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 AUTH. NAME AUTHOR AFFILIATION
 CONWAY, W.F. Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION
 Document Control Branch (Document Control Desk)

SUBJECT: Forwards identified differences between conclusions reached by staff in 850611 & 860609 safety evaluations re SPDS.

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AUGUST, 22 1988

L-88-360

U. S. Nuclear Regulatory Commission
 Attn: Document Control Desk
 Washington, D. C. 20555

Gentlemen:

Re: St. Lucie Units 1 and 2
 Docket Nos. 50-335 and 50-389
Safety Parameter Display System (SPDS)

As discussed in letter L-88-184, dated April 18, 1988, Florida Power & Light Company (FPL) installed upgraded SPDS hardware and software in April and May 1988. Following this installation, FPL conducted performance/site acceptance testing of the upgraded system in May and June 1988. While FPL is emphasizing continued refinement of the displayed parameters, FPL considers the SPDS functionally operational as of July 1, 1988.

Additionally, FPL has reviewed the NRC Safety Evaluations dated June 11, 1985, (E. J. Butcher to J. W. Williams, Jr.) and June 9, 1986, (E. G. Tourigny to C. O. Woody). FPL has identified, in the attachment to this letter, differences between the conclusions reached by the Staff in their June 11, 1985 and June 9, 1986 Safety Evaluations relative to the pre-upgrade SPDS and the upgraded SPDS now installed at St. Lucie Plant.

If further information is required, please contact us.

Very truly yours,

W. F. Conway
 W. F. Conway
 Senior Vice President - Nuclear

WFC/EJW/cm

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator, Region II,
 USNRC
 Senior Resident Inspector, USNRC, St. Lucie Plant

EJWSPDS

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Attachment

SPDS Safety Evaluation Review

by Florida Power & Light Company

EJWSPDS

I. INTRODUCTION

FPL has incorporated various design changes into the Safety Parameter Display System (SPDS) during 1987 and 1988. This review provides an update to the NRC Safety Evaluations dated June 11, 1985 and June 9, 1986. The format of this review is modeled after the June 11, 1985 NRC Safety Evaluation.

II. SUMMARY

All physical modifications discussed herein have been performed under FPL's plant change/modification (PC/M) process. The design changes do not involve an unreviewed safety question nor require a change to the technical specifications.

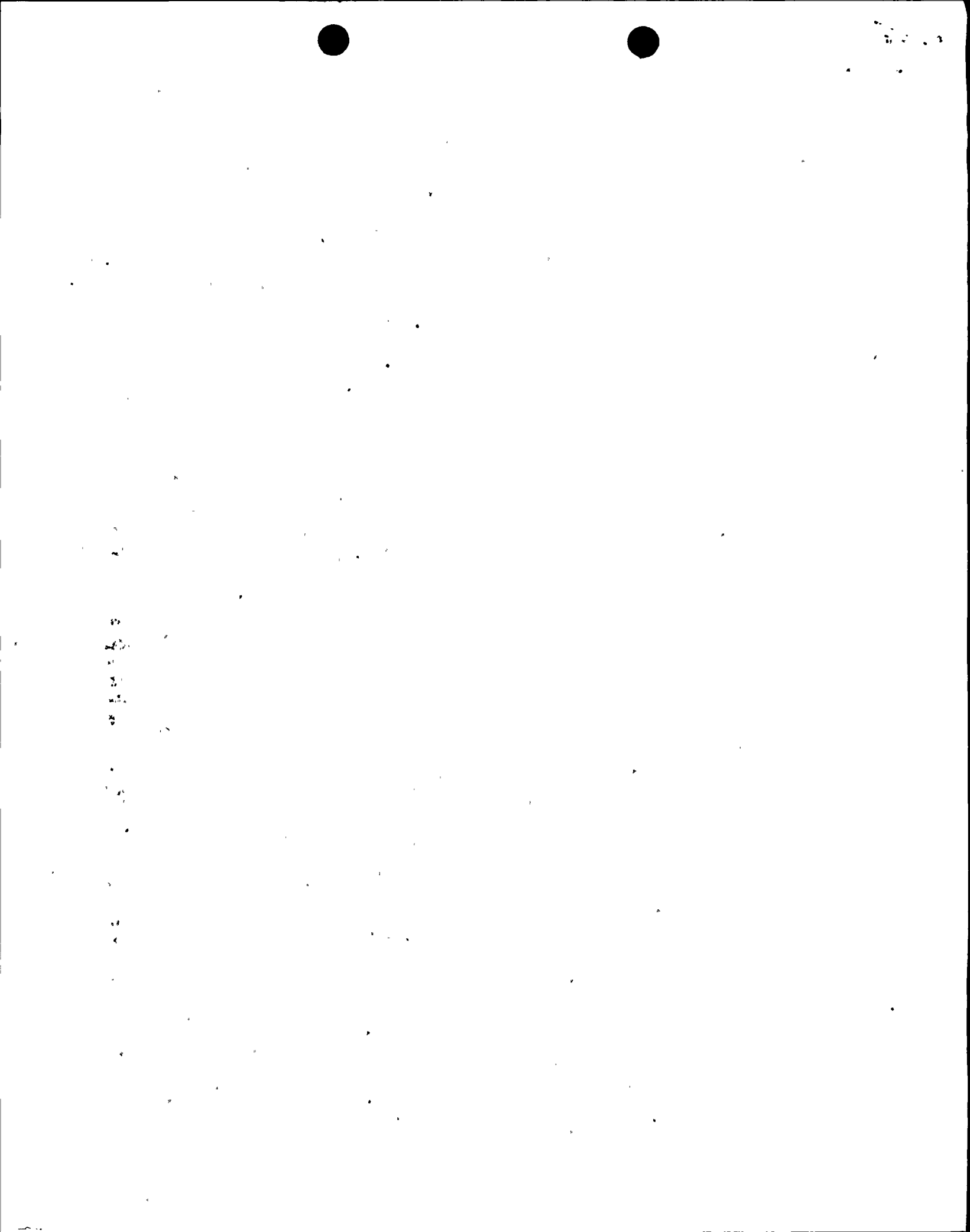
III. EVALUATION

FPL's design modifications to the original SPDS have been intended to enhance the overall system operation, availability, and user friendliness. Only direct changes to the original design will be clarified in this review along with an update on how the system changes will be integrated into plant operation.

A. SPDS DESCRIPTION

The SPDS cathode ray tube (CRT) keyboard and video generator have been replaced on the operator's console. The locations of the SPDS CRT and keyboard, however, remain unchanged. Location of the video generator varies on a unit basis due to space constraints, but is placed within close proximity to the CRT to ensure that cable losses do not impact the visual display. The final CRT will be a 19" Mitsubishi 6905, with a specially designed key pad. A temporary ASEA 2919 CRT is being used at this time until the final CRTs can be installed.

The general format of the top level displays remains unchanged. The Accident Identification Display System (AIDS) section has been replaced with Critical Safety Function Monitor (CSFM) targets in keeping with the nomenclature discussed in the NRC letter dated June 11, 1985. The trend graphs and parameter indicators have been reversed on the cold shutdown top level display, with the trend graphs now on the left side of the display and the parameter bar indicators on the right side. The parameters displayed, however, remain unchanged.



B. PARAMETER SELECTION

Variable Selection: In general, variable selection remains unchanged, with the exception that plant stack radiation level has been added to a supporting display in response to the NRC letter dated June 11, 1985. Hot leg temperature, steamline radiation monitoring, and containment hydrogen concentration are also part of the supporting displays which can be accessed from the SPDS key pad. Containment isolation can be verified through the Safety Assessment System (SAS) which provides containment isolation valve position indication. The SAS CRT is located on a panel next to the operator's desk.

Variable validation: Since the variable selection remains essentially unchanged, no changes to FPL's variable validation program from a design aspect have been required.

C. DISPLAY DATA VALIDATION

The software handling data validation has been upgraded. As in the original QUADREX code, single point parameters are range checked for validity and alarmed accordingly.

The remaining, redundant and calculated points were previously processed by the QUADREX code and are now processed by customized versions of the calculated point service of the new R*TIME system. The central references for the separate customized versions of the calculated point service are the plant-specific SPDS Preliminary and Detailed Software Designs. The functional elements of the Safety Parameter algorithms have been preserved in passing from the TEC/QUADREX code to the upgraded system.

It should be noted that the algorithms (functions) of the R*TIME calculated point service generally include a determination of "quality" (validity) for the calculated point value. The determination logic is naturally dependent on the algorithm and the qualities of the input parameters. The quality determination is generally more refined than that provided in the QUADREX code because of the introduction of the intermediate levels of "suspect" and "poor" between the previously mentioned extremes of "good" and "bad". Finally, it should be noted that, whereas alarm processing for the safety parameters is embedded in the original QUADREX code, this processing is performed by the alarm service of R*TIME.



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D. HUMAN FACTORS

Hardware installation human factors evaluations, including component locations, were within the scope of the PC/M's installing the equipment upgrades. This part of the human factors evaluation has been completed under 10 CFR Part 50.59 with the issuance of the engineering documents.

A verification of system users' requirements, display design, compatibility, and overall machine interface effectiveness will be performed. The results will be included with the PC/M's already containing the hardware evaluation. To augment the human factors effort, two training programs are used: reactor operator training and system software/system engineer training. The reactor operator training provides control-room personnel with instructions on how to use the SPDS/SAS during various plant evolutions and also provides details of computer abnormalities and failures. This course was taught initially by the vendor and incorporated into the operator requalification program by the St. Lucie Plant Training Department to meet future needs.

The system software/system engineer training has been provided to Instrumentation and Control (I&C) personnel responsible for maintaining the SPDS/SAS. Future applications programs for I&C technicians will use this original training as a basis.

E. ELECTRICAL AND ELECTRONIC ISOLATION

No design or physical modifications have been performed on the presently installed isolation cabinets.

IV. CONCLUSION

The major portion of these modifications lie in hardware upgrades to take advantage of advancements in the computer graphics arena. In most part, the original SPDS/SAS design has remained unchanged and, therefore, the original Safety Evaluations performed remain valid, with the exception of the changes discussed herein.

DISTRIBUTION

Docket File w/o encl.
PD22 Reading w/o encl.
D. Miller w/encl.
E. Tourigny w/encl.

August 16, 1988

DOCKET NO(S). 50-335 and 50-389

Mr. W. F. Conway
Senior Vice President - Nuclear
Nuclear Energy Department
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT:

ST. LUCIE UNITS 1 AND 2

The following documents concerning our review of the subject facility are transmitted for your information.

- Notice of Receipt of Application, dated _____.
- Draft/Final Environmental Statement, dated _____.
- Notice of Availability of Draft/Final Environmental Statement, dated _____.
- Safety Evaluation Report, or Supplement No. _____ dated _____.
- Environmental Assessment and Finding of No Significant Impact, dated _____.
- Notice of Consideration of Issuance of Facility Operating License or Amendment to Facility Operating License, dated _____.
- Bi-Weekly Notice; Applications and Amendments to Operating Licenses Involving No Significant Hazards Considerations, dated 8/10/88 [one page(s)]
- Exemption, dated _____.
- Construction Permit No. CPPR-_____, Amendment No. _____ dated _____.
- Facility Operating License No. _____, Amendment No. _____ dated _____.
- Order Extending Construction Completion Date, dated _____.
- Monthly Operating Report for _____ transmitted by letter dated _____.
- Annual/Semi-Annual Report- _____
_____ transmitted by letter dated _____.

Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Enclosures:
As stated

cc: See next page

OFFICE	LA-2					
SURNAME	D. Miller;bg					
DATE	8/1/88					

