TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

April 26, 1983

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NRC REGION II ATLANTA

WBRD-50-390/83-18
WBRD-50-391/83-17

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - INACCURATE RESULTS FROM COMPUTER PROGRAM "ANCHORS" - WBRD-50-390/83-18, WBRD-50-391/83-17- FIRST INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector L. Watson on March 29, 1983 in accordance with 10 CFR 50.55(e) as NCR GEN CEB 8302. Enclosed is our first interim report. We expect to submit our next report on or about September 23, 1983.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills

L. M. Mills, Manager
Nuclear Licensing

Enclosure
cc: Mr. Richard C. DeYoung, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Records Center (Enclosure)
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
INACCURATE RESULTS FROM COMPUTER PROGRAM 'ANCHORS'
NCR GEN CEB 8302
WBRD-50-390/83-18, WBRD-391/83-17
10 CFR 50.55(e)
FIRST INTERIM REPORT

Description of Deficiency

Specific cases have been discovered which show that there are discrepancies in the input specifications for the direction cosines option of the -ANCHOR computer program, and that the output has generally been misinterpreted in the incorrect coordinate system. These cases were discovered when the output could not be hand-verified.

The purpose of the -ANCHOR load program is to combine the loads from both sides of an anchor, compare these loads to allowables, and provide total loads on the anchor. The loads on each side of the anchor are generally determined by a separate stress analysis computer program. If the loads on each side of the anchor are in different coordinate systems, the direction cosines option of the -ANCHOR program must be employed to convert them to a common coordinate system. This system is referred to as the record coordinate system in -ANCHOR.

Page III-4 of the -ANCHOR program user's manual defines the direction cosines from the input system (the system used to define loads in the stress analysis program) to the record system. These input specifications are in error. To be correct, they should define the direction cosines from the record system to the input system. This difference can result in resultant loads being shown 90° in the wrong direction. Also, since the resultant loads are reported (output) in the record system and must be resolved into global and local loads by similar direction cosines, the anchor load designer could similarly misinterpret the results.

Interim Progress

The -ANCHOR program is currently being modified to automatically calculate the direction cosines based on more easily obtainable plant coordinates. The output will be modified to provide more directly usable local and global loads rather than loads in the record system. The user's manual is being modified to reflect these changes.

It has been determined that this nonconforming condition does effect the Bellefonte Nuclear Plant because no skewed anchors were designed which used the particular direction cosine option in question. The Watts Bar Piping Analysis Section is proceeding to determine which anchors are affected, in preparation for reanalysis.