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A. B CUTTER
Vice President
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United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
RESPONSE TO NRC GENERIC LETTER NO. 89-06

Gentlemen:

In accordance with the requirements of Generic Letter 89-06, Carolina Power & Light Company (CP&L) hereby provides this response regarding Task Action Plan Item I.D.2 - Safety Parameter Display System (SPDS) - 10 CFR 50.54(f). This response is specifically applicable to H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2). The purpose of this response is to comply with the requirement of the Generic Letter to provide certification of the current status of SPDS implementation at HBR2. To further support this certification, the SPDS Checklist provided within the GL 89-06 has been completed and enclosed (Enclosure 2).

In addition, during the period of June 13 through June 16, 1989, an NRC Audit was conducted at HBR2 in the areas of SPDS and Detailed Control Room Design Review (DCRDR). As requested by the lead NRC Auditor, this response also includes the resolution to SPDS-related audit findings. As per discussion with the Commission (documented by letter dated July 11, 1989), the due date for this response was extended to August 15, 1989 in order to allow CP&L time to evaluate and incorporate a discussion of the audit items.

The SPDS Checklist, NRC audit findings and NUREG-1342 were used to assess the implementation status of the SPDS against the requirements of NUREG-0737, Supplement 1. In general, the NRC Auditors rated the HBR2 SPDS as "very good." However, the NRC auditors did identify certain specific areas where they felt that the SPDS did not fully satisfy all requirements. Subsequent to the audit, CP&L has reviewed these concerns in more detail. The results of that review, a discussion of actions CP&L will take to correct or enhance the system, and a schedule for implementation are provided in Enclosure 1. As such, this response provides certification that the SPDS will be modified as specified herein to fully meet the requirements of NUREG-0737, Supplement 1, taking into account the information provided in NUREG-1342.

A003

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If you have any further questions concerning this issue, please contact Mr. R. W. Prunty at (919) 546-7318.

Yours very truly,

A. B. Cutter

ABC/MDM/crs (440CRS)

Enclosures

cc: Mr. S. D. Ebneter
Mr. L. Garner (NRC - HBR)
Mr. R. Lo

A. B. Cutter, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, contractors, and agents of Carolina Power & Light Company.

William T Bryson
Notary (Seal)

My commission expires: 08/16/1992

ENCLOSURE 1

SPDS EVALUATION AND NRC AUDIT ITEMS RESOLUTION

For purposes of clarity, the following evaluation of the HBR2 SPDS is organized according to the associated requirement from NUREG-0737, Supplement 1. NRC Audit Items are identified within the sections to which they pertain.

NUREG-0737, Supplement 1; Requirement 4.1.a

RAPID, RELIABLE, CONCISE DISPLAY

The SPDS should provide a concise display of critical plant variables to the control room operators to aid them in rapidly and reliably determining the safety status of the plant. Although the SPDS will be operated during normal operations as well as during abnormal conditions, the principal purpose and function of the SPDS is to aid the control room personnel during abnormal and emergency conditions in determining the safety status of the plant and in assessing whether abnormal conditions warrant corrective action by (control room) operators to avoid a degraded core. This can be particularly important during anticipated transients and the initial phase of an accident.

Based on the information provided within NUREG-1342, this requirement is addressed by the following five elements or concepts:

1. Concise Display - Based upon CP&L's review and interpretation of this requirement (as defined in the applicable NUREGs) and our responses to relevant items within the attached checklist, the HBR2 SPDS is considered to be in compliance with this requirement. Furthermore, the NRC audit identified no outstanding concerns in this area.

2. Critical Plant Variables - This requirement is subsequently addressed in detail under Requirement 4.1.f.

3. Rapid Response - Based on a review of the five conditions for Rapid Response as provided in NUREG-1342, the HBR2 SPDS was viewed as generally meeting all requirements. However, certain enhancements were identified during the review which would more fully implement these requirements.

   For certain parameters, it was determined that point sample rates and screen display update rates might not be fully consistent. Data acquisition to the computer (point sample rate) is variable from 0.1 to 30 seconds, while screen display update rates can vary from 2 to 4 seconds. A review of these parameters will be performed to ensure that changes in plant status are not masked by differences between sample rates and update rates. This review will be completed and any necessary changes implemented by December 1990.

In review of SPDS response to operator commands, certain circumstances were encountered where system response time exceeded 10 seconds. Most SPDS screens averaged approximately 12 seconds from the time of keystroke until all dynamic information had been developed on the screen. This generally included approximately 6 seconds of total blank screen time. Certain "third level" trend plots were completely developed from 14 to 22 seconds following keystroke commands, depending upon the amount and complexity of the information to be displayed. In all cases, however, the screen cursor is removed from the time of keystroke until the display is fully developed. The absence of the cursor, combined with development or updating of dynamic screen data, provides positive feedback to the operator that the computer is still working.

CP&L believes that the SPDS meets the intent of this "Rapid Response" criteria in its present configuration. However, a project has been initiated to further review the feasibility of improving SPDS response times. If this review demonstrates that improvement of the response times is practical, such enhancements will be implemented by December 1991. This is not considered to be an essential element to achieve full compliance.

Based on the information provided in NUREG-1342, certain enhancements were identified with regard to controlling temporary changes to SPDS inputs. With regard to sample rates, the ability to change these rates is restricted to the HBR2 Control Room and the Main Computer Room. However, there is currently no formal method for controlling or tracking changes to sample rates. To ensure that changes to sample rates are properly controlled and tracked, a method will be developed for controlling and tracking sample rate changes. Also, current HBR2 SPDS software provides the ability to substitute a value for a real input value, and to delete and/or restore a real input value from scan. Again, the ability to perform these changes is limited to the HBR2 Control Room and the Main Computer Room. However, there are no visual cues which indicate that the substitute value or delete/restore functions have been used. These functions will also be examined to determine the feasibility of implementing visual cues which will show the SPDS operator that an SPDS input value has been substituted or deleted. A possible alternative to these visual cues which will also be evaluated is a further restriction of the ability to perform these functions. A review of all the above referenced temporary SPDS changes will be completed, with appropriate changes implemented by December 1990.

An NRC Audit Finding in this area concerned access to SPDS third level trend displays. Specifically, SPDS third level trend displays were not deemed readily accessible by "turn on" codes. To address this Finding, an SPDS software review has been performed. It has been determined that changes will be made which will allow direct access to third level displays by turn on code. These software upgrades will be completed by December 1990.

4. Reliability - The HBR2 SPDS was found to generally meet all requirements for reliability as provided in NUREG-1342. However, one area for enhancement was identified as an NRC Audit Finding. Specifically, it was recommended that access to the Main Computer Room be limited to prevent

possible compromise of SPDS software. To address this Finding, options for different locking configurations are being examined. This examination will be completed and the lock installed by December 1989.

5. Conditions When SPDS Should Be Operational - Based upon CP&L's review and interpretation of this requirement (as defined in the applicable NUREGs) and our responses to relevant items within the attached checklist, the HBR2 SPDS is considered to be in compliance with this requirement. Furthermore, the NRC audit identified no outstanding concerns in this area.

NUREG-0737, Supplement 1; Requirement 4.1.b

CONVENIENT LOCATION AND CONTINUOUS DISPLAY

Each operating reactor shall be provided with a Safety Parameter Display System that is located convenient to the control room operators. This system will continuously display information from which the plant safety status can be readily and reliably assessed by control room personnel who are responsible for the avoidance of degraded and damaged core events.

Based on the information provided within NUREG-1342, this requirement is addressed by the following elements:

1. Convenient Location - Based upon CP&L's review and interpretation of this requirement (as defined in the applicable NUREGs) and our responses to relevant items within the attached checklist, the HBR2 SPDS is considered to be in compliance with this requirement. However, the auditors identified two concerns which CP&L has subsequently reviewed. CP&L's positions with respect to these are presented below.

   First, the Dedicated SPDS Monitor in the Control Room was believed to be mounted too high. In response to this comment, HBR2 personnel reexamined the monitor location considering the possible conditions of use and possible users. The location of the Dedicated SPDS Monitor was established based upon viewing distances from across the Control Room. The height of the monitor facilitates viewing during transient operations when operators could be manipulating controls or viewing indications in various areas of the Control Room. In addition, the top level SPDS display consists of six status boxes located at the bottom of the display which indicate the status of each critical safety function (CSF). The CSFs are prioritized by location from left to right, and by status using a color-coding system. This color-coding and prioritization by location further enhances the ability to assess the status of the CSFs. As such, the current monitor location and display configuration are considered adequate for the intended application.

   Second, the controls for the Dedicated SPDS Monitor were considered to be inconveniently located relative to the monitor location. These controls, which are currently located at an adjacent plant process computer terminal, were believed to be too far from the Dedicated Monitor. In response to this comment, HBR2 personnel reexamined the location of the controls associated with the Dedicated SPDS Monitor considering the possible conditions of use and possible users. The location of the

controls for the Dedicated SPDS Monitor were established based on maintaining the controls within the primary operating area of the control room. The present location of the SPDS controls is within the area normally occupied by the control board operators. This area allows the manipulation of the controls for the Dedicated SPDS Monitor while maintaining access to the board controls and indications with minimal movement. The Dedicated SPDS Monitor indications and displays are easily viewed from the control location, and relocation of these controls would cause the operator to move outside the primary operating area to operate the SPDS. As such, the current location of the controls are considered adequate for the intended application.

2. Continuous Display - Based upon CP&L's review and interpretation of this requirement (as defined in the applicable NUREGs) and our responses to relevant items within the attached checklist, the HBR2 SPDS is considered to be in compliance with this requirement. Furthermore, the NRC audit identified no outstanding concerns in this area.

NUREG-0737, Supplement 1; Requirement 4.1.c

ISOLATION FROM SAFETY SYSTEMS AND PROCEDURES AND TRAINING

The control room instrumentation required (see General Design Criteria 13 and 19 of Appendix A to 10 CFR 50) provides the operators with the information necessary for safe reactor operation under normal, transient, and accident conditions. The SPDS is used in addition to the basic components and serves to aid and augment these components. Thus, requirements applicable to control room instrumentation are not needed for this augmentation (e.g., GDC 2, 3, 4 in Appendix A; 10 CFR Part 100; single-failure requirements). The SPDS need not be qualified to meet Class 1E requirements. The SPDS shall be suitably isolated from electrical or electronic interference with equipment and sensors that are in use for safety systems. The SPDS need not be seismically qualified, and additional seismically qualified indication is not required for the sole purpose of being a backup for SPDS. Procedures which describe the timely and correct safety status assessment when the SPDS is and is not available, will be developed by the licensee in parallel with the SPDS. Furthermore, operators should be trained to respond to accident conditions both with and without the SPDS available.

From NUREG-1342, this requirement is addressed by the following elements:

1. Isolation from Safety Systems - Isolation devices used for the HBR2 SPDS are addressed within a CP&L response to an NRC request for additional information on the SPDS. This information was provided by CP&L Serial: NLS-85-396, dated November 15, 1985. To summarize, the HBR2 SPDS configuration utilizes either existing signals which were input to the original plant process computer, or new 1E signals which utilize fiberoptics for signal isolation. Additional information is provided in the above referenced correspondence.

2. Procedures and Training - Based upon CP&L's review and interpretation of this requirement (as defined in the applicable NUREGs) and our responses to relevant items within the attached checklist, the HBR2 SPDS is

considered to be in compliance with this requirement. However, an NRC Audit Finding identified an enhancement in this area regarding designation of the Primary SPDS User. Specifically, it was recommended that the Primary SPDS User be more strongly and clearly identified. This identification should be emphasized in classroom and simulator training, and in actual control room use. To address this concern, the Senior Reactor Operator (SRO) will be designated as the Primary SPDS User. An SRO is continuously available in the Control Room to immediately respond to a plant transient. To support and augment the SRO, the Shift Technical Advisor (STA), who is required to be available to the Control Room within ten minutes of notification, will be designated as an alternate or Secondary SPDS User. In this way, a prompt response to plant transients is facilitated, while providing subsequent relief to key Control Room personnel to allow mitigation of the transient. This designation will be emphasized in the appropriate training classes and simulator exercises, and will be implemented in HBR2 control room activities. Implementation of these concepts will be completed by December 1990.

NUREG-0737, Supplement 1; Requirement 4.1.d

SELECTION OF INFORMATION FOR DISPLAY

There is a wide range of useful information that can be provided by various SPDS. This information is reflected in such staff documents as NUREG-0696, NUREG-0835, and Regulatory Guide 1.97. Prompt implementation of an SPDS can provide an important contribution to plant safety. The selection of specific information that should be provided for a particular plant shall be based on engineering judgment of individual plant licensees, taking into account the importance of prompt implementation.

Based on NUREG-1342, this requirement includes two essential elements:

1. Selection of Information for Display - The HBR2 SPDS design is based on the Westinghouse Owners Group (WOG) Critical Safety Function Status Trees (CSFSTs) which are one set of procedures within the Emergency Operating Procedures (EOPs). Based upon CP&L's review and interpretation of this requirement (as defined in the applicable NUREGs) and our responses to relevant items within the attached checklist, the HBR2 SPDS is considered to be in compliance with this requirement with the exception of certain plant variables which are discussed in Requirement 4.1.f below. Furthermore, the NRC audit identified no other outstanding concerns in this area.

2. Prompt Implementation - Based upon CP&L's review and interpretation of this requirement (as defined in the applicable NUREGs) and our responses to relevant items within the attached checklist, the HBR2 SPDS is considered to be in compliance with this requirement. Furthermore, the NRC audit identified no outstanding concerns in this area.

NUREG-0737, Supplement 1; Requirement 4.1.e

HUMAN FACTORS AND SPDS DISPLAYS

The SPDS display shall be designed to incorporate accepted human factors principles so that the displayed information can be readily perceived and comprehended by SPDS users.

Based upon CP&L's review and interpretation of this requirement (as defined in the applicable NUREGs) and our responses to relevant items within the attached checklist, the HBR2 SPDS is considered to be in compliance with this requirement. However, the auditors identified two concerns which CP&L has subsequently reviewed. CP&L's positions with respect to these are presented below.

1. The concern was raised that the SPDS displays have inconsistent color coding. Additionally, the use of color was considered somewhat "overdone," and that possibly too many different colors are used.

   However, CP&L's review has concluded that the use of color in displaying information in the HBR2 SPDS is appropriate and consistent with the Human Factors practices at HBR2.

   Colors are used on the primary SPDS display only to indicate critical safety function status consistent with the color-coding used in the Emergency Operating Procedures. The second level display includes the logic tree used in determination of the critical safety function status, and color is used here to reenforce the decision path consistent with the status indication. Limiting the use of color on the primary or second level displays would reduce the emphasis intentionally placed on the information displayed that assists in the proper implementation of the Emergency Operations Procedures. The third level displays require additional colors to be used to relate trended data to scales and point identification information. Limiting the use of color on this display would require additional labelling to be added to accomplish the necessary associations between information. Additional screen labelling in lieu of the use of colors would create a cluttered effect and would not significantly enhance the readability of the information displayed.

   Therefore, the possible options to the current color-coding scheme are limited and are considered less effective in the overall presentation of information. The present level of the use of colors on the SPDS displays is consistent with the use of the system and no changes are planned.

2. SPDS "turn on" codes were believed to be inconsistent. This item had previously been identified as a Human Engineering Discrepancy (HED). Resolution to this HED will be developed and implemented by December 1990.

NUREG-0737, Supplement 1; Requirement 4.1.f

MINIMUM PLANT PARAMETERS FOR DISPLAY

The minimum information to be provided shall be sufficient to provide information to plant operators about:

(i) Reactivity Control
(ii) Reactor Core Cooling and Heat Removal from the Primary System
(iii) Reactor Coolant System Integrity
(iv) Radioactivity Control
(v) Containment Conditions

The specific parameters to be displayed shall be determined by the licensee.

Based upon CP&L's review and interpretation of this requirement (as defined in the applicable NUREGs) and our responses to relevant items within the attached checklist, the HBR2 SPDS is considered to be in compliance with this requirement with the exception of certain plant variables which are discussed in Requirement 4.1.f below. Furthermore, the NRC audit identified no other outstanding concerns in this area. Following implementation of the below referenced enhancements, the HBR2 SPDS should fully comply with this requirement.

A previously identified HED, and an item reviewed by the NRC Audit Team, regards the lack of SPDS indication for main plant stack radiation monitoring. CP&L recognizes that this is a Representative Display Parameter needed for the Radioactivity Control Safety Function and has previously committed its incorporation into SPDS. Resolution of this HED and implementation of associated changes will be completed by December 1990.

Another previously identified HED, and an item also reviewed by the NRC Audit Team, regards the lack of SPDS indication for overall containment isolation status. CP&L recognizes that this is a Representative Display Parameter needed for the Containment Conditions Safety Function and has previously committed its incorporation into SPDS. Resolution of this HED and implementation of associated changes will be completed by December 1990.

In summary, this submittal and the implementation of the referenced enhancements should resolve the outstanding items from the HBR2 SPDS Audit and ensure HBR2 compliance with the requirements of NUREG-0737, Supplement 1.

SPDS CHECKLIST

This checklist is intended to aid licensees in determining the status of their SPDS. Bracketed, [ ], information refers to the section in NUREG-1342 where discussions on the specific question(s) may be found.

1.0 GENERAL DESCRIPTION

1.1 Plant Name: H. B. Robinson Plant, Unit No. 2

1.2 Who/What organization developed the original version of the SPDS software implemented at your site?

___ Utility (in-house)

___ Utility Owner's Group; which? _____

_X_ Contractor; which? Science Applications International Corp.

___ Other; who? _____

1.3 If the SPDS software has undergone significant modification (i.e., more than 25 percent of software replaced or modified) since original implementation, list the organization performing the modification:

___ Utility (in-house)

___ Utility Owner's Group _____

___ Contractor _____

___ Other No significant modifications performed

1.4 What is the hardware host on which the current SPDS software is implemented?

___ Westinghouse P250

___ Westinghouse P250U

_X_ Gould/SEL, Model Number 32/6780

___ Digital (DEC), Model Number _____

___ IBM, Model Number _____

___ MODCOMP, Model Number _____

___ Babcock & Wilcox (Recall)

___ Honeywell, Model Number _____

___ Burroughs, Model Number _____

___ Other: Manufacturer, Model _____

_____

1.5 How many total CPUs are accessible by SPDS software on the computer system described in the previous question? 1

1.6 What is the approximate MIPS rating of all the CPUs counted above?

3 MIPS NOTE: Use a decimal fraction if less than 1.0

If SPDS does not run on a single computer system, provide the following information for the minority parameter set provided by a second computer system. For example, a frequent occurrence of this case is where a separate but adjacent computer terminal provides radiological parameters.

1.7 Manufacturer Not Applicable

1.8 Model Number Not Applicable

1.9 List parameters provided: Not Applicable
(on the second system)

1.10 Are significant changes in hardware or software planned in the next two years? X YES ___ NO.

If YES, briefly describe planned changes
and list a schedule of major milestones.

1. Implement RVLIS (December 1990)
2. Implement resolutions to NRC SPDS Audit Findings (December 1990)

2.0 PARAMETER SELECTION

This section is divided into two parts: the safety functions, and the parameters used to depict each safety function.

2.1 Plant-Specific Safety Functions [III.F.]

List the title of the plant-specific safety function(s) displayed on your SPDS that is (are) equivalent to the safety function in Supplement 1 to NUREG-0737.

Supplement 1 To NUREG-0737 Safety Functions		Plant-Specific Safety Functions
2.1.1.	Reactivity Control	Subcriticality
2.1.2	Core Cooling and Heat Removal	Core Cooling RCS Inventory Heat Sink
2.1.3.	RCS Integrity	RCS Integrity
2.1.4.	Radioactivity Control	Heat Sink Containment
2.1.5.	Containment Conditions	Containment

2.2 Parameters Selected to Display Each Safety Function

The purpose of this section is to specify a list of parameters used to depict each of the five safety functions identifed in Supplement 1 to NUREG-0737. Lists of parameters that have been found acceptable to NRC through previous SPDS post-implementation reviews have been provided. One list of parameters applies to pressurized water reactors in general, and the other list applies to boiling water reactors.

NOTE: Check any parameters that have been selected as an SPDS parameter. List any additional parameters under the relevant "Others" category. Include additional safety functions and parameters that are a part of your SPDS.

PRESSURIZED WATER REACTOR SPDS PARAMETER SELECTION CHECKLIST [III.F.1]

Supplement 1 To NUREG-0737 Safety Functions	Parameters
2.2.1 Reactivity Control	Neutron Flux __X__ Source Range __X__ Intermediate Range __X__ Power Range __X__ Other: (List) See Attached
2.2.2 Reactor Core Cooling and Heat Removal from the Primary System	__X__ RCS Level __X__ Subcooling Margin ___ Hot Leg Temperature ___ Cold Leg Temperature __X__ Core Exit Thermocouples __X__ Steam Generator Level __X__ Steam Generator Pressure __X__ RHR Flow __X__ Other: (List) See Attached

ATTACHMENT TO GENERIC LETTER 89-06 SPDS CHECKLIST

2.2.1 Reactivity Control Parameters (Continued)

1. Intermediate Range Start-up Rate
2. Source Range Start-up Rate

2.2.2 Reactor Core Cooling and Heat Removal from the Primary System Parameters (Continued)

1. Maximum Core Exit Temperature
2. Minimum RCS Pressure
3. Reactor Coolant Pump On/Off Status
4. Safety Injection System Cold Leg Injection Flow
5. Safety Injection System Hot Leg Injection Flow
6. Pressurizer Level
7. Total Auxiliary Feedwater Flow
8. Total Main Feedwater Flow

2.2.3 RCS Integrity

- X RCS Pressure
- X Cold Leg Temperature
- ___ Containment Sump Level
- ___ Steam Generator (Pressure, Level, Radiation)
- X Other: (List) See Attached

2.2.4 Radioactivity Control

- ___ Stack Monitor
- X Steamline Radiation
- X Containment Radiation
- X Other: (List) See Attached

2.2.5 Containment Conditions

- X Containment Pressure
- ___ Containment Isolation
- X Containment Hydrogen Concentration
- X Other: (List) See Attached

2.2.6 Other Safety Functions

___ Yes X No

If yes, list functions and parameters.

2.2.3 RCS Integrity Parameters (Continued)

1. High Cold Leg Temperature Decrease

2.2.4 Radioactivity Control Parameters (Continued)

1. Steam Generator Blowdown Radiation

2.2.5 Containment Conditions Parameters (Continued)

1. Containment Sump Level
2. Containment Radiation

BOILING WATER REACTOR SPDS PARAMETER SELECTION CHECKLIST [III.F.2]

Supplement 1 To NUREG-0737 Safety Functions	Parameters
2.2.6 Reactivity Control	___ APRM ___ SRM ___ Other: (List) _____
2.2.7 Reactor Core Cooling and Removal	___ RPV Water Level ___ Drywell Temperature ___ Other: (List) _____
2.2.8 Pressure Vessel Integrity	___ RPV Pressure ___ Other: (List) _____
2.2.9 Radioactivity Control	___ Main Stack or Offgas (Pretreatment) Monitor ___ Containment Radiation Monitor ___ Other: (List) _____
2.2.10 Containment Integrity	___ Drywell Pressure ___ Drywell Temperature ___ Suppression Pool Temperature ___ Suppression Pool Level ___ Containment Isolation Valve Status ___ Drywell Hydrogen Concentration ___ Drywell Oxygen Concentration ___ Other: (List) _____

2.2.11 Other Safety Functions ___ Yes ___ No

If yes, list functions and parameters.

_____

_____

_____

_____

_____

2.3 Detailed Parameter Questions [III.F.1.e and III.F.2.e]

2.3.1 Are containment isolation demand signals input to SPDS (e.g., PWR - Phase A/B Isolation Demand Signal or BWR - Group Isolation Demand Signals)?

___ YES _X_ NO

2.3.2 Does the SPDS use actual containment isolation valve position as an input to monitor successful isolation? ___ YES _X_ NO

3.0 DISPLAY OF SAFETY FUNCTIONS [III.F.]

3.1 Does the SPDS provide the status of all five safety functions on one display page? _X_ YES ___ NO

3.2 Are the individual parameters that support the safety functions grouped by safety function? _X_ YES ___ NO

3.3 Is the status of all five safety functions <u>always</u> displayed on the SPDS? [III.B.2] _X_ YES ___ NO

4.0 RELIABLE DISPLAY [III.A.3 except as noted]

4.1 Is the SPDS hosted on the same computer system as the plant process computer? _X_ YES ___ NO

If NO, does the SPDS computer receive some of the computer point inputs from the process computer? ___ YES ___ NO

4.2 List location of accessible (e.g., keyboards) devices capable of changing SPDS data. [III.A.3.a]

1. Unit 2 Control Room
2. Main Computer Room

4.3 Are SPDS hardware availability data documented? X YES ___ NO

IF YES, what is the documented percent availability of the SPDS hardware over the past 12 months? NOTE: Availability should be based on power operation, startup, hot standby, and hot shutdown only and not include other plant modes. 98.94 % Available

4.4 Are the SPDS computer points included in routine instrument loop surveillances? [III.A.3.a] ___ YES X NO.

4.5 What percentage of software verification and validation has been completed?

- X 100%
- ___ Approximately half
- ___ Planned in the future
- ___ Other, describe _____

4.6 Have changes to the SPDS host computer and software been maintained under a formal Software/Hardware Change Request (or equivalent) system? Check all that apply below:

- X Yes; For how long? 4 years
- ___ No
- ___ Have plans to in the future

4.7 How frequently does the SPDS display invalid or erroneous information? [III.A.3.a]

___ frequent (above 5 percent)
___ infrequent (1-5 percent)
_X_ rare (less than 1 percent of the time)

4.8 How frequently have any of the critical safety functions been in a false alarm condition? [III.A.3.a]

___ frequent (above 5 percent)
___ infrequent (1-5 percent)
_X_ rare (less than 1 percent of the time)

4.9 Does the SPDS display valid parameter information during adverse containment conditions? _X_ YES ____ NO

5.0 HUMAN FACTORS [III.E except as noted]

Human factors in the context of SPDS design includes the usefulness of the technical information displayed on the screen to users and their performance during emergency operations. Human factors also includes display design techniques, such as labeling, display layout, and control/display integration.

This section provides a sample of the kinds of questions to be asked to help determine the degree to which the SPDS design incorporates accepted human factors principles.

5.1 Who is the prime user of the SPDS? [III.B.1]

___ Shift Supervisor
___ Shift Technical Advisor
___ Board Operators
_X_ Other (specify) See Attached

5.1 Prime User of the SPDS (Continued)

The Control Room Senior Reactor Operator (SRO) is designated as the Primary SPDS User. An SRO is continuously available in the Control Room to immediately respond to a plant transient. To support and augment the SRO, the Shift Technical Advisor (STA), who is required to be available to the Control Room within ten minutes of notification, is designated as an alternate or secondary SPDS User. In this way, a prompt response to plant transients is facilitated, while providing subsequent relief to key Control Room personnel to allow mitigation of the transient.

5.2 Are all SPDS controls located at the SPDS workstation? ___ YES _X_ NO [III.B.1]

If NO, where are the controls located? SPDS controls are located at an adjacent plant process computer terminal.

5.3 Is all SPDS-related information physically displayed such that the information can clearly be read from the SPDS user's typical position? [III.A.1 and III.B.1]

_X_ YES ___ NO

If NO, what specific information is available at other locations?

5.4 How are SPDS displays accessed? [III.A.2]

_____ Continuous display, no interaction possible.
__X__ Keyboard, one or two keystroke function key.
_____ Keyboard, greater than 2 keystrokes.
_____ Touchscreen.
_____ Cursor/menu (mouse, joystick, up/down key).

5.5 Does the SPDS consistently respond to user commands in less than 10 seconds? [III.A.2]

___ YES _X_ NO

If NO, is feedback provided to the user regarding delays in response?

_X_ YES ___ NO

5.6 Does the SPDS sampling rate for parameters match the display update rate for those parameters? [III.A.2]

___ YES _X_ NO

If NO, what specific parameters do not match?

Data acquisition to computer is variable from 0.1 to 30 seconds; screen display update rate is 2 to 4 seconds.

5.7 Are all parameter units of measure displayed on the SPDS consistent with the units of measure included in the emergency operating procedures?

_X_ YES ___ NO

5.8 Are all parameter labels and abbreviations consistent with the labels and abbreviations included in the emergency operating procedures?

___ YES _X_ NO

5.9 Is any of the displayed information in a form that requires transformation or calculation?

___ YES _X_ NO

IF YES, what types of transformations or calculations are necessary?

5.10 Are the high-and low-level setpoints consistent with hard-wired parameter instrumentation and reactor protection system setpoints?

_X_ YES ___ NO

5.11 Does SPDS display high-and low-level setpoints?

___ YES _X_ NO

5.12 Are the SPDS calculated values such as subcooling margin, consistent with calculated values on the plant process computer?

_X_ YES ___ NO

5.13 Are all parameter units of measure displayed on SPDS consistent with the hard wired instrumentation?

X YES ___ NO

5.14 Are all parameter labels and abbreviations consistent with hard-wired instrument labels and abbreviations?

___ YES X NO

5.15 Were the technical basis for software specifications verified with plant-specific data (for example, heat-up and cool-down limits, variable steam generator setpoints and high and low level alarm setpoints)?

X YES ___NO

5.16 List LERs written as a result of SPDS software problems.

None

6.0 TRAINING [III.C.2 all questions]

6.1 Does simulator training include training in the use of the SPDS?

X YES ___ NO

6.2 How long is formal classroom training for SPDS users?

___ No formal classroom training
___ Less than 2 hours
X 2-4 hours
___ More than 4 hours

6.3 Is there periodic requalification training for SPDS? X YES ___ NO

If YES, how often? Annually

6.4 When are SPDS users given training regarding the relationship of the parameters to the plant safety functions? Check all that apply below:

_____ Not trained
_____ On the job or required reading
__X__ During requalification training
__X__ During an initial SPDS training program

7.0 ELECTRICAL ISOLATION [III.C.1 all questions]

7.1 What isolation devices are currently used?

See Attached

7.2 Are these devices the same ones that were originally installed and approved by NRC? _X_ YES ___ NO

7.1 Isolation devices currently used (Continued)

Isolation devices used for the HBR2 SPDS are addressed within a Carolina Power and Light Company (CP&L) response to an NRC request for additional information on the SPDS. This information was provided by CP&L Serial: NLS-85-396, dated November 15, 1985. To summarize, the HBR2 SPDS configuration utilizes either existing signals which were input to the original plant process computer, or new 1E signals which utilize fiberoptics for signal isolation. Additional information is provided in the above referenced correspondence.