

**Missouri Public Service Commission
Staff Review of the Investor Owned Electric Utilities
Flow Accelerated Corrosion Procedures/Plans**

August 6, 2008

Case No. ES-2007-0458

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SUMMARY

In the Missouri Public Service Commission Order of April 23, 2008, in Case No ES-2007-0458, the Commission accepted Staff's investigation report of the Flow Accelerated Corrosion (FAC) incident at Kansas City Power & Light Company's (KCPL) Iatan Plant. In addition, the Commission directed the Staff to investigate what steps the other Missouri investor owned electric utilities have taken to address FAC.

This report is a summary of the Missouri Public Service Commission Staff's (Staff) review of the FAC programs of the investor owned electric utilities regulated by the Missouri Public Service Commission, other than KCPL.

Aquila, Inc. (Aquila) has been acquired by Great Plains Energy, Inc. since the Commission issued its order directing Staff to investigate. Staff has received confirmation that the Aquila steam plants will be incorporated into the KCPL FAC procedures/plans starting in 2009.

Staff requested information on the current FAC procedure/plan, and testing results for FAC of the three investor-owned electric utilities (Union Electric Company d/b/a AmerenUE (AmerenUE), Aquila, and The Empire District Electric Company). All three electric utilities own and operate steam generating power plants where FAC may occur. These plants are either coal and/or gas fired. One is a combined cycle plant. See Appendix B for a list of these steam plants.

Staff has reviewed the current FAC procedure/plan and testing results for FAC of the three utilities. All three utilities are aware of FAC, all three have a procedure/plan used for testing/monitoring for FAC, all three have tested for FAC recently, and all three have found FAC damage which they have repaired. A synopsis of the responses is provided in the following pages of this report.

However to make a determination of the adequacy of the procedures/plans relative to each utility's plants would require specific knowledge of each plant's design, piping configuration, and operation. Such a determination would require the expertise of a consultant expert to review each plant's designs, piping configuration, and operation related to FAC.

STAFF REVIEW

The Missouri Public Service Commission Staff sent letters dated May 5, 2008, to AmerenUE, Aquila, and The Empire District Electric Co. (Empire) requesting information from them about their flow accelerated corrosion procedures/plans.

The Staff included a list of eleven questions for the companies to answer. The Staff received a response from each company. The Staff reviewed the responses to each question. Each company reviewed and/or updated its response on July 31, 2008. See Appendix A for the questions.

The following is a short synopsis of the responses received:

AmerenUE:

AmerenUE has developed FAC procedures/plans which were implemented during the recent planned outages for Labadie Plant Units 1 and 2, and Rush Island Plant Unit 1. Plans are currently under development for Labadie Units 3 and 4, Rush Island Unit 2, Sioux Plant Units 1 and 2, and Meramec Plant Units 3 and 4. These remaining seven units have been scheduled for FAC testing during the next major overhaul for each unit in the next two or three years.

FAC has been discovered during routine maintenance at several of AmerenUE's plants. Repairs have been made to piping on Meramec Unit 2 in January 2007, Labadie Unit 2 in September 2007, Rush Island Unit 2 in April 2008, Sioux Unit 1 in August 2006, and Sioux Unit 2 in May 2006.

AmerenUE actively participates in Electric Power Research Institute (EPRI) water chemistry and materials programs, which includes FAC issues. In addition, AmerenUE actively participates in the American Society of Mechanical Engineers' (ASME) Committee on Power Plant and Environmental Chemistry.

AmerenUE has been involved with discussions with KCPL on FAC issues, and has received a copy of KCPL's new FAC procedures/plan.

Aquila, Inc.:

Aquila enacted a FAC testing program after the May 9, 2007 incident at the KCPL Iatan Plant. The Aquila testing procedure/plan concentrates on the attemperator piping systems on the coal fired units at the Sibley and Lake Road Plants. At the current time only Sibley Unit 1 piping has been tested per the procedures developed in Aquila's FAC program. Aquila's other three units (Sibley 2, Sibley 3, and Lake Road 4/6) are scheduled for testing during the next regular scheduled outages for each unit, tentatively scheduled for fall of 2008.

An area of pipe thinning was found during the May 24, 2007 testing on Sibley Unit 1. Aquila determined the cause was external corrosion, not FAC. Aquila repaired the area. A leak discovered in the feedwater piping on Lake Road Unit 4/6 in July 2008, was found to be due to FAC. The piping was repaired.

Aquila has no procedure to contact EPRI on a regular basis to obtain the latest industry information on FAC available from that source.

Aquila has contacted KCPL to discuss the Iatan incident, and has received a copy of KCPL's new FAC procedure/plan. Staff contacted KCPL and has received confirmation that the Aquila plants will be incorporated into the KCPL FAC procedures/plans starting in 2009.

The Empire District Electric Co.:

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APPENDIX A

Staff's List of Questions and Document Requests

1. Please provide a copy of the flow accelerated corrosion testing procedures/plan used at each of your steam generating stations.
2. For each steam generating station, please provide the results of your company's last flow accelerated corrosion testing.
3. How often is your company's flow accelerated corrosion procedure/plan updated? When was it updated last?
4. Has any flow accelerated corrosion been found in any of your company's steam generating stations? If yes, please identify which plant(s).
5. Please provide a list of repairs that have been made due to the presence of flow accelerated corrosion.
6. Has flow accelerated corrosion caused any failures in any of your company's steam generating stations? If yes, identify which plant and the damage done.
7. Does your company contact any other company or industry entity, such as EPRI, on a regular basis for the latest information on flow accelerated corrosion? If yes, identify the entity, and how often do you contact them?
8. Does your company have a designated internal position(s) responsible for flow accelerated corrosion investigations? If yes, identify the position, the qualifications required for the position, and who currently holds this position.
9. Does your company hire a contractor, or a consultant to assist in the monitoring and the investigation of flow accelerated corrosion? If yes, identify the contractor or consultant.
10. Has your company contacted Kansas City Power & Light Co. in regards to its new flow accelerated corrosion procedures/plan? If yes, have you requested a copy of its new procedures/plan?
11. Has your company reviewed the Staff report in Case No. ES-2007-0458 regarding the investigation of the incident at the Kansas City Power & Light Co. Iatan Plant? If yes, have you downloaded a copy of the Kansas City Power & Light Co. new procedures/plan?

APPENDIX B

List of steam generating plants

Labadie Plant – four coal units – total capacity of ** ____ ** MW – AmerenUE

Sioux Plant – two coal units – total capacity of ** ____ ** MW – AmerenUE

Rush Island Plant – two coal units – total capacity of ** ____ ** MW – AmerenUE

Meramec Plant - four coal/gas units – total capacity of ** ____ ** MW – AmerenUE

Sibley Plant – three coal units – total capacity of ** ____ ** MW – Aquila

Lake Road Plant – one coal unit - capacity of ** ____ ** MW, one coal boiler, four gas boilers – Aquila

Asbury Plant – one coal unit - capacity of ** ____ ** MW – The Empire District Electric

Riverton Plant – two coal/gas units – total capacity of ** ____ ** MW - The Empire District Electric

State Line Plant – one combined cycle unit – capacity of ** ____ ** MW - The Empire District Electric

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of an Incident on May 9,)
2007 at the Iatan generating plant Kansas)
City Power & Light Company operates)

Case No. ES-2007-0458

AFFIDAVIT OF DAVID W. ELLIOTT

STATE OF MISSOURI)
) ss:
COUNTY OF COLE)

David W. Elliott, employee of the Missouri Public Service Commission, being of lawful age and after being duly sworn, states that he has participated in preparing the accompanying Staff Report, and that the facts therein are true and correct to the best of his knowledge and belief.



DAVID W. ELLIOTT

Subscribed and affirmed before me this 6th day of August, 2008.



SUSAN L. SUNDERMEYER
My Commission Expires
September 21, 2010
Callaway County
Commission #06942086



NOTARY PUBLIC