BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of a General Investigation Regarding the Acceleration of Replacement of Natural Gas Pipelines Constructed of Obsolete Materials Considered to be a Safety Risk.	))))	Docket No. 15-GIMG-343-GIG

NOTICE OF FILING STAFF MEMORANDUM

COMES NOW, the Staff of the State Corporation Commission of the State of Kansas (Staff and Commission, respectively) and files its Memorandum detailing Staff's review of natural gas public utility-supplied accelerate pipe replacement plans. These plans were required pursuant to the Final Order issued in Docket No. 15-GIMG-343-GIG. Additionally, Staff's Memorandum details a path forward for executing Commission directives established in the Final Order issued in Docket No. 15-GIMG-343-GIG.

WHEREFORE, Staff submits its Memorandum for Commission review and consideration and for such other relief as the Commission deems just and reasonable.

Respectfully submitted,

/s/ Robert Elliott Vincent
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M E M O R A N D U M

To: Chair Shari Feist Albrecht
Commissioner Jay Scott Emler
Commissioner Dwight D. Keen

From: Leo M. Haynos, Chief Engineer

Date: December 10, 2018

Re: Docket No. 15-GIMG-343-GIG: In the Matter of a General Investigation Regarding the Acceleration of Replacement of Natural Gas Pipelines Constructed of Obsolete Materials Considered to be a Safety Risk: Staff Review of Pipe Replacement Plans Submitted by Natural Gas Public Utilities as Required by Commission's Final Order Issued September 12, 2017.

EXECUTIVE SUMMARY:

On September 12, 2017, the Commission issued its Final Order in the subject docket (15-343) that required Atmos Energy (Atmos), Black Hills Energy (BHE), and Kansas Gas Service (KGS), or collectively "the Utilities", to "develop a plan for the systematic accelerated replacement of all of their bare steel service/yard lines, cast iron mains, and all bare steel mains within a Class 3 location." The Final Order also assigned several tasks to the Utilities and/or Staff that are related to the pipe replacement plans. Over the last ten months, Staff has met with each utility, reviewed the submitted plans, and issued data requests related to the plans or to the Commission's directives. This memorandum provides a report of Staff's review of each Company's proposed plan and establishes a path forward for each of the Commission's directives.

The directives issued in the Commission's Final Order are as follows:

1. Develop a plan for the systematic accelerated replacement of cast iron, bare steel service lines, and bare steel mains in Class 3 areas;

2. Develop an annual report for lost and unaccounted for gas for each city with more than 10,000 customers;

3. Prepare a plan for increased frequency of leak surveys over plastic piping that is obsolete;

4. Develop a reporting plan to annually update the Commission on the mileage of mains by material type and categorized by Class location; and

5. Staff is directed to propose a review process that will develop safety and investment analytics for purposes of benchmarking the condition of each utility. The review process will review the following characteristics of the utility's operations (with respect to pipe replacement):
    a. the utility's equipment;
    b. the manner of the utility's conduct in completing the replacement program; and
    c. the actions of the utility's management as it relates policies, practices, and procedures that affect the safety of its natural gas delivery system and the level of investment for replacement of facilities that are either obsolete or at the end of their useful life.

Although all three Utilities have ongoing pipe replacement programs, the replacement programs as outlined in the respective plans provide a comprehensive approach to replace all obsolete piping in the Utility's distribution operations and to do so at an accelerated rate when compared to the ongoing program. Based on the submitted plans, KGS and Atmos are scheduled to begin implementation of their accelerated replacement plans in January of 2019. BHE began the implementation of its accelerated replacement plan in July of 2018.

BACKGROUND:

The 15-343 Docket established the fact that a portion of the natural gas infrastructure operated by the Utilities has become obsolete. Although no evidence of a threat to safety was determined by the docket, all parties recognized the risk to public safety only increases for obsolete gas piping as it continues to age. The types of piping determined to be obsolete and in need of replacement were bare steel and cast iron. Although two of the utilities proposed replacing obsolete plastic pipe as well, the Final Order determined there was not enough evidence of plastic pipe failures to require an accelerated replacement plan for that type of piping. However, the Order required an increased frequency of leak surveys of obsolete plastic in order to gain evidence of the condition of the piping. Based on the evidence presented in this Docket, the Final Order directed the Utilities to assess their replacement efforts to date, determine the level of risk facing the customers of each utility, and prepare the above listed series of action plans. As a means of prioritizing obsolete pipe replacement, the Commission limited the scope of the pipe replacement action plan to those areas with relatively high population densities (AKA Class 3 areas). Within the Class 3 or high population area, each utility is directed to address risk of the obsolete piping for its specific system.

Beginning in November of 2017, Staff met with each of the Utilities to review the directives of the Final Order and agree on interpretations for each directive with respect to each utility's specific circumstances. In January of 2018, each utility filed a preliminary plan outlining its proposal for pipe replacement and how it would meet the above directives. With the filing of the preliminary plan, compliance dockets were created for each of the utilities to serve as repositories for the filed plans and subsequent reports and analyses. The established compliance dockets are as follows:

18-ATMG-316-CPL: In the Matter of Atmos Energy's Compliance Filing of its Accelerated Pipe Replacement Plan Pursuant to Docket No. 15-GIMG-343-GIG;

18-BHCG-319-CPL: In the Matter of Black Hills/Kansas Gas Utility Company, LLC, d/b/a Black Hills Energy ("Black Hills"), Compliance Filing of its Accelerated Pipe Replacement Plan Pursuant to the Commission Orders in Docket No. 15-GIMG-343-GIG; and

18-KGSG-317-CPL: In the Matter of the Application of Kansas Gas Service Company, a Division of ONE Gas, Inc., Regarding the filing of its Plan for the Replacement of Obsolete Materials in Populated Areas.

After receiving feedback from Staff, the Utilities filed finalized versions of their respective plans in April of 2018. Over the last few months, Staff has reviewed the finalized plans and issued discovery to develop an inventory of obsolete piping from each company and establish the current level of capital investment for each company's pipe replacement programs. Because the obsolete piping inventory is continually declining as replacement occurs, Staff selected the time period 2015 through 2017 as a reference point for the pipe replacement program.

ANALYSIS:

Review of Plans for the Systematic Accelerated Replacement of Cast Iron, Bare Steel Service Lines, and Bare Steel Mains in Class 3 Areas: In the submitted plans, Atmos and BHE have agreed with Staff that Class 3 areas will be considered to be areas within the boundaries of Kansas cities served by the respective utility. For its plan, KGS chose to subdivide populated areas into seven location types that align with its leak survey and patrolling frequencies. Based on this scope, the amount of pipe, overall cost, and years to replace are as follows:

TABLE LMH-1

	KGS	Atmos	BHE	Totals
Number of urban areas	348[1]	87	65	500
Miles bare steel main	1,312	596	139	2,047
Planned (miles/yr) Replacement Rate	15-26	17	22	65 miles/yr.
Number bare steel service lines	43,000	28,000	29,000 svc and yardlines	100,000
Planned svc (line/yr) Replacement Rate	7,500	1,370	4,548	13,418 lines/yr.
Miles of cast iron mains	18	0	0	18

[1] Value taken from KGS tariff. KGS did not report all communities with obsolete piping because of the selected population density methodology it used in the plan.

	KGS	Atmos	BHE	Totals
Years to completion	35	35	7	--
CY2017 underground leaks per 100 miles of obsolete piping[2]	49.5	41.2	30.4	--
Total project cost, current $	$1,760 million[3]	$348 million	$79 million	$2,187 million

As noted above, KGS is the only public utility with cast iron piping in Kansas. KGS has committed to having all cast iron removed from service by 2024. In this regard, KGS is ahead of schedule and anticipates completing cast iron removal by the end of 2019. Although the Commission's scope for the replacement projects limited pipe replacement to only urban areas, it is clear from the above summary that complete replacement of obsolete steel piping will take a long period of time. Given the relatively long length of time for the Utilities to complete the pipe replacement projects, each Utility has developed a risk ranking model to prioritize replacement of the piping that presents the highest risk to public safety. In Staff's opinion, the plans presented by the Utilities only offer conceptual details of a given Utility's risk prioritization model. For example, in Atmos' plan, it discusses nine factors that will be used to rank 144 distinct replacement areas it has identified in the 87 urban areas served by Atmos.[4] While the areas have been identified geographically, Atmos does not expect to complete the risk ranking until January 2019.[5] The BHE replacement plan states that it will use its existing risk prioritization methodology found in its integrity management plan. However, it anticipates developing additional prioritization tools as the plan progresses. The KGS plan does not provide insight into its risk ranking methodology but states it will continue to prioritize replacement of the highest risk pipe in the highest consequence areas with the focus on cast iron and bare steel service lines being replaced in the first ten years of the accelerated replacement effort.

Estimated Replacement Costs: Each of the plans state pipe replacement capital expenditures will increase above current levels. In order to evaluate the amount of increase and obtain an indication of the Utilities current rate of replacement, Staff requested the Utilities provide an estimate of their current average replacement costs and an inventory of undesirable pipe types for the years 2015-2017. Based on the responses from each Utility, a compilation of replacement costs and replacement rates is as follows:

[2] Calculated from underground leaks each Utility found on its utility system in 2017 that were not caused from excavation damage. Bare steel service lines assumed to be 60 feet in length converted to miles.
[3] Docket 18-KGSG-317-CPL, KGS Final Plan, page 13. Total plan costs for replacing obsolete cast iron and bare steel in urban and rural areas.
[4] Docket 18-ATMG-316-CPL, Atmos plan, page 3.
[5] Response to Staff Data Request 5.

TABLE LMH-2

	KGS	Atmos	BHE
Main Replacement ($/mile)	$500,000	$525,000	$173,300
Service Line Replacement ($/ea.)	$2,611	$1,400	$1,585
2015-2017: Average CAPEX for safety for distribution system	$39,458,474	$18,300,093	$9,259,198
2016-2017: Average miles undesirable pipe replaced[6]	144	53	41
2016-2017: Average cost of replacing undesirable pipe ($/mile-equivalent)	$291,055	$504,444	$232,183

Staff considers the above compilations to represent a reference point for comparing the rate of pipe replacement and its associated cost for each Utility. However, we recognize there are many assumptions that were used to develop the above reported average costs and inventories. Therefore, Staff expects to update the reference data based on the responses of the Utilities to this Report and Recommendation. Presently, each Utility is scheduled to file a report in their respective compliance docket outlining the projected work activity for 2019.

Review of Report for Lost and Unaccounted for Gas for each City with more than 10,000 Customers: The term Lost and Unaccounted for gas (L&U) is calculated by comparing the amount of gas supplied to a system to the amount gas sold from a system.[7] In meetings with Staff, the Utilities explained the distribution system in metropolitan areas are interconnected such that multiple sources may supply gas to a distribution network that serves several adjacent cities. In these types of situations, Staff and the Utilities agreed to calculate the L&U for the system total rather than attempt to calculate the value for each city. BHE and Atmos state in their respective plans they will begin submitting this filing in 2019. On March 1, 2018, KGS filed a report of the L&U sub-categorized by community with over 10,000 customers. In its report, KGS states it is unable to provide L&U calculations for several communities connected to its "T" transmission system. For those systems that KGS was able to calculate L&U, Staff notes the L&U percentages are minimal. At this time, however, Staff recommends collecting L&U data for at least five years to allow the accumulation of sufficient data on which to base a recommendation as to the value of this metric in analyzing the performance of the replacement program.

Increased frequency of leak surveys over plastic piping that is obsolete: In the 15-343 Docket, the Commission concluded that data gathered from more frequent leak detection on pipelines constructed from obsolete plastic materials may provide further evidence that would support expanding the accelerated replacement program to include replacement of obsolete plastic piping. In its Final Order, the Commission directed the Utilities and Staff to prepare a plan for increased leak detection of obsolete plastic piping. The Utilities each have varying amounts of plastic piping located throughout the distribution systems that is considered to be obsolete.

[6] Miles calculated from inventory reported in Staff DR1. Each service and yard line assumed to be 60 feet in length.
[7] [(Amount Purchased-Amount Sold)/Amount Purchased] x100=%L&U.

Currently, Kansas pipeline safety regulations require plastic piping to be surveyed at least once every five years or as often as necessary while bare steel piping is required to be surveyed at least once every three years. It is Staff's understanding that creating multiple surveying frequencies can lead to difficulties in tracking and completing all surveys on schedule. In meetings with Staff, the Utilities have agreed to leak survey all plastic piping (modern and obsolete) on a three-year frequency. This approach allows the Utilities to efficiently schedule leak surveys across the system and provide for more frequent surveys of obsolete piping. Staff agrees this approach meets the requirements of the Final Order in the 15-343 Docket. In order to synchronize leak survey schedules, Staff and the Utilities have agreed to transition to a more frequent leak survey of plastic piping over a three-year period beginning in 2019. In order to evaluate the condition of obsolete piping, Staff notes it will be necessary to track *any* leaks in plastic piping with the type of plastic, its manufacturer, and date of installation along with the characteristics of the leak. Therefore, Staff recommends the Utilities report plastic pipe failures (leaks) according to the attached reporting form (Attachment 1) created by the American Gas Association Plastic Pipe Database Committee.

Develop a reporting plan to annually update the Commission on the mileage of mains by material type and categorized by Class location: In the Pipe Replacement Plans, filed in the respective compliance Dockets, the Utilities have committed to providing an updated inventory of piping by class location (rural or non-rural) in each respective annual report beginning in April of 2019. As part of its annual inspection program, the Commission's pipeline safety staff also will monitor each Utilities' pipe inventory according to the attached form (Attachment 2).

Staff to propose a review process that will develop safety and investment analytics for purposes of benchmarking the condition of each utility: The Final Order directed Staff to propose a process that will monitor the progress made by each Utility in accomplishing its replacement plan. Specifically, the Commission directed Staff to focus on evaluating safety and investment analytics for each Utility and to address three characteristics. Each of the characteristics and Staff's proposed course of action related to each issue is as follows:

The review process will review the following characteristics of the Utility's operations (with respect to pipe replacement):

a. The Utility's equipment:
   Staff Proposed Action: During routine pipeline safety inspections, Staff will note the state of repair of construction equipment of the Utility and of its contractors. When visible, Staff will also note the general condition of the existing pipeline that is being replaced. Staff assigns an inspection case number to each construction site visited. The above described observations, along with Staff's routine safety compliance inspection notes, will be logged as part of the case. In conjunction with Staff's annual review of the preceding year's replacement progress, Staff will provide feedback to the Commission regarding any findings of note discovered during construction inspections.

b. The manner of the Utility's conduct in completing the replacement program:
   Staff Proposed Action: The initial plans submitted by the Utilities state their intention to meet with Staff at least annually to discuss progress that has been made during the previous year's replacement program. Staff also recommends the Utilities file an annual compliance report by March 31 detailing progress

made in the preceding year, explaining any deviation from the preceding year's projections, any deviation from initial projections, and revising remaining plan projections. This requirement is discussed in the Final Order as a condition of the Commission's proposed Accelerated Replacement Plan (ARP). Staff also recommends the annual report contain an update of parameters similar to those listed in Tables LMH-1 and LMH-2 that are included in the body of this Report and Recommendation. Staff contends an annual reporting requirement will provide an effective and transparent mechanism to be used in evaluating each Utility's conduct in completing its respective replacement program.

c. The actions of the utility's management as it relates policies, practices, and procedures that affect the safety of its natural gas delivery system and the level of investment for replacement of facilities that are either obsolete or at the end of their useful life:
Staff Proposed Action: Under Kansas pipeline safety regulations, gas operators are required to file a current version of their Operations and Maintenance Manual (O&M). As part of the Commission's pipeline safety program, each of the Utilities are inspected at multiple locations[8] on an annual basis. One focus of the inspection program reviews the O&M procedures for completeness, accuracy, and compliance with pipeline safety regulations. O&M procedures and records inspections are assigned a case number in the KCC pipeline safety database. As in the case with construction inspections, Staff will provide feedback to the Commission regarding any findings of note discovered during annual inspections. This summary will be included as part of the review of the Utilities' recommended annual progress reports.

Regarding management policies and practices related to pipe replacement, Staff believes the best means of evaluating this metric is to monitor each Utility's progress in developing a Pipeline Safety Management System (PSMS) as described in API Recommended Practice 1173.[9] PSMS is an initiative promoted by the US DOT Pipeline and Hazardous Materials Safety Administration (PHMSA). The purpose of PSMS is to establish techniques to manage processes associated with operating a gas pipeline throughout its life cycle. The processes include ensuring sufficient human and financial resources, identifying the proper sequence of a series of activities, monitoring and measuring the effectiveness of the activities performed, and applying changes or corrections to those activities as needed.[10] In response to Staff data requests, the Utilities are implementing PSMS throughout their multi-state operations. Staff believes PSMS provides a standardized framework with which to evaluate the Utilities progress at meeting this directive from the Final Order. Therefore, Staff recommends the Utilities provide a summary of progress made to adopt/implement PSMS as part of their annual progress report.

[8] Collectively, the Utilities have 39 locations or inspection units across the state that are regularly inspected by KCC pipeline safety staff.
[9] American Petroleum Institute Recommended Practice 1173: Pipeline Safety Management Systems.
[10] Page vii, RP 1173 introduction.

CONCLUSION:

This Report and Recommendation provides a status report on the progress made to date of Atmos, Black Hills, and Kansas Gas Service in meeting the Commission's directives found in the Final Order of the 15-343 Docket. The Utilities have filed plans for their respective obsolete pipe replacement program in compliance dockets assigned to each company. Staff has reviewed the filed plans and conducted discovery in order to develop a reference point on which to evaluate each Utility's progress in implementing the replacement programs and meeting the Commission's directives. To date, Staff concludes the Utilities have developed adequate plans to commence the pipe replacement programs. Staff expects to continue to monitor the replacement progress through meetings with the Utilities, on-site inspections, and reviewing annual progress reports.

RECOMMENDATION:

Based on Staff's review of the replacement plans and discovery responses, Staff recommends the following issues be addressed in subsequent progress reports to be filed by the Utilities and Staff:

- Update/revise inventory tables labeled as Tables LMH-1 and LMH-2 found in this report;
- Submit L&U data annually for at least five years. At that time the data should be evaluated to determine the value of this metric in analyzing the performance of the replacement program;
- Within three years, increase the frequency of leak surveys on all plastic pipe to once every three years;
- Report plastic pipe failures (leaks) according to the American Gas Association Plastic Pipe Database Committee Plastic Pipe Failure Report;
- Staff to provide feedback to the Commission regarding any observations of note related to the Utilities' equipment and condition of existing pipelines;
- Utilities file an annual compliance report by March 31 detailing progress made in the preceding year, explaining any deviation from the preceding year's projections, any deviation from initial projections, and revising remaining plan projections;
- Utilities include in annual reports an update of parameters similar to those listed in Tables LMH-1 and LMH-2 that are included in the body of this Report and Recommendation;
- Staff to provide annually feedback to the Commission regarding any findings of note discovered during annual inspections. This summary will be included as part of Staff's review of the Utilities' recommended annual progress reports; and
- Utilities provide a summary of progress made to adopt/implement PSMS as part of their annual progress report.

ATTACHMENT 1

PPDC FAILURE/LEAK REPORT

MATERIALS SECTION		
1	PIPE OR FITTING IDENTIFICATION	
TYPE OF MATERIAL		OTHER SPECIFICATION:
(Check one)		MANUFACTURER:
	ABS	
	HDPE - 3306	ASTM F2897 16-CHARACTER CODE,
	HDPE - 3406	PRINT LINE OR LABEL:
	HDPE- 3408	
	HDPE - 4710	
	MDPE - 2306	(Circle one and enter the value below)
	MDPE - 2406	SDR, DR, SCHEDULE or
	MDPE - 2708	WALL THICKNESS:
	PB	
	PVC	NOMINAL SIZE:
	NYLON	
	PA - 11	
	OTHER (Describe)	
2	DATE OF MANUFACTURE:	
	(mm/dd/yy)	

INSTALLATION AND OPERATIONS SECTION				
3	METHOD OF INSTALLATION			TYPE OF SOIL IN
	(Check one)		4	CONTACT WITH PIPE
	OPEN TRENCH			(Check one)
	BORED/HDD			SAND
	PLOWED IN			LOAM
	INSERTION			CLAY
	JOINT TRENCH			ROCKY
	PLANTED			SLURRY
	UNKNOWN			OTHER (Describe)
	OTHER (Describe)			
5	OPERATING PRESSSURE			
A.	AT TIME OF FAILURE:			
		psig		
B.	NORMAL RANGE (IF KNOWN)			
		psig		

6	DATE OF INSTALLATION
	(mm/dd/yy or year)

	CONTACT NAME:

FAILURE ANALYSIS SECTION	
7a	FAILURE/LEAK LOCATION
	PIPE (Go to Failure/Leak Cause)
	FITTING (Complete 7b)
	JOINT (Complete 7c)
7b	FAILURE/LEAK IN FITTING (Check one)
	TRANSITION
	VALVE
	METER RISER
	MECHANICAL FITTING (Stab)
	MECHANICAL FITING (Nut Follower)
	MECHANICAL FITTING (Bolted)
	MECHANICAL FITTING (Other, Describe)
	HEAT FUSION FITTING
	ELECTROFUSION FITTING
	THREADED CAP
	OTHER (Describe)
7c	FAILURE/LEAK IN JOINT (Check one)
	MECHANICAL JOINT (Stab)
	MECHANICAL JOINT (Nut Follower)
	MECHANICAL JOINT (Bolted)
	MECHANICAL JOINT (Other, Describe)
	ELECTROFUSION
	BUTT FUSION
	SOCKET FUSION
	SADDLE FUSION
	SOLVENT
	OTHER (Describe)
8	FAILURE/LEAK CAUSE (Check all that apply)
	SQUEEZE OFF
	POINT LOADING
	EXCESSIVE EXPANSION/CONTRACTION
	EXCESS EXTERNAL EARTH LOADING
	INSTALLATION ERROR
	PREVIOUS IMPACT
	MATERIAL DEFECT (Describe)
	THREADED CAP (Cracked Cap)
	THREADED CAP (Loose cap, not cracked)
	THREADED CAP (Seal/O-ring defect)
	THREADED CAP (Other, Describe)
	CORROSION
	GOPHER/RODENT/WORM DAMAGE
	UNKNOWN: NOT EXCAVATED - ABANDONED
	UNKNOWN: NOT EXCAVATED -REPLACED
	UNKNOWN
	OTHER (Describe)
9	DATE OF FAILURE/LEAK
	(mm/dd/yy)
	E-MAIL PHONE#:

ATTACHMENT 2

Company:	FEDID	IA Unit #

24 /Hr. Contact Name	24/Hr Emergency #	24/Hr Non-Emergency #

System Info	
Highest MAOP	
MAOP Established by PSI Test | Design | History	
Highest % SMYS of System	
Highest Operating Pressure	
Lowest Operating Pressure	
# Unprotected Yardlines	
# Master Meters Served	
Miles of Feeder line >100	
Feeder line PSI	
Total Active Meters	
Total Gas Purchased	
Total Gas Sold	
Number of Farm Taps	
EFVs installed in 2018	
EFV's Installed (Total)	

Number of Mechanical fitting failure reports in 2018	

Number of PE body failures in 2018	
Number of PE component failures in 2018	
Number of PE failures from workmanship in 2018	

Miles of Main By Location			
	Urban	Rural	Total
Protected Coated			0
Protected Bare			0
Unprotected Coated			0
Unprotected Bare			0
Cast Iron			0
PVC			0
PE			0
Aldyl-A & Marlex			0
Other			0
Total	0	0	0
			0

Number of Services by Location			
	Urban	Rural	Total
Protected Coated			0
Protected Bare			0
Unprotected Coated			0
Unprotected Bare			0
Cast Iron			0
PVC			0
PE			0
Aldyl-A & Marlex			0
Other			0
Total	0	0	0

Leaks Found During Inspection Year by Leak Classification				
	Class 1	Class 2	Class 3	Total
# of Leaks Found				0
# of Leaks Repaired				0
# of Current Leaks				0

Supplier Contact Info		
Company	Contact	Phone #

VERIFICATION

STATE OF KANSAS)
) ss.
COUNTY OF SHAWNEE)

Robert E. Vincent, of lawful age, being duly sworn upon his oath deposes and states that he is Litigation Counsel for the State Corporation Commission of the State of Kansas; that he has read and is familiar with the foregoing *Notice of Filing of Staff Memorandum,* and attests that the statements therein are true and correct to the best of his knowledge, information and belief.

Robert E. Vincent, S.Ct. #26028
Senior Litigation Counsel
The State Corporation Commission
of the State of Kansas

SUBSCRIBED AND SWORN to before me this 19th day of December, 2018.

VICKI D. JACOBSEN
Notary Public - State of Kansas
My Appt. Expires 6-30-22

Notary Public

My Appointment Expires: 6-30-22

CERTIFICATE OF SERVICE

15-GIMG-343-GIG

I, the undersigned, certify that a true and correct copy of the above and foregoing Notice of Filing Staff Memorandum was served via electronic service this 19th day of December, 2018, to the following:

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CERTIFICATE OF SERVICE

15-GIMG-343-GIG

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