



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 11, 1988

Docket Nos. 50-369/370
50-413/414

Mr. H. B. Tucker, Vice President
Nuclear Production Department
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

Dear Mr. Tucker:

SUBJECT: Startup Physics Testing Program - McGuire and Catawba Nuclear
Stations, Units 1 and 2 (TAC 67204/67205 AND 67349/67350)

By letter dated February 2, 1988 you forwarded a proposed Startup Physics Test Program for the McGuire and Catawba Nuclear Stations. You state there are no significant changes in this program from the testing currently being performed following refueling at these stations and that you anticipate first application of this program on McGuire 2-Cycle 4 scheduled for restart in July 1988. You note your intent to ultimately substitute this program for the initial test programs described in the FSARs and request NRC review and approval by June 30, 1988.

My letter of May 22, 1987, accepted your rod swap methodology based upon a two-level set of criteria: (1) "review" criteria associated with meeting design criteria, and (2) "acceptance" criteria associated with meeting safety analyses assumptions. Your proposed Startup Physics Test Program would use a single set of criteria for this test method. We agree, in principle, with the use of a single set of criteria for this test method. However, you propose to use the "acceptance" criteria for this single set of criteria. We find that the single set of criteria should be based on those proposed, for example, in the ANSI/ANS 19.6.1-1985 standard. This standard has been generated and generally accepted by the Industry and has been approved by the NRC with comments. The stated purpose of your Program document is to specify the minimum reload physics tests necessary to ensure the reactor core can be operated as designed. Your proposed use of only the "acceptance" criteria is inappropriate since, for example, the rod swap method depends, in part, upon an accurate reference bank measurement represented by the $\pm 10\%$ criterion on this measurement. Use of this $\pm 10\%$ criterion, and other associated criteria of the standard, are necessary to ensure a meaningful rod swap test result.

The NRC has completed review of the proposed program and finds it unacceptable. Accordingly, we request that this program not be added to the FSARs or applied to your stations. Our reasons for this position follow:

1. You state that there is no significant deviation in your Control Bank Worth Measurement program from the ANSI/ANS 19.6.1-1985 standard. We disagree. Your proposed criteria on the rod swap method are not the same

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as those reviewed and approved by the staff for other utility and vendor rod swap programs and endorsed by the staff in the standard. We find a significant and unacceptable deviation between your proposed criteria and those in the standard concerning the Control Bank Worth Measurement program as noted below:

	<u>ANS 19.6.1-1985 Criteria</u>	<u>Duke Criteria</u>
Reference Bank	± 10%	± 15%
Individual Banks	± 15% or ± 0.1% delta rho (whichever is greater)	± 30% or ± 0.2% delta rho (whichever is greater)
Sum of Banks	± 10%	90% of predicted

Additionally, we find your program to be ambiguous regarding the number of control rod banks or groups to be measured. The NRC staff requires that all the control rod banks or groups (including regulating and shutdown) be measured during each reload startup physics tests.

2. You state that there is no significant deviation in your proposed Isothermal Temperature Coefficient (ITC) measurement from the ANS 19.6.1-1985 standard. Again we disagree. Your acceptance criterion for this test is ± 3 pcm/° F (note that a pcm is 10⁻⁵ units of reactivity) whereas the standard uses an acceptance criterion of ± 2 pcm/° F. The staff, based on vendor supplied information, concludes that ITC predictions compare to measured data to within ± 1 pcm/° F. Thus your criterion is not acceptable.
3. Your description of the Flux Symmetry Check at low power does not indicate that the comparison of measured normalized reaction rates of F_{SH}^N with predictions will be made for symmetric core locations. Thus, it is not clear how your proposed test method would accomplish this flux symmetry check using symmetric detector or core locations.

If you have any questions regarding the results of our review, contact me at (301) 492-1442.

Sincerely,

Original signed by:

Darl S. Hood, Project Manager
Project Directorate II-3
Division of Reactor Projects-I/II

cc:
See next page

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NRC PDR
Local PDR
S. Varga
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D. Hood
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Mr. H. B. Tucker
Duke Power Company

McGuire Nuclear Station

cc:

Mr. A.V. Carr, Esq.
Duke Power Company
P. O. Box 33189
422 South Church Street
Charlotte, North Carolina 28242

Dr. John M. Barry
Department of Environmental Health
Mecklenburg County
1200 Blythe Boulevard
Charlotte, North Carolina 28203

County Manager of Mecklenburg County
720 East Fourth Street
Charlotte, North Carolina 28202

Mr. Dayne H. Brown, Chief
Radiation Protection Branch
Division of Facility Services
Department of Human Resources
701 Barbour Drive
Raleigh, North Carolina 27603-2008

Mr. Robert Gill
Duke Power Company
Nuclear Production Department
P. O. Box 33189
Charlotte, North Carolina 28242

J. Michael McGarry, III, Esq.
Bishop, Liberman, Cook, Purcell
and Reynolds
1700 Seventeenth Street, N.W.
Washington, D. C. 20036

Senior Resident Inspector
c/o U.S. Nuclear Regulatory Commission
Route 4, Box 529
Huntersville, North Carolina 28078

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission,
101 Marietta Street, N.W., Suite 2900
Atlanta, Georgia 30323

S. S. Kilborn
Area Manager, Mid-South Area
ESSD Projects
Westinghouse Electric Corporation
MNC West Tower - Bay 239
P. O. Box 355
Pittsburgh, Pennsylvania 15230

Mr. H. B. Tucker
Duke Power Company

Catawba Nuclear Station

cc:

A.V. Carr, Esq.
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

North Carolina Electric Membership
Corp.
3400 Sumner Boulevard
P.O. Box 27306
Raleigh, North Carolina 27611

J. Michael McGarry, III, Esq.
Bishop, Liberman, Cook, Purcell
and Reynolds
1700 Seventeenth Street, N.W.
Washington, D. C. 20036

Saluda River Electric Cooperative,
Inc.
P.O. Box 929
Laurens, South Carolina 29360

North Carolina MPA-1
Suite 600
3100 Smoketree Ct.
P.O. Box 29513
Raleigh, North Carolina 27626-0513

Senior Resident Inspector
Route 2, Box 179N
York, South Carolina 29745

S. S. Kilborn
Area Manager, Mid-South Area
ESSD Projects
Westinghouse Electric Corp.
MNC West Tower - Bay 239
P.O. Box 355
Pittsburgh, Pennsylvania 15230

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission,
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

County Manager of York County
York County Courthouse
York South Carolina 29745

Mr. Heyward G. Shealy, Chief
Bureau of Radiological Health
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Richard P. Wilson, Esq.
Assistant Attorney General
S.C. Attorney General's Office
P.O. Box 11549
Columbia, South Carolina 29211

Karen E. Long
Assistant Attorney General
N.C. Department of Justice
P.O. Box 629
Raleigh, North Carolina 27602

Piedmont Municipal Power Agency
100 Memorial Drive
Greer, South Carolina 29651

Spence Perry, Esquire
General Counsel
Federal Emergency Management Agency
Room 840
500 C Street
Washington, D. C. 20472

Mr. Michael Hirsch
Federal Emergency Management Agency
Office of the General Counsel
Room 840
500 C Street, S.W.
Washington, D. C. 20472

Brian P. Cassidy, Regional Counsel
Federal Emergency Management Agency,
Region I

J. W. McCormach POCH
Boston, Massachusetts 02109