

UNITED STATES NUCLEAR REGULATORY COMMISSION REGION I 475 ALLENDALE ROAD KING OF PRUSSIA, PENNSYLVANIA 19406

November 17, 1997

EA 97-421

Mr. Michael B. Roche Vice President and Director GPU Nuclear Incorporated Oyster Creek Nuclear Generating Station Post Office Box 388 Forked River, New Jersey 03731

SUBJECT: NOTICE OF VIOLATION (NRC Inspection Report No. 50-219/97-06)

Dear Mr. Roche:

This letter refers to the NRC inspection conducted between July 7, 1997 and August 24, 1997, at your Oyster Creek nuclear facility. During the inspection, apparent violations of NRC requirements were identified and were discussed with you and members of your staff at an sxit meeting on September 4, 1997. The inspection report was sent to you on September 17, 997. On September 30, 1997, a predecisional enforcement conference (conference) was conducted with you and members of your staff, to discuss the violations, their causes, and your corrective actions.

Based on the information developed during the inspection, and the information provided during the conference, six violations of NRC requirements are being cited and are described in the enclosed Notice of Violation (Notice). Four of these violations involved the failure to adequately maintain and control equipment in accordance with the design basis, resulting in equipment important afety being inoperable or degraded. In three of the four cases, the design deficiencies resulted in failure of the equipment to perform as designed during an actual transient or during a required surveillance test. Although these particular failures did not impact public health and safety, it is failures like these, when combined with other failures, that can lead to such consequences and are therefore of concern to the NRC. The remaining two violations involved failures to take adequate corrective actions to prevent recurrence of conditions adverse to quality. These violations were of concern both because of the potential safety consequences that could have resulted and because they represented repetitive human errors that are part of a continuing trend of human errors at Oyster Creek.

The three most significant violations, which are set forth in Section I of the enclosed Notice, involved failures in your design and modification processes that resulted in design deficiencies. These failures consisted of: (1) not adequately considering the compatibility of materials in the design specifications for the emergency service water (ESW) pumps when certain component material specifications were changed in 1993; (2) revising a procedure in 1989 to allow periodic opening of a reactor water cleanup (RWCU) system primary containment. isolation valve at reactor pressure so as to fill and pressurize the RWCU system, without considering that the maximum differential pressure against which that valve would have to close in the event of a RWCU pipe break was considerably higher than what the valve was set





for; and (3) not ensuring that the degraded voltage relay setpoints for the vital station electrical busses were selected such that acceptable voltage conditions were provided to the safety buses on a sudden loss of output from the Oyster Creek unit.

With respect to the first violation, in October 1993, the vendor specification for the material for the emergency service water (ESW) pump bowl assemblies was changed from cast iron to stainless steel. Based on that vendor specification change, two of the ESW pumps were installed with stainless steel bowl assemblies in November 1993. However, the top case and head flanges were made of cast iron, which is incompatible with the connecting stainless steel components. This incompatibility created the opportunity for accelerated galvanic corrosion at the welds of these components. In fact, one of those two ESW pumps was subsequently discovered to be inoperable on July 31, 1997, when its top case flange failed at the weld. This violation represents a significant safety and regulatory concern because the failure to have compatible materials increased the potential for degradation of these safety related components. Therefore, this violation is classified at Severity Level III in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600 (Enforcement Policy).

With respect to the second violation, in April 1989, you modified the RWCU system procedures to allow operators to periodically open an outboard isolation valve at full reactor pressure (1020 psig) in order to fill and pressurize the RWCU system via a one inch line downstream of the valve in question. This change was made because the maintenance history for the valve that had been used to perform this evolution, showed seal damage that was believed to have been caused by throttling of the valve during power operation. However, in revising the procedure, it was apparently not recognized that the isolation valve might be required to close against full reactor pressure in the event of a line break with the inboard isolation valve opened. The isolation valve was only designed to close against a 125 psid differential pressure, as determined in the design basis calculations. Therefore, there was no assurance that the valve would be able to perform its safety function to isolate the containment if it was open at full reactor pressure. This violation is of concern because it created the potential for violation of containment integrity upon a coincident single failure of the inboard isolation valve. Additionally, in your reassessment of motor-operated valves (MOVs) in response to Generic Letter 89-10, Supplement 3, in February 1992, you missed an opportunity to identify this problem and correct it. Therefore, this violation is also classified at Severity Level III in accordance with the Enforcement Policy.

With respect to the third violation, in 1994, you failed to assure that specifications for the 4160 volt vital bus degraded voltage relay (DVR) setpoints were adequate to ensure that the onsite distribution system, in conjunction with the offsite distribution system, was capable of providing acceptable voltage under worst case station electric load and grid voltages as specified in the Final Safety Analysis Report (FSAR). Specifically, the dograded grid analysis, performed in 1994, did not consider that the startup transformer voltage regulators could lower bus voltage. The analysis did not consider the design of the voltage regulators, specifically the regulator response time and setpoints, in selection of the 4160 volt vital bus DVR setpoints. As a result, on August 1, 1997, when the output of the Oyster Creek unit was lost due to a manual reactor scram, the startup transformer voltage regulators failed to supply sufficient voltage to the vital busses to preclude an undervoltage (UV) condition. This UV condition lasted for greater than 10 seconds which caused the DVRs to trip (and not

reset), which de-energized the vital buses and started the emergency diesel generators contrary to the design bases. This violation is also of concern because it degraded overall safety bus reliability, and the resulting conditions complicated the overall transient response, thereby representing a significant challenge to the operators and plant equipment. Therefore, this violation is also classified at Severity Level III in accordance with the Enforcement Policy.

A base civil penalty in the amount of \$50,000 is considered for each Severity Level III violation or problem that occurred prior to November 12, 1996. Since Oyster Creek has not been the subject of escalated enforcement actions within the last 2 years, the NRC considered whether credit was warranted for Corrective Action in accordance with the civil penalty assessment process in Section VI.B.2 of the Enforcement Policy for each of the Severity Level Ill issues. Credit for your corrective actions in all cases is warranted because at the time of the enforcement conference in September 1997, those actions were considered prompt and comprehensive. These actions included: (1) with respect to the ESW pumps, inspection of the other ESW pumps for a common mode problem and notification of the vendor which resulted in issuance of a 10 CFR 21 report; (2) with respect to the RWCU isolation valve problem, establishment of administrative controls to prevent opening of the valve, and review of other MOV design bases calculations for similar occurrences; (3) with respect to the DVR setpoints and the startup transfer voltage regulators, changes to the voltage regulator setpoints to ensure that the degraded grid design bases were satisfied, and a planned review of the degraded grid analysis by an expert analyst; (4) providing training and enhancing engineering procedures; and (5) plans for review of assumptions used in a sample of key parameter calculations to ensure that the assumptions are consistent with plant design and operational characteristics.

The NRC recognizes that all of these violations occurred prior to 1995. Nonetheless, the NRC is concerned that in two of the three cases, the problems caused safety-related equipment to fail before the deficient conditions were identified. Nevertheless, in recognition of the absence of previous escalated enforcement action and to encourage prompt and comprehensive correction of violations, I have been authorized, after consultation with the Director, Office of Enforcement, not to propose a civil penalty in this case. However, significant violations in the future could result in a civil penalty.

A violation of Technical Specifications (TSs) for failure to maintain the control rod drive (CRD) hydraulic system operable has been classified at Severity Level IV and is described in Section II of the enclosed Notice. In the case, the unavailability of the CRD pumps resulted in minimal safety consequence because offsite power remained available to the non-vital busses. However, if offsite power had not been a sailable, the CRD pumps would not have been able to perform their high pressure coolant injection function to avoid an argo-relief actuation. The NRC is concerned that in addition to the failure to assure that the CRD design bases was adequately translated into the design of the CRD pump electrical controls, testing was inadequate to verify the functionality of the CRD pump design safety features. Additionally, an opportunity to identify and correct this problem was missed following a loss of offsite power in May 1992 when engineering did not thoroughly evaluate the failure of one of the CRD pumps to start.

Two violations for failure to take adequate corrective actions to prevent recurrence of conditions adverse to quality have been classified at Severity Level IV and are described in

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Section III of the enclosed Notice. Even though the violations in Section III were identified by your staff, enforcement discretion is not being exercised, and these violations are being cited because both of these violations were repetitive. These repetitive violations caused by human errors are part of a larger trend of human errors at Oyster Creek that we discussed with you at a management meeting on July 11, 1997. Nonetheless, sinch that meeting, such errors have continued. In addition to the violations cited herein, on August 5, 1997, a 4160 volt inter-vault fire door was not maintained intact; on September 3, 1997, a dumpster containing unmonitored low levels of contaminated soil was mistakenly removed from the site and sent to a local land fill; and on September 30, 1997, electricians performed troubleshooting on a unit generator field relay without the knowledge of the control room supervisor and inadvertently gropped vital bus voltage to a point where some undervoltage relays actuated and near's caused an unplanned transfer of the vital busses to the emergency diesel generators and a reactor scram. This continuing trend of human errors at Oyster Creek is of concern to the NRC because more significant errors could occur and cause actual plant transients or events. Oyster Creek's future performance in this area will be closely reviewed to determine if there is a need for additional NRC action to arrest the continuation of this trend.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be placed in the NRC Public Document Room (PDR).

Sincerely,

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Hubert J. Miller Regional Administrator

Docket No. 50-219 License No. DPR-16

Enclosure: Notice of Violation

cc w/encl: G. Busch, Manager, Nuclear Safety and Licensing, Oyster Creek M. Laggart, Manager, Corporate Licensing State of New Jersey

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