

SEP 17 1986

Illinois Department of Nuclear Safety
ATTN: Dr. Terry R. Lash, Director
1035 Outer Park Drive
Springfield, IL 62704

Dear Dr. Lash:

This is in response to your letter of August 22, 1986, concerning Mr. Schuyler Mitchell's recent allegations regarding Commonwealth Edison Company's (CECo) as-built drawings at the Byron Station. During the Springfield meeting of August 12, 1986, members of my staff emphasized to you the importance placed on this allegation by the NRC. Let me personally re-emphasize this point to you. Mr. Mitchell's allegation, like the many other allegations received by this office, will be vigorously pursued to determine whether there are any safety concerns or violations of NRC regulations governing the construction and/or operation of a nuclear power facility.

Your letter expressed the view that the proposed NRC investigation of Mr. Mitchell's allegations is too narrow and limited in scope to sufficiently address the concerns. Specifically, you recommend that the initial investigation should involve a complete quadrant in the containment for Byron 1 and that similar investigations should be considered at Byron 2 and at Braidwood 1 and 2. In our view, it is premature to implement the extensive program you suggest until the relative technical significance of Mr. Mitchell's allegations can be established. As you know we initiated an inspection, which is being observed by your staff of Byron Unit 1 on September 15, 1986.

In addition to potential areas of concern identified to us by Mr. Mitchell (about 20 dimensions) we plan to expand the inspection sample considerably. The expanded sample will be safety-related systems (such as safety injection and component cooling water) located inside Unit 1 and Unit 2 Containment Buildings as well as those located in the Auxiliary Building. The resulting dimensions checked will be in the range of 400 to 600. This, of course, is in addition to the inspections performed during the period of August 13, 1984 through April 2, 1985, where similar issues were inspected and reported in Inspection Report Nos. 50-454/84-51 and 50-455/84-35 (we previously provided you a copy of this report).

The dimensions obtained from these inspections will be compared to as-built drawings and any significant discrepancies will be evaluated. Once this effort is completed and the relative safety significance is determined, a decision will be made either to continue to expand or to terminate our as-built verification efforts. This represents a logical and pragmatic approach to resolving the allegation based on the information now available, and is consistent with NRC's handling of past similar allegations.

With regard to your questions about NRC's requirements for the accuracy of "as-built" drawings at the time a plant is licensed to operate and thereafter

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throughout the plant's operating lifetime", enclosed is a copy of IE Bulletin 79-14 for your review. Paragraph 4.D of the enclosure states:

Revise documents to reflect the as-built conditions in plant, and describe measures which are in effect which provide assurance that future modifications of piping systems, including their supports will be reflected in a timely manner in design documents and the seismic analysis.

It has been our policy to have each licensee develop as well as defend accuracy requirements on a case-by-case basis. The NRC evaluates these requirements also on a case-by-case basis using best engineering judgement.

As you are aware, a member of your staff is accompanying us during our inspection efforts on this allegation. We look forward to his participation until final resolution has been achieved. We hope that this information alleviates your concerns and explains our position.

Sincerely,

Original signed by
James G. Keppler

James G. Keppler
Regional Administrator

Enclosure: As stated

cc w/enclosure:
V. Stello, EDO
G. W. Kerr, OSP
G. H. Cunningham, OGC
J. M. Taylor, IE
J. W. McCaffrey, Chief,
Public Utilities Division

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RIII *yes*
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Lickus
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yes RIII
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Davis
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RIII *yes*
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Keppler
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Taylor
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IE *by telephone*
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Jordan
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NRR *by telephone*
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Novak
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U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

July 2, 1979

IE Bulletin No. 79-14

SEISMIC ANALYSES FOR AS-BUILT SAFETY-RELATED PIPING SYSTEMS

Description of Circumstances:

Recently two issues were identified which can cause seismic analysis of safety-related piping systems to yield nonconservative results. One issue involved algebraic summation of loads in some seismic analyses. This was addressed in show cause orders for Beaver Valley, Fitzpatrick, Maine Yankee and Surry. It was also addressed in IE Bulletin 79-07 which was sent to all power reactor licensees.

The other issue involves the accuracy of the information input for seismic analyses. In this regard, several potentially unconservative factors were discovered and subsequently addressed in IE Bulletin 79-02 (pipe supports) and 79-04 (valve weights). During resolution of these concerns, inspection by IE and by licensees of the as-built configuration of several piping systems revealed a number of nonconformances to design documents which could potentially affect the validity of seismic analyses. Nonconformances are identified in Appendix A to this bulletin. Because apparently significant nonconformances to design documents have occurred in a number of plants, this issue is generic.

The staff has determined, where design specifications and drawings are used to obtain input information for seismic analysis of safety-related piping systems, that it is essential for these documents to reflect as-built configurations. Where subsequent use, damage or modifications affect the condition or configuration of safety-related piping systems as described in documents from which seismic analysis input information was obtained, the licensee must consider the need to re-evaluate the seismic analyses to consider the as-built configuration.

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Action to be taken by Licensees and Permit Holders:

All power reactor facility licensees and construction permit holders are requested to verify, unless verified to an equivalent degree within the last 12 months, that the seismic analysis applies to the actual configuration of safety-related piping systems. The safety related piping includes Seismic Category I systems as defined by Regulatory Guide 1.29, "Seismic Design Classification" Revision 1, dated August 1, 1973 or as defined in the applicable FSAR. The action items that follow apply to all safety related piping 2 1/2-inches in diameter and greater and to seismic Category I piping, regardless of size which was dynamically analyzed by computer. For older plants, where Seismic Category I requirements did not exist at the time of licensing, it must be shown that the actual configuration of these safety-related systems, utilizing piping 2 1/2 inches in diameter and greater, meets design requirements.

Specifically, each licensee is requested to:

1. Identify inspection elements to be used in verifying that the seismic analysis input information conforms to the actual configuration of safety-related systems. For each safety-related system, submit a list of design documents, including title, identification number, revision, and date, which were sources of input information for the seismic analyses. Also submit a description of the seismic analysis input information which is contained in each document. Identify systems or portions of systems which are planned to be inspected during each sequential inspection identified in Items 2 and 3. Submit all of this information within 30 days of the date of this bulletin.
2. For portions of systems which are normally accessible*, inspect one system in each set of redundant systems and all nonredundant systems for conformance to the seismic analysis input information set forth in design documents. Include in the inspection: pipe run geometry; support and restraint design, locations, function and clearance (including floor and wall penetration); embedments (excluding those covered in IE Bulletin 79-02); pipe attachments; and valve and valve operator locations and weights (excluding those covered in IE Bulletin 79-04). Within 60 days of the date of this bulletin, submit a description of the results of this inspection. Where nonconformances are found which affect operability of any system, the licensee will expedite completion of the inspection described in Item 3.

*Normally accessible refers to those areas of the plant which can be entered during reactor operation.

3. In accordance with Item 2, inspect all other normally accessible safety-related systems and all normally inaccessible safety-related systems. Within 120 days of the date of this bulletin, submit a description of the results of this inspection.
4. If nonconformances are identified:
 - A. Evaluate the effect of the nonconformance upon system operability under specified earthquake loadings and comply with applicable action statements in your technical specifications including prompt reporting.
 - B. Submit an evaluation of identified nonconformances on the validity of piping and support analyses as described in the Final Safety Analysis Report (FSAR) or other NRC approved documents. Where you determine that reanalysis is necessary, submit your schedule for: (i) completing the reanalysis, (ii) comparisons of the results to FSAR or other NRC approved acceptance criteria and (iii) submitting descriptions of the results of reanalysis.
 - C. In lieu of B, submit a schedule for correcting nonconforming systems so that they conform to the design documents. Also submit a description of the work required to establish conformance.
 - D. Revise documents to reflect the as-built conditions in plant, and describe measures which are in effect which provide assurance that future modifications of piping systems, including their supports, will be reflected in a timely manner in design documents and the seismic analysis.

Facilities holding a construction permit shall inspect safety-related systems in accordance with Items 2 and 3 and report the results within 120 days.

Reports shall be submitted to the Regional Director with copies to the Director of the Office of Inspection and Enforcement and the Director of the Division of Operating Reactors, Office of Nuclear Reactor Regulation, Washington, D.C. 20555.

Approved by GAO (R0072); clearance expires 7/31/80. Approval was given under a blanket clearance specifically for generic problems.

Enclosures:

1. Appendix A
2. Listing of IE
Bulletins Issued
in Last Twelve
Months

APPENDIX A

PLANTS WITH SIGNIFICANT DIFFERENCES BETWEEN ORIGINAL DESIGN AND AS-BUILT CONDITION OF PIPING SYSTEMS

Plant	Difference	Remarks
Surry 1	Mislocated supports. Wrong Support Type. Different Pipe Run Geometry.	As built condition caused majority of pipe overstress problems, not algebraic summation.
Beaver Valley	Not specifically identified. Licensee reported "as-built conditions differ signifi- cantly from original design."	As built condition resulted in both pipe and support overstress.
Fitzpatrick	IE inspection identified differences similar to Surry.	Licensee is using as built configuration for reanalysis.
Pilgrim	Snubber sizing wrong. Snubber pipe attachment welds and snubber support assembly nonconformances.	Plant shutdown to restore original design condition.
Brunswick 1 and 2	Pipe supports undersize.	Both units shutdown to restore original design condition.
Ginna	Pipe supports not built to original design.	Supports were repaired during refueling outage.
St. Lucie	Missing seismic supports. Supports on wrong piping.	Install corrected supports before start up from refueling.

Plant	Difference	Remarks
Nine Mile Point	Missing seismic supports.	Installed supports before startup from refueling.
Indian Point 3	Support location and support construction deviations.	Licensee performing as built verification to be completed by July 1.
Davis-Besse	Gussets missing from main Steam Line Supports.	Supports would be overstressed. Repairs will be completed prior to start-up.

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

August 15, 1979

Supplement IE Bulletin No. 79-14

SEISMIC ANALYSIS FOR AS-BUILT SAFETY-RELATED PIPING SYSTEMS

Description of Circumstances:

IE Bulletin No. 79-14 was issued on July 2, 1979 and revised on July 18, 1979. The bulletin requested licensees to take certain actions to verify that seismic analyses are applicable to as-built plants. This supplement to the bulletin provides additional guidance and definition of Action Items 2, 3, and 4.

To comply with the requests in IE Bulletin 79-14, it will be necessary for licensees to do the following:

2. Inspect Part of the Accessible Piping

For each system selected by the licensee in accordance with Item 2 of the Bulletin, the licensee is expected to verify by physical inspection, to the extent practicable, that the inspection elements meet the acceptance criteria. In performing these inspections, the licensee is expected to use measuring techniques of sufficient accuracy to demonstrate that acceptance criteria are met. Where inspection elements important to the seismic analysis cannot be viewed because of thermal insulation or location of the piping, the licensee is expected to remove thermal insulation or provide access. Where physical inspection is not practicable, e.g., for valve weights and materials of construction, the licensee is expected to verify conformance by inspection of quality assurance records. If a nonconformance is found, the licensee is expected in accordance with Item 4 of the Bulletin to perform an evaluation of the significance of the nonconformance as rapidly as possible to determine whether or not the operability of the system might be jeopardized during a safe shutdown earthquake as defined in the Regulations. This evaluation is expected to be done in two phases involving an initial engineering judgement (within 2 days), followed by an analytical engineering evaluation (within 30 days). Where either phase of the evaluation shows that system operability is in jeopardy, the licensee is expected to meet the applicable technical specification action statement and complete the inspections required by Item 2 and 3 of the Bulletin as soon as possible. The licensee must report the results of these inspections in accordance with the requirements for content and schedule as given in Item 2 and 3 of the Bulletin.

3. Inspect Remaining Piping

The licensee is expected to inspect, as in Item 2 above, the remaining safety-related piping systems which were seismically analyzed and to report the results in accordance with the requirements for content and schedule as given in Item 3 of the Bulletin.

4A. Evaluate Nonconformances

With regard to Item 3A for the Bulletin, the licensee is expected to include in the initial engineering judgement his justification for continued reactor operation. For the analytical engineering evaluation, the licensee is expected to perform the evaluation by using the same analytical technique used in the seismic analysis or by an alternate, less complex technique provided that the licensee can show that it is conservative.

If either part of the evaluation shows that the system may not perform its intended function during a design basis earthquake, the licensee must promptly comply with applicable action statements and reporting requirements in the Technical Specifications.

4B. Submit Nonconformance Evaluations

The licensee is expected to submit evaluations of all nonconformances and, where the licensee concludes that the seismic analysis may not be conservative, submit schedules for reanalysis in accordance with Item 4B of the Bulletin or correct the nonconformances.

4C. Correct Nonconformances

If the licensee elects to correct nonconformances, the licensee is expected to submit schedules and work descriptions in accordance with Item 4C of the Bulletin.

4D. Improve Quality Assurance

If nonconformances are identified, the licensee is expected to evaluate and improve quality assurance procedures to assure that future modifications are handled efficiently. In accordance with Item 4D of the Bulletin, the licensee is expected to revise design documents and seismic analyses in a timely manner.

The schedule for the action and reporting requirements given in the Bulletin as originally issued remains unchanged.

Approved by GAO, B180225 (R0072), clearance expires 7/31/80. Approval was given under a blanket clearance specifically for identified generic problems.

Enclosure: Listing of
IE Bulletins Issued in
Last 6 Months

SSINS: 6820

Accession No.: ~~7908220109~~

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

September 7, 1979

IE Bulletin No. 79-14
Supplement 2

SEISMIC ANALYSIS FOR AS-BUILT SAFETY-RELATED PIPING SYSTEMS

Description of Circumstances:

IE Bulletin No. 79-14 was issued on July 2, revised on July 18, and first supplemented on August 15, 1979. The bulletin requested licensees to take certain actions to verify that seismic analyses are applicable to as-built plants. Supplement 2 provides the following additional guidance with regard to implementation of the bulletin requirements:

Nonconformances

One way of satisfying the requirements of the bulletin is to inspect safety-related piping systems against the specific revisions of drawings which were used as input to the seismic analysis. Some architect-engineers (A-E) however, are recommending that their customers inspect these systems against the latest revisions of the drawings and mark them as necessary to define the as-built configuration of the systems. These drawings are then returned to the AE's offices for comparison by the analyst to the seismic analysis input. For licensees taking this approach, the seismic analyst will be the person who will identify nonconformances.

The first supplement to the bulletin provided guidance with regard to evaluation of nonconformances. That guidance is appropriate for licensees inspecting against later drawings. The licensee should assure that he is promptly notified when the AE identifies a nonconformance, that the initial engineering judgment is completed in two days and that the analytical engineering evaluation is completed in 30 days. If either the engineering judgement or the analytical engineering evaluation indicates that system operability is in jeopardy, the licensee is expected to meet the applicable technical specification action statement.

Visual Approximations

Some licensees are visually estimating pipe lengths and other inspection elements, and have not documented which data have been obtained in that way. Visual estimation of dimensions is not encouraged for most measurements; however, where visual estimates are used, the accuracy of estimation must be within tolerance requirements. Further, in documenting the data, the licensee must specifically identify those data that were visually estimated.

Thermal Insulation

In many areas, thermal insulation interferes with inspection of pipe support details, i.e. attachment welds, saddles, support configuration, etc. In some areas, the presence of thermal insulation may result in unacceptably large uncertainties for determination of the location of pipe supports.

Where thermal insulation obstructs inspection of support details, the insulation should be removed for inspection of a minimum of 10% of the obstructed pipe supports in both Item 2 and 3 inspections. In the Item 3 response, the licensee should include a schedule for inspecting the remaining supports.

Where necessary to determine the location of pipe supports to an accuracy within design tolerances, thermal insulation must be removed.

Clearances

For exposed attachments and penetrations, licensees are expected to measure or estimate clearances between piping and supports, integral piping attachments (e.g. lugs and gussets) and supports, and piping and penetrations. Licensees are not expected to do any disassembly to measure clearances.

Loose Bolts

Loose anchor bolts are not covered by this bulletin, but are covered by IE Bulletin No. 79-02. Any loose anchor bolts identified during actions taken for this bulletin should be dispositioned under the requirements of Bulletin No. 79-02.

Other loose bolts are to be treated as nonconformances if they invalidate the seismic analysis; however, torquing of bolts is not required.

Difficult Access

Areas where inspections are required by the Bulletin but are considered impractical even with the reactor shutdown, should be addressed on a case by case basis. Information concerning the burden of performing the inspection and the safety consequence of not performing the inspection should be documented by the licensee and forwarded for staff review.

Schedule

The schedule for the action and reporting requirements given in the Bulletin as originally issued remains unchanged.

Enclosure: List of IE Bulletins
Issued in the Last Six Months