

60 Day Response to IE Bulletin No. 79-14  
Seismic Analysis for As-Built Safety Related Piping Systems  
R.E. Ginna Nuclear Power Plant, Unit No. 1  
Docket 50-244

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1. Introduction

- a) Our 30 Day Response to IE Bulletin No. 79-14 submitted on July 31, 1979 includes background information on the seismic qualification methods used at Ginna Station, and a description of the 79-14 inspection and evaluation program scope and schedule.
- b) The inspection and evaluation program for Seismic Category I piping systems inside containment has been completed. The results of these evaluations are summarized in this report. The schedule for preparation and revision of the drawings described in our 30 day report has been revised. The drawings for piping inside containment will now be completed within 120 days of the date of the bulletin; and the drawings for piping outside containment will be completed within 180 days of the date of the bulletin. Inspection and evaluation of piping systems outside containment will be completed within 120 days of the date of the bulletin.
- c) A listing of drawings used to establish design requirements was attached to the 30 Day Response. Attachment 1 to this report is a revised listing of the drawings. The list identifies piping and instrumentation diagrams, piping layout drawings, and piping analysis drawings used to inspect and evaluate each system.
- d) The inspection and evaluation of piping systems inside containment was performed prior to the August 15, 1979 issuance of the supplement to IE Bulletin 79-14. Attachment 2 to this report describes the methods of inspection, evaluation, and nonconformance control used for piping inside containment.
- e) The results of the inspections and evaluations are summarized in two parts: first, the Reactor Coolant System and piping systems which were originally qualified by equivalent static analyses and second, piping systems, or portions of systems, which were qualified by dynamic analysis. The results are also presented in the same sequence of systems used in the drawing index, Attachment 1.

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2. Reactor Coolant System and Category I Piping 2½ Inch Nominal Pipe Size and Larger Seismically Qualified Using Equivalent Static Analyses

(a) The results presented here are based on the inspection and evaluation methods discussed in Attachment 2 of this report. Nonconformances and their evaluations and dispositions are identified for those deviations which were outside the established acceptance criteria. All lines listed below were evaluated and found acceptable in the as built condition or repairs made.

(b) Reactor Coolant System

1. Primary Loop

No Nonconformances

2. Surge Piping

No Nonconformances

3. Pressurizer to PCV 434.

No Nonconformances

4. Pressurizer to PCV 435

No Nonconformances

5. Pressurizer to PCV 430 and PCV 431C

No Nonconformances

6. Pressurizer Spray Lines From R.C. Loops through PCV 431A&B

NCR-G-79-119-1

Support PS-15 is installed at elevation 247'-9". The design elevation is 244'-9". The support is intended to protect the nozzle on the primary loop. The installed location is closer to the nozzle, which will further reduce loads on the nozzle.

Evaluation: Use-as-is

NCR-G-79-119-2

Support PS-22 is installed at elevation 279'-4". The design elevation is 280'-6". The support is closer to the valves providing for additional restraint.

Evaluation: Use-as-is.



(c) Main Steam System

1. From Steam Generator 1A to Pen. #401

No Nonconformances

2. From Steam Generator 1B to Pen. #402

No Nonconformances

(d) Feedwater System

1. From Pen. #403 to Steam Generator 1A

No Nonconformances

2. From Pen. #404 to Steam Generator 1B

No Nonconformances

(e) Safety Injection System

1. From Accumulator "A" to R.C. Loop B

No Nonconformances

2. Accumulator "B" to R.C. Loop A

NCR-G-79-119-3

Valve 865 assumed to weigh 1100 lbs. actually weighs 2550 lbs. Since the valve is located only ten inches from an anchor, the stress due to the increased weight is not significant. The maximum seismic stress assuming the valve weighs 1100 lbs. is 3778 psi.

Evaluation: Use-as-is.

3. Pen. #101 to Valves 878 C & D

NCR-G-79-119-4

Support SI-84 is relocated around an elbow, 1'-6" from the design location. Since this is a spring support, it will have negligible effect on seismic stresses. The deadload stress is 3944 psi with the support in the as-built location.

Evaluation: Use-as-is



NCR-G-79-119-5

Angles were added at two locations which join the 4" and 6" containment spray lines providing additional stiffness to the line.

Evaluation: Use-as-is.

NCR-G-79-119-6

The piping was rerouted at the penetration. An additional vertical restraint was added. The line is acceptable in as-built condition.

Evaluation: Use-as-is.

4. Pen. #113 to Valves 878 A & B

NCR-G-79-119-7

Support SI-93 is located 1'-0" southwest of design location. Also, SI-93 is rotated down 30°. The installed location and orientation are acceptable since spacing is still within B31.1 allowables and the support will still provide the necessary lateral restraint. An angle was added near SI-93 joining this 4" pipe to a 2" pipe. This support provides additional stiffness to both piping systems.

Evaluation: Use-as-is.

5. Containment Sump to Pen. #141

No Nonconformances

6. Containment Sump to Pen. #142

No Nonconformances

(f) Residual Heat Removal

1. From Penetration #140 to Reactor Coolant Loop A

NCR-G-79-119-8

Support RH-7 is 2'-7" south of designed location. This condition was included in the reanalysis performed for the revised response to IE Bulletin No. 79-07, July 26, 1979.

Evaluation: Use-as-is.

2. From Penetration #111 to Reactor and Reactor Coolant Loop B





NCR-G-79-90 (See LER-79-015)

Support RH-16 was installed 7'-6" from design location. Another support was installed at the design location. The line is now acceptable in the as-built condition.

Evaluation: Repair

3. 6" and 4" line from 10" RHR to reactor support

NCR-G-79-119-9

RH-28 is located 3'-3" east of design location. RH-28 is a spring, the supports adjacent to it are rigid. The revised deadload stress is 1316 psi. Since RH-28 is a spring, the relocation will have minimal effect on seismic stresses. Therefore, the line is acceptable in the as-built condition.

Evaluation: Use-as-is.

(g) Containment Spray

1. From Pen. #109 to Outer Ring

NCR-G-79-88 (See LER 79-015)

Two clamps were found missing on the ring. These were reinstalled per the design drawings.

Evaluation: Repair.

NCR-G-79-91 (See LER 79-015)

One ring support is missing. The line was reanalyzed and the normal condition stress (deadload + pressure) for the existing condition is 9189 psi. The upset condition stress (deadload + pressure + SSE) is 20327 psi. Since these are all within code allowable stress values, the system is acceptable without this support.

Evaluation: Use-as-is.

NCR-G-79-119-10

Several supports are relocated on the ring and riser. However, spacing between supports does not exceed the recommended code spacing. The deviation from design location will not cause significant stress increases:

Evaluation: Use-as-is.

2. From Pen. #105 to Inner Ring



NCR-G-79-97 (See LER 79-015)

Support CS-12 is not per the design drawings.  
Support has been reconstructed in accordance with  
the design drawing.  
Evaluation: Repair.

NCR-G-79-119-11

Angles have been added at two locations joining the  
6" pipe to the 4" safety injection line providing  
additional stiffness to both lines.  
Evaluation: Use-as-is.

(h) Chemical and Volume Control System

1. 3" Header From R.C. Pump Seals to Pen. #108

No Nonconformances

(i) Component Cooling

1. From R.C. Pump B to Pen. #125

NCR-G-79-119-12

Two angles have been added near the penetration  
joining two 2 inch lines to the 4 inch line pro-  
viding additional stiffness to all lines. Line  
is acceptable in as-built condition.  
Evaluation: Use-as-is.

2. From R.C. Pump A to Pen. #126

No Nonconformances

3. From Pen. #127 to R.C. Pump A

No Nonconformances

4. From Pen. #128 to R.C. Pump B

NCR-G-79-119-13

Additional deadload hanger added to system. This  
upgrades the system. Line is acceptable in as-built  
condition.  
Evaluation: Use-as-is.

5. From Reactor Support Coolers to Pen. #130

No Nonconformances

6. From Pen. #131 to Reactor Support Coolers

No Nonconformances



(j) Service Water Piping

1. For this system various portions of the system are supported on common, multi-pipe pipe supports. The lines evaluated and the nonconformances are listed separately.

1.1 Lines Evaluated:

From Pen. 119 to Recirculation Unit 1A  
From Pen. 308 to Recirculation Unit 1A  
From Pen. 316 to Recirculation Unit 1B  
From Pen. 311 to Recirculation Unit 1B  
From Pen. 320 to Recirculation Unit 1C  
From Pen. 315 to Recirculation Unit 1C  
From Pen. 312 to Recirculation Unit 1D  
From Pen. 323 to Recirculation Unit 1D

1.2 Nonconformances

NCR-G-79-92 (See LER 79-015)

Support SW-20 was reported as missing six U bolts. Further review determined U-bolts were actually installed.

Evaluation: No Action Required.

NCR-G-79-89 (See LER 79-015)

Support SW-23 was missing a clamp. The clamp was installed.

Evaluation: Repair.

NCR-G-79-93 (See LER 79-015)

Pipe support SW-3, a rod support, was missing. The support was installed.

Evaluation: Repair.

NCR-G-79-95 (See LER 79-015)

Pipe support SW-29 was missing a clamp. The clamp was installed.

Evaluation: Repair

NCR-G-79-96 (See LER 79-015)

Pipe support SW-22 was missing four U-bolts. The U-bolts were installed.

Evaluation: Repair.



NCR-G-79-119-14

Additional small lines were found supported from pipe supports SW-18, SW-19, SW-20, SW-21, SW-22, SW-23, and SW-26. These supports are all designed as multi-pipe pipe supports. The additional loads imposed by the small lines will not be significant. Evaluation: Use-as-is.

NCR-G-79-119-15

The design drawing for support SW-9 shows a transverse strut. The strut was installed at a 30° skew. The strut still provides transverse restraint and also some acceptable axial restraint. Evaluation: Use-as-is.

NCR-G-79-119-16

An extra rod hanger was originally installed on the 8 inch line from recirculation unit 1D to Pen. 323. The extra support is acceptable. Evaluation: Use-as-is.

NCR-G-79-119-17

An 8 inch service water pipe was hung from the 8 inch line to recirculation unit 1 C from Pen. 315. The additional load is applied near a rod hanger on the line and should not affect the system. Evaluation: Use-as-is.

2. Lines to reactor compartment coolers

The 2 1/2 inch lines servicing the reactor compartment coolers and the connecting lines for the reactor compartment coolers and continuous recirculation units were field hung in accordance with B31.1. Therefore, no design drawings exist. These lines are supported in accordance with the original criteria.

(k) Steam Generator Blowdown

Piping inside containment is 2 inch nominal pipe size and, therefore, was not included in our program.

(l) Auxiliary Feedwater

No piping inside containment

(m) Boric Acid

No piping inside containment





### 3.0 Piping Systems, or Portions of Systems, Seismically Qualified By Dynamic Analyses

(a) The results presented here are based on the inspection and evaluation methods discussed in attachment 2 of this report. Nonconformances and their evaluations and dispositions are identified for those deviations which were outside the established acceptance criteria. All lines listed below were evaluated and found acceptable in the as built condition.

#### (b) Stand-by Auxiliary Feedwater

##### Standby Auxiliary Feedwater System

##### 1. From Pen. #119 to Main Feedwater Line A

###### NCR-G-79-119-18

Support AFW-27 is 1'-10" higher on the riser than designed. The new location is better since it will provide additional support to the horizontal run.  
Evaluation: Use-as-is

###### NCR-G-79-119-19

The weight of insulation from valve 9706A to the main feedwater line was omitted from the analysis. The maximum seismic stress is 12029 psi. The increase in stress due to 1.9 lb/ft insulation weight is not significant.  
Evaluation: Use-as-is

##### 2. From Pen. #123 to Main Feedwater Line B

###### NCR-G-79-119-20

The weight of insulation from valve 9706B to the main feedwater line was omitted from the analysis. The maximum deadload stress is 1253 psi and the maximum SSE stress is 7644 psi. The increase in stress due to 1.9 lb/ft insulation weight is not significant.  
Evaluation: Use-as-is

#### (c) Chemical and Volume Control System

##### 1. Pen. #112 to Regenerative Heat Exchanger

###### NCR-G-79-119-21

Dynamic analysis performed assuming support of the operators for valves 200A, 200B and 202. These supports do not exist. However, since the center of



gravity location for these valves is six inches above pipe centerline and the analysis assumed the center of gravity to be 24 inches above the pipe centerline, no supports for the operators are required.

Evaluation: Use-as-is.

(d) Service Water

Piping inside containment was not dynamically analyzed.

(e) Steam Generator Blowdown

Piping inside containment was not dynamically analyzed.

(f) Auxiliary Feedwater

No piping inside containment.

(g) Boric Acid

No piping inside containment.

(h) RCS Overpressure Protection System

1. Changes to the installation drawings, and discrepancies between the installation drawings and the analysis, were evaluated and found acceptable during installation.

(i) Demineralized Water - Penetration Piping

1. Changes to the installation drawings, and discrepancies between the installation drawings and the analysis, were evaluated and found acceptable during installation.

(j) Charcoal Filter Drawing - Test Connections

1. Changes to the installation drawings, and discrepancies between the installation drawings and the analysis, were evaluated and found acceptable during installation.

