BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of an Incident on February 4, 2009 at the Iatan Generating Plant Operated by Kansas City Power & Light Company.	))))	Case No. ES-2010-0009

REPORT OF KANSAS CITY POWER & LIGHT COMPANY'S INVESTIGATION AND SUBSEQUENT ACTIONS TAKEN REGARDING DIFFERENTIAL EXPANSION

Pursuant to the Order Adopting Recommendations and Directing Filings directing Kansas City Power & Light to file a response containing the results of its investigation and any subsequent actions taken at those plants ("Order Directing Response") issued on March 31, 2010 by the Missouri Public Service Commission ("Commission") in the above-captioned proceeding, Kansas City Power & Light Company ("KCP&L") respectfully submits the following response.

1. On February 4, 2009, an incident occurred during the attempted start-up of the Iatan Unit 1 generating station. As reported in Incident No. I200900096, the unit tripped during start-up activities due to vibration in the turbine that was beyond its operating parameters. Subsequent testing confirmed that the shape of the rotor shaft had changed and that the unit could not be operated with the shaft in its present condition.

2. Staff completed an investigation and filed its Final Report on January 29, 2010. In its Final Report, the Staff recommended and the Commission ultimately ordered in part that,

a. KCP&L should investigate the possibility of a similar occurrence at the other coal plants owned by KCPL. If there is a possibility of a similar occurrence, KCPL should implement the actions that it took in response to this incident with regard to these other plants.

b. The Commission order KCPL to file a response to this incident report which contains the results of its investigation at coal plants owned by KCPL and any subsequent actions taken at those plants.

3. Immediately after the differential expansion incident KCP&L took numerous steps to respond including:

- Revised the Iatan Unit 1 startup operation procedures to avoid high differential expansion problems, revised the Iatan Unit 1 operator's control screens to include a graphic of the differential expansion values, and added a high differential expansion trip which would shutdown the unit at a preset level of differential expansion.
- Prepared new training materials and updated the Iatan operator guides to emphasize differential expansion.
- Increased its awareness of differential expansion risk by having the Plant Management of all KCP&L and KCP&L Greater Missouri Operations Company (GMO) coal units review their start-up procedures and alarm/trip settings for differential expansion exposure.
- Began evaluating the feasibility of creating standard procedures concerning differential expansion.

4. Additionally, KCP&L Engineering investigated the possibility of differential expansion occurring at other KCP&L and GMO coal units and implemented similar corrective actions if warranted. The final report of those actions is attached as Exhibit 1.

WHEREFORE, KCP&L respectfully requests that the Commission accept this response to Staff's Final Report.

Respectfully submitted

/s/ James M. Fischer
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Dated: July 30, 2010

AFFIDAVIT

State of Missouri)
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County of Jackson)

I, Scott Heidtbrink, having been duly sworn upon my oath, state that I am the Senior Vice President, Supply at Kansas City Power & Light Company, that I am duly authorized to make this affidavit on behalf of KCP&L and KCP&L Greater Missouri Operations Company, and that the matters and things stated in the foregoing report and exhibits thereto are true and correct to the best of my information, knowledge and belief.

Scott Heidtbrink

Subscribed and sworn before me this 30th day of July 2010.

Notary Public

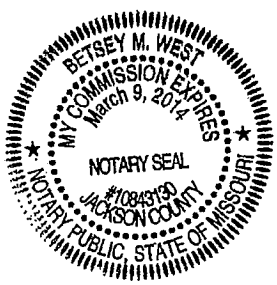

EXHIBIT 1

Report concerning KCP&L and KCP&L Greater Missouri Operations Company investigation into Differential Expansion exposure.

June 25, 2010

BACKGROUND:
On February 4, 2009, while returning to service from an extended outage, the latan Unit 1 turbine experienced a differential expansion event that subsequently required repair of the rotor shaft and extended the time the unit was out of service. The incident was the subject of an investigation by the Missouri Public Service Commission in which the Company was ordered to "investigate the possibility of a similar occurrence at the other coal plants owned by KCPL. If there is a possibility of a similar occurrence, KCPL should implement the actions that it took in response to this incident with regard to these other plants."

DEFINITON:
Differential Expansion: All turbine rotors respond to steam–to–metal temperature mismatches and temperature changes faster than the turbine shells. This is caused by the smaller mass of the rotors, the higher heat transfer coefficients and their almost total immersion in the steam path. Because the axial clearances between the rotating and stationary parts are necessarily small, the changes in metal temperatures, which occur while loading and unloading the unit, result in differences in expansion that could be large enough to cause internal rubbing.

INVESTIGATION DETAILS:
The Supply Services Group conducted the investigation, collaborating directly with Plant Management and the Operations and Maintenance Programs group. The following actions were taken:

- Conducted a review of past start-up data from all KCP&L and KCP&L-GMO locations to evaluate each unit's 'normal' sensitivity to differential expansion. It is clear that the latan Unit 1 dense pack technology displays an enhanced sensitivity to temperature mismatches, therefore increasing the risk of having aborted start-ups/trips due to differential expansion in the high pressure section.

- Completed a system-wide evaluation of the instrumentation and current settings for each of the steam units. Details for each unit are documented in the tables at the end of this report.

- Compared the Company data with the Original Equipment Manufacturers (OEM) recommended alarm/trip settings, eliminating any discrepancies and /or inconsistencies found. Most settings were correct or a little more conservative than recommended. Some settings did not match the exact numbers provided by the OEM's. This is mainly due to the graphic capabilities of each plant's digital control system. Efforts were made to insure that if any numbers were changed to allow for

more user friendly graphics, that the OEM recommended relationships for growth were maintained.

- Based on interviews with the operating staffs, we concluded that all locations could benefit significantly from some general theory and unit specific training concerning differential expansion. Supply Services Group collaborated with the Operations and Maintenance Programs Group to develop individualized training modules for each unit. This work is on-going with a timeline of completing the training by year's end.

- Recommended implementation of automatic differential expansion trips at all facilities. Total compliance will take some additional time as Sibley 1, Sibley 2, Sibley 3, and Hawthorn 9 will require a unit outage to implement the trip logic. It should be noted that Toshiba, the turbine manufacturer for the new Iatan Unit 2, does not recommend implementing automatic trips with its turbine. As this unit is still under construction and the turbine remains under the oversight of the manufacturer, any final decision concerning automatic trips will be held until after final acceptance of the turbine.

SUMMARY:
The differential expansion investigation has heightened awareness of the conditions across the generation fleet. Our efforts have resulted in the deployment of new differential expansion trips, enhanced/user friendly operator graphic displays, and better OEM recommendation compliance. Additionally, need for unit specific operator training was identified. In total these efforts will help to mitigate the risk of having a significant differential expansion excursion at any of our facilities in the future.

EXHIBIT 1

DIFFERENTIAL EXPANSION SETTINGS DETAIL:

Lake Road Unit 4/6 Turbine Differential Expansion Settings

Location	HP Section						Generator Section					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	-73	-43	0	175	205		-106	-76	0	348	378	
Current Settings (mils)	-73	-43	0	175	205	Yes	-106	-76	0	348	378	Yes

Iatan 1 Turbine Differential Expansion Settings

Location	HP Differential Expansion						IP Differential Expansion						LP Rotor Expansion					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	834	804	552	192	162		185	215	335	785	815		100	130	500	1870	1900	
Current Settings (mils)	814	804	552	192	182	Yes	185	215	335	785	815	Yes	100	130	500	1870	1900	Yes

Iatan 2 Turbine Differential Expansion Settings

Location	HP Differential Expansion						IP Differential Expansion						LP Rotor Expansion						
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	
Manufacturers Recommendations (mils)		190	484	813				246	381	754				455	523	1545			No trips recommended by Toshiba
Current Settings (mils)		190	484	773		No		246	381	754		No		456	523	1545		No	

Sibley 1 Turbine Differential Expansion Settings

Location	Between LP and Generator					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	-80	-30	0	400	450	
Current Settings (mils)	-70	-50	15	400	450	No

EXHIBIT 1

Sibley 2 Turbine Differential Expansion Settings

Location	LP shell					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	-105	-75	-50	175	205	
Current Settings (mils)	-120	-100	-32	120	140	No

Sibley 3 Turbine Differential Expansion Settings

Location	HP Differential Expansion						Generator Section					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	129	159	500	594	624		64	94	150	880	910	
Current Settings (mils)	110	380	542	700	880	No	50	100	143	900	950	No

Montrose 1 Turbine Differential Expansion Settings

Location	HP Differential Expansion					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	64	94	233	388	418	
Current Settings (mils)	-180	-150	0	150	180	Yes

Montrose 2 Turbine Differential Expansion Settings

Location	HP Differential Expansion					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	64	94	233	388	418	
Current Settings (mils)	-180	-150	0	150	180	Yes

Montrose 3 Turbine Differential Expansion Settings

Location	HP Differential Expansion					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	562	532	500	106	76	
Current Settings (mils)	438	468	500	894	924	Yes

LaCygne 1 Turbine Differential Expansion Settings

Location	HP Differential Expansion						Generator Section					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	580	550	500	200	170		1060	1030	1000	420	390	
Current Settings (mils)	-80	-40	0	300	340	Yes	-75	-25	0	575	600	Yes

LaCygne 2 Turbine Differential Expansion Settings

Location	HP Differential Expansion						IP Differential Expansion						LP Rotor Expansion					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	200	230	630	770	800		185	215	335	785	815		100	130	500	1870	1900	
Current Settings (mils)	200	230	630	770	800	Yes	185	215	335	785	815	Yes	100	130	500	1870	1900	No

Hawthorn 5 Turbine Differential Expansion Settings

Location	HP Differential Expansion						Rotor Expansion					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)	840	810	650	190	160		405	435	505	1565	1595	
Current Settings (mils)	800	750	650	250	200	Yes	200	400	500	1600	1800	Yes

Hawthorn 9 Turbine Differential Expansion Settings

Location	HP Differential Expansion					
Tag Description	Short Trip	Short Alarm	Cold setting	Long Alarm	Long Trip	Auto Trip Enabled
Manufacturers Recommendations (mils)						
Current Settings (mils)	-60	-30	0	303	335	No