------------|----------|------------|----------|--------------|---------|--|
| HED | 1 | | IDENTI- | INSTRUMENT | 1 | | CHANGE | |
| NO. | IGROUP | [FIGURE 1] | FICATION | NUMBER | CATEGORY | RESOLUTION | INOTICE | REMARKS |
| 0014 | Labeling | 116 | CR | 1-9310 | 11 | Label | 11895 | Label per DD-LAB-1 |
| 0241 | [Relabeling | 1d | 1-10 | XS-93515 | 11 | Label | 11895 | Label per DD-SWI-1 & DD-LAB-1 |
| 0241 | Relabeling | 1d | 1-10 | XS-93516 | 11 | Label | 11895 | Label per DD-SWI-1 & CD-LAB-1 |
| 0241 | Relabeling | l 1d | | XS-93517 | 11 | Labe! | 11895 | Label per DD-SWI-1 & DD-LAB-1 |
| 0241 | Relabeling | 1d | | XS-93518 | 11 | Label | 11895 | Labe per DD-SWI-1 & DD-LAB-1 |
| 0241 | IRelabeling | 1d | 11-10 | XS-93519 | - 11 | Label | 11895 | Label per DD-SWI-1 & DD-LAB-1 |
| 0241 | [Relabeling | 1d | 1-10 | XS-93520 | 11 | Label | 11895 | Label per DD-SWI-1 & DD-LAB-1 |
| 0318 | Labeling | I 1b | 1-10 | TR-1192 | 11 | Relatel | 11895 | Permanently Label Point Assignment, per DD-LAB-1 |
| 0319 | Labeling | [1b] | 11-10 | Bay 1002 | 11 | None | 1 | Not operator used controls |
| 0319 | Labeling | 1b | 11-10 | Bay 1102 | 11 | None | 1 | Not operator used controls |
| 0319 | ILabeling | 1b | 11-10 | Bay 1202 | 11 | None | 1 | Not operator used controls |
| 0319 | [Labeling | [1b] | | Bay 402 | 11 | None | 1 | Not operator used controls |
| 0319 | ILabeling | [1b | 11-10 | Bay 502 | 11 | None | 1 | Not operator used controls |
| 0319 | Labe ing | 1b | 1-10 | Bay 602 | [1] | None | 1 | Not operator used controls |
| 0319 | Labeling | l 1b | 1-10 | Bay 702 | 1 | Relabel | 11895 | Relabel P7/8 only, per DD-LAB-1. Others lare not operator used controls |
| 0319 | Labeling | 1b | 1-10 | Bay 902 | 11 | Relabel | 11895 | [Relabel P7/8 only, per DD-LAB-1. Others lare not operator used controls. |
| 0320 | Labeling | 116 | 1-10 | Bay 1003 | [1 | Retabet | 11895 | [Relabel P1/2/3 only, per DD-LAB-1. Other lare not operator used controls. |
| 0320 | Labeling | 116 | 1-10 | Bay 1103 | 11 | Relabel | 1895 | Relabel P1/2/3 only, per DD-LAB-1. Other lare not operator used controls. |
| 0320 | Labeling | 1b | 1-10 | Bay 1203 | 11 | Relabel | 1895 | Relabel P1/2/3 only, per DD-LAB-1. Other lare not operator used controls. |
| 0320 | Labeling | 1b | 1-10 | Bay 403 | 11 | Relabel | 1895 | Relabel P1/2/3 only, per DD-LAB-1. Other lare not operator used controls. |
| 0320 | Labeling | 1b | 1-10 | Bay 503 | 11 | Relabel | 1895 | Relabel P1/2/3 only, per DD-LAB-1. Other lare not operator used controls. |
| 0320 | Labeling | 16 | 1-10 | Bay 603 | 11 | Relabel | 1895 | Relabel P1/2/3 only, per DD-LAB-1. Other lare not operator used controls. |
| 0320 | Labeling | 116 | 1-10 | Bay 703 | 1 | Relabel | 1895 | Relabel P1/2/3 only, per DD-LAB-1. Other lare not operator used controls. |
| 0320 | Labeling | 1b | 1-10 | Bay 903 | 1 | Relabel | 1895 | Relabel P1/2/3 only, per DD-LAB-1. Other lare not operator used controls. |
| 0321 | Labeling | 16 | 1-10 | Bay 1104 | 11 | None | i | Not operator used controls |

| | PROBLEM CLASSIFICAT | LON | LOCATION | | | IDISPOSITION | | |
|--------------|--|--|----------|-------------|-----------|---|----------|---|
| HED | TROBLEM CEASSITION | | | INSTRUMENT | 1 | Annual and a second section of the second sec | 1 CHANGE | |
| NO. | IGROUP | FIGURE 1) | | | ICATEGORY | RESOLUTION | INOTICE | IREMARKS |
| 321 | Labeling | | 1-10 | Bay 1204 | 11 | Relabel | 11895 | Relabel P5/6 only, per DD-LAB-1. Other |
| 361 | Labering | 1 | | 1 | | | 1 | lare not operator used controls. |
| 321 | ILabeling | 1b | 1-10 | Bay 404 | 11 | Relabel | 11895 | [Relabel P5/6 only, per DD-LAB-1. Other |
| 1361 | Labering | 110 | 1-10 | Day 404 | | 1 | 1 | lare not operator used controls. |
| 202 | It about too | 1b | 1-10 | Bay 504 | 11 | None | i | Not operator used controls |
| 321 | Labeling | | | Bay 604 | ii | [Relabel | 11895 | [Relabel P5/6 only, per DD-LAB-1. Other |
| 321 | Labeling | 10 | 1-10 | Day 004 | | 1.0.1000.1 | 1 | lare not operator used controls. |
| 201 | Laboration . | 1b | 1-10 | Bay 704 | 11 | None | | Not operator used controls |
| 321 | Itabeling | | | Bay 904 | 11 | INone | | Not operator used controls |
| 321 | ILabeling | E CONTROL OF THE PARTY OF THE P | | Bay 1005 | 11 | None | 1 | Not operator used controls |
| 322 | A Miles on the Control of the Contro | | | | | None | | Not operator used controls |
| 1322 | | | | Bay 1105 | 11 | None | 1 | Not operator used controls |
| 1322 | I desired a straight | | | Bay 405 | | | | |
| 1322 | Labeling | * 15 mm. | | 1Bay 505 | 112 | None | | Not operator used controls |
| 1322 | # 75 TO | | | Bay 605 | | None | | Not operator used controls |
| 1322 | Labeling | | | 1Bay 705 | 11 | None | | Not operator used controls |
| 322 | | A | | Bay 905 | - 11 | None | 1.000 | Not operator used controls |
| 323 | Labeling | 11b | | IBay 1006 | - 11 | Relabel | 11895 | Relabel bins per DD-LAB-1 |
| 323 | Labeling | 11b | | 1Bay 1106 | 11 | Relabel | 11895 | [Relabel bins per DD-LAB-1 |
| 1323 | Labeling | 11b | | Bay 1206 | 11 | [Relabel | 11895 | Relabel bins per DD-LAB-1 |
| 1323 | | (1b | 11-10 | Bay 406 | 11 | Relabel | 11895 | Relabel bins per DD-LAB-1 |
| 323 | ILabeling | 11b | 11-10 | Bay 506 | 11 | Relabel | 11895 | [Relabel bins per DD-LAB-1 |
| 323 | | 11b | 11-10 | Bay 606 | 11 | [Relabel | 11895 | Relabel bins per DD-LAB-1 |
| 1324 | | 11b | 11-10 | Bay 1006 | 11 | Relabel | 11895 | Relabel bins per DD-LAB-1 |
| 1324 | | 11b | 11-10 | IBay 1106 | 11 | Relabel - | 11895 | Relabel bins per DD-LAB-1 |
| 1324 | | 11b | | Bay 1206 | 11 | [Relabel | 11895 | Relabel bins per DD-LAB-1 |
| 1324 | Labeling | 11b | 11-10 | Bay 406 | 11 | Relabel | 11895 | Relabel bins per DD-LAB-1 |
| 324 | Habeling | 11b | | 1Bay 506 | 11 | [Relabel | 11895 | [Relabel bins per DD-LAB-1 |
| 1324 | Labeling | 11b | | Bay 606 | 11 | Relabel | 11895 | [Relabel bins per DD-LAB-1 |
| 1324 | | 11b | | IHS-93243 | 11 | Label | 11895 | Label per DD-SWI-1 & DD-LAB-1 |
| | Labeling | 11b | | IHS-93245 | ii . | [Label | 11895 | Labe per DD-SWI-1 & DD-LAB-1 |
| 1325 | | 11b | 11-10 | IHS-93246 | ii . | [Labe] | 11895 | Function included in HS-93242 - delete |
| 0325 | Labeling | 1 10 | 1-10 | 1113-736.40 | | 1 | 1 | Inumber from documents |
| | I should be | 116 | 1-10 | IHS-93248 | 11 | Label | 11895 | Function included in HS-93245 - delete |
| 0325 | Labeling | 110 | 1-10 | 1113-33540 | | Lanci | 1 1072 | Inumber from documents |
| on according | | 1.16 | 1. 10 | INIM-1133-3 | iı . | Label | 11895 | Label per DD-LAB-1 |
| 1325 | Labeling | 1b | 11-10 | INIM-1135-3 | 11 | Label | 11895 | Label per DD-LAB-1 |
| 1325 | Labeling | 1b | 11-10 | | 11 | Labe | 11895 | Label per DD-LAB-1 |
| 1325 | Labeling | 11b | 11-10 | INIM-1136 | | Label | 11895 | ILabel per DD-LAB-1 |
| 1325 | Labeling | 11b | | INIM-1138 | 11 | | 11895 | ILabel per DD-SWI-1 & DD-LAB-1 |
| 326 | Itabeling | 11b | 11-10 | IHS-93244 | !! | Label | | Ifunction included in HS-93244 - Delete |
| 0326 | Labeling | 1b | 11-10 | IHS-93247 | 11 | Label | 11895 | Inumber from documents |

| | PROBLEM CLASSIFICAT | ION | LOCATION | | 1 | DISPOSITION | | |
|-------|---|-------------------|----------|--------------------|----------|--|--------|--|
| 1ED | | | | INSTRUMENT | | Annual Control of the | CHANGE | |
| 10. | GROUP | FIGURE 1) | FICATION | NUMBER | CATEGORY | RESOLUTION | NOTICE | REMARKS |
| | Labeling | 11b | 11-10 | NIM-1134-3 | 11 | Label | 11895 | Label per DD-LAB-1 |
| | | 11b | 1-10 | INIM-1137 | 11 | Label | 11895 | Labet per DD-LAB-1 |
| | Contract territorial Contract | 11b | 1-10 | Bay 104 | 11 | Relabel | 11895 | [Retabel bin per DD-LA8-1 |
| | A ROSE SECTION A COLUMN | 11b | | Bay 204 | 11 | Relabel | 11895 | [Relabel bin per DD-LAB-1 |
| | | 11b | | Bay 304 | 11 | Relabel | 11895 | [Relabel bin per DD-LAB-1 |
| 359 | Instrument | 2a | | Misc. Instr. | 14 | Label | 1895 | Provide location aid and label operator lused control only |
| 360 | Instrument | 2a | 1-10 | NIM Bin Sw. | 14 | None | 1 | Not operator used controls |
| | | 11c | | NIM Bin Sw. | 11 | None | | Not operator used controls |
| | g acces and a contract | 11c | | NIM Bin Sw. | 11 | Label | 1895 | Label operator used controls and provid |
| 363 | Labeling | 11c | 1-10 | NIM Bin Sw. | 11 | None | 1 | Not operator used controls |
| | Labeling | 11c | | IIIIum. PB | 11 | None | | Not operator used controls |
| | Labeling | 11c | 11-10 | Bay 1002 | 11 | Label | 1895 | Functionally label per DD-LAB-1 |
| 365-1 | Labeling | 1c | 1-10 | Bay 1202 P9/10 | 1 | Label | 1895 | Functionally label per DD-LAB-1 |
| 384 | Instrument | 2c× | | Misc, Instr. | 13 | None | | Space limitations preclude relocation within height limits-Operator utilized devices to be labeled, demarcated and |
| 385 | Instrument | 2cx | 1-10 | Misc. Instr. | 3 | None | | location aid provided Space limitations preclude relocation within height limits-Operator utilized devices to be labeled, demarcated and location aid provided |
| 1403 | Instrument | 2a | 11-10 | Misc. Instr. | 12 | None | 1 | INot operator used controls |
| | Labeling | 11b | | Misc. Instr. | | Retabel | 11895 | Relabel per DD-LAB-1 & DD-AAS-1 |
| | | 11b | | SM-21165/66 | 11 | Label | 11895 | Label per DD-LAB-1 |
| | Labeling | 11b | | SM-21171/72 | 11 | Label | 11895 | Label per DD-LAB-1 |
| | Labeling | 110 | | 1404 P5/6 S3 | 11 | Label | 11895 | Label and provide location aid |
| | | 12f | | 1402 P1 S3 | A 7 | Label | 11895 | Itabel and provide location aid |
| | | 151 | | 1602 P1 S3 | 11 | Label | 11895 | Label and provide location aid |
| | S TO THE STATE OF | 12f | | 11002 P1 S3 | 4 3 | Label | 11895 | Label and provide location aid |
| 521 | | 12f | | 11202 P1 S3 | ii | Label | 11895 | Label and provide location aid |
| 521 | | | | | 13 | Rescale | 11895 | Remove existing marks from meters |
| 542 | * 7.7500 W. C. (1011000 T. F. W.) | 2e | | Bay 103 | 13 | Rescale | 11895 | Remove existing marks from meters |
| 542 | B F F F F F F F F F F F F F F F F F F F | 12e | | Bay 203 | 13 | Rescale | 11895 | Remove existing marks from meters |
| 1542 | * 1 T 1 T 1 T 1 T 1 T 1 T 1 T 1 T 1 T 1 | 12e | | Bay 303 | | | 11895 | Remove existing marks from meters |
| 542 | | 12e | | Bay 102 | | Rescale | | |
| 1542 | | * *** | | Bay 302 | | Rescale | 11895 | Remove existing marks from meters |
| | Labeling | 11b | | FSL-2210-3 | 11 | Relabel | 11895 | [Relabel per DD-LAB-1 |
| 0562 | Instrument | 12e | 11-10 | Misc. Meters | 12 | None | | Not operator used indicators |

| | PROBLEM CLASSIFICA | ATION | LOCATION | | 1 | DISPOSITION | | |
|-------|--|------------|---------------|----------------------|-----------|--------------|---------|---|
| HED | I STATE OF THE STA | | | INSTRUMENT | 1 | | CHANGE | |
| NO. | IGROUP | (FIGURE 1) | FICATION | NUMBER | ICATEGORY | RESOLUTION | INOTICE | REMARKS |
| 563 | Instrument | 12e | 1-10 | Misc. Meters | 12 | None | 1 | Not operator used indicators |
| 1568 | Instrument | 12e | 11-10 | Misc. Meters | 12 | None | 1 | Not operator used indicators |
| 572 | Instrument | 12e | 11-10 | Misc. Meters | | None | 1 | Not operator used indicators |
| 1573 | Instrument | /# | | Misc. Meters | | None | 1 | Not operator used indicators |
| 578 | Instrument | 12e | | Misc. Meters | | None | 1 | Not operator used indicators |
| 581 | Instrument | 12e | | IMisc. Meters | | None | 1 | Not operator used indicators |
| 583 | Instrument | 12e | 11-10 | TSH-93472 | 12 | None | 1 | Not operator used item |
| 583 | Instrument | 12e | | ITSH-93474 | 12 | None | 1 | Not operator used item |
| 588 | linstrument | 12e | | Misc. Meters | 12 | None | 1 | Not operator used item |
| 589 | Instrument | 12e | 11-10 | Bay 105 | 12 | Evaluated | i | Not operator used indicator |
| 1589 | Instrument | 12e | 11-10 | IBay 205 | 12 | Evaluated | 11895 | Not operator used indicator |
| 589 | Instrument | 12e | 11-10 | Bay 305 | 12 | Evaluated | 11895 | Not operator used indicator |
| | | 12e | 11-10 | Bay 102 | 12 | None | 11895 | IMED initiated in response to standard |
| 1590 | Instrument | 126 | 1-10 | Day IUZ | 16 | Hone | 11032 | checklist item-Not applicable to log |
| | | | | | | | | Iscale |
| | Andrew commenced in | 120 | 11-10 | I Day 102 | 12 | Rescale | 11895 | IHED initiated in response to standard |
| 1590 | Instrument | 12e | 11-10 | Bay 103 | 16 | Rescare | 11090 | checklist item-Not applicable to log |
| | | | | | | | | Iscale |
| | 1 | | | 10 | 10 | December | 11005 | |
| 1590 | Instrument | 2e | 11-10 | Bay 204 | 12 | Rescale | 1895 | IHED initiated in response to standard |
| | 1 | | | | 1 | | | checklist item-Not applicable to log |
| | 1 | | | lancall and | | | 1.000 | Iscale |
| 1590 | Instrument | 12e | 11-10 | Bay 302 | 12 | Rescale | 11895 | IHED initiated in response to standard |
| | 1 | | | | | | | Ichecklist item-Not applicable to log |
| | 1 | 1 | | Later and the second | 1 | | | Iscate |
| 0590 | Instrument | 12e | 1-10 | Bay 303 | 12 | Rescale | 1895 | IHED initiated in response to standard |
| | | | | | 1 | | 1 | checklist item-Not applicable to log |
| | 1 | 1 | In the second | | 1 | | 1 | Iscale |
| 1592 | Instrument | 12e | 11-10 | Misc. Meters | 12 | None | 1 | Not operator used item |
| 1597 | Labeling | 11b | 11-10 | Misc. | 11 | [Relabel | 1 | Change Arabic numerals on Nuclear Instr |
| | | | 1 | | 1 | | 1 | Ito Roman numerals |
| 0627 | Instrument | 12f | 11-10 | IHS-93301 | 11 | Change-out | | Change button & ring color per DD-SWI-1 |
| 0627 | Instrument | 12f | 1-10 | IHS-93302 | 11 | Change-out | 11895 | Change button & ring color per DD-SWI-1 |
| 0627 | Instrument | 12f | 11-10 | IHS-93303 | 11 | Change-out | 11895 | Change button & ring color per DD-SWI-1 |
| 0627 | Instrument | 12f | 11-10 | IHS-93304 | 11 | Change-out | 11895 | Change button & ring color per DD-SWI-1 |
| 0627 | Instrument | 12f | 11-10 | IKS-700 | 11 | Change-out | 11895 | Change operating sequence per DD-SWI-1 |
| JUL 1 | I THOUSE COMMONTO | i i | 1 | | 1 | | | land assign instrument number |
| 0627 | Instrument | 12f | 11-10 | KS-900 | 11 | Change-out | 11895 | Change operating sequence per DD-SWI-1 |
| 0021 | i matrament | 1 | 1 | | i . | 1 | 1 | land assign instrument number |
| 1250 | Instrument | 12e | 1-10 | TR-1192 | 12 | Evaluated | i | Not required by operator |
| 0658 | | 110 | 11-10 | IXCR Lights | 11 | Relabel | 1895 | ILabel for identification of bistable and |
| 0782 | Labeling | 110 | 1-10 | I LIGHTS | 1 | I TO TO DO T | 1 | reference to operator aid |

HUMAN ENGINEERING DISCREPANCIES LISTED FOR CONTROL BOARD 1-10

| 1 | I PROBLEM CLASSIFICAT | ION | LOCATION | | | IDISPOSITION | | |
|-------|-----------------------|-----------|----------|-----------------------------|----------|--------------|--------------------|--|
| INO. | GROUP | CODE (SEE | | I INSTRUMENT I NUMBER | CATEGORY | RESOLUTION | CHANGE NOTICE | |
| 0783 | Labeling | 11b | 1-10 | MIS-1115 thru MIS-1122 | 1 | Change-out | 11882 | Changed adjustment potentiometer and knob Ion CN-1882 |
| 0784 | Instrument | 12n | 11-10 | IMisc. | 11 | Change-out | 11895 | Change test indication light lens |
| 10785 | Labeling | 11c | 11-10 | [1002 P9/10 | 11 | [Label | 11895 | Functionally label per DD-LAB-1 |
| 10785 | ILabeling | 11c | 11-10 | 11202 P9/10 | 11 | Labe | 11895 | Functionally label per DD-LAB-1 |
| 0792 | Labeling | 1c | 1-10 | IXS-93515 thru IXS-93520 | 1 | Label | 11895 | Functionally label per DD-LAB-1 |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 014

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| JOE KELEME | N | | 6/1/83 |
|-------------------|------------------------------------|---------------|------------------------|
| | IN CONTROL BOARD - TAGE | ING +LABELING | SURVEY |
| 3. | ITEMS INVOLVE | ED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO PHOTO NO. |
| I-01. I-02 | MAIN CONTROL BOARD (PANELS) | CONTROL ROOM | |
| I-04 I-05 | | | |
| I-06. I-09. | | | |
| I-13: I-14: | | | |
| I-15. | V | | |
| | | | |
| C. PROBLEM DESCRI | PTIONS (GUIDELINES VIOLATED) VARIO | 45 MAIN CON | ROL BOARD |
| C. PROBLEM DESCRI | PTIONS (GUIDELINES VIOLATED) VARIO | 45 MAIN CON | TROL BOARD |
| C. PROBLEM DESCRI | PTIONS (GUIDELINES VIOLATED) VARIO | 45 MAIN CON | TROL BOARD |
| ARE NOT IDE | NTIFIED CLABELED OR TA | AGGED) IN COM | TROL BOARD |
| ARE NOT IDE | NTIFIED CLABELED OR T | AGGED) IN COM | TROL BOARD |
| ARE NOT IDE | NTIFIED CLABELED OR TA | AGGED) IN COM | TROL BOARD |
| ARE NOT IDE | NTIFIED CLABELED OR TA | AGGED) IN COM | TROL BOARD |
| ARE NOT IDE | NTIFIED CLABELED OR TA | AGGED) IN COM | TROL BOARD |

| E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FR | IOM HED | |
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| F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | | |
| G. CLASSIFICATION | | |
| H. CORRECTIVE ACTION OPTIONS | | |
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| | | |
| T-01 f-11/1 04 DD-148 | - / | |
| I DISPOSITION I-01 Labeled per DO-LAB. | | |
| I-03 & I-04 Label per DD- LAB-1 | 14/ 1087 | • |
| I-05 to be labeled per DD-LAB-1 by CN-18 | 0.1 | 03 |
| - A + A A 177 | CN-1891 80 1/14/14 | |
| I-06 B to be labeled per DD-LAB-1 by | CN-1892 WCH 2/ | 24/86 |
| I-15 to be labeled per DD. LAB . 1 by | 1-1/ | 1/86 |
| I-10 to be labeled per DD-LAB-1 by | CN-1895 NEH 5/1 | 126 |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR | DATE |
| | NON-CONCURRENCE | |
| Team Manager | | |
| CRDR Coordinator | | |
| Human Factors Spec. | | |
| Senior Reactor Operator | | T. C. |
| | | |
| | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0241

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| EVIEWER NAME | Pau 1122 | | 7/12/83 |
|---------------------|-------------------------------------|-------------------|----------------|
| HED TITLE | RON GARRETT | | |
| | | | |
| 3. | ITEMS INVOLVED |) | INSTRUMENT |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. |
| X5-93515P | CIPA FEEDWATER TESTSWITCH | Z-10 | B-90 |
| X3-93516P . | | | B-90 |
| x5-93517P | | | B-90 |
| X5-935/8P | | | B-90 |
| X5-935/9P | | | B-90 |
| XS-93530P | V | V | B-90 |
| | | | |
| | PTIONS (GUIDELINES VIOLATED) ALL CA | F PHE NIBOVE SWIT | CHS OCNOT HAVE |
| | PTIONS (GUIDELINES VIOLATED) ALL OF | THE ABOVE SWIT | CHS OCNOT WAVE |
| POSITION TAR SHO | OWING POSITION OF SWITCH, | THE DISCUE SWIT | CHS OCNOT WAVE |
| D. LIST THE PROCEDU | | | CHS DONOT WAVE |
| D. LIST THE PROCEDU | URES OR OPERATIONS THAT USE THE | | CHS OCNOT WINE |
| D. LIST THE PROCEDU | URES OR OPERATIONS THAT USE THE | | CHS OCNOT HIVE |
| D. LIST THE PROCEDU | URES OR OPERATIONS THAT USE THE | | CHS DONOT WAVE |
| D. LIST THE PROCEDU | URES OR OPERATIONS THAT USE THE | | CHS DONOT WAVE |
| D. LIST THE PROCEDU | URES OR OPERATIONS THAT USE THE | | CHS DONOT WAVE |

| F. LIST THE CONSEQUENCES OF OPERATOR ERROR G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Lebs/ per DD-SW)-/ \$ DD-LAB-/ CN-R95 EKH S/I/S TEAM MEMBER SIGNATURE TEAM MEMBER SIGNATURE CROC COordinator Human Factors Sorc. Senior Reactor Operator | E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FR | ROM HED | |
|---|--|---------------------|--------------|
| G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Label per DD - SWI-1 & DD - LAB-1 CN-1095 with SVIJA TEAM ACTION TEAM MEMBER SIGNATURE TEAM MEMBER SIGNATURE CROR Coordinator Human Factors Spec. | | | |
| G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Label per DD - SWI-1 & DD - LAB-1 CN-1095 with SVIJA TEAM ACTION TEAM MEMBER SIGNATURE TEAM MEMBER SIGNATURE CROR Coordinator Human Factors Spec. | | | |
| G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Label per DD - SWI-1 & DD - LAB-1 CN-1095 with SVIJA TEAM ACTION TEAM MEMBER SIGNATURE TEAM MEMBER SIGNATURE CROR Coordinator Human Factors Spec. | | | |
| G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Label per DD - SWI-1 & DD - LAB-1 CN-1095 with SVIJA TEAM ACTION TEAM MEMBER SIGNATURE TEAM MEMBER SIGNATURE CROR Coordinator Human Factors Spec. | | | |
| G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Label per DD - SWI-/ & DD - LAB-/ CN-B95" MCH SVIJA TEAM ACTION TEAM MEMBER SIGNATURE TEAM MEMBER SIGNATURE TEAM MANAGER CROR Coordinator Human Factors Spec. | | | |
| G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Label per DD - SWI-1 & DD - LAB -1 CN - 1895 WEH SVIJA TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Lebel per DD - SWI-I & DD - LAB - I CN - 1895 WEH SVIJA TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | | | |
| G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Lebel per DD - SWI-I & DD - LAB - I CN - 1895 WEH SVIJA TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | | | |
| G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Lebel per DD - SWI-1 & DD - LAB -1 CN - 1895 & KH S/I/A TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | | | |
| G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS I. DISPOSITION Label per DD - SWI-1 & DD - LAB -1 CN - 1895 WEH SVIJA TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | | | |
| I. DISPOSITION Label per DD - SWI-I & DD - LAB-I CN-1895 WEH SIII/O TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | G. CLASSIFICATION | | |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | H. CORRECTIVE ACTION OPTIONS | | |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | | | |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | | | |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | | | |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | | | |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CROR Coordinator Human Factors Spec. | 1. DISPOSITION Label per DD-5W1-1 | \$ DD-LAB-1 CN-1895 | tak H stijel |
| TEAM MEMBER SIGNATURE CONCURRENCE OATE Team Manager CROR Coordinator Human Factors Spec. | | | |
| TEAM MEMBER SIGNATURE CONCURRENCE OATE Team Manager CROR Coordinator Human Factors Spec. | | | |
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| TEAM MEMBER SIGNATURE CONCURRENCE OATE Team Manager CROR Coordinator Human Factors Spec. | | | |
| TEAM MEMBER SIGNATURE CONCURRENCE OATE Team Manager CROR Coordinator Human Factors Spec. | | | |
| Team Manager CRDR Coordinator Human Factors Spec. | | CONCURRENCE OR | 0.475 |
| CROR Coordinator Human Factors Spec. | | NON-CONCURRENCE | |
| Human Factors Spec. | | | |
| | | | 1 |
| Senior Reactor Operator | | | |
| | Senior Reactor Operator | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0318

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22-4228 REVIEWER NAME 7-22-83 A HED TITLE Labeling and Tagging convention ITEMS INVOLVED 8. INSTRUMENT DATA FILE NO. LOCATION ITEM TYPE NOMENCLATURE PHOTO NO. C-23 TR-1192 I-10 802 mois ture monitor C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) Some information le in troping paper, it should be in a legend tag, D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FRO | M HED | |
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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| CLASSIFICATION | | |
| . CORRECTIVE ACTION OPTIONS | | |
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| DISPOSITION Permanently label point | i assignents pe | <u></u> |
| DD-2AB-1 CN-1895 WCH ST1/86 | | |
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| TEAM ACTI | CONCURRENCE OR | DATE |
| TEAM MEMBER SIGNATURE | NON-CONCURRENCE | UATE |
| Team Manager | | |
| CRDR Coordinator | | |
| Human Factors Spec. | | |
| Senior Reactor Operator | | |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number <u>0319</u>

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| F LIA | n 4 S | | 7-21-83 |
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| HED TITLE Labeling | and Topsing Co. | rvention | |
| | TEME INVOLVED | | |
| B. ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. |
| 100 2 PI-PII | | 1-10 | E.35 |
| 500 2 P11-P12 | | T-10 | E-36 |
| 600 2 PI-PII | | Z-10 | E-37 |
| 700 2 PG - P7 | | I - 10 | C-24 |
| 900 2 P6-P7 | | 1-10 | E-38 |
| 1000 2 PI-PII | | r-10 | c.09 |
| 1100 2 PII-PI2 | | -10 | C-08 |
| 1200 2 PI-PII | 1 | -/0 | C-06 |
| should be 3/32 | | | |
| D. LIST THE PROCEDURES OR OPERA LISTED ITEMS IN A MANNER TO IT | ATIONS THAT USE THE NDUCE THE OPERATOR ERROR | | |
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| €. | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HE | D | |
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| G. | CLASSIFICATION | | |
| | CORRECTIVE ACTION OPTIONS | | |
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| ı. | DISPOSITION Name - not aperator use | ed controls weh | 1 5/1/36 |
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| | TEAL ACTION | | |
| | TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | DATE |
| | | NOW-COMECONNESSEE | |
| Tel | am Manager | | |
| CR | RDR Coordinator | | 46 |
| Hu | uman Factors Spec. | T. Haran | |
| - | | | |
| Ser | nior Reactor Operator | | |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0320

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| | Llanas | | |
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| A HED TITLE Labelin | and Tagging Co | nushtian | |
| 8. | ITEMS IN | IVOLVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. |
| 400 3 PI thru FR | | I-+0 | E-34 |
| 500 3 Pl +her 7-12 | | I-10 | E-33 |
| 600 3 PI +Ary PIZ | | I-10 | G-02 |
| 700 3 PI + 1 C P 12 | | I-10 | E-23 |
| 900 3 Pl + hru P/2 | | I-10 | E-60 |
| 1000 3 P/ this P12 | | I-10 | E-30 |
| 1200 7 PI thou PI2 | | I-10 | E-29 |
| 1200 3 Pl thru Pla | | I-10 | E-28 |
| C. PROBLEM DESCRIPTIONS | (GUIDELINES VIOLATED) | ettering is too s | mad (1) |
| | (GUIDELINES VIOLATED) | ettering is too s | mad (1) |
| C. PROBLEM DESCRIPTIONS of Should be 3/6 | | | mad (1) |
| C. PROBLEM DESCRIPTIONS of Should be 3/6 | R OPERATIONS THAT USE THE | | mad (1) |
| C. PROBLEM DESCRIPTIONS | R OPERATIONS THAT USE THE | | mad () |
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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| . CLASSIFICATION | | |
| . CORRECTIVE ACTION OPTIONS | | |
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| DISPOSITION Relabel P1/2/3 on all bin. Change on others-not aperator CH-1895 WCH 5/1/26 | s per DD-4A8-1 used contre | 1. No /s. |
| DISPOSITION Relabel P1/2/3 on all bin. Change on others-not aperator CH-1895 WCH 5/186 TEAM ACTION | | '. No /s • |
| CH-1895 WCH 5/126 | concurrence or | /. No |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR | |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager | CONCURRENCE OR | |
| CH-1895 WCH S/1/26 TEAM ACTION | CONCURRENCE OR | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0321

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| F I | llaras | | 7-21-83 |
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| | ing and Tassing | Convention | |
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| 8. | ITEMS IN | VOLVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO PHOTO NO. |
| 400 4 PS | | I-10 | E-20 |
| 500 4 P9-P11 | | I-10 | E-21 |
| 600 4 PS | | I-10 | E-22 |
| 700 4 P1,3,4,5,10, N,12 | | I-10 | E-31 |
| 9004 P1,3,45,10,110 | | I-10 | E-24 |
| 1100 4 89,10,11 | | I-10 | E-26 |
| 12004 PS | | I-10 | E-27 |
| not den ena | ugh. | | |
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| D. LIST THE PROCEDURES OF | | | |
| LISTED ITEMS IN A MANN | ER TO INDUCE THE OPERATOR | EHHOH | |
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| | IFIC OPERATOR ERROR(S) THAT COULD HE | ESULT FROM HED | |
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| LIST | THE CONSEQUENCES OF OPERATOR ERRO | R | |
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| . CLAS | SSIFICATION | | |
| . COR | RECTIVE ACTION OPTIONS | | |
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| No CN | change an others, no. | | 604. ntrols. |
| No CN | 1-1895 WCH S/1/8L | EAM ACTION CONCURRENCE OF NON CONCURRENCE OF NON CONCURRENCE | CATE |
| CN | TEAM MEMBER SIGNATURE | EAM ACTION CONCURRENCE OR | CATE |
| C N | TEAM MEMBER SIGNATURE | EAM ACTION CONCURRENCE OR | CATE |
| CADR C | TEAM MEMBER SIGNATURE | EAM ACTION CONCURRENCE OR | CATE |
| CRDR C | TEAM MEMBER SIGNATURE | EAM ACTION CONCURRENCE OR | CATE |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0322

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| REVIEWER NAME | ana < | | 7-21-83 |
|--|---------------------------------|------------|---------------|
| A. HED TITLE Labelin | | Convention | |
| 8. | ITEMS IN | OLVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | OATA FILE NO. |
| 400 5 P6,7,8 | | I-10 | C-18 |
| 5005 P4,6,7,8 | | I-10 | C-19 |
| 600 5 P6,7,8 | | I-10 | C-30 |
| 100 5 PS, 7,9,11 | | I-10 | C-21 |
| 200 5 PS,7,911 | | I-10 | E-43 |
| 1000 5 P 4,67,8 | | I-10 | E-44 |
| 100 5 P9,11 | | I-10 | G-06 |
| E TAGGING LETTER SIZE SIZED, SHOULD BE 5/16 | | | |
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| D. LIST THE PROCEDURES OR LISTED ITEMS IN A MANNE | OPERATIONS THAT USE THE | ERROR | |
| | the salitities and also are not | | |
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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| CLASSIFICATION | | |
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| W Cotton actions | net enerator use | a el |
| DISPOSITION No STATED action-1 | not aperator use | s d |
| DISPOSITION No Senthan action - 1 | not aperator use | s d |
| DISPOSITION No Settles action-1 | not aperator use | • d |
| DISPOSITION No settles action - 1 | not aperator use | s <u>d</u> |
| DISPOSITION No settles action - 1 | not eperator use | 3 4 |
| cuntrels WCH 5/4/86 | | s d |
| CUNTROLS WCH 5/4/86 TEAM ACTI | ION CONCURRENCE OR | OATE |
| TEAM MEMBER SIGNATURE | ION | |
| TEAM MEMBER SIGNATURE | ION CONCURRENCE OR | |
| TEAM MEMBER SIGNATURE Team Manager | ION CONCURRENCE OR | |
| Controls WCH 5/4/86 TEAM ACTI | ION CONCURRENCE OR | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0323

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 144-22-4228 F Llanas 7-21-83 A HET TITLE Labeling and Tagsing convention ITEMS INVOLVED 8. IT TYPE INSTRUMENT NOMENCLATURE LOCATION DATA FILE NO. PHOTO NO. T-10 PI + Lur PI 400 C-17 I-10 C-16 Frethrup12 500 6 G.09 I-10 600 6 P: thru P/2 1000 6 PI + hruP12 1-10 C-11 G-07 1100 6 PI + Lay P12 I-10 4-69 I-10 1200 6 PI + Lue P12 C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR Lettering is the small () D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE

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| CORRECTIV | E ACTION OPTIONS | | | | | |
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| DISPOSITIO disposi bins WCH | see HE ition WE per DD-LA 5/16/81. | D-324 H 57/2(B-1 within | for specially existing | ific preta | bel ens | tire 1895 |
| DISPOSITION DISPOS | see HE ifien WE per DD-LA 5/16/81 | D-324 4 57/86 B-1 within | for spec Re-evalue existing | restraint. | bel en | tire 1895 |
| DISPOSITION DISPOS | see HE ition WE per DD-6A 5/16/81 | B-1 within | For spec Re-evalue existing | restraint. | s CN. | 1875 |
| DISPOSITION DISPOS | TEAM MEMBER | B-1 within | existing | concurrence Non-concurrence | s CN. | tire 1895 |
| WCH ! | per DD-6A, 5/16/81, | B-1 within | existing | CONCURRENCE | s CN. | 1875 |
| WCH | TEAM MEMBER | B-1 within | existing | CONCURRENCE | s CN. | 1875 |
| DISPOSITIO disposition bins WCH | TEAM MEMBER | B-1 within | existing | CONCURRENCE | s CN. | 1875 |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 3

HUMAN ENGINEERING DISCREPANCY EVALUATION

HEDE - 1 Form 344-22-4228 REVIEWER NAME FLlanas 7-21-83 A HED TITLE Labeling and Tagging Convention ITEMS INVOLVED 8. INSTRUMENT LOCATION DATA FILE NO. NOMENCLATURE ITEM TYPE PHOTO NO. I-10 C-17 400 6 P2,3,9 T-10 500 6 P 2,3,9 C-16 G-09 T-10 6006 I-10 C-11 P 2.39 1000 6 I-10 G-07 P2,3,9 1100 6 H-69 I-10 P2,3,9 1200 6 C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) Function and instrument D-169-2115, 169-2145, 169-2175, 169-2295, 169-2325 Cn -1110 and 169-2365 D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| CLASSIFICATION | | |
| CORRECTIVE ACTION OPTIONS | | |
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| DISPOSITION Relabel entire bins | per DD-LAB-1 | CN 189 |
| DISPOSITION Relabel entire bins WCH 5/1/86 Functionally abo | per DD-LAB-1 | CN 1895 |
| DISPOSITION Relabel entire bins WCH 5/1/86 Functionally about | per DD-LAB-1 | CN 1895 |
| DISPOSITION Relabel entire bins WCH 5/1/86 Functionally about | per DD-LAB-1 | CN 1895 |
| DISPOSITION Relabel entire bins WCH 5/1/86 Functionally about WCH 5/14/86 | per DD-LAB-1 | CN 1895 |
| DISPOSITION Relabel entire bins WCH 5/1/86 Functionally about | per DD-LAB-1 | CN 1895 |
| WCH 5/14/86 | | CN 1895 |
| WCH 5/14/86 TEAM ACTIO | ON CONCURRENCE OR | CN 1895 |
| TEAM MEMBER SIGNATURE | ON | |
| TEAM ACTION TEAM ACTION TEAM MEMBER SIGNATURE | ON CONCURRENCE OR | |
| TEAM ACTION TEAM ACTION TEAM MEMBER SIGNATURE | ON CONCURRENCE OR | |
| TEAM ACTIO | ON CONCURRENCE OR | |

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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0325

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| F LIG | nas | | 7-22-83 |
|---------------------------|--|----------------|---------------|
| | beling and Tags | ins Convention | |
| A. HED TITLE LO.N. | ier is will respin | | |
| 3. | ITEMS INV | OLVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. |
| 45-93243 (sw) | | I-10 304 P1 | B.97 |
| 45-93246·(sw) | | I-10 364 F7 | B-97 |
| nim -//33-3 | | I-10 304 P6 | B-97 |
| nim 1/36 | | I-10 304 PM | B-97 |
| 45-93245 (5W) | | I-10 204 PI | B.98 |
| HS-93248(5w) | | 1-10. 204 P7 | 15-98 |
| nim - 1/35-3 | 5,675 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | I-10 204 P6 | B-98 |
| nim - 1/38 | 4 | I-10 204 P12 | B-98 |
| ar instrument | number | | |
| D. LIST THE PROCEDURES OF | R OPERATIONS THAT USE THE ER TO INDUCE THE OPERATOR E | ERROR | |
| CISTED ITEMS IN A MAINT | | | |
| CISTED FEMS IN A MANNE | | | |
| CISTED FEMS IN A MANNE | | | |
| CISTED FEMS IN A MANNE | | | |
| CISTED FIEMS IN A MANNE | | | |

| E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM H | ED | |
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| F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| G. CLASSIFICATION | | |
| H. CORRECTIVE ACTION OPTIONS | | |
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| DD-4ABT. Functionally label switch DD-4ABT. Functionally label indica CN 1895 WCH Stilas Delete His from do cum mentation. Function in | tors per DD 4 | 9B-1 5-93248 |
| HS-93245 CN 1895 Wet 5/19/86 | | |
| He for to set the set the | | |
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| | | |
| TEAM ACTION | CONCURRENCE OR | |
| TEAM MEMBER SIGNATURE | NON-CONCURRENCE | DATE |
| Team Manager | | |
| CRDR Coordinator | | |
| Human Factors Spec. | | Larrage (|
| Senior Reactor Operator | | |
| | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0326

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22-4228 REVIEWER NAME 7-22-83 F Llanas A HED TITLE Labeling and Tagging Convention ITEMS INVOLVED 8. INSTRUMENT NOMENCLATURE LOCATION DATA FILE NO. ITEM TYPE PHOTO NO. H-08 H5-93244 I-10 104 PI A-08 I-10 104 P7 HS-93247(5W) H-08 I-10 104 P6 nim - 1/34-3 H-08 I-10 104 PM nim 1/37 a problem descriptions (Guidelines VIOLATED) no function top to showen. or instrument number. D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| CLASSIFICATION | | |
| CORRECTIVE ACTION OPTIONS | | |
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| | | /-/ 4 |
| DISPOSITION Functionally label say | itches , ner DD-Swi | '-/ \$ LAB-/. |
| DISPOSITION Functionally label say | itches , ner DD-Swi | '-/ \$ LAB-/. |
| DISPOSITION Functionally label say DD-LAB-1. Functionally label EN-1895 WCH 5/1/26 Dele | itches per DD-SWI indicators per DD- to 15-93247 from | 1.48-1. |
| DISPOSITION Functionally label say DD-LAB-1. Functionally label EN-1895 WCH 5/1/86 Dele documentation. Function inclu | itches per DD-SWI indicators per DD- to 15-93247 from | 1.48-1. |
| DD-LAB-1. Functionally label sw BD-LAB-1. Functionally label BN-1895 WCH 5/1/26 Dele | itches per DD-SWI indicators per DD- to 15-93247 from | 1.48-1. |
| DD-LAB-1. Functionally label say DD-LAB-1. Functionally label EN-1895 WCH 5/1/86 Dele documentation. Function inclu | itches per DD-SWI indicators per DD- to 15-93247 from | 1.48-1. |
| DISPOSITION Functionelly label squ DD-LAB-1. Functionelly label EN-1895 WCH 5/1/26 Dele documentation. Function inclu CN-1895 WCH 5/14/86 | itches per DD-Swi indicators per DD- fo HS-93247 from ded in HS-93244 | 1.48-1. |
| DD-LAB-1. Functionally label say DD-LAB-1. Functionally label EN-1895 WCH 5/1/86 Dele documentation. Function inclu | titches per DD-SWI indicators per DD- for HS-93247 from ded in HS-93244 | 1.48-1. |
| DISPOSITION Functionelly label say DD-LAB-1. Functionelly label EN-1895 WCH 5/19/86 TEAM MEMBER SIGNATURE | titches per DD-Swi padicaturs per DD- fo HS-93247 from ded in HS-93244 | 1.48-/. |
| DISPOSITION Functionelly label say DD-LAB-1. Functionelly label EN-1895 WCH 5/19/86 TEAM MEMBER SIGNATURE | titches per DD-SWI indicators per DD- for HS-93247 from ded in HS-93244 | 1.48-/. |
| DISPOSITION Functionelly label say DD-LAB-1. Functionally label EN-1895 WCH 5/1986 Dele CN-1895 WCH 5/19/86 TEAM MEMBER SIGNATURE TEAM MEMBER SIGNATURE | titches per DD-SWI indicators per DD- for HS-93247 from ded in HS-93244 | 1.48-/. |
| DD-LAB-1. Functionally label say DD-LAB-1. Functionally label EN-1895 WCH 5/1986 Dele CN-1895 WCH 5/19/86 TEAM AC | titches per DD-SWI indicators per DD- for HS-93247 from ded in HS-93244 | 1.48-/. |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0307

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

HEDE - 1 200 Form 344-22-4228 REVIEWER NAME Flanas 7-22-83 A HED TITLE Labeling and Tagging Convention ITEMS INVOLVED 8. INSTRUMENT LOCATION DATA FILE NO. NOMENCLATURE ITEM TYPE PHOTO NO. A-08 I-010 100 4 P2. P3, P4 P5, P8, P9, P10 PII B-98 I-010 2004 P2,P3 P4, P5, P8, P9 P10, P11 T-010 B-97 300 4 P2, P3 MB P8, P9, P10, P11 C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) Lettering is too small D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| E. | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HE | 0 | |
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| F. | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| п. | CORRECTIVE ACTION OFFICES | | |
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| 1. | DISPOSITION Relabel bins per DD-48 | 13-1 CN 9895 WE | 4 5/1/86 |
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| | TEAM ACTION | CONCURRENCE OR | DATE |
| - | TEAM MEMBER SIGNATURE | NON-CONCURRENCE | |
| Tea | m Manager | | |
| CR | DR Coordinator | | |
| Hu | nan Factors Spec. | 12.2 | |
| _ | 2 | | TO SECOND |
| Seu | ior Reactor Operator | | |
| | | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Loc Number 0359

HUMAN ENGINEERING DISCREPANCY EVALUATION

HEDE - 1 Form 344-22-4228 BANIEWER NAME RON GARRETT A HED TITLE SWATCH CONVENTION ITEMS INVOLVED 8. INSTRUMENT NOMENCLATURE DATA FILE NO. LOCATION ITEM TYPE PHOTO NO. SEE SEPARATE SHEETS MIN FR C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) PUSH - BUTTON PAR ROTARY SWITCHS NOT MEETING THE LOCATION SPACING OF EXOA . 76-45-2 (SWITCHS ON I.14 HE ILLUM PUSH-BUTTON) D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| | R ERROR(S) THAT COULD R | ESOLI FROM RED | | |
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| LIST THE CONSEQU | ENCES OF OPERATOR ERRO | А | | |
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| CORRECTIVE ACTIO | N OPTIONS | | | |
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| DISPOSITION EA | hance labeling | er dema | restion on ap | eretor |
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| DISPOSITION EA | bence labeling | er dema | restion on ap | eretor |
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| DISPOSITION EA | hance labeling | or doma | rustion on ap | erator |
| DISPOSITION EA | hance labeling | er dema | syll86 | eretor |
| DISPOSITION EA | hence labeling | er dema | rustion on ap | eretor |
| disposition En | | er dema 95 WCH | | eretor |
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| earn Manager | TI | | CONCURRENCE OR | |
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| | PANEL | BA | | MONLE | INSTR. | P | ANEL | BAY | BIN | MODULE | INSTR. |
|------|---------|------|-----|-----------|--------------------------|--------|------|-----|-----|--------|-------------------------|
| E-11 | I-14 | 100 | | P9/10 | RIS-73437-1 | B-95 | I-10 | 200 | 5 | P8 | XSL-2273 |
| E-11 | I-14 | 100 | - | 12 P11/12 | RIS- 73437-2 | 8-95 | I-10 | 200 | 5 | 19 | XSL-2235 |
| B-96 | I-10 | 100 | 1 | P3/4 | | 8.95 | I-10 | 200 | 5 | PIO | TSN- 22137 |
| | I-10 | 100 | 5 | PZ | X51-93363 | B-92 | I-10 | 200 | 6 | PI | TSW-1177 |
| | I-10 | 100 | 5 | P3 | PSL-1109-2 PSL-1109-1 | | I-10 | 200 | 6 | Pz | 75W-1173 73L-1173 |
| | I-10 | 100 | 5 | PY | PSH -1109-1 | | I-10 | 200 | 6 | P3 | TM-1153-2 |
| | I-10 | 100 | 5 | P5 | PT-1109 | | I-10 | 200 | 6 | PH | TM-1153-1 |
| | I-10 | 100 | 5 | P6/2 | MTU-1 | 1 | I-10 | 200 | 6 | P5 | TM-1153-3 |
| | I-10 | 100 | 5 | P8 | XSL-2271 | 8.92 | I-10 | 200 | 6 | Ph | TSN-93474 |
| 1 | I-10 | 100 | 5 | Pg | X24-2233 | G-05 | I-10 | 300 | 1 | P3/4 | |
| 8.96 | I-10 | 100 | 5 | PIO | TSN-22136 | 8-94 | I-10 | 300 | 5 | PI | ISH-1238 |
| B-93 | I-10 | 100 | 6 | PI | TSL- 1176 | | I-10 | 300 | 5 | Pa | 15L-93362 PSN-1108-1 |
| | I-10 | 100 | 6 | Pa | TSN-1172 TSN-1172 | | I-10 | 300 | 5 | P3 | NST. M68-1 |
| | I-10 | 100 | 6 | P3 | TM-1152-2 | | I-10 | 300 | 5 | PH | PM: 1108-1 |
| | I-10 | 100 | 6 | PY | TM-1152-1 | | I-10 | 300 | 5 | P5 | PT-1108 |
| 1 | I-10 | 100 | 6 | P5 | TM-1152-3 | | I-10 | 300 | 5 | P6/7 | MTU-1 |
| B-9 | 13 I-10 | 100 | 6 | Pb | TSN-93473 | | I-10 | 300 | 5 | P8 | 252-2269 |
| H-01 | I-10 | 200 | 1 | PI | XMS-11262-14 | V | I-10 | 300 | 5 | P9 | X5L-2221 |
| A-01 | I-10 | 200 | 1 | Pa | XMS-11262-13 | 894 | I-10 | 300 | 5 | PIO | TSH-22135 |
| | I-10 | 200 | 1 | P7/8 | | 8-91 | I-10 | 300 | 6 | PI | 75H-1175 |
| C-02 | I-10 | 200 | 2 | PI | XM5-11262-12 | | I-10 | 300 | 6 | P2 | 734-071 |
| | I-10 | 200 | 2 | PZ | YM5-1262-8 | | I-10 | 300 | 6 | P3 | TM-1151-2 |
| | I-10 | 200 | 2 | P3 | XM5-11262-4 | | I-10 | 300 | 6 | P4 | TM-1151-1 |
| | I-10 | 200 | 2 | PY | XMS-11262-11 | 1 | I-10 | 300 | 6 | P5 | TM-1151-3 |
| | I-10 | 200 | 2 | P5 | XMS 11262-7 | B-91 | I-10 | 300 | 6 | 126 | TSN-93472 |
| | I-10 | 200 | 12 | . P6 | XM5-11262-3 | E-34 | I-10 | 400 | 3 | P1/3 | MIS-1122 |
| | I-10 | 2001 | Ad- | PT | XMS-11262-10 | C-18 | I-10 | 400 | 4 | P5/6 | c5-182 |
| | I-10 | 200 | 2 | P8 | XMS-11262-6 | | I-10 | 400 | 5 | PI | 5M-21170-2 |
| | I-10 | 200 | 2 | P9 | XM5-11262-2 | | I-10 | 400 | 5 | P2 | SM-21170-1 |
| | I-10 | 200 | 2 | PIO | XM5-11262-9 | | I-10 | 400 | | P3 | 57-21170 |
| 1 | I-10 | 200 | 2 | PII | XM5-112625 | | I-10 | 400 | 5 | P4/5 | MTU-1 |
| C-02 | I-10 | 200 | 2 | PIZ | XM5-11262-1 | | I-10 | 400 | | P6 | TSL-22104 |
| 8.0 | S Z-10 | 200 | 5 | PI | XMS-1462-45 | | I-10 | 400 | 1 | P7 | X5H - 11222 |
| | I-10 | 200 | 5 | Pa | 154-93364 | | I-10 | 400 | 5 | P8 | FM-2212 |
| | I-10 | 200 | 5 | P3 | PSL-1110-1 | | I-10 | 400 | 5 | P9 | ¥T-93470-B |
| | I-10 | 200 | 5 | PY | PSE-1110-1 | 0 - | I-10 | 400 | 5 | PIO | SM-21/64-2 |
| 1 | | 200 | 5 | P5 | PT-1110 | | I-10 | 400 | 5 | PII | SM-21164-1 |
| 6-95 | | 200 | 5 | Puls | MT4-1 | C-18 . | I-10 | 400 | 5 | P12 | 57-21164 |

| | | B | | MARULE | X015-21328 | PANEL | - | | MODULE | INSTRA |
|------|-------|-----|------|--------|----------------------------|-------|------|-----|--------|--------------------------|
| C-17 | I-10 | 46 | | - 71 | NSN- 11/86 POS-2/550-1 | I-10 | 500 | 4 | PIZ | 55N-21166-1 C-16 |
| | I-10 | | SE V | PZ | POS-21550-2 | I-10 | 600 | 3 | PI/3 | MIS-1120 G-02 |
| | I-10 | 400 | 6 | P3 | POS -21548-1 | I-10 | 600 | 4 | P5/4 | cs-1A2 E-da |
| | I-10 | 400 | 6 | PY | FSL-2212-3 | I-10 | 1000 | 5 | PI | SM-21168-2 C-2 |
| | I-10 | 400 | 6 | P5 | 227-51130-7 | I-10 | 600 | 5 | P2 | SM-21168-1 |
| | I-10 | 400 | 0 | PG | 55W-21170-1 | I-10 | 600 | 5 | P3 | 57-21168 |
| | I-10 | 400 | 6 | PT | XDIS-21322 XSN-11180 | I-10 | 600 | 5 | P415 | MTU-1 |
| | I-10 | 400 | 6 | P8 | x54-93470-8 | I-10 | 600 | 5 | P6 | TSL-22102 |
| | I-10 | 400 | 6 | 19 | XD15-21176 XD15-21182 | I-10 | 400 | 5 | PT | XSH- 11220 |
| | I-10 | 400 | 6 | P10 | FSL- 22/2-1 | Z-10 | 600 | 5 | P8 | FM-2210 |
| 1 | I-10 | 400 | 6 | PII | 554-21164-1 | I-10 | 600 | 5 | Pg | 47-93470-A |
| C-17 | I-10 | 400 | 6 | PIZ | 35N-21164-1 | I-10 | 600 | 5 | PIO | SM-2/162-2 |
| E-31 | I-10 | 500 | 4 | 19 | X5N-93456-C | I-10 | 600 | 5 | PII | SM-21162-1 |
| E-31 | I-10 | 500 | 4 | PIO | XT-93456-C | I-10 | 600 | | PIZ | 51-2462 C-2 |
| E-31 | I-10 | 500 | 4 | PII | 45H-93454-C | E-10 | 600 | 6 | Pa | 6-0 |
| | I-10 | 500 | 4 | P12 | XT-93454-C | I-10 | 600 | 6 | P3 | 1015-21180 |
| | I-10 | 500 | 5 | PI | 54-21172-2 | I-10 | 600 | 6 | PY | FSL-2210-3 |
| 1017 | | 500 | 5 | PZ | 5M-21112-1 | I-10 | 400 | 0 | 105 | 556-21168-1 |
| | I-10 | 500 | 5 | P3 | 37-21172 | I-10 | | 6 | Pb | 336-21168-2 53H-21168 |
| | I-10 | | 5 | P4/5 | | | | 6 | 1 07 | X015-21520 |
| | I-10 | 500 | | | MTU-1 | I-10 | 600 | 6 | 18 | 33H-11/78 |
| | I-10 | 500 | 5 | P6 | T3L-23106 | I-10 | 600 | 6 | 19 | 13H-93470-A |
| | I-10 | 500 | 5 | PI | X5H-11224 | I-10 | 600 | 1 | | FSL 3210-1 |
| | .I-10 | 500 | 5 | P8 | FM-2214 | I-10 | 600 | 1 | P10 | FSL- 2210-2 |
| | I-10 | 500 | 5 | 19 | XT-93470-C | I-10 | 600 | 1 | 1211 | 55K-21162.2 |
| | I-10 | 500 | 5 | P10 | SM-21166-2 | I-10 | | 6 | PIZ | 55H-21162-1 V |
| 4 | I-10 | 500 | - | PII | SM-21166-1 | I-10 | 700 | 2 | 87/8 | CS-218 C-24 |
| C-19 | I-10 | 500 | -5 | P12 | 37-21166 | I-10 | 700 | 3 | P1/3 | M15-1115 E-2 |
| C-16 | I-10 | 500 | 6 | PI | XDIS-21330 XSH-11188 | I-10 | 100 | 4 | P1/2 | MTU-1 2-3 |
| | I-10 | 500 | 4 | P2 | POS-21554-1 POS-21554-2 | I-10 | 700 | 4 | P3 | XSN- 93452 |
| | I-10 | 500 | 6 | P3 | POS-21552-1 POS-21652-2 | I-10 | 700 | 4 | P4 | XDSH-93133 |
| | I-10 | 500 | 6 | PY | FSL-22143 | I-10 | 700 | 4 | P5 | XDSH- 93130 |
| | I-10 | 500 | 6 | P5 | 556-31172-1 556-31172-1 | I-10 | 700 | 4 | PIO | TOSL-22103 |
| | I-10 | 500 | 6 | P6 | 55N-21172 55N-21172-1 | I-10 | 700 | 4 | PII | X3N-2298 V |
| | I-10 | 500 | 6 | PT | XDIS-21324 | I-10 | 700 | 9 4 | P12 | XSL-3124 E-3 |
| | I-10 | 500 | 6 | 138 | X5H-934704 | | 700 | 5 | P5 | XSH-93456-BC- |
| | I-10 | 500 | 6 | Pg | XDIS-21178 | Z-10 | 700 | | PG | XT-93456-8 |
| | I-10 | 500 | 6 | PIO | FSL-2214-1 FSL-2214-2 | I-10 | 700 | 1 | 1 07 | XSH-93454-B |
| de | 2-11 | | | | | | | | | |

| | PANEL | BAT | N. A. | MOBULE | ENSTR. | PANEL | BAY | BIN | MODULE | INSTR. " |
|----------|-------|------|-------|--------|------------------------|-----------|------|-----|--------|----------------------------|
| C-31 | I-10 | 70% | 4 | 0 | YSH- 934578 | E-447-10 | 1000 | 5 | PII | 511-21163-1 |
| C-21 | I-10 | 100 | 2 1 | P10 | YT- 93457-8 | E-44 I-10 | 1000 | 5 | P12 | 57-21163 |
| C-al | I-10 | 700 | 5 | PII | YSH-93455-8 | C-11 I-10 | 1000 | 6 | PI | XD13-21327 XXN-11185 |
| C-21 | I-10 | 700 | 5 | PIZ | XT- 93455-8 | I-10 | 1000 | 6 | P2 | POS-21551-1 POS-2155-2 |
| E:32 | Z-10 | 800 | 4 | P4/5 | MTU-1 | I-10 | 1000 | 6 | P3 | POS-21549-1 |
| | I-10 | 800 | 4 | PG | XDSN-93134 | I-10 | 1000 | 6 | PY | FSL-2211-3 |
| | I-10 | 800 | 4 | PT | XOSH- 93131 | I-10 | 1000 | 6 | P5 | 354-21169-1 354-21169-2 |
| | I-10 | 800 | 4 | PIO | TOSL-22105 | I-10 | 1000 | 6 | PG | SSH-21169 SSH-21169-1 |
| 1 | I-10 | 800 | 4 | PII | X3N-2299 | I-10 | 1000 | 6 | PT | 1015-21321 |
| E-32 | I-10 | 800 | 4 | P12 | XSL-3125 | I-10 | 1000 | 6 | P8 | XSH-93471-8 |
| E-39 | I-10 | 900 | 2 | P1/8 | C5-22A | I-10 | 1000 | 6 | P9 | X015-21175 |
| E-60 | I-10 | 900 | 3 | P1/3 | M15-1119 | I-10 | 1000 | 6 | PIO | EST. 7511-1 |
| E-24 | I-10 | 900 | 4 | P1/2 | mru-1 | V I-10 | 1000 | 6 | PII | 554-21163-1 |
| | I-10 | 900 | 4 | P3 | XSN-93448 XSN-93451 | C-11 I-10 | 1000 | 6 | PIZ | 35N-2H43 SSN-2H43-1 |
| | I-10 | 900 | 4 | P4 | 105N-93132 | E-29 I-10 | 1100 | 3 | P1/3 | MIS-1117 |
| | I-10 | 900 | 4 | P5 | XOSN- 93129 | E-26 I-10 | 1100 | 4 | 19 | X54-93457-C |
| | I-10 | 900 | 4 | P10 | TOSE-22101 | I-10 | 1100 | 4 | P10 | 17-93457-C |
| V | Z-10 | 900 | 4 | PII | X54-2297 | J. Z-10 | 1100 | 4 | PII | XSN-93455-C |
| E-24 | I-10 | 900 | 4 . | PIZ | XSL-3123 | E-36 Z-10 | 1100 | 4 | P12 | 17-93455-C |
| E:43 | I-10 | 900 | 5 | P5 | XSH-93456-A | G-06I-10 | 1100 | 5 | PI | SM-21171-2 |
| | I-10 | 900 | 5 | PG | XT-93456-A | I-10 | 1100 | 5 | P2 | SM-21171-1 |
| | I-10 | 900 | 5 | PI | X54-93454 A | I-10 | 1100 | 5 | P3 | 57-21171 |
| | I-10 | 900 | 5 | P8 | XT-93454-A | 2-10 | 1100 | 5 | P415 | MTU-1 |
| 24 | I-10 | 900 | 5 | 19 | XSN-93457-A | Z-10 | 1100 | 5 | P6 | TSL-22105 |
| | I-10 | 900 | 5 | PIO | XT-93457-A | I-10 | 1100 | 5 | PI | X34-11223 |
| 1 | I-10 | 900 | 5 | PII | X5N-93455-A | I-10 | 1100 | 5 | P8 | FM-2213 |
| E-43 | I-10 | 900 | 5 | PIZ | X7-93455-A | I-10 | 1100 | 5 | 109 | XT-93471-C |
| E-30 | I-10 | 1000 | 3 | P1/3 | M15-1116 | I-10 | 1100 | 5 | P10 | SM-21165-2 |
| E-44 | I-10 | 1000 | 4 | P516 | C5-181 | Z-10 | 1100 | 5 | PII | SM-21165-1 |
| | I-10 | 1000 | 5 | PI | SM-21169-2 | VI-10 | 1100 | 5 | 912 | 57-21165 |
| | I-10 | 1000 | 5 | PZ | 34-21169-1 | G-07 I-10 | 1100 | 6 | PI | XSH-11187 |
| | I-10 | 1000 | 5 | P3 | 57-21169 | Z-10 | 1100 | 6 | P2 | |
| | T-10 | 1000 | 5 | P415 | mru-1 | I-10 | 1100 | 6 | P3 | 1015-21183 |
| | I-10 | 1000 | 5 | PG | TSL-22103 | I-10 | 1100 | 6 | P4 | FSL: 2213-3 |
| | I-10 | 1000 | 5 | PI | YSH-11221 | I-10 | 1100 | 6 | P5 | 554-21171-1 |
| | I-10 | 1000 | 5 | P8 | FM-2211 | I-10 | 1100 | 6 | PL | 554-21171 554-21171-1 |
| 1 | I-10 | 1000 | 5 | Pg | XT-93471-8 | I-10 | 1100 | 6 | PT | XDIS-2/323- |
| E-44 | I-10 | 1000 | 5 | P10 | SM-21163-2 | V I-10 | 1100 | 6 | P8 | YSN-93471-C |

| PANE. | | 444 | | PA | INSTR. # XDIS-21177 XDIS-21153 |
|----------|-----|------|-----|-----------------|--------------------------------------|
| - 1 | | 113 | | PIO | FSL- 2213-1 |
| 1 | | 116 | | Marine Services | 1556. 2213-2 556. 22165-1 |
| I- | - 1 | 1100 | 6 | PII | 334-21105.7 |
| V I- | 10 | 1100 | 6 | PIZ | 35H-21165-1 |
| E-38 T | 10 | 1200 | 3 | P1/3 | M15-1118 |
| E-21 I- | 10 | 1200 | 4 | P5/6 | CS-IAI |
| A-169 I- | 10 | 1200 | 5 | PI | SM-21167-2 |
| I- | 10 | 1200 | 5 | P2 | SM-21167-1 |
| I- | 10 | 1200 | 5 | P3 | 57-21167 |
| I- | 10 | 1200 | 5 | P415 | MTU-1 |
| I- | 10 | 1200 | 5 | Pb | 732-22101 |
| I-1 | 10 | 1200 | 5 | PT | XS4-11219 |
| I- | 10 | 1200 | 5 | P8 | FM-2209 |
| I- | 10 | 1200 | 5 | 19 | XT- 93471-A |
| I- | 10 | 1200 | 5 | PIO | SM-21161-2 |
| I-1 | 0 | 1200 | 5 | PII | SM-21161-1 |
| I | 10 | 1200 | 5 | P12 | 57-21/61 |
| I. | 10 | 1200 | 6 | PI | XD15-21325 |
| Z. | 10 | 1200 | 6 | P2 | POS-21547-1 POS-21547-2 |
| I- | 10 | 1200 | 6 | P3 | POS-21545-1 POS-21545-2 |
| I. | 10 | 1200 | 6 | PY | FSL-2209-3 |
| I. | 10 | 1200 | 6 | P5 | 356-21167-1 |
| I- | | 1200 | 6 | Pb | 55H-21167 55H-21167-1 |
| I- | | 1200 | 6 | PT | XOIS-21319 XSH 11177 |
| Z- | | 1200 | 6 | 18 | 154-93471-A |
| J | | 1200 | 6 | P9 | 1011 - 21173 XDIS-21179 |
| I-1 | | 1200 | 1 | PIO | FSL- 2209-1 |
| V I- | | 1200 | - 6 | PII | 551-21161-2 |
| A-69 Z- | | 1200 | 6 | PIZ | SSN-21161 SSN-21161-1 |
| | | 1200 | | 1 | 1 |

8

PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

Poege (of 6

Log Number 0360

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| REVIEWER NAME | GARRETT | | 1/26/83 |
|---|---|----------|-------------------------|
| A. HED TITLE Swif | | | |
| 8. | ITEMS INVO | LVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. |
| SEESE | PARATE SHEETS | | |
| | | | |
| | | | * |
| | | | |
| | | | |
| | NS (GUIDELINES VIOLATED) PUS. | | |
| | | 1 - 42 | |
| D. LIST THE PROCEDURES LISTED ITEMS IN A MA | OR OPERATIONS THAT USE THE NNER TO INDUCE THE OPERATOR E | ROR | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| _ | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM | M HED | |
|-----|--|-----------------|---------------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| F. | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| | | | |
| | | | |
| _ | | | |
| | | | |
| _ | | | |
| _ | | | |
| | CLASSIFICATION | | |
| H. | CORRECTIVE ACTION OPTIONS | | |
| _ | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | DISPOSITION Nu oction - not operator | used confrols w | ICH 5/1/80 |
| | DISPOSITION Nu oction - not operator | used confrols w | ICH 5/1/80 |
| 1. | DISPOSITION No ection - not operator | used confrols w | 16# 5/1/80 |
| 1. | DISPOSITION Nu ection - not operator | used confrols w | 16/4 5/ 1/80 |
| 1. | DISPOSITION No oction - not operator | used confrols w | 1C# 5/1/80 |
| 1. | | | 1CH 5/1/86 |
| t. | DISPOSITION No ection - not operator TEAM ACTION TEAM MEMBER SIGNATURE | | OATE |
| | TEAM ACTION | CONCURRENCE OR | |
| Tea | TEAM ACTION | CONCURRENCE OR | |
| Tea | TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | |
| Tea | TEAM ACTION TEAM MEMBER SIGNATURE om Manager DR Coordinator | CONCURRENCE OR | |

| . INEL | BAY | | | INSTR. " | PANEL | BAY | BIN | MODULE | INSTR. |
|--------|-----|-----|------------------|---------------|-------|-----|-----|-----------|----------------------|
| I-14 | | | y "Me | RLS: 6212 | I-14 | 400 | 4 | E.6P11/12 | RIS-93250-5 |
| I-14 | 100 | 3.2 | STATE OF PERSONS | RIS-6314-2 | I-14 | 400 | 5 | E:MP1/2 | RIS-93250-12 |
| I-14 | 100 | 3 | PIM | R15 - 7312 | I-14 | 400 | 5 | P5/6 | RIS-93251-9 |
| 2-14 | 100 | 3 | P10/12 9-17 | R15-9302 | I-14 | 400 | 5 | P7/8 | RIS-93251-7 |
| X-14 | 100 | 5 | P9/10 E-11 | R15-73437-1 | I-14 | 400 | 5 | VP11/12 | RIS-93250-4 |
| I-14 | 100 | 5 | P11/12 E-11 | RIS- 73437-2 | I-10 | 100 | 1 | 6d P 3/4 | |
| I-14 | 200 | 3 | P1/3 A:16 | RIS-31193 | I-10 | 100 | 1 | V P718 | 77-93473 |
| I-14 | 200 | 3 | P4/6 | RIS-21251 | I-10 | 100 | 5 | 896 P2 | X5L93363 |
| 5-14 | 200 | 3 | P7/9 V | RIS-7324-2 | I-10 | 100 | 5 | P3 | PSE-1109-1 |
| I-14 | 200 | 3 | P10/12 A-16 | R15-46211 | I-10 | 100 | 5 | PY | p3# -ne i-i |
| I-14 | 200 | 4 | P3/4 E:17 | R 15-93250-13 | I-10 | 100 | 5 | P5 | PT-1109 |
| I-14 | 200 | 4 | P7/8 | RIS- 93252-2 | I-10 | 100 | 5 | P6/7 | MTU-1 |
| I-14 | 200 | 4 | P9/10 V | RIS- 93252-1 | I-10 | 100 | 5 | P8_ | XSL-2271 |
| I-14 | 200 | 4 | P11/12 E-17 | RIS- 7325-2 | I-10 | 100 | 5 | 1 19 | XS2-2233 |
| I-14 | 200 | 5 | P 9/10 E-12 | RIS-93250-8 | I-10 | 100 | 5 | PIO | 75N-22134 |
| I-14 | 200 | 5 | P11/128-12 | RIS- 43252-6 | I-10 | 100 | 5 | V P11/12 | TT-22136 |
| 14 | 300 | 3 | P1/3 A:15 | R15-6213 | I-10 | 100 | 6 | B93P1 | 736-1176 754-1172 |
| I-14 | 300 | 3 | P4/6 | R15-7325-1 | I-10 | 100 | 6 | P2 | 752-1172 |
| I-14 | 300 | 3 | P7/9 | R13-46212 | I-10 | 100 | 6 | P3 | TM-1152-2 |
| I-14 | 300 | 3 | P10/12 | R15-2264 | I-10 | 100 | 6 | PY | TM-1152-1 |
| I.14 | 300 | 4 | P3/4 E:16 | RIS- 93251-4 | I-10 | 100 | 6 | P5 | TM-1152-3 |
| I-14 | 300 | 4 | P5/6 | RIS-93250-14 | I-10 | 100 | 6 | P4 | TSH-93473 |
| I-14 | 300 | 4 | P 7/8 | RIS- 93251-1 | I-10 | 100 | 6 | B1/8 | TT-1172 |
| 1-14 | 300 | 4 | P9/10 + | RIS- 93251-3 | I-10 | 100 | 6 | V P9/10 | TT-1176 |
| I-14 | 300 | 4 | P11/12 E-16 | RIS-93252.4 | I-10 | 200 | 1 | A-01 P1 | XMS-11262-14 |
| I-14 | 300 | 5 | P1/2 E:13 | RIS-93252-12 | I-10 | 200 | 1 | P2 | XMS-11262-13 |
| I-14 | 300 | | P3/4 | RIS-93251-12 | I-10 | 200 | 1 | P7/8 | |
| I-14 | 300 | 5 | P7/8 | RIS-93252-7 | I-10 | 200 | 1 | 19/10 | 77-93474 |
| I-14 | 300 | 5 | P9/10 | RIS-93251-6 | I-10 | 200 | 1 | VP12 | XM5-11262-1 |
| I-14 | 300 | 5 | Pulia | RIS-93251-5 | I-10 | 200 | 2 | C-02 P1 | XMS-11262-16 |
| I-14 | 400 | 3 | P1/3 A.14 | RIS-9301 | I-10 | 200 | 2 | Pa | XMS-11262-8 |
| I-14 | 400 | 3 | P4/6 | RIS-6314-1 | I-10 | 200 | 2 | P3 | XMS-11262-4 |
| J-14 | 400 | 1 | P7/9 | RIS- 7324-1 | I-10 | 200 | 2 | PY | XM5-11262-11 |
| 14 | 400 | | PIOLIZ | RIS-2263 | I-10 | 200 | 2 | P5 | XM5-11262-7 |
| I-14 | 400 | 4 | P3/4 E-5 | | I-10 | 200 | 2 | P6 | XM5-1462-3 |
| I-14 | 400 | 4 | P5/6 | RIS-93250-1 | I-10 | 200 | 2 | PI | XMS 11262-10 |
| I-14 | 400 | | P1/8 | RIS-93250-3 | I-10 | 200 | 2 | P8 | XMS-11262-6 |
| I-14 | 400 | | P9/10 V | RIS- 93251-8 | I-10 | 200 | 2 | JP9 | XMS-11262-2 |

| , | PANEL | 24 | - | MODULE | INSTR = | , | PANEL | BAY | BIN | MODULE | INSTR. |
|------|-------|-----|-----|--------|-------------------------------|------|-------|-----|-----|--------|----------------------------|
| Coa. | I-10 | 3 | | P10 | XMS-11262-9 | B-91 | I-10 | 300 | 6 | P6 | TSN-93472 |
| C.03 | | 200 | 与 | Pil | XMS-11262-5 | 8-91 | I-10 | 300 | 4 | P7/8 | TT-1171 |
| C-02 | | 200 | 2 | PIZ | XM5-11262-1 | 8-91 | I-10 | 300 | 6 | P9/10 | 77-1175 |
| | I-10 | 200 | 5 | PI | XM5-14262-15 | E-35 | I-10 | 400 | 2 | P1/2 | cc-282 |
| | J-10 | 200 | 5 | P2 | XSL-93364 | | I-10 | 400 | 2 | P3/4 | TT-22104 |
| | I-10 | 200 | 5 | P3 | PSL-1110-1 | | I-10 | 400 | 2 | P5/4 | ISL-93208- |
| | I-10 | 200 | 5 | PY | PSH-1110-1 PSL-1110 (STAR) | 1 | I-10 | 400 | 2 | P7/8 | Ist- 93208-3 |
| | I-10 | 200 | 5 | P5 | PT-1110 | E-36 | I-10 | 400 | 2 | P11/12 | RIS-93252- |
| | I-10 | 200 | 5 | P6/7 | MTU-1 | E;34 | I-10 | 400 | 3 | P1/3 | MIS-1122 |
| | I-10 | 200 | 5 | 18 | XSL-2273 | | I-10 | 400 | 3 | P415 | |
| | I-10 | 200 | 5 | Pg | X3L-2235 | | I-10 | 400 | 3 | P6/7 | |
| | I-10 | 200 | 5 | P10 | TSH-22137 | 4 | I-10 | 400 | 3 | P12 | + |
| 1 | I-10 | 200 | 5 | P11/12 | 77-22137 | E:20 | I-10 | 400 | 4 | P5/6_ | CS-182 |
| B-92 | I-10 | 200 | 6 | PI | 734-1177 73L-1177 | | I-10 | 400 | 4 | P7/8 | CT-IBR4 |
| | I-10 | 200 | 6 | P2 | TSN-1173 TSL-1173 | | I-10 | 400 | 4 | P9/10 | CT-282 |
| | I-10 | 200 | 6 | P3 | TM-1153-2 | V | I-10 | 400 | 4 | P"/12 | CT-1813 |
| | I-10 | 200 | 6 | PY | TM-1153-1 | C-18 | I-10 | 400 | 5 | PI | SM-21170 - |
| | I-10 | 200 | 6 | P5 | TM-1153-3 | | I-10 | 400 | 5 | P2 | SM-21170-1 |
| | I-10 | 200 | 6 | 126 | TSH-93474 | | I-10 | 400 | 5 | P3 | 57-21170 |
| | I.10 | 200 | 6 | P7/8 | TT-1173 | | I-10 | 400 | 5 | P415 | MTU-1 |
| 1 | I-10 | 200 | 6 | P9/10 | 77-1177 | | I-10 | 400 | 5 | Pb | TSL- 22104 |
| G-05 | I-10 | 300 | 1 | P3/4 | | | I-10 | 400 | 5 | PT | X54-11222 |
| G-05 | I-10 | 300 | 1 | P7/8 | TT-93472 | | I-10 | 400 | 5 | 18 | FM-2212 |
| B.94 | I-10 | 300 | 5 | PI | ISN-1238 | | I-10 | 400 | 5 | P9 | ¥7-93470-€ |
| | I-10 | 300 | 5 | PZ | XSL-93362 | | I-10 | 400 | 5 | P10 | SM-21164-2 |
| | I-10 | 300 | 5 | P3 | PSN-1108-1 | | I-10 | 400 | 5 | PII | SM-21164- |
| | I-10 | 300 | - 5 | PY | PSL-1108-1 | 1 | I-10 | 400 | 5 | P12 | 57-21164 |
| | I-10 | 300 | 5 | P5 | PT-1108 | C-17 | I-10 | 400 | 6 | PI | X015-2/328 |
| 1 | I-10 | 300 | 5 | P6/7 | MTU-1 | | I-10 | 400 | 16 | P2 | POS-21550-2 |
| | I-10 | 300 | 5 | P8 | X52-2269 | | I-10 | 400 | 6 | P3 | 502-51248-F |
| | I-10 | 300 | 5 | P9 | XSL-2231 | | I-10 | 400 | 6 | P4 | FSL-2212. |
| | I-10 | 300 | 5 | P10 | TSH-22/35 | | I-10 | 400 | 6 | P5 | SSL-21170-1 |
| 1 | I-10 | 300 | 5 | P11/12 | | | I-10 | 400 | 6 | Pb | SSH-21170 |
| 8:91 | I-10 | 300 | 6 | PI | TSH-1175 | | I-10 | 400 | 6 | PT | XDIS-21322 XSH41180 |
| | I-10 | 300 | 4 | Pa | TSH-1171 TSL-117) | | 140 | 400 | 6 | P8 | XSH-93470- |
| | I-10 | 300 | 6 | P3 | TM-1151-2 | | I-10 | 400 | 6 | 19 | x015-21176 |
| | I-10 | 300 | 6 | PY | TM-1151-1 | | 2-10 | 400 | 0 6 | PIO | FSL-22/2-1 |
| 1 | I-10 | 300 | 6 | P5 | TM-1151-3 | V | I-10 | 400 | | PII | 556-21164-1 556-21164-2 |

| F | ANEL | BAN | | THE R | INSTR. | PANEL | BAY | BIN | MODULE | INSTR. " |
|------|------|-----|-----|--------------|-----------------------------|-------|-----|-----|--------|----------------------------|
| | I-10 | 1 | | | SSN-21164 SSN-21164-1 | I-10 | 600 | 2 | P7/8 | ISL-93207-3 E-37 |
| | I-10 | 500 | 4 | R3/4 | TT-22106 | I-10 | 600 | 2 | PIII2 | RIS- 93250-11 E-3 |
| | I-10 | 500 | 2 | P11/12 | RIS-93252-11 | 1-10 | 600 | ق | P1/3 | MIS-1120 G-02 |
| E-33 | I-10 | 500 | 3 | P1/3 | MIS-1121 | I-10 | 600 | 3 | P415 | |
| | I-10 | 500 | 3 | P415 | 1 1 | I-10 | 600 | 3 | P6/7 | |
| | I-10 | 500 | 3 | P617 | | I-10 | 600 | 3 | PIZ | 1 |
| 1 | I-10 | 500 | 3 | P12 | | I-10 | 600 | 4 | P5/6 | cs-1A2 E-22 |
| - 21 | I-10 | 500 | 4 | P1/3 | D265-2263 | I-10 | 600 | 4 | PTB | CT-IAR4 |
| | I-10 | 500 | 4 | P9 | XSH-93456-C | I-10 | 600 | 4 | P9/10 | CT-2A2 |
| | I-10 | 500 | 4 | P10 | XT- 93456-C | I-10 | 600 | 4 | P11/12 | CT-IAL3 V |
| | I-10 | 500 | 4 | PII | 15H-93454-C | I-10 | 400 | 5 | PI | SM-21168-2 C-20 |
| 1 | I-10 | 500 | 4 | PIZ | XT- 93454-C | I-10 | 400 | 5 | P2 | SM-21168-1 |
| C-19 | I-10 | 500 | 5 | PI | SM-21172-2 | I. 10 | 600 | 5 | P3 | 57-21148 |
| 1 | I-10 | 500 | 5 | PZ | SM-21172-1 | I-10 | 600 | 5 | P4/5 | MTH-1 |
| | I-10 | 500 | 5 | P3 | 57-21172 | I-10 | 600 | 5 | P6 | TSL-22/02 |
| | I-10 | 500 | 5 | P4/5 | MTU-1 | I-10 | 600 | 5 | PT | X5H-11220 |
| | 3-10 | 500 | 5 | Pb | TSL-22106 | I-10 | 600 | 5 | P8 | FM-2210 |
| 1 | I-10 | 500 | 5 | PT | X3H-11224 | I-10 | 400 | 5 | Pg | YT- 93470 -A |
| | I-10 | 500 | 5 | P8 | FM-2214 | I-10 | 600 | 5 | PIO | SM-21162-2 |
| | I-10 | 500 | 5 | P9 | XT-93470-C | I-10 | 600 | 5 | PII | 54-21162-1 |
| | I-10 | 500 | 5 | PIO | SM-21166-2 | Z-10 | 600 | 5 | PIZ | 57-21162 |
| | X-10 | 500 | 5 | PII | SM-21166-1 | I-10 | 600 | 6 | PI | XD15-21326 G-09 |
| 1 | I-10 | 500 | 5 | PIZ | 57-21166 | I-10 | 600 | 6 | P2 | |
| C-16 | I-10 | 500 | 6 | PI | XD15-2/330 X3M-//188 | F10 | 600 | 6 | P3 | XO15-21180 |
| 1 | I-10 | 500 | 4 | Pa | POS-21554-1 | I-10 | 600 | 6 | P4 | FSL-2210-3 |
| | I-10 | 500 | 6 | P3 | POS-21552-1 POS- 21552-2 | I-10 | 600 | 6 | P5 | 55L-21168-1 55L-21168-1 |
| | I-10 | | - 6 | PY | FS1-2214-3 | I-10 | 600 | 6 | Pb | SSH-21168 SSH-21168-1 |
| | I-10 | 500 | | P5 | 554-21172-1 554-21172-2 | I-10 | 600 | 4 | PT | XDIS-21320 XSH-11178 |
| | I-10 | 500 | 6 | PG | 55N-21172 55N-21172-1 | I-10 | 400 | 4 | P8 | XSH-93470-A |
| | Z-10 | 500 | 6 | P7 | XD15-21324 XSN-11182 | I-10 | 600 | | 19 | X015-21174 X015-21150 |
| | I-10 | | 6 | 198 | X5H-93470-C | I.10 | 600 | | PIO | FSL-2210-1 FSL-2210-2 |
| | I-10 | 500 | 4 | Pg | XD15-21178 | I-10 | 600 | 6 | PII | 556-21162-1 |
| | I-10 | 500 | 6 | PIO | FSL-2214-1 FSL-2214-1 | x-10 | 600 | 6 | PIZ | SSN-21162 SSN-21162-1 |
| | I-10 | 500 | 6 | PII | 554-21166-1 | I-10 | 700 | 2 | PIL | 727-18 C-24 |
| 1 | I-10 | 500 | 6 | PIZ | 554-21/66 554-21/66 | 5-10 | 700 | 2 | P5/6 | 66.18 |
| E-37 | | 600 | | P1/2 | 35N-21166-1 | I-10 | 700 | 2 | P7/8 | cs-228 |
| | | | 2 | | CC-2A2 | | 700 | 2 | P11/12 | cc-20 V |
| E-37 | I-10 | 600 | 2 | P3/4 P5/6 | TT-22102 ISL-93207-4 | I-10 | 700 | 3 | P1/3 | MIS-1115 E-23 |

| | PANEL | BA | | MORNLE | INSTR. # | PANEL | BAY | BIN | MODULE | INSTR.# |
|------|-------|-----|-----|--------|------------------------|-----------|------|-----|--------|------------------------------|
| | I-10 | 704 | 4 | 584/5 | MIS-1:15 | I-10 | 900 | 4 | PII | 158-2297 E-24 |
| | I-10 | 740 | 1 | P6/7 | 1 | I-10 | 900 | 4 | P12 | 134-3123 E-24 |
| 1 | I-10 | 700 | 3 | PIZ | 1 | E-43.2-10 | 900 | 5 | P5 | XSH- 93456-A |
| E-31 | I-10 | 700 | 4 | P1/2 | mru-1 | I-10 | 900 | 5 | Pb | XT-93456-A |
| | I-10 | 700 | 4 | P3 | XSN-93449 XSN-93452 | I-10 | 900 | 5 | PT | XSH- 93454-A |
| | I-10 | 700 | 4 | PY | XOSH-93/33 | I-10 | 900 | 5 | P8 | XT-93454-A |
| | I-10 | 700 | 4 | P5 | XDSH-93130 | Z-10 | 900 | 5 | P9 | 154-93457-A |
| | I-10 | 700 | 4 | PIO | 1051-22103 | I-10 | 900 | 5 | PIO | XT-93457-A |
| | I-10 | 700 | 4 | PII | X3N-2298 | I-10 | 900 | 5 | PII | X3H-93455-A |
| 1 | I-10 | 700 | 4 | PIZ | XSL-3/24 | ¥ I-10 | 900 | 5 | PIZ | XT-93455-A |
| C-31 | I-10 | 700 | 5 | P5 | XSN-93456-8 | C-09 I-10 | 1000 | 2 | PIL | CC-201 |
| | I-10 | 700 | 5 | Pb | XT-93456-B | I-10 | 1000 | 2 | P3/4 | TT-22103 _ |
| | I-10 | 700 | 5 | PI | XSH-93454-8 | I-10 | 1000 | 2 | P5/6 | 134-83208-2 |
| | I-10 | 700 | 5 | P8 | X7-93454-8 | I-10 | 1000 | 2 | P7/8 | 154-93208-1 |
| | I-10 | 700 | 5 | 19 | XSH- 93457-8 | ¥ I-10 | 1000 | 2 | P11/12 | RIS-93251-10 |
| | Z-10 | 700 | 5 | PIO | XT-93457-8 | E-30 Z-10 | 1000 | 3 | P1/3 | MIS-1116 |
| | I-10 | 700 | 5 | PII | XSN-93455-B | I-10 | 1000 | 3 | P4/5 | |
| 1 | I-10 | 700 | 5 | PIZ | XT-93455-B | I-10 | 1000 | 3 | P6/7 | |
| E-33 | I-10 | 800 | 4 | P2 | 15N-93450 13N-93463 | V I-10 | 1000 | 3 | PIZ | 1 |
| 1 | I-10 | 800 | 4 | P4/5 | MTU-1 | EX I-10 | 1000 | 4 | P5/6 | 05-181 |
| | I-10 | 800 | 4 | Pb | XOSH-93/34 | I-10 | 1000 | 4 | P7/8 | CT-18R2 |
| | I-10 | 800 | 4 | PT | XDSH-93/3/ | I-10 | 1000 | 4 | P9/10 | CT-201 |
| | I-10 | 800 | 4 | PIO | TOSL-22105 | V I-10 | 1000 | 4 | P11/12 | CT-1841 |
| | I-10 | 800 | 4 | PII | XSN-2299 | E-44 I-10 | 1000 | 5 | PI | SM-21169-2 |
| 1 | I-10 | 800 | 4 | PIZ | X54-3125 | I-10 | 1000 | 5 | P2 | SM-21169-1 |
| E.38 | I-10 | 900 | 2 | P1/2 | TLT-IA | I-10 | 1000 | 5 | P3 | 57-21169 |
| 1 | I-10 | 900 | . 2 | P5/6 | cc-11 | J-10 | 1000 | 5 | P4/5 | mru-1 |
| | I-10 | 900 | 42 | P7/8 | cs-224 | I-10 | 1000 | 5 | Pb | TSL- 22103 |
| V | I-10 | 900 | 2 | P11/12 | cc-2A | I-10 | 1000 | 5 | PT | XSN-11221 |
| E-60 | I-10 | 900 | 3 | P1/3 | MIS-1119 | I-10 | 1000 | 5 | P8 | FM-2211 |
| | I-10 | 900 | 3 | P4/5 | 1 | I-10 | 1000 | 5 | P9 | XT-93471-8 |
| | I-10 | 900 | 3 | P6/7 | 1 | I-10 | 1000 | 5 | PIO | SM-21163-2 |
| 1 | I-10 | 900 | 3 | PIZ | 1 | I-10 | 100 | 0 5 | PII | SM-21163-1 |
| E-24 | I-10 | 900 | 4 | P1/2 | mru-1 | VI-10 | 100 | 05 | PIZ | 57-21163 |
| | I-10 | 900 | 4 | P3 | X5N-93448 X5N-93451 | CILI-10 | 1000 | 1 4 | PI | 1015-2/327 XSN-11185 |
| | I-10 | 900 | 4 | PY | XDSN-93132 | I I-10 | 1000 | 6 | PZ | POS- 21551-1 POS- 21551-2 |
| | I-10 | 100 | 4 | P5 | XOSH-93129 | I-10 | 1000 | 6 | P3 | PES-21549-1 |
| 1 | I-10 | 900 | 4 | PIO | TOSL - 22101 | VI-10 | 1000 | 6 | PH | FSL-2211-3 |

| | | | | | | 4.9 I-10 | 11200 | 16 | 1 PI2 1 | 55H-21161 |
|------|-------|---------|--------|--------|----------------------------|-----------|-------|------|---------|----------------------------|
| | PANEL | BALL | | COULE | INSTR. | PANEL | BAY | BIN. | MODULE | INSTR.* |
| C-11 | I-10 | 200 | 24 | P5 | 354-21169-1 354-21169-2 | 6-01I-10 | 1100 | 6 | P10 | FSL-2213-1 FSL-2213-2 |
| 1 | I-10 | 1000 | ALE F. | .68 | SSN-21169 SSN-21169-1 | I-10 | 1100 | 6 | PII | 554-21165-1 554-21165-2 |
| | I-10 | 1000 | 6 | PT | YDIS-21321 X3N- 11179 | VI-10 | 1100 | 6 | P12 | 55N-21165 55N-21165-1 |
| | I-10 | 1000 | 6 | P8 | XSN-93471-8 | C-06-I-10 | 1200 | 2 | P1/2 | CC-2A1 |
| | I-10 | 1000 | 6 | Pg | XDIS-21175 XDIS-21181 | J-10 | 1200 | 1 | P3/4 | 77-22101 |
| | I-10 | 1000 | 6 | PIO | FSL-2211-1 FSL-2211-2 | I-10 | 1200 | 2 | P5/6 | 156-93207- |
| | I-10 | 1000 | 6 | PII | 354-21163-1 354-21163-2 | 3-10 | 1200 | 2 | 07/8 | 154.93207-1 |
| 1 | I-10 | 1000 | 6 | PIZ | 35H-21163 33H-21163-1 | ¥ I-10 | 1200 | 2 | P.1/12 | R15-93250-1 |
| C-08 | I-10 | 1100 | 2 | P3/4 | 77-22105 | E-28.7-10 | 1200 | 3 | P1/3 | MIS-1118 |
| C-08 | I-10 | 1100 | 2 | P11/12 | RIS-93252-10 | I-10 | 1200 | 3 | P415 | 1 |
| E-29 | I-10 | 1100 | 3 | P1/3 | M15-1117 | I-10 | 1200 | 3 | P6/7 | |
| | I-10 | 1100 | 3 | P415 | 1 | V I-10 | 1200 | 3 | P12 | V |
| | I-10 | 1100 | 3 | P67 | 1/ | F-27 I-10 | 1200 | 4 | PS/L | CS-141 |
| 1 | I-10 | 1100 | 3 | P12 | 4 | I-10 | 1200 | 4 | P7/8 | CT-IMAL |
| E-al | Z-10 | 1100 | 4 | Pg | X54-93457-C | I-10 | 1200 | 4 | P9/10 | ET-201 |
| | I-10 | 1100 | 4 | PIO | XT-93457-C | ¥ I-10 | 1200 | 4 | P11/12 | CT-IALI |
| | I-10 | 1100 | 4 | PII | X5N-93455-C | A-69-10 | 1200 | 5 | PI | SM-21167-2 |
| 1 | I-10 | 1100 | 4 | PIZ | XT-93455-C | I-10 | 1200 | 5 | Pa | 3M-21167-1 |
| | J-10 | 1100 | 5 | PI | SM-21171.2 | J-10 | 1200 | 5 | P3 | 37-21167 |
| - 1 | I-10 | 1100 | 5 | P2 | SM-21171-1 | I-10 | 1200 | 5 | P4/5 | MTU-1 |
| | I-10 | 1100 | 5 | P3 | 57-21171 | I-10 | 1200 | 5 | Pb | TSL-22101 |
| | I-10 | 1100 | 5 | P415 | MTU-1 | I-10 | 1200 | 5 | PI | X5H-11219 |
| | I-10 | 1100 | 5 | Pb | rst-22105 | I-10 | 1200 | 5 | P8 | FM-2209 |
| | I-10 | 1100 | 5 | PT | XSH-11223 | I-10 | 1200 | 5 | P9 | XT- 93471-A |
| | I-10 | 1100 | 5 | P8 | FM-2213 | J-10 | 1200 | 5 | PIO | SM-21161-2 |
| | I-10 | | 5 | P9 | XT- 93471-C | I-10 | 1200 | 5 | PII | 3M-21161-1 |
| | I-10 | 1100 \$ | 5 | PIO | SM-21165-2 | I-10 | 1200 | 5 | PIZ | 57-21161 |
| | I-10 | 1100 | 5 | PI | SM-21165-1 | I-10 | 1200 | 6 | PI | XDIS-21325 KIN-11183 |
| 1 | I-10 | 1100 | 5 | PI2 | 37-21165 | I-10 | 1200 | 6 | P2 | POS-21547-1 |
| G-07 | I-10 | 1100 | 6 | PI | XDIS-21329 XSH-11187 | I-10 | 1200 | 6 | P3 | POS-21545-3 |
| | I-10 | 1100 | 6 | P2 | | I-10 | 1200 | 6 | PH | FSL-2209-3 |
| | I-10 | 1100 | 6 | P3 | X015-21183 X015-21159 | I-10 | 1200 | 6 | P5 | 556-21167-1 556-21167-2 |
| | I-10 | 1100 | 6 | PY | FSL-2213-3 | I-10 | 1200 | 6 | P6 | SSN-21167 SSN-21167-1 |
| | I-10 | 1100 | 6 | P5 | 554-21171-1 | I-10 | 1200 | 6 | PT | 1015-21319 XH-11177 |
| | I-10 | 1100 | 6 | PL | 55N-21171 55N-21171-1 | I-10 | 1200 | 6 | 18 | XSH- 93471-A |
| | I-10 | 1100 | 6 | PI | XD15-21323 XSN- 11181 | I-10 | 1200 | 6 | P9 | XD15-211.79 |
| | I-10 | 1100 | 6 | P8 | X5N-93471-0 | I-10 | 1200 | 6 | PIO | EST. 5508-1 |
| 1 | I-10 | 1100 | 6 | P9 | 1015-21177 XOIS-21153 | JI-10 | 1200 | 6 | P11 200 | SSL-21161-2 |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0361

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| PEVIEWER NAME | PAU CARRETT | | 7/27/83 |
|--|--|---------------------|-------------------------|
| A HED TITLESA | PON GARRETT | | |
| | Labeling Function | L | |
| 8. | / ITEMS INVO | LVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. |
| SEE | SEPARATE SHEET | | |
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| | | | |
| | | | |
| | encome la para una successiva de prima de carbon conselució como en con- | | |
| | OW MIDDLE POSITION (I | Dela 2 2 2 12 12 11 | |
| D. LIST THE PROCEDUR | ES OR OPERATIONS THAT USE THE NANNER TO INDUCE THE OPERATOR E | RROR | |
| | | | |
| | | | |
| THE REAL PROPERTY AND THE PROPERTY AND T | | | |
| | | | Adam - All I |
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| E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM | HED | |
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| F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| a a constantion | | |
| G. CLASSIFICATION | | |
| H. CORRECTIVE ACTION OPTIONS | | |
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| | | |
| 1. DISPOSITION No action - not operator | used controls we | H 5/1/86 |
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| | | |
| | | |
| TEAM CTION | | |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | DATE |
| | | |
| Team Manager | | |
| CRDR Coordinator | | |
| Human Factors Spec. | | |
| | | 5- Mi - |
| Senior Reactor Operator | | |
| | THE REPORT OF THE PARTY OF THE | |

| VSTR. # | INST | MODULE | BIN | BAY | PANEL |
|------------|--------|--------|-----|------|-------|
| G- | | P3/4 | 1 | 100 | I-10 |
| G-1 | | P3/4 | 1 | 300 | I-10 |
| C-282 E- | CC- | PIL | 2 | 400 | I-10 |
| -182 F | cs-1 | P5/6 | 4 | 400 | I-10 |
| -1884 | CT-1 | P7/8 | 4 | 400 | I-10 |
| -202 | CT-2 | P9/10 | 4 | 400 | I-10 |
| -18L3 V | CT-1 | P11/12 | 4 | 400 | I-10 |
| 1-2A2 E-3 | CC- | P1/2 | 2 | 600 | I-10 |
| 5-1A2 E-a | C5- | P516 | 4 | 600 | I.10 |
| T- 1.4R4 | CT- | 127/8 | 4 | 400 | I-10 |
| 7-212 | 27- | P9/10 | 4 | 400 | I-10 |
| T-1AL3 V | CT- | P"/12 | 4 | 600 | I-10 |
| 7-18 02 | 747 | P1/2 | 2 | 700 | I-10 |
| 1-18 | 66-1 | P5/6 | 2 | 700 | I-10 |
| -228 | es-, | P7/8 | 2 | 700 | I-10 |
| c-28 | cc - | P11/12 | 2 | 700 | I-10 |
| 8-1123 D-4 | 45- | | 3 | 800 | I-10 |
| 7-1A E-3 | 747- | P1/2 | 2 | 900 | I-10 |
| +A | cct | P5/6 | 2 | 900 | I-10 |
| 5-22A | C5- | P1/8 | 2 | 900 | I-10 |
| 1-2A V | cc - 0 | P11/12 | 2 | 900 | I-10 |
| -281 C-C | CC -0 | P1/2 | 2 | 1000 | I-10 |
| -181 E.a | cs-/ | P5/6 | 4 | 1000 | I-10 |
| -1BR2 | 27-1 | P7/8 | 4 | 1000 | I.10 |
| -201 | CT-3 | P9/10 | 4 . | 1000 | |
| -18L1 V | 21- | P11/12 | 4 | 1000 | |
| -2A1 COL | cc- | P1/2 | 2 | 1200 | |
| -1A1 E-3 | | P5/6 | 4 | | I-10 |
| IAR2 | c7-11 | P118 | 4 | | I-10 |
| -241 | | P9/10 | 4 | | I-10 |
| -1421 | 01-1 | Puliz | 4 | 1200 | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0362

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22-4228 DATE REVIEWER NAME 7/27/83 RON GARRETT SWITCH CONVENTION. A. HED TITLE ___ ITEMS INVOLVED 8. INSTRUMENT DATA FILE NO. NOMENCLATURE LOCATION ITEM TYPE PHOTO NO. SEE SEPARATE SHEET C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) PASH-BUTTON SWITCH SHOWS NO FUNCTION OR POSITION. D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| €. | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT F | ROM HED | |
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| F. | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | | | |
| G. | CLASSIFICATION | | |
| | CORRECTIVE ACTION OPTIONS | | |
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| | | | |
| | | | |
| 1 | DISPOSITION Functionally label of | peratur used con | trols |
| | DEN DD-4AB-1 CN-1895 WCH'S | 511/86 operator c | entrols |
| 7 | re 15/6 on 404, 604, 1004, | \$ 1204 WEH 5/1/86 | |
| - | 1 - 13/6 01 - 1, 5 - 1, | | |
| | | | |
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| | | | |
| | TEAM ACT | ION | |
| | TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | DATE |
| Te | em Manager | | |
| _ | | | |
| CR | DR Coordinator | | |
| Hu | man Factors Spec. | | |
| 9 | nior Reactor Operator | | 717 |
| 36 | TOTAL CONTROL | | |
| | | and the second s | |

| PANEL | BAY | BIN | MODULE | INSTR. | |
|-------|------|-----|--------|-------------|------|
| I.10 | 400 | 2 | P5/6 | ISL-93208-4 | E-35 |
| I-10 | 400 | 2 | P7/8 | ISL-93208-3 | E-35 |
| I-10 | 400 | 4 | P5/6 | CS-1B2 | E-20 |
| I-10 | 600 | 2 | P5/6 | ISL-93207-4 | E-37 |
| I-10 | 600 | 2 | P1/8 | ISL-93207-3 | E-37 |
| I-10 | 600 | 4 | P5/6 | C5-1A2 | 2.22 |
| I-10 | 1000 | 2 | P5/6 | ISL-93208-2 | C-09 |
| I-10 | 1000 | 2 | P 1/8 | ISL-93208-1 | C-09 |
| I-10 | 1200 | 2 | P5/4 | ISL-93207-2 | C-06 |
| I-10 | 1200 | 2 | P7/8 | ISL-93207-1 | C-06 |
| I-10 | 1000 | 4 | P5/6 | CS-181 | E-25 |
| I-10 | 1200 | 4 | PYL | CS-IAI | E-27 |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0363

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Page 183

| REVIEWER NAME | | | 7/26/83 |
|---------------------|--|------------------|-------------------------|
| | PON GARRETT | | 1126183 |
| HED TITLE SW. | ITCH CONVENTION | | |
| ¥ | abeling Functions | angle . | |
| | TEMS INVO | | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. |
| SEE | SEPARATE SHEETS | <u> </u> | |
| | | | |
| | | | - |
| | | | |
| | | | |
| PROBLEM DESCRIPTION | ONS (GUIDELINES VIOLATED) LEG | END SWITCHS SHOW | NO FUNCTION OR |
| | | | |
| LIST THE PROCEDUR | ES OR OPERATIONS THAT USE THE ANNER TO INDUCE THE OPERATOR ER | ROR | |
| | April 2 2-1 | | |
| | | | The Edward |
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| - | SPECIFIC OPERATOR ERRORIS) THAY COULD RESULT FROM HE | 0 | |
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| F. | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | CLASSIFICATION | | |
| н. | CORRECTIVE ACTION OPTIONS | | |
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| _ | | | |
| _ | | | |
| | DISPOSITION No action - not operator use | ed controls we | 4 5/1/86 |
| 1. | DISPOSITION No action - not apperator use | ed controls we | 4 571/86 |
| 1. | DISPOSITION No action - not apperator use | ed controls we | 4 5/1/86 |
| 1. | DISPOSITION No action - not apperator use | ad controls we | 4 5/1/8(|
| 1. | DISPOSITION No action - not appeador use | ad controls we | 4 57./8(|
| 1. | DISPOSITION No action - not apperator use | ed controls we | 4 57:/8(|
| 1. | DISPOSITION No action - not apperator use | ed controls we | 4 57:/8(|
| 1. | | ad controls we | 4 57./86 |
| 1. | TEAM ACTION | 1 CONCURRENCE OR | |
| 1. | | | 4 571/8 C |
| | TEAM ACTION | 1 CONCURRENCE OR | |
| Tes | TEAM ACTION TEAM MEMBER SIGNATURE | 1 CONCURRENCE OR | |
| Tez | TEAM ACTION TEAM MEMBER SIGNATURE | 1 CONCURRENCE OR | |
| Tea | TEAM ACTION TEAM MEMBER SIGNATURE Im Manager DR Coordinator | 1 CONCURRENCE OR | |

| x-247 | 1 17 | - | | والمداد بشباك بالو | and the same | | | | |
|----------------------------|--------|-----|-----|--------------------|--------------------------|---------|-----|------|-------|
| INSTR. " | MODULE | BIN | BAY | PANEL | INSTR. # | TOCA. | | 849 | PANEL |
| 551-2/170-1 551-2/170-2 | P5 | 4 | 400 | C-17 3-10 | | 54001 | | 1000 | I-10 |
| SSH-21170 SSH-21170-1 | 96 | 6 | 400 | I-10 | X51-93363 | 572 87h | 1/4 | 100 | I.10 |
| 1015-2/322 XSH-1180 | PT | 6 | 400 | I-10 | PS1-1109-1 PSN-1109-2 | P3 | 5 | 100 | I-10 |
| XSN-93470-8 | 18 | 6 | 400 | I-10 | PSN-1109-1 | PY | 5 | 100 | I-10 |
| x013-21176 x013-21182 | P9 | 6 | 400 | I-10 | XSL-2271 | P8 | 5 | 100 | x-10 |
| FSL-2212-1 FSL-2212-2 | PIO | 6 | 400 | I-10 | XSL-2233 | P9 | 5 | 100 | I-10 |
| 55L-21164-1 55L-21164-2 | PII | 6 | 400 | I-10 | TSN-22/36 | P10 V | 5 | 100 | I-10 |
| 55N-21164 55N-21164-1 | PIZ | 6 | 400 | ¥ I-10 | TSN-1176 TSL- 1174 | P1 8-93 | 6 | 100 | I-10 |
| X5H-93456-C | Pg | 4 | 500 | E-21 7-10 | 75N-1172 75L-1172 | P2 B93 | 6 | 100 | I-10 |
| X54-93454-C | PII | 4 | 500 | E-21 I-10 | TSN- 93473 | P6 B.93 | 4 | 100 | I-10 |
| TSL-22106 | PG | 5 | 500 | C-19 I-10 | 75775 | A-05 | 3 | 200 | I-10 |
| XSH-11224 | PT | 5 | 500 | C-19 Z-10 | XMS-11242-15 | P1 B.95 | 5 | 200 | I-10 |
| 1015 - 21330 XSN-11/88 | PI | 4 | 500 | C16 I-10 | XSL-93364 | Pa | 5 | 200 | I-10 |
| POS-21854-1 | P2 | 6 | 500 | I-10 | PSL-1110-1 | P3 | 5 | 200 | I-10 |
| POS-2/552-1 | P3 | 6 | 500 | F10 | P3N-1110-1 | PY | 5 | 200 | I-10 |
| FSL-2214-3 | PY | 6 | 500 | I-10 | X52-2273 | P8 | 5 | 200 | I-10 |
| 35L-21172-1 35L-21172-2 | P5 | 6 | 500 | I-10 | | pg | 5 | 200 | I-10 |
| 55H-21172 | PG | 6 | 500 | I-10 | X3L-2235 | | 5 | | I-10 |
| 1015-21172-1 | PI | 6 | | | TSN-22/37 | PIOV | | 200 | I-10 |
| XSH-11182 XSH-93470-C | P8 | 6 | 500 | I-10 | 73L-1177 75W-1173 | P1 842 | 6 | 200 | |
| 1015-21178 | 19 | 6 | 500 | I-10 | 75L-1173 | P2 692 | 6 | 200 | I-10 |
| x015 - 21184 FSL-2214-1 | PIO | | 500 | I-10 | TSH- 93474 | P6 692 | 6 | 200 | I-10 |
| 55L-22/4-2 55L-21/66-1 | 1 | 6 | 500 | I-10 | | C-03 | 2 | 300 | I-10 |
| 55H-21166-2 | PII | | 500 | I-10 | ISH-1238 | P1 B94 | 5 | 300 | I-10 |
| SSN-2/166-1 | P12 | 6 | 500 | V I-10 | XSL-93362 PSN-1108-2 | Pa | 5 | 300 | I-10 |
| TSL-22102 | P6 | | 600 | C-20 Z-10 | PSK-1108-1 | P3 | 5 | 300 | 1-10 |
| X5H-1/220 | PT | | 600 | Cao I-10 | PSL-1108 (SPARE) | PY | 5 | 300 | I-10 |
| NSH- 11184 | PI | | 600 | G-09 I-10 | XSL-2269 | P8 | 6 | 300 | I-10 |
| x015-21180 | P2 | 6 | 600 | I-10 | XSL-2231 | P9 | 1 | 300 | I-10 |
| X015-21156 | P3 | 6 | 600 | J-10 | 75N-22135 | PIOV | 5 | 300 | I-10 |
| FSL-2210-3 SSL-21168-1 | PY | 6 | 600 | I-10 | 751-1175 75N-1131 | P1 8.91 | 6 | 300 | I-10 |
| 551-21168-2 554-21168 | P5 | 6 | 600 | I-10 | 734-1171 | Pa | 6 | 300 | I -10 |
| SSN-21168-1 YOIS-21320 | PG | 6 | 600 | I-10 | TSH-93472 | P6 V | 6 | 300 | I-10 |
| X5H-11178 | PT | | 600 | I-10 | TSL-22104 | P6 C-18 | 5 | 400 | I-10 |
| X54-93470- | P8 | 6 | 600 | I-10 | | P7 C-18 | 5 | 400 | I-10 |
| XDIS-21150 FSL-2210-1 | P9 | 6 | 600 | I-10 | 1 100000 | P1 C-17 | 6 | 400 | I-10 |
| FSL- 2210-2 | PIO | 6 | 600 | I-10 | POS-21550-1 | Pa | 6 | 400 | I-10 |
| 354-21/62-1 | PII | 6 | 600 | I-10 | PO5-21548-1 | P3 | 4 | 400 | I-10 |
| 15N-2/162 55N-2/162-1 | PIZ | 0 6 | 600 | V I-10 | FSL-22/2-3 | P4 V | 6 | 400 | I-10 |

| P | ANEL | EAST | | SHALE | INSTR. | 1 | ANEL | BAY | BIN | MODULE | INSTR. |
|--------|---------|------|---|-------|--------------------------|--------|------|------|-----|--------|----------------------------|
| E-31 = | T-10 | 700 | | 18 | 154-93452 | C-11 2 | 2-10 | 1000 | 4 | PII | 321-3-143-5 |
| 1. | T-10 | 700 | | S. PY | XO: 4- 93/33 | GII | I-10 | 1000 | 6 | P12 | 55N-21163 55N-21163-1 |
| | I-10 | 700 | # | P5 | XDSN-93130 | 626 | I-10 | 1100 | 4 | P9 | X54-93457-C |
| | I-10 | 700 | 4 | PIO | 7034-22/03 | E-26 | I-10 | 1100 | 4 | PII | X54-93455-C |
| | I-10 | 700 | 4 | PII | X5N- 2298 | 6-06 | I-10 | 1100 | 5 | PG | TSL- 22105 |
| 1 | I-10 | 700 | 4 | PIZ | 152-3124 | 1 | I-10 | 1100 | 5 | P7 | XSN-11223 |
| C-21 | I-10 | 700 | 5 | P5 | X5N- 93 454-8 | G-01 | 1-10 | 1100 | 6 | PI | XDIS-21329 XSM-11187 |
| C-al | I-10 | 700 | 5 | PT | XSH-934540 | | I-10 | 1100 | 6 | P2 | XD15-21183 |
| C-21 | I-10 | 700 | 5 | pg | XSH-934528 | | I-10 | 1100 | 6 | P3 | X013-21159 |
| C-al | I-10 | 700 | 5 | PII | XSN-93455-8 | | I-10 | 1100 | 6 | PH | F52-2213-3 |
| E-32 | I-10 | 800 | 4 | P2 | X5N-93450 X5N-93453 | | I-10 | 1100 | 6 | P5 | 554-21171-2 |
| | I-10 | 800 | 4 | PL | XOSH-93/34 | | I-10 | 1100 | 6 | PG | 35H-21171 35H-21171-1 |
| | I-10 | 800 | 4 | P7 | XD3N-93/31 | | I-10 | 1100 | 6 | P7 | YOR -21323. |
| | I-10 | 800 | 4 | PIO | TOSL-22105 | | I-10 | 1100 | 6 | P8 1 | XXX PXXX-C |
| | I-10 | 800 | 4 | PII | X5N-2299 | | I-10 | 1100 | 6 | P9 | X045-27877 |
| V | I-10 | 800 | 4 | PIZ | XSL- 3/25 | | I-10 | 1100 | 6 | PIO | FSL-2213-2 |
| E : | 34 I.10 | 900 | 4 | P3 | X34-93468 | | I-10 | 1100 | 6 | PII | 556-21165-1 556-21165-2 |
| 1 | I-10 | 900 | 4 | PY | XDSN-93192 | 1 | I-10 | 1100 | 6 | PIZ | 55N-21165 55H-21165-1 |
| | J-10 | 900 | 4 | P5 | XDSN-93/29 | A-69 | I-10 | 1200 | 5 | PG | TSL-22101 |
| | I-10 | 900 | 4 | PIO | TOSL-22/01 | | I-10 | 1200 | 5 | PT | XSH-11219 |
| | I-10 | 900 | 4 | PII | XSN-2292 | | I-10 | 1200 | 6 | PI | 1015-21325 15N-11183 |
| | 1 I-10 | 900 | 4 | P12 | X3L-3A23 | | Z-10 | 1200 | 6 | P2 | POS-21547-1 POS-21541-2 |
| | 3 X-10 | 900 | 5 | P5 | XSN- 93456-A | | I-10 | 1200 | 6 | P3 | POS-21545-1 |
| | I-10 | 900 | 5 | PT | X3N-93454A | | I-10 | 1200 | 4 | P4 | F32-2209-3 |
| | I-10 | 900 | 5 | 19 | X54-93457-A | | I-10 | 1200 | 6 | P5 | 336-21167-2 |
| | I-10 | 900 | - | PH | X3N-93455-A | | I-10 | 1200 | 6 | PG | 53N-21167 554-21167-1 |
| E.V | H I-10 | 1000 | - | PL | TSL-22/03 | | | 1200 | 4 | P7 | XD15-21319 XSM-11177 |
| | 4 I-10 | 1000 | - | | X5N-1/221 | | | 1200 | 4 | P8 | X5H-93471-A |
| 0.1 | | 1000 | 6 | PI | XDIS-02/327 XSN-1/185 | | | 1200 | 4 | P9 | XDIS-21173 XDIS-21179 |
| 1 | | 1000 | 4 | P2 | POS-21551-1 | | | 1200 | 6 | PIO | FSL-2209-1 |
| | | 1000 | 6 | P3 | POS-31549-1 | | | 1200 | 4 | PII | 356-2116:-1 |
| | | 1000 | 6 | PH | FSL-2211-3 | 1 | | 1200 | 6 | P12 | 33H-21161 SSN-21161-1 |
| | | 1000 | 4 | P5 | 221-91169-1 | | | | - | | |
| | | 1000 | 6 | Pb | SSN-21169 SSN-21169-1 | | | | | | |
| | | 1000 | 6 | PI | 1015-21321 X5H-11179 | | | | | | |
| | | | 6 | 108 | X5H-93471-8 | | | | | | |
| | | 1000 | 6 | Pg | XDU -21175 | | | | | | |
| | 1-10 | 1000 | 0 | 177 | KDIS-21181 | - | | 100 | | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0364

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22-4228 REVIEWER NAME 7/26/83 RON GARRETT A HED TITLE SWITCH CONVENTION ITEMS INVOLVED 3. INSTRUMENT DATA FILE NO. NOMENCLATURE LOCATION ITEM TYPE PHOTO NO. SEE SEPARATE SHEET C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) NO FAIL ILLUM PUSH BUTTON SWITCHS FUNCTION UNDEFINED. (53 - PUSH-BUTTON IS THE SAME) fight illuminated welicates "no failures" D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HE | :0 | |
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| | | and the second second |
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| | | |
| E LIET THE CONFECUENCES OF OPERATOR ERROR | | |
| F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | | |
| G. CLASSIFICATION | | |
| | | |
| Show " Rush to Keset one | grean Butto | ~ |
| H. CORRECTIVE ACTION OPTIONS Show "Push to Keset one" * Change to "Se | John Status | 05" |
| | | |
| | | |
| | | |
| | | |
| 1. DISPOSITION No action - nut operator | used controls w | 64 -1 /01 |
| | | ER STUBL |
| | | EF S/1/81 |
| | | S/1/81 |
| | | S/1/81 |
| | | S/1/81 |
| | | S/1/81 |
| | | |
| TEAM ACTION | | |
| TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | DATE |
| TEAM MEMBER SIGNATURE | | |
| | | |
| TEAM MEMBER SIGNATURE | | |
| TEAM MEMBER SIGNATURE Team Manager | | |
| TEAM MEMBER SIGNATURE Team Manager CRDR Coordinator | | |

| | | | | | | | | | aler | |
|-------|-----|-----|-------------|---------------|-----------|------|-----|--------|--------------|--|
| 1 IEL | BAY | BIN | MODULE | INSTR. # | PANEL | BAY | BIN | MODULE | INSTR. | |
| 2-14 | 100 | 3 | EP1/3 A.17 | RIS-6212 | E-14 I-14 | 400 | 5 | P5/6 | RIS-93251-9 | |
| I-14 | 100 | 3 | P4/6 | RIS-6314-2 | E-14 I-14 | 400 | 5 | P7/8 | RIS-93251-7 | |
| I-14 | 100 | 3 | P7/9 | RIS- 73/2 | E-14 I-14 | 400 | 5 | P11/12 | RIS-93250-4 | |
| I-14 | 100 | 3 | P10/12 | RIS-9302 | 5.37 Z-10 | 400 | 2 | P1/2 | cc-282 | |
| I-14 | 200 | 3 | P1/3 4.16 | RIS-31193 | E-37 J-10 | 400 | 2 | P11/12 | RIS-93251-11 | |
| I-14 | 200 | 3 | P4/6 | Ris-21251 | E-36 I-10 | 500 | 2 | P11/12 | R15-93252-11 | |
| I-14 | 200 | 3 | P7/9 | RIS- 7324-2 | E-37 I-10 | 600 | 2 | P1/2 | CC-2A2 | |
| I-14 | 200 | 3 | PIO/12V | RIS-46211 | E-37 I-10 | 600 | 2 | P11/12 | RIS-43250-11 | |
| I-14 | 200 | 4 | P3/4 E:17 | RIS-93250-13 | C-24 I-10 | 700 | 2 | P11/12 | | |
| I-14 | 200 | 4 | P7/8 | RIS- 93252-2 | E-39 I-10 | 900 | 25 | P11/12 | CC-2A | |
| 1-14 | 200 | 4 | P9/10 | RIS-93252-1 | C-09 I-10 | 1000 | 2 | P1/2 | CC-281 | |
| I.14 | 200 | 4 | PIIIZV | RIS-7325-2 | C-09 I-10 | 1000 | 2 | P11/12 | RIS-93251-10 | |
| I-14 | 200 | 5 | P 9/10 E-12 | AIS-93250-8 | E-25 I-10 | 1000 | 4 | P5/4 | CS-181 | |
| I-14 | 200 | 5 | P11/12844 | RIS-93252-6 | C-08 I-10 | 1100 | 2 | P11/12 | RIS-93252-10 | |
| I.14 | 300 | 3 | P1/3 46 | R15-6213 | CO6 I-10 | 1200 | 2 | P1/2 | CC-2AI | |
| | 300 | 3 | P4/6 | RIS- 7325-1 | C-06 I-10 | 1200 | 2 | P11/12 | RIS-93250-10 | |
| | 300 | 3 | P7/9 | RIS-46212 | 5-27 I-10 | 1200 | 4 | P5/6 | CS-IAI | |
| I-14 | 300 | 3 | P10/12 | RIS-2264 | | | | | | |
| I-14 | 300 | 4 | P3/4 E16 | R15-43251-4 | | | | | | |
| I-14 | 300 | 4 | P5/6 | RIS-93250-14 | | - | | | | |
| I-14 | 300 | 4 | P7/8 | RIS- 93251-1 | | | | | | |
| I-14 | 300 | 4 | P9/10 | RIS-93251-3 | | | | | | |
| I-14 | 300 | 4 | Pulia | RIS-93252.4 | | | | | | |
| I-14 | 300 | 5 | PIZEU | RIS-93252-12 | | | | | | |
| I-14 | 300 | 5 | P3/4 | RIS- 93251-12 | | | | | | |
| I-14 | 300 | 5 | P7/8 | RIS-93252-7 | | | | | | |
| I-14 | 300 | 5 | P9/10 | R13-93251-6 | | | | | | |
| I-14 | 300 | 5 | PIIII | RIS-93251-5 | | | | | | |
| I-14 | 400 | 3 | P1/34141 | RIS-9301 | | | | | | |
| I-14 | 400 | 3 | P4/6 | RIS-6314-1 | | | | | | |
| I-14 | 400 | 3 | P7/9 | RIS-7324-1 | | | | | | |
| I-14 | 400 | 3 | PIOLIZ | R13-2263 | | | 31 | | | |
| | 400 | 4 | P3/4E15 | RIS-93250-2 | | | | | | |
| 1 | 400 | 4 | P5/6 | RIS- 93250-1 | | | | - | | |
| 3-14 | 400 | ¥ | P 7/8 | RIS-93250-3 | | | | | | |
| I-14 | 400 | 4 | P9/10 | RIS-93251-8 | | | | | | |
| I-14 | 400 | 4 | P"/12V | RIS- 93250-5 | | | | | | |
| I-14 | 400 | 5 | P1/2 E14 | 215-93250-12 | | | 1 | | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0365-1

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 3.44-22-4228 DATE REVIEWER NAME 7/27/83 RON GARRETT SWITCH CONVENTION A. HED TITLE _ ITEMS INVOLVED 3. INSTRUMENT DATA FILE NO. LOCATION NOMENCLATURE ITEM TYPE PHOTO NO. PANEL BAY BIN MODULE INSTR. C-09 I-10 1000 2 P9/10 NONE C-06 I-10 1200 2 PY10 NONE C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) __INDICATING LIGHTS ARE NOT MARKED AS TO FUNCTION. D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| €. | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HE | ED | |
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| F. | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| _ | a. resignation | | |
| | CLASSIFICATION | | |
| п. | CORRECTIVE ACTION OPTIONS | | |
| | | Language Commission | |
| | | | |
| | | | |
| | | | |
| | | | , |
| t. | DISPOSITION Functionally label per | DD-LAB-1 CN 1895 | WEH 5/1/86 |
| | | TO STEEL PROPERTY | |
| | | | |
| | | | |
| - | | | |
| | | | |
| - | | | |
| | TEAM ACTION | CONCURRENCE OR | - |
| | TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | DATE |
| Te | am Manager | | |
| CR | DR Coordinator | - Mys. Carl Carl Will House | |
| Hu | man Factors Spec. | | |
| | | | |
| 54 | nior Reactor Operator | | - |
| | | | Harris III |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0384

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

200

| EVIEWER NAME | E 112 | | 8-5-83 |
|--|------------------------------------|-------------------------------|-------------------------|
| | F Llanas | | 4-3-83 |
| HED TITLE Indies | ator Elevations | | |
| | | | |
| | ITEMS INVOL | VED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. |
| see attached | | | |
| sheets | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | S (GUIDELINES VIOLATED) | | |
| the attached 34 pither took sh | sheets of survey ar too low on par | checklist numbe | r CRS-10 an |
| the attached 34 | sheets of survey | checklist numbe | r CRS-10 an |
| the attached 34 aither took who and I-15 | sheets of survey | checklist numberels I-09, I-1 | CRS-10 an |
| the attached 34 aither took who and I-15 | ar too low on par | checklist numberels I-09, I-1 | CRS-10 an |
| the attached 34 aither took who and I-15 | ar too low on par | checklist numberels I-09, I-1 | CRS-10 an |
| the attached 34 aither took who and I-15 | ar too low on par | checklist numberels I-09, I-1 | CRS-10 an |
| the attached 34 aither took she and I-15 | ar too low on par | checklist numberels I-09, I-1 | CRS-10 an |
| the attached 34 aither took sh and I-15 | ar too low on par | checklist numberels I-09, I-1 | CRS-10 an |
| the attached 34 aither took she and I-15 | ar too low on par | checklist numberels I-09, I-1 | CRS-10 an |

| E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM | HED | |
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| F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | | |
| G. CLASSIFICATION | | |
| H. CORRECTIVE ACTION OPTIONS | | |
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| . 0 . 1 . | | |
| 1. DISPOSITION See attached sheet | | |
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| | | |
| | | |
| TEAM ACTION | | |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | DATE |
| Team Manager | | |
| | | |
| CRDR Coordinator | | |
| Human Factors Spec. | | |
| Senior Reactor Operator | | |
| | | |

HED 0384 RESOLUTION

TOR-73335, POR-73440, POR-73441, POR-73442, POR-73449, POR-73450, POR-73451,
DR-73452 WERE COMBNED INTO A SINGLE RECORDER AND LOCATED
...THIN THE HEIGHT LIMITATIONS.

TR-73445, TR-73446, TR-73447, TR-73448, TR-73449, TR-73450, TR-73451 &TR13452 WERE COMBINED INTO A SINGLE RECORDER AND LOCATED WITHIN THE HEIGHT LIMITATIONS.

TR-2232, TR-4637, TR-4638, TR-5156 & TR-92105 WERE RELOCATED TO IO9 AND LOCATED BY HEIGHT LIMITATIONS.

TR-2321 WAS REMOVED FROM THE CONTROL ROOM

Mike Herderson 11/22/85

I-15 Devices CN-1893

TI-7316, 7317, 7318, 7321, 7553, 7555, 7557, MI-7322, 7DI-7319, FI-7320, MI-7554, & PDI-7556 to be relocated on I-15 within constraints of DD-CBL-1. TR-5156 & TR-92105 to be relocated to I-07 per CN-1878.

Present location of XRP protective relays is acceptable. They do not require munitoring er adjusting. Operator does not use the devices.

W.C. Kolones 3/28/85

I-10 Devices CN-1895

Existing space constraints preclude relocating devices within limits. Those devices required by operators in emergency situations will be label or demandated to enhance location.

W.C. A 5/1/36

a review of HED-0384 reflects the following:

(1) The following instruments / indicators are used by the operators in conducting plant normal of Energency operations.

75H-22136 105-P10 -22137 205-P10 -22135 305-P10 RWP Logic 102-P3/4 11 10 302 P3/4

X1-93234/2 - {above 101 X1-93181/2 - {above 101 X1-93183/235 " 201 " 301

RIS-93251-11 402 PII/12 RIS-93252-11 502 PII/12 RIS-93250-11 602 PII/12

C5-ZZB 70Z P7/8 C5-ZZA 90Z P7/8

RIS-93251-10 1002 PH/12 RIS-93252-10 1102 PII/12 RIS-93250-10 1202 PII/12

XCR Birs (modules) 101 P910 301 P9/10 401 P9/10 1601 P9/10 701 P9/10 1001 P9/10 1201 P9/10 TR - 2232 TR - 4637 TR - 4638 T-13 TR - 4638 T-13 F1-11263 P1-1130 T-13

5) Recorders

- 6 77-21267 is above the recommended elevation however due to the size of the williante and the scale increment the within the instrument may be read to within 10° = which is adapted for the intentil
- miles ophy. The devices to should be removed)
 - Radiation Induction Switches Walk their reflected that operators use indicators to strictly at trips. (This applicable during Emergency Contained) ine Dase assessment and any requirement for reading the meters on the RIS comes in the present RERP.

 Ambiguity exist between existing bosedural steps of Operating philosophias as to the & Column Catamas philosophias as to the & Column Catamas encompass Emerging Catamas as to the possible result of Correspondence of ony error,

the assessment team elected to classify this as a cat 1.

Radiation India Switches located in Bins 204, 304, \$ 404 are 12" below the Al" value. The probability of accept making an error due to elevation is considered only a minimal percentage Righer that those located above 41".

non is quantatine into regist for dose assessment may verify a trip and serify an up seale that reading only before proceeding to locate and isolate.

is categorized as a 4 since these are not operator use them.

Jetuales switch the probably of on even considered minimal proper identification to pasition decognition and them.

TR-8901/2/3 & River temp monter formels rated category 4 & HEO 0833 initiated for these tems of as ex-unused equip

FORM 344 22-4227

CONTROL BUARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

CRS . 10

CALIST

File # 0 14 Sheet / of 34

| PANEL | Record Instr. Numbers | Dist. if No | Are all located Elevati | Are all indicators located below a Panel Elevation of 70"? | Are all located Elevation | Are all indicators located above a Panel Elevation of 41"? | REMARKS |
|---------|-----------------------------|-------------------|-------------------------------|--|---------------------------------|--|-------------|
| | if No | | YES | ON | YES | ON | |
| | | | | HED# | | #ЕД# | |
| | | | 1 | | | | |
| I-7507x | | | 7 | | | | |
| | | | | | 7 | | |
| I-7507x | | | | | 7 | | |
| | | | | 7 | | | See 50 ruey |
| I-09 | | | | | - | | Cheellist |
| | | | | | | 7 | SEE S RUEY |
| I-09 | | | | | | | checklist |
| | | | | 1 | | | See Survey |
| J. 10 | | | | | | | Chacklist |
| | | | | | | 7 | See SURVEY |
| 7-10 | | | | | | | Chick 11st |
| | | | | 7 | | | See SUR |
| I-13 | | | | | | | Checklist |
| | | | | | | 7 | see sur |
| I-/3 | | | | | | | checklist |
| | | | | 7 | | | See survey |
| I-14 | | | The second second | | | | checklist |
| | | | | | | 7 | see survey |
| | | | | | | | 4.11.4 |



CONTROL ROOM SURVEY CHECKLIST

CRS 10

File # Sheet 9 of 35

PRINCIPLE:

3.2.2.5 Controls should be located so they are reachable and accessible.

| T | ATON | (| ار | | | (| 2 | | | | | | | (| V | | | | | | | ^ | J |
|--|--|-------|------|----|------------|----|-----------|---|--------------|---|------------|------------|----------|---|---------------|---|----------|------------|------------|---|------------|---|-----------|
| | G0R121 | S | 2 | 0 | 5 | 1/ | 2, | (| n | | M | r | 2 | 1 | 7, | ١ | N | 0 | 2 | 0 | 5 | ~ | 7 |
| | CATEGORIZATION REMARKS | 5 | I | 11 | 50 | 7 | 2, | - | 'w | | 2 | 1/ | 3 | _ | 2 | 1 | 2 | 7 | 5, | _ | 2 | 1 | 7, |
| | | | | | 8.36 | | 8.36 | | 8.38 | | 8-95 | | 838 | | 8-95 | | 8-94 | | 8-94 | | 16-8 | | 18.94 |
| The second secon | Are all indicators located above a Panel Elevation of 41"? | ON | HED# | 7 | | 7 | | 7 | | 7 | | 7 | | 7 | | ١ | | 7 | |) | | 7 | |
| - 1 | Are all located Elevation | YES | | | | | | | | | | | | | | | | | | | | | |
| | Are all indicators located below a Panel Elevation of 70"? | ON | HED# | | | | | | | | | | | | | | | | | | | | |
| - | Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | | | |
| | Dist. if No | | | | 38/4" | _ | | | <u>ــ</u> | | | | | | | | | | | | | | > |
| Annual contract of the last of | S | if No | | | 1-8011 HSA | | TSH-33136 | | XM5-11362-15 | | Pst-1110-1 | Ps# 1110-1 | 0111-150 | | TSH-33137 | | 75H-1338 | 6-8011-H24 | 1-8011-75d | | PSH-1108-1 | | TCH-13115 |
| | | | | | 49 | | 210 | | 14 | | P3 | | hd | | 010 | | 10 | | 23 | | PY | | F10 |
| The second secon | | | | | 901 | _ | -> | - | 300 | - | | | | | \rightarrow | | 308 | - | | | | | `` |
| | PANEL | | | | I-10 | - | | | | | | | | | | | | | | | | | -> |
| | SEO. | | | | | | * | | | | | | | | | | | | | | | | * |



PRINCIPLE:

CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

| File # | | | | _ |
|--------|---|----|---|---|
| Chant | 8 | n/ | 4 | |

CRS-_10___

| SEQ. | PANEL | Record Instr. Numbers | Dist. if No | located | indicators below a Panel on of 70"? | located | indicators above a Panel on of 41"? | | CATE | RKS | ATION |
|------|----------------------------|--|-------------------|------------|---|---------|---|------|------|-----|-------|
| | | if No | | YES | NO | YES | NO | | 1 | | C |
| | MoD4LE | | | | HED# | 1 | HED# | | A | B | 1 |
| | I-10 10 34 MH | NSH-1137-3 | | | | | | A-08 | 1/3 | 3 | |
| | | NSH-1134-4 NSH-1134-4 | | | | | L | A-08 | 1/3 | 3 | |
| | | NSH-1134-5 | | | | | V | A-08 | 1/3 | 3 | |
| | 2084 CHANNEL " | NSH-1138-7 NSH-1138-3 | | | | | V | B-98 | 1/3 | 3 | |
| | | NSH-1138-4 NSH-1135-3 NSH-1135-4 | 1 1 | | | | V | B-98 | 1/3 | 3 | |
| | | NSH-1135-5 NSH-1135-6 | | The second | | | V | B-98 | 3 | 3 | |
| | MH POWER 3084 CHANNEL'A | NSH-1136-1 NSH-1136-2 NSH-1136-3 | | | | | L | B-97 | 3 | 3 | |
| | | NSH-1136-4 NSH-1133-3 NSH-1133-4 | | | | | L | B-97 | 3 | 3 | |
| | | N 5H-1133-5 N 5H-1133-6 | | | | | V | B-97 | 1/3 | 3 | |
| | 1085 MH P3 | PSL-1109-1 | 2834 | | | | V | B-96 | 1/3 | 3 | |



CONTROL ROOM SURVEY CHECKLIST

CRS - 10

File # Sheet 10 of 35

PRINCIPLE:

3.2.2.5 Controls should be located so they are reachable and accessible.

| ATION | 1 |) | | | | | | | | | | | | | | | | | | | | |
|--|-------|------|------|------|---|----------|----|-----------|---|-----------|---|--|---|-----------|----|----------|----|----------|---|-----------|-----|---------------|
| CATEGORIZATION | 9 | 9 | 0 | 7 | 0 | ^ | 0 | 2 | 0 | ^ | ١ | 2 | 1 | \cap | , | 5 | 0 | 2 | 0 | 2 | ^ |) |
| CATEGO | , | I | -/ | N | 1 | 2 | -> | S | 1 | S | _ | S | | 2 | 1/ | 3 | 7, | S | 1 | in | 1/2 | n |
| | | | | 8.93 | | 18-93 | | 18.93 | | 6.93 | | 18-93 | | 8-93 | | 18-93 | | 6-92 | | 6-92 | | 6.92 |
| Are all indicators located above a Panel Elevation of 41"? | ON | HED# | 7 | | 7 | | 7 | | 1 | | 7 | and the second s | 7 | | 7 | | 7 | | 7 | | 7 | |
| Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | | | |
| Are all indicators located below a Panel Elevation of 70"? | ON | HED# | | | | | | | | | | | | | | | | | | | | |
| Are all located l Elevation | YES | | | | | | | | | | | | | | | | | | | | | |
| Dist. if No | | | , | 17/2 | - | | | | | | | | | | | | | | | | | > |
| S | if No | | 1,76 | 1.0 | Í | TSH-1172 | | TM-1152-3 | | TM-1152-1 | | TM-1152-3 | | TSH-93473 | | TS4-1177 | | TSH-1173 | | TM-1153-3 | | TM-1153-1 |
| | | | | Id | | Pa | | P3 | | hd | | PS | | Pb | | Pı | | Pa | | P3 | | h d |
| | | | | 101 | | | | | | | | | | > | | 900 | - | | | | | \rightarrow |
| PANEL | | | | I-10 | | | | | | | | | | | | | | | | | | > |
| SEO. | | | | | | | | | | | | | | H | | | | | | | | |

FORM 344-22-4227 PRINCIPLE:

CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

CHS. 10

01 34 Sheet 11 File #

| - | CATEGORIZATION | (|) | | | | | | | | | | | | | | | | | | | | |
|--|--|--------|------|---|-----------|---|-----------|---|----------|---|-----------------------|---|-----------|---|-----------|---|-----------|---|-----------|---|-----------|---|----------|
| - | FGGRI | 5 | 2 | , | N | (| N | | M | 1 | N | , | 2 | 0 | 2 | ~ | 0 | 0 | 2 | | - | | _ |
| - | CATEGOR | < | I | 1 | 13 | - | 13 | 1 | 3, | 7 | 13 | _ | S | 1 | 3 | | 'n | 1 | is | _ | 4 | - | + |
| The same of the sa | | | | | 6-92 | | 6.92 | | 16.91 | | 16.91 | | 16-91 | | 16-8 | | 16-81 | | 16-8 | | | | |
| | Are all indicators located above a Panel Elevation of 41"? | ON | HED# | 7 | | 7 | | 7 | | 7 | | 7 | | 7 | | 7 | | 7 | | | | | |
| | Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | | | |
| The second secon | Are all indicators located below a Panel Elevation of 70"? | ON | HED# | | | | | | | | | | | | | | | | | × | HCD-384 | × | Hr - 284 |
| The second second | | YES | | | | | | | | | | | | | | | | | | | | | |
| A COLUMN | Dist. if No | | | | 17/21 | _ | | | | - | | | | | | | | | 1 | | | | |
| A | | if No. | | | TM-1153-3 | | TSH-93474 | | TS4-1175 | | 1211-1121 TSL-1171 | | FM-1/51-8 | | 1-1511-MT | | TM-1151-3 | | TSH-43472 | | RWP LCGIL | | - |
| the second name of the party of | | | | | PS | | 9d | | 1d | | ba | | p3 | | hd | | PS | | 90 | | P3/4 | | P134 |
| the same of the same is not a second or other same of | | | | | 306 | - | 7 | | 306 | - | | | | | | | | | > | | 201 | , | 305 |
| | PANEL | | | | J-10 | | | | | | | | | | | | | | > | | I-10 | | 01-1 |
| | SEO. | | | | | | | | | | | | | | | | | | | | | | |



CONTROL ROOM SURVEY CHECKLIST

CHS- 10

File # Sneet /A of 34

PRINCIPLE:

3.2.2.5 Controls should be located so they are reachable and accessible.

| | | | Ann all | indicatore | Ara all | indicatore | | | | |
|------|----------------------|-------|--------------------------------|--|---------------------|-----------------------|------|---------------------------|--------------|----|
| Re I | S | Dist. | Are all located Elevatio | Are all indicators located below a Panel Elevation of 70"? | located Elevatio | located above a Panel | | CATEGORIZATION REMARKS | SR12AT KS | NO |
| | if No | - | YES | ON | YES | ON | | < | < | 1 |
| | | | | HED# | | HED# | | I | 2 | U |
| | | | | 7 | | | | 1 | | |
| II | II-93177 | 16" | | | | | 0.04 | 2 | 3 | |
| | | | | 7 | | | | | | r |
| 17 | 6166-11 | 76 " | | | | | 50-0 | 3, | M | |
| SCA | SCRAM BRAKE | | | 7 | | | | 1 | (| |
| Pwp | PWR SUPAT 9 | 1,1/2 | | | | | | 'n | S | |
| SCA | SCRAM BRAKE | | | 7 | | | | 1/ | | |
| Pw | PWR SUPPLY 9 | 41.14 | | | | | | 3 | 3 | |
| | | | | 7 | | | | , | | |
| S XI | CONTACTORS XE93335 8 | 85/4 | | | | | | 4 | | |
| | | | | 7 | | | | | | |
| 7 | 1818-17 | | | | | | | 4 | | |
| 7 | ×1-93237 | | | 7 | | | | 7 | | |
| | | 1 | | | | | | | - | |
| * | ¥I-43183 | | | > | | | | 4 | | |
| - | July | | | 2 | | | | | | |
| + | acreh-1+ | | | | | | | 4 | | |
| * | 4818b-17 | | | > | | | | 4 | | |
| | / | _ | | | | | | _ | | |



CONTROL ROOM SURVEY CHECKLIST

CHS-10

File # Sheet 13 of 34

PRINCIPLE:

3.2.2.5 Controls should be located so they are reachable and accessible.

| NOIL | 1 |) | (| V | | | | | | | | | | | | | | | | | | |
|--|-------|--------------|---|------------|---|------------|---|------------|---|-----------|---|----------|---|------------|----|-----------|-------------|--|------|--|----|-------------|
| CATEGORIZATION | 4 | 2 | 1 | 2 | ſ | 5 | | N | 1 | 2 | | M | 0 | 5 | ſ | 2 | ١ | 5 | (| N | N | 1 |
| CATEGOR | < | I | | 2 | 1 | 2 | 7 | S | 7 | N | 1 | w. | 7 | 3 | 11 | 30 | 1 | 2 | 1 | 2 | 1, | n |
| | | | | €.35 | | C-18 | | C-18 | | 81-5 | | 61-3 | | C-18 | | 81-2 | | C-17 | | 11-5 | | C-17 |
| Are all indicators located above a Panel Elevation of 41"? | ON | нер <i>#</i> | | | 7 | | 7 | | 2 | | 7 | | ١ | | 7 | | ١ | The state of the s | 7 | The second secon | 7 | |
| Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | | | |
| Are all indicators located below a Panel Elevation of 70"? | ON | #СЭ# | 7 | | | | | | | | | | | | | | | | | | | |
| | YES | | | | | | | | | | | | | | | | | | | | | |
| Dist. if No | | | | 125 | | 391/4" | | | | | | | | | | > | 4 | 78 34 | | ~ | | > |
| y, | if No | | | RT5-43251- | | SM-21170-A | | 5M-21170-1 | | FSE-32104 | | FM- 2313 | | SM-21164-2 | | 157-21164 | -035-31550- | PL825-05516-549 | 2000 | PDS-21578 3 | | F 51-1313-3 |
| | | | | P1,2 | | Pi | | PA | | 90 | | P8 | | D10 | | PII | | pa | | P3 | | he |
| | | | | 40.7 | | 504 | T | | | | | | | | | > | | 904 | | | | 7 |
| PANEL | | | | I-10 | | | | | | | | | | | | | | | | | | > |
| SEO. | | | | | | | | | | | | | | | | | | | | | | |



CONTROL ROOM SURVEY CHECKLIST

CHS . 10

File # Sheet 14 of 34

PRINCIPLE:

3.2.2.5 Controls should be located so they are reachable and accessible.

CODY

| ATION | (|) | | | | | | | | | | | | | | - F | | | | | | |
|--|----------|------|---|------------|---|-------------|---|------------|---|-----------|---------|-------------|-----------|-------------|--------|------|------|------|------|-------------|-------|-------|
| CATEGO RIZATION REMARKS | < | 0 | , | 2 | ١ | 5 | (| n | ١ | 5 | (| 5 | ٢ | 5 | | | | | | | | |
| CATEGOR | < | I | _ | 3 | 1 | 'w | - | 2, | - | 3 | 7 | 3 | -1 | 3 | | _ | | | 3- | - | 7 | 77 |
| | | | | C.17 | | C-17 | | 11.0 | | 11.0 | | 517 | | C-17 | £ 76 | | c 30 | £39 | 010 | 500 | | |
| Are ali indicators located above a Panel Elevation of 41"? | ON | HED# | 7 | | 7 | | 7 | | 7 | | 7 | | 7 | | | | | | | | | |
| Are ali located Elevatio | YES | | | | | | | | | | | | | | | | | | | | | |
| Are all indicators located below a Panel Elevation of 70"? | ON | HED# | | | | | | | | | | | | | 77 | 0384 | 11 | V384 | 77 | 0384 | 11 | 1384 |
| Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | | | |
| Dist. if No | - Access | | | 788 | - | | | | | | | | | > | | | | | | | | |
| S | if No | | | 54.4116.45 | | 55H-21170-1 | | X5H-43470B | | F4-12/3-3 | 21110-1 | 554-21164-7 | V41.3116V | 1-haire 455 | XCR- | | | | | > | | 2 |
| | | | | 50 | | 26 | | P8 | | 010 | | PIII | | Fid | DI+P12 | | | | | > | 29/10 | 89/11 |
| | | | | 904 | - | | | | | | | | | > | 1471 | 107 | 104 | 000 | 1001 | 1201 | 101 | 301 |
| PANEL | | | | J-10 | - | | | | | | | | | > | 1-10 | 1 | - | | | > | 01-1 | |
| SEO. | | | | | | | | | | | | | | | | | | | | | | * |



CONTROL ROOM SURVEY CHECKLIST

сиз. 10

File # Sheet 15 of 34

PRINCIPLE:

3.2.2.5 Controls should be located so they are reachable and accessible.

COPY

| NOIL | (|) | (| 7 | | | | | | | | | | | | | | | | | | |
|--|-------|------|---|--------------|---|-------------------|---|------------|---|------------|---|---------|---|------------|---|-------------|------------|-----------------|------------|--|-----|-----------|
| CATEGORIZMT10N REMARKS | 9 | 9 | 1 | 2 | | 5 | ſ | 5 | (| 2 | r | 2 | Ŋ | 7 | r | 5 | 0 | 2 | (| 2 | 7 | 1 |
| CATEGORI | | I | 1 | 2 | 1 | 3 | 4 | 3 | 1 | S | 1 | w. | 7 | 2 | 1 | S | 1 | 2 | 1/2 | 3 | 1/2 | 2 |
| | | | | 5.36 | | 61.3 | | 6/2 | | 61.0 | | 61.0 | | 6-19 | | 61-3 | | 0-16 | | C-16 | | |
| Are all indicators located above a Panel Elevation of 41"? | ON | HED# | | | 7 | | ١ | | 7 | | 7 | | ١ | | ١ | | 7 | | 7 | | 7 | |
| Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | | | |
| Are all indicators located below a Panel Elevation of 70"? | ON | HED# | 7 | | | | | | | | | | | | | | | | | and the second s | | |
| Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | manufacture and analysis of the | | |
| Dist. | | | | 1 75 | | 391/2 | | | | | | | | | | -> | 1-1 | 1/88 | Ţ | 2 | | , |
| Record Instr. Numbers | if No | | | RI3-93251-11 | | 511-21112-13 3712 | | 1-51115-M2 | | 4018-1-751 | | FM-2314 | | 5-43116-M2 | | 1-9911 E-WS | 18516- 200 | PDS 21554-22874 | PDS-21552- | PDS-21552-2 | | FU-3314.3 |
| | | | | Eld | | PI | | pa | | 90 | | P8 | | 010 | | PII | | Pa | | 63 | | hd |
| | | | | 805 | | 505 | | | | | | | | | | > | | 206 | - | | | / |
| PANEL | | | | J-10 | | | | | | | | | | | | | | | | | | - |
| SFO | | | | | | | | | | | | | | | | | | | | | | |



CONTROL ROOM SURVEY CHECKLIST

СИS 10

File # Sheet 16 of 34

PRINCIPLE:

3.2.2.5 Controls should be located so they are reachable and accessible.

| | | Record Instr. | Dist. | | Are all indicators located below a Panel Elevation of 70"? | Are all located Elevation | Are all indicators located above a Panel Elevation of 41"? | | CATEGORI | CATEGORIZATION REMARKS | 20 |
|-------------|-----|---------------------------|-------|-----|--|---------------------------------|--|-------|----------|---------------------------|-----|
| | | if No | | YES | ON | YES | NO | | | , | |
| | | | | | #ED# | | HED# | | I | 9 | 0 |
| | | | | | | | 7 | | | , | |
| 905 | Sd | 554-4117-355 54-3117-3 | 783/4 | | | | | 011-2 | 3 | 2 | |
| | | C 21/43 | - | | | | 7 | | 1 | ^ | |
| | 90 | 1-ETIK-H22 | | | | | | 01-0 | (1) | 2 | |
| | | | | | | | 7 | | 7 | (| |
| | PS | X5H-43476C | | | | | | 0-16 | 'n | 5 | |
| | | | | | | | 7 | | 1/ | V | |
| | 210 | 1-4188-751 | - | | | | | 0.16 | 'n | 2 | |
| | | | | | | | 7 | | 1 | r | |
| | DII | 5x-31166-7 | | | | | | 0/-3 | ie | S | |
| | | | | | | | 7 | | 1 | ١ | |
| <i>></i> | PIB | 55H-21166-1 | > | | | | | 01.0 | 3 | 3 | |
| | | | | | 7 | | | | | - | - (|
| 603 | F13 | RTS-93350-1 | 175" | | | | | F-37 | 2 | 2 | N |
| | | | | | | | 7 | | 1 | ~ | |
| 509 | PI | E-87114-WS | 34% | | | | | C-30 | n | 7 | |
| - | | | _ | | | | 7 | | 1/2 | ^ | |
| | pa | 1-89118-MS | | | and the same of th | | | 0.30 | N | 0 | |
| | | | | | | | 7 | | 1/2 | 0 | |
| > | 90 | 141-33107 | > | | | | | C-30 | n | 7 | |



CONTROL ROOM SURVEY CHECKLIST

| File | | |
|------|----|-------|
| rile | ** | _ |

CRS - 10

Sheet 17 of 34

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | indicators below a Panel on of 70"? | located | indicators above a Panel on of 41"? | | CATEG | ORIZAT RKS | Hoir |
|------|-------|-----|-----|-----------------------------|-------------------|---------|---|---------|---|------|-------|---------------|------|
| | | | | if No | | YES | NO HED# | YES | NO HED# | | A | B | C |
| | I-10 | 605 | P8 | FM-22/0 | 391/4" | | | | V | C-20 | 1/3 | 3 | |
| | | | 210 | SM 11163-2 | | | | | V | C-20 | 1/3 | 3 | |
| | | | PII | 5M-21162-1 | 1 | | | | V | C-20 | 3 | 3 | |
| | | 606 | P2 | PDS-21546-9 | | | | | V | G-09 | 1/3 | 3 | |
| | | | P3 | PDS-21544-1 | | | | | | 6-09 | 1/3 | 3 | |
| | | | PY | F51-2110-3 | | | | | V | 6-09 | 1/3 | 3 | |
| | | | P5 | 551-21168-2 | | | | | L | 6.09 | 3 | 3 | |
| | | | P6 | 55H-21168 55H-21168-1 | | | | | V | G-09 | 3 | 3 | |
| | | | P 8 | *54-43470A | | | | | V | 6-09 | 1/3 | 3 | |
| | 1 | 1 | PID | 15L-22/0-1 | 1 | | | | V | 6-09 | 1/3 | 3 | |

PRINCIPLE

CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

сяз. 10

3.2.2.5 Controls should be located so they are reachable and accessible.

of Sheet 18 File #

| Holl | 1 | 0 | | | | | | | | | | | | | | | | | | | | |
|--|-------|------|-------------|--------------------|------------|---------------|---|------------|---|------------|---|------------|---|------------|---|---------|-----|-----------|---|------------|----|------|
| CATEGORIZ ATION REMARKS | < | 9 | C | 9 | 1 | 7 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 2 | - 1 | 2 | ^ | 0 | N |) |
| CATEGOR | < | I | 1 | Ś | 1 | 'n | 1 | S | 1 | 3 | - | 'n | 1 | in | 1 | n | 1 | S. | 1 | S | 1/ | 5 |
| | | - | | 60.0 | | 60-9 | | 16.3 | | C-21 | | C.21 | | 0.21 | | C-23 | | £.43 | | £-43 | | 6.42 |
| Are all indicators located above a Panel Elevation of 41"? | ON | HED# | 7 | | 7 | | ١ | | 7 | | 7 | | 7 | | | | 7 | | 7 | 1 | 2 | |
| Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | | | |
| Are all indicators located below a Panel Elevation of 70"? | ON | #СЭН | | | | | | | | | | | | | 7 | | | | | | | |
| Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | | | |
| Dist. | | | | 383/4 | - | > | | 39% | - | | | | | > | | 75 " | | A 39 16" | | | | , |
| Record Instr. Numbers | if No | | 1-C 315-1-1 | 556-21162-2 283/4" | E9112-1163 | 1-x31167-1 | | XSH-73456B | | X5H-93454B | | XSH-93457B | | XSH-43455B | | TR-1197 | | X5H93456A | | YSH-93454A | | |
| | | | | PII | | PIA | | 75 | | P7 | | 60 | | PII | | | | 75 | | 64 | | 000 |
| | | | | 909 | - | \rightarrow | | 705 | | | | | | > | | 807 | | 905 | _ | | | |
| PANEL | - | | | I-10 | | | | | | | | | | | | | | _ | | | | , |
| SEQ. | | | | | | | | | | | | | | | | | | | | | | |



CONTROL ROOM SURVEY CHECKLIST

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of 34 Sheet 19 File #

PRINCIPLE

| TON | (|) | | | | 2 | | | | | | | | | | | | | | | | |
|--|--------|------|-----|----------------|---|----------------------|---|------------|---|------------|---|-----------|---|---------|---|------------|---|------------|---------|------------|-------------|-------------|
| CHTEGORIZATION REMARKS | 9 | 0 | 0 | 5 | 1 | 12 | 0 | 2 | (| 2 | 0 | 2 | ^ | 7 | ~ | 7 | 0 | 2 | 0 | 7 | N | 1 |
| CHTEGOR REMARKS | 5 | I | 1/1 | 3 | 7 | 2, | _ | 3, | 2 | 2 | 1 | 3 | _ | in | 7 | 8 | 1 | 3 | 1/2 | n | 7 | 0 |
| | | | | E-43 | | 6.09 | | F-44 | | 44.3 | | F. 44 | | F-44 | | 6-44 | | hh-3 | | 11-0 | | 11-5 |
| Are all indicators located above a Panel Elevation of 41"? | ON | HED# | 1 | | | | J | | J | | 1 | | ١ | | 7 | | 7 | | 7 | | 7 | |
| Are all located Elevation | YES | | | | | | į | | | | | | | | | | | | | - | | |
| Are all indicators located below a Panel Elevation of 70"? | ON | HED# | | | 1 | | | | | | | | | | | | | | | | | |
| Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | | | |
| Dist. if No | | | | 3.1% | | 10 75" | | 391/4 | | | | | | | | | | > | | 78 % | _ | > |
| Record Instr. Numbers | if No. | | | P11 X5H-93+55A | | PIA RIS-43251-10 75" | | SM-3/169-3 | | 1-84115-MS | | 751-12103 | | FM-2311 | | SM-21163-3 | | 1-891163-1 | 1-1551F | PUSSISSI-3 | PB5-11549-1 | PDS-31549-3 |
| | | | | PIII | | FIA | | PI | | Pa | | Pb | | P.8 | | D10 | | 111d | | px | | P3 |
| | | | | 306 | | 1003 | | 1005 | - | | | | | | | | | > | | 9001 | | > |
| PANEL | | | | J-10 | _ | _ | _ | | _ | | | | | | | | | | | | | > |
| SEQ. | | | | | | | | | | | | | | | | | | | | | | |



CONTROL ROOM SURVEY CHECKLIST

CRS 10

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PRINCIPLE

3.2.2.5 Controls should be located so they are reachable and accessible.

| - | | | | | | | | | | | Contraction of Contraction | | |
|------|-------|------|-----|-----------------------------|-------------------|-----|--|--------------------------------|--|------|----------------------------|----------------|----|
| SEO. | PANEL | | | Record Instr. Numbers | Dist. if No | | Are all indicators located below a Panel Elevation of 70"? | Are all located Elevatio | Are all indicators located above a Panel Elevation of 41"? | | CHTEGOR | CATEGORIZATION | No |
| | | | | if No. | | YES | ON | YES | ON | | 5 | 9 | |
| | | | | | | | #СЭ# | | HED# | | I | 0 | 0 |
| | | | | | | | | | 7 | | ~ | 2 | |
| | 1-10 | 1006 | hd | F563211-3 | 788 | | | | | C-11 | (%) | 0 | |
| | | | | The same | - | | | | 7 | | 1/ | (| |
| | | | PS | 556-21169-3 | | | | | | C-11 | 'n | S | |
| | | | | 0 | | | | | 7 | | 11 | ſ | - |
| | | | Ple | 55H-21167 | | | | | | C-11 | S | 5 | |
| | | | | | | | | | 7 | | 11 | ١ | |
| | | | 8 2 | X5H-934713 | | | | | | 11.0 | 32 | N | |
| | | | | | | | | | 7 | | 1 | r | |
| | | | 010 | F 54-2211-1 | | | | | | 17-3 | n | 2 | |
| | | | | 541-31163-1 | | | | | 7 | | 10 | 0 | |
| | | | P11 | 556-21163-3 | | | | | | 11.0 | 3 | 2 | |
| | | | | 55H-21163 | | | | | 7 | | 4 | (| |
| | | > | PIA | 1-89116-Hes | > | | | | | C-11 | n | 2 | |
| | | | | | | | 7 | | | | 2 | 1 | C |
| | | 4011 | PIA | RIS-93352-10 75 | 10 75 | | | | | 80.0 | ,5, | 2, | V |
| | | | | | | | | | 7 | | -/ | ~ | |
| | | 1105 | bı | SM-2111-A | 34.19. | | | | | 90-9 | 5 | 7 | |
| | | - | | | _ | | | | 7 | | 1/2 | O | |
| | > | > | ed | 1-111-MS | 7 | | | | | 90-9 | _ |) | |



P8

XSH-93471C V

CONTROL ROOM SURVEY CHECKLIST

| File | # | | | |
|------|----|---------|---|------|
| 1000 | 77 | 2000000 | - | |

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G-07

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | indicators below a Panel on of 70"? | located | indicators above a Panel on of 41"? | | REMAR | RKS | 4017 |
|------|-------|------|-----|-----------------------------|-------------------|---------|---|---------|---|------|-------|-----|------|
| | | | | if No | | YES | NO HED# | YES | NO HED# | | A | B | C |
| | I-10 | 1105 | P6 | T4-22105 | 391/2 | | 1100 | | V | 6-06 | 1/3 | 3 | |
| | 1 | 1105 | P8 | FM-2213 | | | | | V | 6.06 | 43 | 3 | |
| | | | P10 | SM-21165-2 | | | | | V | 6-06 | 1/3 | 3 | |
| | | | PII | SM-21165-1 | 1 | | | | V | 6-04 | 1/3 | 3 | |
| | | 1106 | Pa | PDS-21555-2 | | | | | L | G-07 | 1/3 | 3 | |
| | | 1 | p3 | PDS-21563-1 | 1 | | | | V | G-07 | 1/3 | 3 | |
| | | | РЧ | F5L-3213-3 | | | | | V | G-07 | 1/3 | 3 | |
| | | | P.5 | 55L-21171-1 55L-21171-1 | | | | | V | 6-07 | 1/3 | 3 | |
| | | | P6 | 55H-21171-1 55H-21171-1 | | | | | <i>-</i> | G-01 | 1/3 | 3 | |
| - | - | | | | | | | | | 1 | 1 | | |

ORM 344-22-4227 PRINCIPLE

CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

Controls should be located so they are reachable and accessible.

3.2.2.5

34 0 Sheet 33 File #

0 CATEGORIZATION 2 M M M M 3 3 3 REMARKS 20 20 10 20 200 10 1 1/2 10 69-H 0.06 P. 69 6-07 6-07 607 CODY located above a Panel Are all indicators 1 Elevation of 41"? 1 1 HED# YES located below a Panel Are all indicators Elevation of 70"? 00 HED# YES Dist. if No RIS-43150-10 75" SM-21167-2 391/5" 1.81-2218.1 383, 1-59114-755 1-59114-755 FS1-22/3-2 1-59/18-145 1-13/167-1 S311E-455 10166-127 Numbers Record Instr. if No . 619 e1d 010 11d Pa 10 PG 1307 12051 100 PANEL 01-I SEQ.

m

3

69 H

5M-21161-1

PI

5m-21162-3

PID

FM-2309

P8

3

10

7

P-69

*

PRINCIPLE

CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

CHS. 10

File # Sheet 23 of 34

3.2.2.5 Controls should be located so they are reachable and accessible.

COPY

| NON | (|) | | | | | | | | | | | | | | | | | | | |
|--|---------|------|------------|-------------|-------------|-------------|----|--------------|---|------------|-----------|-------------|----|------------|------------|------------|----|----------------------------|-----------|------------|--|
| CATEGORITATION | S | 0 | , | N | 0 | 5 | (| 2 | 0 | 5 | 0 | n | | N | 1 | n | 0 | 7 | 0 | 0 | |
| CATEGOR | 5 | I | | w | 7 | n | 11 | 5 | ^ | 13 | 7 | 3 | 11 | W | 1 | 3 | 1/ | 3 | 1 | 5 | |
| | | - | | H.69 | | 19.63 | | 17.69 | | 19-69 | | 17-69 | | FJ-69 | | 4.69 | | 19-H | | 19-69 | |
| Are all indicators located above a Panel Elevation of 41"? | ON | HED# | ١ | | 7 | | 7 | | 7 | | 7 | |) | | 7 | | 7 | | 7 | | |
| Are all located Elevation | YES | | | | | | | | | | | | | | | | | | | | |
| Are all indicators located below a Panel Elevation of 70"? | NO | #СЭН | | | | | | | | | | | | | | | | | | | |
| Are all located Elevatio | YES | | | | | | | | | | | | | | | | | | | | |
| Dist. | | | | 182 | | | | | | | | | | | | | | | | 1 | |
| Record Instr. Numbers | if No · | | 124518-20G | K-24516-507 | 1-5A512-5QJ | E-545/6-50d | | F. 5000.75 } | | 1-73/15-22 | 554-31167 | 1-19116-H24 | | X5H-93471A | 760-3306-1 | F34-3309-3 | | 554-31161-1 554-31161-B | 1911E-WS5 | 55H-3/16F/ | |
| | | | | ed | | 63 | | hd | | 20 | | PC | | 80 | | Old | | PII | | 619 | |
| | | | | 1306 | | | | | | | | | | | | | | | | > | |
| PANEL | | | | 01-I | _ | | | | | | | | | | | | | | | 1 | |
| SEQ. | | | | | | | | | | | | | | | | | | | | | |

CONTROL ROOM SURVEY CHECKLIST

сяs. 10

File # Sheet 35 of 34

3.2.2.5 Controls should be located so they are reachable and accessible.

PRINCIPLE

(00)

| TION | < | ار | | | | | | | | | | | | | | | |
|--|-------|------|---|----------|---|----------|---|-----------|---|-------------|---|--------------|-----------------|-----------------|---|--|---|
| CATEGORIZATION REMARKS | C | 0 | | | | | | | | | | | | | | | |
| CHTEGOR | < | I | 1 | 1 | " | 1 | ; | 7 | 1 | 1 | 1 | 1 | 7 | _ | | | |
| | | | | A-93 | | A 93 | | H-93 | | H-93 | | 88-8 | 8.30 | | | | |
| Are all indicators located above a Panel Elevation of 41"? | ON | HED# | | | | | | | | | | | × | | | | |
| Are all located Elevatio | YES | | | | | | - | | | | | | | | | | |
| Are all indicators located below a Panel Elevation of 70"? | ON | HED# | × | | ٨ | | + | | 4 | | × | | | | | | |
| Are all located Elevatio | YES | | | | | | | | | | | | | | | | |
| Dist. if No | | | | 1/8 | | 11/8 | | 11/8 | | ,18 | " | 754 | " 42 | > | | | |
| Record Instr. Numbers | if No | | | m1-11173 | - | MI-11175 | | 11114 81" | | 8 9C111-117 | | 71-21267 754 | 21356-X | X5-93520 | | | |
| | | | | | | | | | | | | | " 45 813515 24" | West Can On you | 0 | | |
| PANEL | | | | 1-13 | | 1-13 | | I-13 | | I-13 | | I-/3 | 1 | 7-10 | | | - |
| SEQ. | | i | | | | | | | | | | | | | | | 1 |



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0385

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22-4228 CATE REVIEWER NAME 8-5-83 A. HED TITLE Control Elevations ITEMS INVOLVED 8. INSTRUMENT DATA FILE NO. LOCATION NOMENCLATURE ITEM TYPE PHOTO NO. see a Hacked sheets C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) all instruments lised on the affacted 22 streets of survey checklist number CRS-11 are either too high or too Low on panels I - 7507x, I-09, I-10, I-13, I-14 and I-15 D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FRO | M HED | |
|----------|--|---|-------------------|
| | | | |
| _ | | | |
| | | | |
| | | | |
| | | | |
| _ | | | |
| E | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| | cial the consequences of orenation ennon | | |
| | | | |
| | | | |
| _ | | | |
| | | | |
| G. | CLASSIFICATION | | |
| | CORRECTIVE ACTION OPTIONS | | |
| | | | |
| - | | | |
| - | | | |
| | | | |
| | | | |
| f. | DISPOSITION HS-73 400, 73401, 73404, \$ | 73405 on I-15 ar | 15/16 too |
| | ow. The controls are hand switch | | |
| | 34. The existing discrepancy is me | | |
| j | 1 | of significant. No fu | |
| ن | action required CN-1893 WEH +/1/8 | 1 | erther |
| j | I-7507X CONTROLS & INDICATIONS, | 1 | erther |
| | I-7507X CONTROLS & INDICATIONS, M. DO-CBL-1, Rdd 22 AROLEGO ON 1894 | RELOCATE ON I-7507X | PER |
| <u>.</u> | T-1507X CONTROLS & INDICATIONS, A DO-CBL-1, RAD 22 APPLRS ON 1894 T-10 instruments to remain at p oction required CN-1895 WCH | RELOCATE ON I-7507X Present locations - 1 5/1/86 | PER |
| <u>.</u> | T-7507X CONTROLS & INDICATIONS, A DO-CBL-1, RXD 22 APPLIES ON 1894 T-10 instruments to remain at p | RELOCATE ON I-7507X Present locations - 1 5/1/86 | PER |
| | T-7507X CONTROLS & INDICATIONS, A DO-CBL-1, RAD 22 APPEL 86 ON 1894 T-10 instruments to remain at p action required CN-1895 WCH TEAM MEMBER SIGNATURE | RELOCATE ON I-7507X Present lecations - 1 5/1/86 N CONCURRENCE OR | per no further |
| Tear | T-7507X CONTROLS & INDICATIONS, A DO-CBL-1, RAD 22 APPRILAGE ON 1894 T-10 instruments to remain at p action required CN-1895 Way TEAM ACTIO | RELOCATE ON I-7507X Present lecations - 1 5/1/86 N CONCURRENCE OR | per no further |
| Tear | T-7507X CONTROLS & INDICATIONS, A DO-CRI-1, RAD 22 APRIL 86 ON 1894 T-10 instruments to remain at P Chier required CN-1895 WCH TEAM MEMBER SIGNATURE THE MANAGER | RELOCATE ON I-7507X Present lecations - 1 5/1/86 N CONCURRENCE OR | per no further |
| Team | T-7507X CONTROLS & INDICATIONS, A DO-CRI-1, RAD 22 APRIL 86 ON 1894 T-10 instruments to remain at P Chier required CN-1895 WCH TEAM MEMBER SIGNATURE THE MANAGER THE MAN | RELOCATE ON I-7507X Present lecations - 1 5/1/86 N CONCURRENCE OR | per no further |

CONTROL ROOM SURVEY CHECKLIST

CRS. 11

File # 048

of d2

Sheet



CONTROL ROOM SURVEY CHECKLIST

| File | # | 052 |
|------|---|-----|
| | | |

CRS - 11

Sheet 5 of 22

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS |
|------|-------------|-----|-------|-----------------------------|--------------------------|--------------|--|-------------|---|------------------|
| | | | | if NO | | YES AS-10 | NO HED# | YES AS-9 | NO HED# | |
| | | | | | 2519 | 7,0 10 | neo# | | NO | |
| | I-14 · | 305 | P7/8 | RIS-932527 | 30 15/4 | | | | HED = 0385 | |
| | I-14 | 305 | P9/10 | R15-93251-6 | 25 48° 70 30° 19/16 | | | | 1 100 | |
| | I-14 | | | R15-93,257-5 | 25 hg. | | | | NO | |
| | I-14 | | | R15-93250-12 | 2515 | | | | ,00 | |
| | <i>I-14</i> | | | RIS-93251-9 | 2519" | | | | NO | |
| | I-14 | | | RIS-83251-7 | 25% | | | | NO | |
| | I-14 | 405 | PIII | RIS-93250-4 | 25 48' 70 30 19/16 | | | | NO NO | |
| | I-10 | | | RWP LOGIC | 1234 | | NO HED*0385 | | | NO INSTE NUMBER. |
| | I-10 | 101 | P 7/8 | TT- 93473 | 1/5/16 | | 1.00 | | | |
| | I-10 | 105 | P2 | XSL-93363 | 275/6 | | | - | NO HED*0385 | |



(Vertical)

CONTROL ROOM SURVEY CHECKLIST

| File # | 053 | |
|--------|-----|--|
| | | |

CRS 11 Sheet 6 of 22

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS |
|------|---------------|-----|------|-----------------------------|-------------------|--------------|--|---------|---|---------|
| | 1.1.1.1.1.1.1 | | | if NO | | YES AS-10 | NO | YES | NO | |
| | I-10 | 105 | P 3 | PSL-1109-1 PSL-1109-2 | 273/4 | A5-10 | HED# | AS-9 | HED# NO HED #0385 | |
| | I 10 | 105 | | PSH-1109-1 | | | | | 1 20 | |
| | I-10 | 105 | | PT-1109 | 215/16 | | | | NO | |
| | I-10 | 105 | | MTd-1 | 2734 | | | | ,00 | |
| | I-10 | 105 | P8 | X5L-2.271 | | | | | NO | |
| | I-10 | 105 | | x52-2233 | 275/16 | | | | NO | |
| | I-10 | 105 | | TSH-22136 | 275/16 | | | | NO | |
| | I-10 | 105 | Pull | TT-22/36 | 275/6 | | | | NO | |
| | I-10 | 106 | PI | TSH-117% | 167/6 | | | | 100 | |
| | I-10 | 106 | P2 | TSH-1172 TSL-1172 | 167/16 | | | | 100 | |



PRINCIPLE:

CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

CRS. 11

File # 054

| REMARKS | | | | | | | | | | | | | | |
|--|-------|-------|------|-----------|----------|-----------|------------|-------------|----------------|-----|-----------|--------------|-----------------|------------------|
| Are the controls located above a Panel Elevation of 34"? | ON | #ОЗН | 0,70 | HE5#0385 | NO | 00 | ÖΛ | 00% | 000 | 1. | | | | |
| Are the located Elevatio | YES | AS-9 | | | | | | | | | | | | |
| Are there controls located below a Panel Elevation of 70"? | ON | HED# | | | | | | | | 0,7 | HED#0385 | 000 | 001 | 200 |
| Are ther located Elevatio | YES | AS-10 | | | | | | | | | | | | |
| Dist. if No | | | | 16 % | 1,2 7,6 | 1671. | 767" | 16.10 | 1672 | 1 | 13 | 72" | 71.25 | 112" |
| Record Instr. Numbers | if NO | | | TM-1152-2 | F-1752-1 | TM 1152-3 | TSW. 93423 | PNS TT-1172 | 09/10 17-11.76 | | MESEL SWX | YMS-11262-19 | 201 PT/8 TLTT 1 | 1100 TT 9100 100 |
| | | | | P3 | 60 | PS | 29 | 8118 | 01/60 | | PI | Pa | 61/8 | 04/60 |
| | | | | 106 | 10% | 106 | 106 | 106 | 106 | | 301 | 901 | 201 | 100 |
| PANEL | | | | 2.10 | 7-10 | 1.10 | 7.10 | 7.10 | 7.10 | | I-10 | 7.10 | 1.10 | 7.10 |
| SEQ. | | | | | | | | | | | | | Į. | |



PRINCIPLE

CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

CRS- 11

File # 055

8 of 22 Sheet

| REMARKS | | | INSTR NUMBER PENELLED IN | | | | | | | | | | | | | | | | | | | |
|--|-------|-------|--------------------------|---------------------|----|-------------|----|--------------|-----|---------------|------------|-------------|-----|------------|-------|------------|-----|-----------------|----|-------------|----|---------------|
| Are the controls located above a Panel Elevation of 34"? | ON | HED# | | • | No | HED # 0385 | ON | | 000 | | 024 | | 000 | | 200 | | 000 | | NO | | 90 | > |
| Are the located Elevatio | YES | AS-9 | | | | | | | | | | | | | | | | | | | | |
| Are there controls located below a Panel Elevation of 70"? | ON | HED# | 20 | HED # 0385 | | | | | | | | | | | | | | | | | | |
| Are ther located Elevatio | YES | AS-10 | | | | | | | | | | | | | | | | | | | | |
| Dist. if No | | | ×, | 11/10 | 24 | 275 | * | 17/4 | | 213/16 | ž | 273/6 | * | 273/10 | 4744" | 30 % | * | 373/14 | | 275/10 | 4 | .37% |
| Record Instr. Numbers | if NO | | | XMS-11262-16 71 116 | | XM5-11262 5 | | P2 X52-83364 | | P3 PSL-1110-1 | 1-01/1-180 | P4 +51-1110 | | PS PT-1110 | | PUL) MTU-1 | | 205 P8 KSL-2373 | | P9 X54-2235 | | PID 154-33197 |
| | | | | | | 10 | | 62 | | P3 | | ho | | 65 | | 1617 | | 68 | | 68 | | PIC |
| | | | | 201 612 | | 205 | | 205 | | 205 | | 205 | | 305 | | 205 | | 205 | | 205 | | 306 |
| PANEL | | | | I-10 | | I-10 | | I-10 | | J-10 | | I.10 | | J-10 | | I-10 | | I-10 | | J-10 | | 7.10 |
| SEQ. | | k | | | | | | | | | | | | | | | | | | | | |

PRINCIPLE

CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

CHS.

9 01 Sheet

File # 056

| REMARKS | | | | | | | | | | | | | | | | | | | | | | NO INSTR NUMBER. |
|--|-------|-------|-----|-------------------------|----------|----------|----------|----------|--------|--------------------|----|-----------|------|----------|----|---------------|------|------------------|-----|------------------|-------|--------------------|
| Are the controls located above a Panel Elevation of 34"? | ON | HED# | 000 | HED # 0385 | 020 | | NO | | 200 | | NO | | 000 | | 20 | | 200 | | 500 | > | | |
| Are the located Elevation | YES | AS-9 | | | | | | | | | | | | | | | | | | | | |
| Are there controls located below a Panel Elevation of 70"? | ON | HED# | | | | | | | | | | | | | | | | | | | 000 | HED FORRS |
| Are ther located Elevatio | YES | AS-10 | | | | | | | | | | | | | | | | | | | | |
| Dist. if No | - | | | 27 % | * * | 16% | 167." | 37 | . 12 " | 1001 | 4 | 14/11, | 11/1 | 16/10 | | 167/6 | * 12 | 16/16 | , | 1676 | 433,4 | NX N |
| Record Instr. Numbers | if NO | | | 205 PW12 TT-22137 27 00 | TSH-1177 | 754-1177 | TSW-1173 | 134.1113 | | TM . 1153.2 10 11. | | TM-1153-1 | | TM 11533 | | Plo 754-43474 | | 206 PT/8 TT-1173 | | 206 PHIO TT-1177 | | 301 P3/4 KWP LOGIC |
| | | | | 01/12 | | 10 | | 13 | | 63 | | 60 | | P5 | | 20 | | P1/8 | | 68110 | | P3/4 |
| | | | | 2051 | | 206 | | 300 | | 200 | | 200 | | 206 | | 206 | | 306 | | 300 | | 301 |
| PANEL | | | | 1.10 | | J-10 | | J-10 | | J-10 | | 1.10 | | J-10 | | I-10 | | J-10 | Ŀ | I.10 | | 2-10 |
| SEO | | | | | | | | | | | | | | | | | | | | | | |

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CONTROL BOARDS (Vertical)

CONTROL ROOM SURVEY CHECKLIST

CRS. 11

1

File # 057 Sheet 10 of 22

| REMARKS | | | | | | | | | | | | | | | | | | | | | |
|--|-------|------|-----|------------------|----|-------------|------|--|------------|-----|---------------|-----|----------------|-------|---------------|-----|-----------------|-----|----------|-----|-----------|
| Are the controls located above a Panel Elevation of 34"? | ON | #СЭ# | | | 20 | 450 #0385 | 20 | | 000 | 000 | | 00/ | | 000 | | 000 | | 00, | | 00, | → |
| Are the controls located above a Elevation of 34" | YES | AS-9 | | | | | | | | | | | | | | | | | | | |
| Are there controls located below a Panel Elevation of 70"? | ON | #СЭ# | 000 | HED#0385 | | | | and the second s | | | | | | | | | | | | | |
| Are there located t Elevation | YES | | | | | | | | | | | | | | | | | | | | |
| Dist. if No | | | *, | 11/10 | *. | 27% | ,33, | 818 | 273. | | 3220 | 4 2 | 212 | 37.14 | 30 1/8" | • | 2738 | 9 | 273/3 | | 33.50 |
| Record Instr. Numbers | if NO | | | 301 PUS TT-93972 | | P1 ISH-1238 | | 102-93362 | PSH-1108.2 | | Py PSH-1108-1 | | 305 PS PT-1168 | | 305 PUT MTU-1 | | 305 P8 XSL-2269 | | 188-3331 | | TSH-23/35 |
| | | | | 61/8 | | 10 | | 62 | 63 | | hd | | PS | | 6017 | | 88 | | | | |
| | | | | 3011 | | 305 | | 305 | 305 | | 305 | | 305 | | 305 | | 305 | | 305 Pg | | 305 010 |
| PANEL | | | | I.10 . | | I-10 | | Z-10 | Z-10 | | J-10 | | J-10 | | I-10 | | I-10 | | J-10 | | 01-1 |
| SEQ. | | | | | | | | | | | | | | | | | | | | | |



CONTROL ROOM SURVEY CHECKLIST

File # 058

Sheet // of 22

FORM 344-22 4227

CRS- 11

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS |
|------|-------|-----|-------|-----------------------------|-------------------|---------|--|---------|---|---------|
| | | | | if NO | - 1 | YES | NO | YES | NO | |
| | | -1- | | | | AS-10 | HED# | AS-9 | HED# | |
| | I-10 | 205 | Pulis | TT-22135 | 273/2 | | | | .00 | |
| | 270 | 300 | | | | | | | HED #0385 | |
| | I-10 | 306 | PI | 754-1175 752-1175 | 167/16 | 19.4 | | | NO. | |
| | I-10 | 306 | | - | 167/6 | | | | NO | |
| | I-10 | 306 | | TM-1512 | 167/4 | | | | NC | |
| | I-10 | 306 | P4 | TM-1151-1 | 16 % | | | | .00 | |
| | I-10 | 306 | P5 | TM-1151-3 | 113/16 | | | | NO | |
| | I-10 | 306 | | TSH-93472 | | | | | wo | |
| | I-10 | 306 | | 77-1171 | | | | | NO | |
| | I-10 | | | 17-1175 | 14 | | | | 100 | |
| | | | | | | | NO | | | |
| | I-10 | 402 | P1/2 | CC-202 | 72 | | HED # 0385 | 1 | | |



CONTROL ROOM SURVEY CHECKLIST

| Eile # | 059 |
|---------|----------|
| Title M | <u> </u> |

CRS - 11

Sheet /2 of 22

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS |
|------|----------|----------|-------|-----------------------------|-------------------|---------|--|---------|---|---------|
| | | | | if NO | | YES | NO | YES | NO | |
| | | | | | | AS-10 | HED# | AS-9 | HED# | |
| | | | | | | | 160 | | | |
| | Z-10 | 402 | P3/4 | 77-22104 | 713/8 | | HED # 0385 | | | |
| | | | | | * | | 1 100 | | | |
| | I-10 | 402 | P5/6 | 152-932084 | 11% | | | | | |
| | | | | | | | NO | | | |
| | Z-10 | 402 | P 7/8 | 154-932083 | 1/1/8 | | | | | |
| | | | | | 7234 | | 20 | | | |
| | I-10 | 402 | Pula | R15-93-151-11 | 74-14 | L . | ¥ | | | |
| | | | | X34-11184 | 2738 | | | | 100 | |
| | I-10 | 406 | PI | XDM 21328 | 302 | | | | HED #0385 | |
| | | | | PDS 21550 1 | | | | | 1 00 | |
| | I-10 | 406 | P2 | PDS-215502 | | | | | | |
| | F-178-14 | | | PDS-215481 | | | | | NO | |
| | I-10 | 406 | P3 | POS-21548-2 | 27% | | | | | |
| | | 4. The 1 | | | | | | | NO | |
| | I-/0 | 406 | PY | FSL: 2212-3 | 27-18 | | | | | |
| | | | | 532-,21170-1 | | | | | ,00 | |
| | I-/0 | 40% | P5 | | 27/8 | | | | | |
| | | | | 534-21170 | | | | | NO | |
| | I-10 | 406 | 16 | 5:4-21170-1 | 273/ | | | | V | |



CONTROL ROOM SURVEY CHECKLIST

| | | 0/0 |
|------|---|-----|
| File | # | 060 |
| | | |

CRS 11

Sheet _/3 of 22

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS |
|------|-------|-----|--------|-----------------------------|-------------------|--------------|--|-------------|---|---------|
| | | | | if NO | | YES AS-10 | NO HED# | YES AS-9 | NO HED# | |
| | | | | X54-11/80 | 273/3 | | | | nº0 | |
| | I-10 | 406 | P7 | 1015-21322 | 3012 | | | | HED = 0385 | |
| | I-10 | 406 | P8 | X54-230708 | 27/4 | | | | 1,00 | |
| | I-10 | 406 | pg | XDIS-21174 XDIS-21182 | - | | | | NO | |
| | | | | Car 23/2-1 | | | | | NO | |
| | T-10 | 406 | P10 | FS2-22122 | 273 | | | | | |
| | I-10 | 406 | PII | 552-21/64-2 | | | | | GW | |
| | | | | 554-21164 | | | | | NO | |
| | I-10 | 406 | P12 | 554-2/164.1 | 27% | | | | ¥ | |
| | 1 | | 7 | | | | NO | | | |
| | I-10 | 502 | P3/4 | TT-22106 | | | HED = 0385 | | | |
| | | | | | 7234" To | | 1 20 | | | |
| | I-10 | 502 | P11/12 | R15-9325211 | 74 34 | | * | | | |
| | | | | X5H-11188 | 275 | | | | NO | |
| | I-10 | 506 | PI | x0/3-2/330 | 30-44 | | | | HED \$ 0385 | |
| | I-10 | 506 | PZ | PDS-21554-1 | | | | | 1 NO | |



CONTROL ROOM SURVEY CHECKLIST

| File# | 061 | |
|-------|-----|--|
| | | |

CRS 11

Sheet 14 of 22

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls labove a Panel on of 34"? | REMARKS |
|------|-------|-----|-----|-----------------------------|-----------------------|--------------|--|-------------|--|---------|
| | | | | if NO | | YES AS-10 | NO HED# | YES AS-9 | NO HED# | |
| | I-10 | 506 | P3 | PDS-21552H PDS-21552-2 | 27/2 | | | | NO HED#0385 | |
| | I-10 | 506 | | FSL-22143 | | | | | 1,00 | |
| | I-10 | 506 | | 552-21172-1 552-21172-2 | | | | | NO | |
| | I-10 | 504 | | 55H-21172 55H-21172-1 | | | | | NO | |
| | I-10 | 506 | P7 | X5N-11/82 Xb/3-2/324 | 275 | | | | NO | |
| | I-10 | 506 | P8 | X5H-93410-6 | | | | | NO | |
| | I-10 | 506 | 19 | 1015-21178 XDIS-21184 | 271/2° 70 303/4 | | | | NO | |
| | I-10 | 506 | P10 | FSL-2214-1 FSL-2214-2 | 272 | | | | NO | |
| | I-10 | 506 | P11 | 556-31166-3 | 27% | | | | NO | |
| | I-10 | 506 | P12 | 554-21166-1 | | | | | vo V | |



CONTROL ROOM SURVEY CHECKLIST CRS - 11

File # 062

Sheet 15 of 22

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS |
|------|-------|-------|------|-----------------------------|---|--------------------------|--|---------|---|---------|
| | | | | if NO | | YES | NO | YES | NO | |
| | | | | | | AS-10 | HED# | AS-9 | HED# | 1 22 |
| | T.10. | 100 | P1/2 | CC-2A2 | 7.2" | | NO | | | |
| | 7-10. | 602 | 7 | | | | HED #0385 | | | |
| | I-10 | 1.02 | P3/4 | 77-22/02 | 7/5 | | 110 | | | |
| - | 270 | | | | - | | NO | - | - | |
| | I-10 | 402 | P5/6 | 152-93207-4 | 71/2 | | | | | |
| | Z-10 | | | 152-93207-3 | 100000000000000000000000000000000000000 | | ,00 | | | |
| R | I-10 | | | R15-93250-11 | 721/2" | The second second second | 100 | | | |
| | | ETA - | 95.0 | 154-11/84 | 275 | | | | NO | |
| | I-10 | 606 | PI | XDIS-21326 | 3058 | | - Eh | | HED #0385 | |
| | I-10 | 606 | P2 | 705-21546-1 | 273 | | | | I NO | |
| | I-10 | 606 | P3 | PDS-21544-1 | 2743 | | | | NO | |
| | I-10 | 606 | P4 | FSL-2110-3 | 273% | | | | NO | |
| | I-10 | | | 551-21168-1 | 273/3 | | | | ¥ 00 | |



CONTROL ROOM SURVEY CHECKLIST CRS - 11

File # 063 Sheet 16 of 22

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS | |
|------|-------|-----|-------|-----------------------------|-------------------|---------|--|---------|---|----------|--|
| | | | | if NO | | | YES | NO | YES | NO | |
| | 1.3 | | | | | AS-10 | HED# | AS-9 | HED# | | |
| | | | 0.4 | 554 21148 554-21148 | 273/8 | | | | NO | | |
| | I-10 | 606 | 16 | 337 27-4- | | | | | HED = 0385 | | |
| | I-10 | 606 | 87 | X511-111.23 XD13-21320 | 273/8 3048 | | | | I NO | | |
| | I-10 | 606 | P8 | XSH-93470-A | | | | | 100 | | |
| | I-10 | 606 | 19 | XDIS 21174 XDIS 21180 | 273/3 | | | | no | | |
| | I-10 | 606 | P10 | FSL-2210-1 FSL-2210-2 | | | | | No | | |
| | I-10 | 606 | PII | 552-21162-1 | | | | | NO | | |
| | I-10 | 606 | P12 | SSN-21162 SSN-21162-1 | | | | | NO | . | |
| | | | | | | | NC | | | | |
| | I-10 | 702 | P1/2. | TLT-1B | 721/8 | | HED # 0385 | | | | |
| | Z-10 | 702 | P5/6 | cc 18 | 721/8 | | 1 00 | | | | |
| | I-10 | 702 | P 1/8 | C5-228 | 721/8 | | ₩ NO | | | | |



CONTROL ROOM SURVEY CHECKLIST

| W | A/11 | |
|--------|------|--|
| File # | 064 | |
| | | |

CRS 11

Sheet _/7_ of _22_

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS |
|------|-------|------|--------|-----------------------------|-------------------|--------------|--|-------------|---|---------|
| | | | | if NO | | YES AS-10 | NO HED# | YES AS-9 | NO HED# | |
| | I-10 | 702 | PII/12 | cc-28 | 7243 | | NO HED = 0385 | | | |
| | I-10 | 902 | Pila | TLT-IA | 721/8 | | 1 20 | | | |
| | I-10 | 902 | P5/4 | CC-1A | 72/9 | | ,00 | | | |
| | Z-10 | 902 | P 1/8 | CS-JZA | 72'9 | | NO | | | |
| | I-10 | 902 | Pula | 00-2A | 721/8 | | NO | | | |
| | I-10 | 1002 | P1/2 | cc-281 | 72"9 | | Du Ou | | | |
| | I-10 | 1002 | P3/4 | 77-22103 | 715 | | NO | | | |
| | I-10 | 1002 | P5/4 | 152-93262 | 715 | | NO | | | |
| | I-10 | 1002 | | 152-93208-1 | 7/发 | | NO | | | |
| | I-10 | 1002 | Pula | RIS-93251-10 | 72 /2 | | NO | | | |



CONTROL ROOM SURVEY CHECKLIST

| File # | 065 | |
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| | | |

CRS-__11__

Sheet 18 of 22

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS |
|------|-------|------|-----|-----------------------------|-------------------|---------|--|---------|---|---------|
| | | | | if NO | | YES | NO | YES | NO | |
| | | | | | | AS-10 | HED# | AS-9 | HED# | |
| 1 | | | | X54-1/185 | 2748 | | | | 100 | |
| | I-10 | 1006 | PI | YOUS-21327 | 305/8 | | | | HED# 0385 | |
| 1 | | | | 705 21331-1 | | | | 7.6 | 100 | |
| | I-10 | 1006 | P2 | 205-21551-2 | 273/3 | | | | | |
| | | | | POS-215491 | | | | | NO | |
| | I-10 | 1006 | P3 | PDS 21549-2 | 2743 | | | | | |
| | 100 | | | | | | | | NO | |
| | I-10 | 1006 | P4 | FSL 2211-3 | 27/3 | | | | | |
| | | | | 552-21169-1 | ** | | | | NO | |
| | I-10 | 1006 | P5 | 552-21169 2 | 27-1/2 | | | | | |
| | | | | 554-21169 | 273/ | | | | NO | |
| | 1-10 | 1006 | P6 | SSW-21169-1 | 31.13 | | | | | |
| | 1 | | | XSH-11179 | 273/3 | | 1 -10-01 | | NO | |
| | I-10 | 1006 | PT | 1015 21321 | 305/9 | | | | | |
| | - | | | | 222 | | | | N6 | |
| | I-/0 | 1006 | P8 | X54-93471-B | | | | | | |
| | | | | 1015-21175 | 273/8 | | | | NO | |
| | 1-10 | 1006 | P9 | X015-21181 | 30-49 | | | | | |
| | | | | FSL-2211-1 | 2734 | | | | NO | |
| | I-10 | 1006 | P10 | FSL-2211-2 | 2.18 | 1.5. | | | V | |



CONTROL ROOM SURVEY CHECKLIST CRS 11

File # 066

Sheet 19 of 22

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS |
|------|-------|------|--------|-----------------------------|-------------------|---------|--|---------|---|---------|
| | | | | if NO | | YES | NO | YES | NO | |
| | | | | | | AS-10 | HED# | AS-9 | HED# | |
| | 1,11 | | | 551-21163-1 | 223 | | | | ,00 | |
| | I-10 | 1006 | PII | SST-71163-7 | 2113 | | | | HED = 0385 | |
| | | | | 354-21163 | 2,* | | | | 1,00 | |
| | I-10 | 1006 | PIZ | 554-21163 | 2178 | | | | 1 | |
| | | | | TY-22/05 | | | NO | | | |
| | I-10 | 1102 | P3/4 | 77-2206 | 7/5/8 | | HED # 0385 | | | |
| | C UV | | | | 73" | | 1,00 | | | |
| | I-10 | 1102 | P11/12 | R15-93252-K | 75" | | 1 | | F T | |
| | | | | X5H-11187 | 375/5 | | | | .00 | |
| | I-10 | 1106 | PI | 4013-21329 | 3034 | | | | HED # 0385 | |
| | | | | POS 21555-1 | 11 " | | | | 1 NO | |
| | I-10 | 1106 | 12 | 205-21555-2 | 275/8 | | | | | |
| 15 | | | | PDS-21553-1 | | | | | 100 | |
| | I-10 | 1106 | P3 | 205-21553-2 | 2748 | | | | | |
| T . | | | | | | | | | NO | |
| | I-10 | 1106 | P4 | FS2-2213-3 | 273/8 | | | | | |
| | | | | -5. 2117/1 | | | | 1 | ,00 | |
| | I-10 | 1106 | P5 | 552-21171-2 | 27-18 | | | | | |
| | | | | 554-21171 | 4 | | | | NO | |
| | I-10 | 1106 | 96 | 55/1-2/17/1 | 273/8 | | | | V | |



CONTROL ROOM SURVEY CHECKLIST

| | | 0/7 | |
|------|---|-----|--|
| File | # | 067 | |

Sheet 20 of 22

CRS 11

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS | |
|------|-------|------|------|-----------------------------|-------------------|---------|--|---------|---|---------|--|
| | | | | if NO | | YES | NO | YES | NO | | |
| | | | | | | AS-10 | HED# | AS-9 | HED# | | |
| | | | | X3H-11/81 | 275/8 | | 1 | | n'O | | |
| | Z-10 | 1106 | PT | XD15-21323 | 3034" | | | | HED # 0385 | | |
| | | | | | | | | | 1,00 | | |
| | I-10 | 1106 | 18 | X5.W-93471-C | 277/8 | | | | | | |
| | | | | | 275/3 | | | | NO | | |
| | I-10 | 1106 | P9 | 100 21183 | 3034 | | | | | | |
| | | | | FSL-2213-1 | | | | | ,00 | | |
| | I-10 | 1106 | P10 | FSL-2213-2 | 2118 | | | | | | |
| | | | | 552-21165-1 | | | | | ,00 | | |
| | I-10 | 1106 | PIL | 552-21165-2 | 27% | | | | | | |
| | | | | 554-21165 | | | | | NO | | |
| | I-10 | 1106 | P12 | 554-211/25-1 | 2749 | | | | * | | |
| | | | | | - | | NO | | | | |
| | I-10 | 1202 | P1/2 | CC-2A1 | 721/8 | | HED#0385 | | | | |
| 1.7 | | | | | m 21 | | 100 | | | | |
| | Z-10 | 1202 | P3/4 | 77-22/01 | 1174 | | | | | | |
| | | | art | 4 | 7/3/ | | 1 mg | | | | |
| | I-10 | 1202 | P5/6 | 152-93201-2 | 11.14 | | 1 | | | | |
| | | | - 1- | 152-93207-1 | 113% | | NO | | | | |
| | I-10 | 1202 | P7/8 | 152-93201-1 | 11.14 | | ¥ | | | | |



File # 068 Sheet 21 of 22

Sheet __

PRINCIPLE:

| SEQ. | PANEL | | | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS |
|------|-------|------|--------|-----------------------------|-----------------------|--------------|--|---------|---|---------|
| | | | | if NO | | YES AS-10 | NO | YES | NO | |
| | - | | | - | 7348" | M3-10 | HED# | AS-9 | HED# | |
| | 7-10 | 1202 | P11/12 | R15-93250-10 | 70 | | HED #0385 | | | |
| | | raca | | ¥54-11183 | 273/3" | | 1120 0300 | | NO | |
| | I-10 | 1206 | PI | XDIS 21325 | 30.34 | | | | HED *0385 | |
| | I-10 | 1206 | | POS 21547-1 POS 21547-2 | 275/3 | | | | NO | |
| | 1.10 | 1206 | | PDS-21545-1 PDS-21545-2 | | | | | ,00 | |
| | I-10 | 1206 | | FSL-22093 | 275/8 | | 199 | | NO | |
| | 1-10 | 1206 | | 551-21167-1 551-21167-2 | | | | | NO | |
| Į. | I-/0 | 1206 | P6 | 554-21167 554-21167-1 | 275/8 | | | | NO | |
| | I-10 | 1201 | 6 P7 | XSN-11/77 XDIS-21319 | 275/8° 70 3034° | | | 71 | NO | |
| | I-10 | | 6 P8 | XSH-934714 | 275/8 | | | | NO | |
| | I-10 | | 6 P9 | XDIS-21173 XDIS-21179 | | | | | NO | |



CONTROL ROOM SURVEY CHECKLIST

| | | 069 | |
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| File | # | | |

CRS-__11__

Sheet 22 of 22

PRINCIPLE:

| SEQ. | PANEL | Record Instr. Numbers | Dist. if No | located | re controls below a Panel on of 70"? | located | controls above a Panel on of 34"? | REMARKS | |
|------|---------------------|-----------------------------|-------------------|---------|--|---------|--|----------------------|--|
| | | if NO | | YES | NO | YES | NO | | |
| | | | | AS-10 | HED# | AS-9 | HED# | | |
| | | FSL:2209-1 | | | | | NO | | |
| | I-10 1206 P10 | FSL-2209-2 | 2778 | | | | HED # 0385 | | |
| | | 55L-21161-1 | | | | | I NO | | |
| | I-10 1206 PII | 551-21161-2 | 275/8 | 1 | | | | | |
| | | 554-21141 | | | | | NO | | |
| | I-10 1206 P12 | 554-21/6/-1 | 2758 | | | | | | |
| #1 | IN STREET OF LOT OF | | | | | | NO | | |
| | 1-15 | HS-73405 | 331/4 | | | | | | |
| | Teletina Line Line | | | | | | NO | | |
| | I-15 | HS 73404 | 337/10 | | | | | | |
| | | | | | | | NO | | |
| | I-15 | NS-73400 | 33 V | | | | | | |
| | | | | | | | NO | | |
| | I-15 | HS-73401 | 331/16 | | | | 4 | | |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0403

| REVIEWER NAME | 11100: | | 8/x/83 |
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| KON | GARRETT | | |
| HED TITLE SWITE | CH CONVENTION | | |
| 1. | ITEMS INVO | LVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. |
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| | TINGUISH HBLE FROM ENC | | |
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| LIST THE PROCEDURES | OR OPERATIONS THAT USE THE | яоя | |
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| Part Program | | | |
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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| . CLASSIFICATION | | |
| . CORRECTIVE ACTION OPTIONS | | |
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| DISPOSITION famile defluctation of In | lusting light from | |
| DISPOSITION fronte deflevation of in | lusting light from | 1 De |
| DISPOSITION fronte deflevation of In illuminated subtil per DO. | lusting light fin- | o spe |
| DISPOSITION frank defluction of me illuminated subted gen DO. | lusting diff firm | ntrols |
| DISPOSITION fronte deflevation of me illuminated subted per DO. 1/17/12 as applicable to I-06 A I-10 Set action required-not ex EN 1895 WCH 5/1186 | lusting tight fin- 125-1 by in-185 | ntrels |
| DISPOSITION family defluctation of me illuminated subted per 100. 1/14/2 as applicable to I-06 A I-10 pet action required-nut of EN 1895 WCH 5/1186 | lucting high fin- | ntrols |
| DISPOSITION famile differentiation of In illuminated subted per DO., if 1/4/4 ar applicable to I-OLA I-10 Set action required-nut ex EN 1895 WCH 5/1186 | lusting high fin- 125-1 ay in-185 | ntrels |
| DISPOSITION Provide deflevation of In illuminated subted per DO. 1/17/24 as applicable to I-OLA I-10 Set action required-nut ex EN 1895 WCH 5/1186 | perator used con | ntrols |
| I-10 Set action required-nut ex EN 1895 WCH 5/1186 | concurrence or | ofre/s |
| T-10 Set action required - nut ex EN 1895 WCH 5/1186 TEAM ACTION TEAM MEMBER SIGNATURE | concurrence or | ntrels |
| T-10 Set action required - nut ex EN 1895 WCH 5/1/BC TEAM ACTION TEAM MEMBER SIGNATURE | concurrence or | ntrels |
| THE ACTION TEAM ACTION TEAM MEMBER SIGNATURE CROR Coordinator | concurrence or | ntrels |
| I-10 pet action required-nut ex EN 1895 WCH S/1186 | concurrence or | ntrels |

| | | | | | | | | | | . 192 | |
|-------------|------|-------|------------|-------|-------|------|-----|------|------|-------|--------|
| LOCATION | 1 | PAN | EL | | PANEL | BAY | BIN | / | PANE | BAY | BIN |
| I-04 | CORE | GRACE | MC DISPLAY | PANEL | 1-10 | 400 | 6 | C-17 | I-10 | 1200 | 5 A-67 |
| I-06 SEET / | GE | PANEL | I-5/01X | | I-10 | 500 | 2 | E-36 | I-10 | 1300 | 4 A-69 |
| 1-06 SECT.1 | GE . | PANEL | I-51021 | | I-10 | 500 | 3 | 5.33 | | | |
| T-03 | NIC. | -1199 | | | I-10 | 500 | 4 | E-21 | | | |
| PANEL | BAY | BIN | | | I-10 | 500 | 5 | C-19 | | | |
| I-14 | 100 | 3 | A-17 | | I-10 | 500 | 10 | C-16 | | | |
| 1-14 | 100 | 5 | B96 | | I-10 | 600 | 1 | E-40 | 2 | | |
| I-14 | 200 | 3 | A-16 | | I-10 | 600 | 2 | E-3 | 4 | | |
| I-14 | 200 | 4 | E-17 | | I-10 | 600 | 3 | G-0 | | | |
| I-14 | 200 | 5 | B 95 | | I-10 | 600 | 4 | E-2 | | | |
| I-14 | 300 | 3 | A-15 | | I-10 | 600 | 5 | C-20 | | | |
| I-14 | 300 | 4 | E-16 | | I-10 | 600 | 6 | C-0 | 9 | | |
| I.14 | 300 | 5 | E-13 | | I-10 | 700 | 1 | C-7 | | | |
| I-14 | 400 | 3 | A-14 | | I-10 | 700 | ,2 | C-2 | | | |
| I-14 | 400 | 4 | E-15 | | I-10 | 100 | 3 | E-2 | | | |
| 1-14 | 400 | 5 | E-14 | | I-10 | 700 | 4 | E-3 | 1 | | |
| 7.10 | 100 | 1 | G-01 | | I-10 | 700 | | C-31 | 1 | | |
| I.10 | 100 | ,2 | C-01 | | I-10 | 300 | 4 | E-3 | 3 | | |
| 1-10 | 100 | 3 | B-99 | | I-10 | 400 | 1 | E-3 | 9 | | |
| I-10 | 100 | . 4 | A-08 | | I-10 | 900 | × | 5-3 | 8 | | |
| I-10 | 100 | 5 | B-96 | | I-10 | 900 | 3 | E-4 | | | |
| I-10 | 100 | 6 | B-93 | | I-10 | 900 | 4 | E-a | | | |
| I-10 | 200 | 1 | A-01 | | I-10 | 900 | 5 | E-4 | 3 | | |
| I-10 | 200 | 3 | A-05 | | I-10 | 1660 | + | C-1 | | | |
| 1.10 | 200 | 4 | B-98 | | I-10 | 1000 | 2 | C-0 | | | |
| J-10 | 200 | 5 | B.95 | | I-10 | 1000 | 3 | E=. | | | |
| 5-10 | 200 | 6_ | B-92 | | I-10 | 1000 | 4 | E-9 | | | |
| I-10 | 300 | 1 | G-05 | | I-10 | 1000 | 5 | E-1 | | | |
| I-10 | 300 | 2 | C-03 | | I-10 | 1006 | 4 | C-I | 1 | | |
| I-10 | 300 | 3 | A-06 | | I-10 | 1100 | 2 | C-1 | | | |
| I-10 | 300 | 4 | B-97 | | I-10 | 1100 | 3 | €.0 | | | |
| I-10 | 300 | 5 | B-94 | | I-10 | 1100 | 4 | | 26 | | |
| 1-10 | 300 | 6 | B-91 | | I-10 | 1100 | 5 | G-1 | | | |
| I-10 | 400 | 1 | E-41 | | I-10 | 1100 | 6 | G-0 | | | |
| I-10 | 400 | 2 | E-35 | | I-10 | 1200 | i | | 07 | | |
| I-10 | 400 | 3 | E-34 | | 1.10 | 1200 | 2 | | 06 | | |
| I-10 | 400 | 4 | E-20 | | I-10 | 1200 | 3 | | -38 | | |
| I-10 | 400 | | C-18 | | I-10 | 1200 | 4 | E. | -27 | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Page 1 04 13

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-32-4228 REVIEWER NAME M. Hodgow D.GIENN 10-25-83 A. HED TITLE Abbreviation of Acrony on Convention 8. ITEMS INVOLVED INSTRUMENT ITEM TYPE LOCATION NOMENCLATURE DATA FILE NO PHOTO NO I-01 "TNK" should be "TK 0003 41-6217 F-13 1-01 00005 "TNK" should be "TK" PT-6315 I-01 AbbREVIATION F.13 0048 "COMP" should be "COMPR" PDI-2340 . Abbreviation C-85 0049 "COMP" should be "COMPR" Abbreviation PDI- 2341 C-85 0054 I-01 Abbreviation "VLY" Should be "VA" PDI-2367-1' F-16 Abbreviation *PR" Should be "PRESS" A. 79 PJ-21286 + FI-21445 0095 should be "PRESS" Abbreviation A-79 POI-21286-3 + PI-21244 0096 I-02 A.79 Abbreviation "PT" NOT IN DO-AAS-1 HC-21417 C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) Non-conformance to DD-AAS-1 D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| | ROM HED | |
|---|---|-----------------------------------|
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| | | |
| F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | | |
| G. CLASSIFICATION | | |
| H. CORRECTIVE ACTION OPTIONS | | |
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| AU 1 | | to kal |
| DISPOSITION All Settlementation on I | -01 relabeled per | Jabeling |
| Conventions; DD-LAB-1 of DD-AAS- | -01 relabeled per | Jabeling |
| DISPOSITION All Settlementation on I Conventions; DD-LAB-1 of DD-AAS-, Functionally labeled per DO- | -01 relabeled per 1 All-10/1/25 LAB-1 and DO-AAS | Jabeling 1 on TOZ |
| | abel all 1-05 der | Jabeling on FOZ |
| in CN/886 & fer/0/23/85. Red in accordance with DO-SW | I-1, UD-LAB-1, & D I-06A devices per | DD-AAS-1 |
| D.D-4AB+ NOH 2-7-86 Relabel of | I-1, UD-LAB-1, & D I-06A devices per I I-06B devices per | DD-AAS-1 |
| in CN/886 & fer-10/23/85. Red in accordance with DO-SW DD-4AB+ WOH 2-7-86 Relabel of | I-1, UD-LAB-1, & D I-06A devices per IJ-06B devices per DD-445-1 | DD-AAS-1 |
| In CN/886 & fer-10/23/85, Relabel of DD-SWI-1 CN 1892 WOH 2-24-86 \$ | I-1, UD-LAB-1, & D I-06A devices per IJ-06B devices per DP-445-1 | DD-AAS-1 |
| TEAM MEMBER SIGNATURE | I-1, UD-LAB-1, & D I-06A devices per I I-06B devices per DD-AAS-1 ION CONCURRENCE OR | DD-AAS-1 DD-SW1-1, DD-LAB-1 |
| TEAM MEMBER SIGNATURE | I-1, UD-LAB-1, & D I-06A devices per I I-06B devices per DD-AAS-1 ION CONCURRENCE OR | DD-AAS-1 DD-SW1-1, DD-LAB-1 |
| TEAM MEMBER SIGNATURE CON 1886 & Step 10/23/85 . Red DO-SWIT DO-SW TEAM MEMBER SIGNATURE TEAM Manager CRDR Coordinator | I-1, UD-LAB-1, & D I-06A devices per I I-06B devices per DD-AAS-1 ION CONCURRENCE OR | DD-AAS-1 DD-SW1-1, DD-LAB-1 |
| In CN/886 & Ster-10/23/85, Relabel all DD-SW DD-SWI-1 CN 1892 WOH 2-24-86 F TEAM ACT | I-15 DD-LAB-1, & D I-06A devices per I I-06B devices per DD-AAS-1 ION CONCURRENCE OR | DD-AAS-1 DD-SW1-1, DD-LAB-1 |

Attachment to HED-0488

Relabel all I-15 devices per DD-LA8+ + DD-AAS-1 CN-1893 WCH 4/1/86

I-10 relabel per DD-LAB-1 + DD-AA5-1 AN 1855-WEH 5/181

| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
|--------------|---|--------------------|--|
| | | I-02 | 0097 |
| ABBREVIATION | "PT" NOT IN OD-AAS-1 | HC-21418 | A-97 |
| 1 | | I-02 | 0128 |
| | "DP" SHOULD BE "AP" | HC-2143 | A-77 |
| | | I-02 | 029 |
| | "DP" SHOULD BE "AP" | HC-2144 | A. 78 |
| | | T-01 | 0144 |
| | "LI" SHOULD BE "LP 1" | TC-46209 | A.80 |
| | | I-01 | 0145 |
| | "LPII AVE" SHOULD BE "LP2 AVG" | 70-4638 | A.80 |
| - ; | | I-01 | 0147 |
| | "AVE" SHOULD BE "AVG" | TC-4637 | 480 |
| | THE SHOWS DO LINE | I-01 | 0149 |
| | "COMP" SHOULD BE "COMPR" | FR-2339 + FR-23112 | A-84 |
| | CONT SPICAL BE CONTA | I-01 | 0152 |
| P. C. C. | "REACT" SHOULD BE "RX" | LR-4605 | A.80 |
| | NEACT SHOULD BE IN | I-01 | 0155 |
| | WILLIAM ELLANDO DE MILLON | PDC-2367-1 | E-47 |
| | "VLV" SHOULD BE "VA" | I-01 | 0213 |
| | "TULL SULLIN OF "TV" | | D-72 |
| | "TAK" SHOULD BE "TK" | HS-4610 | 0214 |
| | WELLER STATE | | 0-71 |
| | "TNK" SHOULD BE "TK" | H5-4609 | 0224 |
| | WTHEN ALL IS OF HITH | | D-71 |
| | "TNK" SHOULD BE "TK" | H5-6335 | 0236 |
| | | 17.1 | N/A |
| | "ANAYL" SHOULD BE "ANAL" | H5-23/30 | 0259 |
| | 2 - 1 - 1 | I-0/ | The state of the s |
| | "TNK" SHOULD BE "TK" | HS-2525 | N/A |
| | | | 0254 |
| | "EMER" SHOULD BE "EMERG" | HS-23/3 | D-73 |
| | | T-0/ | 0257 |
| | "EMER" SHOULD BE "EMERG" | HS-2314 | D-73 |
| | | I-02 | 0284 |
| | "COMP" SHOULD BE "COMPR" | HS-21573 | F-97 |
| | | I.02 | 0285 |
| | "COMP" SHOULD BE "COMPR" | H5-21579 | F.98 |
| | | I-02 | 0290 |
| | "PUR" SHOULD BE "PURIF" | H5-23/67 | F-96 |
| | I MA VIII VIII VIII VIII VIII VIII VIII | I.02 | 29/ |
| V | "PUR" SHOULD BE "PURIF" | HS-2366 | D-74 |

| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
|--------------|-----------------------------|--|------------------------------------|
| | | 1.01 | 0344 |
| ABBREVIATION | "FILT" SHOULD BE "FLTR" | x5-2/568 | N/A |
| | | I-01 | 0344 |
| | "PUR" SHOULD BE "PURIF" | X5-21568 | N/A |
| | | I-01 | 0345 |
| | "FILT" SHOULD BE "FLTR" | X5-21569 | NIA |
| | | I-01 | 0345 |
| | "PUR" SHOULD BE "PURIF" | X5-21569 | N/A |
| | "GP" NOT IN DD-AAS-1 | IIN-1209-20 + hrs 17 XIC-1210-20 + brn 37 | 0365 N/M |
| | | 321-12H-20 thru -37 | |
| | | I-03 | 0450 |
| | "DR" SHOULD BE "DRN" | MC-DINUL DI-2144F | F-54 |
| | UN SHOWLD DE DAN | 1-03 ZINY 2/14 + 947 | 0450 |
| | "PR" SHOULD BE "PRESS" | | F-54 |
| | TR Shorte De Trees | T-03 | 0450 |
| | "DEAR" SHOULD BE "DA" | u 11 | F54 |
| | Derik Shouse St | 7.03 | 0450 |
| | "COMP" SHOULD BE "COMPR' | " " | F-54 |
| | P. Yof Y | I-04 | 0477 |
| | "ABNORM" NOT IN DD-AAS-1 | 13-11101 -11137 XI-1212-1+37 | NA |
| | | T CIM | 0477 |
| | "F.W." SHOULD BE "FOWTR" | 21-1171-78 72A-1171-78 | NA |
| | | I-05 | 0551 |
| | "FEEDWTR" SHOULD BE "FOWTR" | HT 22201 H5-93317 | A-22 |
| | | I-05 | 0405 |
| | "EM" SHOULD BE "EMERG" | FC-2239 | 0-38 |
| | | I-05 | 0606 |
| | "FM" SHOULD BE "EMERG" | PR-2267 FR-2239 | 0-39 |
| | | 1-05 | 0610 |
| | "FW" SHOULD BE "FOWTR" | FR-2205 | D-37 |
| | | I-05 | 0611 |
| | "PT" NOT IN DD-AAS-1 | FC-2805 | A-29 |
| | | T-05 | 0624 |
| | "PT" NOT IN DD-AAS-1 | FC-2206 | A30 |
| | | I.05 | |
| | "FW" SHOULD BE "FDWTR" | FR- 2206 | A-42 |
| | | I.05 | |
| V | "EM" SHOWLD BE "EMERG" | FC- 2240 | A-33 |

| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. |
|---------------------------------------|--|-------------------|-------------------------|
| | | 1.05 | 0627 |
| ABBREVIATION | "EM" SHOULD BE "EMERG" | PR-2269 / FR-2240 | A-33 |
| I I I I I I I I I I I I I I I I I I I | 7/10/10/10/10/10/10/10/10/10/10/10/10/10/ | 1-05 | 0629 |
| | "CONTR" SHOULD BE "CONT" | NONE | N/A |
| | | T.05 | 0635 |
| | "CLT" SHOULD BE "CONT" | PC-2243 | A-27 |
| | | I-05 | 0636 |
| | "PRIM" SHOULD BE "PRI" | PC-22129 | D-39 |
| | TALL SHOWED DE | I-05 | 0646 |
| | "PRIM" SHOULD BE "PRI" | PC-22130 | E-52 |
| | I SHURWING ST. | I-05 | 0649 |
| | "CLT" SHOULD BE "CONT" | PC-2244 | A-32 |
| | "CLT" SHOULD BE "CON!" | I-05 | 0669 |
| | "VAL" SHOULD BE "VA" | POC-22127 | A-43 |
| | THE SHULL BE | I-06 A | 0742 |
| | "CHNGR" NOT IN DO-AAS-1 | H5-31165 | 2.84 |
| | - CANON POR IN DO AND I | I-06A | 0745 |
| | "CHNGR" NOT IN DO-ARS-1 | HS-11166 | D-85 |
| | CHACK AU TA 12 HAS! | I-06A | 075/ |
| | "REHT" SHOULD BE "RHT" | H5-5203 | 0-90 |
| | "Exe" SHOULD BE "EXCH" (ATT MENTO SHEET) | I-ONA | 0752 |
| | OIR DEC "HT LE" FR" - NOT IN DO-ARS-1 | H5-3720 | D-89 |
| | TOTAL DEC. HI. CO., TR. THOU THE CO. THES. | I-04A | 0756 |
| 1 3 1 1 1 1 1 | "REHT" SHOULD BE "RHT" | H5-5221 | D-90 |
| | KEHI SHUMO BE MI | I-06A | 076/ |
| | "MD" NOT IN D.D-AAS-1 | HC-31207 | |
| | TID NOT IN DUTANT | I.04A | 0762 |
| | "REHT" SHOULD BE "RHT" | PC-5214 | F-61 |
| | Se SAUGO DE ARI | I-04A | 0776 |
| | "DEAERATOR" SHOULD BE "DEARATOR" | HC-3175 | F-69 |
| | SE SHOWED BE LETTERING | I-OGA | 0777 |
| | "DERERATOR" SHOULD BE "DEARATOR" | LIC-3175 | F-60 |
| | CEREBILIVE SHOWS IN DEPARTURE | I-06A | 0779 |
| | "EMER" SHOULD BE "EMERG" | LIC-3/45 | F-61 |
| _ | ELIEN SULVES | I-06A | 0789 |
| | "FO PUMP" NOT IN DO-ARS-1 | H5-3/07 | |
| | TO FULL AND IN VICTORS | I-004 | 0800 |
| | "POS" NOT IN DD-AAS-1 | 28.5155 | 8-65 |
| | TVS NOT IN DUTATO | I-064 | 0820 |
| V | "DESUP" SHOUD BE "DESUPER" | HC-5208 | 8-69 |

| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
|--------------|--|----------------|------------------------------------|
| | | I.06# | 0821 |
| ABBREVIATION | "DESUP" SHOULD BE "DESUPER" | TZC- 5208 | B-69 |
| | | I-06# | 0822 |
| | "DESUP" SHOULD BE "DESUPER" | HC-5207 | B-69 |
| | | I-06A | 0823 |
| | "DESUP" SHOULD BE "DESUPER" | 72c-5207 | B-69 |
| | | I-00A | 0824 |
| | "EMER" SHOULD BE "EMERG" | LIC-3251 | B-63 |
| 100011 | | I-00A | 0829 |
| | "PRE" NOT IN DD-AAS-1 | LC-22219 | 8.0 |
| | | I-04A | 0830 |
| | "PRE" NOT IN DO-AMS-1 | LC-22220 | B-75 |
| | | I-OM | 0834 |
| | "DISH" SHOULD BE "DISCH" | FI-3/01 | C-75 |
| | 7 | I-06A | 0835 |
| | "DISH" SHOULL BE "DISCH" | PI-3104 | C-75 |
| | 1 | I-06A | 0842 |
| | "DISH" SHOULD BE "DISCH" | FI - 3/02 | B-78 |
| | The same of the sa | I-06A . | 0843 |
| | "DISH" SHOULD BE "DISCH" | PI-3/05 | B-78 |
| | 52 | I.06A | 0850 |
| | "DEMERATOR" SHOULD BE "DEMERTOR" | PI-5301 | E-96 |
| | SP SP | 1-064 | 0851 |
| | "DEAERATOR" SHOULD BE "DEARATOR" | LT-1192-1 | E-96 |
| | WELLER THE STREET SET SERVICES | I.064 | 0867 |
| The state of | "STR" SHOULD BE "STOR" | LI-3/38 | E-99 |
| | , carried the | I-06A | 0858 |
| 1 | "STR" SHOULD BE "STOR" | LI-3/4/ | 6-99 |
| 0 - 3 | | I-00A | 0867 |
| see Hage 13 | WELSH" NOT IN DO-ARS ! | P3-5025 | C-76 |
| | mH | I-06A | 0868 |
| See rage 13 | "FLSH" NOT IN DO ARS ! | FI-3019 | C-76 |
| - | The state of the s | I-06A | 0870 |
| | "HEL" SHOULD BE "HE" | PI-5217 | F12 |
| | 1100 | I-06A | 0879 |
| | "EXP" NOT IN DD-AAS-1 | GR-SISY | 8-76 |
| | St NOT IN DOMAS! | I-06# | 0882 |
| 100 000 | "DEAFRATOR" SHOULD BE "DEARATOR" | PI-5828 | C-82 |
| | "DA" SHOULD BE "DRN", "FXC" SHOWLD BE "FXCH" | I-06A | 0893 |
| | "FR: "LUB" "CLR" "SLY" "THR" - NOT IN DD-ARS-I | TR-31115 (186) | B-72 |

| IIEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
|--------------|----------------------------------|------------------|------------------------------------|
| | ·DR' S'OULD BE 'DRN' | I-06A | 0894 |
| HBBREVIATION | "GID", "EXT" - NOT IN DD-AAS-1 | TR-3118 (TAG) | 6-73 |
| | "SPRY" + "POS" - NOT IN DD-AAS-1 | I-06A 2I-5207 | 0898 |
| | STATE TOO THAT HE REAL | I-00A | 0899 |
| | "SPRY" + "POS" - NOT IN DO-AAS-1 | ZI-5208 | |
| | | I-06A | 0912 |
| | "EXHST" SHOULD BE "EXH" | ZI-5251-Y | and the second |
| | | I-06A | 09/3 |
| | "EXT" NOT IN DD-AAS-1 | 27-5383 | |
| | | I-064 | 0914 |
| | "EXT" NOT IN DD. AAS-1 | 2I-5365 | |
| | | I-06A | 09/5 |
| | "EXHST" SHOULD BE "EXH" | 21-5251-3 | |
| | | I-06B | 0922 |
| | "EMER" SHOULD BE "EMERG" | H3-4221 | E-03 |
| | | I-068 | 0923 |
| | "RHEOSTAT" NOT IN DD-AAS-1 | HS-5116 | D-95 |
| | | I-048 | 0925 |
| | "NON-ESS" NOT IN DO-AAS-1 | H5-4/33 | F-02 |
| | | I-068 | 0928 |
| | "DEC" NOT IN DO-AAS-1 | 145-4285 | E-02 |
| | | I.068 | D-99 |
| | "SYNC" NOT IN DO-AAS-1 | H5-9226 | 0947 |
| | N | I-068 | E-01 |
| | "SYNC" NOT IN DD-AAS-1 | HS-9232 | 0948 |
| | LANGE NOT IN DO ARE | T-068 H5-9230 | E-01 |
| | -SYNC NOT IN DD-AAS-1 | T-068 | 0949 |
| | WYANT NO W DO ANG-1 | HS-9208 | 0-99 |
| | "SYNC" NOT IN DO-ARS-1 | I-068 | 0950 |
| | WYGE HET IN DO-POST | H= 9247 | D-98 |
| | "SYNC" NOT IN DD-AAS-1 | I-043 | 0951 |
| | "SYNC" NOT IN DO-AHS-1 | H5-9224 | 0-98 |
| | JIM NOT IN OUTEN | I-068 | 0952 |
| | "SYNC" NOT IN DO-AAS-1 | H5-9236 | 0-98 |
| | SING IN INTEREST | I-068 | 0953 |
| | "SYNC" NOT IN DO-AAS-1 | H5-9222 | D-97 |
| | JIM IN DURAS | I-068 | 0954 |
| | "SYNC" NOT IN DD-AAS-1 | H5-9234 | 0-97 |

| | | | INSTRUMENT |
|---------------|--|------------------|---------------|
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. |
| | | | PHOTO NO. |
| | | I-068 | 0955 |
| ABBREVIATION. | "SYNC" NOT IN DD-AHS-1 | 45-9220 | 0-96 |
| 1 | "SYNC" NOT IN DD-AAS-1 | I-068 | 0956 |
| | "STNOBY" SHOULD BE "STDRY" | 45-9243 | D-96 |
| | | I-06B | 0957 |
| | "SYNC" NOT IN DD-AAS-1 | H59208 | D-96 |
| | | I-068 | 0958 |
| | "SYNC" NOT IN DD-AAS-1 | HS-9206 | D-95 |
| | I WE WE WOULD | I-060 | 0959 |
| | "SYNC" NOT IN DO-AAS-1 | HS-9204 | 0-95 |
| - 1 | Jan III III III III III III III III III I | I-048 | 0960 |
| | "SYNC" NOT IN DD-AAS-1 | H5.9202 | D-94 |
| | THE NULL IN DE-HAST | I-06B | 0961 |
| | "SYNC" NOT IN DD-AASH | H5-9279 | D-94 |
| | SINC NOI IN IZE ARS | I-068 | 0982 |
| | "RHEOSTAT" NOT IN DD-A AS-1 | H5-5117 | 2.95 |
| | KHEDSIKI MOI IN DU-HASI | T-068 | 0993 |
| | *CVANCI NOT IN DO DOK-1 | x6I-9253 | F-28 |
| | "SYNC" NOT IN DID-AAS-1 | I-048 | 0996 |
| | " " " " " " " " " " " " " " " " " " " | | F-33 |
| | "COMP" SHOULD BE "COMPR" | H5-8219 I-068 | 0998 |
| | War 124 ALLEN OF WANTON | | |
| | "COMP" SHOULD BE "COMPR" | H5-8220 | 8-41 |
| | 1 . O | I.003 | 1001 |
| | "POS" NOT IN DO-AAS-1 | ZI- 822/ | 1002 |
| | lun de la companya della companya della companya de la companya della companya de | I-068 | 1002 |
| | "POS" NOT IN DO-AAS-1 | 21.8255 | |
| | 1.0 | I-068 | 1003 |
| | "POS" NOT IN DO-AAS-1 | 2I-8217 | 1004 |
| | | I-068 | 1007 |
| | "POS" NOT IN DO-ARS-1 | 2I-82/8 | 1013 |
| | | I-068 | 1013 |
| THE RESERVE | "BAT" SHOULD BE "BATT" | 27-9298 | |
| | | I-06B | 1015 |
| | "BAT" SHOULD BE "BATT" | ZI-9297 | |
| | | I-068 | 1021 |
| | "PL" NOT IN DD-AAS-1 | 27-92235 | |
| | | I-068 | 1024 |
| | "PL" NOT IN DD-AAS-1 | 21-92828 | |
| | | I-0 68 | 1039 |
| V | "COMP" SHOULD BE "COMPR" | HS-8211-3 | |

| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
|--------------|--|------------------|---|
| | | I-068 | 1041 |
| ABBREVIATION | "COMP" SHOULD BE "COMPR" | H5-8201 | 100000000000000000000000000000000000000 |
| 1 | | I-048 | 1042 |
| | "COMP" SHOULD BE "COMPR" | H5-8211-1 | |
| | | I-068 | 1043 |
| | "COMP" SHOULD BE "COMPR" | HS-8211-2 | |
| | | I-048 | 1063 |
| | "COMP" SHOULD BE "COMPR" | HS-92102 | |
| | | I-068 | 1064 |
| | "COMP" SHOULD BE "COMPR" | HS-92101 | - 171, or 151, but |
| - 1 | | Z068 | 1072 |
| | "STNDBY" SHOULD BE "STDBY" | 55-9249 | |
| | The state of the s | I-068 | 1073 |
| | "STNDBY" SHOULD BE "STOBY" | 55-9245 | |
| | 911015 | I-048 | 1080 |
| 211 | "SYNC" NOT IN DD-AMS-1 | 45-9212 | E-69 |
| | THE MULTINGETHER | I-068 | 1081 |
| | "SYNC" NOT IN DD-AAS-1 | 45-9210 | |
| | SINC NOI IN OF HAS! | I-068 | 1089 |
| | "SYNC" NOT IN DO-ARS-1 | EI-9250 | B-16 |
| | SINC NOI IN OUTINS! | I-068 | 1101 |
| | "STNBY" SHOULD BE "STDBY" | EI-9273 | B.36 |
| | SINDY SHOULD BE SIZE! | I-068 | 1112 |
| | "STNDBY" SHOULD BE "STDBY" | II-9248 | B-29 |
| | SINDBY SHOULD BE SIDBI | I-063 | 1/22 |
| | WETHER SHALLS OF METARY | XVI-9248 | B. 22 |
| | "STABY" SHOULD BE "STOBY" | 1-068 | 1/23 |
| | "CT. DOWN CHOUSE OF ACTORNAL | XFI-9248 | B-22 |
| | "STNDBY" SHOULD BE "STDBY" | 1-068 | 1129 |
| | INTURBUN SHOWER OF METRONS | ×FI-9244 | 8-20 |
| | "STNDBY" SHOULD BE "STDBY" | I-068 | 1130 |
| | METURUM SHOWED DE METARUM | XVI-9244 | B-18 |
| | "STNBY" SHOULD BE "STDBY" | I-068 | //33 |
| A A P Late | INCHES HE WE ARE ASSET | | B-17 |
| _ | "SYNC" NOT IN DD-AAS-1 | EI-9251 | 1139 |
| | 110000 1100 1000 1000 | I-068 | |
| | "STR" NOT IN DD-AAS-1 | LI-4505 I-068 | F-22 |
| | 11 | | 1143 |
| | "STNDBY" SHOULD BE "STDBY" | 21-92202-1 + -2 | |
| | | I-068 | 1152 |
| V | I"SRV" SHOULD BE "SERV" | TI-4220+PI-4224 | F-22 |

| IIE TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
|-------------|-------------------------------|--------------------|------------------------------------|
| 21 . | | I-068 | 1153 |
| Hobrevation | "DEC HT" NOT IN DD-MAS-1 | TI- 4222 | F-aa |
| | | 1-09 | 1576 |
| | "DISCHG" SHOULD BE "DISCH" | H5-4258-2 | N/M |
| | | I-09 | 1577 |
| | "DISCHG" SHOULD BE "DISCH" | HS- 4263-1 I-09 | N/A 1578 |
| | | | NIA |
| | "DISCHG" SHOULD BE "DISCH" | H5 4263-2 | 1579 |
| | 17 (o | I-09 | NA |
| | "DISCHE" SHOULD BE "DISCH" | H5-4559-2 | 1580 |
| 1 | SOTIONS SUBJECT OF NOTICE | | |
| | "DISCHE" SHOULD BE "DISCH" | HS-4261 | N/A ISEL |
| | INTERIOR SHOWED DE INTERIOR | | NA |
| | "DISCHE" SHOULD BE "DISCH" | HS-4260 I-09 | 1587 |
| | "DISCHE" SHOULD BE "DISCH" | HS-4263-2 | NA |
| | DISCHE SHUULD DE CUSCH | I-09 | 1589 |
| | "DISCHE" SHOULD BE "DISCH" | H5- 4259-1 | NA |
| | LUSAN SAUGED BE LUSA | J-09 | 17/17 |
| | "SYN" NOT IN DD-AAS-1 | NONE | NA |
| | USAT' NOT IN DD-MAB-I | I-10 | 1721 |
| | FW. SHOULD BE FOWTH | BIN 704 P-10 + -11 | E-31 |
| | -SHT NOT IN DO-MHS-1 | I-10 | 1724 + 1725 |
| | "FW" SHOULD BE "FOWTE" | BIN 904 P-10 + -11 | E-24 |
| | "SHT" + "50" NOT IN DO-A 46-1 | 1.70 | 1726 + 1727 |
| | "FW" SHOULD BE "FDWTR" | BIN 605 P.6 -7 -8 | C-80 |
| | "SHT" + "SG" NOT IN DO-MASH | T-10 | 1726 |
| | "FW" SHOULD BE "FDWTR" | BIN 505 P6 -7 -8 | C-19 |
| | "SHT" +"SG" NOT IN DO-MAS-1 | I-10 | 1726 |
| | "FW" SHOULD BE "FDWTE" | DIN 405 A6, -7 -8 | C-18 |
| | "SHT" + "SE" HOT IN DO-MASH | I-/0 | 1728 |
| | "FW" SHOULD BE "FOWTR" | BW 1005 P-6-7-8 | E-44 |
| | "RUPT" NO IN DO-AAS-I | I-v0 | 1732 |
| | "FW" SHOULD BE "FOWTR" | SIN 406 P-4-8 -10 | C-17 |
| | WRUPT NOT IN DO-MAS-! | I-/0 | 1733 + 1734 |
| | "FW" SHOULD BE "FOWTE" | BIN 506 P.4 -8 -10 | C-16 |
| | "RUPT" NOT IN DO-MAS-I | I-/0 | 1736 |
| | "FW" SHOULD BE "FDWTE" | BIN 1006 P.4-8,-10 | C-11 |
| | "RUPT" NOT M DO-MAS-1 | T-10 | 1738 +1739 |
| | "FW" SHOULD BE "FDWTR" | DIN 1206 P-4-8-10 | A-69 |

| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
|-------------------|--|-----------------|--|
| | | I-10 | 1748 + 1749 |
| ABBREVIATION | -LLT" "HLT" + "RWP" NOT IN DO AAS-! | BIN 104 | A.08 |
| HOOKEYIHIIVA | Let , Her , Add He had he | TVO | 1749 + 1750 |
| The second second | -4T" "HET, + "RWP" NOT IN DO-MAS-1 | BIN 204 | A-98 |
| | I HE THE THE THE THE THE THE THE THE THE | J-10 | 1750 + 1751 |
| | "LLT" "HLT" + "RWP" NOT IN DO-AMS-1 | BIN 30Y | B-97 |
| | Terr, Far V ART AR IA SETTING | I-13 | 1325 |
| | "PL" NOT IN QO-AMS-1 | H5- 7218 P | F-32 |
| | NOT IN DO-HAS-1 | 1.13 | 1326 |
| | "C. AT" CHANG AS "CHO! | HS- 46227 | N/A |
| - | "SUPT" SHOULD BE "SUP" | I-11 | 1330 |
| | "ANALY" SHOULD BE "ANAL" | H5-6342 | N/M |
| | "TNK" SHOULD BE "TK" | T-/3 | 1341 |
| | | H5-6341 | NA |
| | "THK" SHOWLD BE "TK" | 1.13 | 1342 |
| C | The state of the | | E-78 |
| | "TNK" SHOWLD BE "TK" | H5-2443 | /350 |
| | | | €-78 |
| | "TNK" SHOULD BE "TK" | HS-2444 I-13 | 1358 |
| | | | €.78 |
| | "TNK" SHOULD BE "TK" | HS-2445 | 1366 |
| | | | |
| | "TNK" SHOULD BE "TK" | H5-2446 | E-83 |
| | | 1-13 | |
| | "TNK" SHOULD BE "TK" | H5-2438 | €-83 |
| | | I-13 | 1384 |
| | "HR" SHOULD BE "HDR" | HS-46247 | A STATE OF THE PARTY OF THE PAR |
| | | I-13 | /385 |
| | "HR" SHOULD BE "HDR" | HS-46245 | N/A |
| | | T-13 | 1398 |
| | "FLR" NOT IN DD-AAS-1 | HS-46241 | 1399 |
| | | エーコ | |
| | "FLR" NOT IN DO-ARS-1 | H5-46239 | N/A |
| | | I-13 | 1400 |
| 1 724 343 61 | "FLE" NOT IN DO-AAS-1 | HS- 4623.7 | E-75 |
| | | I-13 | 1411 |
| | "ANALY" SHOULD BE "ANAL" | HS-93256 | NA |
| | | T-13 | 1412 |
| 5-10 Line 31 | "ANALY" SHOULD BE "ANAL" | HS-9316 | N/M |
| | THE STATE OF THE S | I-13 | 1416 |
| <u> </u> | "FW" SHOULD BE "FDWTR" | FR-2222 | E-07 |

| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
|-------------|--------------------------------|-------------------------|------------------------------------|
| ARREVIRTION | "WST" NOT IN DD-AAS-1 | T-14 RIS-6212 | 1776 |
| | "STAE" NOT IN DO-AAS-I | T-14 RIS-31193 | 1776 A-16 |
| | "COMP" SHOULD BE "COMPR" | T-14 RIS 46211 | 1776 A:16 |
| | "WST" NOT IN DD-AAS-I | T-14 815-6213 | 1778 A-15 |
| | "COMP" SHOULD BE "COMPR" | T-14 RIS-46212 | 1778 A-15 |
| | "RFLG FL" NOT IN DO-ARS-1 | RIS- 93252-1 | 1780 E-17 |
| | "HSF" NOT IN DO-MAS-I | F-14 RIS-93251-3 | 1782 E-16 |
| | "ANALY" SHOULD BE "ANAL" | T-14 R15-93252-4 | 1792 |
| | "REFL" NOT IN OD-AAS-1 | T-14 RIS-93250-1 | 6-15 |
| | "HSF" NOT IN DO-RAS-1 | RIS-93250-3 | 1782 E-15 |
| | "RAD CHEM LAB" NOT IN DO-RAS-I | T-14 RIS- 93851-8 | 1782 E-15 |
| | "RLF" NOT IN QO-AAS-I | RIS-53252-12 | 1784 E-13 |
| | "VO" NOT IN PO-MAS-I | T-14 RIS-93282-7 | 1786 E-13 |
| | "REACT" SHOULD BE "RX" | I-15 TI-7316 | 1156 N/A |
| | "COMP" SHOULD BE "COMPR" | I-15 2I-4527-1 | 1168 N/A |
| | "REACT" SHOULD BE "RX" | I-15 MI-7322 | 1175 E-65 |
| | "RFLG" NOT IN DD-AAS-I | Z-15 PDI-7319 | 1176 E-65 |
| | "REACT" SHOULD BE "RX" | T-15 FI-7320 I-15 | 1177 F-65 |
| | "STNOBY" SHOULD BE "STDBY" | XRP-92188 | 1180 F-47 |
| * | "STNDBY" SHOULD BE "STDBY" | I-15 XRP-92189 | 1181 F-46 |

| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. |
|----------------|--|------------------|-------------------------|
| | | I-15 | 1182 |
| ABBREVIATION | "STNOBY" SHOULD BE "STOBY" | ×89.92190 | F-46 |
| | | I-15 | /123 |
| March Control | "STNDBY" SHOULD BE "STDBY" | XRP-92191 | F.46 |
| | | I-15 | 1184 |
| | "STNOBY" SHOULD BE "STOBY" | X89-92/93 | F-48 |
| | | I-15 | F-45 |
| | "STHOBY" SHOULD BE "STDBY" | XRP 93194 | 1186 |
| 7 75 117 | THE PARTY SHOWS AS INSTRUME | T-/5 | NIM |
| | "STNOBY" SHOULD BE "STDBY" | X8P-92195 | 1187 |
| 1 | STUDENS SHOULD BE STORY | XRP- 92196 | C.50 |
| | "STNDBY" SHOULD BE "STDBY" | I-15 | 1194 |
| 10 - 3 - 3 - 3 | "STNDBY" SHOULD BE "STDBY" | x89-92186 | F-48 |
| | SINDSI SHOULD BE SIDDI | I-15 | 1195 |
| | "STNDBY" SHOULD BE "STDBY" | x88-92187 | F-47 |
| | I SINDS! SHOOLD NO. | I.15 | 1202 |
| | "RT" NOT IN DD-MAS-I | XRP.92131 | 3.01 |
| | 1 17 140. 11 200 1112 | I-15 | 1203 |
| | "RT" NOT IN DD-AAS-1 | X82-92130 | A.99 |
| | AL A | I-15 | 1204 |
| | "RT" NOT IN OD-ARS-1 | ×RP-92129 | A-99 |
| | | I-15 | 1209 |
| | "SINMTI" NOT IN DO-AAS-I | XRP- 92/23 | C-98 |
| MEST TO | | I.15 | 1288 |
| | "TB" NOT IN DD-AAS-1 | X5-92223 | N/A |
| | "BU" SHOULD BE "BKUP" | I-15 | 1291 |
| | "BLK" NOT IN DD-AAS-1 | X5-92192 | 1292 |
| | 100000 1100 | x5-93/55 | N/A |
| | "BLK" NOT IN DD-AAS-1 | X5-73/33 I-15 | 1293 |
| | "01111 1/T DO HOLL | X5-92154 | NA |
| | "BLK" NOT IN DD-MAS-1 | X5 74/3 T | 1294 |
| | WALKE ILE W OD MALL | x5-92/53 | NA |
| _ | "BLK" NOT IN DO-AAS-1 | I-15 | 1295 |
| | *BU" SHOULD BE "BKUP" | x5-92/56 | NA |
| | -BLK" NOT IN DD-RAS- | A | |
| \ | | | 1 - 1 - 1 |

ADDITIONAL ITEMS

| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
|---------------------|--|---------------------|------------------------------------|
| | | I.02 | 0093 |
| VARREWINTTON | "PR" SHOULD BE "PRESS" | PDT-2/285 + PI-2/43 | 4.79 |
| HIDIONEXILITOR | 100000000000000000000000000000000000000 | I.01 | 0139 |
| | "PRIF" SHOULD BE "PURIF" | HS-23/34 | E-87 |
| | i del servicio de la companya de la | T-01 | 0140 |
| | PRIF SHOULD BE "PURIF" | H5-23/33 | €-87 |
| | I SAULUS STERRES | I-0/ | 0/46 |
| | "L2" SHOULD BE "LP 2" | TC.46210 | A-80 |
| | The should be to | I-03 | 0417 |
| | "INSTR" SHOULD BE "INST" | NO-1199 | |
| - , | 1101 | I-05 | 0551 |
| | "FEEDWIR" SHOULD BE "FDWTR" | H5-22201 + H5-93317 | A-22 |
| | The state of the s | 1-05 | 0567 |
| Mark of the Control | "PT" NOT IN DD. AAS. | FI -2205-1 | 0.08 |
| | THE WOLL WAS THE | I.05 | 0568 |
| | "PT" NOT IN DD-ARS-1 | FI-2205.2 | D-08 |
| | NOT IN DO-ANSI | I-05 | 0580 |
| | "PT" NOT IN DD-AAS-1 | FI-2206-1 | C-96 |
| | NOT IN DD-HAS-1 | I-05 | 0581 |
| | I DE HET IN DO POSE! | FI-2204-1 | c -96 |
| | "PT" NOT IN DO-AAS-1 | 1-06A | 0867 |
| | WELL TANK CURIN AT "TITH" | 12.5225 | C-76 |
| | "FLSH TANK" SHOULD BE "FLTK" | J-06M | 0868 |
| | THE CHAIN OF HEITH | FJ-3219 | C-76 |
| | "FLSH TANK" SHOULD BE "FLTK" | 233017 | |
| | | | |
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| | | | |
| | | | |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 05/8

| | INSTRUMENT LABELIN | | |
|--|---|--|--|
| TEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO PHOTO NO. |
| 45-2187-3 | 14 Buffer He Supply BK | I-02 | |
| HS-2188-3 | 10 " " " " " | " | |
| 45-2189-3 | 18 " " " " | 4 | |
| 45-2190-3 | 10 " " " " | " | |
| 4-21118 . | L.P. Separator level | " | F-20 |
| L1-21119 · | | " | F-19 |
| SM-21865/66 SM-21171 /72 . | Speed Wobble Inste | I-10 | E-42 |
| | tash analysis - Circ & | | |
| (2) He live of LIST THE PROCEDUR LISTED ITEMS IN A M | cons (GUIDELINES VIOLATED) Tel legend tage are re to reading displayed Be displayed on a S Speed Wobble Instrum Egend Marbings on a ES OR OPERATIONS THAT USE THE ANNER TO INDUCE THE OPERATOR ERROR Start-up 21-02 | I om deffered ingle duel of both modules | PPS actions of Scales welle welle do not |

| TEAM MEMBER SIGNATURE TEAM MANAGER CRDR Coordinator | | OULD RESULT FROM HED | |
|--|--|---|------------------------------|
| CLASSIFICATION | | | |
| CLASSIFICATION | | | |
| DISPOSITION Hand switches little for I-02 will be relabeled for accordance with DR-SWI-1. LI-21119 will be relabeled in accordance with DR-RIS-1, all instruments will be relabeled in accordance with DR-RIS-1, all instruments will be relabeled in accordance with DR-LIS-1 and LI-21118 will be deleted for CN 1886B. SMI-21145/LL and SM-21171/72 /abel per DD-4AB-1 CN-1895 WCH S/118L TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE DATE TEAM Manager SRDR Coordinator | | | |
| DISPOSITION Hand switcher little for I-02 will be relabelet for accordance with DD-SWI-1. LI-21119 will be relabelet in accordance with DD-RIS-1. All instruments will be relabeled in accordance with DD-RIS-1. All instruments will be relabeled in accordance with DD-LB-1 and LI-21118 will be deleted for CN 1886B. SMI-21145/LL and SM-21171/72 /abel per DD-LAB-1 CN-1895 WCH S/118L TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE DATE TEAM Manager SRDR Coordinator | | | |
| DISPOSITION Hand switcher little for I-02 will be relabelet for accordance with DD-SWI-1. LI-21119 will be relabelet in accordance with DD-RIS-1. All instruments will be relabeled in accordance with DD-RIS-1. All instruments will be relabeled in accordance with DD-LB-1 and LI-21118 will be deleted for CN 1886B. SMI-21145/LL and SM-21171/72 /abel per DD-LAB-1 CN-1895 WCH S/118L TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE DATE TEAM Manager SRDR Coordinator | | | |
| DISPOSITION Hand switcher lited for I-02 will be relabeled for accordance with DD-SWI-1. LI-21119 will be relabeled in accordance with DD-RIS-1. all instruments will be relabeled in accordance with DD-RIS-1. all instruments will be relabeled in accordance with DD-LB-1 and LI-21118 will be delabeled in accordance with DD-LB-1 and SM-21171/72 /abel per DD-LAB-1 CN-1895 WCH STI186 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE DATE TEAM Manager CROR Coordinator | | | |
| DISPOSITION Hand switcher listed for I-02 will be relabeled for accordance with OR-SWI-1. LI-21119 will be relabeled in accordance with OR-SWI-1. LI-21119 will be relabeled in accordance with OR-A15-1. all mathematic will be relabeled in accordance with OR-A15-1. all mathematic will be relabeled in accordance with OR-LAB-1 and LI-21118 will be deleted for CN 1886B. SMI-21165/LL and SM-21171/72 /abel per DD-4AB-1 CN-1895 VCH STITBE TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE OR NON CONCURRENCE OR NON CONCURRENCE DATE | reference a reference | | |
| DISPOSITION Hand switches listed for I-02 will be relabeled for accordance with DD-SWI-1. LI-2/119 will be resealed in accordance with DD-A15-1. all instruments will be relabeled in accordance with DD-LAB-1 and LI-2/118 will be deleted for CN/886B. SMI-2/145/66 and SM-2/17/72 /abe/ per DD-LAB-1 CN-1895 WCH S/1186 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE TEAM Manager CROR Coordinator | LIST THE CONSEQUENCES OF OPERATO | OR ERROR | |
| DISPOSITION Hand switches listed for I-02 will be relabeled for accordance with DD-SWI-1. LI-2/119 will be relabeled in accordance with DD-AB-1. all instruments will be relabeled in accordance with DD-LAB-1 and LI-2/118 will be deleted for CN/886B. SMI-2/165/66 and SM-2/17/72 /abe/ per DD-LAB-1 CN-1895 UCH S/1186 TEAM ACTION TEAM MEMBER SIGNATURE TEAM MACTION CONCURRENCE OR NON CONCURRENCE DATE TEAM MANAGER CROR Coordinator | | | |
| DISPOSITION Hand switcher listed for I-02 will be relabeled for accordance with DD-SWI-1. LI-21119 will be relabeled in accordance with DD-AB-1. all instruments will be relabeled in accordance with DD-LAB-1 and LI-21118 will be deleted for CN 1886B. SMI-2115/LL and SM-21171/72 Jabel per DD-LAB-1 CN-1895 UCH STI186 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE TEAM Manager CRDR Coordinator | | | |
| DISPOSITION Hand switches listed for I-02 will be relabeled for accordance with DD-SWI-1. LI-2/119 will be relabeled in accordance with DD-AB-1. all instruments will be relabeled in accordance with DD-LAB-1 and LI-2/118 will be deleted for CN/886B. SMI-2/165/66 and SM-2/17/72 /abe/ per DD-LAB-1 CN-1895 UCH S/1186 TEAM ACTION TEAM MEMBER SIGNATURE TEAM MACTION CONCURRENCE OR NON CONCURRENCE DATE TEAM MANAGER CROR Coordinator | | | |
| DISPOSITION Hand switches listed for I-02 will be relabeled for accordance with DD-SWI-1. LI-2/119 will be resealed in accordance with DD-AB-1 all instruments will be relabeled in accordance with DD-LAB-1 and LI-2/118 will be deleted for CN/886B. SMI-2/145/LL and SM-2/17/72 /abe/ per DD-LAB-1 CN-1895 UCH STI186 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE TEAM Manager CRDR Coordinator | | | |
| DISPOSITION Hand switches listed for I-02 will be relabeled for accordance with DD-SWI-1. LI-2/119 will be resealed in accordance with DD-AB-1 all instruments will be relabeled in accordance with DD-LAB-1 and LI-2/118 will be deleted for CN/886B. SMI-2/145/LL and SM-2/17/72 /abe/ per DD-LAB-1 CN-1895 UCH STI186 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE TEAM Manager CRDR Coordinator | | | |
| DISPOSITION Hand switches listed for I-02 will be relabeled for accordance with DD-SWI-1. LI-2/119 will be resealed in accordance with DD-AB-1. all instruments will be relabeled in accordance with DD-LAB-1 and LI-2/118 will be deleted for CN/886B. SMI-2/165/LL and SM-2/17/72 /abe/ per DD-LAB-1 CN-1895 UCH S/1/8L TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE TEAM Manager CRDR Coordinator | CLASSIFICATION | | |
| DISPOSITION Hand switches listed for I-02 will be relabeled gon accordance with DD-5WI-1. LI-2/11/9 will be relabeled in accordance with DD-A15-1. All motherments will be relabeled in accordance with DD-LAB-1 and LI-2/11/8 will be delated for CNT886B. SMI-21165/66 and SM-21/7/72 /abe/ per DD-LAB-1 CN-1895 WCH 5/1/86 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE TEAM Manager CRDR Coordinator | | | |
| TEAM ACTION TEAM MEMBER SIGNATURE TEAM Manager CRDR Coordinator | CORRECTIVE ACTION OPTIONS | | |
| TEAM MEMBER SIGNATURE TEAM MANAGER CRDR Coordinator | | | |
| with OP-LAB-1 and LT-21118 will be deleted per CN 1886B. SM - 21165/66 and SM - 21171/72 /4be/ per DD-LAB-1 CN-1895 VCH 5/1/86 TEAM ACTION CONCURRENCE OR DATE | | | |
| TEAM MEMBER SIGNATURE TEAM MANAGER CRDR Coordinator | | | |
| TEAM MEMBER SIGNATURE TEAM MANAGER CRDR Coordinator | | | |
| TEAM MEMBER SIGNATURE TEAM MANAGER CRDR Coordinator | | | |
| TEAM ACTION TEAM MEMBER SIGNATURE TEAM Manager CRDR Coordinator | | | |
| TEAM ACTION TEAM MEMBER SIGNATURE TEAM Manager CRDR Coordinator | DISPOSITION * Hand switches | · listed for I-02 will. | be relabeled gin |
| TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE OR NON-CONCURRENCE Ceam Manager CRDR Coordinator | accordance with 00-5WI | -1. LI-2/119 will be no | scaled in accords |
| TEAM ACTION TEAM MEMBER SIGNATURE CRDR Coordinator TEAM ACTION CONCURRENCE OR NON-CONCURRENCE CRDR Coordinator | itt 00-815-1 111 met | -1. LI-21119 will be relateled | in suordance |
| TEAM ACTION TEAM MEMBER SIGNATURE CRDR Coordinator TEAM ACTION CONCURRENCE OR NON-CONCURRENCE CRDR Coordinator | itt 00-815-1 111 met | -1. LI-21119 will be relateled | in suordance |
| TEAM MEMBER SIGNATURE CONCURRENCE OR NON-CONCURRENCE CATE CRDR Coordinator | with OP-AIS-1, all matrices with OP-LAB-1 and LI-21 SM - 21165/66 and SM-21171 | -1. LI-21119 will be relateled | in suordance |
| TEAM MEMBER SIGNATURE CONCURRENCE OR NON-CONCURRENCE Ceam Manager CRDR Coordinator | with OP-AIS-1, all instrumenth OP-LAB-1 and LT-21 SNI-21165/66 and SM-21171 | -1. LI-21119 will be relateled | in suordance |
| TEAM MEMBER SIGNATURE NON-CONCURRENCE DATE Team Manager CRDR Coordinator | with OP-AIS-1, all matrices with OP-LAB-1 and LI-21 SM - 21165/66 and SM-21171 | -1. LI-21119 will be relateled | in suordance |
| CRDR Coordinator | with OP-AIS-1, all instrumenth OP-LAB-1 and LT-21 SNI-21165/66 and SM-21171 | -1. LI-2/119 will be no to will be netabled 118 will be deleted a 1/32 /abe/ per DD: | en CNT886B. LAB-1 CN-1895 |
| CRDR Coordinator | with OP-AIS-1, all matrices with OP-LAB-1 and LI-21 SM1-21165/66 and SM-21171 | -1. LI-2/119 will be no to will be related a 118 will be deleted a 1/32 /abel per DA: TEAM ACTION | en CN 1886B. LAB-1 CN-1895 |
| | with OP-AIS-1. all matrices with OP-LAB-1 and LT-ZI SMI-21165/66 and SM-2117/ UCH 5/1/86 TEAM MEMBER SIGNATION | -1. LI-2/119 will be no to will be related a 118 will be deleted a 1/32 /abel per DA: TEAM ACTION | en CN 1886B. LAB-1 CN-1895 |
| ruman ractors spec. | with OP-AIS-1. all mathematical of the OP-LAB-1 and LT-21 SN1-2115/66 and SM-21171 UCH 5/1/86 TEAM MEMBER SIGNATION | -1. LI-2/119 will be no to will be related a 118 will be deleted a 1/32 /abel per DA: TEAM ACTION | en CN 1886B. LAB-1 CN-1895 |
| | TEAM MEMBER SIGNATION CROR Coordinator | -1. LI-2/119 will be no to will be related a 118 will be deleted a 1/32 /abel per DA: TEAM ACTION | en CN 1886B. LAB-1 CN-1895 |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0521

| B. ITEMS INVOLVED | | | | |
|--|---------------------------------------|--|------------------------------|--|
| ITEM TYPE | NOM | ENCLATURE | LOCATION | INSTRUMENT DATA FILE NO PHOTO NO |
| 5.3 m CC- | Cue Tu | ip Reset | I+0,1202 P1 | C-06 |
| " | | 11 11 | I-10 1002 PI | C-09 |
| " | " | " " | I-10 602 P1 | E-37 |
| " | 1 | 1, 1, | ITO 402 P1 | E-35 |
| S-3 pushbutton | Loop S | shutdown Mos | 1-10 404 P5/6 (Typical) | E-20 |
| | | | (Typical) | |
| Poperence Tash analysis - Circ Start-up 11/28/83 PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) S-3 Reset Buttons are that of trip light. Need to be codor cooled per-Sw1-1 and appropriate legend tog synnlis 2 nd S-3 Purchastra Coop shutdown Modules typically I-10 404 PS/6 is not marked as a reset. | | | | |
| S-3 Reset S-3 Reset need to be appropriate loop shute is not no LIST THE PROCEDUR LISTED ITEMS IN A M | Color Color Color Manner TO INDUCTION | are this cooler Tag Supprodules try a rese | Lie End S Briably I-10 40 | |

| E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HEL | inated Richber | then |
|---|-----------------------------------|------------------------|
| Greation of Wrong lam Pailure to operate proper du | shbutton) | |
| | | |
| | | |
| | | |
| | | |
| Kot resetting are Tryp | | |
| | | |
| G. CLASSIFICATION | | |
| (1) Color coole (Blue) fushbutte recognition | ton lens for ea | se of |
| secognition | | |
| pisposition Change lens on pushbutton label per DD-LAB-1 CN-1895 We since light does indicate trip le color patch around to designate WCH 5/14/86 | reset CN-188 | 1-1 ¢ valuated id \$ 5 |
| | | |
| | | |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR NON CONCURRENCE | DATE |
| eam Manager | | |
| CRDR Coordinator | | |
| luman Factors Spec. | | |
| Senior Reactor Operator | | |
| | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0542

| derive and | Instrument Sca | | |
|---|---|---------------------|--------------|
| | ITEMS INV | OLVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO |
| Log for | wer channel 20 m | reters & Long | Power |
| • | Log Power | I-10-103° | B-99 |
| | Log Porver | I-10-203 | A-05 |
| | Log Porner | I-10 303 | A-04 |
| | Start - up | I10 102 | C-01 |
| | Start-up. | I:10 302 | C-03 |
| PROBLEM DESC | RIPTIONS (GUIDELINES VIOLATED) | is home exces | s markin |
| Log Po on Scal | e all in Red significance when | used exces | nailing) |
| Log Po on Scal Conse Washin | significance when | used exces | nailing) |
| Log Po on Scal Come Machine ambig LIST THE PROCE | significance when | r used excessible a | nailing) |
| Log Po on Scal Come Machine ambig LIST THE PROCE | significance when significance when up are also effer our EDURES OR OPERATIONS THAT USE THE NA MANNER TO INDUCE THE OPERATOR E | r used excessible a | nailing) |

| . 5 | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM | M HED | |
|------|---|--------------------------------|-----------------------|
| | | | |
| - | | | |
| - | | | |
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| - | | | |
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| _ | | | |
| | | | |
| . 1 | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| | | | |
| - | | | |
| | | | |
| - | | | |
| - | | | |
| - | CLASSIFICATION | | |
| | | | |
| . (| CORRECTIVE ACTION OPTIONS | | |
| | | | |
| | | | |
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| | DD 05-1 | 14.1865 404 5/ | 101 |
| 0 | isposition Rescale per DD-A15-1 | EN-1013 WEN STI | P 1 |
| 110 | mave existing cationation me | arks on 36916. | -1.101 |
| 3 | cale is acceptable for log mete | r. CN-1873 WCH | 3/14/04 |
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| | TEAM ACTION | | |
| | TEAM MEMBER SIGNATURE | CONCURRENCE OR NON CONCURRENCE | DATE |
| eam | Manager | | |
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| HUI | R Coordinator | | |
| uma | n Factors Spec. | | |
| enio | r Reactor Operator | | |
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FORT ST VRAIN NUCLEAR GENERATING STATION

Log Number _0545

| D. | Glenn /M. Hodson | | 12/22/83 |
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| HED TITLE /N | strument Label | ing | |
| 3. | ITEMS INV | OLVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO PHOTO NO |
| FSL- 2210-3 | F.W. FLOW | I-10 606 P4 | 6.09 |
| | | | |
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| NOTED | DURING CROSS | REFERENCING | EFFORT |
| | | | |
| FSL- 2210- | 3 IS MIS LABEL | ED AS FSL- | 2110-3 |
| D. LIST THE PROCEDUR LISTED ITEMS IN A M | ES OR OPERATIONS THAT USE THE ANNER TO INDUCE THE OPERATOR E | RROR | |
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| Part of the state of the | | | |

| E. | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HED | | |
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| F. | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| G. | CLASSIFICATION | | |
| H. | CORRECTIVE ACTION OPTIONS | | |
| - | CORRECTIVE ACTION OPTIONS Conset labeling | | |
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| _ | DISPOSITION Correctly label per DD- | LAB-1 CN-1895 | WEH 5/1/81 |
| 1. | DISPOSITION COFFEELT IN TONOT DET | -//// | , , , |
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| - | TEAM MEMBER SIGNATURE | CONCURRENCE OR | DATE |
| - | | 101 001001112102 | |
| - | arn Manager | | Appetraction |
| - | DR Coordinator | | |
| Hu | man Factors Spec. | | |
| Se | nior Reactor Operator | | + |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0562

| REVIEWER NAME J. KELEMEN | 1/30/84 | | |
|--|--|-------------|---|
| A. HED TITLE INS | TRYMENT SCALING | | |
| в. | ITEMS INVOLVE | 0 | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO |
| bI-830P. | INDICATING METER DISPLAY | 7.06 | F12 F22 079 |
| 1-422. | | 1-06 | F-22 |
| 34-21164 BIN (406) PS/6) | lulis | 1-10 | c-17 |
| 5N-31/66 10- 41/66" 10- 41/12", BIN(566) P5/6/6 | | | C-16 |
| 134-31/6A 564-31/6A-1 | | | 6.09 |
| SAM. 21/63 : BIN (606) PS/6/ SAM. 21/63 : SAM. 21/63 : | | | C-11 |
| 24-41145-1 | | | 6.07 |
| 5 - 2110 (106) PS/L | | ¥-10 | H-69 |
| BETWEEN MAJO | R INTERVALS, VIOLATES SCAL | E DIVISIONS | WIFH YSYAL |
| D. LIST THE PROCED LISTED ITEMS IN | OURES OR OPERATIONS THAT USE THE A MANNER TO INDUCE THE OPERATOR ERROR | | |
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| - | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FRO | M HED | |
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| - | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| - | CLASSIFICATION | | |
| | CORRECTIVE ACTION OPTIONS | | |
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| | DISPOSITION Remale A-5238 in amount CN-1891 Defle 1/17/84 P1-4502, P1-8206, 4 TI-4222 res CN-1892 WCH 2/25/26 I-10 meters not apperator us acton WCH 5/1/86 | scole per DD-AM | 5-/ |
| _ | PI-4502, PI-8206, 4 TI-4222 res CN-1892 WCH 2/25/26 I-10 meters not operator us | scole per DD-AM | 5-/ |
| _ | PI-4502, PI-8206, 4 TI-4222 res CN-1892 WCH 2/25/26 I-10 meters not operator us | scole per DD-AD | 5-/ |
| _ | PI-4502, PI-8206, & TI-4222 res CN-1892 WCH 2/25/26 T-10 meters not operator us acton WCH 5/1/86 | scole per DD-AD | 5-/ |
| | PI-4502, PI-8206, \$ TI-4222 res CN-1892 WOH 2/25/26 T-10 meters not aperator us acton WCH 5/1/86 TEAM ACTION | concurrence or | s-1 |
| ea | PI-4502, PI-8206, \$ TI-4222 res CN-1892 WCH 2/25/26 T-/U meters not operator us acton WCH 5/1/86 TEAM ACTION TEAM MEMBER SIGNATURE | concurrence or | s-1 |
| ea :R | PI-4502, PI-8206, \$ TI-4222 Yes CN-1892 WOH 2/25/26 T-10 meters not operator us acton WCH S/1/86 TEAM ACTION TEAM MEMBER SIGNATURE | concurrence or | s-1 |
| ea | PI-4502, PI-8206, \$ TI-4222 Yes CN-1892 WCH 2/25/26 T-/U meters not operator us acton WCH S/1/86 TEAM MEMBER SIGNATURE TRANSPORTED TO TEAM ACTION TEAM MEMBER SIGNATURE TRANSPORTED TO TEAM ACTION TO TEAM MEMBER SIGNATURE | concurrence or | s-1 |



PUBLIC SERVICE COMPANY OF COLORADO FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0563

| REVIEWER NAME | | | DATE |
|--|--|---------------|------------------------------------|
| J. KELEMEN | | | 1/30/84 |
| HED TITLE INSTRUM | IENT SCALING | | |
| 3. | ITEMS INVOL | VED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
| MIS-1122 BINGVOS) PIOLU | CATING METER DISPLAY | I-10 | E-34 |
| 43-1121 BIN (503) PIO/11 | | | E-33 |
| 4.5-11.00 Add (403) Palis | | | G-02 |
| NS-1115 ANTON PROLI | 1 2 2 | | E-23 |
| 115-1119 014(903) 10/11 | | | E-60 |
| 113-1116 Old (1803) Proli | | | E-30 |
| 115-1117 BIN (1103) PIOLI | | | E-29 |
| ALS HIS MIN (1201) PIOLI | | 1-10 | E-28 |
| SETWEEN MAJOR IN | TERVALS, VIOLATES SE ESSION PRINICIPLE. | ALE DIVISIONS | WITH USUAL |
| D. LIST THE PROCEDURES OF LISTED ITEMS IN A MANNE | OPERATIONS THAT USE THE | ROR | |
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| | SPECIFIC OPERATOR ERRORIS) THAT COULD RESULT FROM HE | | |
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| | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | CLASSIFICATION | | |
| | CORRECTIVE ACTION OPTIONS | | |
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| | DISPOSITION No action - not enerate | | etors |
| | DISPOSITION No action - not eperate | | eters |
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| | DISPOSITION No action - not enerate | or used indie | |
| 4 | DISPOSITION No action - not exercite WH 5/1/81 | | DATE |
| 4 | DISPOSITION No action - not exercite MH 5/1/81 TEAM ACTION | concurrence or | |
| 4 | DISPOSITION No action - not eperate MH 5/1/81 TEAM ACTION TEAM MEMBER SIGNATURE | concurrence or | |
| | DISPOSITION No action - nut eperate MH 5/1/81 TEAM ACTION TEAM MEMBER SIGNATURE | concurrence or | |



PUBLIC SERVICE COMPANY OF COLORADO FORT ST. VRAIN NUCLEAR GENERATING STATION Log Number 0568

| REVIEWER NAME | | | 1/31/84 |
|---|-----------------------------|---------------|-----------------------------------|
| J. KELEMEN | | | 1131/3 |
| HED TITLE INSTRUME | NT SEALING | | |
| | | | |
| В. | ITEMS INVOLV | ED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO PHOTO NO |
| TSN- 24136 BIN(105) PID INDICA | TING METER DISPLAY | I-10 | B-96 |
| 134-22/37 BIN (205) 210 | | | B-95 |
| 750-221.35 BH(305) PID | | | B-94 |
| 24-425-1 BUNDO) P1/2/4/4 | | | 6.93 |
| 111-43474 LEW (200) 61/5/4/10 | | | 8-92 |
| 24-93423, 125-475 24-1151-1 BIN (300) PILA/4/6 | | | B91 |
| 756-22102 BINGS) PG 736-22104 BINGSOS) PG 736-22104 BINGSOS) PG | | | C-20, C-19 C-18 |
| 756-22103 SW(1005) PG 736-22105 (SW(1005) PG 736-22105 (SW(1005) PG | | 1-10 | E-44 G-06 A 69 |
| C. PROBLEM DESCRIPTIONS (G | UIDELINES VIOLATED) METER | SCALES DO N | OF CONTAIN |
| ANY CRADUATION MA | RKINGS OR NUMERIC | S ON LONER | PURTION OF |
| THE SCALE, CREFE | RENCE CRS-44-3 SYR | VEY) NOTE: 1 | HE INDICATOR MA |
| NO LOWER VALUES BE | CAUSE THE THERMOCO | HPLE IS BELO | WITS FYNETION |
| AND OPERATING RA | | | |
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| D. LIST THE PROCEDURES OR C | | - | |
| LISTED ITEMS IN A MANNER | TO INDUCE THE OPERATOR ERRO | н | |
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| | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HED | | 115 |
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| | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | CLASSIF CATION | | |
| | CORRECTIVE ACTION OPTIONS | | |
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| | DISPOSITION He action - not eperator 5/1/86 WEA | used indicato | 75 |
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| | DISPOSITION He action - not energtor | used indicato | 75 |
| | DISPOSITION He action - not energtor | used indicato | 75 |
| | DISPOSITION No action - not aperator 5/1/86 WG/: | used indicato | 75 |
| | DISPOSITION He action - not energtor | concurrence or | DATE |
| | DISPOSITION No action - not aperator 5/1/86 WELL TEAM ACTION | CONCURRENCE OR | |
| eas | DISPOSITION No action - not aperator 5/1/86 WELL TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | |
| ess | DISPOSITION He action - not eperator 5/1/86 WELL TEAM ACTION TEAM MEMBER SIGNATURE THE MACTION TO THE MEMBER SIGNATURE THE MEMBER SIGNATURE THE MEMBER SIGNATURE THE MEMBER SIGNATURE | CONCURRENCE OR | |
| Tes | DISPOSITION He action - not eperator 5/1/81 WC!: TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | |

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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0572

| REVIEWER NAME | | | DATE |
|---|--|--------------|------------------------------------|
| J. KELEMEN | | | 1/31/84 |
| HED TITLE INST | RUMENT SCALING + 45EAR | ILIFF | |
| | ITEMS INVOLV | /ED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
| II-4505 . | INDICATING METER DISPLAYS | 7.06 | |
| I-8706 . | | I-06 | F-22, C-79 |
| 1-1130 - | | 1-13 | H-93 |
| MIS- IASO BIN (603) PRA MIS- INSI BIN (503) PRA MIS- INSA BIN (903) PXA | | 1-10 | G-2, E-33, E-34 |
| 145-115 BH (703) 73/9 115-117 BH (703) 73/9 15-117 BH (1803) PXB | | | E.23, E. 60, E.30 |
| 0-417 dW(1103) 12/4 15-1112 dW(120) 1 44 11-1412 dW(125) 14 | | | E-29, E-28, C-18 |
| 31-24/04 AM (505) P4 14-22/02 AM (645) P4 14-22/02 AM (645) P4 | | | C19, C20, E.44 |
| 12-22-105 & 4 (1405) PL 12-22-105 & H (1203) PL | | T-10 | G-06, A-69 |
| 14 METERS IN BINS | 1 | 1-14 | A-17, A-16, A-15, A-14 |
| OWER VALUES B | CF THE SCALE. NOTE I-10 ! ECHUSE THE THERMOCCUPLE L AND OPERATING RANG (REFERENCE CRS | OR OTHER DEV | |
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| D. LIST THE PROCEDU | RES OR OPERATIONS THAT USE THE MANNER TO INDUCE THE OPERATOR ERRO | OR | |
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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| CLASSIFICATION | | |
| CORRECTIVE ACTION OPTIONS | | |
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| | | |
| DISPOSITION 11-4505 \$ PI-8206 rescele | DEN 70-415-16 | CN-1892 |
| T-10 no action - not eperator | | |
| 1-10 no action - not operator | used indicator | 15 |
| 5/1/81 WCH | | |
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| TEAM ACTION | CONCURRENCE OR | |
| TEAM MEMBER SIGNATURE | NON CONCURRENCE | DATE |
| am Manager | | |
| DR Coordinator | | |
| man Factors Spec. | | |
| nior Reactor Operator | | THE ! |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0573

| J. KELEMEN | | | 1/3//84 |
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| | STRUMENT SCALING + 45EABI | LITY | |
| | | | |
| 8. | ITEMS INVOLVED |) | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. |
| 134-1132-1 1914 (102) | PPS INDICATING METER DISPLAYS | 1-10 | C-01, C-03 |
| 43#-113#-1 &1# (103) 12#-113\$-1 &1# (203) 13#-113\$-1 &1#(203) | | | B.99 A.05, A.04 |
| TIN 1216 WIN (105) 110 Dir 22157 CIN (205) PIO IN NUMBER BIN (205) PIO | | | B-96 B-95 B-94 |
| ISN-W3R | | | 8-94 |
| 43x-1176 1314(106) P1 73x-1174 1814(106) P4 F14-1174 4 44(106) P4 | | | 6-93 |
| remi 92472 direkisa) #4 tsariyay diakkasa) #1 tarang giakkasa) ng | | | B-92, B-93 |
| tm-1153 i Biblion) pro Tu-13 si a diversor) pro Tw-1175 diversor) pro | | | B-92, B-91 |
| #3411171 (354(364) 112 Currossin 2 dan (364) 112 Cur \$3473 (354) 164) 114 | Y | 1-10 | B-91 |
| | CAUSE THE THERMOCCUPLE OR O R OPERATING RANGE. (REFERENCE CRS-46 SU | | 15 BELOW ITS |
| | DURES OR OPERATIONS THAT USE THE A MANNER TO INDUCE THE OPERATOR ERROR | | |
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| E. | E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HED | |
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| F. | F. LIST THE CONSEQUENCES OF OPERATOR ERROR | |
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| C | G. CLASSIFICATION | |
| | H. CORRECTIVE ACTION OPTIONS | * * |
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| l. | 1. DISPOSITION No action required - not operator used WCH 5/16/86 | indicators. |
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| | TEAM ACTION | |
| | TEAM MEMBER SIGNATURE CONCURRENCE OR NON-CONCURRENCE | |
| Tei | Team Manager | |
| CR | CRDR Coordinator | |
| Hu | Human Factors Spec. | |
| Ser | Senior Reactor Operator | |
| | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0578

| J. KELEMEN | | | 1/31/84 |
|---|--|------------------|------------------------------------|
| A. HED TITLE INS | TRUMENT SCALING + 45EA | BLITT | |
| 3. | ITEMS INVOL | LVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
| CRAM BEARE POR SUPPLY #1 (BLTS METER MPERES METER SUMM DEMEE PUR SMETLY #4 | PPS INDICATING METERS | 1-10 | |
| MISSEL METER MISSEL METER MISSEL METER | | | 8:1% |
| # 13 17 0 0 0 0 (\$1 0) FT | | | 6-09 |
| BIN(105) P5/1/9/11 11-93456 & M (504) P7 | | | C.21 E.21 E.26 |
| 14-31483 5 510 (104) 511 54-33483 5 500 (104) 79 54-33483 6 500 (104) 73 54-33483 6 500 (104) 73 | | 1-10 | E-26 C-11 G-07 A-69 |
| (404) NA GN (404) P8 | 1 | the fight of the | 7.37 |
| DISPLAYS SHOUL | D HAVE SCALES FOR WHEN AT LEAST WITHIN SYSTE CREFERENCE CRS-46 | W. WITS ON RATE | |
| LUCT THE PROCEDU | RES OR OPERATIONS THAT USE THE | | |
| LISTED ITEMS IN A | MANNER TO INDUCE THE OPERATOR ERI | ROR | |
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| LIST THE CONSEQUENCES OF OPERATOR ERROR CLASSIFICATION CORRECTIVE ACTION OPTIONS | | |
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| CLASSIFICATION | | |
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| WCH 5/1/21 | ed indicato | 273 |
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| TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | DATE |
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| eam Manager | | |
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| RDR Coordinator | | |
| RDR Coordinator uman Factors Spec. | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0 58/

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22 4228 REVIEWER NAME 1/3//84 J KELEMEN A HED TITLE INSTRUMENT SCALING 8. ITEMS INVOLVED INSTRUMENT ITEM TYPE LOCATION DATA FILE NO NOMENCLATURE PHOTO NO. INDICATING METER DISPERYS I-06A C-89 1) XPI-5119 8TH STAGE PHESSIRE T-06 A METER (EHC PANEL) 3) PERCENT POWER METERS T-10 BINS (NX, 103, 203, 50% C-01, B-99, A-05, AND 303). C-03 A-06 C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) METER SCALE ON XPI-5/19 HAS A RED ABNORMAL OPERATING RANGE MARKING, 2) GETSTACE PRESSURE METER HAS CRAYISH BLUE BACKERCUND ON METER FACE, 3) THESE INDICATORS HAVE SOME MARKINGS IN RED, THE QUESTION ASKED ON CRS 48-1 WAS DO METERS HAVE BLACK MARKINGS ON A WHITE BACKGROUND. D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| LIST THE CONSEQUENCES OF OPERATOR ERROR CLASSIFICATION CORRECTIVE ACTION OPTIONS XAP 5119 delemment to be acceptable as is founded scale meter acceptable as is founded scale meter acceptable for Hydrogen 9a get stage pressure indicator plantic for Hydrogen 9a get stage T-10 rescale per DD-AUS-1 CN 1885 WEH 5/1/81 T-10 meters re-evaluated - Na action required. Not aperator used indicators. WeH 5/1/86 TEAM MEMBER SIGNATURE CROR Coordinator Human Factors Spec. Senior Resctor Operator | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM | M HED | |
|--|---|---|--------------------------|
| CLASSIFICATION | | | |
| CORRECTIVE ACTION OPTIONS XA-5119 determinate be acceptable as is formled scale mater amptable for Hydran 3. 8th shape pressure voluntar plantic face he shiffly affect that the adjusted molications. Dethining that to be acceptable as is offly 1/10/80 DISPOSITION XPI-5-119 determined to be acceptable as is - banded scale mater acceptable for Hydrogen % of the stage pressure indicator plastic face has slightly different that than adjacent indicators. Determined to be acceptable as is. Well 2-4-86 T-10 rescale pex DD-ASS-1 CN 1895 WCH 5/1/81 T-10 maters re-evaluated - No action required. Not aperator used indicators. WCH 5/16/86 TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE DATE THOMASSIGNATURE TRANSPORT CONCURRENCE OR NON-CONCURRENCE OR | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| CORRECTIVE ACTION OPTIONS XAT-5119 determinate be acceptable as is formled scale mater amptable for Hydran 3. 8th stage pressure relication plantic face he shiffly affect that the adjacent molication dethined to be acceptable as is - banded scale meter acceptable for Hydrogen %. Sthe stage pressure indicator plastic face has slightly different tent than adjacent indicators. Determined to be acceptable as is. Well 2-4-86 T-10 rescale per DD-AVS-1 CN 1895 Well 5/1/81 T-10 meters re-evaluated - No action required. Not aperator used indicators. Well 5/10/86 TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE DATE THOR Coordinator Human Factors Spec. | | | |
| CORRECTIVE ACTION OPTIONS XA-5119 determinate be acceptable as is formled scale mater amptable for Hydran 3. 8th stage pressure voluntar plantic face he slightly affect that the adjusted molication Dethined to be be acceptable as is offly 1/10/80 DISPOSITION XPI-5-119 determined to be acceptable as is - banded scale mater acceptable for Hydrogen % of the stage pressure indicator plastic face has slightly different tent than adjacent indicators. Determined to be acceptable as is. Well 2-4-86 T-10 rescale per DD-AVS-1 CN 1895 Well 5/1/81 T-10 maters re-evaluated - No action required. Not aperator used indicators. Well 5/16/86 TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE DATE THORROR COORDINATOR | | | |
| CORRECTIVE ACTION OPTIONS XAT-5119 determinate be acceptable as is formled scale mater amptable for Hydran 3. 8th stage pressure relication plantic face he shiffly affect that the adjacent molication dethined to be acceptable as is - banded scale meter acceptable for Hydrogen %. Sthe stage pressure indicator plastic face has slightly different tent than adjacent indicators. Determined to be acceptable as is. Well 2-4-86 T-10 rescale per DD-AVS-1 CN 1895 Well 5/1/81 T-10 meters re-evaluated - No action required. Not aperator used indicators. Well 5/10/86 TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE DATE THOR Coordinator Human Factors Spec. | | | |
| CORRECTIVE ACTION OPTIONS XA-5119 determinate be acceptable as is formled scale mater amptable for Hydran 3. 8th stage pressure voluntar plantic face he slightly affect that the adjusted molication Dethined to be be acceptable as is offly 1/10/80 DISPOSITION XPI-5-119 determined to be acceptable as is - banded scale mater acceptable for Hydrogen % of the stage pressure indicator plastic face has slightly different tent than adjacent indicators. Determined to be acceptable as is. Well 2-4-86 T-10 rescale per DD-AVS-1 CN 1895 Well 5/1/81 T-10 maters re-evaluated - No action required. Not aperator used indicators. Well 5/16/86 TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE DATE THORROR COORDINATOR | | | |
| CORRECTIVE ACTION OPTIONS X.77-5119 determinants be acceptable as is formled scale mater amptable for Hydron 3. 8th stage pressure relication plantic face he shiffly affected that the adjacent molication between the laterals as is - based scale mater acceptable for Hydrogen %. Sthe stage pressure indicator plastic face has slightly different that than adjacent indicators. Determined to be acceptable as is. Well 2-4-86 T-10 rescale per DD-AVS-1 CN 1895 Well 5/1/81 T-10 maters re-evaluated - No action required. Not aperator used indicators. Well 5/16/86 TEAM MEMBER SIGNATURE TEAM ACTION TEAM MEMBER SIGNATURE THOR COORDINATER CONCURRENCE OR NON-CONCURRENCE DATE | | | |
| CORRECTIVE ACTION OPTIONS X.77-5119 determinants be acceptable as is formled scale mater amptable for Hydron 3. 8th stage pressure relication plantic face he shiffly affected that the adjacent molication between the laterals as is - based scale mater acceptable for Hydrogen %. Sthe stage pressure indicator plastic face has slightly different that than adjacent indicators. Determined to be acceptable as is. Well 2-4-86 T-10 rescale per DD-AVS-1 CN 1895 Well 5/1/81 T-10 maters re-evaluated - No action required. Not aperator used indicators. Well 5/16/86 TEAM MEMBER SIGNATURE TEAM ACTION TEAM MEMBER SIGNATURE THOR COORDINATER CONCURRENCE OR NON-CONCURRENCE DATE | CLASSIFICATION | | |
| APT 5119 determinants be acceptable as is formed scale meter amples for Hydron 3. 8th stage pressure indicators. Determined that the bacepts affected that the adjusted indicators. Determined to be acceptable as is - based scale meter acceptable for Hydrogen %. Sthe stage pressure indicator plastic face has slightly different that than adjacent indicators. Determined to be acceptable as is. Well 2-4-86 T-10 rescale per DD-AVS-1 CN 1895 Well 5/1/81 T-10 meters re-evaluated - No action required. Not aperator used indicators. Well 5/16/86 TEAM MEMBER SIGNATURE RDR Coordinator THEAM MEMBER SIGNATURE RDR Coordinator Tuman Factors Spec. | CORRECTIVE ACTION COTIONS | | |
| DISPOSITION XPI-5-119 determined to be acceptable as is- based scale meter acceptable for Hydrogen %. get stage pressure indicator plastic face has slightly different bint than adjacent indicators. Determined to be acceptable as is. WCH 2-9-BL I-10 rescale pex DD-A15-1 CN 1885 WCH 5/1/81 I-10 meters re-evaluated - No action required. Not aperator used indicators. WCH 5/16/86 TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE OR NON-CONCURRENCE DATE CROR Coordinator Human Factors Spec. | VA 5119 de Terminelto be accontable as | is - bouled scale me | ter asystel |
| TEAM ACTION TEAM MEMBER SIGNATURE CRDR Coordinator Human Factors Spec. | Affered that the adjunct notical as is offer 1/17/50 | as Dething to to | Laure |
| TEAM ACTION TEAM MEMBER SIGNATURE CRDR Coordinator Human Factors Spec. | DISPOSITION XPI-5-119 determined to based scale meter acceptable for pressure indicator plastic face h than adjacent indicators. Deta | Hydrogen % gt s Hydrogen % gt s 45 slightly difference ermined to be ac | tage of birst ceptuble |
| TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE CONCURRENCE DATE CRDR Coordinator Human Factors Spec. | DISPOSITION XPI-5-119 determined to based scale meter acceptable for pressure indicator plastic face h than adjacent indicators. Deta | Hydrogen % gt s Hydrogen % gt s 45 slightly difference ermined to be ac | tage of birst ceptuble |
| eam Manager CRDR Coordinator Human Factors Spec. | DISPOSITION XPI-5-119 determined to based scale meter acceptable for pressure indicator plastic face he than adjacent indicators. Deta as is. WCH 2-4-86 T-10 rescale per DD-AVS-1 CN T-10 meters re-evaluated - No action | Hydrogen % gt s Hydrogen % gt s 45 slightly difference ermined to be ac | tage of bint ceptuble |
| RDR Coordinator Human Factors Spec. | DISPOSITION XPI-5-119 determined to be seale meter acceptable for pressure indicator plastic face he than adjacent indicators. Deto as is. WCH 2-4-86 I-10 rescale per DD-AS-1 CN I-10 meters re-evaluated - No action used indicators. WCH 5/16/86 | Hydrogen %. Sti so stydrogen %. Sti so stydrogen % sti so | tage at best ceptable |
| luman Factors Spec. | DISPOSITION XPI-5-119 determined to based scale meter acceptable for pressure indicator plastic face h than adjacent indicators. Deta as is. WCH 2-4-86 I-10 rescale per DD-AS-1 CN I-10 meters re-evaluated - No action used indicators. WCH 5/16/86 TEAM ACTIO | Hydrogen %. Sti so stydrogen %. Sti so stydrogen % sti so | tage at best ceptable |
| | DISPOSITION XPI-5-119 determined to based scale meter acceptable for pressure indicator plastic face h than adjacent indicators. Deto as is. WCH 2-4-86 T-10 rescale per DD-A15-1 CN T-10 meters re-evaluated - No action used indicators. WCH 5/16/86 TEAM MEMBER SIGNATURE | Hydrogen %. Sti so stydrogen %. Sti so stydrogen % sti so | tage at best ceptable |
| Senior Reactor Operator | DISPOSITION XPI-5-119 determined to be ded scale meter acceptable for pressure indicator plastic face he than adjacent indicators. Deta as is. WCH 2-4-86 I-10 rescale per DD-A15-1 CN I-10 meters re-evaluated - No action used indicators. WCH 5/16/86 TEAM MEMBER SIGNATURE | Hydrogen %. Sti so stydrogen %. Sti so stydrogen % sti so | tage at bust ceptable |
| BUILD TURBURY SERVICES | DISPOSITION XPI-5-119 determined to be ded scale meter acceptable for pressure indicator plastic face he than adjacent indicators. Deta as is. Well 2-4-86 I-10 rescale per DD-AS-1 CN I-10 meters re-evaluated - No action used indicators. Well 5/16/86 TEAM MEMBER SIGNATURE TEAM MEMBER SIGNATURE | Hydrogen %. Sti so stydrogen %. Sti so stydrogen % sti so | tage at bust ceptable |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0583

| Form 344-22-4228 | | | DATE |
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| | | | 11- 1011 |
| J. KELEMEN | | | 1/31/84 |
| . HER TITLE TALE | TRYMENT SCALING | | |
| A. HED TITLE _+ N.3 | RAMENT SCRETNE | | |
| | of the fairthment statistics | | |
| 8. | ITEMS INVOLVE | D | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO PHOTO NO. |
| PDI-ARRAY . | INDICATING METER DISPLAYS | I-06 | |
| PDI-22230 . | 1 | | 0-70 |
| PI-8212 . | | | F. 22 |
| bi- 890P . | | | c-79 |
| LOAD FLOAD SET + . | | _¥. | |
| RATED PRESS METERS | | I-06 | |
| (6,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | | |
| TSH-93472 BN (36) A | 36 | | 8-91 |
| TS 4- 93474 BIN (306) A | | I-10 | 6.92 |
| PI-1130' WHEN COMPAR | The state of the s | I-/3 | 0.7- |
| WITH PI-11415 ON I-O | | | A-93 |
| | * | | KI 1244 / KI 1243 |
| KI-9244: KI-9248 | INDICATING METER DISPLAYS | I-06 | B-35 / C-77 |
| | | - 1 := 1:= 1 | D. 214 2 F. 3 |
| C. PROBLEM DESCRIPT | IONS (GUIDELINES VIOLATED) IN DICA | TOR SCHEES | DISPLAPING THE |
| CALL DAGAMET | ER AND RANGE ARE NOT II | TENTICAL MI | HTIPLE DISPLAY |
| SAME PARAMETO | R AND NAIVE ARE NOT I | 1610116172, 111 | telires or specif. |
| OF THE SAME P | ARAMETER SHOULD HAVE CO | NSISTENT. | SEALES 4NITS |
| or the shriet. | | | , |
| AND ZERO POLL | NTS. | | |
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| | CREFERENCE CRS | -48-2 54Ru | EY |
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| D. LIST THE PROCEDUR | ES OR OPERATIONS THAT USE THE | | |
| LISTED ITEMS IN A M | IANNER TO INDUCE THE OPERATOR ERROF | , | makes and the second se |
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| . SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FRO | OM HED | |
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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| CLASSIFICATION | | |
| . CORRECTIVE ACTION OPTIONS | | |
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| DISPOSITION Instalf new deal cares for DD- for PVI-22229/30, Pt 8246/8212, wood Set et Kated fressure in definitional label which indicates to reading. Pffc-1/22/80 PI-3212, reache per DD-AIS-1 MCH 2-25- I-D No action- not operator used inc | ALS-1 by CN-1891 Load set & Roter fluis licalo suggests to a PI-8206, KI-9244 & Picators WCH 5/1/8 | Industas Endustas Exect 9249 |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | DATE |
| earn Manager | | |
| RDR Coordinator | | |
| uman Factors Spec. | | |
| | | |
| enior Reactor Operator | | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0588

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22-4228 REVIEWER NAME DATE 2/1/54 J. KELEMEN A. HED TITLE INSTRUMENT SCALING + READABLE ITEMS INVOLVED 8. INSTRUMENT ITEM TYPE LOCATION NOMENCLATURE DATA FILE NO PHOTO NO ALL BIN/MODULE I-10 INDICATORS METERS ALL BINIME DULE I-14 INDICATORS METERS C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) ALL BIN/MODILE INDICHTING METER SCALES ON I-10 + I-14 HAVE TOO SMALL OF LETTER SIZE ON BOTH NUMERAL AND PROCESS OR ENGINEERING UNITS PER CHIDELINES OF DD-LAB-1. D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| | COULD RESULT FROM HED | |
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| LIST THE CONSEQUENCES OF OPERAT | TOR ERROR | |
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| CLASSIFICATION | | |
| H. CORRECTIVE ACTION OPTIONS | | |
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| WOH 5/1/8(| of operator used maters | |
| Wat 5/1/8(| of operator used maters | |
| DISPOSITION No action - no Walt 5/1/8(| | |
| DISPOSITION No oction - no Walt 5/1/8 (| TEAM ACTION CONCURRENCE OR | DATE |
| TEAM MEMBER SIGNA | TEAM ACTION CONCURRENCE OR | |
| TEAM MEMBER SIGNA | TEAM ACTION CONCURRENCE OR | |
| TEAM MEMBER SIGNA Feam Manager CRDR Coordinator | TEAM ACTION CONCURRENCE OR | |
| | TEAM ACTION CONCURRENCE OR | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0559

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

HEDE - 1 Form 344 22 4228 REVIEWER NAME 2/1/54 J. KELEMEN A. HED TITLE INSTRUMENT SCALING 8. ITEMS INVOLVED INSTRUMENT ITEM TYPE NOMENCLATURE LOCATION DATA FILE NO. PHOTO NO INDICATING METER DISPLAY 1-06B EI-4250. 3-16 8-17 EI-9251 . EI-47.217. A.38 EI-92218. EI-92214 A-38 EI-91110. EI-977211. 0.80 EI-92222 B-23 11-9367 8.29 II- 9768. B-30 KI-4757 . 0-33 KI-9258 0-14 KI-9257 13.35 8-34 XFI-9257 . 0-35 I .06B KI-4744. 8-96, 8.95, 0.94 BETH METERS IN BINSCIES, 265, 365) C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) CIRCLICAR TYPE METERS DO NOT HAVE YOR LESS GRADUATION MARKS BETWEEN NUMERALS ON THE CENTER 3/3 OF THE SCALE, DISPLAYS SHOULD SCALE DIVISIONS WITH USHAL NUMBERISHL PREGRESSIONS. (REFERENCE CRS 52-3 SUNLEY) D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM H | 1ED | |
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| F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| G CLASSIFICATION | | |
| H. CORRECTIVE ACTION OPTIONS | | |
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| DISPOSITION All I-U&B maters rescal | e per DD - 145 -1 | CN-1892 |
| WeH 2-25-86 | 77 00 1 11 | 100- |
| WAN Elile Re-evaluated mater | s are not used | by |
| operators . Puplicate info. on I-03 | for operator us | . No |
| I-10 rescale both meters per WCH 5/1/81 Re-evaluated meter operators. Puplicate info. on I-03 Further aution. WCH 5/14/86 | | |
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| TEAM ACTION | | |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | DATE |
| Team Manager | | |
| CRDR Coordinator | | |
| Human Factors Spec. | | |
| Senior Reactor Operator | | |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0590

| Form 344-22-4228 | | | 1 |
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| REVIEWER NAME | | | DATE |
| J. KELEMEN | | | 2/1/84 |
| A HED TITLE TNST | RUMENT SCALING | | |
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| 8. | ITEMS INVOLVE | D | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO PHOTO NO |
| DPM METERS IN BINS 102,103, 204, 3-2,303 | INDICATING METER DISPLAYS | I-10 | C-01, B-99, B-98, |
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| ADDITIONAL HIER | CONS (GUIDELINES VIOLATED) CARCHAL SUBDIVISIONS WHE | N PHERE IS ME | RE THAN 5 |
| | CREFERENCE CRS 5 | 1-3 SHAVEY |) |
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| | RES OR OPERATIONS THAT USE THE MANNER TO INDUCE THE OPERATOR ERROR | | |
| LISTED ITEMS IN A IV | ANNER TO INJUCE THE OPERATOR ENROR | | |
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| F. LIST THE CONSEQUENCES OF OPERATOR ERROR G. CLASSIFICATION H. CORRECTIVE ACTION OPTIONS 1. DISPOSITION Rescale per DDHIS-1 CN 1895 WCH 5/1/86 Re-evaluated Hed generated as a response to a standar Survey guestion. Daes not apply to log maters. WCH 5/19/85 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE OR NOT CONCU | E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM | M HED | |
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| DISPOSITION Rescale per DDAIS - CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standa survey guestion. Daes not apply to leg meters. WCH 5/19/85 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE Geam Manager SEDR Coordinator | | | |
| DISPOSITION Rescale per DDAIS - CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standar Survey guestion. Daes not apply to log meters. TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE CHARM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE CHARM MEMBER SIGNATURE | | | |
| DISPOSITION Rescale per DDAIS - CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standa survey guestion. Daes not apply to leg meters. WCH 5/19/85 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE Geam Manager SEDR Coordinator | | | |
| DISPOSITION Rescale per DDAIS - CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standar Survey guestion. Daes not apply to log meters. TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE CHARM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE CHARM MEMBER SIGNATURE | | | |
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| DISPOSITION Rescale per DDAIS - CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standa survey guestion. Daes not apply to leg meters. WCH 5/19/85 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON CONCURRENCE DATE Geam Manager SEDR Coordinator | | | |
| DISPOSITION Rescale per DDAIS-1 CN 1895 WCH 5/1/86 Re-evaluated Hed generated as a response to a stands Survey question. Does not apply to log meters. WCH 5/19/85 TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OF NON CONCURRENCE OF NOT CONCURREN | LIET THE CONCEQUENCES OF OBERATOR ERROR | | |
| DISPOSITION Rescale per DDAIS-1 CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standa Survey question. Does not apply to log meters. WCH 5/19/85 TEAM ACTION TEAM MEMBER SIGNATURE TEAM MEMBER SIGNATURE CONCURRENCE OR NON CONCURRENCE TEAM MANAGER CROR Coordinator | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| DISPOSITION Rescale per DDAIS-1 CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standa Survey question. Does not apply to log meters. WCH 5/19/85 TEAM ACTION TEAM MEMBER SIGNATURE TEAM MEMBER SIGNATURE CONCURRENCE OR NON CONCURRENCE TEAM MANAGER CROR Coordinator | | | |
| DISPOSITION Rescale per DDAIS-1 CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standary survey question. Does not apply to log meters. WCH 5/19/85 TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE CROR Coordinator | | | |
| DISPOSITION Rescale per DDAIS-1 CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standary survey question. Does not apply to log meters. WCH 5/19/85 TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE CROR Coordinator | | | |
| DISPOSITION Rescale per DDAIS-1 CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standary survey question. Does not apply to log meters. WCH 5/19/85 TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CONCURRENCE CROR Coordinator | | | |
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| DISPOSITION Rescale per DDAIS-1 CN 1855 WCH 5/1/86 Re-evaluated Hed generated as a response to a standa Survey question. Does not apply to log meters. WCH 5/19/85 TEAM ACTION CONCURRENCE OR NON-CONCURRENCE TEAM MEMBER SIGNATURE RDR Coordinator | | | |
| TEAM ACTION TEAM MEMBER SIGNATURE TEAM Manager CRDR Coordinator | | | |
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| TEAM ACTION TEAM MEMBER SIGNATURE TEAM Manager CRDR Coordinator | | | |
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| TEAM MEMBER SIGNATURE CONCURRENCE DATE CRDR Coordinator | DISPOSITION Rescale per DDH15-1 C. Re-evaluated Hed generated as survey question. Does not app. WCH 5/19/85 | N 1895 WCH 5/1 a response to a ly to log meter | 186 2 standar |
| TEAM MEMBER SIGNATURE NON-CONCURRENCE DATE. Team Manager CRDR Coordinator | TEAM ACTION | 1 | |
| CRDR Coordinator | | CONCURRENCE OR | DATE |
| | eam Manager | | |
| łuman Factors Spec. | RDR Coordinator | | |
| | luman Factors Spec. | | |
| enior Reactor Operator | Senior Reactor Operator | | |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0592

| J. KELEMEN | | | 2/1/84 |
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| A HED TITLE INSTRU | IMENT SCALING | | |
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| в. | ITEMS INV | OLVED | |
| ITEN: TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO PHOTO NO |
| ME-9306 . ME-9307 . | INDICATORS | I-05 I-05 | C-95 |
| 415 1133 BIN 403 P819 | | I-10 | E-34 |
| 415-1131 BN 503 P8/9 | | | E-33 0-02 |
| 415-1115 BIN 703 P8/9 | | | E-23 |
| 415-1119 BIN 903 P9/9 | | | E-60 |
| MIS-1116 BIN 1003 PE/9 | | | E-30 E-29 |
| MIS-1118 BIN 1263 28/9 | 1 | 1-10 | €-58 |
| | IS (GUIDELINES VIOLATED) BIN | | |
| D. LIST THE PROCEDURES LISTED ITEMS IN A MAN | OR OPERATIONS THAT USE THE INER TO INDUCE THE OPERATOR E | RROR | |
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| | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HE | | |
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| | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| à. | CLASSIFICATION | | |
| 1. | CORRECTIVE ACTION OPTIONS | | |
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| | DISPOSITION MF -9306/07 Subject to Removal | бу CN-1871 (иоп- | CRDR Chong |
| 1. | DISPOSITION ME-9306/07 Subject to Removal | бу CN-1871 (иги- | CREE Chony |
| 7 | DISPOSITION ME-9306/07 Subject to Remnal | dy CN-1871 (Non- | CRER Change |
| - | DISPOSITION ME-9306/07 Subject to Remnal of Solder 1/30/86 -10 No action - not operator use | d indicators w | CRER Change |
| 3 | DISPOSITION ME-9306/07 Subject to Remnal | d indicators w | CRER Chang |
| 2 | DISPOSITION ME-9306/07 Subject to Removal After 1/30/86 -10 No action - not aperator use | d indicators w | CRER Chang |
| 3 | DISPOSITION ME-9306/07 Subject & Remnal After 1/30/86 -10 No action - not aperator use | d indicators w | CRER Chang |
| 2 | DISPOSITION ME-9306/07 Subject & Remand Defle 1/30/86 -10 No action - not aperator use | d indicators w | CRER Chang |
| 3 | -10 No action - not aperator use | d indicators w | CREDE Ching |
| 2 | TEAM ACTION | CONCURRENCE OR | 5/1/8 (|
| 7 Te | TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | 5/1/8 (|
| Te | TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | C# 5/1/8 C |
| Te CI | TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | 5/1/8°C |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0597

| REVIEWER NAME D. | ilenn | | 2/3/84 |
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| A. HED TITLE | nstrument fabeler | 7 | |
| 8. | ITEMS INVOL | VED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
| 45-1131-2. | Chunnel Select | I-03 | C.51 |
| 45 //33-/ | Chennel Select | I-03 | C-52 |
| N1-1131 -2; | Rate of Change | I-03 | D-67 |
| N1-1132-2, | Log of Power Chernal | | 0-67 |
| VI- 1/33-2,3,-i | 1 | | C-12, D-68, C-73 |
| NE- 1134-2;3.1 | | | C-72, D.68, C-73 |
| NI- 1135-2,3-1 | V | | C-72, D-68, C-73 |
| V-1 1136,37,38 | Power Ronge | Y | C-73 and 4/1 |
| C. PROBLEM DESCRIPTI | Nuclear Instrument M ONS (GUIDELINES VIOLATED) | doubed in asal | range of |
| Power (| Muelean Channel) | are much | ad in |
| arabic | numbers while the | correspons | ling references |
| on Ison | numbers while the | numerals | . / |
| CARLAS | 45 | | |
| the Alle | | | |
| D. LIST THE PROCEDUR | ES OR OPERATIONS THAT USE THE ANNER TO INDUCE THE OPERATOR ERR | OR | |
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| TEAM MEMBER SIGNATURE NON-CONCURRENCE | E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FR | ROM HED | |
|--|---|--|--|
| DISPOSITION Maintain Reman numerals on T-03 & Chan numerals on T-10 to Roman (CN 1895). This is with industry practice 11-7-85 weth TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE OF NON-CONCURRENCE OF N | | | |
| CLASSIFICATION | | | |
| DISPOSITION Maintain Reman numerals on T-03 & Chan numerals on T-10 to Roman (CN 1895). This is with industry practice 11-7-85 weth TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE OF NON-CONCURRENCE OF N | LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| DISPOSITION Maintain Reman numerals on T-03 & chan numerals on T-10 to Roman (CN 1895). This is with industry practice 11-7-85 WCH TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE OR NON-CONCURRENCE OR NO | | | |
| DISPOSITION Maintain Reman numerals on T-03 & chan numerals on T-10 to Roman (CN 1895). This is with industry practice 11-7-85 WCH TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE OR NON-CONCURRENCE OR NO | | | |
| DISPOSITION Maintain Reman numerals on T-03 & chan numerals on T-10 to Roman (CN 1895). This is with industry practice 11-7-85 WCH TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE OR NON CONCURRENCE OR | | | |
| DISPOSITION Maintain Reman numerals on T-03 & chan numerals on T-10 to Roman (CN 1895). This is with industry practice 11-7-85 WCH TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE OR NON CONCURRENCE OR | | | |
| DISPOSITION Maintain Reman numerals on T-03 & chan numerals on T-10 to Roman (CN 1895). This is with industry practice 11-7-85 WCH TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE OR NON-CONCURRENCE OR NO | | | |
| DISPOSITION Maintain Reman numerals on I-03 & channumerals on I-10 to Roman (CN 1895). This is with industry practice 11-7-85 weth TEAM ACTION TEAM MEMBER SIGNATURE CONCURRENCE OR NON CONCURRENCE OR NON CONCURRENCE OR NON CONCURRENCE OR NON CONCURRENCE | . CLASSIFICATION | | |
| TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CO | CORRECTIVE ACTION OPTIONS | | |
| TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CO | | | |
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| TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CO | | . 7-1-1-1-1 | |
| TEAM ACTION TEAM MEMBER SIGNATURE TEAM ACTION CONCURRENCE OR NON-CONCURRENCE OR NON-CO | | | |
| TEAM MEMBER SIGNATURE CONCURRENCE OR NON-CONCURRENCE | DISPOSITION Maintain Roman numerals numerals on I-10 to Roman (Co | on T-03 & change N 1895). This is con WCH | arabic isistant |
| TEAM MEMBER SIGNATURE NON-CONCURRENCE | TEAM ACT | ION | |
| eam Manager | TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | DATE |
| and the large | eam Manager | | |
| RDR Coordinator | RDR Coordinator | | |
| tuman Factors Spec. | luman Factors Spec. | | |
| lenior Reactor Operator | lenior Reactor Operator | | |
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FORT ST VRAIN NUCLEAR GENERATING STATION

Log Number 0627

| NOT CONFORM TO DE SULL, RS 700 900 OPERATING SEQUENCE | | 2/3/04 |
|--|-----------------|---------------|
| ITEM TYPE NOMENCLATURE NOS-93301 RELAY KY9 TEST SWITCH MS-93302 " KY8 " " MS-93304 " K50 " KS-900 NS-900 PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) MS-93301 LIST THE PROCEDURES OR OPERATIONS THAT USE THE | | 2//3/24 |
| NOMENCLATURE WS-93301 RELAY K49 TEST SWITCH WS-93302 "K48 "" WS-93303 "K51 " WS-93304 "K50 " WS-93304 "K50 " WS-900 " WS-900 " WS-900 " WS-900 " WS-900 " WS-200 " W | TING SEQUENCE | |
| NS-93301 RELAY KYP TEST SWITCH MS-93302 " KYR " " MS-93303 " KST " MS-93304 " KSO " KS-900 " KS-900 " C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) MS-93301 O. LIST THE PROCEDURES OR OPERATIONS THAT USE THE | | |
| MS-93301 RELAY KY9 TEST SWITCH MS-93302 " KY8 " " MS-93304 " K50 " KS-900 " KS-900 " KS-900 " C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) MS-93301 NOT CONFORM TO DO SMS-1, KS-7505 900 OPERATING SEQUENCE | | |
| MS-93302 " KUS " " MS-93304 " KSO " KS-900 " KS-900 " KS-900 " C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) MS-933011 MST CENTERM TO DO SMIT, KS-750 900 OPERATING SEQUENCE | LOCATION | DATA FILE NO |
| HS-93303 " K51 " KS-900 " KS-900 " KS-900 " C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) HS-933011 MSI CENTERM TO DO SMIL-1, KS-750 900 OPERATING SEQUENCE | I-10 | A-07 |
| NS 93304 " KSO " KS-900 " NS 700 " PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) HS-933011 NOT CENTERM TO DO SHELL, KS-750 & 900 OFERATING SEQUENCE | 1 | 4-07 |
| KS-900 KS-900 C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) MST CONFORM TO DO SMS-1, KS-750 + 900 OPERATING SEQUENCE D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE | | A.07 |
| C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) HS-933011 NOT CONFORM TO DO SMA-1, HS-750 900 OFERATING SEQUENCE D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE | - | H-87 |
| C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) HS-933011 NOT CONFORM TO DO SHALL, HS-750 & 900. OFERATING SEQUENCE D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE | | |
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| D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR | | |
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| CLASSIFICATION | | |
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| | | <i>asz</i> |
| DISPOSITION Change button & ring per Weth 5/1/8 (Assign instrument \$ KS-900 EN-1885 WCH 5/19) | DD-SWI-I EN 18 numbers to | 1875 KS-700 |
| DISPOSITION Change button & ring per WCH 5/1/8 Assign instrument \$ KS-900 EN-1885 WCH 5/191 | | 1895 KS-700 |
| | DD-SWI-I EN 18 NUM bers to (86 | 0ATE |
| TEAM ACTION | CONCURRENCE OR | |
| TEAM ACTION_ TEAM MEMBER SIGNATURE | CONCURRENCE OR | |
| TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | |



Farm 344-22-4228

PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0658

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

REVIEWER NAME 3/6/84 JOE KELEMEN A HED TITLE INSTRUMENT SCALING + 45EABILITY 8. ITEMS INVOLVED INSTRUMENT TEM TYPE NOMENCLATURE LOCATION DATA FILE NO. PHOTO NO. SEE ATTACHED H.E.D. LIST C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) RECORDER HAS MORE THAN (6) POINTS OR CHANNELS BEING RECORDED. (REF. CRS-61-2 SURVEY) D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| - | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM H | | |
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| | CLASSIFICATION CORRECTIVE ACTION OPTIONS | | |
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| | OISPOSITION TR2255 TR2227 removed from I-of these recorders is to minter Stange bail-ond. a new graphies display (seing proposal for I-of, with these record | Silvational dispuis | of is during is early trend |
| | DISPOSITION TR2255 TR2227 removed from I-of these recorders is to minter Stange bail-ond. A new graphies display (being proposed for I-of, with these record back ups. The information derived from Type with the important information demoting from the other 11 points, It | Silvational dispuis | 2) ~ |
| | back ups. The information derived from | Silvational dispuis | tiend point |
| | back ups. The information derived from | Silvational dispuis | tiend point |
| | back ups. The information derived from type with the important information derived from the limportant information derived from the other 11 points, the puntle together is desirable for this particular teams action | lus serving as da These seconders is Being a simple Inefore 18 points be theulor opplication | Continue |
| T e. | back ups. The information derived from Type with the Important information derived from the Important information derived from the other 11 points, the puntly together is desirable for this part TEAM ACTION | lus serving as da These seconders is Being a simple Inefore 18 points be theulor opplication | Tienel point (Continue (ATTACHE) |
| Tel | bail-ont. A new graphies display (being proposal for I-of, with these recomb back ups. The information derived from type with the important information derivating from the other 11 points, the puntil together is desirable for This pa TEAM ACTION TEAM MEMBER SIGNATURE | lus serving as da These seconders is Being a simple Inefore 18 points be theulor opplication | Tienel point (Continue (ATTACHE) |

HED OGSB RESOLUTION CONTINUED

TR-31115, TR3118, FR-72222, & TR2232 ARE being Replaced by Alternation.

101 cation And moved to IO9 to be used for historical information.

TR-7321 is being removed from the control Room. GiR-5154, TR-5154

† TR-92105 are used to monitor plant parameter, however regimed and provided from which plant adjustments are made, however not required on a continual basis & The resolution for these is adequate. Midulesce 1/22/85

TR-1192 used by results only. No required by operator. No further action WCH 5/1/86



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number C658

HUMAN ENGINEERING DISCREPANCY EVALUATION SHEET 1 0 F / HEDE - 1

| 8. | ITEMS INVOLVED | | | |
|-----------|----------------|--------------|--|--|
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO PHOTO NO | |
| TR-2255 | RECORDER | I-01 | 7-04 | |
| TR-2227 | | + | C-45 | |
| TR-31115 | | I-06 | B-72 | |
| TR-3118 | | | B-73 | |
| GR-5154 | | | B-76 | |
| TR-5153 | | + | E-77 | |
| TR-5156 | | I-15 | C-34 | |
| TR-92105 | | + | C-33 | |
| TR-1192 | | I-10 | c-23 | |
| RR-93256 | | I-14 | E-19 | |
| RR-93254 | | + | A-13 | |
| FR-2322 | | 1/3 | E-07 | |
| TR-232/ | | | E-05 | |
| [R-2232 | | | E-04 | |
| TA-21269 | * | <u> </u> | E-10 | |
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FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0782

| REVIEWER NAME | essment team | | 4-3-84 |
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| A. HED TITLE Pa | beling Functioned | 0 | |
| A. HED TITLE | | | |
| 8. | ITEMS INVOL | VED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. |
| 401 BIN | XCR PANELS | I-10 | E-41 |
| 601 BIN | | | E-40 |
| 701 BIN | | | C-30 |
| 901 BIN | | | F-59 |
| 1001 BIN | | | C-10 |
| 1201 BIN | | | ¢-07 |
| 0 101 BIN | | | G-01 |
| 301 BIN | <u> </u> | V | G-05 |
| lights are d Drays 101 | School (GUIDELINES VIOLATED) C School to associate + 301 have XCR light and designation and | t times fifth et | scciated light scassociate |
| LISTED ITEMS IN A N | LES OR OPERATIONS THAT USE THE LANNER TO INDUCE THE OPERATOR ER | ROR | |
| Constitution | | | |
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| | - Professional Control | | |

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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| DISPOSITION Label per DD-LAB-1 CN | 1875 NCH 5/ | 1/8(|
| DISPOSITION Label per DD-LAB-1 CN | 1875 NCH 5/ | /8(|
| DISPOSITION Label per DD-CAB-/ CN | 1875 NCH 5/ | 1/8(|
| DISPOSITION Label per DD-LAB-1 CN | 1875 NCH 5/ | /8(|
| DISPOSITION Label per DD-LAB-1 CN | 1875 NCH 5/ | /8(|
| DISPOSITION Label per DD-LAB-1 CN | 1875 NCH 5/ | 1/8(|
| TEAM ACTION | CONCURRENCE OR | 1/8 (|
| TEAM ACTION TEAM MEMBER SIGNATURE | | |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager | CONCURRENCE OR | |
| TEAM ACTION | CONCURRENCE OR | |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager | CONCURRENCE OR | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0783

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| convention | | |
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| NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO. PHOTO NO. |
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| OPERATIONS THAT USE THE | ERROR | |
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| DISPOSITION Changed on CN-1882 | WCH 5/1/81 | |
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| DISPOSITION Changed on CN-1882 | | |
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| TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | DATE |
| TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | DATE |
| TEAM ACTION | CONCURRENCE OR | DATE |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0784

| REVIEWER NAME ADDOMENT | 10 <u> </u> | | 4/3/84 |
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| A. HED TITLE Sustained | | Digit coment | |
| 8. | ITEMS INVO | LVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO PHOTO NO |
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| Coexie (Typ) | | | |
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| c. PROBLEM DESCRIPTIONS (GUID light are real | elines violated) Tac | t puch buttons | L'adietin |
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| D. LIST THE PROCEDURES OR OPER LISTED ITEMS IN A MANNER TO | RATIONS THAT USE THE INDUCE THE OPERATOR EF | ROR | |
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| | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HED | | |
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| | DISPOSITION Change per DD-SW1-1 C | N-1885 WCH | 5/18(|
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| | DISPOSITION Change per DD-SW1-1 C | N-1895 WCH | 5/1/8(|
| | DISPOSITION Change per DD-SW1-1 C | N-1885 WCH | 5/1/2(|
| | DISPOSITION Change per DD-SW1-1 C | N-1885 WCH | 5/1/8(|
| | DISPOSITION Change per DD-SW1-1 C | N-1885 WCH | 5/1/8(|
| | DISPOSITION Change per DD-SW1-1 C | N-1885 WCH | 5/1/8(|
| | TEAM ACTION | N-1885 WCH | |
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| | TEAM ACTION | CONCURRENCE OR | |
| e | TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | |
| e | TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | |
| rec | TEAM ACTION TEAM MEMBER SIGNATURE am Manager RDR Coordinator | CONCURRENCE OR | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0785

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| A DAME | . + To | | 4/3/84 |
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| A HED TITLE Lale | Din - Function | | |
| A. HED TITLE | 3 | | |
| в. | ITEMS INV | OLVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. |
| 1202 69610 | | IIO | 006 |
| 1002 P9C 10 | | IIO | 609 |
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| C. PROBLEM DESCRIPTIO | NS (GUIDELINES VIOLATED) No | Functional To | 0 |
| C. PROBLEM DESCRIPTIO | NS (GUIDELINES VIOLATED) NO | Funtional To | DT CBVICUS |
| D. LIST THE PROCEDURES | NS (GUIDELINES VIOLATED) NO CONTINUE THE NORTH TO INDUCE THE OPERATOR E | | CT CBVICUS |
| D. LIST THE PROCEDURES | S OR OPERATIONS THAT USE THE | | ET ENICUS |
| D. LIST THE PROCEDURES | S OR OPERATIONS THAT USE THE | | DT CBVICUS |
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| DISPOSITION Label per DD-49B-1 4 | N 1875 WCH 31 | 1186 |
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| TEAM ACTION | CONCURRENCE OR | DATE |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | DATE |
| | CONCURRENCE OR NON-CONCURRENCE | DATE |
| TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | DATE |
| TEAM MEMBER SIGNATURE Team Manager | CONCURRENCE OR NON-CONCURRENCE | DATE |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0792

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| orm 344-22-4228 | | | DATE | | | | | |
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| A NO. | + | | 4/2/84 | | | | | |
| Markey | en lan | | 1-101 | | | | | |
| HED TITLE Labelin | - Functions | | A 1990 (1991) | | | | | |
| A Decement Team 4/2/84 A. HED TITLE Labeling-Functional | | | | | | | | |
| | ITEMS INVOL | VED | | | | | | |
| | | | INSTRUMENT | | | | | |
| ITEM TYPE | NOMENCLATURE | LOCATION | DATA FILE NO. PHOTO NO. | | | | | |
| 5-93515-20 | | MH I-10 | 890 | | | | | |
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| П | SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FROM HET | | |
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| | CLASSIFICATION | | |
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| | | | |
| | DISPOSITION Function ally label pe WCH 5/1/86 | r DD-4AB-1 | CN 1875 |
| | DISPOSITION Function ally label pe WCH 5/1/86 | y DD-4AB-/ | CN 1875 |
| | DISPOSITION Function ally label pe WCH 5/1/86 | y DD-4AB-/ | CN 1875 |
| | DISPOSITION Function ally label pe WCH 5/1/86 | y DD-4AB-/ | CN 18 95 |
| | | y DD-4AB-/ | CN 1875 |
| | DISPOSITION Function ally label pe WCH 5/1/8C TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR NON-CONCURRENCE | CN 18 95 |
| | TEAM ACTION | CONCURRENCE OR | |
| e | TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | |
| Te CF | TEAM ACTION TEAM MEMBER SIGNATURE am Manager | CONCURRENCE OR | |

ATTACHMENT B

SAMPLE COPIES

OF

INVESTIGATIVE INFORMATIONAL RECORDS



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 089

INVESTIGATIVE INFORMATIONAL RECORD

Investigator's Name May 14, 1986 William C. Holmes Problem Description: Nuclear Fux Meters on I-10 ITEMS INVOLVED E-1203 LOC. DESCRIPTION P & I NO. ITEM Ito Questions: How do you use these meters? Are they a results item? Responses (Include Respondent's Name) Bob Kevan We are required by a surveillance to read them once a day. I find the log meters are difficult to read. Mainly used by results for calibration. We use the meters on I-03 Provide Conclusion on separate or final sheet. ellian C. Halmes



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 090

INVESTIGATIVE INFORMATIONAL RECORD

| Investigator's | Name Win | liam C. Holme | 5 | May 15, 1986 |
|----------------|--------------|--|-----------------|--------------------|
| | option: | | of I-10 contr | rol Board proposed |
| | | | | |
| | | ITEMS INV | OLVED | |
| ITEM | Loc. | DESCRIPTION | E-1203 | P & I NO. |
| | | | | |
| Questions: 6 | eneral | comments on | proposed change | es. |
| | | | | |
| | | | | |
| Responses (Inc | lude Respon | dent's Name) Like | Vabeling XCR | but I don't |
| | | ble to includ | | |
| be too so | nell of | leftering & chopp | ed abbreviat | ons W. Ashmore |
| | | | | |
| We need | more | than just a "Re | set" label on | 53 switches |
| to aid | operator | D. Hood | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Provide Conclu | ision on sep | arate or final sheet. William C. Investigator | Holmes | 5/15/86 Date |

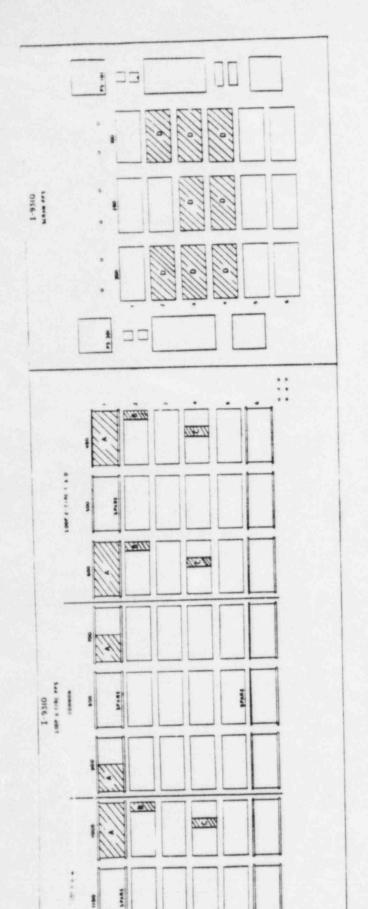


FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number OGI

INVESTIGATIVE INFORMATIONAL RECORD

| | | | | Sht_/_ of_/ |
|-----------------|--------------|-----------------------|-----------------|-------------|
| Investigator' | s Name Will | liam C. Holme. | 5 | 5/16/86 |
| Problem Descr | iption: _E | inal review a | of I-10 contra | 1 board |
| Group 5 | | es by Control | Koom System | Review |
| | | Harris Constitution | | |
| | | ITEMS INV | OLVED | |
| ITEM | Loc. | DESCRIPTION | E-1203 | P&I NO. |
| | | | | 3 |
| | | | / | , |
| ques crons: | reperal | comments on | proposed ch | anges |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| lasmaneas / Inc | Juda Dannan | tantla Nama\ ad / | 7 1 | |
| | | dent's Name) Marty | | |
| Would | like to | see reset on | Penetration : | Drain |
| | | lifed. They are | | |
| | | | | |
| function | , but | they are a | latched control | requiring |
| reset | and ar | e presently a | difficult to | locate - |
| | | | | |
| , | , | / / / | 1 1 | |
| (Thes | e modu | les are locate | ed at 406, 6 | 606, 1006 |
| \$ 120 | 6 01 | \$ P7 WCH) | | |
| | | | | |
| | | | | |
| | | | 0 | |
| | | | | |
| | | | | |
| rovide Conclu | sion on sepa | arate or final sheet. | | |
| | | William C | · Holmes | 5/14/86 |
| | | Investigator | s Signature | Date |



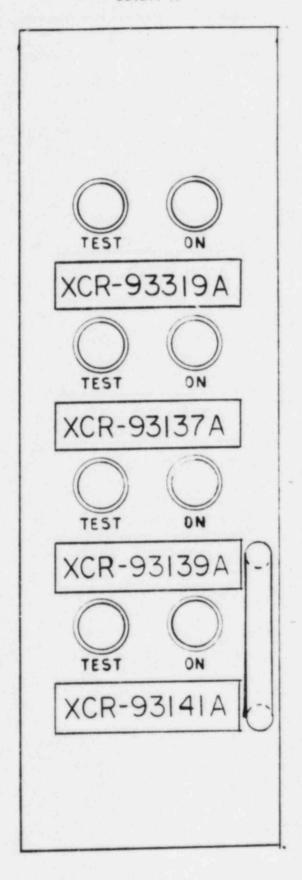
1011

ATTACHMENT C
Examples of
Proposed Location
Aids & Labeling

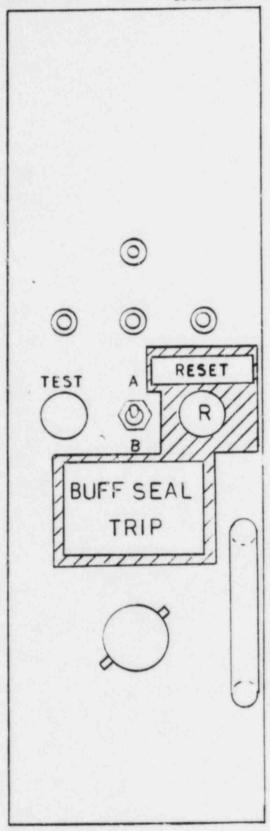
NOTES:

- 1. Proposed Hierarchial Labels Shown
- Shaded Areas Represent Those Areas Subject to Identification and Marking Changes
- For Specific Module Details, See Attached Detail Sheets

ATTACHMENT C Detail A



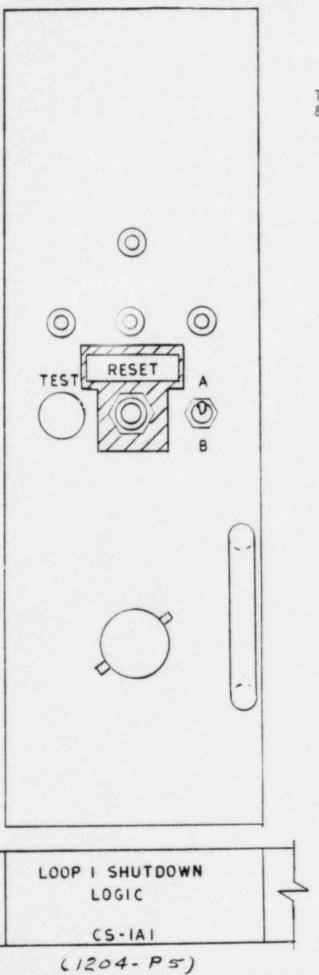
Typical for all XCR Relay Relay Drivers. Operational Aid to Provide Function & Reset Information



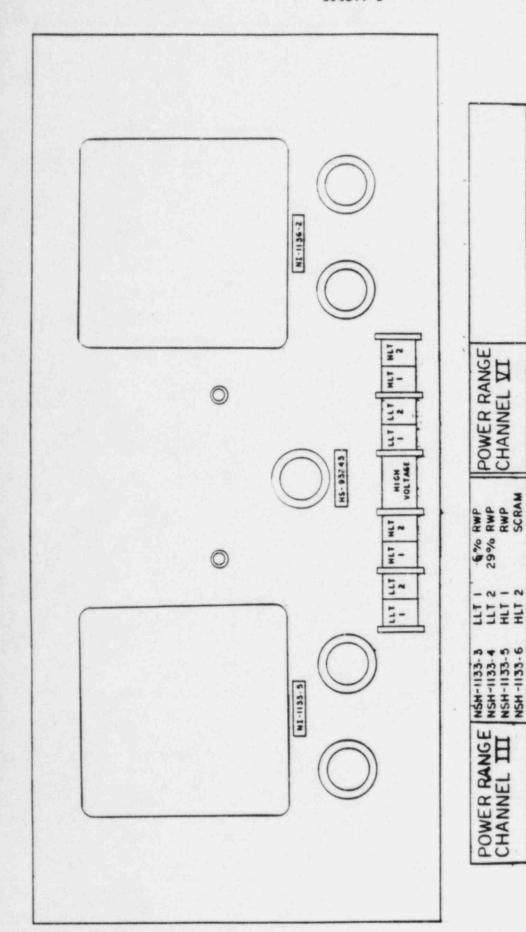
Typical for 402, 602, 1002, & 1202 P1

Function Label Not to Scale

LOOP 2 CIRC SHUTDOWN CC-2B2 (402-P1)



Typical for 404, 604, 1004, & 1204 P5



Provide Instrument Label for Meters & RWP Switch. Increase Height of Bin Label to 1 1/4" and Increase Letter Size to 5/32".

ATTACHMENT D SUMMARY OF PROPOSED CHANGES TO I-9310

1. Provide location aids for logic reset functions on modules:

402 P1/2 CIRC SEAL TRIP 602 P1/2 CIRC SEAL TRIP 1002 P1/2 CIRC SEAL TRIP

404 P5/6 Loop Shutdown Logic 606 P5/6 Loop Shutdown Logic 1006 P5/6 Loop Shutdown Logic 1206 P5/6 Loop Shutdown Logic

406 P1, P7 Main Drain to Steam Water Drain Trips 606 P1, P7 Main Drain to Steam Water Drain Trips 1006 P1, P7 Main Drain to Steam Water Drain Trips 1206 P1, P7 Main Drain to Steam Water Drain Trips

- 2. Provide instrument labels to identify XCR outputs.
- Provide instrument number identification labels for Rod Withdrawl Prohibit Selection Switch on Nuclear Instrumentation bins 104, 204, and 304.
- 4. Correct labels with functional description discrepancies.
- 5. Add missing functional labels.
- 6. Provide demarcation and hierarchial labeling as practical.

ATTACHMENT E

SAMPLE OF LABEL LIST

1-9310

LABELING LEGEND LIST

| CONTROL BOARD # | INSTRUMENT # | STYLE | FUNCTIONAL LABEL | STYLE | HED # if applicable) |
|--------------------|--------------|-----------|---------------------|----------|----------------------|
| I-10 | | | I-9310 | 1 RED | 014 |
| ٨ | | | LOOP & CIRC PPS | Z RED | |
| | | | LOOP 1 - CIRC A & B | 3 RED | |
| | XCR-93319A | 86 RED | | | |
| | XCR-93137A | 1 | | | |
| | XCR-93139A | | | | |
| | XCR-93141A | | | | |
| | XCR-9332/A | | | | |
| | XCR-93140A | | | | |
| | XCR-93151A | | | | |
| | XCR-93153A | | | | |
| | XCR-93159A | | | | |
| | XCR-93165A | | | | |
| | XCR-93239 A | | | | |
| | XCR-93529A | | | | |
| | XCR93163A | | | | |
| | XCR-93167A | | | | A PART |
| Y | XCR-9324/A | | | | |
| I-10 | XCR-9331 A | 86 RED | | | 120 |

LABELING LEGEND LIST

| CONTROL BOARD # | INSTRUMENT # | STYLE | FUNCTIONAL LABEL | STYLE | HED # |
|--------------------|--------------|------------|--------------------|-------|-------------------|
| | | 86 | | | AL Append College |
| I-10 | XCR-93/6/A | RED | | | |
| ^ | XCR-93367 A | 1 | | | |
| | XCR-93503A | | | | |
| | XCR-93195A | | | | |
| | XCR-93197A | | | | |
| | XCR-93199A | 86 | | | |
| | XCR-932/6A | | | | |
| | ACA SSCIENT | 7-2 | RESET | 10 | |
| | | | CIRC SEAL MALFUNCT | 9 | |
| | | | RESET | 10 | |
| | NI-1133-5 | 11a RED | | | |
| | NI-1136-2 | 1 | | | |
| | HS-93243 | IIa RED | | | |
| | XCR-933/98 | 86 RED | | | |
| | XCR-931378 | 1 | | | |
| | XCR-93139 E | 3 | | | |
| | XCR-93/41 | 8 | | | |
| Y | XCR-9332/1 | V | | | |
| I-10 | XR-931491 | 8 BED | | | |

SUPPLEMENT

to

ATTACHMENT 9

ATTACHMENT 9
HEDs Having
Final Dispositions Different from The
Proposed Disposition Shown in Attachment B
Of The Summary Report

| нер | PROBLEM CLASSIFICATION | ORIGINAL DISPOSITION | FINAL DISPOSITION | REMARKS |
|------|---------------------------|----------------------|-------------------|---|
| 0319 | 0319 Labeling | Label | None | Bins 1102 & 1202 are not operator used controls |
| 0320 | 0320 Labeling | None | Relabel | Relabel 1203 bin |
| 0323 | 0323 Labeling | None | Relabel | Relabel entire bin |
| 0359 | 0359 Instrument | Change-out | Label | Label and enhance location of operator used controls |
| 0362 | 0362 Labeling | None | Label | Label operator used controls |
| 0521 | 0521 Instrument | Change-out | Label | Label and enhance location of operator used controls |
| 0589 | 0589 Instrument | Rescale | Evaluated | Not an operator used indicator-No further action required |
| 0650 | 0590 Instrument | Rescale | Evaluated | HED initiated in response to standard checklist item-Not applicable to log scale |
| 1650 | 0597 Labeling | None | Relabel | Labeling on 1-03 CN-1887 unchanged-Change Arabic numbers on 1-10 to Roman numerals |

ATTACHMENT 6b-19

SUMMARY OF THE
CONTROL ROOM IMPROVEMENT
DESIGN PROCESS
AS APPLICABLE TO
THE ANNUNCIATOR SYSTEM
(MISCELLANEOUS ALARM MODIFICATIONS)

FOREWORD - NUREG-0737 Supplement 1, Section 5.1b requires that a Control Room Design Review (CRDR) be conducted to identify human engineering discrepancies. Section 5.1c requires that these discrepancies be assessed and design improvements selected to correct these discrepancies.

Public Service Company (PSC) has conducted the required review of the Fort St. Vrain Control Room. Approximately eight hundred forty eight (848) discrepancies or classes of discrepancies were cited. These discrepancies were assessed to determine their potential for causing an operating error and the potential effect of any error. (Certain discrepancies are known to have caused errors). An improvement program has been selected which meets the regulatory requirements and proposes to improve the operability and functionality of the Control Room.

The regulatory requirement for the CRDR and the follow-on improvement program was directed toward the improved handling of emergencies and not specifically toward improved production. Public Service Company's improvement program is directed toward both normal operation and the handling of emergencies.

BACKGROUND - Public Service Company has initiated an integrated improvement program based on functionality rather than particular classifications of problems. This approach is first, one of determining functional groupings, followed by demarcating, hierarchial labeling, correcting indicator scaling, complying with established conventions (color coding, switch positions, etc.).

The following steps constituted the planning portion of the integrated improvement program.

- Elevation Drawings of each control panel were color coded to show applicable HEDs as either, relabeling, relocations, scaling, deletions, or equipment changeout. This scheme provides an overview of the problems documented on each control board.
- All HEDs involving Alarm Locations, and multipoint alarms were reviewed. System function and operator response were considered in grouping, deleting and adding alarms. Paste ups of all alarm panels were completed to show proposed rearrangements.
- Functional grouping of controls and indications was approached by first preparing point interaction sketches for various systems or by direct reference to system P&Is. This effort was, in effect, an extensive operational analysis which considered the dynamic considerations of control groups and

arrangements. This activity reviewed the purpose and use of each and every component on the main control boards. Interviews with operators and training personnel were conducted to determine operator interpretations and actions.

- Controls and indications were then arranged in functionally related groups. Associated alarm locations were rechecked to verify that the more desirable locations were selected. The function relationship of adjacent indicator and control groupings were reviewed.
- Revised drawings were prepared to show the proposed arrangements. Certain of these drawings were color coded to aid in differentiating between groupings. These drawings were then utilized to determine the scope of each change package (change notice).
- Change notice (CNs) numbers were assigned to each effort identified above.

IMPROVEMENT PROCESS METHODOLOGY

The Improvement Process for the annunciator system starts with the documentation and drawings produced during the improvement planning process described in the BACKGROUND presentation portion of this summary. An individual designer was assigned the responsibility of evaluating the annunciator system. Since this individual had not participated in previous efforts, an educational process was initiated to acquire a thorough understanding of the annunciator system and each alarm. System descriptions, Piping & Instrument diagrams, electrical drawings, operating procedures and 0 & M manuals were studied to gain this thorough understanding. An operational analysis was conducted for the system. (This in-depth analysis was in addition to that completed for the CRDR and planning purposes.) This Operational Analysis provided additional basis for determining any changes to the annunciator control switches.

Operating and training personnel were interviewed to solicit operational philosophies for the annunciator system. The Operational value and function of each alarm was addressed. Informational requirements were again discussed. (This informational requirements effort is in addition to that conducted for Emergency Operating Procedures task analysis).

All HEDs applicable to the annunciator system were reviewed and the tentative fix evaluated for its corrective value within the integrated approach. HEDs written against the alarms and control switches by the Emergency Operating Procedure task analysis "Information and Control Requirements" effort, were reviewed with

particular attention to any potential safety considerations. previously prepared investigative information was studied. All factors were evaluated in considering any changes to the system. SPECIFIC - Miscellaneous Alarm Modifications Synopsis - (Change Notice (CN)-1925 preparation package.) Research - During this phase, the fire alarms and the annunciator system were studied as listed below: Abstracts of the fire protection/detection system were reviewed. The control room was surveyed to obtain a complete list of audio alarm horns, bells, 2. 3. Applicable HEDs were reviewed. Operators and trainers were interviewed to determine the need/response to special audio alarms. Operators and trainers were interviewed to determine operational needs of the protection/detection system. Conceptual Design - After the original design and all relevant documents were reviewed, a proposed design was developed which addressed the HEDs and met the operational requirements. This approach is one of functional grouping HVAC and fire alarms on the

associated control panel or board according to function, separating the general alarm audible alert according to control board responsibility assignments, and providing a visual indication of unacknowledged alarms. This proposed design provides for the following:

- 1. The general annunciator horn will be segmented into two separately distinguishable horns. One horn will provide an audible alert for the I-01, I-02, I-03, I-05 and I-13 alarms. The other horn will provide an alert for the I-06 and I-15 alarms. This segmentation of the annunciator horn closely corresponds with the control room operator division responsibility.
- New general annunciator horns will be 2. installed that are adjustable for waveform, tone and amplitude. Waveform and tone will be adjusted to assure that the horns are separately distinguishable. Amplitude will be adjusted adequately above normal background

noise levels. Adjustments will not be available to the operators.

- 3. Red indicating lights will be installed above all the I-O1, I-O2, I-O3, I-O5, I-O6, I-13 and I-15 alarm panels. The red light control circuit will be modified so that the lights will illuminate above the panel upon actuation of an alarm. The red light will stay illuminated until the respective alarm control station "ACKNOWLEDGE" button has been pushed.
- 4. The annunciator control circuit will be modified to permit the operator to silence either general annunciator horn from the I-O1, I-O2, I-O3, I-O5, I-O6 Section A, I-O6 Section B, I-13, or I-15 control stations.
- 5. Modify the control circuitry on the I-01D and I-01E Betalert-10 annunciator. The "RESET" and "TEST" switches will be removed from the face of these units. The test feature of the Betalert units will be controlled from the I-02 annunciator control station.
- 6. Relabel the various fire zone windows on XC-45153P to provide explicit operator information.
- 7. Functionally relocate related instrumentation (indicating lights and alarms) to the XC-45153P panel.
- Modify or replace existing XC-45153P alarm controls to conform to the established convention for Fort St. Vrain Control Room alarm controls.

The following Design Directives apply to work assigned to CN-1925:

| | NUMBE? | ISSUE | DESCRIPTION |
|----|----------|-------|---|
| | DD-AAS-1 | Α | ABBREVIATION, SYMBOL, AND ACRONYM SELECTION |
| ** | DD-APL-1 | | ANNUNCIATOR PANEL LEGENDS |
| ** | DD-CBL-1 | | CONTROL BOARD LAYOUT |
| | DD-LAB-1 | В | CONTROL ROOM PANEL AND COMPONENT LABELING |
| | DD-SWI-1 | A | SWITCH SELECTION |
| ** | DD-ASP-1 | | ANNUNCIATOR SELECTION AND PLACEMENT |
| | DD-ILS-1 | A | INDICATING LAMP SELECTION & LOCATION |

**IN DRAFT FORM

ATTACHMENTS TO SUMMARY OF THE CONTROL ROOM IMPROVEMENT DESIGN PROCESS

- A. HED Summary List & Copies of HED's
- B. Original XC-45153P Panel Layout
- C. Proposed XC-45153P Panel Layout
- D. Alarm Panel Layout for XC-45153P
- E. Sample of XC-45153P Labels
- F. Summary of Changes

ATTACHMENT A
HED SUMMARY LIST
&
COPIES OF HED's

HUMAN ENGINEERING DISCREPANCIES LISTED FOR MISCELLANEOUS ALARMS & ALARM CONTROLS

| | PROBLEM CLASSI | FICATION | LOCATION | | 1 | DISPOSI | TION | |
|------------|----------------|-----------|-----------|----------------------|----------|------------|--------|---|
| HED NO. | GROUP | CODE (SEE | | INSTRUMENT NUMBER | CATEGORY | RESOLUTION | CHANGE | REMARKS |
| 0316 | Alarms | | XC-45153 | | 3 | Change-out | 11925 | Change switches per DD-SWi-1 and relocate |
| 0459 | Alarms | 18d | XC-451531 | | 11 | Relabel | 11925 | Relabel per DD-LAB-1 |
| 0472 | Alarms | 18d | XC-451531 | | 11 | Relabel | 11925 | Relabel per DD-LAB-1 |
| 0478 | Alarms | 18d | XC-45153 | | 12 | Change-out | 11925 | Change switches per DD-SWI-1 and relocate |
| 0492 | Alarms | 18b | 1-03B | | 13 | Change-out | 11925 | Add red panel indicating lights |
| 0492 | Alarms | 18b | 1-05A | | 13 | Change-out | 11925 | Add red panel indicating lights |
| 0492 | lAlarms | 18b | 11-05D | | 13 | Change-out | 11925 | Add red panel indicating lights |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 03/6

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

| D. Glen | 7/17/83 | | |
|-------------------|--|-----------------|---|
| HED TITLE A | ARM Reset Butto | N LOCATION NOT | Access 16 |
| | ITEMS INV | OLVED | |
| ITEM TYPE | NOMENCLATURE | LOCATION | INSTRUMENT DATA FILE NO PHOTO NO. |
| C-45153P | FIRE Detection PDL | L Eastwall C.R. | |
| | See HED-C | 478 | |
| | | | |
| PROBLEM DESCRIPT | TIONS (GUIDELINES VIOLATED) | | |
| alain 7 | Reset Button is whire locked Do | located ins | ide |
| was an | s are not Provide | 1. Cum y co | nuc |
| instruction | | | |
| instruction | | | |
| LIST THE PROCEDUR | RES OR OPERATIONS THAT USE THE MANNER TO INDUCE THE OPERATOR S | | |
| LIST THE PROCEDUR | RES OR OPERATIONS THAT USE THE | | |
| LIST THE PROCEDUR | RES OR OPERATIONS THAT USE THE MANNER TO INDUCE THE OPERATOR E | | |
| LIST THE PROCEDUR | RES OR OPERATIONS THAT USE THE MANNER TO INDUCE THE OPERATOR E | | |

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| | LIST THE CO | NSEQUEN | CES OF OPERA | TOR ERROR | | | | |
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| | Reserve II | | | | | | | |
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| | | | | | THE WARREN | | | |
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| | CLASSIFICAT | ION | | | | | 0.1 | |
| | CORRECTIVE | ACTION (| PTIONS | Pelocat | e to a | cessu | ble 1 | location |
| | COMMECTIVE | 4011014 | - | | | | | |
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| | autside | e pa | ponel. | Provide | Function | in lege | ends o | on |
| | autside | e pa | ponel. | Provide | Le To a | n lege | ends i | on |
| | autside | e pa | ponel. | Provide | Function | in lege | ends | on |
| | autside | e ga | ponel. | Provide | Function | in lege | ends | on |
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| | | | | reses cessibilition of | t Lutter for | | | |
| | | Loca greia | | resessible line and | | | enel s | |
| | | Loca greia | le class | resessible line and | t Lutter for | CONCURSEN | enel s | Surfice well - 2/10/8 |
| 31 | DISPOSITION for aprecate | Loca greia r u | le class | resessible line and | t Lutter for | CONCURSEN | enel s | Surfice well - 2/10/8 |
| aric | DISPOSITION for Green | forci greia L | le class | resessible line and | t Lutter for | CONCURSEN | enel s | Surfice well - 2/10/8 |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0459

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22-4228 REVIEWER NAME Henderson/s 8. ITEMS INVOLVED INSTRUMENT ITEM TYPE NOMENCLATURE LOCATION DATA FILE NO. PHOTO NO. XC-48:53P Fire Control alam Bul I-7507X SEE HED-0478 C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) _ alaum marking are Temporary - Lymo lape See HED 0478 } D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| | HED | |
|---|----------------|--|
| | | |
| | | |
| | | |
| F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| | | ************************************** |
| | | |
| | | |
| G. CLASSIFICATION | | |
| charge to lemonen | I Legend Plat | les |
| | | |
| | | |
| DD - APL-1 Me 2/3/85 | with DD-CAB | -1, \$ |
| DO-APL-1 Ste-2/3/81 | with DD-CAB | -1, \$ |
| TEAM ACTION | CONCURRENCE OR | |
| TEAM MEMBER SIGNATURE | | -1, \$\forall 1 |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager | CONCURRENCE OR | |
| TEAM ACTION TEAM MEMBER SIGNATURE Team Manager CRDR Coordinator | CONCURRENCE OR | |
| TEAM ACTION | CONCURRENCE OR | |



FORT ST. VRAIN NUCLEAR GENERATING STATION

Log Number 0472

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

Form 344-22-4228 REVIEWER NAME DATE HEHDERSON 9129183 A. HED TITLE AMUNCIATOR HOMENCLATURE /ACRONYMS B. ITEMS INVOLVED INSTRUMENT ITEM TYPE NOMENCLATURE LOCATION DATA FILE NO. PHOTO NO. AUX ELECT EQUIP ROOM 1 DUCT IONIZATION XL45173P FONEY WELL VALVES LOW PUMP DISCHG PRESS 41- 60I HI PRESS HE STOR TK PAH-2437 . D-63 RUPTURE DISK LEAK I 13 A 5-1 FAL-11212 MAIN POWER TRANS SUDDEN I136 2.2 (5) PRESS TRIP 106 E 2-5 ACKNOWLEDGE RESERVE SHUT DOWN XA-1106 D-43 (6) OR CTL ROD PURGE SYS LOCAL ALARM IOI A 1-9 GAS WASTE COMPE IA LOW FAL-6323 D-43 4-4 HIOE LUB FLOW TRIP GAS WASTE COMPR 18 LOW FAL-6324 D-43 IOIA 4-5 LUB FLOW TRIP C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) LEGEND DOES NOT COMPLY WITH CONVENTION D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

| E. SPECIFIC | | | | | | | | |
|-----------------------------|--|--|--|----------------------------------|---|--|--|--|
| | | | THE RESERVE | | | | | |
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| . LIST THE | E CONSEQUENC | ES OF OPERATO | OH EHHOH | | | | | |
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| DE 30 | SCH 3 H | is not A | H Approved | AbbreviA | @ Mart | HTFA | IS NOT | HO |
| BE DI AKRON | SCH 3 H | I S NOT AN | H Approved | AbbreviA PTED FOR | TRANS | HTFA | IS NOT | HO |
| DE DI AKRON | SCH 3 H | is not A | H Approved | AbbreviA PTED FOR | TRANS | HTFA | IS NOT | HO |
| DE DI AKRON | SCH 3 H | I S NOT AN | H Approved | AbbreviA PTED FOR | TRANS | HTFA | IS NOT | HO |
| BE DI ACROM BE C | SCH 3 H | S TEAMS IS LB SHOULD | H Approved NOT ACCE | Abbrevia PIED FOR ED OVET, | TRANS | HTFA | IS NOT | TL SHOUL |
| ACROM BE C | SCH 3 H | S TEAMS IS LB SHOULD | H Approved NOT ACCE | Abbrevia PIED FOR ED OVET, | TRANS | HTFA | IS NOT | TL SHOUL |
| AC RON BE C | SCH 3 H | STEAMS IS JEAMS | NOT ACLED BE SPELL DD APL-1 FAL-6323 | AND DES, FAL 63 | TRANS | HTFA SFORMER -/ BY C H-2437 | N-188 | ORLY B |
| BE DI PK ROM BE C | SCH 3 H | SEL PER EXA-1106 OUP XA-1106 | NOT ACLED BE SPELL DD APL-1 FAL-6323 | AND DES, FAL 63 | TRANS | HTFA SFORMER -/ BY C H-2437 | N-188 | ORLY B |
| ACRON BE C | TIONMLY GE | SEL PER EXA-1106 OUP XA-1106 | DD APL-1 FAL-6323, F | AND DES, FAL 63 | TRANS LUBE D. AAS SZ4, PAI PER DO | HTFA SFORMER -/ BY C H- 2437 | N./88 | ORLY B |
| ACRON BE C | TIONMLY GE | SEL PER EXA-1106 OUP XA-1106 | DD APL-1 FAL-6323, F | AND DESAL-6324 | D- AAS PER DO | HTFA SFORMER -/ BY C H- 2437 | N./88 | ORLY B |
| ACRON BE C | TION RELATED TOWNEY GE TOW | SEL PER EXA-1106 OUP XA-1106 1880. O Relabel Relabel | DD APL-1 FAL-6323, FAL-63 | AND DOS, FALGO | D. AAS RER DO PER DO | HTFA SFORMER -/ BY C H- 2437 -ASP-/ DD-AAS | N-188 7, 4 FA AND L | ORLY B |
| BE DI PK ROM BE C | TION RELATED TOWNEY GE TOW | SEL PER EXA-1106 OUP XA-1106 | DD APL-1 FAL-6323, FAL-63 | AND DESTALLAND DO -AP | D- AAS READ D- AAS READ PER DO C-1 of S-1 by | HTFA SFORMER -/ BY C H-2437 -ASP-/ DD-AAS -//WW By C CN-1925 | N-188 7, 4 FA AND E 5-1 A E N-192. | ORLY B |
| AC RON BE C | TION RELATED TO NAMELY GO TO NA | SEL PER EXA-1106 OUP XA-1106 1880. O Relabel Relabel | DD APL-1 FAL-6323, FAL-63 | AND DESTALLAND DO -AP | TRANS LUBE D. AAS RER DO LUBE D. AAS RER DO CONCE | HTFA SFORMER -/ BY C H- 2437 -ASP-/ DD-AAS | N-188 7, 4 FA AND 6 -1 00 S-1 A E | ORLY P |
| DISPOSITE PLANCE | TION RELATE TIONMELY GE TONNELY GE TOLON TEAM | SEL PER ZXA-1106 OUP XA-1106 1880. O Relatel um per DD | DD APL-1 FAL-6323, FAL-63 | AND DESTALLAND DO -AP | TRANS LUBE D. AAS RER DO LUBE D. AAS RER DO CONCE | HTFA SFORMER -/ BY C H-2437 -ASP-/ DO-APL DD-AAS -//WW BA C CN-1925 URRENCE OR | N-188 7, 4 FA AND 6 -1 00 S-1 A E | OR SHOULD OR SHO |
| DISPOSIT FUNC Cam Manager | TION RELATE TION RELATE TION RELATE TION RELATE TOURLY GE TOLON TEAM | SEL PER ZXA-1106 OUP XA-1106 1880. O Relatel um per DD | DD APL-1 FAL-6323, FAL-63 | AND DESTALLAND DO -AP | TRANS LUBE D. AAS RER DO LUBE D. AAS RER DO CONCE | HTFA SFORMER -/ BY C H-2437 -ASP-/ DO-APL DD-AAS -//WW BA C CN-1925 URRENCE OR | N-188 7, 4 FA AND 6 -1 00 S-1 A E | OR 1 1/2/2 OR 1 1/2/2 OR 2 1/3/8 OR 2 1/3/8 5/2/86 |
| BE DI PK ROM BE C | TION RELATED TO LAND TEAM | SEL PER ZXA-1106 OUP XA-1106 1880. O Relatel um per DD | DD APL-1 FAL-6323, FAL-63 | AND DESTALLAND DO -AP | TRANS LUBE D. AAS RER DO LUBE D. AAS RER DO CONCE | HTFA SFORMER -/ BY C H-2437 -ASP-/ DO-APL DD-AAS -//WW BA C CN-1925 URRENCE OR | N-188 7, 4 FA AND 6 -1 00 S-1 A E | OR 1 1/2/2 OR 1 1/2/2 OR 2 1/3/8 OR 2 1/3/8 5/2/86 |



FORT ST. VRAIN NUCLEAR GENERATING STATION

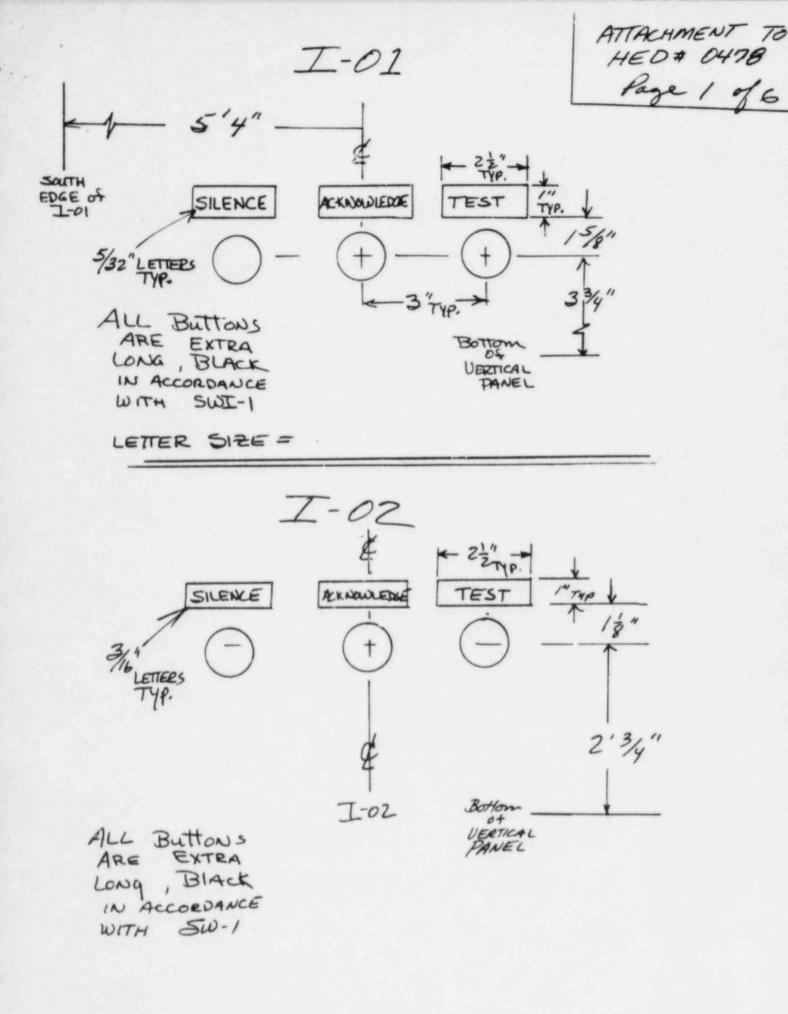
. Log Number 0478

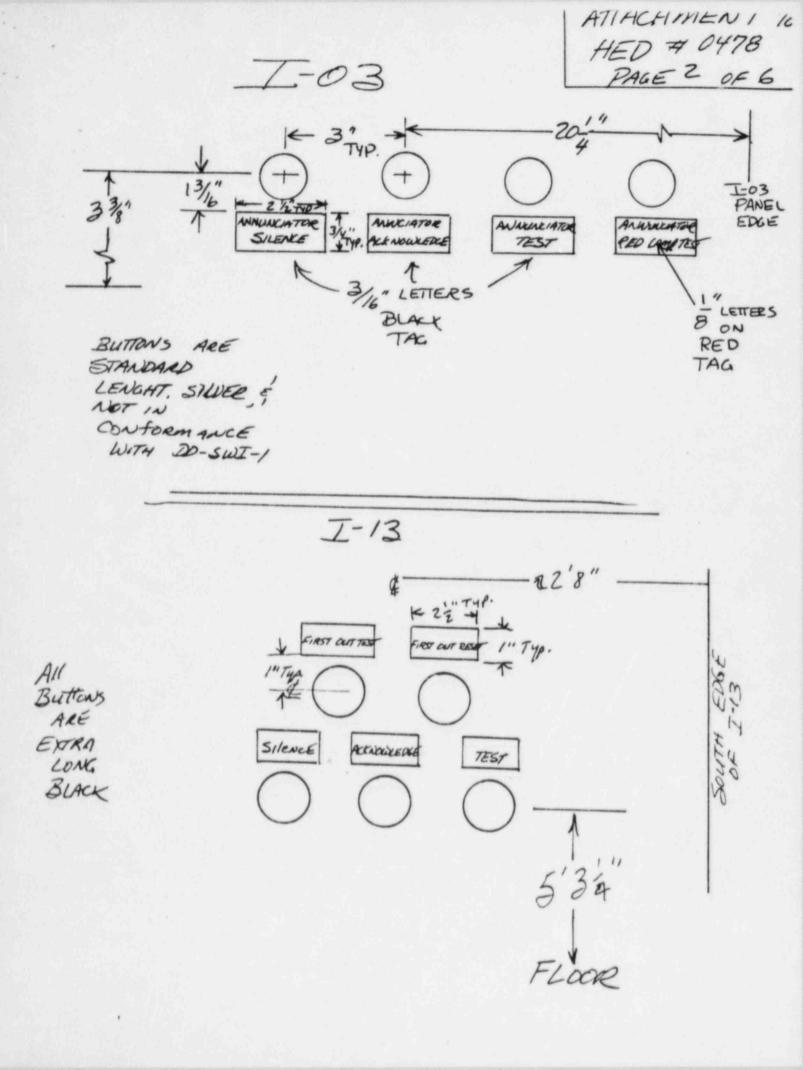
HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

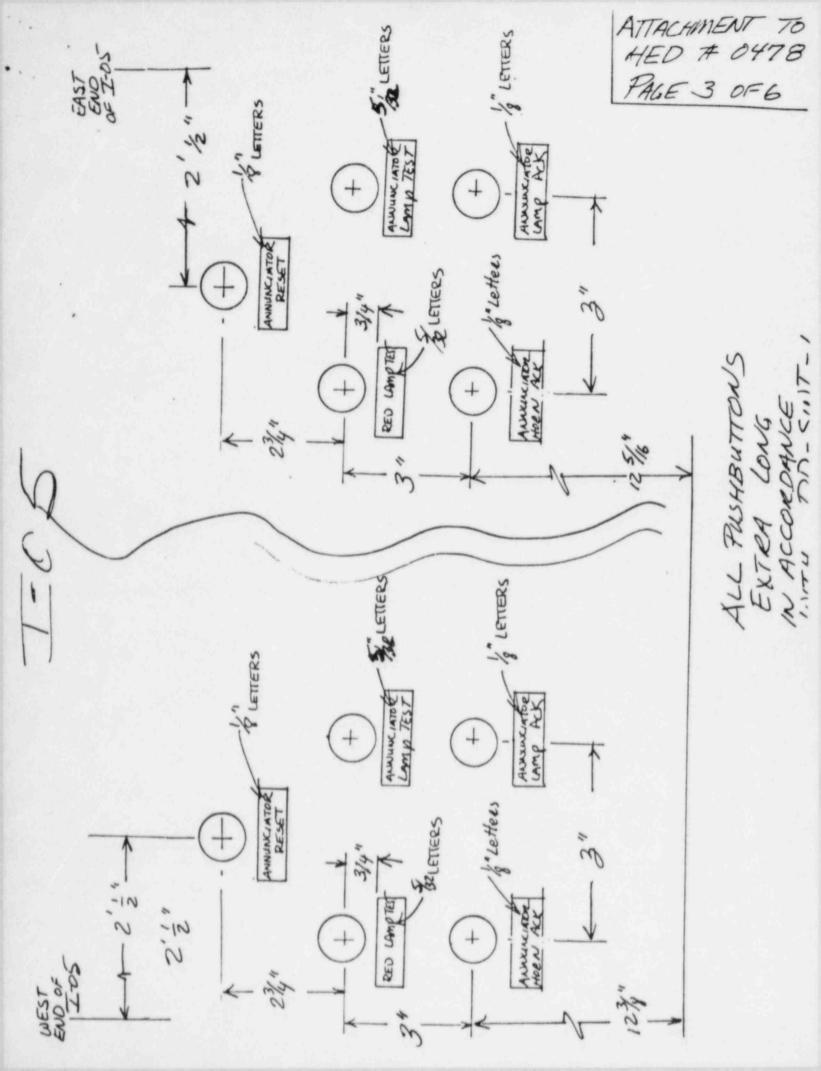
See HED 0316

Form 344-22-4228 REVIEWER NAME D. Gleva / R. Moler / G. Moore 10-10-83 A. HED TITLE annunciator Controls Layout, Identification and markings. Ref HEDs 459,461, \$ 316 ITEMS INVOLVED INSTRUMENT ITEM TYPE NOMENCLATURE LOCATION DATA FILE NO. Sil ach, test of Reset P.B PHOTO NO. alum P.B T-01 alaum Control Butters T-02 A-70 I-03 D-77 T-05 A-23, A42 2.06 1-88 T-09 I-13 XC-45153P I-7507X C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) (1) alarm Buttons do not compos to DO-SWI-1 (2) Function identification is inconsistent. (3) Button location and laignet is inconsistent. (4) Buttons for 2nd alarm gones on I so To3 Red long heart (5) Test sequences vary between Panels (7) I 03 Red long heart (5) Test sequences vary between Panels (7) I 03 Red long heart (4) Buttons for 2nd alain gonel on I-7507X are not functionally - (6) alara Controls are not separated (demarcated) from all procedures involving alains (8) I-06B is not equipped with act-sit test & reset Buttons (Operator must walk to west end of I-06A) NotE See attacked shetches

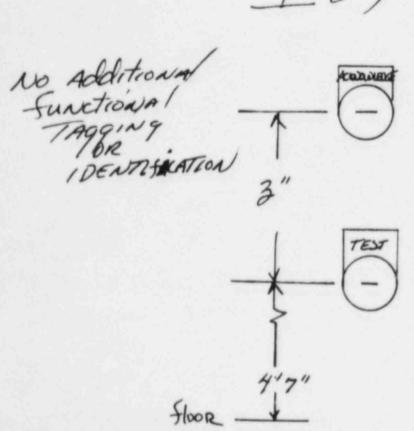
| E. SPECIFIC OPERATOR ERROR(S) THAT COULD RESULT FR | OM HED | |
|--|--------------------------|---|
| | | no |
| (1) (4) Confusion in silvaning and a | en test | |
| (4) (6) astuating equipment con (7) Confusion in interpreting | ing alarms anente | ationally |
| (4) (6) astuating equipment Es | Stol by mistake | |
| (7) Confusion in interperting | function tog color | Codina |
| , | / | / |
| | | |
| | | |
| F. LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
| actuating on tripping critical steam inputs on I-05. | lied equipment is | nadveilently |
| i. e. water and/or steam | a lubine PPS l | up 1 |
| inputs on 105. | | |
| | | |
| | | |
| | | |
| G. CLASSIFICATION | 0 0 4 4 7 | 0 00 |
| H. CORRECTIVE ACTION OPTIONS () Change all a | lain bullous to equ | a long Black. |
| (2) Establish & apply a consistent | function identifies | lion scheme. |
| (3) forate alain Control P. Bo Co | restently (4) Group | test & |
| Silence Rushbuttons with alars | - window group on | I-7507X. |
| (5) Establish of anyly consistent to | sequences. | |
| (6) after consistently locating of groupes | a alarm Control P. B's | demacate |
| These groups. (7) linnly beaut tax ex | la code (8) Romide | an a mine |
| These groups. (7) lipply begind tag en | Bon the east en | Lof I-06. |
| I-01, I-02, I-03, I-05, I-06 and I-13 | | |
| Menators claused to a low to pro | -SWI-1 per CN-1879. | I-01, I-02, |
| | | |
| I-03, I-05 and I-06 anninciator contro | of switches functionally | 1 |
| functionally grouped and demarcated | m cw-1874. SEA 1011 | 9 85 |
| XC451537 & I7507 x amuniciator cont | not surital operators wi | ll be changed |
| to conform to DO-SWI-1, functionally o | non ged a labeled in | N1924B MHD |
| I-7507X SWITCHES TO BE CHANGED, FUNCTIONARY GA | CONDED PER DO-SWI- ON CN | 1894 RUGARES 41 |
| TEAM ACTIO | ON CONCURRENCE OR | |
| TEAM MEMBER SIGNATURE | NON-CONCURRENCE | DATE |
| Team Manager | | |
| CRDR Coordinator | | |
| Human Factors Spec. | | |
| riuman ractors opec. | | |
| Senior Reactor Operator | | |
| | | R. 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- |







ATTACHMENT TO HED# 0478 I-06 A Page 4 of 6 - 23"-> Typ. T-06 LETTERS FRONT ERE ALL BUTTONS CONSOLE STO, SILVER EXCEPT AS (NOT IN CONTORMANCE WITH DO-SWI-1)



STANDARD
SILVER
BUTTONS
CENTERED
HORIZONTALLY
UNDER ALARM
PANELS ON
3th Section
05 I-09
3nd from west
Total 7 pections

PANEL I-7507X BETA ALARM WINDOW BOX Dymo HORN SIL RESET ACK TEST Centerel alams Buttons do not Conform to DD-SWI-1 However Buttons alam Bix W/ INDIVIOUAL ALARM CUBICLES, alaim assy who . 22'5" Silence Butters are known TEST 4" Letters

HED # 0478 XC-45153P Page 6 of 6 alaem Windows "POWER" "ALARM" TROUBLE " Illuminates Thru panel. Silence Buttons are inside See HED # 3/6 Inside fanel under Keyloch (Key remains in lock) Switche

ATTACHMENT TO

On an actual alarm (Horn & light)

Operator must first silence "trouble"

kefore "ALARM" will clear.

Instructions are not posted.

SILENCE SILENCE

TROUBLE

ALARM

RESET TEST

POWER

DISCONNECT



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

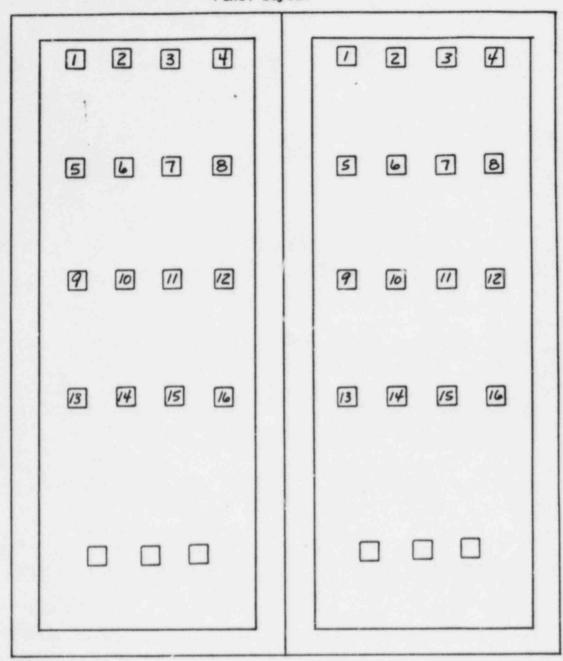
Log Number 0492

HUMAN ENGINEERING DISCREPANCY EVALUATION HEDE - 1

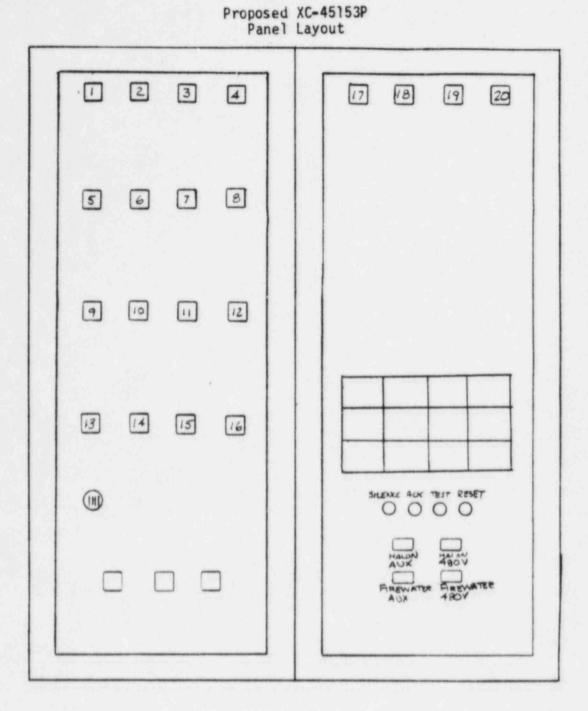
Form 344-22-4228 REVIEWER NAME DATE HENDERSON 11/2/83 A HED TITLE ANNUNCIATOR LOCATION 8. ITEMS INVOLVED INSTRUMENT NOMENCLATURE ITEM TYPE LOCATION DATA FILE NO. PHOTO NO. 0-49 ANNUNCIATOR IU3B 0-50 ANNUNCIATOR 105 A D-53 1050 ANNUNCIATOR C. PROBLEM DESCRIPTIONS (GUIDELINES VIOLATED) ANNUNCIATORS WITH AUDIBLE TONES SHOULD GROVIDE LOCATION CUES D. LIST THE PROCEDURES OR OPERATIONS THAT USE THE LISTED ITEMS IN A MANNER TO INDUCE THE OPERATOR ERROR

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| LIST THE CONSEQUENCES OF OPERATOR ERROR | | |
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| | | |
| CLASSIFICATION ALL PEN THINK AT | | 13 B |
| CORRECTIVE ACTION OPTIONS Add RED INDICATI | NG CIGHTS TO IC | 13 63, |
| | | THE R. P. LEWIS CO., LANSING MICH. 4917 |
| | | - 111-311-111 |
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| | | |
| | | |
| | e collect for Io | 3R, IOSA |
| DISPOSITION Panel indication lights to 1 | re collect for ID | 38, IOSA |
| | se collect for ID | 38, IOSA |
| DISPOSITION Panel indication lights to 1 | re collect for ID | 38, IOSA |
| DISPOSITION Panel indication lights to 1 | re collect for IO | 38, IOSA |
| DISPOSITION Panel indication lights to 1 | se collect for ID | 38, IOSA |
| DISPOSITION Panel indiration lights to (end IOSD in CN 1925- MIHLER 7/13) | se collect for ID | 38, IOSA |
| DISPOSITION Panel indication lights to 1 | CONCURRENCE OR | DATE |
| DISPOSITION Panel indication lights to (and IOSD in CN 1925 - MITTER 7/13/ TEAM ACTION TEAM MEMBER SIGNATURE | 184 | |
| DISPOSITION Panel indication lights to (and IOSD in CN 1925 - MIHON 7/13) TEAM ACTION TEAM MEMBER SIGNATURE | CONCURRENCE OR | |
| DISPOSITION Panel indication lights to 1 and IOSD in CN 1925 - MIHON 7/13/ TEAM ACTION TEAM MEMBER SIGNATURE Gearn Manager CRDR Coordinator | CONCURRENCE OR | |
| DISPOSITION Panel indication lights to (and IOSD in CN 1925 - MITTER 7/13) TEAM ACTION | CONCURRENCE OR | |

ATTACHMENT B
Existing XC-45153P
Panel Layout



ATTACHMENT C



ATTACHMENT D Alarm Panel Layout for XC-45153P

| DETECTOR BUBS DETECTORS LUSS OF POWER 1-1 | 1-2 | /-3 | 1-4 |
|---|-----|-----|-----|
| TURBINE BLDG DETECTORS LOSS OF POWER Z-1 | 2-2 | 2-3 | 2-4 |
| 3-1 | 3-2 | 3-3 | 3-4 |

ATTACHMENT E

SAMPLES OF LABEL LIST

(XC-45153P)

LABELING LEGEND LIST

| CONTROL BOARD # | INSTRUMENT # STYLE | FUNCTIONAL LABEL | STYLE HED # |
|---|--------------------------------|------------------------------------|-------------|
| X45153 | ZONE I INDICATING LIGHT | CONTROL ROOM | 7a |
| | ZONE Z INDICATING LIGHT | 4815'-T G-5 PNL | 7a |
| | ZONE 3 INDICATING LIGHT | 4815'-T G-5 AVL | 7a |
| | ZONE 4 INDICATING LIGHT | 4815'-T G-5 PNL | 7a |
| | ZONE 5 INDICATING LIGHT | 4795'-T G-7 PNL | 74 |
| | ZONE 6 INDICATING LIGHT | 4795'-T G-7 PNL | 74 |
| | ZONE 7 INDICATING LIGHT | 4744'-R J-5 PNL | 7d |
| | ZONE 8 INDICATING LIGHT | 4819'-R J-5 PNL | 7d |
| | ZONE 9 INDICATING LIGHT | 4832'-R J-4A PNL | 7d |
| | LONE 10 INDICATING LIGHT | 4852'-R J-S PNL | 7d |
| ZONE II INDICATING UGHT ZONE IZ INDICATING UGHT ZONE I3 INDICATING UGHT ZONE I4 TNDICATING | INDICATING | 4795'-T G-7 PNL | 74 |
| | INDICATING | 4815'-T G-5 PNL | 7d |
| | ZONE 13 INDICATING | 4832'-R J-5 PNL 4796'-R J-5 PNL | 7d |
| | 20NE 14 | 4832'-R J-5 PNL 4796'-R J-5 PNL | 74 |
| | ZONE 15 INDICATING LIGHT | 4832'-R J-5 PNL 4796'-R J-5 PNL | 7c |
| | ZONE 16 INDICATING UGHT | HYD OIL MIST | 7a |
| | ZONE 17 INDICATING PANEL | TSC HVAC | 7a |
| | ZONE 18 INDICATING PANEL | BLDG 10 PNL | 7a |
| 1 | | AUX ELECTRIC ROOM FIRE SUPPRESSION | 5d |

LABELING LEGEND LIST

| CONTROL BOARD # | INSTRUMENT # | STYLE | FUNCTIONAL LABEL | STYLE | HED # |
|--------------------|--------------|-------|-----------------------------------|-------|---------------|
| XC-45153 | | | 480 VOLT ROOM FIRE SUPPRESSION | 54 | if applicable |
| | XI-45175 | 11 | | | |
| | XI-45177 | 11 | | | |
| | PIH-45155 | 11 | | | |
| + | PIH-45154 | /1 | | | |
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ATTACHMENT F SUMMARY OF ACTUAL CHANGES TO CN-1925

The following is a summary of the CN-1925 changes:

- The control room annunciator horn will be segmented into two horns, each dedicated to specific control panels. (These horns will be adjusted for waveform, tone and amplitude.)
- Red indicating lights will be installed above all alarm panels that when illuminated, indicate an unacknowledged alarm condition on the panel.
- The annunciator controls will be modified so that the horns may be silenced from any alarm control station.
- Control of the I-O1D and I-O1E annunciator units will be simplified by controlling the test function from the I-O2 control station.
- Panel XC-45153P will be relabeled to clarify instrument functions.
- 6. Functionally related instrumentation will be relocated to XC-45153P panel.
- XC-45153P controls will be modified or replaced to conform to human engineering requirements.

SUPPLEMENT

to

ATTACHMENT 9

ATTACHMENT 9
HEDS Having
Final Dispositions Different From The
Proposed Disposition Shawn in Attachment B
Of The Summacy Report

| | EMARKS | | |
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| | DRIGINAL DISPOSITED | | |
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| | 312 | | |
| | 0 | | |
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| | | Z | |
| | | 0 | |
| | PROBLEM | A | |
| | 381 | 0 | |
| | PRC | - | |
| | | CLASSIFICATIO | |
| | | CL | |
| 1 | | 10 | |
| | Q | | |
| | HED | | |
| | | | |

Change-out

Special

0316 Alarms

Change switches to conform to DD-SWI-1 and relocate to front of panel for operator access