



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION III  
801 WARRENVILLE ROAD  
LISLE, ILLINOIS 60532-4351

October 13, 1998

EA Numbers 98-150, 98-151, 98-152 and 98-186

Mr. John Sampson  
Site Vice President  
Nuclear Generation Group  
Indiana Michigan Power Company  
500 Circle Drive  
Buchanan, MI 49107-1395

SUBJECT: NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY  
- \$500,000 (NRC Inspection Reports 50-315(316)/97201(NRR),  
50-315(316)/97017(DRP), 50-315(316)/98004(DRS), 50-315(316)/98005(DRS),  
and 50-315(316)/98009(DRS))

Dear Mr. Sampson:

The NRC conducted five inspections at the Indiana Michigan Power (IMP) Donald C. Cook Nuclear Power Plant from August 4, 1997 through April 15, 1998. These inspections included evaluations and assessments of the: (1) ice condenser surveillance program, (2) corrective action program, (3) facility design basis, (4) safety evaluation program, and (5) control of foreign material in the containment. Because of the seriousness of the issues resulting from these inspections, lengthy public meetings were held on December 12, 1997, December 22, 1997, and January 8, 1998. The NRC held an open predecisional enforcement conference in the Region III office on May 20, 1998, with video viewing by members of the public and NRC staff in the NRC Rockville, Maryland office.

Based on the information developed during these inspections, provided during the public meetings, and provided during the predecisional enforcement conference, the NRC has determined that numerous violations of NRC requirements occurred. The circumstances surrounding these violations are described in detail in the subject inspection reports and the violations are cited in the enclosed Notice of Violation and Proposed Imposition of Civil Penalty (Notice). The violations have been grouped into four areas: (1) section A, performance of surveillance test activities, (2) section B, implementation of the corrective action program, (3) section C, control of the facility design basis, and (4) section D, conduct of safety evaluations.

During the predecisional enforcement conference, IMP admitted all the apparent violations that formed the basis for the conference, described its assessment of the root causes, and presented its corrective actions to address these issues. IMP stated that a root cause for many of these apparent violations was the failure to establish and communicate adequate performance standards.

As a consequence of the violations, extensive degradation of the design of each unit's containment and emergency core cooling systems (ECCS), including the ice condensers, refueling water storage tanks (RWST), and containment sumps occurred, adversely impacting

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the ability of both of the remaining design barriers (fuel cladding and containment) to prevent fission product release to the environment in the event of an accident. With regard to the fuel cladding barrier, deficiencies were identified involving: (1) a large quantity of fibrous materials within containment which would likely have clogged the ECCS suction strainers in the recirculation mode, (2) a single failure ECCS vulnerability, and (3) the amount of water available in the ECCS sump. With regard to the containment barrier, the effects of the degradation to the ice condenser from blocked ice bed flow passages, missing ice segments and ice basket damage represent a serious impairment of the function of the ice condenser to condense steam and suppress peak pressure. These conditions resulted in a serious impairment of the safety function for all redundant trains of ECCS and for containment. Further, beyond the specific systems addressed by this enforcement action, two additional systems related to the containment, the hydrogen ignition and containment spray systems, were also degraded during the same period and following analysis the licensee declared these systems inoperable.

The eight violations in section A of the Notice demonstrate that the surveillance program intended to ensure the continued availability of safety systems was inadequate. Procedures implemented to ensure post refueling outage containment cleanliness inspections were inappropriate as demonstrated by the thousands of pounds of debris present in containment for several operating cycles. The debris, which consisted of insulation, coatings (paint), labels, tape, and granular charcoal would, during a loss of coolant accident (LOCA), deposit on suction strainers used for long-term recirculation cooling and significantly impede reactor core cooling. Several procedures implemented for ice condenser testing were inadequate as demonstrated by (1) visual examinations that failed to detect excessive ice blockage of ice condenser flow passages, (2) acceptance criteria that failed to account for measurement errors, and (3) the selection of a population of baskets to weigh that was not representative of conditions within the ice condenser. In addition to the procedure problems, IMP failed to monitor the quality of services provided by contractors performing ice condenser surveillance activities and to detect rough handling practices that caused structurally significant ice basket damage to go undetected. These violations represent a programmatic breakdown in the control of IMP's surveillance program for the ice condenser.

The six violations in section B demonstrate a failure of the Donald C. Cook corrective action program to promptly identify significant conditions adverse to quality, to take appropriate corrective actions to determine the cause of each condition, and implement corrective actions to preclude repetition. For example, dented/buckled ice basket webbing and missing ice from the ice baskets identified by NRC inspectors were readily apparent conditions not previously identified by IMP staff. Further, NRC intervention was necessary to prompt licensee corrective actions for numerous deficiencies associated with the ice condenser such as missing or broken ice basket sheet metal screws found repeatedly by IMP staff in the ice melt system since 1991 without investigation or corrective action. The failure to effectively implement the corrective action program represented a programmatic breakdown in the control of licensed activities such that conditions adverse to quality were not aggressively pursued and resolved.

The sixteen violations in section C represent a programmatic breakdown of IMP's design change program. Design control deficiencies resulted in the degraded condition of the ice condenser, containment sump, and the RWST level instruments. For the ice condenser, IMP

failed to follow the design control process pertaining to changes in the method to secure ice baskets in place, and the repair of damaged baskets. For the containment sump, IMP failed to implement adequate controls for the installation of material in the containment that would have affected long-term post-LOCA recirculation cooling. Most notable was the routine installation of fibrous insulation material without appropriate controls. For the RWST, IMP failed to verify the adequacy of instrument uncertainty calculations which allowed the establishment of improper swap over setpoints. This condition could result in insufficient water inventory in the containment sump for ECCS during a LOCA also resulting in reduced/inadequate core cooling.

The seven violations in section D represent a programmatic breakdown of IMP's ability to perform safety evaluations to adequately assess the consequences of changes and ensure the plant was maintained as designed and specified in the licensing basis. For example IMP created an unreviewed safety question and a single failure vulnerability when they changed the proceduralized system lineup to transfer ECCS pump suction from the RWST to the containment sump using the west residual heat removal (RHR) pump. Specifically, failure of this RHR pump would cause the loss of both trains of emergency core cooling. Another example included several safety evaluations that failed to identify that operating the facility with the ultimate heat sink above its maximum temperature was an unreviewed safety question. Operation under these conditions could have affected the ability to reach cold shutdown. In addition, when the licensee did address elevated equipment operating temperatures, the associated safety evaluation failed to provide the basis for the determination that the higher temperatures were not an unreviewed safety question.

The violations in the four sections of the Notice have been collectively categorized in accordance with the NRC Enforcement Policy (NUREG-1600) as a Severity Level II problem. This Severity Level is warranted for the breadth and number of the violations that, taken in total, resulted in a lack of reasonable assurance that following a design basis LOCA, i.e., large break, the ECCS and containment would have functioned.

Accordingly, I have been authorized, after consultation with the Commission to exercise discretion pursuant to Section VII.A.1 of the NRC Enforcement Policy to assess a penalty in the amount of \$500,000. Specifically, the escalated civil penalty reflects the consideration of the particularly poor licensee performance, the duration of the problems, the impact on ECCS and containment, and the NRC's concerns regarding the violations. The purpose of this enforcement action is to emphasize: (1) the need to take timely and effective corrective actions for identified deficiencies, (2) the need for effective surveillance testing and for plant personnel to challenge and investigate discrepancies identified during surveillance activities, (3) the need for rigorous safety evaluations to determine if changes to the plant or procedures constitute unreviewed safety questions, (4) the need to maintain systems' design bases, and (5) the need for a strong self-assessment program. The staff would have proposed higher civil penalty had it not been for IMP's decision to take comprehensive corrective actions and commitment to keep the facility shutdown until these problems are resolved.

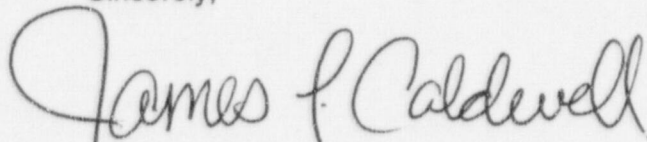
Finally, the violations described in the Notice are not all of the apparent violations present or identified during the various inspections, but serve to represent the systemic nature of the significant regulatory problems existing at the D.C. Cook facility. The breadth and number of

violations identified resulting in the significant degradation of multiple systems raise questions about the condition of other safety systems at D.C. Cook. This enforcement action emphasizes the need for IMP's ongoing review of the condition of other systems to be effective. Other apparent violations described in the inspection reports referenced in the Notice are not being addressed in this enforcement action. Nevertheless, they need to be considered as part of your corrective actions.

IMP is required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing its response. The NRC will use IMP's 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 IMP's response will be placed in the NRC Public Document Room (PDR). IMP's response may, as appropriate, make reference to the material IMP provided at the predecisional enforcement conference on May 20, 1998. To the extent possible, IMP's response should not include any personal privacy, proprietary, or safeguards information so that it can be placed in the PDR without redaction.

Sincerely,



James L. Caldwell  
Acting Regional Administrator

Docket Nos. 50-315; 50-316  
License Nos. DPR-58, DPR-74

Enclosure: Notice of Violation and  
Proposed Imposition of Civil Penalty

cc w/encl: J. Sampson, Site Vice President  
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D. Cooper, Plant Manager  
R. Whale, Michigan Public Service Commission  
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MI Department of State Police  
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