JUN 18 1971

P. A. Morris, Director
Division of Reactor Licensing

INTERIM REPORT: PROTECTION, CONTROL AND EMERGENCY POWER SYSTEMS; INDIAN POINT NUCLEAR GENERATING UNIT NO. 3; DOCKET NO. 50-286

The interim report relating to the protection, control and emergency power systems of Indian Point Nuclear Generating Unit No. 3, is attached.

Original signed by
E. G. Case

Edson G. Case, Director
Division of Reactor Standards

ESB-
DRS:ESB;DFS

Enclosure:
Interim Report

cc w/enclosure:
S. Hanauer, DR
E. Case, DRS
R. DeYoung, DRL
R. Boyd, DRL
D. Skovholt, DRL
D. Muller, DRL
C. Hale, DRL (2)
V. Moore, DRS
D. Sullivan, DRS

bcc w/enclosure:
E. Case, DRS

CRESS T-4:01:mcs	DRS	DRS	DRS			Memo
OFFICE ▶						
SURNAME ▶	Sullivan:mcs	VAMoore	EGCase			
DATE ▶	6/16/71	6/16/71	6/17/71			

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

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INTERIM REPORT: PROTECTION, CONTROL AND EMERGENCY POWER SYSTEMS;
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3

Protection and Control Systems

The protection and control systems for Indian Point Nuclear Generating Unit No. 3 will be evaluated against the Commission's General Design Criteria (as published Feb. 20, 1971) and the Proposed IEEE Criteria for Nuclear Power Plant Protection Systems (IEEE 279), dated August 1968. This review will be accomplished by comparing the designs of these systems with those of Indian Point Unit No. 2 which have been reviewed in detail by the Regulatory Staff. The applicant will be requested to identify those portions of the protection and control systems that differ from Unit No. 2, and the extent of conformance of the protection system to IEEE 279. The applicant has also been requested to provide additional information in other areas such as the seismic design criteria, qualification testing, quality assurance procedures, cable installation design criteria, the effects of losses of air conditioning in vital areas, battery charger monitoring, circuit testability and the instrumentation for monitoring post-accident conditions. We intend to pursue in further detail those aspects of the systems' designs that are different from the Unit 2 design or for which new information is received.

Our review of the schematic diagrams, which was conducted on May 18 and 19, uncovered a serious problem area which the applicant has agreed to correct. Specifically, both logic trains of all engineered safety features

can be concurrently bypassed by the (periodic) testing circuits. We will review the applicant's circuit modification at a later date.

At this writing we have not yet transmitted our questions to the applicant. We anticipate, however, that the responses and our further discussions with the applicant relating to them will not give rise to new issues or significant problems.

Emergency Power Systems

Offsite Power

Power is brought to the Buchanan substation via two rights-of-way: overhead 138 kV lines carried on a single set of four-circuit towers, and a single underground 138 kV line which crosses the river. From Buchanan to Unit No. 3 there are two lines, one overhead (138 kV) and one underground (138 kV) which supply power to the emergency buses.

Our review of the schematic diagrams and other pertinent information indicates that the design satisfies Criterion 17.

Onsite Power

Onsite a-c power is furnished by three diesel generators rated at 1750 kW continuous. They are arranged in a split bus configuration in accordance with Safety Guide 6. Our review of the system's conformance to Safety Guide 9 is incomplete; however, it appears from the information in hand

that the diesel loads are well within the 2000 hour rating.

Unlike the a-c system, the d-c system is not completely split. There are several swing buses which tend to compromise the independence of the redundant d-c buses. During our schematic diagram review we observed that several swing buses could be eliminated from the design without violating other current criteria. The applicant will be asked to delete these unnecessary buses. If he agrees, the modification will constitute an improvement. The design as it stands, however, could be deemed acceptable for this reactor on the grounds that it satisfies the single failure criterion.

The bypassing of diesel generators for test and maintenance purposes is ambiguously annunciated by a single annunciator window. We consider this to be a problem area and are pursuing it with the applicant.

Our review of the cable routing in the two tunnels indicates that the physical independence among the redundant channels is provided not by the tunnels but by the cable tray separation (four feet horizontally) within each tunnel. Because of the 2/3 and 3/5 logic system arrays in the protection system design, three tunnels would be required to provide "tunnel" independence. In view of the horizontal separation of four feet between cable trays and the facts that (a) each vertical set of trays carries the cables of only one channel, (b) three-phase breaker protection