



MISSISSIPPI POWER & LIGHT COMPANY

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January 11, 1984

NUCLEAR PRODUCTION DEPARTMENT

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

Attention: Mr. Harold R. Denton, Director

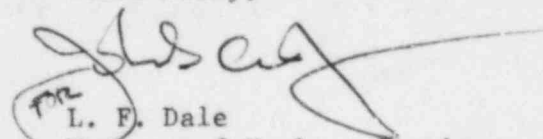
Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-13
File: 0290/L-860.0
Modifications to FSAR Startup Test
Program; Operating License
Condition 2.C.(40)
AECM-84/0029

In accordance with GCNS Operating License Condition 2.C.(40), MP&L is transmitting modifications to the FSAR Chapter 14 Startup Test Program for your review and approval. Nine startup test procedure modifications, involving procedures described in Chapter 14 of the GCNS FSAR, are attached. Of these modifications, only Startup Test No. 25 on MSIV Function Testing requires a specific change to the FSAR. The remaining modifications involve tests or portions of tests, which were unable to be completed during the initial heatup phase testing. The subject tests will be completed during future startup testing.

In order to prevent impact to the power ascension test program and to provide sufficient time to incorporate the proposed changes into startup procedures, your review and approval is requested by January 27, 1984. Please advise, if you require additional information.

Yours truly,


L. F. Dale
Manager of Nuclear Services

SAB/JGC:rg
Attachments

cc: See next page

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Mr. R. B. McGehee (w/o)
Mr. T. B. Conner (w/o)
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Test: Test No. 5 (1-C11-SU-05-H) Control Rod Drive System; Exception HU-43

FSAR Section: 14.2.12.3.5

Category: O.L. Condition 2.C.(40)(d), Failure to Complete Test

Exception: The FSAR indicates that all control rod drives (CRD) would be friction tested at rated pressure. However, CRD 56-41 could not be tested due to a leaking needle valve which prevented the proper attachment of the test differential pressure cell to the hydraulic control unit (HCU).

This exception is not considered significant in that evidence of satisfactory rod performance is available through successful completion of rod insert/withdraw timing and friction testing at zero psig pressure. This rod also passed the scram time test.

Corrective Action: Current MP&L plans are to rework the leaking valve and test the rod at a later date with reactor power greater than 20% of rated. Due to the control rod sequence to be employed in the subsequent reactor startup, the Rod Pattern Control System's constraints to rod movement prohibit the free stroking of this drive below the low power setpoint (20% of rated power), as a result testing will be deferred until the beginning of the Mid Power Test Plateau (i.e. Test Conditions 2 and 3).

Test: Test No. 11 (1-C51-SU-11-H) LPRM's; Exception HU-63

FSAR Section: 14.2.12.3.9

Category: O.L. Condition 2.C.(40)(d), Failure to Complete Test

Exception: FSAR Paragraph 14.2.12.3.9 describes a test to calibrate the Local Power Range Monitors (LPRM's). The calibrations are typically performed with reactor power >10% of rated. During the Heatup Test Plateau MP&L attempted to perform a test to verify the proper LPRM channel assignments and instrument connections. This test, which is typical of all recent BWR startup test programs, monitors LPRM output in response to adjacent control rod movements. It is not a "calibration", but merely a prerequisite instrumentation checkout. During the GGNS Low Power Testing ($\leq 5\%$ rated power) it was found that the flux levels in the vicinity of the LPRM's were not high enough to register any changes. As a result it was determined that this test would have to be postponed until a higher power level is achieved.

Corrective Action: MP&L will perform this test during the Low Power Test Plateau (Test Condition 1) prior to performing the first true LPRM calibration.

Test: Test No. 14 (1E51-SU-14-H) RCIC; Exceptions HU-73 and HU-74

FSAR Section: 14.2.12.3.12

Category: O.L. Condition 2.C.(40)(d), Failure to Complete Test

Exception: FSAR Paragraph 14.2.12.3.12(d) provides a Level 2 Acceptance Criteria for RCIC speed and flow control loop adjustments such that the decay ratios of any RCIC related variable is not greater than 0.25. During RCIC testing at both 150 psig and at rated reactor pressure, stability testing of RCIC was performed by introducing step changes into the control system while RCIC was injecting into the condensate storage tank (CST). Analysis of the system response indicated that several RCIC variables (EG-M governor output, Governor valve position, and turbine steam supply pressure) did not meet the "quarter damped" criteria.

The specific Level 2 evaluations were made after the reactor had been shutdown following completion of the Heatup Test Plateau, and as a result no adjustments to the control system could be made.

Since none of the aforementioned RCIC variables are primary indicators of the RCIC system performance, these failures do not seriously impact system operation. Primary RCIC performance variables (i.e., RCIC pump flow, discharge pressure and turbine speed) met the level 2 Acceptance Criteria for decay ratios. In view of this, and the fact that the final control system settings will be tested during Test Condition 2, this temporary failure has been judged to be acceptable.

Corrective Action: While these Level 2 failures may be minor in nature, MP&L will resolve the open exceptions during the RCIC vessel injections at Test Condition 2. All applicable Level 1 criteria were met for the Heatup Test Plateau testing.

Test: Test No. 14 (1-E-51-SU-14-H) RCIC System, Exception HU-76 and HU-77

FSAR Section: 14.2.12.3.12

Category: O.L. Condition 2.C.(40)(d), Failure to Complete Test

Exception: FSAR Paragraph 14.2.12.3.12(d) provides Level 2 criteria requiring that the RCIC turbine gland seal air compressors be capable of preventing steam leakage to the atmosphere.

During RCIC testing at 150 psig and rated reactor pressure, a minor steam leak was observed around the RCIC turbine governor valve stem, (seal air pressure at approximately 12 psig). The leakage was considered minor and adjustments to the valve packing were not immediately pursued. However, upon completion of the rated pressure test, the reactor was shutdown, without providing an opportunity to make the adjustments and demonstrate the criterion.

Corrective Action: This Level 2 criterion will be retested following resumption of the power ascension test program, in conjunction with the RCIC retest associated with Exception HU-73 and HU-74 as previously described.

Test: Test No. 17 (1-000-SU-17-H) NSSC Piping System Expansion;
Exception HU-70

FSAR Section: 14.2.12.3.14

Category: O.L. Condition 2.C.(40)(d), Failure to Complete Test

Exception: FSAR Paragraph 14.2.12.2.14.(c) indicates that NSSC piping thermal expansion monitoring would be performed during initial plant heatup and on three subsequent heatup/cooldown cycles.

Our Heatup Test Plateau testing under Startup Test Procedure 1-000-SU-17-H, includes data collection for the initial and 3 subsequent plant heatup/cooldown cycles. However, during the course of our testing, the plant only experienced 1 complete heatup and cooldown cycle, and as such, the remaining 3 cycles have not yet been tested.

Corrective Action: MP&L will keep this test procedure open until the subsequent 3 thermal cycles are experienced. This effort may take several months, in which case the procedure will remain open until all FSAR commitments are satisfied. This exception does not impact plant operation or testing.

Test: Test No. 25A (1B21-SU-25-H) Main Steam Isolation Valves
Function Tests; Exception HU-48

FSAR Section: 14.2.12.3.22.1

Category: O.L. Condition 2.C.(40)(b), Modification of Acceptance Criteria

Exception: FSAR paragraph 14.2.12.3.22.1(d) provides Level 1 criteria for MSIV Closure times which consists of limits on valve stroke time and "electrical" delay time (limited to 0.5 seconds).

During the performance of the valve functional tests, valve 1B21-F022A and 1B21-F028C failed to meet the "electrical delay" criteria.

An investigation was made into the basis for the 0.5 second "electrical delay". Conversations with General Electric indicated that the criteria used in the Grand Gulf FSAR did not reflect the actual valve timing requirements in that the specific 0.5 second "electrical delay" was a misnomer (it should be "total delay") and further that it is not meant to be an independent criterion, but is additive to the 5.0 second valve stroke time criterion. The latest GE methodology and criteria wording does not include the separate 0.5 second delay requirement, and the revised criteria is now being used in all future GE BWR Test Specifications.

Corrective Action: MP&L has adopted this methodology and is in the process of preparing an FSAR change.

The new wording of the FSAR paragraph 14.2.12.3.22.1(d) Level 1 Acceptance Criteria will be as follows:

"The MSIV stroke time (ts) shall be no faster than 3.0 seconds (average of the fastest valve in each steam-line), and for any individual valve $2.5 \text{ seconds} \leq ts \leq 5.0 \text{ seconds}$. Total effective closure (tt) (including delay time) for any individual MSIV shall be $\leq 5.5 \text{ seconds}$."

Upon acceptance of the proposed criteria change, the test exception will be closed out, with no criteria failures associated.

Test: Test No. 74 (1-N64-SU-74-H) Off-Gas System; Exception HU-82

FSAR Section: 14.2.12.3.36

Category: O.L. Condition 2.C.(40)(d), Failure to Complete Test

Exception: FSAR Paragraph 14.2.12.3.36(d) provides a Level 2 criteria requirement that the Off-Gas system flows, pressures, temperatures and dewpoint comply with process data sheets supplied to the site.

The Off-Gas system test was performed during the initial plant nuclear heatup. During the course of this testing problems were discovered with the steam jet air ejectors' (SJAE) performance. This appeared to be due to specific piping configurations which resulted in high steam flows to the second stage air ejector and low outlet pressures. In addition, other problems were identified, such as high air flows from unidentified in-leakage (probably associated with the Condenser Air Removal system), and a slight glycol cooling flow imbalance between the cooler condenser and the dryer chillers (which resulted in lower than design process temperatures at the outlet of the cooler condenser and a marginally high dryer chiller outlet temperature during the dryer regeneration cycles). As a result, many of the Off-Gas system parameters failed to meet the Level 2 criteria.

A review of the test results was made with General Electric to confirm that the specific deviations were explainable due to the aforementioned problems. GE confirmed that the data was consistent with these conditions and that this did not provide any undue concern at this time, since the hydrogen concentrations were within reasonable ranges and the charcoal adsorbers appeared to be functioning correctly.

Corrective
Action:

MP&L is in the process of modifying the SJAE steam supply piping to correct the major problem of high steam flow and low outlet pressure. A rebalancing of the glycol flow to the cooler condenser and dryer chillers will be performed when the unit is brought back to power. Continued investigation into the source of the air in-leakage will also be pursued at the same time.

These tests are to be performed again during Test Condition 1 under Startup Test Procedure 1-N64-SU-74-1. It is expected that once the SJAE performance is within design tolerances the Off-Gas parameters will also fall within design tolerances.

Test: Test No. 79 (1-000-SU-79-H) Penetration Cooling; Exception HU-33

FSAR Section: 14.2.12.3.40

Category: O.L. Condition 2.C.(40)(d); Failure to Complete Test

Exception: The purpose of this test is to demonstrate the ability to cool the concrete surrounding selected high temperature pipe penetrations in the containment wall with the minimum design capability of cooling systems components available. MP&L attempted to demonstrate this by securing 1 of 2 steam tunnel coolers inside containment and 1 of 2 coolers outside containment. This objective was not met as all steam tunnel coolers inside and outside containment were required in order to maintain the steam tunnel temperatures within Technical Specification limits of 125°F (Table 3.7.8-1) with the reactor above 400°F. Upon investigation, the steam tunnel cooling coil was found to be badly fouled and, in some case, plugged.

The original performance of 1-000-SU-79-H did, however, demonstrate that the pipe penetrations remained below both Level 1 and Level 2 criteria for extrapolated concrete temperature values even with high ambient air temperatures. Because of this demonstration this exception does not impact plant operations or testing.

Corrective Action: The cooling coils in the steam tunnel coolers were replaced, and MP&L will perform a retest of 1-000-SU-79-H which will close this exception. The retesting will be performed at Test Condition 1.

Test: Special Test No. 5 (1C88-ST05) BOP Piping System Expansion;
Exception HU-60

FSAR Section: 14.2.12.4.5

Category: O.L. Condition 2.C.(40); Failure to Complete Test

Exception: FSAR paragraph 14.2.12.4.5(d) specifies that the Balance of Plant (BOP) piping system thermal expansion monitoring program would verify that spring hangers and snubbers do not restrict thermal movements, that spring hanger and snubber movements would be recorded, that springs would remain within their hot and cold settings and that snubbers would not become fully extended or retracted.

However, during the Nuclear Heatup testing, the following problems were detected on the Main Steam System:

- (1) Snubber N1N11G001R01 was locked in its cold position.
- (2) Snubbers N1N11G004R07A and B were found fully extended.
- (3) Spring hangers N1N11G004C01A and B were found to be outside of their hot/cold settings.

Engineering evaluations and/or calculations were performed and showed acceptable effects on the piping. Based on these engineering determinations, the Nuclear Heatup testing could continue.

Corrective Action: Replacements or design changes to correct the concern will be performed prior to restarting the plant. This exception will be closed out after GGNS returns to power and proper component operation is verified.