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General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

October 18, 1977

Mr James G Keppler Office of Inspection and Enforcement Region III US Nuclear Regulatory Commission 799 Roosevelt Road Glen Ellyn, IL 60137

DOCKET 50-255 - LICENSE DPR-20 -PALISADES PLANT - ER-77-047 -LOSS OF OFF-SITE POWER



Attached is a 14-day reportable occurrence relating to the loss of off-site power at the Palisades Plant on September  $2^{14}$ , 1977. The report due date was extended one week as previously discussed with Mr R Warnick.

An attachment to the LER is provided for additional details.

David P. Loffman

David P Hoffman Assistant Nuclear Licensing Administrator

CC: ASchwencer, USNRC

## ATTACHMENT TO LER 77-047

The cause of the 'R' Bus loss is not known. Loss of off-site power causes a loss of main condenser cooling water. Thus, the main turbine tripped on high back pressure and tripping of the main generator and reactor occurred. Both emergency diesel generators started immediately, loaded properly and performed satisfactorily throughout the incident. The secondary system was isolated, primary system stabilized and the plant functioned as designed during the incident. Atmospheric dumps were operated as necessary to maintain PCS temperature. During the incident, power was lost to the Security System and extra Security personnel were called into the plant. Technical Specifications 3.1.1 and 3.7.1 were violated.

3.1.1 At least one primary coolant pump or shutdown cooling pump shall be in operation whenever a change is being made in the boron concentration of the primary coolant.

It is conservative and prudent to borate the plant to shutdown condition after a reactor trip. Boron samples during the incident and after restoring primary coolant flow were as anticipated and verified that no stratification occurred.

- 3.7.1 The primary coolant system shall not be heated above 325°F or maintained above 325°F if the following electrical systems are not operable.
  - a. Station power transformer 1-2.
  - b. Start-up transformer 1-2.
  - 1. 2400 'V' Bus 1-E.

Throughout the incident the plant was maintained in hot shutdown. Power was restored after 4 hours and 45 minutes. It was prudent to maintain the PCS hot rather than add to the Operators workload as power was restored shortly, and plant conditions were stabilized. This is permitted by C.E. Standard Technical Specifications. Changes to 3.1.1 and 3.7.1 will be submitted for approval.

The plant operated as analyzed and no failures of safety-related systems occurred as a result of this incident.

| LICENSEE EVENT REPORT<br>Palisades<br>CONTROL BLOCK:<br>LICENSEE<br>NAME<br>CONTROL BLOCK:<br>LICENSEE<br>NAME<br>CONTROL BLOCK:<br>LICENSEE<br>NAME<br>CONTROL BLOCK:<br>LICENSEE<br>NAME<br>CONTROL BLOCK:<br>LICENSEE<br>NAME<br>CONTROL BLOCK:<br>LICENSEE<br>NAME<br>CONTROL BLOCK:<br>LICENSEE<br>NAME<br>CONTROL BLOCK:<br>LICENSEE<br>LICENSEE<br>NAME<br>CONTROL BLOCK:<br>LICENSEE<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>LICENSEE<br>CONTROL BLOCK:<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE<br>LICENSEE | ATION]   |
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| REPORT<br>TYPE       REPORT<br>SOURCE       DOCKET NUMBER<br>0       EVENT DATE       REPORT DATE       REPORT DATE         7       8       57       59       59       60       61       68       69       74       75         EVENT DESCRIPTION         01       Ouring an electrical storm, the 'R' Bus was de-energized causing a complete loss         7       8       9         03       of off-site power, resulting in a loss of main condenser cooling water and ultimately         7       8         04       a plant trip. Primary plant was stabilized in the hot condition and was borated.         7       8         05       Event nonrepetitive. Tech Specs 3.1.1 and 3.7.1 were violated. Electrical power         7       8         05       Event cause         07       8         07       8         07       9         05       Event nonrepetitive. Tech Specs 3.1.1 and 3.7.1 were violated. Electrical power         7       8         07       9         08       Coope         17       12         10       11         12       12         13       12         14       12 <t< td=""><td></td></t<>   |  |
| EVENT DESCRIPTION<br>During an electrical storm, the 'R' Bus was de-energized causing a complete loss<br>7 8 9<br>O3 of off-site power, resulting in a loss of main condenser cooling water and ultimately<br>7 8 9<br>O4 a plant trip. Primary plant was stabilized in the hot condition and was borated.<br>7 8 9<br>O5 Event nonrepetitive. Tech Specs 3.1.1 and 3.7.1 were violated. Electrical power<br>7 8 9<br>O5 Event nonrepetitive. Tech Specs 3.1.1 and 3.7.1 were violated. Electrical power<br>7 8 9<br>O6 was restored after 4.75 hours and the plant returned to Tech Spec limits. (ER-77-47<br>7 8 9<br>OF CODE CODE CODE COMPONENT CODE COMPONENT CODE COMPONENT SUPPLER<br>SYSTEM CAUSE CODE COMPONENT CODE COMPONENT SUPPLER<br>CODE CODE CODE COMPONENT CODE COMPONENT SUPPLER<br>COMPONENT MANUFACTURER VIOLATION<br>CODE DESCRIPTION<br>D18 Exact cause of loss of electrical power is not known. A change to the Tech Specs   |  |
| <pre>7 8 9 [03] of off-site power, resulting in a loss of main condenser cooling water and ultimatel; 7 8 9 [04] a plant trip. Primary plant was stabilized in the hot condition and was borated. 7 8 9 [05] Event nonrepetitive. Tech Specs 3.1.1 and 3.7.1 were violated. Electrical power 7 8 9 [06] was restored after 4.75 hours and the plant returned to Tech Spec limits. (ER-77-47 7 8 9 [07] E A [C] Z Z Z Z Z Z [2] [Z] [Z] 9 9 9 9 [10] Y [2] 43 [2] 9 9 9 [10] Y [2] 43 [2] 9 9 9 [2] Y [3] [2] 9 9 10 [3] [4] [5] Exact cause of loss of electrical power is not known. A change to the Tech Specs</pre>   |  |
| 7       8         04       a plant trip. Primary plant was stabilized in the hot condition and was borated.         7       8         05       Event nonrepetitive. Tech Specs 3.1.1 and 3.7.1 were violated. Electrical power         7       8         06       was restored after 4.75 hours and the plant returned to Tech Spec limits. (ER-77-47         7       8         9       06         07       E         A       COMPONENT CODE         COMPONENT CODE       COMPONENT SUPPLER         CODE       COMPONENT CODE         07       E         A       COMPONENT CODE         COMPONENT       CODE         COMPONENT       CODE         CAUSE       COMPONENT CODE         07       E         A       CODE         CAUSE       COMPONENT CODE         CAUSE DESCRIPTION       CAUSE DESCRIPTION         08       Exact cause of loss of electrical power is not known. A change to the Tech Specs  |  |
| <pre>7 8 9<br/>OS Event nonrepetitive. Tech Specs 3.1.1 and 3.7.1 were violated. Electrical power<br/>7 8 9<br/>OIE was restored after 4.75 hours and the plant returned to Tech Spec limits. (ER-77-47<br/>7 8 9<br/>OIE CODE COMPONENT CODE COMPONENT SUPPLER<br/>SYSTEM CAUSE COMPONENT CODE COMPONENT SUPPLER<br/>07 E A C Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z</pre>   | 80   |
| 7       8       9         06       was restored after 4.75 hours and the plant returned to Tech Spec limits. (ER-77-47         7       8       9         SYSTEM       CAUSE<br>CODE       COMPONENT CODE         07       E       A       C         17       2       2       2       2         7       8       9       10       11       12         7       8       9       10       11       12         7       8       9       10       11       12       17         43       44       47       48         CAUSE DESCRIPTION         018       Exact cause of loss of electrical power is not known. A change to the Tech Specs  | 80   |
| 7       8       9       PRIME<br>COMPONENT<br>CODE       PRIME<br>COMPONENT<br>CODE       COMPONENT<br>COMPONENT<br>SUPPLER       COMPONENT<br>MANUFACTURER       VIOLATION         07       E       A       C       Z       Z       Z       Z       Z       Z       Y         7       8       9       10       11       12       17       43       44       47       48         CAUSE DESCRIPTION         018       Exact cause of loss of electrical power is not known. A change to the Tech Specs  |  |
| CAUSE DESCRIPTION           CAUSE DESCRIPTION           DIS         Exact cause of loss of electrical power is not known. A change to the Tech Specs   | 1  |
|  | 1  |
| 7 8 9<br>Will be made to make this type of event a nonviolation.   | 80   |
|  | 80   |
| 7     8     9       FACILITY<br>STATUS     % POWER     OTHER STATUS       11     E     1     0       11     E     1     0  |  |
| 7 8 9 10 12 13 44 45 46<br>FORM OF<br>ACTIVITY CONTENT   | 80   |
| 12     Z     OF RELEASE     N/A     N/A  | ]  |
| PERSONNEL EXPOSURES  | 80   |
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| 14 0 0 0 N/A<br>7 8 9 11 12  | 80   |
| PROBABLE CONSEQUENCES  | · 1  |
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| 7 8 9 10<br>PUBLICITY  | 80   |
|  |  |
| ADDITIONAL FACTORS   |  |
| 1 8    N/A<br>7 8 9  | <br>80   |
|  |  |