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WHITE,L.D. Rochester Gas & Electric Corp.
RECIP.NAME RECIPIENT AFFILIATION
GRIER,B.H. Region 1, Philadelphia, Office of the Director

SUBJECT: Discusses 791008-13 tendon insp & lift-off verification tests.Results indicated good agreement between predicted & actual rate of loss.Procedure for tendons being developed to bring tendons back within Tech Specs limits.

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LEON D. WHITE, JR.
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October 18, 1979

Mr. Boyce Grier
Director, Region I
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

Subject: Tendon Inspection and Lift-Off Verification
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Ziemann:

A tendon inspection and lift-off verification test was performed at the R. E. Ginna Nuclear Power Plant during the period of October 8 through October 13, 1979.

For the test, twenty-two (22) tendons approximately equally spaced around the containment structure were selected. Of the sample group selected, fourteen (14) tendons had previously been tested in June of 1977 and this group met the criteria established in the Technical Specification.

The October 1979 test included the following:

1. visual inspection of each tendon tested
2. lift-off measurements
3. 6% overstress verification
4. observation for an indication of a broken wire or wires during all phases of testing
5. the total de-tensioning and re-tensioning of one tendon was completed with visual observation of the connection between the rock anchor and tendon being made during testing
6. withdrawal of an unbonded surveillance wire from three tendons

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The results of the tendon inspection and verification test are as follows:

1. The average stress of the twenty-two tendons tested was 143,475 PSI which is .4% below the Technical Specification limit of 144,000 PSI (60% of ultimate strength).

2. There was no indication of tendon wire failure on initial inspection, during lift-off, at 6% over stress, after reseating, or with the totally de-tensioned re-tensioned tendon throughout the entire test.

3. One (1) surveillance wire was withdrawn from three (3) specified tendons for future testing. The wires were free of any visible corrosion for the entire length and no galls or deformed sections were found in these wires.

Therefore, with reference to the Technical Specification which states that, "The specified acceptance criteria are such as to alert attention to the situation well before the tendon load-carrying capabilities would deteriorate to a point that failure during a design basis accident might be possible. Thus the cause of the incipient deterioration could be evaluated and corrective action studied without need to shut down the reactor."

The Technical Specification provides two acceptance criteria, that less than 5% of the total wires be broken and that the stress level in the tendons be above 144,000 psi.

Experience with vertical tendons indicates that tendon wires seldon, if ever, break. It also indicates that when wires break it is usually during tensioning. Visual examination of the tendons coupled with past experience would lead to a high degree of certainty that no broken wires exist, although a 5% allowance for broken tendons is made in the design.

An evaluation of the data from this test and all previous surveillances indicates that although the actual losses exceed those predicted using current techniques (NRC Draft RG 1.35.1) the current rate of loss is in reasonable agreement. The current deficiency in tendon stress of .4% is predicted to increase to .6% in the next year.

Based on:

1. Good agreement between predicted and actual rate of loss,

2. Lack of any evidence of wire breakage or corrosion,

3. The 5% allowance for broken wires in the design, and

4. The very minor extent of the variation from the Technical Specification, currently and in the near future,

we conclude that the situation is acceptable over the near term.

However, to bring the tendons back within the Technical Specification limits, a tendon re-tensioning procedure is currently being developed by the structural designer of the plant. After issuance, review, and approval of the procedure, a schedule for re-tensioning the tendons will be developed for completion of the work as soon as practical.

If there are any questions regarding this information, please contact us.

Very truly yours,

L. D. White, Jr.

LDW:np
xc: Mr. Dennis L. Ziemann
Chief Operating Reactors
Branch No. 2