

**Detroit  
Edison**

**Edward Hines**  
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October 30, 1979

EF2-50,637

Mr. James G. Keppler  
Regional Director  
Directorate of Regulatory Operations  
Region III  
U.S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Dear Mr. Keppler:

Detroit Edison's Response to NRC IE Bulletin 79-14

NRC IE Bulletin 79-14, including Rev. 1, and supplements 1 & 2, concerned Seismic Analysis for As-Built Safety-Related Piping Systems. Detroit Edison has investigated this matter for the Enrico Fermi Power Plant, Unit 2, and our response is contained in the enclosed Edison memorandum (EF2-50,595 of October 29, 1979).

If you require additional action by Edison in this matter, please advise us.

Very truly yours,

*Edward Hines*

HE/lm

Attachment

cc: Mr. John G. Davis  
Acting Director  
Office of Inspection and Enforcement  
Division of Reactor Inspection Programs  
U.S. Nuclear Regulatory Commission  
Washington D.C. 20555

Director  
Division of Operating Reactors  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington D.C. 20555

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To: R. W. Barr

From: W. F. Colbert *WAC/LMS 10-30-79*

- References:
- 1) Enrico Fermi Power Plant - Unit 2
  - 2) USNRC Licensing Docket 50-341
  - 3) Letter on Docket 50-341 Dated July 2, 1979  
from J. G. Keppler, USNRC to Edward Hines,  
Edison.
  - 4) Letter on Docket 50-341 Dated July 20, 1979  
from J. G. Keppler, USNRC to Edward Hines,  
Edison.
  - 5) Letter on Docket 50-341 Dated August 20, 1979  
from J. G. Keppler, USNRC to Edward Hines,  
Edison.
  - 6) Letter on Docket 50-341 Dated September 12, 1979  
from J. G. Keppler, USNRC to Edward Hines,  
Edison
  - 7) USNRC IE Bulletin 79-14, Revision 1, Plus  
Supplements  
1 and 2 to that Bulletin.
  - 8) EF2-50, 253, Revision A, Dated October 16, 1979

Subject: Detroit Edison Response to NRC IE Bulletin 79-14.

This memo advises you of Edison's actions to date, and future plans, formulated to effectively address the concerns expressed in NRC IE Bulletin 79-14 relative to the accuracy of the input data used as the basis for the conduct of the Seismic Analysis of Category I Piping Systems on Fermi 2.

Those Piping Systems on Fermi 2 which have been designed to Category I (Edison Seismic Class I) requirements are identified in the FSAR, Table 3.2-1. The Piping Stress Analysis, including Seismic Analysis was prepared for each of these systems using the design documents which are listed, generically, below: (See Table I)

1) Piping Fabrication & Installation Drawings

These documents specify the pipe routing, size, wall thickness, insulation information, and the location of in-line components.

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2) Component Drawings

These specify the size, weight, location of the center of gravity and overall geometry of the major in-line components (valves, flanges, etc)

3) Equipment Drawings

These specify the equipment terminal (nozzle) locations, nozzle movements, allowable loads, etc.

4) Hanger Location Drawings

These identify the support system components by mark number and type (spring, snubber, rigid, etc.) and locate the attachment point to the pipe.

5) Hanger Detail Sketches

These give specific information as to the support design, orientation and function.

6) System Design Specifications (ASME III Systems)

- AND -

7) System Design Instructions (B.31.1 Systems)

The above documents specify the various design, code and licensing related requirements which must be addressed in the piping stress analysis.

8) Reactor-Auxillary Building Seismic Report

This document provides the relevent seismic response spectra for both the OBE & SSE load cases.

The exact listing of all documents actually used is not included here due to the great volume of information involved. That exact listing, plus a listing of any supplemental documents used, such as notes of conferences, letters, non-project related technical reference documents, etc., is readily available by reviewing the "Reference" section of the appropriate Piping Stress Analysis Report.

Due to the status of construction of the Fermi 2 piping systems, no reconciliation of the piping system seismic analysis to the "As-Built" condition has been accomplished to date. Edison's present plans, relative to this activity are outlined below:

The Fermi 2 primary pressure boundary piping systems, 1 1/4 inch and larger, out to the outer isolation valves are designed and constructed to the rules of ASME III, Class I or ANSI B.31.7, Class I and have been stress-analyzed to the rules of ASME III, Subsection NB-3000. For these lines Edison will provide for the reconciliation of these stress analyses with the "As-Built" condition of the piping prior to the issuance of the Certified Stress Report. This reconciliation will be accomplished by re-analysis or engineering evaluation, depending upon the deviation of the final "As-Built" configuration from the originally analyzed design configuration. This reconciliation will be conducted in accordance with the rules of Subsection NA-3355 of the ASME III Code and is planned to be completed prior to the conduct of the initial primary pressure boundary systems hydrostatic test. For a synopsis of the type of information considered in the reconciliation, see the attached Reference 8.

For Seismic Class I Systems designed to ASME III Class 2 & 3 or B.31.1 requirements, Engineering feels that the input to the seismic analysis does reflect the as-built condition because of the manner in which Edison handles design changes to Seismic Class I piping systems which are required as a result of field conditions, as described.

All field generated requests for a change from the design configuration of Seismic Class I piping or pipe supports in excess of established tolerances must be submitted to Edison engineering for approval prior to actual implementation. If the request involves a minor change to the piping or hanger configuration, such as a hanger relocation or piping fit-up adjustment, which in Edison Engineering's judgement will not compromise the validity of the seismic analysis, the change is authorized. If the change is major in nature, such as a significant piping re-route or elimination of a pipe support, the stress analysis, including seismic analysis, is re-run and the effects of the change evaluated.

In either case described above, the Project design drawings are updated to reflect the change to the configuration of the piping system.

As construction nears the completion phase, the revised design drawings will be re-reviewed by the engineering firms who performed the original piping analysis. Where re-analysis is indicated as necessary due to the number and/or nature of the changes, that re-analysis will be accomplished. Where no significant changes have been found to occur, the analysis will not be re-done.

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October 29, 1979  
EF2-50,595

Edison believes that the above described approach is adequately conservative to insure that field generated changes will not compromise the integrity of the seismic analysis of safety related piping systems on Fermi 2. If you require our further input in this matter, please advise us.

WRITTEN BY: J. H. CASIGLIA

EH/JHC/

ATTACHMENT-Table 1 & EF2-50, 253, Rev. A

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TABLE IMETHODS EMPLOYED TO SEISMICALLY ANALYZE  
SEISMIC CLASS I PIPING ON FERMI 2

PIPE SIZE	CODE & CLASS	SIMPLIFIED ANALYSIS (1)		COMPUTERIZED ANALYSIS
1½" & UP	ASME III CLASS 1			X
6" & UP	ASME III CLASS 2 & 3			X
2½" - 4"	ASME III CLASS 2 & 3	X	OR	X
2" & UNDER	ASME III CLASS 2 & 3	X		
1"	ASME III CLASS 1 (2)	X	OR	X
ALL	B.31.1 SEISMIC I			X

NOTES:

1.) SIMPLIFIED ANALYSIS IS DESCRIBED  
IN THE FERMI 2 FSAR, SUB SECTION  
3.9.2.7.

2.) ASME III, CLASS 1 PIPING, 1" NOM.  
PIPE SIZE AND UNDER IS DESIGNED  
TO THE RULES OF ASME III,  
SUBSECTION NC-3650.





ENRICO FERMI UNIT 2 PROJECT  
ENGINEERING

October 16, 1979

EF2-50,253  
Revision A

To: W.M. Everett  
Site Superintendent


From: W.F. Colbert *WFC/HB*  
Project Engineer

Subject: As-Built Drawing Package Content for Class I Systems

In order to finalize and certify the Class I piping analysis for Enrico Fermi Unit 2, a thorough and complete "as-built" piping and hanger package needs to be developed for each stress report. The drawing content of each package was identified in letter EF2-43,107. In an effort to support the proper development and coordination for this activity, engineering has developed minimum requirements for the content of each as-built package. The following are the requirements:

- 1). Two (2) marked prints each of the most current revision of the appropriate piping fabrication (-1), hanger installation (-2) and hanger sketches shall be provided, each marked up as follows:
  - A). For all pipe-to-pipe dimensions for which the deviation from the design dimension is  $\frac{1}{2}$  inch or less, the dimension shall be considered correct (equal to design) and the appropriate dimension shall be shaded in yellow.
  - B). For all pipe-to-structure (building column centerline) dimensions for which the deviation from the design dimension is 1-inch or less, the dimension shall be considered correct (equal to design) and the appropriate dimension shall be shaded in yellow.
  - C). For all dimensions in excess of the above limits, a deviation shall be assumed to exist and the actual dimension shall be reported, this shall be accomplished by crossing out the design dimension and providing the corresponding "as built" dimension in red. Actual dimensions shall be reported to the nearest 1/8-inch.

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- D). For pipe-to-hanger attachment points and hanger-to-structure attachment points which deviate 3-inches or less from the design dimension, the dimension shall be considered correct and shall be shaded in yellow. Deviations in excess of 3-inches shall be crossed out and the actual dimension reported in red.
- 2). Information necessary on (-1) drawing:
- A). As-built pipe-to-pipe dimensions
  - B). As-built dimensions from pipe to referenced building members & coordinates.
  - C). Valve ID no., type and end to end dimensions.
  - D). Valve operator orientation
  - E). Pipe O.D. & Wall thickness\* verification.
  - F). As-built location of all flanges, reducers, pressure taps, thermal wells, shear lugs and other inline components.
  -  G). As-built location of all field welds and shop welds.
- 3). Information necessary on (-2) drawings:
- A). As-built dimensions to hanger, restraint or snubber pipe attachments.
  - B). Valve body and operator weight.
  - C). Hanger mark no., type and cold load setting (spring hangers).
- 4). Information necessary on hanger sketches:
- A). Mark-up to show as-built configuration of the permanent hanger.
  - B). Verification of hanger type (i.e., spring, snubber, rigid, etc.).
  - C). Dimensional location of building attachment point.
  - D). For dummy snubbers or temporary hangers, a sketch shall be provided showing the above information.

\*Verify wall thickness using UT thickness gauge at three locations on each piece of straight pipe or fitting.



MEMO TO:  
W.M. Everett  
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EF2-50,253  
Revision A

As a guide we are enclosing a sample as-built package identifying all of the above requirements.

Please advise us as to your ability and schedule to supply the above-listed information, in the format specified by October 5, 1979.

Written by: R. Kennedy  
/sp

cc: T.H. Dickson  
L. Bertani  
F.E. Gregor  
J.H. Casiglia  
D.E. Seifert  
K. Dempsey  
C.R. Bacon  
M.G. Sigetich  
F.M. Faubert  
Doc. Control

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*QAC*  
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