CATEGORY 1

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FACIL:50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244
AUTH.NAME AUTHOR AFFILIATION
MECREDY,R.C. Rochester Gas & Electric Corp.
RECIP.NAME RECIPIENT AFFILIATION
VISSING,G.

SUBJECT: Provides addl info in support of request for NRC approval of encl rev to valve testing relief requests VR-8&9,per 960528 ltr.

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CATEGORY 1 DOCUMENT

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ROBERT C. MECREDY
Vice President
Nuclear Operations

November 14, 1996

U.S. 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:

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 group (NIC). As such, RG&E has a well-documented maintenance 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. A review of industry wide history documentation has shown that there has been only one degraded performance indication of the same check valve 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. Mecredy

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

Attachment 1

RELIEF REQUEST NO. VR - 8, Rev. 1

SYSTEM: Safety Injection

VALVES: 842A, 842B

CATEGORY: A/C

SAFETY CLASS: 1

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

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

BASIS FOR RELIEF: 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 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 the valves have been found in excellent mechanical condition

upon disassembly. With an excellent mechanical condition baseline verified by periodic part-stroke (quarterly) and full-stroke 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. VR - 9, Rev. 1

SYSTEM: Safety Injection

VALVES: 867A, 867B

CATEGORY: A/C

SAFETY CLASS: 1

FUNCTION: These valves 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 part-stroke and full-stroke testing, the operability of check valves 867A and 867B will continue to be ensured.

ALTERNATE TESTING: 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.

Scope:

- o Determine the optimum frequency for full flow exercise test performance based on achievement of assigned technical objectives and cost impact.

Approach:

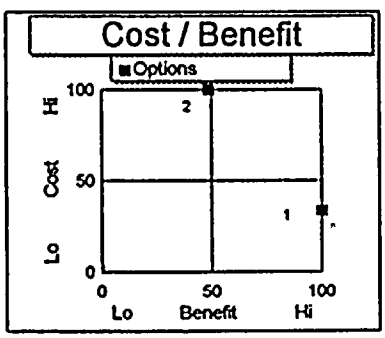
- o Evaluate test frequency options for testing by constraint determination; including weighted value assignment to technical objectives and cost.
- o Compare test frequency options relationships; including Cost/Benefit, Advantages/ Disadvantages and Risk.

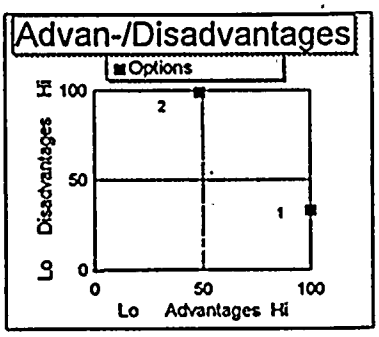
Options: Two (2) test frequency options for check valve full flow test performance are :

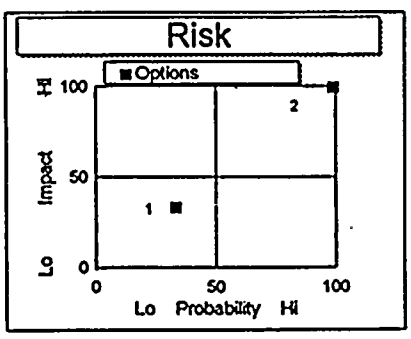
1) Perform full flow exercise test of each check valve once every 54 months.

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.

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.

Option 2: Perform full flow exercise test of each SI accumulator check valve once every 18 months.

Technical Objectives	Weight	Achievement: low (1) ... High (10) 1	2
Maximize valve(s) operability confidence	10	9	10
Minimize potential occurrence-RHR pump NPSH loss	10	9	3
Minimize potential occurrence-N2 ingress to RCS	9	9	3
Minimize # of thermal shock cycles to Accumulator	9	9	3
Minimize # of pressure transients to check valves	9	9	3
Minimize unneccessary wear of check valve	9	9	3
Minimize SIPE performance (Note 3)	8	9	2
Meets 6 year maximum operability verification interval as inferred by NRC Generic Letter 89-04, Position 2	5	10	10
Technical Evaluation		626	304
Percent of Highest Value		100.0%	48.6%
Cost, $K (Over Three Year Period) (Note 1)	n/a		
Test Preparation/Restoration (64 manhours per test)(Note 4)		2560	7680
SIPE Training (100 manhours per test) (Note 4)		4000	12000
Dose ($10,000/Rem)		600	1800
Outage Schedule Impact (Delay of Shutdown/Cooldown Process 8 hours/test @ $333,000/Day)		111000	333000
Cost Evaluation		116160	354480
Percent above Lowest Cost		0.0%	200.0%
Percent below Highest Cost		-66.7%	0.0%
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

Relationship(s)	Notes	n/a	Evaluate: low (10) ... High (100) 1	2
Cost	1		33.3	100.0
Benefit	2		100.0	48.6
Advantages	3		100.0	48.6
Disadvantages	4		33	99
Risk Probability	5		33	99
Risk Impact	6		33	99

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, ie. 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

ATTACHMENT 4

ACCEPTANCE DATE: 10/04/93

Utility.....Pacific Gas and Electric Company
Unit.....DIABLO CANYON 2
NSSS.....Westinghouse
Component....VALVE Util Component Id.....RHR-2-8740A
Discovery Date..10/15/91 Discovery Time..12:00 End Date..03/18/93
Input Date...08/03/93
Restoration Days.....520
Severity Level.....K - Degraded
Failure Mode.....IL - Internal Leakage
Failure Detection..B - Maintenance/Test
Fail Cause Cat.....H - Age/Normal Usage
Fail/Cause Desc....BE - Dirty
BG - Corrosion
System Effect.....E - System Function/Operation Unaffected
Plant Effect.....G - Resulted in No Significant Effect
Corrective Action..AA - Recalibrate/Adjust
Documentation.....N - Other Documents or Records are Not Available
LER Report Number..
System Affected....CFF - Residual Heat Removal/LP Safety Inject-W

Application.....
Function.....
System..... Residual Heat Removal/LP Safety Injec
Utility System..... 10
Data Start Date..03/13/86 In-Service Date.....08/20/85
Accepted Date....02/17/88 Out-of-Service Date..

Safety Class..... S

Data/Comments 1.....
Data/Comments 2.....
Data/Comments 3.....
Data/Comments 4.....
Data/Comments 5.....

Manufacturer..... Anchor / Darling Valve Co
Mfr Model Id.....
Mfr Model No..... S350WSC
Mfr Serial No..... NF
Drawing No..... 108010

Failure Description Narrative.....
DURING REFUELING , WHILE PERFORMING LOCAL LEAK RATE TESTS , THE 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

A.Type.....	Check
B.Operator.....	Mech(Diff-Press Open/Sprn
C.Function/Application	One-Way Flow
D.Body Material.....	Austenitic Stnls Stl-304
F.Nominal Inlet Size (	4 to 11.99 IN
G.Size (Inlet).....	8.000 IN
H.Maximum Design Press	0.000 PSIG
J.Maximum Design Tempe	0.000 DEGF