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United States Nuclear Regulatory Commission
Executive Director for Operations
Margaret Doane
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SUBJECT 10 CFR 2.206 PETITION INVOLVING GRAND GULF NUCLEAR STATION

Dear Ms. Doane:

Pursuant to 10 CFR 2.206 I am petitioning the NRC to take additional enforcement action at Grand Gulf Nuclear Station (GG) by issuing an Order to compel the licensee to take several actions:

1. That GG perform an evaluation of the root and contributing causes for both the individual and the collective issues that have and are occurring at the facility.
2. That GG/Entergy meet with the Commission at least annually to discuss performance concerns and improvement efforts until the corrective action in Item 4 are completed.
3. That the evaluation performed to meet Item 1 conform to the requirements for a full scope Inspection Procedure (IP) 95003, “Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input,” to independently (a) review the breadth and depth of the performance deficiencies, and (b) perform a graded assessment of the licensee’s safety culture.
4. That GG/Entergy submit in writing to the NRC the results of the evaluation required by Item 1, all licensee commitments, and all corrective actions.

Reasons for additional enforcement action by the NRC:

1. Several conditions described in MC 0305 for a deviation or transition to MC 0350, “Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns,” have been satisfied. In particular: (a) The regulatory actions dictated by the Action Matrix are not appropriate and have not been successful in correcting and preventing additional significant performance deficiencies at GG. (b) An extended voluntary shutdown to address performance issues associated with deficient operations and operator knowledge occurred at GG; however, the NRC did not implement additional regulatory oversight. (c) The NRC issued a confirmatory order for multiple operators willfully failing to meet regulatory requirements and the licensee’s actions have been inconsistent; and (d) Numerous significant operational events have occurred at GG.

2. GG/Entergy has demonstrated a longstanding inability to correct systemic problems as described by NRC staff in numerous documents. Unbelievably, in spite of 6 years of licensee “recovery” plans, performance progressively declined. During this period, the NRC never, not once, performed a diagnostic evaluation to understand the root causes of continued performance declines at GG. GG/Entergy has not performed a holistic causal evaluation of the organizational and programmatic performance issues that continue to plague the facility.

In 2015, 33 violations (statistically deviant) were identified by the NRC. Eight involved traditional enforcement for impeding the regulatory process (statistically deviant) and one in the area of willfulness. Region IV staff considered the licensee's engineering organization to have significant challenges involving a failure to recognize degraded or nonconforming conditions and condition reports that did not accurately describe the associated degraded or nonconforming conditions. These challenges affected the station's ability to identify problems at a low threshold and to promptly correct conditions adverse to quality. The licensee continued to implement an ill-fated recovery plan without success.

In 2016, 21 findings (lower but still statistically deviant) were identified. The Unplanned Scrams per 7,000 Critical Hours PI was White in the 3rd and 4th Quarters. A special inspection that began in October 2016 identified a finding with potential Greater-than-Green safety significance associated with the unavailability of the alternate decay heat removal (ADHR). The licensee misreported the unplanned downpower metric (should have been white). The NRC identified a station-wide lack of adequate procedures. The licensee commenced an extended shutdown to retrain all operators on fundamentals of operating a nuclear power plant. The NRC staff considered the 50.59 process implementation inadequate and that engineering staff had insufficient design basis knowledge. Thirty percent of the findings over the past two years were related to security. Additional violations were issued in the area of impeding the regulatory process.

NRC staff were concerned with occupational radiation safety ALARA planning and work control program in terms of effectively planning and executing radiologically controlled work. During the assessment period, the inspectors identified a violation of 10 CFR 20.1101(b) for a failure to implement radiation exposure reduction procedures and engineering controls to minimize unplanned and unintended dose. ALARA related violations are extremely rare in the nuclear industry. Several work activities during the March 2016 (RFO 20) refueling outage significantly exceeded the initial dose estimates, with minimal or no actions taken to evaluate the basis for the dose overrides and develop mitigating strategies.

The NRC identified significant weaknesses in operator fundamentals. This was identified through the operator licensing inspection, the inspection of operator performance during the June 17, 2016, scram, and during resident control room tour observations. Weaknesses identified were the lack of (1) operations personnel maintaining their roles during events, (2) communication weaknesses and minimization of noise during evaluated scenarios, and (3) understanding and implementation of standing orders and operational decision making instructions. During the extended shutdown the NRC identified several weaknesses in cross-organizational communications. Most notable was the lack of consistency in understanding plant risk and schedule coordination between the control room and the outage control center.

The residents performed a trend review in the second quarter of 2016 and identified numerous examples of the licensee's failure to recognize degraded or nonconforming conditions and generate condition reports that accurately describe the associated degraded or nonconforming conditions.

The 2016 performance concerns are reflective of broad programmatic concerns in multiple program areas with little to no increase in regulatory oversight.

In 2017, twenty-seven findings (3 years of statistically deviant results) were documented during the assessment period. The licensee's restart plan, included nine corrective actions designated as, "Actions required for restart." The inspectors concluded that four were satisfactorily completed, four had received due date extensions that extended beyond the date of the restart without documented justification, and one corrective action was closed without documentation demonstrating that the intent of the corrective action was met. The licensee identified yet another action plan to address performance gaps, but only implemented part of the plan prior to restart, focusing primarily on the operations department, with some emphasis on the maintenance department. Performance issues were not limited to the operations and maintenance departments, and the licensee has not fully implemented a strategic training plan for the engineering, chemistry, radiation protection and security departments.

Inadequate/lack of procedures – The licensee implemented efforts to address this issue with the "high intensity training" conducted during the extended shutdown from September 2016 – January 2017. There was a large focus on procedural adherence and stopping when uncertain or if poor procedural guidance is encountered. Even though the licensee is continuing their improvement efforts in regards to procedure adequacy and human factor formatting, there have been multiple examples of workers not adhering to procedures and/or stopping when the procedure is unclear.

License commitments and 50.59 process implementation and insufficient design basis knowledge continued thru 2017. The licensee continued to be challenged with producing quality engineering products, promptly correcting issues affecting safety-related components, and ensuring that an adequate engineering interface with maintenance and operations was maintained. In addition, there were indications that there was a lack of understanding of the design basis of the plant and how that design basis is to be translated into processes and procedures. There was also a continuing theme of failure to maintain the final safety analysis report accurate and current.

Corrective Action Program findings that were identified in the 2017 were indicative of a poor performing CAP. One IP 95001 supplemental inspection was conducted during this assessment period for a White Unplanned Scrams per 7,000 Critical Hours PI, which was White in the 3rd and 4th Quarter 2016. The NRC concluded that the inspection objectives were not met due to two significant weaknesses and five general weaknesses related to the licensee's corrective actions to address the underlying performance issues. Therefore, a White parallel PI inspection finding was opened as an ROP Action Matrix input effective the 1st Quarter 2017.

In November 2017, the NRC issued additional traditional enforcement apparent violations involving willfulness, which were associated with general employee training exam proctoring and falsification of non-licensed operator rounds. In August 2017, four additional Severity Level IV licensee-identified violations in the area of impeding the regulatory process. In December 2017, one additional Severity Level IV violation in the area of impeding the regulatory process. This violation involved multiple examples of the licensee's failure to update the facility's final safety analysis report as required.

A finding was issued for the licensee's failure to operate their gaseous radwaste system within design specifications for years, resulting in non-ALARA effluent releases. The licensee's operation of this system outside of the designed off gas flowrate and refrigeration temperature requirements resulted in elevated radiological effluent releases.

Grand Gulf issued yet another recovery plan with three main focus areas. GG and Entergy Corporate Management indicated that GG performance stabilized. However, the NRC staff determined the continued equipment and human performance issues, a weak corrective action program, ineffective work management, and equipment failures involving latent issues, reflected declining performance.

The licensee remained in the Regulatory Response Column of the ROP Action Matrix since the third quarter of 2016 due to a White performance indicator (PI) for Unplanned Scrams per 7000 Critical Hours.

The 2017 results indicate GG was incapable of turning performance. The 2017 performance concerns continued to be reflective of broad programmatic concerns in multiple program areas with little to no increase in regulatory oversight. The scram rate is extreme for the nuclear industry. Since January 2016, only 1 quarter exceed 2000 critical hours, reflecting an inability to reliably maintain the facility.

In 2018, GG continued to exceed the statistically deviant 20+ violation count. The abnormally high scram rate continued. The inability to achieve 2000 critical hours in a quarter continued. Column 2 performance continued. Another IP 95001 is to be initiated. The expected 2018 results will likely indicate GG was incapable of turning performance for yet another consecutive year. The 2018 performance concerns continue to be reflective of broad programmatic concerns in multiple program areas with little to no increase in regulatory oversight. Plant performance cannot be improved with phone calls and visits from the NRC's Office of the Executive Director. To turn performance, the NRC needs to perform a diagnostic evaluation of the facility (IP 95003), understand the causes driving year after year inadequate performance, and implement an inspection program that will lead GG to safe operation.

3. SCRAMS, Transients and Risk

Boiling Water Reactors, such as GG, typically have a large transient initiator contribution for core damage frequency (CDF) and Large Early Release Frequency (LERF). The vast majority of operating reactors in the United States have transient initiating event frequencies in the E-1 to E-2 range. A few have frequencies greater than 1.

In reviewing the scram, downpower and force shutdown data for GG, it is abundantly clear that the transient frequency at GG is orders of magnitude above industry norms. Most licensees have zero or maybe 1 transient in an 18 to 24 month operating cycle. GG has 5 to 10 per year. As such, the baseline risk values for CDF and LERF at GG should be significantly higher. However; the NRC has not taken into account the increase in risk metrics, and as a result has not assigned additional regulatory oversight to the facility.

What is problematic at GG? According to NRC documents it's: (1) untrained operators; (2) inadequate procedures; (3) loss of control of the facility design; (4) lack of understanding of the licensing and design basis; (5) actions that impede and/or prevent

regulatory oversight; (6) inability to implement an ALARA program; (7) difficulty planning, scheduling and completing maintenance; (8) inability to perform causal evaluations; (9) inability to develop meaningful corrective actions; and (10) an inability to implement improvement efforts that restore safety margins.

Risk models fail to account for programmatic deficiencies in licensee performance. Programmatic deficiencies (errors of commission and omission) must be accounted for using heuristic reasoning in determining a risk informed decision. However, the NRC has not elevated risk informed decisions to account for broad programmatic failures leading to numerous errors of commission and omission. As a result, the risk determinations made by the NRC over the past 4-5 years have severely underestimated the risk significance of findings. The underestimations have in turn resulted in a misapplication of the MC 0305 Action Matrix.