Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802

John Dinelli
Site Vice President
Arkansas Nuclear One
479-858-3110

10 CFR 21.21(d)(3)(ii)

0CAN101902

October 30, 2019

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: 10 CFR Part 21 Notification, ITE/Gould Relay
Arkansas Nuclear One, Unit 1 and Unit 2
NRC Docket Nos. 50-313 and 50-368
Renewed Facility Operating License Nos. DPR-51 and NPF-6

In accordance with the reporting requirements of 10 CFR 21, attached is a Part 21 Notification for Arkansas Nuclear One (ANO). This report is being submitted in accordance with 10 CFR 21.21(d)(3)(ii). This information was reported to the NRC Operations Center on October 2, 2019 (Event Notification #54306).

The attachment to this letter provides the information required by 10 CFR 21.21(d)(4).

This letter contains no new regulatory commitments. Should you have any questions concerning this issue, please contact Tim Arnold, Manager, Regulatory Assurance, at 479-858-7826.

Sincerely,

ORIGINAL SIGNED BY JOHN DINELLI

John Dinelli
Site Vice President, ANO

JCD/dkb

Attachment: 10 CFR Part 21 Notification – ITE/Gould Relay

cc: U.S. Nuclear Regulatory Commission
Attn: Arkansas Nuclear One Project Manager

U. S. Nuclear Regulatory Commission
Attn: Regional Administrator, NRC Region IV

NRC Senior Resident Inspector - Arkansas Nuclear One

Attachment to

0CAN101902

10 CFR Part 21 Notification
ITE/Gould Relay

10 CFR Part 21 Notification
ITE/Gould Relay

(i) Name and address of individual informing the NRC:

John Dinelli
Site Vice President
Arkansas Nuclear One
Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802

(ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity which fails to comply or contains a defect:

Facility:
Arkansas Nuclear One (ANO), Units 1 and 2
NRC Docket Nos. 50-313 and 50-368
Renewed Facility Operating License Nos. DPR-51 and NPF-6

Manufacturer:
ITE/Gould Manufacturing Company (Telemecanique)
Curtiss-Wright/QualTech
4600 East Tech Drive
Cincinnati, OH 45245

Component:
J20M Coil Block Relay
Manufacturing Date Code 9132

(iii) Identification of the firm supplying the basic component which fails to comply or contains a defect:

ITE/Gould Manufacturing Company (Telemecanique)
Curtiss-Wright/QualTech
4600 East Tech Drive
Cincinnati, OH 45245

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

On June 1, 2019, during an ANO Unit 2 forced outage, a failure occurred when one of four safety related containment cooling fans failed to start. The containment cooler fan hand switch was taken to ‘start’ during the forced outage. The breaker tripped and the containment cooling fan failed to start. It was determined the direct cause of the containment fan motor failure to start was an electrical short of the fan control relay coil

that directly resulted in failure of the inline control power fuses and loss of fan control power. The loss of control power prevented the fan start relay from actuating to align 480VAC power to the fan motor.

The failure of the containment cooling fan to start would have prevented the Containment Cooling System from performing its function of providing essential cooling and environmental controls for safety related equipment inside containment during the modes of applicability (Modes 1-4).

During a causal evaluation, NRC Information Notice (IN) 92-27 Supplement 1 was reviewed. The IN noted the same component failure mode. However, the failure mechanism was determined to be different. The IN discussed failures associated with thermal degradation of the relay armature carriers in ganged mounting configurations. It was determined the failure of the relay occurred due to a manufacturing defect associated with uneven varnish application on the coil windings. This defect lead to premature turn-to-turn shorting of the coils. This failure was determined to be limited to ITE/Gould relays that were part of a 1991 batch purchased by ANO. The 1991 relay batch had 7 relays and a manufacturing date code of 9132.

ANO contacted Curtiss-Wright/QualTech NP Services, who now owns ITE/Gould intellectual property, and received confirmation from the vendor the 1991 batch ANO received had defective winding wire and met the Part 21 reporting criteria.

Therefore, the conclusion is that the deviation is a Defect reportable in accordance with 10 CFR Part 21.

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

The potential deviation was entered into ANO's Corrective Action Program on June 1, 2019.

The evaluation for the Part 21 was completed on September 25, 2019, and determined the reported deviation constituted a defect in accordance with regulatory definitions.

An officer of the company was notified of the defect and Part 21 reporting requirement on October 1, 2019.

Notification to the NRC of the defect was completed on October 2, 2019, by Event Notification #54306.

(vi) In the case of a basic component which contains a defect or fails to comply, the number and location of all such components in use at, supplied for, or being supplied for one or more facilities or activities:

As part of the ANO evaluation, an industry operating experience review identified INPO ICES Operating Experience (OE) #242045. This OE identified another utility had purchased 3 relays from ANO in 2007 and subsequently experienced coil failures on 2 of

the 3 relays. The OE states that 3 coils were purchased in 2007 from "another facility". It was determined 3 of the relays procured by ANO in the 7-relay batch were sold to the Shearon Harris Nuclear Power Plant in October 2007. According to the OE, 2 of the 3 relays failed after approximately 3 years in service due to the presence of uneven varnish applied to the coil windings causing turn-to-turn shorts. Based on the research, 5 of the 7 relays purchased by ANO in 1991 have been installed with 3 of the 5 relays known to have failed in less than 3 years; 2 failures at Shearon Harris and 1 failure at ANO. No relays were installed at ANO from this batch until 2017.

In 2017, ANO replaced the ITE/Gould relay in the Unit 2 Containment Cooling fan under an 18 year preventive maintenance (PM) strategy. On June 1, 2019, this ITE/Gould relay failed as part of a manufacturing defect.

One relay is installed and currently in use by the other Unit 2 containment cooling fan and the other relay is on parts hold in an ANO onsite warehouse. The containment cooling fan was replaced to reset the known life of the relay until a suitable replacement can be obtained and installed. The potential for failure of the Containment Cooling control power relays has been entered into the Entergy Corrective Action Program (CAP).

In summary, of the seven relays affected, 3 were sold to Shearon Harris Nuclear Power Plant, 2 were installed at ANO and then removed, 1 is currently installed in the other Unit 2 Containment Cooler, and 1 is on parts hold in the ANO onsite warehouse.

(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:

The remaining installed relay component from this batch is currently in use by one of the Containment Cooling fans. Due to the time required to find a replacement relay for the obsolete ITE/Gould relay, the potential for failure of the Containment Cooling control power relays has been entered into the Entergy CAP. This action is currently due for completion during 2nd Quarter 2020.

(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:

None.