

TECHNICAL SPECIFICATION CHANGE REQUEST NO. 53 (APPENDIX A)

Replace pages 3/4 3-2 and 3/4 3-3 with the attached revised pages 3/4 3-2 and 3/4 3-3.

Proposed Changes

On page 3/4 3-2, Table 3.3-1, Items 2 and 4, replace applicable ACTION references with "1, 2#". Changes to page 3/4 3-2 were also proposed in Technical Specification Change Request No. 47, dated July 13, 1979.

On page 3/4 3-3, replace Action Statement 1 with a new Action Statement 1 which reads: "With the number of OPERABLE channels less than the Total Number of Channels due to a heat balance error of greater than two percent RATED THERMAL POWER (RTP) (actual thermal power - out of core detector indicated power >2% RTP), either perform a CHANNEL CALIBRATION of the affected channels within 8 hours or perform Action 2, below".

Also, on page 3/4 3-3, revise Action Statement 2 to read: "With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided all of the following conditions are satisfied, except as allowed in Action 1, above....".

Changes page 3/4 3-3 were also proposed in Technical Specification Change Request No. 47, dated July 13, 1979.

Reasons for Proposed Change

At the present time, if more than one out of core detector is inoperable due to a heat balance error of more than 2% RTP, the calibration error has to be corrected in 1 hour or CR3 must be in HOT STANDBY and COLD SHUTDOWN within the next 30 hours (Specification 3.0.3). This is an unrealistic amount of time for the task. Even if power was reduced to limit the calibration error to <2% RTP, a flux transient will result, making NI calibration difficult and inaccurate. This Change Request will provide sufficient time for the reactor to recover from a transient condition and to recalibrate the nuclear instrumentation with the reactor in a more stable condition.

Safety Analysis of Proposed Change

The high flux trip value used in the safety analysis of Crystal River Unit 3 is 112% Rated Thermal Power. In determining the Reactor Protection System (RPS) instrumentation trip setpoints for use at Crystal River 3, the following error assumptions were made:

- |  |          |
|--|----------|
| 1. Heat Balance Error -                          | 2.0% RTP |
| 2. Neutron Power Measurement Error -             | 4.0% RTP |
| 3. Allowance for Setpoint and Comparison Error - | 0.5% RTP |

Safety Analysis of Proposed Change: (Continued)

Each error is described as follows:

Heat Balance Error: Heat Balance determination of reactor power yields a value of reactor power which is real power  $\pm 2\%$  Full Power (FP), i.e., this is the inherent accuracy of the heat balance technique.

Neutron Power Measurement Error: Indicated reactor power is related to the real power by measurement of leakage flux with the out-of-core detectors (OCD). The leakage flux is a function of core configuration and conditions and can be influenced by such things as control rod movements, boron addition and depletion, etc. The OCDs are required to be calibrated to the heat balance power on a periodic basis and allowed to differ by 2% FP from the heat balance. By listing the neutron power measurements as 4.0% FP, this implies the calibration procedures are adequate to insure that indicated power is within 4.0% FP of the heat balance, even during a transient.

Setpoint and Comparison Error: This component of the total error accounts for the accuracy of the bistable to determine a trip condition exists in comparing the Indicated Power to the Trip Setpoint Valve. Also included is an allowance for the accuracy of the setpoint value at the bistable (i.e., bistable drift).

These error assumptions, totaling 6.5% RTP are applied to the RPS Instrumentation Trip Setpoint (in the conservative direction) to assure that the actual reactor power does not exceed the value assumed in the Safety Analysis (112% RTP). This requires that the RPS Instrumentation Trip Setpoint be  $< 105.5\%$  RTP ( $112 - 6.5 = 105.5$ ) and this value is specified on Page 2-5 of Crystal River 3 Technical Specifications.

Technical Specification 4.3.1.1.1 requires daily surveillance of the NI indication vs. Heat Balance correlation. As presently written, the surveillance procedure requires NI recalibration if the Heat Balance differs with NI Indication by more than 2% FP at steady state.

In summary, therefore, the RPS trip setpoint of 105.5% RTP accounts for a Nuclear Instrumentation Indication vs. Heat Balance correlation within 4% RTP and daily surveillance requirements maintain this correlation within 2% during steady state.

This Change Request does not reduce any assumptions in the Safety Analysis; it does apply those assumptions to the Technical Specifications, so that the Reactor Protection System may be operated within design limitations.

TABLE 3.3-1

REACTOR PROTECTION SYSTEM INSTRUMENTATION

| FUNCTIONAL UNIT   | TOTAL NO.<br>OF CHANNELS | CHANNELS<br>TO TRIP  | MINIMUM<br>CHANNELS<br>OPERABLE | APPLICABLE<br>MODES  | ACTION |
|---|--------------------------|----------------------|---------------------------------|----------------------|--------|
| 1. Manual Reactor Trip  | 1                        | 1                    | 1                               | 1, 2, and *          | 8      |
| 2. Nuclear Overpower  | 4                        | 2                    | 3                               | 1, 2                 | 1, 2#  |
| 3. RCS Outlet Temperature--High                                     | 4                        | 2                    | 3                               | 1, 2                 | 3#     |
| 4. Nuclear Overpower Based on RCS<br>Flow and AXIAL POWER IMBALANCE | 4                        | 2(a)                 | 3                               | 1, 2                 | 1, 2#  |
| 5. RCS Pressure--Low  | 4                        | 2(a)                 | 3                               | 1, 2                 | 3#     |
| 6. RCS Pressure--High   | 4                        | 2                    | 3                               | 1, 2                 | 3#     |
| 7. Variable Low RCS Pressure  | 4                        | 2(a)                 | 3                               | 1, 2                 | 3#     |
| 8. Reactor Containment Pressure--High                               | 4                        | 2                    | 3                               | 1, 2                 | 3#     |
| 9. Intermediate Range, Neutron Flux<br>and Rate                     | 2                        | 0                    | 2                               | 1, 2 and *           | 4      |
| 10. Source Range, Neutron Flux and Rate                             |                          |                      |                                 |                      |        |
| A. Startup  | 2                        | 0                    | 2                               | 2## and *            | 5      |
| B. Shutdown   | 2                        | 0                    | 1                               | 3, 4 and 5           | 6      |
| 11. Control Rod Drive Trip Breakers                                 | 2 per trip<br>system     | 1 per trip<br>system | 2 per trip<br>system            | 1, 2 and *           | 7#     |
| 12. Reactor Trip Module   | 2 per trip<br>system     | 1 per trip<br>system | 2 per trip<br>system            | 1, 2 and *           | 7#     |
| 13. Shutdown Bypass RCS Pressure-High                               | 4                        | 2                    | 3                               | 2**, 3**<br>4**, 5** | 6#     |

CRYSTAL RIVER - UNIT 3

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TABLE 3.3-1 (Continued)

TABLE NOTATION

- \* With the control rod drive trip breakers in the closed position and the control rod drive system capable of rod withdrawal.
- \*\* When Shutdown Bypass is actuated.
- # The provisions of Specification 3.0.4 are not applicable.
- ## High voltage to detector may be deenergized above 10<sup>-10</sup> amps on both Intermediate Range channels.
- (a) Trip may be manually bypassed when RCS pressure ≤1720 psig by actuating Shutdown Bypass provided that:
  - (1) The Nuclear Overpower Trip Setpoint is ≤5% of RATED THERMAL POWER
  - (2) The Shutdown Bypass RCS Pressure--High Trip Setpoint of ≤1720 psig is imposed, and
  - (3) The Shutdown Bypass is removed when RCS pressure >1800 psig.

ACTION STATEMENTS

- ACTION 1 - With the number OPERABLE channels less than the total Number of Channels due to a calibration error of greater than two percent RATED THERMAL POWER (RTP) (actual thermal power - out of core detector indicated power >2% RTP), either perform a CHANNEL CALIBRATION of the affected channels within 8 hours or perform Action 2, below.
- ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels STARTUP and/or POWER OPERATION may proceed provided all of the following conditions are satisfied, except as allowed in Action 1 above:
  - a. The inoperable channel is placed in the tripped condition within one hour.
  - b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1,