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2CAN120904

December 9, 2009

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: ANO-2 Cycle 21 Startup Report
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

REFERENCE: Entergy letter to the NRC, "ANO-2 Cycle 20 Startup Report," dated July 3, 2008 (2CAN070804)

Dear Sir or Madam:

The Arkansas Nuclear One, Unit 2 (ANO-2) Technical Requirement Manual (TRM) Section 6.9.1.1 requires a summary report of plant startup and power escalation testing following modifications that may have significantly altered the nuclear, thermal, or hydraulic performance of the plant. Cycle 21 is the first cycle that contains a complete core of Westinghouse's Next Generation Fuel (NGF) design fuel assemblies. This fuel design raised the core pressure drop. ANO-2 submitted a startup report for Cycle 20 which was the first cycle this fuel design was introduced (Reference submittal).

The unit achieved criticality on September 25, 2009, following the twentieth refueling outage.

This letter contains no new commitments.

By means of this submittal, the reporting requirements of ANO-2 TRM 6.9.1.1 are fulfilled.

If you have any questions or require additional information, please contact me.

Sincerely,

DBB/rwc

Attachment: ANO-2 Cycle 21 Startup Report

IE26
NRR

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Attachment to

2CAN120904

ANO-2 Cycle 21 Startup Report

ANO-2 Cycle 21 Startup Report

ABSTRACT

This report summarizes the results of the startup physics test program. Results of these activities verify the Cycle 21 nuclear design calculations and demonstrate adequate conservatism in core performance with respect to the Arkansas Nuclear One, Unit 2 (ANO-2) Safety Analysis Report (SAR), Technical Specifications (TSs), Technical Requirements Manual (TRM), and the Cycle 21 Reload Safety Evaluation. Cycle 21 achieved initial criticality on September 25, 2009.

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1.0 INTRODUCTION

This report summarizes the results of the ANO-2 Cycle 21 startup physics test program. The startup physics test program consisted of a series of tests performed at various stages, including prior to initial criticality, low power physics testing (LPPT), and during power ascension.

The objective of these tests were (a) to demonstrate that during reactor operation, the measured core physics parameters would be within the assumptions of the SAR accident analyses (Reference 7.1), within the limitations of the plant TSs (Reference 7.2), and within the limitations of the Cycle 21 reload safety evaluation (References 7.3 and 7.4), (b) to verify the nuclear design calculations, and (c) to provide the bases for validation of database and addressable constants in the core protection calculators (CPCs) and the core operating limit supervisory system (COLSS). Specifically, cycle independent shape annealing matrix (CISAM) elements installed in each channel of the CPCs are verified and the all rods out (ARO) planar radial peaking factor (RPF) is measured and conservatively adjusted in the CPCs and COLSS during power ascension.

Section 2 of this report provides a brief description of the reactor core. Section 3 discusses the pre-critical control element assembly (CEA) drop time test. In Section 4, initial criticality and the low power physics tests are presented. Section 5 describes the power ascension tests, which include a reactor coolant system (RCS) flow rate determination, core power distribution measurements, the CISAM verification, planar RPF verification, azimuthal power tilt verification, and a temperature coefficient measurement. The conclusions of this report are given in Section 6. Section 7 lists the references cited in this report.

2.0 REACTOR CORE DESCRIPTION

The design of the ANO-2 Cycle 21 core includes the second batch (and first full core) of Westinghouse Next Generation Fuel (NGF) and is the fourth cycle of zirconium diboride ($ZrB2$) as an integral fuel burnable absorber (IFBA). The NGF fuel design incorporates the following changes relative to the previous (standard) fuel design:

- A reduced cutback (non-IFBA coated) region at both the tops and bottoms of IFBA fuel rods and a reduced IFBA coating thickness where the coating is applied
- Eliminated use of annular fuel pellets in non-IFBA fuel rods
- Reduced fuel pellet and fuel rod cladding diameters to accommodate increased pressure drop of mixing vane grids
- Slight increase in overall fuel rod length
- Reduction in fuel rod initial fill gas pressures
- A wholly re-designed grid cage including lower end fittings, guide tubes, upper end fitting flow plate and longer hold down springs

- Use of Optimized ZIRLO material for fuel rod cladding and all but the top and bottom grid straps
- An Inconel top grid, new mid-grids with I-Springs and intermediate flow mixing grids
- Use of bulge joints to connect grid assemblies and guide tubes (vs. welding)
- Attaching the lower Guardian grid to the lower end fitting with inserts (vs. welding)
- Use of Stress-Relief Annealed (SRA) ZIRLO material for guide tubes
- An anti-rotation joint between guide tubes and the upper nozzle

The 89 new fuel assemblies designated as Batch AA (through AE) were loaded with fuel rod enrichments as high as 4.08 weight percent (w/o) U-235 and a nominal B-10 loading of 3.14 milligrams per inch (mg/in) in the ZrB2 IFBA rods. A special Batch AE assembly (one of the 89) with all fuel rods enriched to 1.80 w/o U-235 was manufactured to be the center assembly in the core. In addition, 88 Batch Z assemblies were loaded into the Cycle 21 core (Reference 7.3).

The NGF design changes have been explicitly modeled in Cycle 21 neutronics calculations and reload analyses (Reference 7.3).

2.1 Loading Pattern and Assembly Burnup

Attached Figures 1 through 4, taken from the ANO-2 Cycle 21 Reload Analysis Report (RAR), give the loading pattern and beginning of cycle (BOC) assembly average design burnups.

2.2 In-core Instrumentation (ICI) Locations

The ICI design consists of 42 fixed ICI assemblies inserted into the center guide tube of 42 fuel assemblies. ICI locations are identified in Figure 5. Each ICI assembly contains 5 self-powered rhodium detectors and one core exit thermocouple (CET). All of the 42 ICI assemblies were replaced during 2R20 prior to the Cycle 21 startup. During power ascension, at least 208 of 210 possible detectors were operable.

2.3 Verification of Core Loading

After the reactor core was loaded, core mapping was performed using an underwater television camera and monitor. This core mapping operation verified that the core was correctly loaded. Core mapping was performed by the reactor engineering organization. The core mapping operation included a comparison of the identification numbers on the fuel assemblies, CEA configuration, and fuel assembly orientation against the design configuration.

3.0 PRECRITICAL TESTS

3.1 <u>Control Element Assembly (CEA) Drop Time Testing</u>

This testing verifies that the drop time of all CEAs are in accordance with the surveillance requirements of ANO-2 TS 3.1.3.4. The method used by this test involves special control element assembly calculator (CEAC) software (CEA Drop Time Test, or CDTT software), which allows the measurement of all CEAs simultaneously. After the establishment of hot, full flow RCS conditions (i.e., greater than 525 °F with four reactor coolant pumps operating) and with the RCS boron concentration at a sufficient level to keep the reactor adequately shutdown during the test, all CEAs are withdrawn to the full out position. The CDTT software is then loaded into one of the CEAC channels and initiated. The software transmits a large penalty factor to each of the CPC channels, thereby initiating a reactor trip. The CDTT software records CEA positions every 50 milliseconds (msec) during the drop. Data output from the CDTT software is adjusted for holding coil delay time and used to verify that drop time limits are satisfied (Reference 7.10).

From a fully withdrawn position, TS 3.1.3.4 requires that the maximum individual CEA drop time and the average of all CEA drop times from when electrical power to the CEA drive mechanism is interrupted until the CEAs reach 90% inserted be:

Individual Limit	≤	3.7 seconds
Average Limit	≤	3.2 seconds

A 50 msec allowance is used for measurement uncertainty.

All CEAs passed the individual drop time limit of 3.65 seconds (TS limit minus 0.05 seconds). The slowest drop time was 3.410 seconds (CEA #80). The average CEA drop time was 3.004 seconds, which passed the average limit of 3.15 seconds (TS average limit minus 0.05 seconds).

In addition, ANO-2 utilizes the CEA drop time testing data as a CEA coupling check. If measured and expected drop times differ by more than 0.1 seconds for a CEA, then an additional review of drop characteristics (i.e., slowdown in the dashpot region, presence or absence of "bounce") is performed to determine the condition of the CEA. Expected drop times are obtained from historical data. If CEAs remain suspect after this further review, additional CEA coupling data may be taken during low power physics testing by exercising the suspect CEAs individually and monitoring the reactivity trace behavior on a reactimeter. This provides a final confirmation that any suspect CEA is coupled. For Cycle 21, all CEAs were determined to be coupled based on meeting expected drop times or review of drop characteristics.

4.0 LOW POWER PHYSICS TESTING

Prior to reactor startup, engineering evaluations and startup test controlling procedure pre-requisites verified the applicability requirements of Westinghouse Topical Report WCAP-16011-P-A, "Startup Test Activity Reduction Program", dated February 2005 (e.g., the STAR program) were satisfied. Based on meeting the requirements of this topical report, a reduced scope of startup testing was performed versus the traditional reactimeter based test program. The following presents the STAR test program results.

4.1 Initial Criticality

ANO-2 normally withdraws CEAs to criticality. Shutdown Banks A and B are withdrawn and the RCS is then diluted to an estimated critical boron concentration corresponding to the desired critical CEA position. For Cycle 21, the estimated critical position was Group P at 126.9 inches withdrawn based on a measured RCS boron concentration of 1127.7 parts per million (ppm) prior to starting the approach to criticality. For Cycle 21, actual criticality was achieved with Group P at 133 inches withdrawn.

4.2 STAR Program HZP Critical Boron Concentration

This test procedure specifies that the controlling group (Group P) position be recorded and all other CEAs are at their Upper Electrical Limit. As a pre-requisite, boron equilibrium is checked by obtaining three RCS boron samples and verifying each is within 10 ppm of the average. The residual worth of Group P is determined using the physics test predictions. The average RCS boron sample is corrected for the residual Group P worth to determine the ARO critical boron concentration (CBC). For Cycle 21, the ARO CBC was predicted to be 1168 ppm. The actual ARO CBC was 1141 ppm. The acceptance criteria require the actual and predicted ARO CBC values to be within either 50 ppm or the boron equivalent of 0.5 % $\Delta k/k$. Therefore, the 27 ppm difference for Cycle 21 was well within the acceptance criteria limit.

4.3 STAR Program MTC Alternate Surveillance

When applying the STAR test program, the moderator temperature coefficient (MTC) of reactivity is calculated at HZP by adjusting the predicted MTC to account for the difference between actual boron concentration and the boron concentration associated with the test prediction. The resultant MTC at test conditions was -0.31×10^{-4} $\Delta k/k/°F$ versus an upper (or positive) Core Operating Limits Report (COLR) limit of $+0.5 \times 10^{-4}$ $\Delta k/k/°F$. The MTC was extrapolated to the COLR figure Linear Break Point Power Level (LBPPL) and the 100% power level to insure compliance with the COLR. The resulting MTC (LBPPL) was -0.88×10^{-4} $\Delta k/k/°F$ versus an upper (or positive) COLR limit of $+0.05 \times 10^{-4}$ $\Delta k/k/°F$ at the LBPPL. The extrapolated MTC(100) was -1.45×10^{-4} $\Delta k/k/°F$ versus an upper (or positive) COLR limit of -0.20×10^{-4} $\Delta k/k/°F$ and a negative COLR limit of -3.8×10^{-4} $\Delta k/k/°F$ at 100% power. All values were within the limits of the COLR which meets the Alternate MTC Surveillance acceptance criteria.

5.0 POWER ASCENSION TESTING

5.1 Reactor Coolant System (RCS) Flow Rate

At the 68% power test plateau, the RCS flow rate was determined by calorimetric methods at steady state conditions in accordance with ANO-2 TS Table 4.3-1, Item 10, Note 8. The acceptance criterion requires the measured RCS flow rate to be at least 103% of the design flow rate of 120.4×10^{6} lbm/hr to account for measurement uncertainties. The RCS flow rate determined calorimetrically was 104.26% of the design flow rate, which satisfies the acceptance criterion. The COLSS and CPC calculated RCS flow rates were verified to be conservative with respect to the calorimetric flow rate and the CPCs were verified conservative with respect to COLSS. No adjustments to CPC or COLSS calculated flow were made.

5.2 Core Power Distribution

5.2.1 ≤ 30% Power Test Plateau Results

Core power distribution data using fixed in-core neutron detectors is used to verify proper core loading and consistency between as-built and engineering design models. The first power distribution measurement is performed after the turbine is synchronized and prior to exceeding 30% power. The objective of this measurement is primarily to identify any fuel misloading that results in asymmetries or deviations from the reactor physics design. Because of the decreased signal-to-noise ratio at low powers and the absence of xenon stability requirements, radial and azimuthal symmetry criteria are emphasized, whereas pointwise absolute statistical acceptance criteria are relaxed. A core power distribution map at approximately 28% power is given in Figure 6. The acceptance criteria at this test plateau follow:

a. For a predicted relative power density (RPD) < 0.9, the radial power distribution measured and predicted relative power density values shall agree within ± 0.1 RPD units.

b. For a predicted RPD ≥ 0.9, the radial power distribution measured and predicted RPD values shall agree within ± 10%.

c. The power in each operable incore detector shall be within ± 10% of the average power in its symmetric detector group.

d. The vector tilt shall be less than 3%.

The acceptance criterion stated in a, b, and c above was met for all 177 locations and all operable incore detectors (208 operable out of a possible 210). From Figure 6, the maximum percent difference for a predicted RPD ≥ 0.9 was -4.56% (predicted RPD of 1.091 versus measured RPD of 1.041). The largest percent difference for an operable in-core detector relative to the average power in its symmetric group was 4.42%. The vector tilt was measured to be 0.84%; therefore, the acceptance criterion stated in item d above was met.

5.2.2 68% Power Test Plateau Results

At the intermediate power plateau of approximately 68% power, a core power distribution analysis is performed to again verify proper fuel loading and consistency with design predictions. The acceptance criteria at the intermediate power analysis follow:

a. The measured radial power distribution is compared to the predicted power distribution by calculating the root mean square (RMS) deviation from predictions of the RPD for each of the 177 fuel assemblies. This RMS error may not exceed 5%.

b. The measured radial power distribution is additionally compared to the predicted power distribution using a box-by-box comparison of the RPD for each of the 177 fuel assemblies. For a predicted RPD ≥ 0.9, the measured and predicted RPD values shall agree within ± 10%.

c. For a predicted RPD < 0.9, the measured and predicted RPD values shall agree within ± 15%.

d. The measured axial power distribution is also compared to the predicted axial power distribution. The acceptance criterion states the RMS error between the measured axial power distribution and the predicted axial power distribution shall not exceed 5%.

e. The measured values of total planar RPF (F_{xy}), total integrated RPF (F_r), core average axial peak (F_z), and 3-D power peak (F_q) are compared to predicted values. The acceptance criteria state that the measured values:

   F_{xy}, F_r, and F_z shall be within ± 10% of the predicted values, and that COLSS and CPC constants shall be adjusted to appropriately reflect the measured values.

All of the acceptance criteria stated in a through e above was met at the 68% power plateau.

TABLE 5.2.2-1

PEAKING PARAMETER COMPARISON			
PARAMETER	MEASURED	PREDICTED	% DIFFERENCE*
F_{xy}	1.4288	1.426	0.1934
F_r	1.3885	1.388	0.0347
F_z	1.0697	1.107	-3.3703
F_q	1.5108	1.544	-2.1502

* % Difference = %(M-P)/P obtained from GETARP output (Figure 7)

Calculated RMS values were:

RADIAL = 1.3070
AXIAL = 4.7302

A RPD map for the 68% power test plateau is given in Figure 7. The maximum percent difference for a predicted RPD ≥ 0.9 was -3.35% (predicted RPD of 1.102 versus measured RPD of 1.065).

5.2.3 <u>100% Power Test Plateau Results</u>

The final core power distribution analysis is performed with equilibrium xenon at approximately 100% power. At this plateau, axial and radial power distributions are compared to design predictions as a final verification that the core is operating in a manner consistent with its design within the associated design uncertainties. The acceptance criteria are the same as those for the intermediate power distribution analysis stated in 5.2.2.a through 5.2.2.e above. The acceptance criteria stated in 5.2.2.a through 5.2.2.e for the 100% power test plateau were met for Cycle 21.

TABLE 5.2.3-1

PEAKING PARAMETER COMPARISON			
PARAMETER	MEASURED	PREDICTED	% DIFFERENCE*
F_{xy}	1.4256	1.418	0.5334
F_r	1.3831	1.374	0.663
F_z	1.094	1.097	-0.2716
F_q	1.5673	1.547	1.3135

* % Difference = %(M-P)/P obtained from GETARP output (Figure 8)

Calculated RMS values were:

RADIAL = 0.7309
AXIAL = 1.4577

A relative power density (RPD) map for the 100% power test plateau is given in Figure 8. The maximum % difference for a predicted RPD ≥ 0.9 was -2.19% (predicted RPD of 1.111 versus measured RPD of 1.087).

5.3 Shape Annealing Matrix (SAM) and Boundary Point Power Correlation Coefficient (BPPCC) Measurement

The CPCs, part of the reactor protection system, use excore neutron flux detector signals to infer the axial distribution of reactor power. The algorithm that infers the core power distribution from the excore signals includes an adjustment for the non-uniform transport of neutrons between the core and the excore detectors. This adjustment is provided by the SAM. The ANO-2 TSs require measurement and installation of appropriate SAM elements and associated BPPCCs after each refueling or verification of cycle independent SAM (CISAM) elements for each channel of the CPCs prior to exceeding 70% power. For Cycle 21, a verification of the CISAM elements for each channel of the CPCs was performed.

Acceptance criteria for the CISAM validation require the following:

a. Evenly distributed measurement data from reload power ascension over a range between 30% and 70% power.

b. A minimum of 20 snapshots composed of at least 15 ARO and at most 5 rodded cases.

c. An observed Axial Shape Index (ASI) change of greater than or equal to 0.065.

d. Axial shape RMS errors must be less than or equal to 7.5% with Axial Form Index and ASI errors less than or equal to 0.10 and 0.075 respectively.

CISAM validation results are provided in Table 5.3-1:

TABLE 5.3-1

CYCLE INDEPENDENT SHAPE ANNEALING MATRIX VALIDATION SUMMARY				
PARAMETER	**CH A**	**CH B**	**CH C**	**CH D**
Number Cases	115	115	115	115
Number Rodded	0	0	0	0
ASI Range	0.1623	0.1623	0.1623	0.1623
RMS Error	1.9652	1.9737	2.0647	2.1994
ASI Error	0.0134	0.0224	0.0092	0.0192
Form Error	0.0432	0.0329	0.0456	0.0452
Review Status	PASS	PASS	PASS	PASS

5.4 Planar Radial Peaking Factor (RPF) Verification

At the 68% power test plateau, the RPF for the ARO configuration was measured using in-core detector data and the CECOR computer code. The measured ARO F_{xy} was 1.4294. The planar RPF multiplier corresponding to the ARO condition in CPCs (ARM1 addressable constant) and the similar addressable constant (AB1(01)) in COLSS were appropriately and conservatively adjusted as a result of this measurement prior to the plant increasing power above 70%. Adjustments for other CEA configurations are no longer performed since conservative bounding values have been determined by reload analyses and are installed prior to startup.

For ANO-2, the CEA shadowing factors are not measured. The CPC database and addressable constants include allowances for using predicted CEA shadowing factors.

5.5 Temperature Reactivity Coefficient

A moderator and isothermal temperature coefficient measurement was performed at approximately 100%. During the Isothermal Temperature Coefficient (ITC) and MTC measurement, turbine load is used to increase RCS average temperature, which decreases reactor power, and then to decrease RCS average temperature, which increases reactor power. This manipulation yields a ratio of RCS temperature change to reactor power change. Using a predicted power coefficient (PC) with the measured average ratio, an ITC is inferred. Using a predicted Fuel Temperature Coefficient (FTC) with the inferred ITC yields an MTC.

Acceptance criteria state that the difference between the predicted and inferred ITC shall be less than 0.3×10^{-4} Δk/k/°F. MTC, extrapolated to 100%, 70%, the COLR linear breakpoint power level and 0% power must also be within COLR limits.

For Cycle 21, the ITC and MTC passed the acceptance criteria. The measured ITC was -1.18×10^{-4} Δk/k/°F versus a predicted ITC of -1.37×10^{-4} Δk/k/°F. The difference was 0.19×10^{-4} Δk/k/°F which is within the $\pm 0.3 \times 10^{-4}$ acceptance criterion. Extrapolated MTC values were as follows:

Power Level	Extrapolated MTC Value (Δk/k/°F)
100%	-1.05×10^{-4}
70%	-5.95×10^{-5}
COLR Linear Breakpoint Power Level (50%)	-2.95×10^{-5}
0%	1.30×10^{-5}

All extrapolated MTC values remained within COLR limits.

The measured MTC was extrapolated to 100% and 0% power and predicted peak boron concentration for the cycle to verify the MTC remains within COLR and TS stated design limits. The MTC extrapolated to 100% power and peak boron concentration was -7.94×10^{-5} Δk/k/°F. The MTC extrapolated to 0% power and peak boron concentration was 3.03×10^{-5} Δk/k/°F. Both values were within COLR and TS stated design limits.

Finally, the measured MTC was also extrapolated to 100% power and end of cycle conditions. This extrapolation indicated that the limiting boron concentration for maintaining COLR compliance can not be physically achieved (i.e., negative boron concentration) during the cycle, providing assurance that that the COLR negative MTC limit of -3.8×10^{-4} Δk/k/°F will not be exceeded during Cycle 21.

6.0 CONCLUSIONS

Based upon analysis of the startup physics test results, it is concluded that the measured core parameters verify the Cycle 21 nuclear design calculations and the proper loading of the core. All test values were found to be acceptable with respect to limits and requirements contained within the ANO-2 SAR, TSs, TRM and COLR.

The above test results demonstrate adequate conservatism in the Cycle 21 core performance with respect to the Cycle 21 reload safety evaluations and licensing basis.

7.0 REFERENCES

7.1 ANO-2 Safety Analysis Report (SAR), Section 4.5, Startup Program and Section 15, Accident Analysis

7.2 ANO-2 Technical Specifications

7.3 ANO-2 Cycle 21 Reload Analysis Report (RAR), CALC-ANO2-NE-09-00001

7.4 ANO-2 Cycle 21 Core Operating Limits Report (COLR)

7.5 ANO-2 Procedure 2302.009, Change 026, Moderator Temperature Coefficient at Power, 11/10/2009

7.6 ANO-2 Procedure 2302.021, Change 026, Sequence for Low Power Physics Testing Following Refueling, 9/26/2009

7.7 ANO-2 Procedure 2302.022, Change 016, Initial Criticality Following Refueling, 9/25/2009

7.8 ANO-2 Procedure 2302.034, Change 020-00-0, Power Ascension Testing Controlling Procedure

7.9 ANO-2 Procedure 2302.039, Change 014, Core Power Distribution Following Refueling, 9/25/2009, 9/26/2009 and 9/30/2009

7.10 ANO-2 Procedure 2302.046, Change 011, CEA Drop Time Test, 9/24/2009

7.11 ANO-2 Procedure 2302.057, Change 005, RCS Calorimetric Flowrate Calibration Using RCSFLOW Program, 9/26/2009 and 9/28/2009

7.12 2CNA090902, "Arkansas Nuclear One, Unit No. 2 – Issuance of Amendment RE: Technical Specification change to Modify Reactor Coolant System Flow Verification (TAC No. ME0125)," dated September 16, 2009.

FIGURE 1

Cycle 21 Core Loading

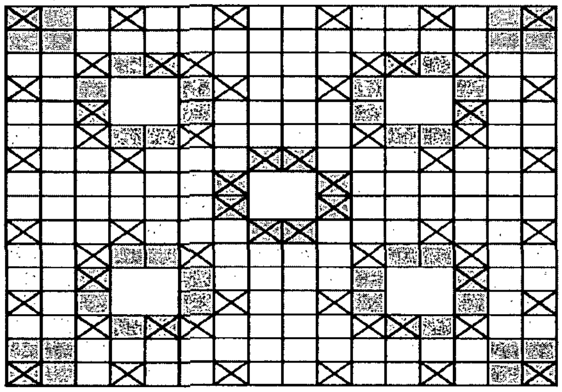
Sub-Batch ID	Number of Assemblies	Fuel Rods per Assembly (Excluding ZrB_2 Rods)	Nominal Enrichment (wt. %)	ZrB_2 Rods per Assembly	Shim Loading (ZrB_2)	Number of Fuel Rods (Including ZrB_2 Rods)	Number of ZrB_2 Rods
Z1	16	108 32 48	4.16 3.86 3.56	36 8 4	2.00x 2.00x 2.00x	2304 640 832	576 128 64
Z2	20	108 36 24	4.16 3.86 3.56	36 4 28	2.00x 2.00x 2.00x	2880 800 1040	720 80 560
Z3	8	88 32 16	4.16 3.86 3.56	56 8 36	2.00x 2.00x 2.00x	1152 320 416	448 64 288
Z4	44	80 24 8	4.16 3.86 3.56	64 16 44	2.00x 2.00x 2.00x	6336 1760 2288	2816 704 1936
Total	88					20768	8384

AA	16	76 64 36	4.08 3.83 3.58	28 12 20	2.00x 2.00x 2.00x	1664 1216 896	448 192 320
AB	20	64 56 36	4.08 3.83 3.58	40 20 20	2.00x 2.00x 2.00x	2080 1520 1120	800 400 400
AC	40	64 48 12	4.08 3.83 3.58	40 28 44	2.00x 2.00x 2.00x	4160 3040 2240	1600 1120 1760
AD	12	56 48 8	4.08 3.83 3.58	48 28 48	2.00x 2.00x 2.00x	1248 912 672	576 336 576
AE	1	0 236 0	0.00 1.80 0.00	0 0 0	0 0 0	0 236 0	0 0 0
Total	89					21004	8528

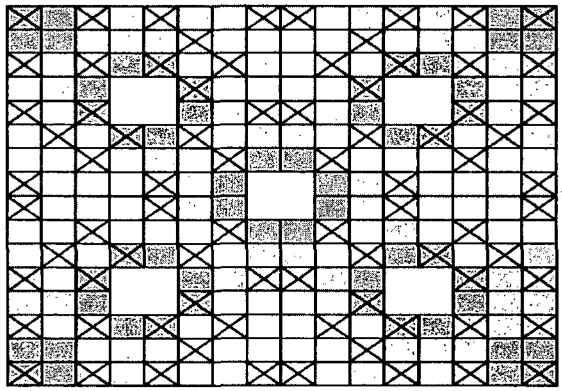
Grand Total	177					41772	<u>ZrB_2</u> 16912

FIGURE 2

Integral Burnable Poison Shim and Enrichment Zoning Patterns for Batch AA (through AE) Fuel Assemblies



AA (60 ZrB_2 Pins)
PAT1638IFB



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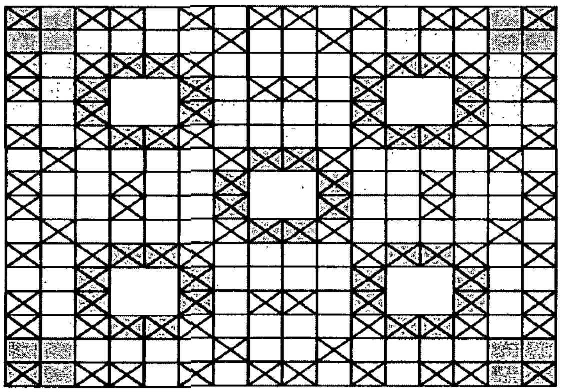
PAT1639IFB



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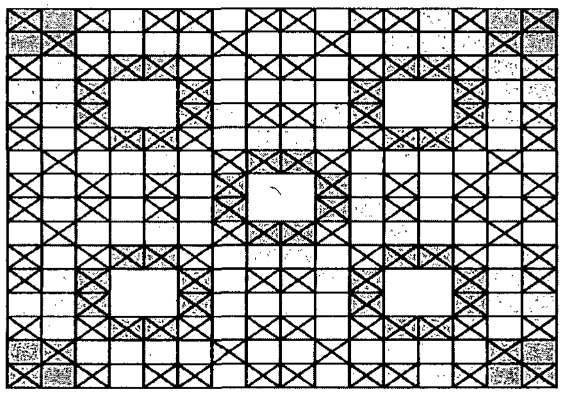

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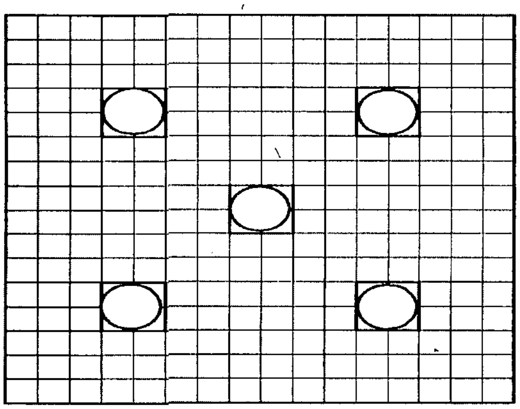

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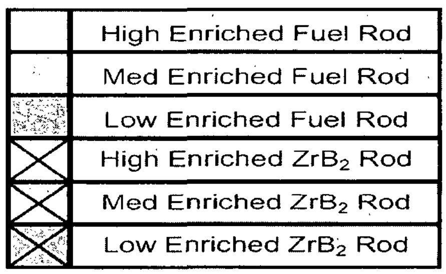


FIGURE 3

Cycle 21 Fuel Management Scheme

	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R
1						Z423 G-6	Z408 K-5	Z416 H-3	Z415 L-6	Z430 F-7					
2				Z438 M-7	Z420 F-13	AA03 FEED	AB03 FEED	AB08 FEED	AB10 FEED	AA06 FEED	Z432 K-13	Z433 J-4			
3			Z429 E-8	AA08 FEED	AB16 FEED	AC03 FEED	Z105 D-13	AC15 FEED	Z102 N-4	AC18 FEED	AB17 FEED	AA14 FEED	Z441 H-5		
4		Z401 D-7	AA15 FEED	Z112 P-10	AC28 FEED	Z210 J-2	AC29 FEED	Z211 P-8	AC02 FEED	Z203 G-2	AC37 FEED	Z101 F-14	AA02 FEED	Z421 J-12	
5		Z418 N-6	AB02 FEED	AC08 FEED	Z103 F-2	AC23 FEED	Z209 C-11	AC24 FEED	Z217 L-3	AC20 FEED	Z104 P-6	AC21 FEED	AB20 FEED	Z426 C-6	
6	Z439 G-10	AA16 FEED	AC14 FEED	Z212 B-9	AC17 FEED	Z444 G-8	AD02 FEED	Z306 M-5	AD04 FEED	Z414 H-7	AC01 FEED	Z207 P-9	AC27 FEED	AA04 FEED	Z410 K-7
7	Z402 F-5	AB04 FEED	Z108 D-3	AC13 FEED	Z202 C-5	AD05 FEED	Z301 M-11	AD10 FEED	Z308 E-12	AD11 FEED	Z216 E-3	AC10 FEED	Z115 C-4	AB13 FEED	Z404 L-10
8	Z436 C-8	AB14 FEED	AC34 FEED	Z208 H-2	AC32 FEED	Z302 E-4	AD01 FEED	AE01 FEED	AD12 FEED	Z303 L-12	AC26 FEED	Z219 H-14	AC40 FEED	AB11 FEED	Z435 N-8
9	Z427 E-6	AB12 FEED	Z110 N-12	AC25 FEED	Z206 L-13	AD03 FEED	Z304 L-4	AD08 FEED	Z305 D-5	AD09 FEED	Z201 N-11	AC22 FEED	Z107 M-13	AB07 FEED	Z406 K-11
10	Z440 F-9	AA11 FEED	AC31 FEED	Z204 B-7	AC09 FEED	Z407 H-9	AD06 FEED	Z307 D-11	AD07 FEED	Z428 J-8	AC36 FEED	Z213 P-7	AC07 FEED	AA12 FEED	Z424 J-6
11		Z442 N-10	AB09 FEED	AC16 FEED	Z111 B-10	AC30 FEED	Z215 E-13	AC19 FEED	Z220 N-5	AC33 FEED	Z113 K-14	AC35 FEED	AB01 FEED	Z422 C-10	
12		Z431 G-4	AA09 FEED	Z106 K-2	AC39 FEED	Z218 J-14	AC04 FEED	Z214 B-8	AC38 FEED	Z205 G-14	AC05 FEED	Z116 B-6	AA10 FEED	Z434 M-9	
13			Z412 H-11	AA05 FEED	AB15 FEED	AC11 FEED	Z109 C-12	AC06 FEED	Z114 M-3	AC12 FEED	AB06 FEED	AA07 FEED	Z425 L-8		
14				Z413 G-12	Z403 F-3	AA01 FEED	AB05 FEED	AB19 FEED	AB18 FEED	AA13 FEED	Z419 K-3	Z409 D-9			
15						Z417 K-9	Z437 E-10	Z411 H-13	Z405 F-11	Z443 J-10					

270°

180°

Y YY	Assembly Identifier
Z-ZZ	Previous Cycle Location

FIGURE 4

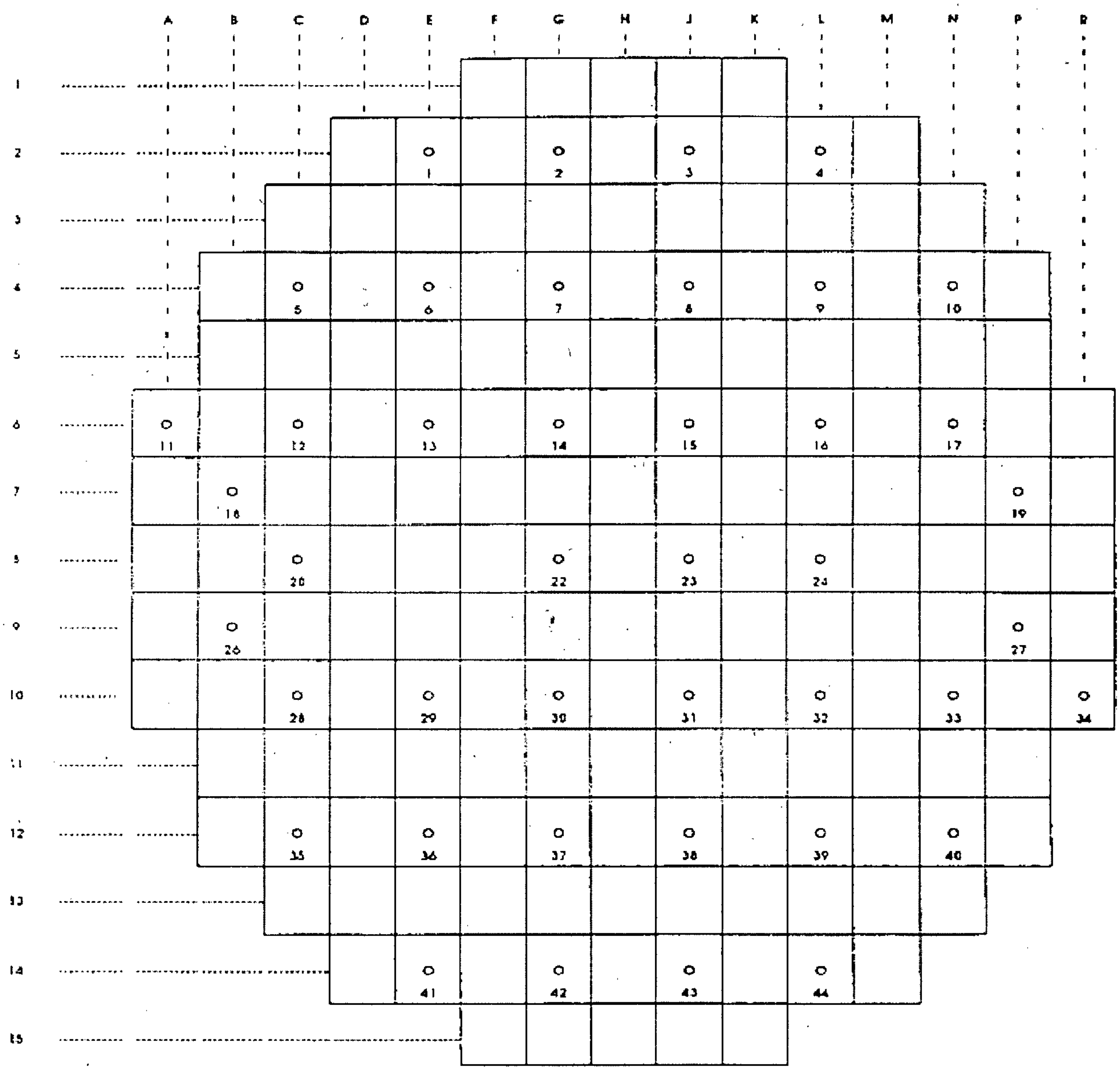
BOC Assembly Average Burnup and Initial Enrichment Distribution

AB 0	AD 0	Z3 23814	AC 0	Z2 21544	AC 0	AB 0	Z4 24275
AD 0	Z3 23844	AD 0	Z2 21794	AC 0	Z1 17357	AB 0	Z4 24363
Z3 23814	AD 0	Z4 23415	AC 0	Z2 20933	AC 0	AA 0	Z4 24300
AC 0	Z2 21761	AC 0	Z1 18696	AC 0	AB 0	Z4 23346	
Z2 21544	AC 0	Z2 20930	AC 0	Z1 18696	AA 0	Z4 24598	
AC 0	Z1 17394	AC 0	AB 0	AA 0	Z4 24568		
AB 0	AB 0	AA 0	Z4 23355	Z4 24596			
Z4 24275	Z4 24335	Z4 24324					

Legend	
1A	BATCH
AB	ASSEMBLY BURNUP

FIGURE 5

ICI Locations



DETECTOR AXIAL LEVEL LOCATIONS:

J = 1 BOTTOM OF CORE
J = 3 MIDDLE OF CORE
J = 5 TOP OF CORE

FIGURE 6

GETARP Output for the <30% Power Plateau

```
GGGGGGGGGG  EEEEEEEEEE  TTTTTTTTTT     AAAA      RRRRRRRRR   PPPPPPPPP
GGGGGGGGGG  EEEEEEEEEE  TTTTTTTTTT    AAAAAA     RRRRRRRRRR  PPPPPPPPPP
GGG         EEE            TTT       AAA  AAA    RRR     RRR PPP     PPP
GGG  GGGGG  EEEEEE         TTT      AAAAAAAAAA   RRRRRRRRRR  PPPPPPPPPP
GGG  GGGGG  EEEEEE         TTT      AAAAAAAAAA   RRRRRRRRR   PPPPPPPPP
GGG    GGG  EEE            TTT      AAA    AAA   RRR RRR     PPP
GGGGGGGGGG  EEEEEEEEEE     TTT      AAA    AAA   RRR  RRR    PPP
GGGGGGGGGG  EEEEEEEEEE     TTT      AAA    AAA   RRR     RRR PPP       (FPA)
A PROGRAM TO EXTRACT DATA FROM CECOR SUMMARY FILES FOR COMPARISON OF
AXIAL AND RADIAL POWER DISTRIBUTIONS.
GETRNP01 - GETARP FOR NT REVISION 1
MEASURED DATA EXTRACTED FROM: A3782WT.S01
PREDICTED DATA EXTRACTED FROM: A2PRED.029

                                                  RELATIVE RADIAL POWER DISTRIBUTION COMPARISON
+-----------+                           +-------+-------+-------+-------+-------+
; PREDICTED ;                           ;  .383 ;  .503 ;  .529 ;  .505 ;  .385 ;                  (MEAS.-PREDICTED)
; MEASURED  ;                           ;  .412 ;  .537 ;  .564 ;  .539 ;  .412 ;   % DIFFERENCE = ----------------- X 100.0
; % DIFFER  ;                           ;  7.45 ;  6.79 ;  6.67 ;  6.64 ;  6.91 ;                      PREDICTED
+-----------+           +-------+-------+-------+-------+-------+-------+-------+-------+-------+
                        ;  .383 ;  .627 ;  .964 ; 1.072 ; 1.090 ; 1.081 ;  .970 ;  .628 ;  .382 ;
                        ;  .406 ;  .633 ;  .963 ; 1.061 ; 1.078 ; 1.069 ;  .961 ;  .618 ;  .402 ;
                        ;  5.93 ;  1.04 ;  -.14 ; -1.05 ; -1.14 ; -1.15 ;  -.90 ; -1.59 ;  5.23 ;
                +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
                ;  .472 ;  .944 ; 1.112 ; 1.161 ; 1.284 ; 1.240 ; 1.289 ; 1.163 ; 1.110 ;  .942 ;  .472 ;
                ;  .498 ;  .953 ; 1.096 ; 1.136 ; 1.266 ; 1.208 ; 1.266 ; 1.135 ; 1.094 ;  .955 ;  .504 ;
                ;  5.58 ;  1.01 ; -1.41 ; -2.15 ; -1.43 ; -2.57 ; -1.75 ; -2.41 ; -1.45 ;  1.38 ;  6.82 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .382 ;  .942 ; 1.165 ; 1.225 ; 1.259 ; 1.272 ; 1.267 ; 1.276 ; 1.257 ; 1.220 ; 1.165 ;  .944 ;  .383 ;
        ;  .408 ;  .935 ; 1.160 ; 1.214 ; 1.251 ; 1.264 ; 1.257 ; 1.257 ; 1.248 ; 1.223 ; 1.171 ;  .956 ;  .415 ;
        ;  6.76 ;  -.70 ;  -.41 ;  -.87 ;  -.67 ;  -.65 ;  -.82 ; -1.50 ;  -.72 ;   .24 ;   .51 ;  1.30 ;  8.44 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .628 ; 1.110 ; 1.220 ; 1.302 ; 1.247 ; 1.211 ; 1.207 ; 1.212 ; 1.244 ; 1.302 ; 1.225 ; 1.112 ;  .627 ;
        ;  .660 ; 1.103 ; 1.195 ; 1.286 ; 1.221 ; 1.202 ; 1.182 ; 1.195 ; 1.216 ; 1.290 ; 1.205 ; 1.114 ;  .669 ;
        ;  5.14 ;  -.65 ; -2.01 ; -1.23 ; -2.05 ;  -.74 ; -2.09 ; -1.37 ; -2.22 ;  -.92 ; -1.64 ;   .15 ;  6.63 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .385 ;  .970 ; 1.163 ; 1.257 ; 1.244 ; 1.153 ; 1.094 ; 1.074 ; 1.091 ; 1.153 ; 1.247 ; 1.259 ; 1.161 ;  .964 ;  .383 ;
;  .378 ;  .979 ; 1.171 ; 1.249 ; 1.217 ; 1.146 ; 1.059 ; 1.065 ; 1.041 ; 1.140 ; 1.219 ; 1.252 ; 1.170 ;  .991 ;  .421 ;
; -1.79 ;   .93 ;   .72 ;  -.62 ; -2.20 ;  -.61 ; -3.23 ;  -.84 ; -4.56 ; -1.17 ; -2.24 ;  -.58 ;   .78 ;  2.81 ; 10.05 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .505 ; 1.081 ; 1.289 ; 1.276 ; 1.212 ; 1.091 ; 1.022 ; 1.016 ; 1.022 ; 1.094 ; 1.211 ; 1.272 ; 1.284 ; 1.072 ;  .503 ;
;  .535 ; 1.083 ; 1.286 ; 1.253 ; 1.206 ; 1.080 ; 1.024 ; 1.012 ; 1.014 ; 1.075 ; 1.202 ; 1.246 ; 1.277 ; 1.078 ;  .545 ;
;  5.96 ;   .23 ;  -.26 ; -1.83 ;  -.48 ; -1.01 ;   .21 ;  -.36 ;  -.75 ; -1.73 ;  -.76 ; -2.07 ;  -.58 ;   .53 ;  8.34 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .529 ; 1.090 ; 1.240 ; 1.267 ; 1.207 ; 1.074 ; 1.016 ;  .875 ; 1.016 ; 1.074 ; 1.207 ; 1.267 ; 1.240 ; 1.090 ;  .529 ;
;  .570 ; 1.095 ; 1.232 ; 1.260 ; 1.190 ; 1.078 ;  .993 ;  .904 ;  .977 ; 1.069 ; 1.185 ; 1.253 ; 1.215 ; 1.087 ;  .567 ;
;  7.79 ;   .45 ;  -.63 ;  -.52 ; -1.45 ;   .34 ; -2.22 ;  3.27 ; -3.87 ;  -.43 ; -1.79 ; -1.13 ; -2.01 ;  -.27 ;  7.17 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .503 ; 1.072 ; 1.284 ; 1.272 ; 1.211 ; 1.094 ; 1.022 ; 1.016 ; 1.022 ; 1.091 ; 1.212 ; 1.276 ; 1.289 ; 1.081 ;  .505 ;
;  .546 ; 1.079 ; 1.284 ; 1.251 ; 1.205 ; 1.082 ; 1.025 ; 1.014 ; 1.016 ; 1.075 ; 1.204 ; 1.249 ; 1.278 ; 1.076 ;  .532 ;
;  8.60 ;   .61 ;  -.02 ; -1.63 ;  -.46 ; -1.07 ;   .26 ;  -.22 ;  -.55 ; -1.50 ;  -.68 ; -2.15 ;  -.84 ;  -.47 ;  5.26 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .383 ;  .964 ; 1.161 ; 1.259 ; 1.247 ; 1.153 ; 1.091 ; 1.074 ; 1.094 ; 1.153 ; 1.244 ; 1.257 ; 1.163 ;  .970 ;  .385 ;
;  .422 ;  .994 ; 1.174 ; 1.255 ; 1.217 ; 1.147 ; 1.057 ; 1.068 ; 1.048 ; 1.142 ; 1.221 ; 1.250 ; 1.173 ;  .977 ;  .376 ;
; 10.29 ;  3.07 ;  1.13 ;  -.34 ; -2.44 ;  -.50 ; -3.09 ;  -.56 ; -4.20 ;  -.91 ; -1.88 ;  -.53 ;   .82 ;   .71 ; -2.47 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .627 ; 1.112 ; 1.225 ; 1.302 ; 1.244 ; 1.212 ; 1.207 ; 1.211 ; 1.247 ; 1.302 ; 1.220 ; 1.110 ;  .628 ;
        ;  .671 ; 1.119 ; 1.210 ; 1.294 ; 1.226 ; 1.208 ; 1.187 ; 1.198 ; 1.220 ; 1.288 ; 1.199 ; 1.109 ;  .662 ;
        ;  7.08 ;   .67 ; -1.20 ;  -.61 ; -1.46 ;  -.31 ; -1.69 ; -1.06 ; -2.18 ; -1.07 ; -1.69 ;  -.12 ;  5.43 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .383 ;  .944 ; 1.165 ; 1.220 ; 1.257 ; 1.276 ; 1.267 ; 1.272 ; 1.259 ; 1.225 ; 1.165 ;  .942 ;  .382 ;
        ;  .418 ;  .965 ; 1.179 ; 1.226 ; 1.261 ; 1.277 ; 1.264 ; 1.256 ; 1.249 ; 1.216 ; 1.166 ;  .949 ;  .412 ;
        ;  9.15 ;  2.19 ;  1.18 ;   .52 ;   .32 ;   .10 ;  -.25 ; -1.23 ;  -.80 ;  -.71 ;   .10 ;   .78 ;  7.77 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
                ;  .472 ;  .942 ; 1.110 ; 1.163 ; 1.289 ; 1.240 ; 1.284 ; 1.161 ; 1.112 ;  .944 ;  .472 ;
                ;  .510 ;  .967 ; 1.111 ; 1.153 ; 1.286 ; 1.218 ; 1.268 ; 1.136 ; 1.096 ;  .956 ;  .502 ;
                ;  7.95 ;  2.69 ;   .11 ;  -.85 ;  -.27 ; -1.75 ; -1.23 ; -2.13 ; -1.41 ;  1.30 ;  6.45 ;
                +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
                        ;  .382 ;  .628 ;  .970 ; 1.081 ; 1.090 ; 1.072 ;  .964 ;  .627 ;  .383 ;
                        ;  .412 ;  .646 ;  .984 ; 1.090 ; 1.090 ; 1.066 ;  .963 ;  .628 ;  .405 ;
                        ;  7.91 ;  2.90 ;  1.47 ;   .88 ;  -.02 ;  -.56 ;  -.09 ;   .22 ;  5.70 ;
                        +-------+-------+-------+-------+-------+-------+-------+-------+-------+
                                        ;  .385 ;  .505 ;  .529 ;  .503 ;  .383 ;
                                        ;  .420 ;  .548 ;  .571 ;  .540 ;  .412 ;
                                        ;  9.21 ;  8.57 ;  7.89 ;  7.44 ;  7.69 ;
                                        +-------+-------+-------+-------+-------+
```

FIGURE 6 (continued)

GETARP Output for the <30% Power Plateau

RELATIVE AXIAL POWER DISTRIBUTION COMPARISON

NODE	PREDICTED	MEAS.	% DIFFERENCE
1	.4870	.5053	3.7622
2	.5830	.6030	3.4299
3	.6830	.6993	2.3895
4	.7250	.7389	1.9168
5	.7680	.7794	1.4795
6	.8030	.8134	1.2960
7	.8290	.8385	1.1447
8	.8500	.8593	1.0993
9	.8680	.8771	1.0469
10	.8830	.8923	1.0522
11	.8970	.9058	.9803
12	.9100	.9179	.8730
13	.9230	.9294	.6948
14	.9350	.9403	.5644
15	.9470	.9507	.3889
16	.9590	.9608	.1848
17	.9700	.9705	.0507
18	.9810	.9799	-.1169
19	.9920	.9889	-.3111
20	1.0040	.9978	-.6219
21	1.0150	1.0065	-.8396
22	1.0260	1.0153	-1.0455
23	1.0380	1.0241	-1.3387
24	1.0500	1.0336	-1.5586
25	1.0630	1.0452	-1.6750
26	1.0780	1.0596	-1.7069
27	1.0930	1.0742	-1.7241
28	1.1050	1.0860	-1.7186
29	1.1150	1.0958	-1.7196
30	1.1240	1.1049	-1.7035
31	1.1320	1.1137	-1.6194
32	1.1380	1.1221	-1.3939
33	1.1450	1.1304	-1.2772
34	1.1500	1.1383	-1.0196
35	1.1550	1.1457	-.8038
36	1.1590	1.1525	-.5568
37	1.1630	1.1584	-.3962
38	1.1650	1.1631	-.1638
39	1.1670	1.1662	-.0712
40	1.1680	1.1672	-.0679
41	1.1670	1.1660	-.0893
42	1.1630	1.1614	-.1418
43	1.1560	1.1529	-.2715
44	1.1430	1.1394	-.3183
45	1.1240	1.1201	-.3474
46	1.0970	1.0937	-.2977
47	1.0530	1.0543	.1216
48	.9970	1.0061	.9147
49	.9420	.9638	2.3097
50	.8110	.8629	6.3934
51	.6850	.7624	11.2940

PEAKING PARAMETER COMPARISON

PARAMETER	MEAS.	PREDICTED	% DIFFERENCE
FXY	1.4382	1.4430	-.3309 %
FR	1.3980	1.4100	-.8493 %
FZ	1.1672	1.1670	.0178 %
FQ	1.6332	1.6500	-1.0168 %

CALCULATED RMS VALUES
RADIAL = 2.0961
AXIAL = 1.7256
MEASURED ASI = -.0980
PREDICTED ASI = -.1014

ACCEPTANCE CRITERIA REPORT

MEASURED FXY WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
MEASURED FR WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
MEASURED FZ WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
MEASURED FQ WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
RMS ERROR ON AXIAL DISTRIBUTION WAS LESS THAN OR EQUAL TO 5.000 %.
RMS ERROR ON RADIAL DISTRIBUTION WAS LESS THAN OR EQUAL TO 5.000 %.
ALL PREDICTED RADIAL POWERS LESS THAN 0.9
WERE WITHIN PLUS OR MINUS 15.000 % OF MEASURED.
ALL PREDICTED RADIAL POWERS GREATER THAN OR EQUAL TO 0.9
WERE WITHIN PLUS OR MINUS 10.000 % OF MEASURED.

*** ALL ACCEPTANCE CRITERIA WERE MET ***

FIGURE 7
GETARP Output for the 68% Power Plateau

```
GGGGGGGGGG  EEEEEEEEEE  TTTTTTTTTT     AAAA      RRRRRRRRR   PPPPPPPPP
GGGGGGGGGG  EEEEEEEEEE  TTTTTTTTTT    AAAAAA     RRRRRRRRRR  PPPPPPPPPP
GGG         EEE            TTT       AAA  AAA    RRR     RRR PPP      PPP
GGG  GGGGG  EEEEEE         TTT      AAAAAAAAAA   RRRRRRRRRR  PPPPPPPPPP
GGG  GGGGG  EEEEEE         TTT      AAAAAAAAAA   RRRRRRRRR   PPPPPPPPP
GGG    GGG  EEE            TTT      AAA    AAA   RRR RRR     PPP
GGGGGGGGGG  EEEEEEEEEE     TTT      AAA    AAA   RRR  RRR    PPP
GGGGGGGGGG  EEEEEEEEEE     TTT      AAA    AAA   RRR     RRR PPP      (FPA)
A PROGRAM TO EXTRACT DATA FROM CECOR SUMMARY FILES FOR COMPARISON OF
AXIAL AND RADIAL POWER DISTRIBUTIONS.
GETRNP01 - GETARP FOR NT REVISION 1
MEASURED DATA EXTRACTED FROM: a3783qs.s01
PREDICTED DATA EXTRACTED FROM: a2pred.068
```

```
                                        RELATIVE RADIAL POWER DISTRIBUTION COMPARISON
+-----------+                           +-------+-------+-------+-------+-------+
; PREDICTED ;                           ;  .397 ;  .518 ;  .544 ;  .520 ;  .399 ;                 (MEAS.-PREDICTED)
; MEASURED  ;                           ;  .410 ;  .535 ;  .561 ;  .536 ;  .411 ;    % DIFFERENCE = ----------------- X 100.0
; % DIFFER  ;                           ;  3.33 ;  3.20 ;  3.16 ;  3.10 ;  2.92 ;                      PREDICTED
+-----------+           +-------+-------+-------+-------+-------+-------+-------+-------+-------+
                        ;  .396 ;  .639 ;  .970 ; 1.072 ; 1.089 ; 1.081 ;  .975 ;  .640 ;  .395 ;
                        ;  .407 ;  .643 ;  .965 ; 1.059 ; 1.076 ; 1.067 ;  .965 ;  .630 ;  .404 ;
                        ;  2.67 ;   .56 ;  -.55 ; -1.19 ; -1.23 ; -1.28 ; -1.08 ; -1.52 ;  2.23 ;
                +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
                ;  .485 ;  .951 ; 1.109 ; 1.152 ; 1.267 ; 1.225 ; 1.272 ; 1.154 ; 1.107 ;  .948 ;  .485 ;
                ;  .497 ;  .953 ; 1.096 ; 1.135 ; 1.262 ; 1.205 ; 1.262 ; 1.134 ; 1.095 ;  .955 ;  .502 ;
                ;  2.48 ;   .16 ; -1.20 ; -1.50 ;  -.38 ; -1.62 ;  -.80 ; -1.75 ; -1.12 ;   .69 ;  3.61 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .395 ;  .948 ; 1.157 ; 1.212 ; 1.243 ; 1.256 ; 1.251 ; 1.259 ; 1.241 ; 1.208 ; 1.157 ;  .951 ;  .396 ;
        ;  .406 ;  .937 ; 1.156 ; 1.203 ; 1.244 ; 1.256 ; 1.251 ; 1.245 ; 1.241 ; 1.213 ; 1.167 ;  .956 ;  .413 ;
        ;  2.83 ; -1.11 ;  -.09 ;  -.72 ;   .11 ;   .01 ;  -.01 ; -1.12 ;  -.01 ;   .37 ;   .84 ;   .58 ;  4.22 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .640 ; 1.107 ; 1.208 ; 1.284 ; 1.235 ; 1.204 ; 1.202 ; 1.204 ; 1.232 ; 1.284 ; 1.212 ; 1.109 ;  .639 ;
        ;  .657 ; 1.098 ; 1.191 ; 1.279 ; 1.221 ; 1.205 ; 1.187 ; 1.198 ; 1.217 ; 1.285 ; 1.201 ; 1.109 ;  .663 ;
        ;  2.58 ;  -.77 ; -1.44 ;  -.35 ; -1.11 ;   .09 ; -1.26 ;  -.48 ; -1.24 ;   .08 ;  -.91 ;   .02 ;  3.81 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .399 ;  .975 ; 1.154 ; 1.241 ; 1.232 ; 1.152 ; 1.102 ; 1.085 ; 1.100 ; 1.152 ; 1.235 ; 1.243 ; 1.152 ;  .970 ;  .397 ;
;  .389 ;  .977 ; 1.160 ; 1.241 ; 1.209 ; 1.151 ; 1.078 ; 1.081 ; 1.064 ; 1.146 ; 1.215 ; 1.245 ; 1.161 ;  .985 ;  .417 ;
; -2.49 ;   .18 ;   .54 ;   .00 ; -1.83 ;  -.11 ; -2.16 ;  -.39 ; -3.25 ;  -.51 ; -1.59 ;   .20 ;   .76 ;  1.52 ;  5.11 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .520 ; 1.081 ; 1.272 ; 1.259 ; 1.204 ; 1.100 ; 1.043 ; 1.046 ; 1.043 ; 1.102 ; 1.204 ; 1.256 ; 1.267 ; 1.072 ;  .518 ;
;  .534 ; 1.078 ; 1.277 ; 1.248 ; 1.205 ; 1.091 ; 1.046 ; 1.035 ; 1.036 ; 1.086 ; 1.202 ; 1.243 ; 1.271 ; 1.073 ;  .540 ;
;  2.75 ;  -.32 ;   .36 ;  -.89 ;   .12 ;  -.84 ;   .28 ; -1.04 ;  -.68 ; -1.45 ;  -.16 ; -1.05 ;   .29 ;   .11 ;  4.33 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .544 ; 1.089 ; 1.225 ; 1.251 ; 1.202 ; 1.085 ; 1.046 ;  .923 ; 1.046 ; 1.085 ; 1.202 ; 1.251 ; 1.225 ; 1.089 ;  .544 ;
;  .566 ; 1.088 ; 1.220 ; 1.255 ; 1.193 ; 1.093 ; 1.035 ;  .931 ; 1.014 ; 1.082 ; 1.187 ; 1.248 ; 1.210 ; 1.081 ;  .562 ;
;  4.01 ;  -.09 ;  -.44 ;   .29 ;  -.76 ;   .73 ; -1.05 ;   .89 ; -3.07 ;  -.26 ; -1.25 ;  -.22 ; -1.24 ;  -.75 ;  3.38 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .518 ; 1.072 ; 1.267 ; 1.256 ; 1.204 ; 1.102 ; 1.043 ; 1.046 ; 1.043 ; 1.100 ; 1.204 ; 1.259 ; 1.272 ; 1.081 ;  .520 ;
;  .542 ; 1.075 ; 1.275 ; 1.247 ; 1.206 ; 1.095 ; 1.048 ; 1.036 ; 1.036 ; 1.083 ; 1.201 ; 1.243 ; 1.269 ; 1.066 ;  .530 ;
;  4.61 ;   .24 ;   .65 ;  -.70 ;   .19 ;  -.66 ;   .47 ;  -.94 ;  -.69 ; -1.54 ;  -.26 ; -1.27 ;  -.22 ; -1.37 ;  1.84 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .397 ;  .970 ; 1.152 ; 1.243 ; 1.235 ; 1.152 ; 1.100 ; 1.085 ; 1.102 ; 1.152 ; 1.232 ; 1.241 ; 1.154 ;  .975 ;  .399 ;
;  .418 ;  .987 ; 1.163 ; 1.248 ; 1.213 ; 1.155 ; 1.081 ; 1.084 ; 1.065 ; 1.144 ; 1.209 ; 1.240 ; 1.160 ;  .972 ;  .386 ;
;  5.31 ;  1.71 ;   .92 ;   .38 ; -1.79 ;   .26 ; -1.70 ;  -.14 ; -3.35 ;  -.66 ; -1.84 ;  -.09 ;   .49 ;  -.26 ; -3.26 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .639 ; 1.109 ; 1.212 ; 1.284 ; 1.232 ; 1.204 ; 1.202 ; 1.204 ; 1.235 ; 1.284 ; 1.208 ; 1.107 ;  .640 ;
        ;  .666 ; 1.115 ; 1.207 ; 1.290 ; 1.229 ; 1.214 ; 1.192 ; 1.199 ; 1.217 ; 1.278 ; 1.192 ; 1.103 ;  .657 ;
        ;  4.23 ;   .52 ;  -.43 ;   .48 ;  -.28 ;   .86 ;  -.80 ;  -.38 ; -1.46 ;  -.44 ; -1.29 ;  -.38 ;  2.69 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .396 ;  .951 ; 1.157 ; 1.208 ; 1.241 ; 1.259 ; 1.251 ; 1.256 ; 1.243 ; 1.212 ; 1.157 ;  .948 ;  .395 ;
        ;  .416 ;  .966 ; 1.176 ; 1.218 ; 1.258 ; 1.273 ; 1.260 ; 1.246 ; 1.240 ; 1.202 ; 1.160 ;  .951 ;  .410 ;
        ;  5.00 ;  1.61 ;  1.61 ;   .80 ;  1.34 ;  1.15 ;   .72 ;  -.78 ;  -.25 ;  -.82 ;   .25 ;   .31 ;  3.69 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
                ;  .485 ;  .948 ; 1.107 ; 1.154 ; 1.272 ; 1.225 ; 1.267 ; 1.152 ; 1.109 ;  .951 ;  .485 ;
                ;  .508 ;  .967 ; 1.112 ; 1.154 ; 1.285 ; 1.217 ; 1.264 ; 1.133 ; 1.094 ;  .954 ;  .501 ;
                ;  4.80 ;  2.04 ;   .49 ;   .02 ;  1.00 ;  -.68 ;  -.27 ; -1.62 ; -1.38 ;   .29 ;  3.22 ;
                +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
                        ;  .395 ;  .640 ;  .975 ; 1.081 ; 1.089 ; 1.072 ;  .970 ;  .639 ;  .396 ;
                        ;  .413 ;  .656 ;  .988 ; 1.091 ; 1.089 ; 1.063 ;  .964 ;  .637 ;  .405 ;
                        ;  4.67 ;  2.49 ;  1.35 ;   .95 ;  -.04 ;  -.82 ;  -.62 ;  -.36 ;  2.29 ;
                        +-------+-------+-------+-------+-------+-------+-------+-------+-------+
                                        ;  .399 ;  .520 ;  .544 ;  .518 ;  .397 ;
                                        ;  .420 ;  .546 ;  .568 ;  .537 ;  .411 ;
                                        ;  5.22 ;  5.09 ;  4.40 ;  3.75 ;  3.45 ;
                                        +-------+-------+-------+-------+-------+
```

FIGURE 7 (continued)
GETARP Output for the 68% Power Plateau

RELATIVE AXIAL POWER DISTRIBUTION COMPARISON

NODE	PREDICTED	MEAS.	% DIFFERENCE
1	.5630	.6134	8.9596
2	.6680	.7298	9.2478
3	.7780	.8434	8.4063
4	.8190	.8876	8.3725
5	.8610	.9319	8.2315
6	.8950	.9674	8.0940
7	.9180	.9913	7.9834
8	.9350	1.0091	7.9241
9	.9490	1.0222	7.7149
10	.9600	1.0314	7.4373
11	.9700	1.0377	6.9801
12	.9780	1.0417	6.5095
13	.9860	1.0442	5.8992
14	.9930	1.0455	5.2837
15	1.0010	1.0459	4.4865
16	1.0080	1.0458	3.7532
17	1.0140	1.0454	3.0925
18	1.0210	1.0447	2.3172
19	1.0270	1.0439	1.6485
20	1.0340	1.0433	.9039
21	1.0400	1.0431	.2941
22	1.0460	1.0433	-.2615
23	1.0530	1.0439	-.8657
24	1.0590	1.0455	-1.2731
25	1.0670	1.0494	-1.6502
26	1.0770	1.0562	-1.9339
27	1.0870	1.0630	-2.2062
28	1.0930	1.0670	-2.3776
29	1.0980	1.0688	-2.6617
30	1.1010	1.0695	-2.8623
31	1.1040	1.0697	-3.1077
32	1.1060	1.0693	-3.3219
33	1.1070	1.0683	-3.4916
34	1.1080	1.0669	-3.7076
35	1.1070	1.0650	-3.7964
36	1.1070	1.0625	-4.0207
37	1.1050	1.0593	-4.1390
38	1.1030	1.0553	-4.3255
39	1.0990	1.0503	-4.4342
40	1.0950	1.0439	-4.6628
41	1.0890	1.0362	-4.8493
42	1.0810	1.0261	-5.0754
43	1.0700	1.0134	-5.2932
44	1.0550	.9969	-5.5055
45	1.0330	.9761	-5.5037
46	1.0050	.9499	-5.4832
47	.9630	.9129	-5.1984
48	.9110	.8691	-4.6021
49	.8620	.8307	-3.6274
50	.7500	.7424	-1.0189
51	.6420	.6548	1.9966

PEAKING PARAMETER COMPARISON

PARAMETER	MEAS.	PREDICTED	% DIFFERENCE
FXY	1.4288	1.4260	.1934 %
FR	1.3885	1.3880	.0347 %
FZ	1.0697	1.1070	-3.3703 %
FQ	1.5108	1.5440	-2.1502 %

CALCULATED RMS VALUES
RADIAL = 1.3070
AXIAL = 4.7302
MEASURED ASI = -.0035
PREDICTED ASI = -.0442

ACCEPTANCE CRITERIA REPORT

MEASURED FXY WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
MEASURED FR WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
MEASURED FZ WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
MEASURED FQ WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
RMS ERROR ON AXIAL DISTRIBUTION WAS LESS THAN OR EQUAL TO 5.000 %.
RMS ERROR ON RADIAL DISTRIBUTION WAS LESS THAN OR EQUAL TO 5.000 %.
ALL PREDICTED RADIAL POWERS LESS THAN 0.9
WERE WITHIN PLUS OR MINUS 15.000 % OF MEASURED.
ALL PREDICTED RADIAL POWERS GREATER THAN OR EQUAL TO 0.9
WERE WITHIN PLUS OR MINUS 10.000 % OF MEASURED.

*** ALL ACCEPTANCE CRITERIA WERE MET ***

FIGURE 8

GETARP Output for the 100% Power Plateau

```
GGGGGGGGGG  EEEEEEEEEE  TTTTTTTTTT      AAAA       RRRRRRRRR    PPPPPPPPP
GGGGGGGGGG  EEEEEEEEEE  TTTTTTTTTT     AAAAAA      RRRRRRRRRR   PPPPPPPPPP
GGG         EEE            TTT        AAA  AAA     RRR     RRR  PPP      PPP
GGG   GGGGG  EEEEEE        TTT       AAAAAAAAAA    RRRRRRRRRR   PPPPPPPPPP
GGG   GGGGG  EEEEEE        TTT       AAAAAAAAAA    RRRRRRRRR    PPPPPPPPP
GGG     GGG  EEE           TTT       AAA     AAA   RRR RRR      PPP
GGGGGGGGGG  EEEEEEEEEE     TTT       AAA     AAA   RRR  RRR     PPP
GGGGGGGGGG  EEEEEEEEEE     TTT       AAA     AAA   RRR    RRR   PPP      (FPA)
A PROGRAM TO EXTRACT DATA FROM CECOR SUMMARY FILES FOR COMPARISON OF
AXIAL AND RADIAL POWER DISTRIBUTIONS.
GETRNP01 - GETARP FOR NT REVISION 1
MEASURED DATA EXTRACTED FROM: A3786NX.s02
PREDICTED DATA EXTRACTED FROM: a2pred.100.eqxe
```

```
                                     RELATIVE RADIAL POWER DISTRIBUTION COMPARISON
+-----------+                           +-------+-------+-------+-------+-------+
; PREDICTED ;                           ;  .405 ;  .526 ;  .552 ;  .528 ;  .406 ;                         (MEAS.-PREDICTED)
; MEASURED  ;                           ;  .406 ;  .528 ;  .555 ;  .529 ;  .406 ;      % DIFFERENCE = ----------------- X 100.0
; % DIFFER  ;                           ;   .29 ;   .46 ;   .46 ;   .28 ;   .12 ;                             PREDICTED
+-----------+           +-------+-------+-------+-------+-------+-------+-------+-------+-------+
                        ;  .403 ;  .645 ;  .971 ; 1.069 ; 1.085 ; 1.077 ;  .976 ;  .646 ;  .402 ;
                        ;  .404 ;  .646 ;  .964 ; 1.056 ; 1.073 ; 1.062 ;  .964 ;  .635 ;  .402 ;
                        ;   .29 ;   .09 ;  -.74 ; -1.24 ; -1.08 ; -1.37 ; -1.24 ; -1.65 ;   .02 ;
                +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
                ;  .492 ;  .952 ; 1.105 ; 1.146 ; 1.256 ; 1.216 ; 1.260 ; 1.147 ; 1.103 ;  .949 ;  .492 ;
                ;  .492 ;  .948 ; 1.096 ; 1.138 ; 1.257 ; 1.208 ; 1.257 ; 1.137 ; 1.095 ;  .950 ;  .498 ;
                ;  -.07 ;  -.47 ;  -.79 ;  -.72 ;   .06 ;  -.66 ;  -.27 ;  -.86 ;  -.70 ;   .12 ;  1.18 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .402 ;  .949 ; 1.150 ; 1.203 ; 1.233 ; 1.248 ; 1.242 ; 1.251 ; 1.231 ; 1.199 ; 1.150 ;  .952 ;  .403 ;
        ;  .402 ;  .934 ; 1.147 ; 1.199 ; 1.239 ; 1.258 ; 1.248 ; 1.249 ; 1.236 ; 1.207 ; 1.158 ;  .955 ;  .409 ;
        ;  -.08 ; -1.60 ;  -.23 ;  -.30 ;   .50 ;   .78 ;   .51 ;  -.19 ;   .41 ;   .65 ;   .73 ;   .31 ;  1.42 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .646 ; 1.103 ; 1.199 ; 1.274 ; 1.231 ; 1.202 ; 1.202 ; 1.202 ; 1.228 ; 1.274 ; 1.203 ; 1.105 ;  .645 ;
        ;  .650 ; 1.096 ; 1.192 ; 1.275 ; 1.228 ; 1.208 ; 1.198 ; 1.203 ; 1.225 ; 1.280 ; 1.203 ; 1.108 ;  .657 ;
        ;   .62 ;  -.61 ;  -.56 ;   .09 ;  -.21 ;   .53 ;  -.30 ;   .07 ;  -.28 ;   .50 ;   .03 ;   .28 ;  1.80 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .406 ;  .976 ; 1.147 ; 1.231 ; 1.228 ; 1.154 ; 1.111 ; 1.095 ; 1.108 ; 1.154 ; 1.231 ; 1.233 ; 1.146 ;  .971 ;  .405 ;
;  .394 ;  .973 ; 1.156 ; 1.236 ; 1.216 ; 1.157 ; 1.100 ; 1.094 ; 1.088 ; 1.153 ; 1.222 ; 1.242 ; 1.158 ;  .978 ;  .411 ;
; -2.84 ;  -.35 ;   .82 ;   .37 ;  -.94 ;   .22 ; -1.03 ;  -.10 ; -1.84 ;  -.06 ;  -.74 ;   .70 ;  1.09 ;   .72 ;  1.54 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .528 ; 1.077 ; 1.260 ; 1.251 ; 1.202 ; 1.108 ; 1.059 ; 1.070 ; 1.059 ; 1.111 ; 1.202 ; 1.248 ; 1.256 ; 1.069 ;  .526 ;
;  .529 ; 1.070 ; 1.266 ; 1.250 ; 1.206 ; 1.105 ; 1.063 ; 1.059 ; 1.054 ; 1.104 ; 1.207 ; 1.249 ; 1.265 ; 1.067 ;  .533 ;
;   .19 ;  -.66 ;   .46 ;  -.09 ;   .34 ;  -.23 ;   .33 ; -1.07 ;  -.43 ;  -.65 ;   .41 ;   .11 ;   .68 ;  -.19 ;  1.35 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .552 ; 1.085 ; 1.216 ; 1.242 ; 1.202 ; 1.095 ; 1.070 ;  .961 ; 1.070 ; 1.095 ; 1.202 ; 1.242 ; 1.216 ; 1.085 ;  .552 ;
;  .557 ; 1.080 ; 1.214 ; 1.248 ; 1.200 ; 1.103 ; 1.068 ;  .953 ; 1.049 ; 1.097 ; 1.204 ; 1.250 ; 1.214 ; 1.078 ;  .556 ;
;   .95 ;  -.43 ;  -.15 ;   .47 ;  -.15 ;   .71 ;  -.15 ;  -.80 ; -1.93 ;   .20 ;   .16 ;   .60 ;  -.20 ;  -.61 ;   .77 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .526 ; 1.069 ; 1.256 ; 1.248 ; 1.202 ; 1.111 ; 1.059 ; 1.070 ; 1.059 ; 1.108 ; 1.202 ; 1.251 ; 1.260 ; 1.077 ;  .528 ;
;  .533 ; 1.065 ; 1.263 ; 1.247 ; 1.204 ; 1.107 ; 1.062 ; 1.058 ; 1.053 ; 1.101 ; 1.206 ; 1.250 ; 1.264 ; 1.062 ;  .526 ;
;  1.25 ;  -.40 ;   .55 ;  -.08 ;   .14 ;  -.38 ;   .31 ; -1.11 ;  -.53 ;  -.68 ;   .33 ;  -.04 ;   .35 ; -1.37 ;  -.35 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
;  .405 ;  .971 ; 1.146 ; 1.233 ; 1.231 ; 1.154 ; 1.108 ; 1.095 ; 1.111 ; 1.154 ; 1.228 ; 1.231 ; 1.147 ;  .976 ;  .406 ;
;  .411 ;  .976 ; 1.157 ; 1.238 ; 1.212 ; 1.155 ; 1.098 ; 1.094 ; 1.087 ; 1.151 ; 1.216 ; 1.237 ; 1.159 ;  .971 ;  .392 ;
;  1.38 ;   .56 ;   .97 ;   .41 ; -1.53 ;   .12 ;  -.89 ;  -.14 ; -2.19 ;  -.24 ;  -.94 ;   .52 ;  1.06 ;  -.50 ; -3.42 ;
+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .645 ; 1.105 ; 1.203 ; 1.274 ; 1.228 ; 1.202 ; 1.202 ; 1.202 ; 1.231 ; 1.274 ; 1.199 ; 1.103 ;  .646 ;
        ;  .656 ; 1.108 ; 1.203 ; 1.279 ; 1.229 ; 1.210 ; 1.200 ; 1.202 ; 1.226 ; 1.276 ; 1.197 ; 1.104 ;  .652 ;
        ;  1.74 ;   .30 ;   .02 ;   .39 ;   .07 ;   .70 ;  -.21 ;   .03 ;  -.44 ;   .19 ;  -.17 ;   .05 ;  1.00 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
        ;  .403 ;  .952 ; 1.150 ; 1.199 ; 1.231 ; 1.251 ; 1.242 ; 1.248 ; 1.233 ; 1.203 ; 1.150 ;  .949 ;  .402 ;
        ;  .409 ;  .957 ; 1.161 ; 1.208 ; 1.244 ; 1.263 ; 1.252 ; 1.249 ; 1.237 ; 1.203 ; 1.154 ;  .950 ;  .406 ;
        ;  1.50 ;   .56 ;   .96 ;   .73 ;  1.08 ;   .97 ;   .78 ;   .09 ;   .32 ;   .02 ;   .39 ;   .06 ;  1.03 ;
        +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
                ;  .492 ;  .949 ; 1.103 ; 1.147 ; 1.260 ; 1.216 ; 1.256 ; 1.146 ; 1.105 ;  .952 ;  .492 ;
                ;  .500 ;  .958 ; 1.108 ; 1.150 ; 1.270 ; 1.214 ; 1.257 ; 1.137 ; 1.097 ;  .951 ;  .496 ;
                ;  1.66 ;   .93 ;   .44 ;   .28 ;   .80 ;  -.14 ;   .06 ;  -.77 ;  -.74 ;  -.09 ;   .89 ;
                +-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+
                        ;  .402 ;  .646 ;  .976 ; 1.077 ; 1.085 ; 1.069 ;  .971 ;  .645 ;  .403 ;
                        ;  .410 ;  .658 ;  .981 ; 1.078 ; 1.081 ; 1.058 ;  .963 ;  .641 ;  .404 ;
                        ;  1.90 ;  1.91 ;   .56 ;   .14 ;  -.33 ; -1.01 ;  -.82 ;  -.65 ;   .14 ;
                        +-------+-------+-------+-------+-------+-------+-------+-------+-------+
                                        ;  .406 ;  .528 ;  .552 ;  .526 ;  .405 ;
                                        ;  .413 ;  .536 ;  .559 ;  .530 ;  .406 ;
                                        ;  1.73 ;  1.59 ;  1.23 ;   .78 ;   .32 ;
                                        +-------+-------+-------+-------+-------+
```

FIGURE 8 (continued)

GETARP Output for the 100% Power Plateau

RELATIVE AXIAL POWER DISTRIBUTION COMPARISON

NODE	PREDICTED	MEAS.	% DIFFERENCE
1	.6720	.6476	-3.6310
2	.7910	.7722	-2.3830
3	.9150	.8936	-2.3335
4	.9580	.9412	-1.7532
5	1.0020	.9885	-1.3514
6	1.0370	1.0260	-1.0650
7	1.0580	1.0505	-.7068
8	1.0720	1.0682	-.3541
9	1.0820	1.0805	-.1402
10	1.0890	1.0882	-.0746
11	1.0930	1.0925	-.0460
12	1.0950	1.0940	-.0895
13	1.0970	1.0938	-.2938
14	1.0970	1.0921	-.4468
15	1.0970	1.0894	-.6912
16	1.0970	1.0862	-.9884
17	1.0960	1.0825	-1.2310
18	1.0940	1.0787	-1.3986
19	1.0920	1.0750	-1.5600
20	1.0900	1.0715	-1.6972
21	1.0880	1.0685	-1.7968
22	1.0850	1.0660	-1.7516
23	1.0820	1.0640	-1.6627
24	1.0790	1.0630	-1.4788
25	1.0780	1.0643	-1.2736
26	1.0780	1.0683	-.9020
27	1.0780	1.0721	-.5465
28	1.0750	1.0728	-.2079
29	1.0700	1.0708	.0781
30	1.0630	1.0675	.4219
31	1.0570	1.0632	.5907
32	1.0500	1.0580	.7612
33	1.0420	1.0519	.9516
34	1.0340	1.0450	1.0671
35	1.0250	1.0374	1.2115
36	1.0160	1.0291	1.2930
37	1.0060	1.0201	1.4007
38	.9970	1.0104	1.3417
39	.9860	.9998	1.4003
40	.9750	.9882	1.3563
41	.9630	.9756	1.3072
42	.9490	.9611	1.2781
43	.9330	.9445	1.2332
44	.9130	.9249	1.2983
45	.8900	.9016	1.3016
46	.8600	.8736	1.5852
47	.8200	.8362	1.9775
48	.7720	.7928	2.6975
49	.7300	.7547	3.3892
50	.6400	.6715	4.9212
51	.5540	.5894	6.3889

PEAKING PARAMETER COMPARISON

PARAMETER	MEAS.	PREDICTED	% DIFFERENCE
FXY	1.4256	1.4180	.5334 %
FR	1.3831	1.3740	.6630 %
FZ	1.0940	1.0970	-.2716 %
FQ	1.5673	1.5470	1.3135 %

CALCULATED RMS VALUES
RADIAL = .7309
AXIAL = 1.4577
MEASURED ASI = .0379
PREDICTED ASI = .0501

ACCEPTANCE CRITERIA REPORT

MEASURED FXY WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
MEASURED FR WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
MEASURED FZ WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
MEASURED FQ WAS WITHIN PLUS OR MINUS 10.000 % OF THE PREDICTED VALUE.
RMS ERROR ON AXIAL DISTRIBUTION WAS LESS THAN OR EQUAL TO 5.000 %.
RMS ERROR ON RADIAL DISTRIBUTION WAS LESS THAN OR EQUAL TO 5.000 %.
ALL PREDICTED RADIAL POWERS LESS THAN 0.9
WERE WITHIN PLUS OR MINUS 15.000 % OF MEASURED.
ALL PREDICTED RADIAL POWERS GREATER THAN OR EQUAL TO 0.9
WERE WITHIN PLUS OR MINUS 10.000 % OF MEASURED.

*** ALL ACCEPTANCE CRITERIA WERE MET ***