

**NIAGARA
MOHAWK**

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

September 4, 1979

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

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Dear Mr. Grier:

My July 6, 1979 response to Inspection and Enforcement Bulletin 79-02 addressed concerns with pipe support baseplate designs using concrete expansion anchor bolts.

The attachment to this letter supplements this response.

Very truly yours,

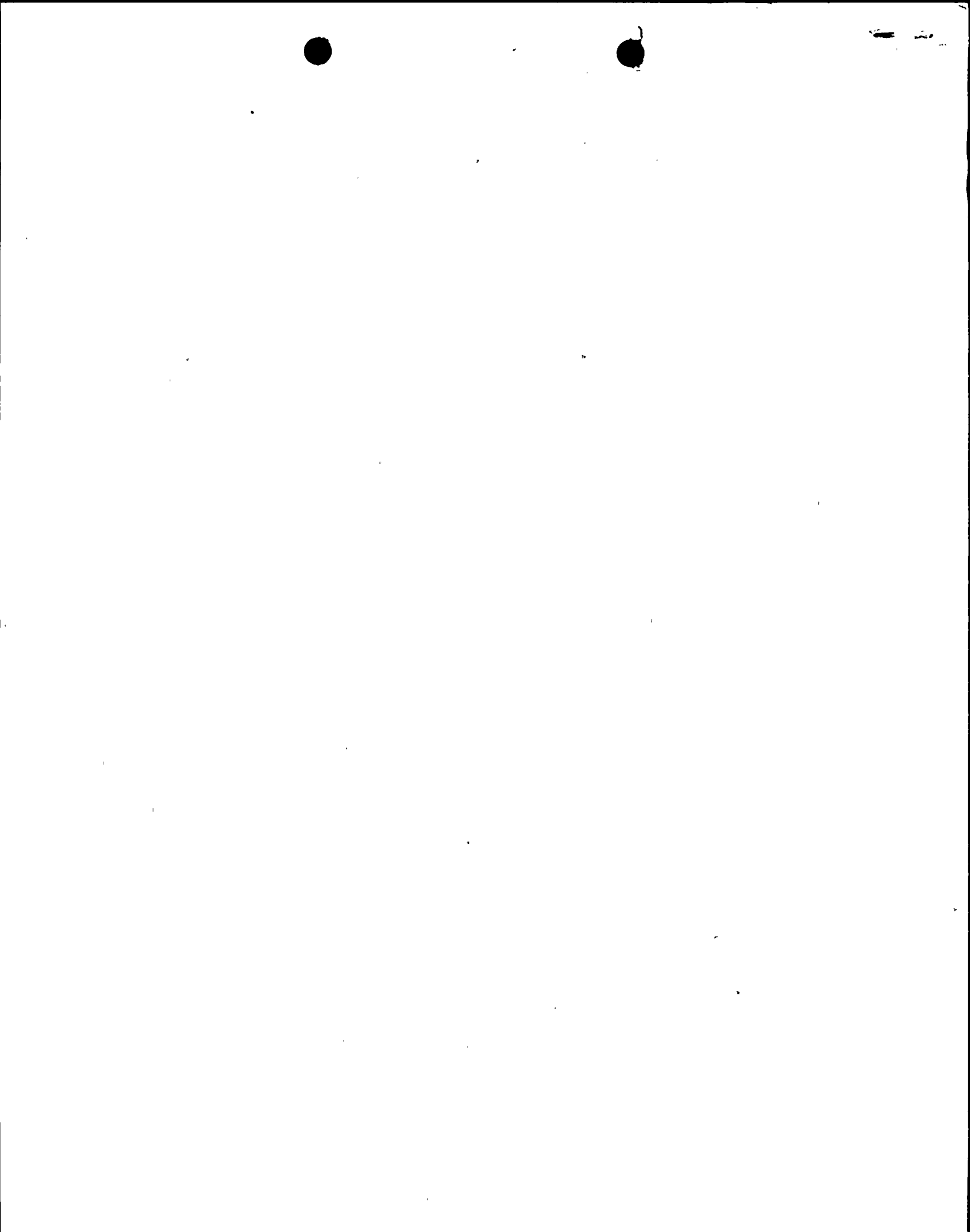
NIAGARA MOHAWK POWER CORPORATION

R. R. Schneider for

R. R. Schneider
Vice President - Electric Production

MGM/kmb
Attachment

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ADDITIONAL INFORMATION IN RESPONSE
TO INSPECTION AND ENFORCEMENT BULLETIN 79-02

SEPTEMBER 4, 1979



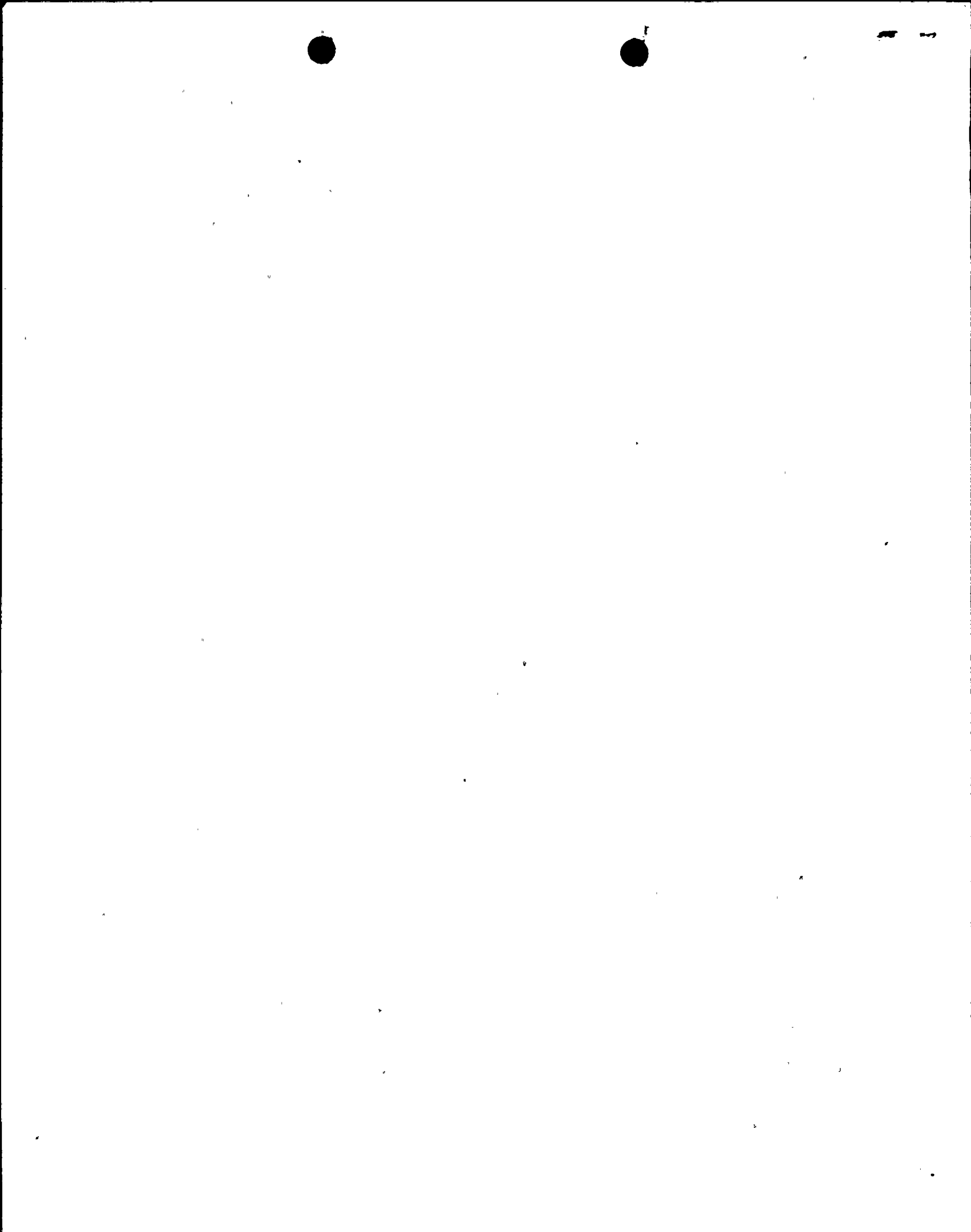
Since April 1979, Niagara Mohawk Power Corporation has participated in a Utility Owner's Group to perform generic work related to Inspection and Enforcement Bulletin 79-02. The following tasks have been performed:

1. Shear-tension interaction curves have been experimentally developed for use in calculating bulletin safety factors for combined loadings.
2. The capability of non-preloaded concrete anchor bolts to withstand cyclic loading has been experimentally determined.
3. Analytical technique for determining the effect of baseplate flexibility in concrete anchor bolt loading has been developed.

Information related to these tasks is contained in Teledyne Engineering Services Report TR-3501-1, Revision 1 entitled "Summary Report - Generic Responses to USNRC I&E Bulletin 79-02 Baseplates/Concrete Expansion Anchor Bolts." This report will be transmitted by Teledyne Engineering Services to the Nuclear Regulatory Commission by September 7, 1979.

The information in this report is applicable to baseplates and concrete anchor expansion bolts at Nine Mile Point Unit 1. It has been used by Niagara Mohawk Power Corporation in it's plant specific analysis in the following manner:

1. Shear-tension interaction curves - Niagara Mohawk Power Corporation has used these curves to confirm the conservatism of the straight line relationship described in our July 6, 1979 response. Niagara Mohawk Power Corporation, however, will continue to use the straight line relationship in design. A factor of safety of four (4) will be applied to sleeve and wedge type anchors and five (5) to shell type anchors. A linear reduction will be applied to the allowable loads calculated from the manufacturer's recommended ultimate loads using the safety factors mentioned above. This is based on a minimum spacing of ten (10) diameters or a distance necessary to prevent overlapping of 45° shear cones, whichever is less.
2. Cyclic load information - This information assures that concrete expansion anchors are adequate to withstand cyclic loads without preloading. Our pull test program confirms that anchors are properly set and capable of adequately sustaining their design loads. To date, 973 bolts on 834 restraints have been tested with only one (1) bolt failure.
3. Analytical technique for plate flexibility - The Teledyne Engineering Services analytical technique was used to verify the methods developed by Niagara Mohawk Power Corporation, which were detailed in our letter of July 6, 1979. Niagara Mohawk Power Corporation methods are more conservative than those of the Teledyne Engineering Services analytical techniques. The Teledyne Engineering Services analytical techniques yielded more conservative results than the Teledyne Engineering Services experimental tests performed.



Those values listed on the shear-tension interaction curves and cyclic load curves as the manufacturer's catalog values for the Star Slugin anchors are based on anchors using the recommended number of units. The test performed under this program for the 5/8, 3/4 7/8, and 1 inch diameter Star Slugins used less than the recommended number of units. Therefore, test values cannot be compared to manufacturer's catalog values.

The discrepancies between test and manufacturer's values is being investigated. Niagara Mohawk Power Corporation plans to report the results of this investigation by October 15, 1979.

