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AUTH.NAME AUTHOR AFFILIATION
MATHEWS,E.R. Wisconsin Public Service Corp.
RECIP.NAME RECIPIENT AFFILIATION
EISENHUT,D.G. Division of Licensing

SUBJECT: Advises that operating procedures & training programs re station blackout event reviewed per request.Improvements to plant procedures & equipment necessary to cope w/station blackout event implemented.

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WISCONSIN PUBLIC SERVICE CORPORATION

P.O. Box 1200, Green Bay, Wisconsin 54305

May 29, 1981

Mr. Darrel G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

Docket No. 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Generic Letter 81-04: Emergency Procedures and Training for Station Blackout Events

In accordance with your request in the referenced letter, we have reviewed our operating procedures and training programs concerning a station blackout event.

On January 17, 1980, the Kewaunee Plant experienced a transformer failure which resulted in a partial station blackout event. Power was available to the two 4160 V safeguard buses through the diesel generator for bus 1-6 and through the tertiary auxiliary transformer from off-site power to bus 1-5 (see Figure 8.2-2 in the Kewaunee Nuclear Power Plant FSAR). During the event, safe shutdown and natural circulation cooldown was accomplished without any problems. Total off-site power was eventually restored to the plant by removing the main generator links and back feeding through the main auxiliary transformer from the grid.

As a result of this event, a substantial number of improvements to the Kewaunee Plant procedures and equipment necessary to cope with a station blackout were made. Several of the major changes included revising the Station Blackout Emergency Operating Procedure to advise operators of equipment not available and how to alternately accomplish required tasks; revising the Natural Circulation Cooldown Procedure; revising the Abnormal 4160 V Supply and Distribution System Procedure to be able to accomplish electrical distribution with various power sources unavailable; implementing modifications to improve emergency lighting throughout the plant; implementing modifications to power the Gai-Tronics system (internal plant communications system) from emergency power; and increased training and operator awareness for events of this nature.

The Kewaunee Plant is designed and has the procedures necessary to cope with a station blackout event. Additionally, the Westinghouse Owners Group, of which WPSC is a member, has undertaken a program to develop guidelines for operator action in the event of a loss of all AC. The initial effort is expected to be completed in September of 1981, resulting in a draft generic procedure for this postulated event. Finally, our licensed operator training and retraining programs will include appropriate instruction in this postulated event utilizing emergency procedures to mitigate the consequences of a station blackout event.

We recognize that the severe consequences of an extended loss of all AC at a nuclear power plant warrants careful consideration and preparation to assure appropriate actions should such an event occur. We feel that the design of the Kewaunee plant, which includes four off-site sources of AC power and two emergency on-site sources, reduces the probability of occurrence of this event to a negligibly small value. Finally, the actions we have taken and are continuing to take to enhance operator knowledge and response to a complete loss of AC power provide a high degree of assurance that corrective measures will be taken in a timely manner, if this unlikely event should occur.

The attachment to this letter summarizes the results of the review conducted in this matter.

Very truly yours,

E R Mathews

E. R. Mathews
Senior Vice President
Power Supply & Engineering

jac

Attach.

cc - Mr. Robert Nelson, NRC Resident Inspector
RR #1, Box 999, Kewaunee, WI 54216

EMERGENCY PROCEDURES AND TRAINING FOR STATION BLACKOUT EVENTS

A. OPERATOR ACTIONS AND PROCEDURES

The Station Blackout Procedure delineates the necessary emergency steps for operators to take. These include ensuring hot shutdown is attained, emergency power to safeguard buses 1-5 and 1-6 is established, and the necessary equipment to remove decay heat is available. The procedure cautions the operator on the loss of certain equipment. Once a stable condition is established, the operator is directed to the Natural Circulation Operation Procedure. The necessary steps to maintain natural circulation and decay heat removal are delineated, along with potential problems and precautions.

Due to the necessity of restoring AC power as soon as possible after a station blackout, the Kewuanee Plant emergency procedures focus on restoring power to safeguard buses 1-5 and 1-6. Without AC power (which would require the loss of off-site power and both emergency diesel generators) there is no mechanism to increase reactor coolant system inventory. Therefore, it is essential to restore power to at least one safeguard bus. Until safeguard power is restored, RCS inventory will remain constant if RCS integrity, pressure and temperature are maintained. RCS pressure and temperature can be maintained if decay heat removal is controlled properly. Decay heat removal can be accomplished during a blackout by using the steam generators (SG) as a heat sink by relieving steam through the SG safety valves or power operated relief valves. The power operated relief valves can be provided through the turbine driven auxiliary feedwater pump, regulating flow through the DC powered discharge valves.

The unavailability of other safeguard equipment such as the component cooling system, ventilation systems and the safety injection system, compounds matters in trying to mitigate the consequences of dealing with the loss of decay heat removal, and increases the priority of establishing power to the safeguard buses.

B. ESTIMATED TIME AVAILABLE TO RESTORE AC POWER

Because of the number of variables involved, it is difficult to accurately predict how much time is available to restore AC power to the safeguard buses.

The Westinghouse Owners Group, of which Wisconsin Public Service Corporation is a member, is performing analyses to determine the best action to take based upon the equipment available, should a total loss of AC power occur. Their evaluation will be "time independent" and should result in recommended operator actions to restore AC power in the event of certain predicted complications, such as the failure of a reactor coolant pump seal. The initial phase of that analysis is scheduled to be complete in September, 1981. Upon completion of the WOG efforts, WPSC will review their results and recommendations and incorporate applicable portions into our procedures or training program.

C. ACTIONS FOR RESTORING OFF-SITE AC POWER

In the unlikely event of a loss of the electrical grid supplying power to the Kewaunee Plant, Wisconsin Public Service Corporation System Operating Procedures establish the highest priority on returning off-site power to the Kewaunee Plant. The major steps of the procedure include starting available peaking units with dead load startup procedures; energizing various transmission lines through remote OCB's; energizing the 138 KV line into the Kewaunee Plant substation; and reestablishing power into the plant through one of three transformers. If all equipment is available, power can be reestablished to the Kewaunee Plant within one hour.

D. RESTORING OFF-SITE POWER DUE TO ON-SITE EQUIPMENT FAILURES

The Kewaunee Plant has three transformers on site that can be utilized to supply power to the safeguard buses. Two of these transformers are readily available to be fed from the Kewaunee Plant substation. The third transformer can be used to supply power to the plant after removing the generator links, which can be done in approximately one hour. Any of the three transformers can supply enough power to the safeguard buses to operate all necessary emergency loads. The existing abnormal operating procedure, A-EHV-39, "Abnormal 4160 Volt AC Supply and Distribution System", provides alternate methods of establishing off-site power to the safeguard buses, should one or more transformers or bus paths be lost.

E. RESTORING ON-SITE EMERGENCY POWER

Existing normal and abnormal operating procedures include precautions and provisions to follow in restoring power to 4160 V and 480 V buses. Should a loss of voltage occur on the 4160 V safeguard buses, all supply and source breakers will trip (DC control power). On starting of the diesel generators, the ESF loads will be automatically sequenced on to the bus; alternatively, the manual required loads could be sequenced onto the bus manually. The emergency power system is discussed in Section 8.2 of the Kewaunee FSAR.

F. EMERGENCY LIGHTING

During each refueling outage a surveillance procedure is performed which verifies the proper operation of emergency lighting. During the partial loss of off-site power event that occurred January 17, 1980, we noted several areas that required additional emergency lighting. We have provided emergency lighting in those areas. During this event, we also noted that the Gai-Tronics system (internal plant communications) was severely impaired. This proved to be the most significant operational concern, and since that time, we have completed a design change, providing our internal Gai-Tronics paging and intercom system with emergency power. Previously, only select locations had communications on the emergency power system; this arrangement was demonstrably inadequate.

G. RETURN TO NORMAL OPERATING CONDITIONS

When returning power to buses and equipment, one concern is that a faulted bus or piece of electrical equipment may be inadvertently put on line. This faulted equipment may have caused the initial loss of power. To prevent this from happening, Kewaunee is equipped with protective relaying which would "lock out" a bus or piece of equipment and prevent its inadvertent loading onto a good bus. Annunciators are available in the control room to inform the operators of faulted equipment.

Procedures are available to start reactor coolant pumps. These procedures are used at least once per year while returning to power from refueling operations, and would apply to restart following a blackout event.

H. TRAINING AND REQUALIFICATION

The Kewaunee Plant licensed operator training and retraining programs include training in postulated station blackout events. This training incorporates the review of the Kewaunee Plant procedures necessary to accomplish the items mentioned in the review above. The next simulator training session will specify simulator exercises in a station blackout event utilizing the turbine driven auxiliary feedwater pump and natural circulation cooldown operations.

5/29/81