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JOHNSON,A.R. Project Directorate I-3

SUBJECT: Forwards summary of svc water sys reliability optimization program & follow-up response to Generic Ltr 89-13,per 900129 ltr,in order to give overview of svc water sys before svc water insp.

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October 28, 1991

U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Allen R. Johnson
Project Directorate I-3
Washington, D.C. 20555

SUBJECT: Status Information Concerning Generic Letter 89-13, R.E. Ginna Nuclear Power Plant
Docket No. 50-244

REFERENCE: (a) Letter from Robert C. Mecredy, RG&E, to the NRC, Mr. Russell, Subject: Response to Generic Letter 89-13, Service Water System Problems Affecting Safety Related Equipment, dated January 29, 1990.

Dear Mr. Johnson:

This letter is intended to give an overview of the Service Water System status before your Service Water Inspection visit at Ginna Station. RG&E has established a Service Water System Reliability Optimization Program (SWSROP) plan. A brief summary of this plan is provided in Attachment A. The SWSROP plan is a comprehensive document established for the purpose of defining the techniques, equipment, methods and responsibilities necessary to provide effective management of the Generic Letter 89-13 issues.

RG&E responded to the Generic Letter in reference (a). Summaries of current status, programs, ongoing activities and plans established to date are provided in Attachment B as an update to our reference (a) response.

Very truly yours,

Robert C. Mecredy

MEC/193
Attachment

xc: Mr. Allen R. Johnson (Mail Stop 14D1)
Project Directorate I-3
Washington, D.C. 20555

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U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406
Ginna Senior Resident Inspector

ATTACHMENT A

Summary of the Service Water System Reliability Optimization Program (SWSROP) Plan

The Ginna Station SWSROP has been established for the purpose of defining the techniques, equipment, methods and responsibilities which are used to ensure that the Service Water System (SWS) performs the following functions: transfer the necessary heat from safety-related equipment to the plant Ultimate Heat Sink (UHS) under both normal and accident plant conditions; provide a source of water to the Auxiliary Feedwater System (AFW) and the Standby Auxiliary Feedwater System (SAFW) for decay heat removal and support reliable and economic operations of the plant. SWSROP requirements are derived from a variety of sources, such as: the Operating License; Federal Regulatory Documents (NRC Bulletins, Generic Letters); New York State Regulatory Documents (SPDES discharge permit); and Industry-based good practices. The SWSROP is implemented through a variety of means, including Ginna Station Procedures (A-Series, M-Series, PT-Series); Ginna Quality Assurance Manual and its Appendices; and RG&E Training Modules.

The SWSROP plan is organized under the following topical areas:

INTRODUCTION
SURVEILLANCE PROGRAM
DEGRADATION CONTROL PROGRAM
THERMAL PERFORMANCE TESTING PROGRAM
PUMP PERFORMANCE TESTING PROGRAM
VALVE PERFORMANCE TESTING PROGRAM
ANALYSIS AND PERFORMANCE TRENDING PROGRAM
PREVENTIVE MAINTENANCE PROGRAM
CORRECTIVE MAINTENANCE PROGRAM
TRAINING PROGRAMS
ASSESSMENTS AND EVALUATIONS
SYSTEM MODIFICATIONS
DOCUMENTATION
RECORDS
REGULATORY REPORTS AND NOTIFICATIONS

ATTACHMENT B
FOLLOW-UP RESPONSE TO GENERIC LETTER 89-13

RECOMMENDATION I
ADDRESSING THE CONCERNS OF GENERIC ISSUE 51

Item A

The intake structure should be visually inspected, once per refueling cycle, for macroscopic biological fouling organisms (for example, blue mussels at marine plants, American oysters at estuarine plants, and Asiatic clams at freshwater plants), sediment, and corrosion. Inspections should be performed either by scuba divers or by dewatering the intake structure or by other comparable methods. Any fouling accumulations should be removed.

Response of January 29, 1990

Ginna underwater service water structures and equipment have periodically been visually inspected throughout the operating history of the plant. Procedure M-92, Underwater Inspection of Mechanical Equipment and Structures in the Screenhouse (performed annually), Procedure M-92.1, Underwater Inspection and Maintenance of the Intake Structure and Shaft (performed every 5 years), and Procedure M-92.2, Inservice Inspection of Miscellaneous Water Control Structures at Ginna (performed annually) are currently in place and utilized at Ginna Station, and have been shown to be effective based on the historical operability and reliability of the Service and Circulating Water Systems.

Present Status

Inspection procedures M-92, Underwater Inspection of Mechanical Equipment and Structures in the Screenhouse and M-92.2, Inservice Inspection of Miscellaneous Water Control Structures at Ginna are currently in place and being performed annually. Ginna takes its Service Water (SW) from Lake Ontario, a fresh water Great Lake. Asiatic clams are not thought to be capable of living this far north. Zebra mussels have been found in various places in and around Ginna Station beginning in 1990. The intake structure was inspected in July 1990 and showed no evidence of zebra mussels, however in 1991 zebra mussels were found in the intake structure. Because of the present evidence of zebra mussels around Ginna Station, the Intake Structure procedure M-92.1 will be modified to have the intake structure inspected during each refueling cycle, until it can be demonstrated that this testing frequency is no longer necessary. A standardized monitoring protocol for New York State was developed for veliger sampling by the Zebra Mussel Task Force of the New York Power Pool to follow the migration of the zebra mussels.

The applicable sections of the SWSROP plan which discuss inspection procedures are organized into the following topical areas:

Introduction (1.2) Background Information (Zebra Mussel Control); Surveillance Program (SP)(2.3) Intake Structure; SP (2.4) Intake Tunnel; SP (2.5) Travelling Screens; SP (2.6) Screenhouse Forebay; SP (2.7) Discharge Canal; SP (2.8) Buried and Embedded Piping; SP (2.9) Above-Ground Piping; SP (2.10) Pumps; SP (2.11) Valves; SP (2.12) Heat Exchangers; SP (2.13) Instrumentation and Controls; SP (2.14) Miscellaneous Equipment.

Item B

The service water system should be continuously (for example, during spawning) chlorinated (or equally effectively treated with another biocide) whenever the potential for a macroscopic biological fouling species exists (for example, blue mussels at marine plants, American oysters at estuarine plants, and Asiatic clams at freshwater plants). Chlorination or equally effective treatment is included for freshwater plants without clams because it can help prevent microbiologically influenced corrosion. However, the chlorination (or equally effective) treatment need not be as stringent for plants where the potential for macroscopic biological fouling species does not exist compared to those plants where it does. Precautions should be taken to obey Federal, State, and local environmental regulations regarding the use of biocides.

Response of January 29, 1990

Circulating water chlorination using sodium hypochlorite to prevent biofouling is performed twice weekly from May through October. The Ginna Station State Pollution Discharge Elimination System (SPDES) Permit limits chlorination to 120 minutes per day with the daily maximum total residual chlorine limited to 0.2 mg/L.

New York State Department of Environmental Conservation (NYDEC) has stressed chlorine minimization for a number of years. Both reduced residual chlorine allowed during chlorination - from 0.5 mg/L to 0.2 mg/L at the last SPDES Permit renewal - and reduced frequency of chlorination have been stressed. Informally, Rochester Gas and Electric has gradually reduced the chlorination season and the frequency of chlorination during the season.

Ginna Station SPDES Permit renewal hearings are currently underway. Application parameters, including chlorination practices for normal circumstances are being discussed as well as possible courses of action in the advent of zebra mussel migration to Ginna Station. See Item D. below.

Present Status

The circulating/service water chlorination process using sodium hypochlorite to prevent biofouling has been changed and is now usually performed daily, year round. The Ginna Station SPDES Permit in general limits chlorination to 120 minutes per day with the daily maximum total residual chlorine limited to 0.2 mg/L. In

1990, the SPDES permit was modified to also allow for four, 18 day periods of continuous chlorination between August 1990 and August 1991. The maximum total residual chlorine limit during these periods is 0.1 mg/L. In July of 1991, the New York State Department of Environmental Conservation gave RG&E permission to continuously chlorinate the service water for 60 days up to a maximum chlorine concentration of 1.0 mg/l. Following the initial 60 day trial, permission for an additional 60 day trial for continuous chlorination of the service water up to a maximum chlorine concentration of 0.5 mg/l was given. The intent of the New York State Department of Environmental Conservation is to experimentally continue decreasing chlorine concentration until the zebra mussel mortality threshold is found at Ginna.

A plant modification was installed during the 1991 refueling outage which provides chlorine injection points in the screenhouse inlet plenum and SW pump bays. Chlorine sampling provisions were also included in the design. It is expected that this additional equipment will further enhance the ability of RG&E to effectively control biofouling.

RG&E is involved in the ongoing process to develop the optimum level of chlorine usage which will effectively control the zebra mussel population at Ginna Station, as well as conservatively abide by New York State Department of Environmental Conservation limits and requirements. A detailed description of our chlorination program is included in the SWSROP plan Section (3.2) Biocide Treatment Techniques.

Item C

Redundant and infrequently used cooling loops should be flushed and flow tested periodically at the maximum design flow to ensure that they are not fouled or clogged. Other components in the service water system should be tested on a regular schedule to ensure that they are not fouled or clogged. Service water cooling loops should be filled with chlorinated or equivalently treated water before layup. Systems that use raw service water as a source, such as some fire protection systems, should also be chlorinated or equally effectively treated before layup to help prevent microbiologically influenced corrosion. Precautions should be taken to obey Federal, State, and local environmental regulations regarding the use of biocides.

Response of January 29, 1990

A flushing program for the service water system will be established at Ginna Station only as needed to augment periodic inspections now required as part of RG&E's Inservice Testing Program, which requires full flow testing or inspection and disassembly of all check valves to ensure adequate Service Water flow to safety-related equipment. A policy of chlorination for laid up Service Water loops will be performed as described in Generic Letter 89-13 except for the Fire System. Ginna's comprehensive yearly Fire System testing and inspection programs controlled by procedures adequately detect system fouling or degradation.

Present Status

The volume of water that is contained within the infrequently used

cooling loops and dead legs has been reviewed by RG&E and none are currently considered to be sufficient to sustain a colony of zebra mussels. Therefore, no special chlorination or layup practices will be implemented. This policy will be reviewed periodically as results of chlorine sampling within various portions of the SWS are made available.

Infrequently used Service Water loops are functionally assured as follows. The alternate SWS Discharge Line is flushed during each annual refueling outage in accordance with Ginna Station Procedure PT-2.10.11, "Exercising Service Water Redundant Discharge Line Isolation Valve." The SWS Supply to the Auxiliary Feedwater System is verified to be working during monthly testing in accordance with Ginna Station Procedure PT-16M and during quarterly testing in accordance with Ginna Station Procedure PT-16Q via visual observations at the flush points.

The SWS supply to the Standby Auxiliary Feedwater System is verified to be working during monthly testing in accordance with Ginna Station Procedure PT-36M and quarterly testing in accordance with Ginna Station Procedure PT-36Q via visual observations at the flush points. The total volume of water in the SWS Supply to Diesel Generator Cooling Water Expansion Tanks and the infrequent flow in these lines would not support marine life growth, therefore, no flushing or chemical treatment of these lines is required. The Spent Fuel Pool Heat Exchangers have a dead leg that is not sufficient to sustain zebra mussels. The isolated header piping does not present sufficient water volume to support marine life growth, and therefore no flushing or chemical treatment of the isolated piping is required.

There are currently no formal procedures used in layup (dry or wet) of any portion of the SWS. SWS design and maintenance practices are such that an extended layup has not been required. RG&E is currently not planning to modify the IST Program relative to layup. An extensive maintenance program on SW components is planned during the 1993 outage. Decisions on layup of the system during that period have not yet been made.

The fire protection system water piping is flushed frequently as part of flow testing guidelines in the National Fire Protection Association (NFPA) Codes. Fire protection flow testing is performed in accordance with Ginna Station Procedure PT-13 series. Chlorination or other equally effective treatment is not necessary since the present program for flushing and cleaning of the fire protection system water piping is effective in controlling degradation of the system.

The flushing programs aforementioned are established only as needed to augment the Inservice Testing Program (IST). The IST program will be reviewed to insure compliance in support of the flushing program. Normally flowing service water is in continuous operation and is therefore being continuously flushed.

A chlorination policy has been developed in SWSROP plan section (3.2) Biocide Treatment Techniques; Biocide Application Schedule, Concentration at Point of Application, Concentration at Discharge, and Effectiveness of Biocide Applications.

Other referenced SWSROP plan sections are: Degradation Control Program (3.3) Cleaning and Flushing; and Valve Performance Testing

Program (7.5) Check Valves.

Item D

Samples of water and substrate should be collected annually to determine if Asiatic clams have populated the water source. Water and substrate sampling is only necessary at freshwater plants that have not previously detected the presence of Asiatic clams in their source water bodies. If Asiatic clams are detected, utilities may discontinue this sampling activity if desired, and the chlorination (or equally effective) treatment program should be modified to be in agreement with paragraph B above.

Response of January 29, 1990

Starting in 1990, the following monitoring programs will be instituted for the Asiatic clams (Corbicula sp.) and the zebra mussel (Dreissena polymorpha):

A) An annual benthic sampling program will be conducted. Samples will be taken from the following transects: 1) the nearshore area (to a depth of 5 meters) of the Ginna Nuclear Power Plant; 2) near the plant intake structure. The samples will be examined for the presence of bivalve mollusks.

B) Intake cooling water will be sampled twice a month from May through August. The samples will be examined for presence of bivalve mollusks.

C) Representative components of the service water system (i.e., diesel generator coolers) will be inspected for the presence of bivalve mollusks when opened during annual outages.

If the presence of either the Asiatic clam or the zebra mussel is determined by any of the above methods, future monitoring for that species will be terminated. If neither mollusk is found, the monitoring will continue only for species that are capable of surviving in the area of the Ginna Nuclear Power Plant. Monitoring would be discontinued for those species on which documentation is available stating that it would not be able to survive in Lake Ontario.

Present Status

The annual benthic sampling and intake cooling water sampling programs have been left in place even though zebra mussels were detected. Representative component sampling of the SWS also remains in place. These sampling programs will continue to monitor the zebra mussel population until such time as RG&E determines that further testing becomes unnecessary. The applicable section within the SWSROP plan which describes the sampling program is the Surveillance Program (2.2) Lake Ontario.

RECOMMENDATION II
HEAT TRANSFER CAPABILITY TEST PROGRAM

Response of January 29, 1990

RG&E will continue to perform regular maintenance of the Service Water-related heat exchangers. During the 1989 Refueling Outage, the following heat exchangers were inspected, disassembled and cleaned:

a) Component Cooling Water (both)
b) Spent Fuel Pit
c) Emergency Diesel Generator (both)
d) Turbine Lube Oil Cooler
e) Auxiliary Feedwater Pumps (all 3)
f) Electro Hydraulic Oil Cooler (both)

The following are scheduled for the 1990 Refueling Outage:

1) Emergency Diesel Generator (both)
2) Turbine Lube Oil Cooler
3) Auxiliary Feedwater Pumps (all 3)
4) Electro Hydraulic Oil Cooler (both)

No significant levels of fouling were noted to date in heat exchangers after 20 years of operation. RG&E is also determining the feasibility of performing periodic tests of selected heat exchangers, in accordance with Enclosure 2 to Generic Letter 89-13. The purchase of additional instrumentation, development of test procedures, and establishment of acceptance criteria will be pursued. A testing schedule will be established based on the results of these efforts by the 1992 Refueling Outage.

The closed cycle Component Cooling Water heat exchangers are considered within the scope of the program. However, because of the favorable inspection results during the 1988 and 1989 Refueling Outages, showing negligible deterioration after long years of operation, and because of the stringent chemistry control associated with the CCW loop (maintaining pH between 8.0 and 9.0 by addition of sodium hydroxide and maintaining chromate concentration between 175 and 225 ppm by addition of potassium chromate), no additional testing is scheduled unless periodic inspections indicate a degradation of the heat exchangers.

Present Status

A variety of techniques are used to control degradation of the physical condition and performance of heat exchangers. For example, heat exchanger fouling was dissolved during the 1991 refueling outage with the performance of acid cleaning on the service water side of the containment fan cooler heat exchangers. Thermal Performance testing of selected heat transfer components within the Ginna Station SWS will be performed in accordance with the SWSROP plan. The following heat exchangers will be considered for periodic thermal performance testing: SFP Heat Exchanger B; CCW Heat Exchangers A and B; SAFW Pump Room Cooling Units A and B; Containment Recirculation Fan Coolers, and Recirculation Fan Motor Coolers A, B, C, and D. RG&E has installed additional instrumentation on selected components to facilitate testing. The SWSROP plan sections that reference performance tests are: Thermal Performance Testing Program (TPTP)(5.1) General Features; TPTP (5.2) Safety-Related Components; and TPTP (5.3) Non-Safety-Related Components.

Periodic disassembly and inspection of heat exchangers is provided in the present status of Recommendation III below.

RECOMMENDATION II
ESTABLISH ROUTINE MAINTENANCE AND INSPECTION PROGRAM

Response of January 29, 1990

As noted in Response II, RG&E has been performing routine inspection of safety-related (including Service Water) heat exchangers. RG&E has also initiated a Reliability Centered Maintenance Program, which includes the Service Water System. This program, previously discussed with the NRC, is a state-of-the-art system used to optimize maintenance activities for the systems within its scope. It is considered that these measures constitute an acceptable level of inspection and maintenance to meet the recommendations of Generic Letter 89-13.

Present Status

RG&E has been performing routine inspections of safety-related equipment as noted above in the January 29, 1990 response. In addition note the present status of Recommendation II. RG&E will continue to optimize our established maintenance and inspection program and schedule for SWS components. The applicable SWSROP sections are:

2.0	Surveillance Program
(2.2)	Lake Ontario
(2.3)	Intake Structure
(2.4)	Intake Tunnel
(2.5)	Travelling Screens
(2.6)	Screenhouse Forebay
(2.7)	Discharge Canal
(2.8)	Buried and Embedded Piping
(2.9)	Above-Ground Piping
(2.10)	Pumps
(2.11)	Valves
(2.12)	Heat Exchangers
(2.13)	Instrumentations and Controls
(2.14)	Miscellaneous Equipment
3.0	Degradation Control Program
(3.2)	Biocide Treatment Techniques
(3.3)	Cleaning and Flushing
(3.4)	Layup
(3.5)	Cathodic Protection
(3.6)	Chemical Flushing
9.0	Preventive Maintenance Program
(9.2)	Pumps
(9.3)	Valves
(9.5)	Heat Exchangers
10.0	Corrective Maintenance Program
(10.2)	Pumps
(10.3)	Valves
(10.4)	Piping
(10.5)	Heat Exchangers
15.0	Records
(15.2)	Maintenance Records
(15.3)	Surveillance Testing
(15.4)	Engineering Technical Basis Records

RECOMMENDATION IV
CONFIRMATION OF INTENDED FUNCTION

Response of January 29, 1990

RG&E has, as part of our P&ID Upgrade Program, completed a system walkdown as of December 29, 1989. This effort reconciled the as-built system with our controlled configuration drawings (the P&IDs).

In addition, RG&E is in the process of performing a confirmatory single active failure analysis review. Although RG&E intends to complete this review prior to the end of the 1991 Refueling Outage, in accordance with Generic Letter 89-13, the full scope of this review has not yet been established. If additional time is required, RG&E will inform the NRC.

Present Status

RG&E completed a walkdown of plant systems for the purpose of updating the controlled P&IDs, and issued these new drawings in December 1990.

RG&E has performed a single-active component failure evaluation. This evaluation was completed in April, 1991 and is contained in Altran Corporation Report No. 90121.6. The report confirmed that the SWS has the ability to perform required safety functions in the event of a failure of a single active component during normal and accident conditions.

RECOMMENDATION V
CONFIRMATION THAT THE SERVICE WATER SYSTEM WILL FUNCTION AS INTENDED AND THAT EQUIPMENT WILL PERFORM EFFECTIVELY

Response of January 29, 1990

Normally, the Ginna Maintenance, Operating and Emergency Operating Procedures are all reviewed on a regular three year schedule. Maintenance Procedures are given further review as determined by focused results through the efforts of Ginna's continuing Reliability Centered Maintenance Program. Emergency Operating Procedures receive an additional level of review by the Plant Emergency Operating Procedures Committee. All of the above procedures are validated through the efforts of the Ginna INPO accredited Operating and Maintenance Training Programs to ensure that safety-related equipment cooled by the Service Water System will function as intended and that the equipment will perform effectively.

Present Status

See above January 29, 1990 response. The applicable sections of the SWSROP plan which discuss Maintenance, Operating and Emergency Operating Procedures are: Assessments and Evaluations (AAE)(12.2) Maintenance Practices and Procedures Assessments; AAE (12.3) Operating and Emergency Procedures Assessments; and AAE (12.4) Training Assessments.