

**From:** DAVIS, RONALD R  
**Sent:** Tuesday, June 26, 2007 3:12 PM  
**To:** Penny, Robert A  
**Subject:** FW: Status of Regions Single Point Vulnerable Transformers

**Importance:** High

**Attachments:** SPF Transformer writeup.doc; EN GSU Evaluation FINAL 6-25-2007.doc  
As per our conversation

-----Original Message-----

**From:** DAVIS, RONALD R  
**Sent:** Tuesday, June 26, 2007 8:24 AM  
**To:** WILES, DENNIS P; KRUPA, MICHAEL A; REASONER, CLEVELAND; NICHOLS, KEITH D  
**Cc:** JELKS, KENNETH A; WOOD, MARK A; MATHARU, G SINGH; Giguere, Robert T; SAUNDERS, STEVEN  
**Subject:** Status of Regions Single Point Vulnerable Transformers  
**Importance:** High

I was asked to provide a status of the regions transformers for a presentation to be made to John Herron. The attached SPF Transformer write-up does not include the Main Transformers. A report was sent to Oscar that contains the regions main transformer update and it is also attached for your information.

I have coordinated and reviewed/validated the data with your system engineers.

Points of interest:

Except for WF3; no on-line dissolved gas analyzers have been installed with WF3 having one installed on a startup transformer due to a gassing issue.

On-line analyzers can provide early intelligence that may be used to remove a transformer from service prior to catastrophic failure. Based on the impact of transformer failure on the site and a lack of spare transformers the use of this low cost indicator of health should be used. These need to be expedited on the Asset Management Plan and installed on key assets to protect fleet transformers.

Internal transformer inspections currently are only performed when a transformer is drained for another purpose. As indicated by the GE Dyna Comp Clamp issue that occurred at ANO conditions can be identified during these inspections that are not indicated by other current predictive technology. Severe through fault conditions concurrently with degrading winding clamps can result in catastrophic failure. Your support is needed to schedule internal inspections on our aging assets to anticipate failures.

GE Type U Bushings manufactured prior to 1980 should either be replaced proactively or spares available on site should testing indicate replacement required. HV bushings have a long lead time and risk of failure is real with internal OE germane.

Aged Gap Type Lightning arrestors are reliability issues waiting to happen. The cumulative effect of past service can result in failure without warning. We still have several applications where they remain in service although Entergy Transmission has recommended replacement at earliest convenience. This risk needs to be removed at the next available window.

*Besides the above vulnerabilities the following deserves highlighting:*

ANO1/2 Unit Aux Transformers

These old transformers that are heavily loaded (100%) and at or near max temperature need to be expedited for replacement. Current plan for replacement in 2011 and 2012 may not provide protection against unanticipated

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failure.

#### GGNS Service Transformers

Without suitable spare transformers any failure that compromises the ability of the transformer will result in a plant shutdown and may prevent restart. The severity of the fault will determine whether a repair or replacement is required. Due to the long lead time for a replacement transformer this is an excellent candidate for on-line dissolved gas analyzers. Comp measures such as the analyzers could help limit damage to repairs. Although \$4.5M is on the Asset Management plan for 2009 no funding has been reserved for the purchase of a spare transformer.

RBS transformers are considered good except for a normal transformer that is to be removed for refurbishment in next outage and then replaced in a future outage.

#### WF3 Startup Transformers

Both ST EMT A and B require work in the upcoming outage, assistance to ensure both transformers receive the required work should be provided.

Hope this synopsis of issues is of assistance

Ron