



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO NRC BULLETIN 95-02

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT, UNIT 1

DOCKET NO. 50-220

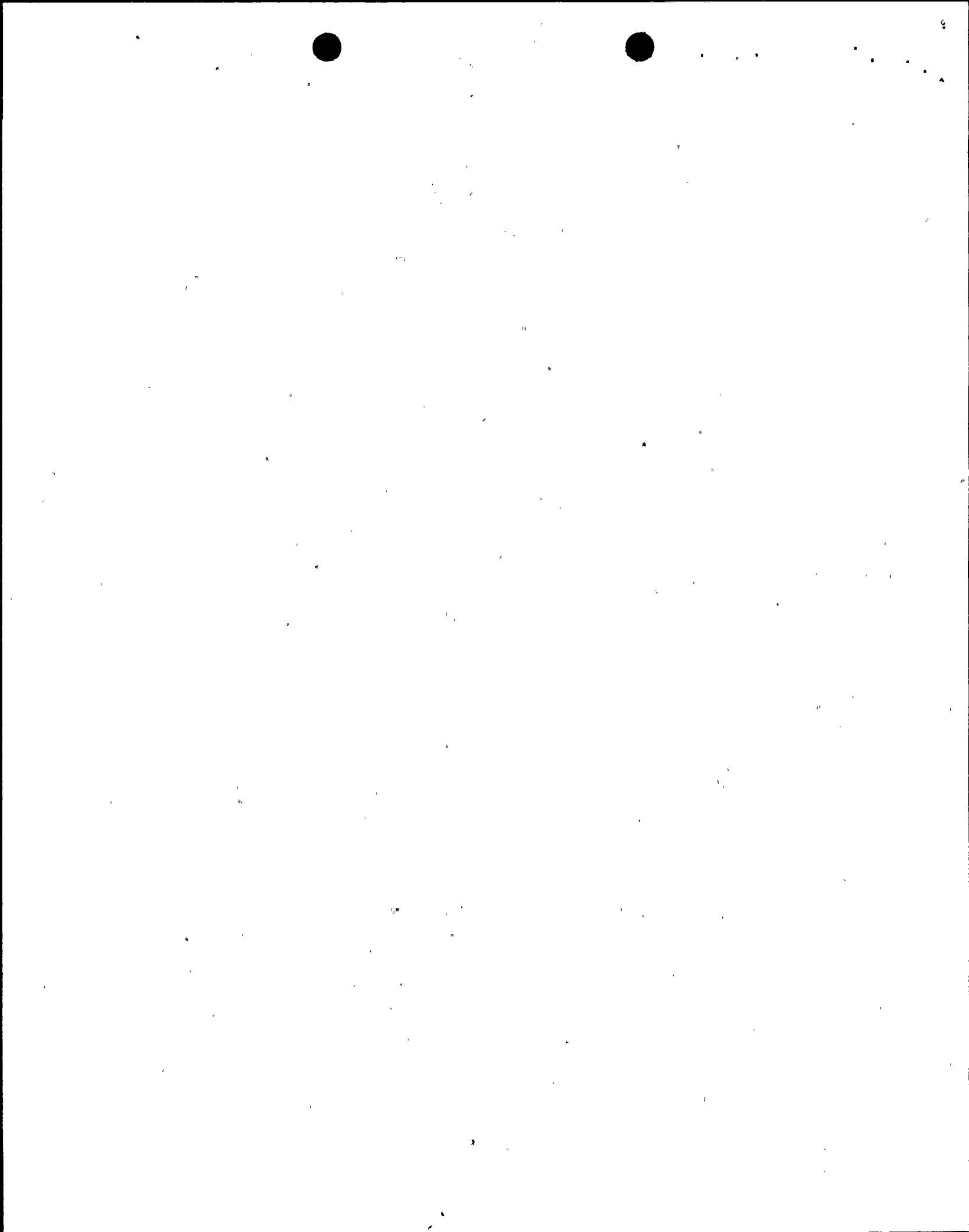
1.0 INTRODUCTION

On October 17, 1995, the NRC issued Bulletin 95-02, "Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode," to all holders of boiling-water reactor (BWR) operating licenses or construction permits for nuclear power reactors. It requested that addressees take five actions to ensure that unacceptable buildup of debris that could clog strainers does not occur during normal operation. By letters dated November 16, 1995, and April 26, 1996, Niagara Mohawk Power Corporation (the licensee) responded to NRC Bulletin 95-02. In its response, the licensee stated that the torus for Nine Mile Point, Unit 1 (NMP1), was last cleaned and desludged in 1981. The following describes the requested actions in NRC Bulletin 95-02 and the licensee's response to each requested action:

Action 1

Verify the operability of all pumps which draw suction from the suppression pool when performing their safety functions (e.g., emergency core cooling system (ECCS), containment spray, etc.), based on an evaluation of suppression pool and suction strainer cleanliness conditions. This evaluation should be based on the pool and strainer conditions during the last inspection or cleaning and an assessment of the potential for the introduction of debris or other materials that could clog the strainers since the pool was last cleaned.

Response: In response to requested action number 1, the licensee concluded that all pumps taking suction from the pool are operable. The licensee's conclusion was based on the fact that all debris from construction of the plant was removed when the torus was cleaned in 1981. During this cleaning, the licensee drained the torus, hydro-lazed the torus walls and "squeegeed" the torus prior to refilling it with water. In addition, the licensee took samples from the torus in March 1995 and had them analyzed. The analysis results indicated the presence of iron oxide, but no fibrous material was found in the samples. The licensee also inspects one of the ECCS strainers each quarter and has found no fibrous material or any other material that could potentially clog the strainers during any of these inspections. All strainers have been inspected within the



last 2 years. The licensee has a unique design in that the ECCS strainers are located in-line rather than in the torus, and the strainers are accessible at power for inspection and/or cleaning. The licensee also stated that there is little potential for introduction of fibrous material into the containment because the plant uses reflective metallic insulation rather than fiberglass. The licensee has not performed any significant torus activities since the 1983 refueling outage. At the end of the 1983 outage, a full torus inspection was conducted by a diver. Since the 1983 outage, divers have been sent into the torus anytime materials were inadvertently dropped into the pool. Therefore, the licensee has concluded that the ECCS pumps are operable.

Action 2

Confirm the operability evaluation in requested action 1 above through appropriate test(s) and strainer inspection(s) within 120 days of the date of this bulletin.

Response: After discussions with the NRC staff about the initial response to NRC Bulletin 95-02, the licensee performed an extended pump test. For this test, one train of core spray and one train of containment spray ran in recirculation mode for 6 hours during the licensee's April 1996 maintenance outage. In the post-test strainer inspections, the licensee found no fibrous material present and only minimal debris (i.e., some small pieces of tape). In addition, the licensee has stated that it inspects one strainer every quarter, in a manner that ensures that all strainers are inspected at least once every 2 years, and that inservice testing of the ECCS pumps is conducted every quarter and during every refueling outage. The licensee will trend strainer differential pressure to identify potential strainer clogging situations.

Action 3

Schedule a suppression pool cleaning. The schedule for cleaning the pool should be consistent with the operability evaluation in requested action 1, above. In addition, a program for periodic cleaning of the suppression pool should be established, including procedures for the cleaning of the pool, criteria for determining the appropriate cleaning frequency, and criteria for evaluating the adequacy of the pool cleanliness.

Response: In response to requested action number 3, the licensee committed to establishing a torus cleaning program based upon the results of torus inspections to be conducted during the upcoming refueling outage and the 1999 refueling outage. The licensee also committed to cleaning the torus during the next outage of sufficient duration (i.e., minimum duration of 17 days), but no later than the upcoming refueling outage currently scheduled for spring 1997.



Action 4

Review foreign material exclusion (FME) 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. This review should determine if comprehensive FME controls have been established to prevent materials that could potentially impact ECCS operation from being introduced into the suppression pool, and that workers are sufficiently aware of their responsibilities regarding FME. Any identified weaknesses should be corrected. In addition, the effectiveness of the FME controls since the last time the suppression pool was cleaned and the ECCS strainers inspected, and the impact that any weaknesses noted may have on the operability of the ECCS, should be assessed.

Response: In response to requested action number 4, the licensee has completed a review of its FME practices and concluded they are adequate. This was based upon in-house inspection activities such as housekeeping/system cleanliness inspections performed during work activities, final closure inspections, and torus downcomer/ring header inspections. In addition, licensee management is sensitive to the importance of FME. Both the Plant Manager and the Outage Manager conducted walkdowns of the containment during the last refueling outage. However, the licensee is considering material accountability enhancements to the program through improved training, procedures, communication, and coordination. The licensee will also implement improved FME training prior to the spring 1997 refueling outage for station and contractor personnel that have outage work responsibilities.

Action 5

Consider additional measures such as suppression pool water sampling and trending of pump suction pressure to detect clogging of ECCS suction strainers.

Response: In response to requested action number 5, the licensee committed to continue monitoring pump performance parameters during inservice testing. The licensee will also trend strainer differential pressure data to ensure acceptable pump performance during the periodic tests. The licensee will continue to inspect the in-line strainers on a quarterly basis (at least one strainer each quarter).

2.0 EVALUATION

The purpose of the requested actions in the bulletin is to ensure that ECCS and other pumps drawing suction from the suppression pool do not experience unacceptable buildup of debris that could clog strainers during normal operation and prevent them from performing their safety function. Requested action 1 requested licensees to evaluate the operability of the pumps based on the cleanliness of the suppression pool and strainers. Requested action 2 then requested verification of the licensee's assessment by way of a pump test



and strainer inspection. These two actions serve to ensure that the pumps are currently operable, and that the pumps are not experiencing unacceptable debris buildup on the strainer surfaces. Requested actions 3, 4, and 5 serve to ensure that appropriate measures have been established, or will be taken, to prevent debris accumulation in the pool.

The licensee has performed an assessment of the operability of all pumps drawing suction from the suppression pool to perform their safety function and concluded that they are operable. This is based upon: 1) a complete torus cleaning in 1981 with minimum potential for debris introduction since that time; 2) water sample analysis showing no indication of fibrous materials; and 3) strainer inspections conducted on a quarterly basis revealing no buildup of debris on the strainer surfaces. The licensee also conducted an extended pump run, followed by inspections of the affected strainers, to verify the operability of the ECCS pumps. The fact that only minimal debris was found on the strainer surfaces after a 6 hour, two-pump run supports the licensee's conclusion that the pumps are operable.

Accordingly, the NRC staff finds that the licensee's response meets the intent of requested actions 1 and 2 and is acceptable. The NRC staff also finds that the licensee's commitments to establish a torus cleaning program, implement improved training and other potential improvements to the FME program, monitor/trend pump performance data, and to continue quarterly strainer inspections, meet the intent of requested actions 3, 4, and 5. The NRC staff further finds that the licensee's proposed schedule for cleaning the torus and implementing the torus cleaning program is appropriate given the actions already taken.

3.0 CONCLUSION

Based upon the above evaluation of the licensee's submittals, the NRC staff finds the licensee's response to NRC Bulletin 95-02 to be acceptable.

Principal Contributors: R. Elliott
D. Hood

Date: August 15, 1996



11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11

11-11-11