



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 152 TO FACILITY OPERATING LICENSE NO. DPR-72

FLORIDA POWER CORPORATION, ET. AL.

CRYSTAL RIVER UNIT NO. 3 NUCLEAR GENERATING PLANT

DOCKET NO. 50-302

1.0 INTRODUCTION

By letter dated May 31, 1995, as supplemented November 28, 1995, and December 21, 1995, Florida Power Corporation (FPC) submitted proposed revisions to Crystal River Unit 3 (CR-3) Technical Specifications (TS). The proposed revisions would extend the existing 18-month instrument surveillance interval for the protective functions of the Reactor Protection System (RPS), Engineered Safeguard Actuation System (ESAS), Emergency Feedwater Initiation and Control (EFIC) System, Neutron Flux Monitoring System, Post Accident Monitoring (PAM) System, Remote Shutdown System, and Nuclear Instrumentation System to a 24-month interval. FPC also proposed to change the instrument setpoint allowable values of certain functions in the RPS, EFIC System, and Control Room isolation instrumentation channels. Because of the possible generic implications of the changes to the setpoint allowable values the staff and the licensee have agreed to deal with this issue separately; the setpoint changes are not covered by this evaluation.

In preparing their amendment request, FPC followed the guidelines provided in Generic Letter (GL) 91-04 and their submittal responded to each of the seven actions identified by the staff in the GL as an acceptable basis for the extension.

The November 28, 1995, and December 21, 1995, letters contained supplementary information that did not affect the staff's proposed finding of no significant hazards considerations.

2.0 EVALUATION

GL 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-month Fuel Cycle," provides guidance on the development of TS revisions to allow a 24-month fuel cycle. The GL also includes requirements to evaluate the effect on safety for an increase in surveillance intervals to accommodate a 24-month fuel cycle. The staff determined that a licensee should address the issue of instrumentation errors/setpoint methodology assumptions when proposing an extended instrumentation surveillance interval; specifically, the licensee must evaluate the effects of an increased calibration interval on instrument uncertainties, equipment qualification, and vendor maintenance requirements in order to ensure that an extended surveillance interval does not result in exceeding the assumptions stated in

the safety analysis. GL 91-04 also specifies that licensees incorporate a plant-specific program to monitor and assess the long-term effects of instrument drift and provide continuing data to evaluate extended 24-month instrumentation surveillance intervals.

EPRI document TR-103335, "Guidelines for Instrument Calibration Extension/Reduction Programs" dated March 1994, expanded the NRC GL 91-04 guidelines and provided statistical methodologies to calculate instrument drift; however, these EPRI methodologies have not been reviewed and approved by the NRC staff. FPC's submittal requesting extension of certain instrumentation surveillance intervals, however, has followed the EPRI methodology for calculating instrument drift and included sample calculations of instrument drift for three representative instruments. The calculations used statistical techniques. The licensee compared the results of these calculations to the GL action items using qualitative reasoning as a justification for the surveillance interval extension. FPC's primary setpoint methodology is to use vendor-provided drift for setpoint development when it is available. This method is endorsed by Instrument Society of America (ISA) Standard ISA-S67.04 Parts I & II, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation," and is also specified in the GL 91-04 guidance.

The licensee stated that most of the instruments in the study for which surveillance interval extension is requested have been replaced since original plant start-up. As such, most drift data used in the calculation is vendor-stated, and historical drift data is only used when vendor-stated data is not available. With the exception of a few components, all protection system instrumentation (RPS, ESAS and EFIC) is being evaluated with vendor-stated drift data. For instrumentation where historical data was used for determining instrument setpoint drift, FPC performed a linear regression analysis on the absolute value of drift data from each drift study to indicate the instrument's drift trend. The regression line was plotted with the absolute values of drift versus interval in months to show a correlation between the instrument setpoint drift and its calibration interval. The regression line showed only the drift trend and was not used to extrapolate the 30 months (24 months + 25% of 24-month interval permitted by TS) drift term. The licensee also plotted drift data versus "As found" data when the instrument was re-calibrated. These plots were used for determination of the time dependency of the instrument drift.

The staff review of the three sample calculations indicated that the data points used for these calculations were not sufficient in number due to the limited number of instruments and their limited calibration history. The independence of the data points was also not adequately demonstrated as the licensee used five calibration points from the span of the same instrument instead of an independent measurement of drift on five different instruments. FPC nevertheless believes that their methodology is conservative since the difference between as-left and as-found setpoint values is actually the sum of measurement and test equipment error, temperature difference error, vibration

effects, instrument accuracy and readability, power supply effects, and journeyman techniques. The FPC methodology combined all these errors into the instrument drift calculation. While the staff agrees that these error terms introduce conservatism into the drift analysis, the staff maintains that the small number of instruments and the small number of historical calibration data points do not provide for a statistically meaningful modeling of the data.

In discussion with the licensee on December 19, 1995, the staff informed FPC that their statistical approach to projecting instrument drift was not sufficient to justify a 24-month surveillance interval. In response to our concerns, FPC submitted additional justification by letter dated December 21, 1995. This additional information provides data based solely on experience and does not rely upon statistical analysis. The licensee evaluated calibration data for all instruments whose surveillance interval is proposed for extension. As-found and as-left data were evaluated to determine how the equipment performed. The instruments have, except on rare occasions, performed within the acceptance criteria of the calibration procedures used to satisfy Technical Specification calibration requirements. Equipment performing outside specified as-found tolerances is considered to be inoperable and is not returned to service until it is left within the as-left requirements. Instrument drift per calibration interval was evaluated by inspection of the data and, with a few exceptions, the instruments did not appear to have time-dependent drift. Instruments whose data could not support this conclusion were not included in the request for calibration extension to 24-months. The drift tended to be random in that the setpoint drift was in both the positive and negative directions. This tendency to "cross" zero reduces the impact of drift since it does not build in one direction for an extended period of time. Additionally, the safety system instrumentation setpoints include manufacturer-provided 30-month instrument drift values, and if the drift term was not bounded by the existing allowance, the surveillance interval remained at 18-months per the existing Technical Specifications.

The licensee has implemented a program to monitor the effects of a 24-month Calibration Cycle on the instrument drift as specified in GL 91-04. The purpose of this monitoring program is to provide a means to verify the assumptions made in the setpoint methodology with regard to instrument drift. The monitoring program also provides a method to determine the adequacy of the instruments surveillance intervals.

The staff finds that the licensee's evaluation of instrument calibration data sufficiently demonstrates that a 24-month calibration interval will not significantly impact the instrument's capability to perform its safety function. The ongoing monitoring program provides further assurance that unacceptable instrument drift will be evaluated immediately and the calibration interval and the instrument setpoint will be revised to account for any additional drift. The staff, therefore, finds that the proposed change of certain RPS, ESAS, EFIC System, neutron flux monitoring, PAM, and Remote Shutdown System instrumentation Surveillance intervals from an 18- to a 24-month interval is consistent with the guidelines of GL 91-04.

Based on the above evaluation, the staff concludes that the proposed changes to the Technical Specifications to extend the calibration surveillance interval from 18 to 24 months for certain RPS, ESAS, EFIC System, neutron flux, PAM, and remote shutdown system instrumentation is consistent with the guidance of GL 91-04 and is, therefore, acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Florida State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves **no** significant increase in the amounts, and no significant change in the **types**, of any effluents that may be released offsite, and that there is **no** significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (60 FR 35070). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with **the** issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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