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ACCESSION NBR:9611260207 DOC.DATE: 96/11/14 NOTARIZED: NO FACIL:50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G AUTH.NAME: AUTHOR AFFILIATION MECREDY,R.C. Rochester Gas & Electric Corp. RECIP.NAME RECIPIENT AFFILIATION VISSING,G.	DOCKET # 05000244
SUBJECT: Provides addl info in support of request for NRC approval encl rev to valve testing relief requests VR-8&9,per 96052 ltr.	of <sup>8</sup> C
DISTRIBUTION CODE: A047D COPIES RECEIVED:LTR ENCL SIZE: _/( TITLE: OR Submittal: Inservice/Testing/Relief from ASME Code - GL-8	) A 9-04 7
NOTES:License Exp date in accordance with 10CFR2,2.109(9/19/72).	05000244 <sub>គ</sub>

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AREA CODE 716 546-2700

 ROBERT C. MECREDY
 November 14, 1996

 Vice President
 November 14, 1996

 Nuclear Regulatory Commission
 Document Control Desk

 Attn:
 Guy Vissing

 Project Directorate I-1
 Washington, D.C. 20555

 Subject:
 Inservice Testing (IST) Program for Pumps and Valves

 Revision to Relief Request VR-8&9
 Third Interval (1990-1999), Revision 2

Safety Injection Accumulator Check Valves R.E. Ginna Nuclear Power Plant Docket No. 50-244

Ref.(a): Letter from Jocelyn A. Mitchell (NRC), to Dr. Robert C. Mecredy (RG&E), "Request for Relief from the American Society of Mechanical Engineers (ASME) Code Section XI Requirements for R.E. Ginna Nuclear Plant (TAC No. M94509)," dated May 28, 1996.

Dear Mr. Vissing:

9611260207 961114 PDR ADDCK 05000244

PDR

The purpose of this letter is to provide additional information in support of the request for NRC approval of the attached revision to valve testing relief requests VR-8&9 (for check valves CV-842 A/B and CV-867 A/B) as discussed in the referenced letter. The referenced letter granted a 1 year relief to allow for submittal of requested additional information and descriptions.

Granting of these relief requests would replace the current disassembly schedule of these check valves (two valves every six years) with a more frequent testing schedule (all four valves every 54 months) to be performed during plant refueling outages as provided for in ASME OMA Part 10 Section 4.2. This request is made in accordance with the provisions of 10CFR50.55(a)(3)(i) and (a)(3)(ii), in that the proposed alternatives provide an equivalent level of quality and safety due to the fact that the unique configuration and operating conditions of these valves is such that they remain in excellent material condition, as documented in the inservice testing program history records. In addition, the approval of these requests will result in lower personnel radiation exposures, reductions in thermal cycling induced age degradation for both SI Accumulators, and a reduction in probability of nitrogen gas injection into the RCS.

Unlike the system alignment in many other nuclear power plants, the Ginna Station combined accumulator and safety injection pump pathway is not designed as part of a normal flow path for other plant systems. This system's only purpose is to provide a pathway

for safety injection to the RCS and has no flow path interfaces with other frequently active systems such as the residual heat removal system. The only time that these check valves are cycled is during an actual safety injection condition, quarterly partial flow testing of 842 A/B, and periodic full flow testing. Therefore, the valves are not subject to degradation mechanisms except during test conditions. The periodic stroke testing also represents an abnormal/high risk condition that requires special procedural controls and results in additional schedule and resource impacts during plant cooldown transitions as shown by the attached "SI Accumulator Check Valve Full Flow Test" risk/cost impact assessment (Attachment 3).

Rochester Gas and Electric (RG&E) is an original and currently participating member in the nuclear industry check valve working As such, RG&E has a well-documented maintenance aroup (NIC). history that has been analyzed as demonstrated by the attached matrix "SI Accumulator Discharge Check Valves 842A, 842B, 867A and 867B Disassembly/Inspection Results" (Attachment 4). The matrix shows that after the first twenty years of operation, no degradation has occurred that adversely impacted the operability of these check valves. Α review of industry wide history documentation has shown that there has been only one degraded the same check valve performance indication of type and manufacturer. As shown on the attached "Nuclear Plant Reliability Data System - Failure Master Report" (Attachment 5) this degradation did not affect the system operability. Furthermore, this valve was being used in the residual heat removal shutdown cooling mode which results in flow induced cycling and vibration wear mechanisms. As discussed above, this is not applicable to Ginna for these valves and, therefore, the wear conditions are absent.

In order to allow proper planning for the fall 1997 Refueling Outage, we would appreciate a response by February 1997.

Very truly yours,

Robert C. Mecred

**REJ\438** 

xc: Mr. Guy Vissing (Mail Stop 14C7)
Project Directorate I-1
Washington, D.C. 20555
U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Ginna Senior Resident Inspector

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### Attachment 1

RELIEF REQUEST NO. \_\_\_\_\_ VR - 8, Rev. 1

Safety Injection SYSTEM:

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842A, 842B VALVES:

CATEGORY: A/C

SAFETY CLASS:

These valves open to provide flow from the FUNCTION: safety injection (SI) accumulators to the reactor coolant system (RCS).

Check valves shall be exercised at least once TEST REQUIREMENT: every three months except as provided by IWV-3522. (IWV-3521)

> If only limited operation is practical, during plant operation the check valve shall be part-stroke exercised during plant operation and full-stroke exercised during cold shutdowns. (IWV-3522)

The previous relief request VR-8 provided for valve disassembly once every six years as the alternative position. (Relief Request No. VR-8)

Full-stroke open and close exercising during normal power operation cannot be accomplished since system pressures required to perform the test are not enough to overcome RCS pressure. A test method that permits and confirms full-stroke exercising of these check valves during cold shutdown has been developed for Ginna Station. To perform the test, the plant must be maintained in an offnormal condition with a risk for nitrogen injection and possible entrainment in the RCS. The performance of this test also involves added personnel radiological exposure. Additionally, this test method requires extensive planning and setup and substantially impacts refueling outage schedule at the start of the shutdown.

> As a result of the implementation of this check valve test method, the need for periodic disassembly to satisfy Code requirements would no longer exist thereby eliminating the potential for improper reassembly. The maintenance history of these check valves documents that the valves have been found in excellent mechanical condition

BASIS FOR RELIEF:

upon disassembly. With an excellent mechanical condition baseline verified by periodic part-stroke (quarterly) and fullstroke testing, the operability of check valves 842A and 842B will continue to be ensured.

ALTERNATE TESTING: These valves will be part-stroke exercised quarterly using the SI test header.

Full-stroke exercising of 842A and 842B will be performed in conjunction with full-stroke exercising of 867A and 867B at a frequency of once every three refueling outages. Attachment 2

RELIEF REQUEST NO. <u>VR - 9, Rev. 1</u>

SYSTEM: Safety Injection

A/C

VALVES: 867A, 867B

CATEGORY:

SAFETY CLASS: 1

FUNCTION: These values open to provide a flowpath from the safety injection (SI) accumulators or the SI pumps to the reactor coolant system (RCS) cold legs.

TEST REQUIREMENT: Check valves shall be exercised at least once every three months except as provided by IWV-3522. (IWV-3521)

> If only limited operation is practical, during plant operation the check valve shall be part-stroke exercised during plant operation and full-stroke exercised during cold shutdowns. (IWV-3522)

The previous relief request VR-9 provided for valve disassembly once every six years as the alternative position (Relief Request No. VR-9)

BASIS FOR RELIEF:

Full-stroke or part-stroke open and close exercising during normal power operation cannot be accomplished since system pressures required to perform the test are not enough to overcome RCS pressure. A test method that permits and confirms full- stroke exercising of these check valves during cold shutdown has been developed for Ginna Station. TO perform the test, the plant must be maintained in an off-normal condition with a risk for nitrogen injection and possible entrainment in the RCS. The performance of this test also involves added personnel radiological exposure. Additionally, this test method requires extensive planning and setup and substantially impacts refueling outage schedule at the start of the shutdown.

As a result of the implementation of this check valve test method, the need for periodic disassembly to satisfy Code requirements would no longer exist thereby eliminating the potential for improper reassembly. The maintenance history of these check valves documents that these valves are found in excellent mechanical condition upon disassembly. With an excellent mechanical condition baseline verified by periodic partstroke and full-stroke testing, the operability of check valves 867A and 867B will continue to be ensured.

### ALTERNATE TESTING: Thes

These valves will be part-stroke exercised each refueling outage using actual SI flow into the RCS.

Full-stroke exercising of 867A and 867B will be performed in conjunction with full-stroke exercising of 842A and 842B at a frequency of once every three refueling outages.



# SI Accumulator Check Valve Full Flow Test

10/24/96

**Description:** The SI Accumulator check valves 842A, 842B, 867A and 867B require a quarterly exercise verification to satisfy ASME Sec XI requirements. RG&E has developed a test method to perform full flow exercise testing of these check valves during refueling shutdowns. o Determine the optimum frequency for full flow exercise test performance based on Scope: achievement of assigned technical objectives and cost impact. o Evaluate test frequency options for testing by constraint determination; including weighted Approach: value assignment to technical objectives and cost. o Compare test frequency options relationships; including Cost/Benefit, Advantages/ Disadvantages and Risk. **Options:** Two (2) test frequency options for check valve full flow test performance are : 1) Perform full flow exercise test of each check valve once every 54 months. 2) Perform full flow exercise test of each check valve once every 18 months.

**Relationships:** 



Evaluate the options :





Recommendation: Option 1 was determined to be the optimum test frequency, satisfying ASME Sec XI requirements while working within given constraints. It achieved the best overall evaluation using weighted values on achieving technical objectives and comparitive relationships.

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# SI Accumulator Check Valve Full Flow Test

Evaluation of the following (2) proposed options for SI accumulator discharge check valves, 842A, 842B, 867A and 867B.

Option 1: Perform full flow exercise test of each SI accumulator check valve once every 54 months.

U-PROGRAMSVSTVSTDOC\SIFFTEST.WKS

Option 2: Perform full flow exercise test of each SI accumulator check valve once every 18 months. Achievement: low (1) ... High (10) Weight Technical Objectives 10 Maximize valve(s) operability confidence 10 8 10 9 3 Minimize potential occurrence-RHR pump NPSH loss Minimize potential occurrence-N2 ingress to RCS 8 g 3 g 3 g Minimize # of thermal shock cycles to Accumulator g 9 3 Minimize # of pressure transients to check valves 9 8 3 Minimize unneccessary wear of check valve (Note 3) 8 9 2 MinImize SIPE performance 10 5 10 Meets 6 year maximum operability verification Interval as Inferred by NRC Generic Letter 89-04, Position 2 304 48.6% Technical Evaluation 8626 98.98897 B 100.0% Percent of Highest Value (Note 1) n/a Cost, \$K (Over Three Year Period) 2560 7680 Test Preparation/Restoration (64 manhours por test)(Note 4) 12000 SIPE Training (100 manhours per test) (Note 4) 4000 Dose (\$10,000/Rem) 600 1800 333000 Outage Schodule Impact (Delay of Shutdown/Cooldown Process 111000 8 hours/test @ \$333,000/Day) 354480 Mediae (4 (CANNER) 118160 Cost Evaluation 0.0% 200.0% Percent above Lowest Cost 0.0% Percent below Highest Cost 66.7% Evaluation n/a 70%Tech/30%Cost Note 2 90.0% 34.0% 1. Not included: AFUDC, CAC, ESC. 2. The largest value indicates the most attractive recommendation. 3. SIPE = Significant Infrequently Performed Evolution 4. Personnel cost = \$40/manhour Evaluate: low (10) ... High (100) Relationship(s) ≈n⁄a⊗ Notes 33.3 100.0 Cost 100.0 48.6 2 Bonofit 48.6 100.0 Advantages 3 99 33 Disadvantages 99 5 33 **Risk Probability** 99 6 33 **Risk Impact** 1. Reflects the relative cost. 2. Reflects the achievement of the technical objectives. 3. Reflects the achievement of the technical objectives. 4. Intangables, future costs of personnel and training. 5. Probability: Catastrophic failure of valve/system. 6. Impact, le. Outage Schedule, valve degradation

SI Accumulator Discharge Check Valves 842A, 842B, 867A and 867B Disassembly/Inspection Results, April 1989					
Component	842A	842B	867A	867B -	
Body/Bonnet Bolts/Studs	No Abnormalities Found.	Fair	Satisfactory	Slight Erosion	
Body/Bonnet Nuts	Minor Corrosion Present	Good	Satisfactory	Slight Erosion	
Retaining Block Studs	No Apparent Thread Degradation	Good ·	Satisfactory	Good	
Retaining Block Nuts	Threads Good, Flats Welded and Ground	Acceptable	Good	Good	
Body Seat	Good Service Condition	Satisfactory	Good	Acceptable	
Disc	Good Service Condition, No Apparent Wear	Satisfactory, Minor Wear	Acceptable with Minor Indications, No Unusual Wear	Acceptable with Minor Indications, No Unusual Wear	
Retaining Blocks, Clapper Arm & Shaft	No Wear or Damage No Apparent Warpage	No Wear or Damage No Apparent Warpage	No Wear or Damage No Apparent Warpage	Minor Surface Scratches No Apparent Warpage	
Disc Trunnion Bushing	Usable Surface Condition Minor Surface Wear	Satisfactory No Wear	Usable Surface Condition Minor Surface Wear	Usable Surface Condition Normal Service Wear	
Body/Bonnet Gasket Seating Surface	No Signs of Leakage, Pitting or Washout	No Signs of Leakage, Pitting or Washout	No Signs of Leakage, Pitting or Washout	No Signs of Leakage, Pitting or Washout	
Bonnet Gasket Surface	No Signs of Leakage, Pitting or Washout	No Signs of Leakage, Pitting or Washout	No Signs of Leakage or Pitting. Slight Washout	No Signs of Leakage or Pitting. Slight Washout	
Body Contact/Sealing Area Blue Check	Satisfactory, 360° Contact	Satisfactory, 360° Contact	Satisfactory, 360° Contact	Satisfactory, 360° Contact	
Disc/Seat Contact/Sealing Area Blue Check	Satisfactory, 360° Contact	Satisfactory, 360° Contact	Satisfactory, 360° Contact	Satisfactory, 360° Contact	
Freedom of Movement	Acceptable	Acceptable	Acceptable	Acceptable	

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ATTACHMENT 5	
NPRGDGAA Nuclear Plant Relianty Data System - Failure H	aster Report(W/Unit Information) Run Date: 08/05/96
By: Unit 1D - value, System -	value Job Number: 3566
ACCEPTANCE DATE: 10/04/93	
UtilityCompany	
UnitDIABLO CANYON 2	
NSSSWestinghouse	Application
ComponentVALVE Util Component IdRHR-2-8740A	Function
Discovery Date10/15/91 Discovery Time12:00 End Date03/18/93	System Residual Heat Removal/LP Safety Injec
Input Date08/03/93	Utility System 10
Restoration Days520	Data Start Date03/13/86 In-Service Date08/20/85
Severity LevelK - Degraded	Accepted Date02/17/88 Out-of-Service Date
failure ModeIL - Internal Leakage	,
Failure DetectionB - Maintenance/Test	Safety Class S
Fail Cause CatH - Age/Normal Usage	
Fail/Cause DescBE - Dirty	Data/Comments 1
<ul> <li>8G • Corrosion</li> </ul>	Data/Comments 2
System EffectE - System Function/Operation Unaffected	Data/Comments 3
Plant EffectG - Resulted in No Significant Effect	Data/Comments 4
Corrective ActionAA - Recalibrate/Adjust	Data/Comments 5
DocumentationN - Other Documents or Records are Not Available	
LER Report Number	Hanufacturer Anchor / Darling Valve Co
System AffectedCFF - Residual Heat Removal/LP Safety Inject-W	Hfr Model Id
.*	Hfr Hodel Ko S350WSC
	Mfr Serial No NF
Failure Description Narrative	Drawing No 108010
DURING REFUELING , WHILE PERFORMING LOCAL LEAK RATE TESTS , THE	
RESIDUAL HEAT REHOVAL SYSTEM DISCHARGE TO THE REACTOR COOLANT SYSTEM	

RESIDUAL HEAT REMOVAL SYSTEM DISCHARGE TO THE REACTOR COOLANT SYSTEM HOT LEG LOOP 1 SECOND OFF CONTAINMENT ISOLATION CHECK VALVE WAS FOUND WITH BACK LEAKAGE PAST THE SEAT .' THE LEAK RATE WAS 2 . 5 GPM WHICH EXCEEDED THE 1 GPM TEST CRITERIA . THE LOSS OF THE VALVE'S ISOLATION FUNCTION HAD NO EFFECT ON THE SYSTEM OR THE PLANT SINCE THE

Cause of Failure Narrative.....

FIRST OFF CONTAINMENT ISOLATION VALVE PAST ITS TEST . THE CAUSE OF THE FAILURE WAS AGE RELATED DIRT AND CORROSION PRODUCTS ON THE SEATS .

Corrective Action Narrative.....

THE VALVE SEATS WERE CLEANED . THE VALVE WAS THEN TESTED AND RETURNED TO SERVICE .

Engineering Codes

Check-
Hech(Diff-Press Open/Sprn
One-Way Flow
Austenitic Stnls Stl-304
4 to 11.99 IN
8.000 IN
0.000 PSIG
0.000 DEGF

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