

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
WASHINGTON, D.C. 20555

IE Bulletin No. 79-02  
Date: March 8, 1979  
Page 1 of 3

PIPE SUPPORT BASE PLATE DESIGNS USING CONCRETE EXPANSION ANCHOR BOLTS

Description of Circumstances:

While performing inservice inspections during a March-April 1978 refueling outage at Millstone Unit 1, structural failures of piping supports for safety equipment were observed by the licensee. Subsequent licensee inspections of undamaged supports showed a large percentage of the concrete anchor bolts were not tightened properly.

Deficiency reports, in accordance with 10 CFR 50.55(e), filed by Long Island Lighting Company on Shoreham, indicate that design of base plates using rigid plate assumptions has resulted in underestimation of loads on some anchor bolts. Initial investigation indicated that nearly fifty percent of the base plates could not be assumed to behave as rigid plates. In addition, licensee inspection of anchor bolt installations at Shoreham has shown over fifty percent of the bolt installations to be deficient.

Vendor Inspection Audits by NRC at Architect Engineering firms have shown a wide range of design practices and installation procedures which have been employed for the use of concrete expansion anchors. The current trends in the industry are toward more rigorous controls and verification of the installation of the bolts.

The data available on dynamic testing of the concrete expansion anchors show fatigue failures can occur at loads substantially below the bolt static capacities due to material imperfections or notch type stress risers. The data also show low cycle dynamic failures at loads below the bolt static capacities due to joint slippage.

Action to be Taken by Licensees and Permit Holders:

For pipe support base plates that use concrete expansion anchor bolts in Seismic Category I systems as defined by Regulatory Guide 1.29, "Seismic Design Classification" Revision 1, dated August 1973 or as defined in the applicable FSAR.

1. Verify that pipe support base plates are included in the calculation of anchor bolt stresses in the analysis justifying the assumption of rigid plate behavior.

11-113

7903140038

Dup

DUPLICATE DOCUMENT

Entire document previously entered into system under:

ANO 7903140038

No. of pages: 5



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
631 PARK AVENUE  
KING OF PRUSSIA, PENNSYLVANIA 19406

TERA

March 20, 1979

Docket Nos. 50-289  
50-320

Metropolitan Edison Company  
ATTN: Mr. J. G. Herbein  
Vice President - Generation  
P. O. Box 542  
Reading, Pennsylvania 19640

Gentlemen:

The enclosed IE Circular 79-05 is forwarded to you for information. A written response is not required. If there are any questions related to your understanding of the suggested actions, please contact this office.

Sincerely,

  
for Boyce H. Grier  
Director

Enclosures:

1. IE Circular No. 79-05
2. List of IE Circulars Issued  
in Last Twelve Months

cc w/encls:

E. G. Wallace, Licensing Manager  
J. J. Barton, Project Manager  
R. C. Arnold, Vice President - Generation  
L. L. Lawyer, Manager - Generation Operations  
G. P. Miller, Manager - Generating Station - Nuclear  
J. L. Seelinger, Unit 1 Superintendent  
W. E. Potts, Unit 1 Superintendent - Technical Support  
J. B. Logan, Unit 2 Superintendent  
G. A. Kunder, Unit 2 Superintendent - Technical Support  
I. R. Finrock, Jr.  
Mr. R. Conrad  
G. F. Trowbridge, Esquire  
Miss Mary V. Southard, Chairman, Citizens for a Safe Environment

11 114

7904050021