Georgia Power Company
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201
Telephone 205 877-7279

J. T. Beckham, Jr.
Vice President - Nuclear
Hatch Project

Georgia Power
the southern electric system

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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Edwin I. Hatch Nuclear Plant
Response to NRC Bulletin 95-02

Gentlemen:

On October 17, 1995, the Nuclear Regulatory Commission (NRC) issued Bulletin (NRCB) 95-02, "Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode." The NRCB describes the NRC's concerns related to inadequate suppression pool cleanliness that can lead to an unacceptable buildup of foreign material and particulate debris during normal operation which could adversely impact the suction strainers for the Emergency Core Cooling Systems (ECCS). The resulting buildup on the strainers could potentially prevent the ECCS from providing long-term cooling.

The NRCB requests that an operability review of the ECCS be performed and verified through appropriate testing and inspection. Additionally, licenses are requested to implement a suppression pool cleaning program and other procedural modifications to minimize foreign material intrusion. The NRC has determined that the requested actions represent compliance backfits under the terms of 10 CFR 50.109.

As stated in NRCB 95-02, the bulletin was issued to resolve the potential for ECCS suction strainers to be clogged during normal operations by debris which is presently contained in the suppression pool, or which may accumulate in the suppression pool during normal operation. The issue covered by NRCB 95-02 differs from the issue covered by a draft bulletin recently issued for public comment entitled, "Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling Water Reactors." The draft bulletin concerns the potential for ECCS strainers to be clogged by debris generated by a loss of coolant accident.

In response, Georgia Power Company (GPC) has previously complied with the requested actions concerning suppression pool cleaning and strainer inspections. The Unit 1 suppression pool was previously cleaned during the Spring 1993 refueling outage and during the most recent Fall 1994 refueling outage. The Unit 1 ECCS Suction Strainers were inspected during the Fall 1994 refueling outage and determined to be in proper condition. The Unit 2 suppression pool was previously cleaned during the Spring 1991

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refueling outage and during the recent Fall 1995 refueling outage. The Unit 2 ECCS Suction Strainers were also inspected and determined to be in proper condition. The amounts of foreign materials, corrosion products, or particulate debris identified during the cleaning activities on both units have been evaluated and shown to have represented no adverse impact to ECCS performance.

The requested verification of operability of the ECCS pumps which draw suction from the suppression pool has been completed, based on an evaluation of suppression pool and suction strainer cleanliness conditions. As stated above, GPC has completed suppression pool cleaning and suction strainer inspections on both units. A program for periodic cleaning will be established. Also, a foreign materials exclusion procedure will be implemented to establish the suppression pools as exclusion areas. The procedure will be implemented prior to the start of the Unit 1 Spring 1996 Refueling Outage. As such, GPC has complied with the majority of the requested actions and intends to comply with the remaining requested actions. The enclosure provides a description of these actions and the results. As the strainer inspections and ECCS pump operability evaluations have been completed, a second 120-day report confirming completion is not required.

Should you have any questions in this regard, please contact this office.

Sincerely,

J. T. Beckham, Jr.

JKB/eb

Enclosure: Response to NRC Bulletin 95-02

cc: *Georgia Power Company*
Mr. H. L. Sumner, Nuclear Plant General Manager
NORMS

U. S. Nuclear Regulatory Commission, Washington, D. C.
Mr. K. Jabbour, Licensing Project Manager - Hatch

U. S. Nuclear Regulatory Commission, Region II
Mr. S. D. Ebneter, Regional Administrator
Mr. B. L. Holbrook, Senior Resident Inspector - Hatch

Enclosure

Edwin I. Hatch Nuclear Plant
Response to NRC Bulletin 95-02

Background

On October 17, 1995, the Nuclear Regulatory Commission (NRC) issued Bulletin (NRCB) 95-02 entitled, "Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode." The NRCB describes the NRC's concerns related to the potential for unacceptable accumulations of foreign material and particulate debris in the suppression pool during normal operation which could adversely impact the capability of the Emergency Core Cooling Systems (ECCS). The issue covered by NRCB 95-02 differs from the issue covered by a draft bulletin recently issued by the NRC staff for public comment. NRCB 95-02 was issued to resolve the potential for ECCS suction strainers to be clogged during normal operations while the draft bulletin concerns the potential for clogging by debris generated by a loss of coolant accident.

NRC Required Response

Within 30 days of the date of this bulletin, a report indicating to what extent the licensee intends to comply with the requested actions in this bulletin. In the report, licensees that intend to comply should provide a detailed description of their actions, the results of their evaluations, any corrective actions they have taken, and a description of the licensee's planned test(s) and inspection(s) for confirming their operability evaluation. In addition, licensees should include their schedule for pool cleaning, the basis for the cleaning schedule, and a summary of any additional measures taken to detect and prevent clogging of the ECCS strainers. If a licensee does not intend to comply with these requested actions, its report should contain a detailed description of any proposed alternative course of action, its schedule for completing this alternative course of action, and the safety basis for its having determined the acceptability of the planned alternative course of action.

GPC Response

GPC has previously implemented actions which comply with the requested actions related to suppression pool cleaning and suction strainer inspections and intends to comply with the remaining requested actions. GPC has recently performed suppression pool cleaning and suction strainer inspections on both units. The Unit 1 suppression pool was most recently cleaned during the Fall 1994 refueling outage and the Unit 2 suppression pool was cleaned during the Fall 1995 refueling outage. The ECCS suction strainers on both units were inspected during the cleaning activities with no clogging or material condition concerns identified. An operability verification, based on the evaluation of suppression pool and suction strainer cleanliness conditions has also been completed. A detailed description of GPC's actions and evaluations is provided below:

Operability Verification of ECCS Pumps

The operability of the ECCS pumps which draw suction from the suppression pool when performing their safety functions has been verified. The ECCS pumps included consist of the core spray, residual heat removal (RHR), and high pressure coolant injection (HPCI) systems. Although non-safety related, the reactor core isolation (RCIC) system was also included. The evaluation was based on the suppression pool and suction strainer conditions at the time of the last cleaning and considers the potential impact of the debris identified at the time of cleaning. The assessment shows that the debris found in the suppression pools would not have prevented any of the ECCS systems from performing their safety functions. Also, limited samples taken from the Unit 1 suppression pool and more detailed samples from Unit 2 did not indicate the presence of fibrous material. All debris identified during the cleaning activities was removed from the pools.

Additionally, the potential for the introduction of debris or other materials that could clog the strainers since the last suppression pool cleaning is sufficiently low. Current procedures require thorough inspections inside primary containment during refueling outages prior to containment closeout and reactor startup. A maintenance department procedure requires a specific inspection of the drywell to confirm removal of tools and debris. The maintenance procedure contains steps requiring specific confirmation for removal of temporary fibrous materials. Operations department procedures require closeout inspections of the drywell and suppression pool which also contain steps to confirm removal of tools, debris, and temporary material from the primary containment.

The effectiveness of the general housekeeping procedures for workers and the containment closeout inspections is demonstrated by the relatively small amount of debris identified in the suppression pools, especially considering that the Unit 2 pool was last cleaned during the Spring 1991 refueling outage. As a result, Unit 2 operated for three cycles, including two refueling outages, with only a relatively small amount of debris deposited in the Unit 2 suppression pool.

Tests and Strainer Inspections

NRCB 95-02 requested that the appropriate test(s) and strainer inspections(s) be performed within 120 days of the date of the bulletin. GPC previously performed inspections of the Unit 1 suction strainers during the Fall 1994 refueling outage in conjunction with the suppression pool cleaning. The inspections included the strainers for the core spray, RHR, HPCI, and RCIC systems. There are two 100 percent capacity strainers for each pump in these systems. Prior to the inspections, the Unit 1 "B" and "D" RHR pumps were operated for substantial durations in the suppression pool cooling mode during July, August, and September of 1994.
As a result of the inspection, a light film of non fibrous particulates was found on the strainers, prior to the cleaning process. The film was easily removed by wiping the strainer by hand. It was apparent that water turbulence would remove the film. The

inspection showed that the holes in the strainers were clear with no debris entrapment and the strainers were in good material condition. Also, the inspection along with limited sample analysis did not identify the presence of fibrous material.

In addition to the Unit 1 pool cleaning and strainer inspections, pump operation has been reviewed to confirm acceptable cleanliness. The review shows that all four RHR pumps were recently successfully operated in the suppression pool cooling mode in August and September 1995. While the "A" and "C" pumps were only operated for 3 to 6 hours, the B and D pumps received substantial run times. The B pump was operated for over 60 hours with 3 runs of over 8 hours and 2 runs of over 12 hours. The "D" pump was operated with 3 runs of at least 6 hours duration No problems associated with strainer cleanliness were present.

The inspections of the Unit 2 suction strainers were recently completed during the Fall 1995 refueling outage. As with the previous Unit 1 inspection, a light film of non-fibrous particulates was found prior to the cleaning process. The film was easily removed by wiping the strainer by hand and it was apparent that water turbulence would remove the film. The inspection showed that the holes in the strainers were clear of debris and the strainers were in good material condition. The inspection along with an analysis of sample material did not identify the presence of fibrous material.

It should be noted that prior to the suppression pool cleaning and strainer inspections, three of the four Unit 2 RHR pumps were operated for substantial durations in the suppression pool cooling mode during July, August, and September of 1995. The "A", "C", and "D" pumps were operated for approximately 78 hours when considering only those run times of 6 hours or longer. The 78 hours includes 5 runs of greater than 10 hours. No problems associated with suction strainer clogging were present.

The suppression pool cooling run times on both Unit 1 and Unit 2 were more than sufficient to agitate the general pool volume and allow any available material to be drawn to the strainers. Given that the pump operations were performed prior to the pool cleaning and given that only a slight film was identified on the suction strainers, it is reasonable to conclude that fibrous material is not present in sufficient quantities to potentially create strainer blockage.

Suppression Pool Cleaning

NRCB 95-02 requested addressees to schedule a suppression pool cleaning. As previously described, both the Unit 1 and Unit 2 suppression pools have been cleaned. Also, the suppression pools have been periodically cleaned in the past as part of activities associated with coating maintenance. The Unit 1 pool was last cleaned during the Fall 1994 refueling outage and previously cleaned during the Spring 1993 refueling outage.

The Unit 2 pool was cleaned during the recent Fall 1995 refueling outage and previously cleaned during the Spring 1991 refueling outage. GPC will formalize the periodic cleaning activities and establish a program to ensure the pool cleanliness is maintained at an acceptable level. The program will include criteria for determining the appropriate cleaning frequency, procedures for the cleaning, and criteria for evaluating the adequacy of the cleanliness. The program will be established prior to the next suppression pool cleaning which is currently scheduled for Unit 1 during the upcoming Spring 1996 refueling outage. GPC intends to use a performance based approach for establishing the cleaning frequency. The frequency determination will be based on factors such as sample results, the results from previous inspections, visual inspections, consideration of other maintenance activities that could generate debris, and the effectiveness of the housekeeping and materials exclusion programs.

Foreign Material Exclusion Procedures

NRCB 95-02 requested addressees to review foreign material exclusion procedures and their implementation to determine whether adequate control of materials in the drywell, suppression pool, and systems that interface with the suppression pool exists. Prior to the issue of the bulletin, GPC was in the process of developing a procedure to establish foreign material exclusion areas and establish appropriate controls to prevent the intrusion or retention of unwanted materials or debris in plant systems or components. The procedure will also ensure that the appropriate personnel are aware of the definition for foreign material, the areas applicable to foreign material exclusion and the requirements for entering areas such as the suppression pool. The procedure will establish the suppression pools as exclusion areas and is currently scheduled to be completed and implemented prior to the start of the Spring 1996 Unit 1 refueling outage.

As previously described, current procedures require general housekeeping and closeout inspections of the drywell and suppression pool. The drywell closeout inspections require specific confirmation of the removal of temporary fibrous material. Based on a review of the debris identified during the cleaning of both suppression pools and the results of sample analysis which does not identify the presence of fibrous material, it is concluded that these procedures have been sufficiently effective to prevent materials that could potentially impact the operability of the ECCS. An evaluation showed that the debris identified would not have caused an adverse impact to the ECCS suction strainers.

Additional Measures

NRCB 95-02 requested consideration of additional measures such as suppression pool water sampling and trending of pump suction pressure to detect clogging of ECCS suction strainers. In response, samples of suppression pool water and the particulate debris have been collected and analyzed as part of previous cleaning activities. GPC expects that sample collection and analysis will continue as part of the performance based periodic cleaning program. Additionally, pump suction pressure is trended as part of the inservice

testing program. Also, GPC's actions in response to NRC Bulletin 93-02, Supplement 1 included reviews with operations personnel relative to indicators of suction strainer clogging. The subject of these reviews included decreased system flow, abnormal discharge pressure indication, and frequent discharge valve position adjustment.