



Commercial HVAC  
North American Parts  
Carrier Parkway, TR5  
Syracuse, NY 13221

U.S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738

January 10, 2020

**Subject: Interim Report/Notification of Defect Pursuant to 10 CFR Part 21**

**Reference (A):** Duke Energy Carolinas, LLC (Duke Energy)  
McGuire Nuclear Station (MNS), Units 1 and 2  
Request for Determination of 10 CFR 21 Reportability  
Nuclear Condition Report (NCR) 2300622

**Reference (B):** Carrier 17FA999-1200-107 Oil Pump  
Duke Catalog Identification Number: 157183  
Duke Energy UTC Numbers: 30110654, 30078287

The following information is provided pursuant to the requirements of 10 CFR Part 21 to report a defect that could lead to a substantial safety hazard (SSH).

**Duke Energy Notice**

Duke Energy via Mr. James M. Smith issued a letter to Carrier Corporation's Customer Service Organization on November 21, 2019 reporting that on November 4, 2019, a Carrier 17FA999-1200-107 Oil Pump (Duke Energy UTC Number 30110654) failed rendering one train of the Control Room Area Chilled Water System inoperable.

A failure investigation by Duke Energy representatives' determined that the oil pump, which had been in service for less than two months, had a broken shaft and failed due to improperly assembled oil pump motor assembly.

The failed oil pump and a replacement (spare) oil pump in the warehouse (Duke Energy UTC Number 30078287) both had loose fasteners and unstaked alignment pins.

**Prior Corrective Actions**

Prior to Duke Energy's November 21, 2019 notice, Carrier issued a corrective action to our supplier on April 28, 2017 to address failures with a different non-safety related oil pump (Carrier Model 17FA512-968) at a non-nuclear facility. The corrective action applied to all 17FA oil pump assemblies supplied to Carrier after April 28, 2017, including both safety and non-safety related oil pumps. The corrective action consisted of cleaning of threaded holes and application of red Loctite, ensuring specified torque requirements are met using a calibrated digital torque wrench, and verifying the staking operation. Both

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oil pump issues described by Duke Energy in the November 21, 2019 notice concerned oil pumps built prior to the April 28, 2017 corrective action. We are not aware of reports of any other defects in pumps in the same series in either nuclear or non-nuclear applications built since the corrective action.

**10 CFR §21.21 Interim Report Details**

- (i) Name and address of the individual or individuals informing the Commission.

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- (ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect.

Duke Energy – McGuire Nuclear Station  
12700 Hagers Ferry Road  
Huntersville, NC 28078

Supplied Component – Carrier 17FA999-1200-107 Oil Pumps (Duke Energy UTC Numbers 30110654, 30078287)

- (iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.

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- (iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply

As Guide Pin peening operations were not performed correctly and Cover Bolts were not torqued down enough, the two Guide Pins and two Cover Bolts vibrated loose on the Oil Pump Assembly, resulting in failure of the pumps.

- (v) The date on which the information of such defect or failure to comply was obtained.

Carrier Customer Service was informed in writing by Duke Energy on November 21, 2019.

- (vi) In the case of a basic component which contains a defect or fails to comply, the number and location of these components in use at, supplied for, being supplied for, or may be supplied for, manufactured, or being manufactured for one or more facilities or activities subject to the regulations in this part.



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Two Carrier 17FA999-1200-107 Oil Pumps (Duke Energy UTC Numbers 30110654, 30078287) were supplied to the McGuire Nuclear Station. Carrier is in the process of investigating its records to determine if any additional affected oil pumps were supplied to other nuclear facilities.

- (vii) The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.

Carrier will issue a letter to Duke Energy offering to replace the two failed oil pumps at Carrier's expense. Further, Carrier is in the process of investigating its records to determine if any additional affected oil pumps were supplied to other nuclear facilities and, if so, will promptly provide notice and corrective action guidance.

- (viii) Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.

Carrier is in the process of investigating its records to determine if any additional affected oil pumps were supplied to other nuclear facilities and, if so, will promptly provide notice and corrective action guidance.

- (ix) In the case of any early site permit, the entities to whom an early site permit was transferred.

N/A

Carrier will provide a final report to the U.S. Nuclear Regulatory Commission no later than March 11, 2020. If you have questions regarding this matter, please contact the undersigned.

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Carrier Safety Review Committee  
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