



October 10, 2018

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001
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Subject: 10CFR Part 21 Notification of Deviation, Dry Type Transformer Serial #: 24-26458

1. This letter provides a notification of a defect associated with dry type transformer serial # 24-26458. The failure was caused by the breakdown of layer to layer insulation within the 4160 Volt winding due to dielectric stress. Deterioration of the insulation resulted in an internal fault within the Bravo phase 4160 Volt winding, triggering a ground fault trip shut down of this equipment. This failure was reported by Exelon's Clinton Nuclear Station and it is the only known reported occurrence of safety related transformer failure caused by the breakdown of layer to layer insulation. Information is provided as specified in 10CFR21 paragraph 21.21(d) (4).
2. Notifying individual: Joey Chandler, Plant Manager, ABB ((PGTR) Power Grids Transformer Division, US), 171 Industry Drive, Bland Va. 24315.
3. Identification of the Subject component: ABB P/N 24-26458 dry type transformer. This transformer is used for stepping down voltage and was intended for providing power to safety related electrical equipment.
4. Nature of the deviation: The Exelon Clinton Nuclear Generating Station shut down due to a ground fault alarm on the 4160 Volt side of the stepdown transformer that provides power to numerous safety-related components at the plant. Subsequent troubleshooting of the problem revealed that the dry-type transformer supplying 480Volt power had dielectrically failed due to apparent internal fault within the Bravo phase. Further investigation of this failure revealed an operational voltage design stress on the Nomex 410 insulation between the 4160 volt winding's layers of conductor greater than recommended by the manufacturer (Dupont) for a 40 year design life. At the time of failure, the subject transformer had been in operation for approximately 33.5 years and had progressed 37 years and two months into its intended 40 year life given the 10/1980 ship date. ABB has no knowledge of any adverse operational variances over the course of the approximate 33.5 year life of operation to be able to assess or comment on this potential impact in terms of life.
5. The function of this dry type transformer is to step voltage down from 4160 volts to 480 volts while providing transfer of power to safety related components. Exelon's Clinton Nuclear Power Station has identified this transformer's power transfer to feed safety related equipment. An interruption of this transfer in power would result in a loss of power to the safety related equipment downstream and could potentially result in a compromise in safety.

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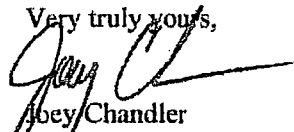


6. ABB was notified of this transformer failure 12/9/2017. This notification was delayed while the failure was being investigated. This investigation is documented in report: Exelon Clinton Failure Analysis_26458_011218 rev5.doc.pdf dated 09/10/2018.
7. Corrective actions include:
- Reviewed and verified current electrical engineering safety related design standard for allowable design stress on insulation per Dupont's recommendation for 40 year life. (Complete.)
 - Reviewed the material used for transformer 24-26458. Found only affected safety related product to be isolated to Clinton Nuclear Station, though records may be incomplete as these records have been archived for over 35 years. (Complete.)
 - Re-trained all involved personnel of the 10CFR21 reporting requirements, and the need to provide an interim report within 60 days of discovery.
 - ABB worked directly with Clinton Nuclear to ensure all transformers of respective design was replaced with new transformers following ABB's Technical Evaluation for Nuclear 1E Transformer, Rev. 18 which documents operational design stresses be less than or equal to 30 volts / mil of Nomex 410 insulation between layer to layer of conductor for 40 year life.
8. Recommendation: Because of the possible existence of additional affected transformers, ABB (PGTR) cannot determine if the potential for a substantial safety hazard exists at any other licensee's facility. Licensees are requested to evaluate any Gould-Brown Boveri/ITE dry type transformer with the following nameplate identification below. Transformers associated with this identification are recommended to be replaced.

kVA: 750 AA / 1000 FA
HV: 4160 Delta Connected
LV: 480 Wye Connected
Class: AA / FA
Type: Vent
Frequency: 60 HZ
Temp Rise: 80°C
Date of Manufacture: 10/1988 and older models

Questions concerning this notification should be directed to the Quality Manager (Rick Kinder) at the ABB transformer plant in Bland Virginia at (276) 688 - 3325.

Very truly yours,



Joey Chandler
Plant Manager
Power Grids Transformer Division, US

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