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MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. ER-2010-0036

DIRECT TESTIMONY

OF

JOHN F. WIEDMAYER

ON

BEHALF OF

UNION ELECTRIC COMPANY
d/b/a AmerenUE

****DENOTES HIGHLY CONFIDENTIAL INFORMATION****

St. Louis, Missouri
July, 2009

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DIRECT TESTIMONY

OF

JOHN F. WIEDMAYER

CASE NO. ER-2010-____

I. INTRODUCTION

Q. Please state your name and address.

A. My name is John F. Wiedmayer. My business address is 1010 Adams Avenue, Audubon, Pennsylvania 19403.

Q. By whom and in what capacity are you employed?

A. I am Project Manager, Depreciation Studies of the Valuation and Rate Division of Gannett Fleming, Inc.

Q. Please describe the Valuation and Rate Division.

A. The Valuation and Rate Division of Gannett Fleming, Inc. provides consulting services to public utilities and railroads. The Gannett Fleming affiliated companies employ nearly 1,900 people in over 50 offices throughout the United States and Canada.

The Valuation and Rate Division has a long history of client services encompassing valuations; depreciation studies; revenue requirement, cost allocation and rate design studies; rate of return; analyses of accounting systems; and acquisition and feasibility studies. The Valuation and Rate Division has been providing these services to public utility companies since 1915. Software developed by Gannett Fleming, Inc. and related to the conduct of depreciation studies is licensed to utility companies and commissions including the Missouri

Public Service Commission and Union Electric Company d/b/a AmerenUE ("AmerenUE" or "Company").

Q. How long have you been associated with Gannett Fleming, Inc.?

A. I have been associated with the firm since June, 1986.

Q. What is your educational background?

A. I have a Bachelor of Arts degree in Engineering from Lafayette College and a Master of Business Administration from the Pennsylvania State University.

Q. Do you belong to any professional societies?

A. Yes. I am a member of the National and Pennsylvania Societies of Professional Engineers and the Society of Depreciation Professionals ("SDP"). In 2005, I served as President of the Society of Depreciation Professionals.

Q. Do you hold any special certification as a depreciation expert?

A. Yes. The Society of Depreciation Professionals has established national standards for depreciation professionals. The Society administers an examination to become certified in this field. I passed the certification exam in September 1997.

Q. Please outline your experience in the field of depreciation.

A. In June, 1986, I was employed by Gannett Fleming Valuation and Rate Consultants, Inc. as a Depreciation Analyst. I held that position from June, 1986 through December, 1995. In January, 1996, I was assigned to the position of Supervisor of Depreciation Studies. In August 2004, I was promoted to my present position as Project Manager of Depreciation Studies. I am responsible for conducting depreciation and valuation studies, including the preparation of testimony, exhibits, and responses to data requests for submission to the appropriate regulatory bodies. My additional duties include determining final life and salvage estimates, conducting field reviews, presenting recommended depreciation rates to management for their consideration and supporting such rates before regulatory bodies.

Q. Have you previously testified on the subject of utility plant depreciation?

A. Yes. I have submitted testimony to the Kentucky Public Service Commission, the Newfoundland and Labrador Board of Commissioners of Public Utilities, the Nova Scotia Utility and Review Board, the Federal Energy Regulatory Commission, the Utah Public Service Commission, the Pennsylvania Public Utility Commission, the Illinois Commerce Commission, the Missouri Public Service Commission and the Arizona Corporation Commission.

Q. Have you received any additional education relating to utility plant depreciation?

A. Yes. I have completed the following courses conducted by Depreciation Programs, Inc.: "Techniques of Life Analysis," "Techniques of Salvage and Depreciation Analysis," "Forecasting Life and Salvage," "Modeling and Life Analysis Using Simulation" and "Managing a Depreciation Study." In 2000, I became an instructor at the Society of Depreciation Professionals annual conference lecturing on "Salvage Concepts," "Depreciation Models," and "Data Requirements for a Depreciation Study."

Q. How many depreciation studies have you performed during your career and for what types of companies?

A. I have conducted over two hundred depreciation studies during my 23-year career for electric, gas, water, wastewater, telephone, and railroad companies.

II. SUMMARY

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to sponsor the depreciation study conducted for AmerenUE. The depreciation study report titled, "Depreciation Study – Calculated Annual Depreciation Accruals Related to Electric Plant at December 31, 2008" is attached hereto as Schedule JFW-E1. My testimony will address (1) the methods and procedures I used in the depreciation study, (2) the statistical analyses of service life and salvage data I performed, (3) my estimates of survivor curves and net salvage percents, (4) my calculation of depreciation accrual rates, (5) my proposed amortization of the reserve variance and (6) several examples of the manner in which the study results are presented in the depreciation study report. The current depreciation rates for steam and hydraulic production plant were determined in Missouri Public Service Commission ("Commission") Case No. ER-2007-0002 and were based upon the Commission's decision at that time not to adopt the life span approach and to instead accede to the Staff's approach of using a single average service life and survivor curve for each of AmerenUE's steam and hydraulic production plant accounts. With regard to that issue, my testimony provides evidence related to the appropriate approach to the depreciation of steam and hydro power plants for AmerenUE.[1] I recommend, consistent with sound depreciation principles and practice, as

[1] The Company's Callaway Nuclear Plant is depreciated consistent with the life span approach, based upon its expected life as determined by the expectation of the date when its Nuclear Regulatory Commission license will ultimately expire.

followed by nearly all jurisdictions, that the Commission adopt the life span approach with respect to the Company's steam and hydro power plants in contrast to the approach the Staff has historically advocated which essentially treats these power plants as mass plant property. Examples of mass plant include assets such as meters, poles, line transformers, etc. Power plants are significantly different types of property compared to mass plant assets and because of these significant differences they should be depreciated in accordance with the life span approach.[2]

Q. What are your conclusions regarding the use of the life span approach?

A. During the life of a power plant, interim additions, replacements, and retirements occur regularly. At the time of the final retirement of a power plant, all of the structures and equipment are retired, regardless of whether they were part of the original installation or were added as recently as a year or two prior to the plant's retirement. The life span approach reflects the unique average lives that are experienced by each year of installation at a power plant by recognizing the period of time between each installation and the final retirement of the plant. Conversely, the Staff's approach in Case No. ER-2007-0002 of applying a single average life or average survivor curve to all installation years of an entire power plant account does not recognize the unique survivor characteristics of each installation year. For example, Labadie Unit 1 began operation in 1970 and there have been subsequent plant additions made each year since 1970 in Account 312, Boiler Plant Equipment. For these plant additions, 1970 through 2008, there is a unique service life and survivor curve for each vintage under the life span

[2] As I discuss later, that production plant should be depreciated using the life span approach is consistent with the depreciation principles adopted by the National Association of Regulatory Utility Commissioners ("NARUC"). *See* Public Utility Depreciation Practices, published by NARUC, Chapter X.

approach for a total of 39 different survivor curves. Under the Staff's approach used in Case No. ER-2007-0002, there is **one** average service life and survivor curve used to describe the life characteristics of all assets within Account 312, Boiler Plant Equipment at Labadie. Further, the use of a single average life is only applicable for one year, as with each year of betterments and replacements, the overall average life of the power plant changes. Thus, depreciation based on the use of the life span approach, rather than the use of a single average life, results in a more accurate reflection of the loss in service value of a power plant. Reflecting the loss in service value of an asset, here a power plant, is *the* central goal of depreciation and of setting depreciation rates.

Q. What is the purpose of the depreciation study?

A. The purpose of the depreciation study is to determine the annual depreciation accrual rates applicable to AmerenUE's electric plant as of December 31, 2008.

III. DEPRECIATION CONCEPTS

Q. Please describe what you mean by the term "depreciation".

A. "Depreciation", as defined in the Commission's Uniform System of Accounts ("USOA"), refers to the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes which can be reasonably anticipated or contemplated, against which the Company is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and the requirements of public authorities. Depreciation accrual rates are used to allocate, for accounting and ratemaking purposes, the service values of assets over their service lives. As a result, each year of service and each generation of customers are charged with the portion of the asset that it or they consume or use.

Q. You referred to depreciation as the "loss in service value" in your definition. What is service value?

A. Service value, as defined in the Uniform System of Accounts, is "the difference between original cost and net salvage value of electric plant."[3]

Q. Does the Uniform System of Accounts also define what it means by "net salvage value"?

A. Yes, it does. "'Net salvage value' means the salvage value of property retired less the cost of removal."[4]

Q. Does the Uniform System of Accounts prescribe a method of Depreciation Accounting?

A. Yes. The Uniform Systems of Accounts for electric companies includes General Instruction 11, Accounting to be on accrual basis, which states "The utility is required to keep its accounts on the accrual basis." Further, General Instruction 22, Depreciation Accounting, of the electric system states "Utilities must use a method of depreciation that allocates in a systematic and rational manner the **service value** of depreciable property over the service life of the property." (Emphasis added).

[3] 18 CFR Part 101 Uniform System of Accounts Prescribed for Public Utilities and Licensees Subject to the Provisions of the Federal Power Act. Definition 36.
[4] *Ibid.* Definition 19.

Q. Based on the instructions in the Uniform System of Accounts, what do you conclude that it requires regarding the allocation of service value of power plants?

A. The USOA requires that the allocation of service value be systematic and rational. The allocation of power plant costs based on a single average life that cannot possibly be correct is not rational since some of the initial plant equipment installed on day one of the plant's life will live the full life span of the plant while subsequent additions cannot be in service for as long as the initial additions. The allocation of power plant costs using the life span approach in which the lives of each installation year reflect the concurrent retirement of all facilities at the end of the plant's life is rational and, therefore, compliant with the USOA. The approach advocated by the Staff is not.

Q. Do authoritative texts on depreciation support your conclusion that the service value of power plants should be allocated based on the use of the life span approach?

A. Yes, they do. Authoritative texts on the subject of depreciation support the proposal to use the life span approach for power plants. As noted earlier, <u>Public Utility Depreciation Practices</u>, published in 1996 by the National Association of Regulatory Utility Commissioners states:

> Life span property generally has the following characteristics:
> 1. Large individual units,
> 2. Forecasted overall life or estimated retirement date,
> 3. Units experience interim retirements, and
> 4. Future additions are integral part of initial installation.
>
> The following classes of utility property may be most appropriately studied under this method, taking into consideration the availability of

> plant accounting data, and particularly the number of units of property involved: buildings, electric power plants,...[5]

Depreciation Systems, a widely recognized and used depreciation text authored by Wolf and Fitch[6] states:

> Depreciation professionals use the term life span to describe both a unit of property and a group of property that will be retired as a unit. Examples of a unit of property are a hydroelectric dam or the building housing electrical generating equipment. Examples of a group of property that will be retired as a unit include the turbines, generators, and other equipment used to generate electrical power and housed in either the dam or building. The dispersion pattern of retirements from a group of life span property differs from the pattern of other (mass) property, because much of the life span property is retired simultaneously (unlike mass property). The resulting survivor curve is truncated (and instantaneously reaches zero percent surviving) rather than gradually curving to zero percent surviving.[7]

Q. What method for allocation of power plant service value do you propose for AmerenUE in this proceeding?

A. I propose, consistent with the NARUC Manual, authoritative texts and the USOA, the use of the life span method of allocating the service value of power plants over the life of the facility.

Q. In addition to allocating the service value of an asset, you also mentioned the concept of net salvage, which is the salvage value of a retired asset less its cost of removal. Based on the definitions and instructions in the Uniform System of Accounts, what do you conclude that it requires regarding power plant net salvage?

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[5] Public Utility Depreciation Practices, Page 141, National Association of Regulatory Utility Commissioners (1996) (sometimes referred to herein as the "NARUC Manual").

[6] Frank Wolf, Ph.D., P.E. and W. Chester Fitch, Ph.D., P.E. are retired professors from Western Michigan University and co-founders of Depreciation Programs, Inc., one of largest and preeminent training courses in the field of Public Utility Depreciation. Their week long training courses were offered for nearly thirty years and were attended by thousands of industry professionals including consultants and regulators.

[7] Depreciation Systems, Page 255.

A. The USOA requires that power plant net salvage, as a component of its service value, must also be allocated or accrued over the service life of the property in a systematic and rational manner.

Q. Do authoritative texts on depreciation support your conclusion that net salvage should be accrued during the life of the related plant?

A. Yes, they do. Every authoritative text on the subject of depreciation supports the proposal to ratably accrue for net salvage during the life of the related property. The NARUC Manual states:

> Closely associated with this reasoning is the accounting principle that revenues be matched with costs and the regulatory principle that utility customers who benefit from the consumption of plant pay for the cost of that plant, no more, no less. The application of the latter principle also requires that the estimated cost of removal of plant be recovered over its life.[8]

Depreciation Systems states the concept in this manner:

> The matching principle specifies that all costs incurred to produce a service should be matched against the revenue produced. Estimated future costs of retiring of an asset currently in service must be accrued and allocated as part of the current expenses.[9]

Q. What treatment of net salvage do you recommend?

A. I recommend, consistent with the authoritative texts and the definition in the USOA, a continuation of the standard incorporation of net salvage related to power plants in the determination of depreciation. The standard approach has been used by this Commission in establishing AmerenUE's ratemaking allowances for depreciation for many decades. The standard approach collects net salvage costs ratably over the life of plant from the customers served by the plant.

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[8] NARUC Manual, Page 157.
[9] Depreciation Systems, Page 7.

This approach is equitable and conforms to the definition of depreciation as the loss in service value, where service value is the difference between original cost and net salvage. One major modification to the net salvage estimates that I proposed in this proceeding compared with those proposed in Case No. ER-2007-0002 is the exclusion of terminal or final net salvage related to production plant. Terminal or final net salvage related to the decommissioning and dismantlement costs of electricity generating facilities are not included in the net salvage estimates proposed in this proceeding. The net salvage estimate for steam production is based on a net salvage analyses of interim net salvage associated with interim retirements. The indicated net salvage percents resulting from the net salvage analyses were adjusted to reflect our expectation that interim retirements generally comprise less than half of the total retirements to be recorded for a given plant account within steam production. For example, the net salvage analyses containing exclusively interim net salvage related to interim retirements for Account 311, Structures and Improvements indicates negative ten percent. This represents the net salvage percent experienced by the Company. However, I estimated negative two percent for Account 311 based on judgment and an adjustment made to the historical net salvage percent that I will explain below. Net salvage is expressed as a percent of the original cost of the asset retired. Negative net salvage indicates that the cost of retiring an asset exceeds gross salvage. The adjustment to the historical net salvage percent is based on my estimate that 20 percent of the retirements related to Account 311 will occur during the operation of the power plant, i.e., interim retirements, and 80 percent of the retirements will occur at the end of the plant's operation, i.e., final retirements. Therefore, the net salvage estimate that we apply to the entire Account 311 plant balance has been adjusted from negative 10 percent to negative 2 percent in order to recognize that most retirements for this account will occur at the end of the life of the power plant. AmerenUE is not seeking recovery of terminal net salvage in this proceeding.

IV. POWER PLANT SERVICE LIVES

Q. Please describe the addition and retirement activity that occurs during the course of a power plant's life span.

A. The first addition at a power plant is its initial construction, a substantial expenditure. For a plant with several units, this initial construction can occur over a period of several years. Throughout the life of this initial expenditure, betterments and replacements take place. For example, after their initial installations in 1970 through 1973, precipitators were added to the units at Labadie in 1983, representing a betterment. Further, in 1995 the original coal burners were replaced with burners that had lower nitrous oxide (NOx) emissions. The retirement of the original burners represents an interim retirement. This type of activity occurs in almost every year of a power plant's life span in varying degrees of magnitude. As a result of inflation, some of the subsequent additions can be nearly as large as or larger than the original installation. Interim plant additions are made for various reasons, at times to replace worn or unreliable components of the facility and other times made to comply with newly enacted environmental regulations. After a period of 40, 50 or more years, it becomes uneconomic to continue to make improvements to keep the plant running and the entire unit or plant is retired. This retirement includes the original construction as well as all of the interim betterments and replacements.

Q. Given this pattern of additions and retirements, how can the survivor characteristics of power plant structures and equipment be described?

A. The survivor characteristics of power plant structures and equipment can be described through the use of interim survivor curves truncated at the date of final retirement of the entire plant or unit. The interim survivor curve describes the rate of interim retirements from the date of installation to the date of final retirement. These interim retirements are the result of retirements of equipment with lives that are less than the overall life span of the plant. These retirements would be of items such as boiler feedwater pumps, turbine rotors, control equipment, coal pulverizers, and numerous other items. The interim survivor curve, graphically depicted, begins at 100 percent surviving at the date of installation and decreases gradually throughout most of the life span. At the date of final retirement, the interim survivor curve is truncated, reducing the percent surviving to 0 percent. The age at which truncation occurs is different for ***every*** year of installation, resulting in a different average service life for each vintage.

Q. Please use an example to illustrate the survivor characteristics of power plants.

A. I will use Account 312, Boiler Plant Equipment, at Sioux Generating Station as the example. The interim survivor curve estimated for this account is the 60-L0.5. This is the survivor curve that describes the rates of retirement that occur between the installation date and the date of final retirement. The 60-L0.5 is illustrated on page A-5 of the depreciation study report, Schedule JFW-E1 and is also attached to this testimony as Schedule JFW-E2. The survivor curve for the initial installations at Sioux in 1967 is shown in Schedule JFW-E3 attached to my testimony. The average life of this installation year is the area encompassed by this curve and is 48.50 years. In 2007, the Company replaced the existing water treatment system at Sioux. The survivor curve for the water treatment system added in 2007 is shown in Schedule JFW-E4 attached to my testimony. The average life of installation year 2007 at Sioux is 24.42 years and is also determined by finding the area encompassed by this curve. The average life of the 2007 installations is restricted by the final retirement date of 2033. The survivor curve and average life of each installation year are defined by the interim survivor curve truncated at that installation year's age at the date of final retirement. The average lives for each installation year of Account 312, Boiler Plant Equipment, at Sioux are shown on pages C-12 and C-13 of Schedule JFW-E1. The point of the above example is that each vintage has its own unique average service life and the life span approach accounts for this fact and determines depreciation accordingly. This is a primary reason why the approach recommended by Staff in Case No. ER-2007-0002 of using a single average service life and survivor curve cannot appropriately describe the life characteristics related to power plants or other facilities considered to be life span property. The depreciation rates applied to life span property using the life span approach is a refinement of the current approach.

Q. Please explain how the life span approach can be considered a refinement of the current approach.

A. The whole life depreciation rate equation is expressed as:

Annual Accrual Rate = {(1 – Net Salvage %) / Average Service Life}.

This is the depreciation rate equation currently used by AmerenUE. Additionally, the accrual rate is the same for all vintages under the current method. The refinement of the life span approach is that every vintage has its own average service life and therefore its own depreciation rate in contrast to the approach which produced the current depreciation rates in which a single average service life and accrual rate is used for all vintages. Consider the following example related to a 1995 plant addition made at the Venice steam plant. In 1995, there was approximately $100,000 added to Account 311, Structures and Improvements at the Venice steam plant. $100,000 was approximately 5 percent of the total investment in this account at Venice. The Venice steam plant began operation in 1942 and was 53 years old in 1995. UE conducted a depreciation study in 1996 and estimated a final retirement year for Venice to be 2002. This meant that the $100,000 addition made in 1995 had a service life of approximately 7 years. The depreciation rate excluding net salvage for the 1995 addition would be approximately 14.28 percent (1 / 7 yrs.). Accordingly, under the life span approach a 7 year average service life would have been used for the 1995 addition; 8 years would have been used for the 1994 addition; 9 years would have been used for the 1993 addition and so on for every vintage year going back to 1942. In contrast, using the approach which resulted in the depreciation rates implemented after Case No. ER-2007-0002, an average service life of an incredible *115 years*, or a 0.87 percent depreciation rate excluding net salvage would have been used for every vintage in service at Venice regardless if it was installed in 1942 or 1995. Under the life span approach, the 1995 addition at Venice of $100,000 would have been fully depreciated in 2002 while there would have been a significant under-recovery using the approach Staff has advocated. After 7 years using the Staff's approach, only $6,087 {$100,000 * (7 / 115)} or approximately 6 percent, would have been recovered through depreciation expense. This example illustrates the difference between the life span approach and Staff's approach of using a single average service life for all vintages. The use of the life span approach for power plants is appropriate, is supported by authoritative texts on depreciation, and will result in a more accurate determination of depreciation.

Q. How is the interim survivor curve estimated?

A. The interim survivor curves for the several accounts at power plants are estimated based on informed judgment that incorporates retirement rate analyses of historical *interim* retirements and a consideration of the interim retirement rates observed for similar accounts and plants at other electric utilities. Retirements that occur at the end of a power plant's life are termed final retirements and are excluded from the life analyses for purposes of determining an interim survivor curve. The results of the interim retirement rate analyses for AmerenUE's boiler plant equipment are presented on pages A-6 and A-7 of Schedule JFW-E1 and plotted along with the 60-L0.5 interim survivor curve on page A-5.

Q. How is the final retirement date estimated?

A. The final retirement date is estimated based on informed judgment incorporating the outlook of management and a consideration of both the life spans of retired stations and units and the estimates of others for units currently in service. AmerenUE engaged Black & Veatch, a leading global consulting engineering and construction company with practice areas specializing in power generation, to assist the Company with developing informed estimates of the life spans for the Company's four coal-fired steam plants. Black & Veatch has prepared a report of their findings (attached to the testimony of AmerenUE witness Larry W. Loos, P.E.) and have set forth their estimated probable retirement dates for AmerenUE's four coal-fired power plants. The estimated retirement dates shown in the Black & Veatch report on Table 1.1 are based upon a consideration of relevant factors used to estimate the life spans of steam plants. Some of the factors considered include: 1) age and condition of the plant; 2) life span estimates used by other electricity generating companies; 3) industry experience with retired steam plants and those currently in service; 4) future major refurbishments including expenditures related to environmental compliance; and 5) design life of major components of the boiler and steam systems. I reviewed the life spans and estimated final retirement dates with AmerenUE management and Black & Veatch and determined that their findings and conclusions were sound and the estimates were reasonable to use for capital recovery, i.e., depreciation purposes.

Q. Does the estimated final retirement date represent a date certain for the retirement of each plant?

A. No, it does not. The estimated final retirement dates should not be interpreted as a firm commitment to retire these plants on these dates, but rather, as reasonable, informed estimates based on currently available information.[10] This is not unlike the prior use of the expiration of the current Callaway Plant operating license (in 2024) for depreciation purposes up until 2007. The fact that the term of the initial license was used for depreciation purposes did not mean that it was certain the plant would be retired in 2024, and indeed it is expected the license will be extended, which is why the expiration date of the renewed Callaway Plant operating license that the Company expects to obtain from the Nuclear Regulatory Commission is now being used to set depreciation rates for the Callaway Plant. The estimated final retirement dates, like other estimates used for capital recovery purposes, are subject to modification in the future as circumstances dictate. The estimated final retirement dates are based on current information and a consideration of all relevant factors, as discussed in the Black & Veatch report. The estimated final retirement dates are as follows: 1) Meramec – January 31, 2022; 2) Sioux – September 30, 2033; 3) Labadie – September 30, 2042; 4) Rush Island – September 30, 2046.

Q. Can you provide an example illustrating the average service life determined from a power plant facility that has been retired?

A. Yes. I will use AmerenUE's Venice II steam plant as an example. The Venice II steam plant began operation in 1942 as a coal-fired, baseload electricity generating station. The station had 6 generating units capable producing 500 MW

[10] The NARUC Manual recognizes both that the life span approach is the appropriate depreciation approach for power plants, and that use of the life span approach depends upon "informed estimates of the final retirement date . . .." NARUC Manual, Page 146.

and a total life span of 60 years from 1942 to 2002. Toward the end of its life the plant was used to meet peak demand during the summer months. The overall average life of the plant on a dollar-weighted basis, as calculated in Schedule JFW-E6, was 39.91 years, significantly less than the 60-year life span. Also, consider that the average life for the Venice Plant did not include the installation of scrubbers midway or so into its life span. The Company is currently constructing scrubbers for installation at the Sioux plant and (if environmental requirements change) may install additional scrubbers at the Labadie and Rush Island Plants. Installation of these scrubbers will have a dramatic effect on these plants' average service lives as the scrubbers are estimated to be in service approximately 20 to 25 years. At this point, the Company has no plans to install scrubbers at the Meramec Plant.

Q. Do you expect to see similar results with respect to the average service lives for the existing coal-fired power plants?

A. Yes, while Black & Veatch has estimated overall life spans ranging from 62 to 73 years for the four in service steam plants, I expect the dollar-weighted average service lives of those plants to range from 30 to 40 years when the plants are retired due to the impact of interim additions. Interim additions will be significant in terms of investment dollars and will be in-service significantly less than the overall life span of the plant.

Q. Can you provide further support for your belief that the dollar-weighted average service lives for the plants in service will be approximately 30 to 40 years?

A. Yes. Consider that AmerenUE may spend as much as approximately $**____** billion at the four steam plants over the next five years, 2009 through 2013, which is more than 45 percent of the current investment in steam plant production. These substantial future additions are not included in the historical database used by the Staff for life analyses purposes. Further, nearly $**___** million will be invested at the Sioux power plant over the period 2006 through 2010 with more than $**___** million being invested for the installation of a flue gas desulfurization system on both Sioux units (a.k.a., scrubbers). The initial cost to build the Sioux plant in 1967 (Unit 1) and 1968 (Unit 2) was $140 million and it will cost the Company over $**___** million to install new pollution control equipment. Therefore, while the life span of the Sioux plant is estimated to be approximately 65 years (estimated final retirement year of 2033), only a relatively small percentage of the plant will actually be in service for 65 years. A rough calculation of the dollar weighted average service life for Sioux can be determined using the above information. The example below contains several simplifying assumptions; however it is a relatively straightforward calculation and is used for illustrative purposes. Assume there are two plant additions at Sioux power plant: 1) the initial construction of the plant in 1968 for $140 million; and, 2) the nearly $**___** million of additions being made at the plant. Assume that the nearly $**___** million added during the period 2006 through 2010 has an average life of 25 years (i.e., 2033 – 2008) and the $140 million initial addition has an average service life of 65 years based on a 2033 retirement date. The dollar-weighted average service life for the Sioux plant is **____** years and is

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determined as follows: [(($**___**M * 25 yrs) + ($140M * 65 yrs)) / ($**___**M + $140M)]. The **___** years is significantly less than the average service lives currently being used for this plant. The current average service lives for steam production plant accounts range from 60 to 115 years. This example demonstrates: 1) the importance and effect that large interim additions have on the dollar-weighted average service life of a power plant; and 2) the current average service lives are significantly longer than they should be.

Q. The Staff has argued that it is necessary for management to have replacement plans in effect for these units in order to estimate a final retirement date. Is that correct?

A. No, it's not correct. In fact, it would be premature for management to be making such plans at this point in time. Such plans need not be prepared until the time to retirement approximates the lead time for construction of the replacement power generation. In the Black & Veatch report, the estimated lead time for construction of replacement power generation is 90 months or 7.5 years.

Q. Is an economic study required in order to estimate the final retirement date of a power plant?

A. No, it is not. It is not possible to conduct such a study until near the end of the power plant's life. The economics and regulatory requirements are subject to significant change over the life of the plant and it would be difficult, if not impossible, to forecast such conditions so far into the future. However, it is possible to recognize that (1) regulatory requirements continue to increase, making the operation of the plant more costly, (2) the condition of many plant

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items deteriorates with age and cannot be fully arrested through maintenance, and (3) technology continues to advance, making the installation of a new facility ultimately more economic than the continued operation of the existing facility.

Q. Has AmerenUE previously retired power plants?

A. Yes, it has. AmerenUE has retired the Mound, Cahokia, and Venice I and II power plants, consisting of a total of 21 units.

Q. Do you believe that the plants currently in service can live indefinitely?

A. Absolutely not. Although the sites may be used for a significant period of time into the future, the depreciable assets will be retired as they become uneconomic due to deterioration, regulation, and obsolescence.

Q. What is your opinion of the life spans estimated for AmerenUE's power plants?

A. I believe that the life spans estimated for AmerenUE's power plants are at the upper end of the probable range of life spans for these stations. The life spans estimated for AmerenUE units range from 62 to 73 years. I have attached to my testimony as Schedule JFW-E7 a tabulation of the actual life spans of nearly 484 retired U.S. coal-fired, steam production units. The average life span of these units was 42.65 years. The life spans estimated throughout the electric industry for similar plants range from 40 to 60 years. Thus, I conclude that the life spans estimated for AmerenUE's power plants are at the upper end of the probable range of life spans. AmerenUE has already made a considerable investment to refurbish and extend the normal life expectancy of these plants and will need to continue this type of investment in order to achieve the life spans utilized in the depreciation study.

Q. Is it appropriate to describe the life characteristics of power plants with the use of a single average survivor curve for each account?

A. No, it is not. For life span property, the average service life of property installed in each year is different. The closer the installation is to the date of final retirement of the plant, the shorter is the average life. Complete recovery of the original cost with the use of a single average service life would require an annual adjustment to reduce the average to reflect the shorter life of the new additions. This continual reduction in average life for the account would result in a pattern of increasing accruals with age for each year of installation. That is not straight-line depreciation as required by the USOA. Alternatively, an average life that reflects the lives of plant in service and plant to be added in the future could be used from the time of the initial installation. However, this approach results in too much annual depreciation in the early years for the long-lived facilities and too little depreciation in the later years for the short-lived facilities.

Q. Should actuarial analyses be used exclusively to develop a basis for estimating an overall average life applicable to a power plant account?

A. No, it should not. The mix of interim and final retirements in the historical database is not consistent with the mix of future interim and final retirements. As a result, the analysis of historical retirement rates is not appropriate for forecasting future retirement rates for power plants. For instance, scrubbers are being added at Sioux, a 40 year old power plant. The installation of scrubbers can occur at various ages, i.e., when a plant is 10 years old or 30 years old or during the initial construction of the plant. In addition, scrubbers may not be added at all. The point is that each power plant is unique and the timing of significant interim plant additions is also unique and one cannot assume that historical retirement data is representative of the future for all plants. Also, there are only four steam plants in service along with four retired steam units in the historical database used in the actuarial analyses. In contrast, there are thousands of poles, meters and line transformers added and retired each year. It is not appropriate to use the same analytical approach to determine the average service life of poles, meters, line transformers, etc., as it would be to determine the average service life of power plants. The sample size for power plants in the historical data base is too small and statistically insignificant beyond age 41 since only the units at Mound, Cahokia, Venice and Meramec have been in service beyond age 41. In Case No. ER-2007-0002, Staff relied exclusively on the results of the historical life analyses for steam production plant accounts, which is inappropriate for reasons stated above. Plus, Staff only studied interim retirements (Transaction Code 0 in the property accounting database) and excluded final retirements (Transaction Code 7 in the property accounting database) from their life analyses. This significant flaw in their life analyses led to average service lives that were by far the longest in the electric industry for certain accounts (i.e., 115 years for Account 311 and 90 years for Account 315) and much longer than the previous estimate of 35 years.

Q. Do customer equity considerations support the use of the life span method for power plants?

A. Yes, they do. The life span method provides for a better match of depreciation expense with service value rendered than does the use of a single average survivor curve for all installation years.

Q. Please explain.

A. The life span method develops and uses a unique average service life for each installation year. As a result of the decision to cease operations at a power plant, all property of varying ages are retired concurrently. Therefore, the older installation years have longer average service lives than the younger installation years. The life span approach recognizes and accounts for these facts. Under the life span approach, the original cost of an older installation year is recovered during the average life of that installation year. The original cost of a younger installation year is recovered during its average life. In comparison, the use of a **single** average service life and survivor curve that is somewhere between the longer lives of the older installation years and the shorter lives of the younger installation years results in the over-recovery of cost for the older installation years and the under-recovery of cost for the younger installation years. This does a poor job of matching the use or consumption of an asset with the customers who are using or consuming that same asset.

Q. Do you have any other concerns with the use of the average survivor curve method (i.e., Staff's method in Case No. ER-2007-0002) for power plants?

A. Yes, I do. In my opinion, it is often the case that the average service life estimated for each account when this approach is used is too long. That is, it does not sufficiently recognize the shorter service lives of plant additions yet to be recorded. Unless the life estimate for the account recognizes the shorter lives of both the interim retirements and additions including future activity, the life will be overstated, resulting in an overall under-recovery of the original cost. In Case No. ER-2007-0002, Staff's recommended average service lives were based on a life analysis of historical data without consideration of future activity.

Q. What are the bases for this concern?

A. The bases for my concern are the misuse of retirement rate analyses of historical retirement data for these facilities and the underestimation of the impact of future activity on the average life of the entire facility. Most retirement rate analyses for power plant accounts do not reflect a mix of retirements in the historical data that is consistent with the overall mix that will result by the time of the final retirement. The mix that is reflected tends to overstate the average life of the account. For instance, in Case No. ER-2007-0002, Staff proposed the following average service life for the steam production plants:

Account 311, Structures and Improvements	115 years
Account 312, Boiler Plant Equipment	60 years
Account 314, Turbogenerator Units	63 years
Account 315, Accessory Electric Equipment	90 years
Account 316, Miscellaneous Power Plant Equip.	60 years

Currently, AmerenUE's steam units range in age from 32 years to 56 years old. This indicates that not even the oldest vintage of AmerenUE's oldest steam unit (Meramec Unit 1) has reached even the ***average*** service lives prescribed by Staff for these accounts. The lives recommended by Staff and currently being used by the Company are much too long and are resulting in a significant under-recovery which, if continued, will unduly shift costs to future customers. Also, Staff's recommended average service lives were determined incorrectly in Case No. ER-2007-0002. This occurred because Staff's life analyses only considered interim retirements and excluded final retirements. By excluding final retirements, which comprise a significant portion of the total retirements, the calculations that resulted in the Staff's average service lives in Case No. ER-2007-0002 were flawed and should be rejected. Also, the depreciation rates for steam plants used by AmerenUE prior to the 2006 rate case (Case No. ER-2007-0002) were based on an average service life of 35 years. In my opinion, the magnitude of the change in average service lives recommended by Staff in Case No. ER-2007-0002 is reason alone to reject them as valid estimates, since Staff had reviewed the life estimates for steam plants 5 years earlier in Case No. EC-2002-1 and felt 35 years was reasonable. To recommend a change five years later in the average service life for steam plants from 35 years to 115 years or even to 60 years is unreasonable. Usually, service lives change gradually over time and the service life estimates should reflect this type of gradual change especially if the life indications from the historical data are inconclusive due to the lack of retirement data.

Secondly, future addition and retirement activity has a significant impact on the overall average life of a facility, as demonstrated above regarding the Sioux Plant.

The determination of depreciation rates is essentially an effort to forecast the future, commonly by analyzing past experience. However, such analyses for power plants do not provide reasonable indication of the future, unless the company has retired a significant number of power plants with unit life spans similar to those expected for the remaining units. The units that were retired at Mound, Cahokia, and Venice I were small MW units that were built prior to 1930, and therefore they are not comparable to the large, more modern plants currently in service.

Q. **In past AmerenUE cases, what has the Staff recommended with regard to the treatment of steam production plant for depreciation purposes?**

A. In Case No. EC-2002-1, the Staff recommended average service lives for steam production accounts that ranged from 29 to 35 years. Staff did not recommend the life span approach in this case consistent with the existing approach in effect at the time. The case was settled and the depreciation rates remained unchanged. In Case No. ER-2007-0002, Staff recommended average service lives ranging from 60 years to 115 years. Again, Staff did not recommend the life span approach; rather they chose to treat the power plants as one would treat mass plant accounts, which as discussed above, is wholly inappropriate in that it fails to constitute a rational depreciation method under the USOA and is directly contrary to the approaches recommended by the NARUC Manual and Wolf and Fitch. Indeed, the Staff's approach incredibly assumes the steam plants would continue to operate *indefinitely* into the future and that future retirement of the plant should not be taken into consideration in calculating the average service lives of the plant accounts.

Q. Is the assumption that steam plants will continue to operate indefinitely into the future a reasonable assumption?

A. No, it is not. All power plants have a finite life and a specific terminal date. That is, in the future when company management decides to cease operating a specific power plant all of the assets associated with the plant regardless of their age or condition will be retired concurrently. These retirements are termed final retirements. The final retirement for the Venice II Steam Plant, retired in 2002, occurred in such fashion. Assets added with the initial construction of the Venice steam plant in 1942 were retired in 2002 as were assets that were added in 2001. This type of interim retirement and final retirement activity that occurs at facilities like power plants is unique and therefore power plants should <u>not</u> be treated like other mass assets. Life span property is different from mass plant property. For example, each year AmerenUE adds thousands of poles, meters and line transformers. While these individual mass plant assets may be retired at any age (i.e., ages 1 through 40 or more) due to damage from accidents or lightning strikes, all of these assets' lives are mostly independent from one another and each has an opportunity to last its full expected life cycle when installed. That is not the case with assets that are added at power plants. The lives of the assets are dependent on the life of the facility. For example, assets were added at Venice in 2001, one year prior to its shutdown. Presumably, these 2001 additions at Venice were made to replace broken and worn components to keep the plant operating as efficiently as possible. The retirement of the Venice plant required the retirement of these assets, and the Staff simply did not take this circumstance into account in developing depreciation rates in Case No. ER-2007-0002 for the remaining four steam plants.

Q. What is the policy of other regulatory commissions regarding the life span approach for production plant?

A. Virtually all other regulatory commissions use the life span approach for production plant. Gannett Fleming has assisted utilities in nearly all 50 states, 10 Canadian provinces and 3 Canadian territories and we are not aware of a jurisdiction that denies the life span approach for production facilities, despite the Staff's continued recommendation that the life span approach should be denied. This particularly makes no sense in light of the Commission's own regulations (4 CSR 240-3.175, Submission Requirements for Electric Utility Depreciation Studies), which requires that Missouri electric utilities provide an estimated date of final retirement for each warehouse, electric generating facility, combustion turbine, general office building or other large structure. It is illogical for the utility regulations to require the life span approach for these facilities for depreciation studies only to have the life span approach rejected in rate case proceedings.

In March 2009, Concentric Energy Advisors ("CEA") conducted research for AmerenUE regarding the policy of other regulatory commissions with respect to the acceptance of the life span approach for power plants in 29 states other than Missouri that regulate electricity generation (i.e., non-restructured states). CEA searched the websites of these 29 state commissions looking at final orders, testimonies, etc., related to the life span approach for power plants. Further, CEA contacted commission staff in certain states to acquire and verify information that they were unable to acquire from the commission's website. CEA was able to confirm commission acceptance of the life span approach in 23 of the 29 states. In six states, Alabama, Florida, Iowa, Montana, Tennessee and Vermont, there was not enough information available for CEA to confirm acceptance of the life span approach. However, Gannett Fleming performs depreciation studies in 4 of the 6 states identified above and can confirm acceptance of the life span approach in these states leaving a lack of confirmation for only Alabama and Tennessee.

Q. Do you have any other comment regarding the life span approach and its acceptance in Missouri?

A. Yes. I have demonstrated that the life span approach is appropriate to use for electricity generating units and is superior in comparison to the currently approved approach. The life span approach is recognized in authoritative texts on depreciation including the NARUC Manual. Electricity generating facilities are **classic** examples of life span property listed in the authoritative sources on depreciation that I have cited above. Additionally, the Missouri Public Service Commission uses the life span approach for nuclear production plants yet rejects the life span approach for other types of production plant. I have also demonstrated that the life span approach is used in nearly all other states. Failure to use the life span approach for non-nuclear production plant is inconsistent with the Commission's regulations (4 CSR 240-3.175) that require electric utilities to estimate a final retirement year for certain facilities. The life span approach is also accepted by federal regulatory agencies such as the Federal Energy Regulatory Commission, the Federal Communication Commission and the Surface Transportation Board.

All existing power plants will be retired on a specific date sometime in the future. All assets in service as of that date associated with the electric generating facilities will be retired concurrently on that date. While there may be disagreement about when the retirement date will occur, there should be no debate about assets associated with these types of facilities being retired concurrently. This type of retirement activity is characteristic of life span property. The life span approach is based on the facility having a specific retirement date while the Staff's approach assumes an indefinite life of the facility based upon continual replacement of the assets located at the facility. The life span approach is commonly used for power plants since it results in a more accurate determination of depreciation than the approach used by Staff. Further, there are several inherent weaknesses with the Staff's approach that I have described above. For these reasons, most electric companies and most states use the life span approach for facilities such as electricity generating stations.

Q. Please comment on the existing depreciation rates for Steam Production Plant accounts.

A. AmerenUE's current depreciation rates for steam production plant accounts are among the lowest that I've observed in the 23 years that I have been conducting studies for electric companies. The composite rate for AmerenUE's steam production plant excluding coal cars is 1.91 percent, which is significantly less than the industry average of approximately 3 percent. The depreciation accrual rates for Accounts 311, Structures and Improvements and 315, Accessory Electrical Equipment are particularly low in relation to the rates used for these accounts by other electric companies. The depreciation rates for AmerenUE for Accounts 311 and 315 are 1.05 and 1.21 percent, respectively. The estimated *average* service lives for these two accounts are 115 and 90 years respectively. These service life estimates are significantly longer than those used by other electric companies and their state regulatory commissions when setting their depreciation rates. The prior average service life estimate for these two accounts was 35 years. The oldest steam unit owned by AmerenUE is Unit 1 at Meramec which is only 55 years old. The youngest steam unit owned by AmerenUE is Unit 2 at Rush Island which is 31 years old. The company's Venice II Steam Plant was retired in 2003 with generating units ranging from 53 to 61 years old. The range of lives experienced at Venice is substantially different from Staff's unreasonably long estimate of 115 years that was used to develop the depreciation rate for that account.

Property units associated with Account 311, Structures and Improvement include elevators, HVAC, floor coverings, windows, doors, paving, sidewalks, siding, roofs, landscaping, fencing, etc. While the average service life estimate for Account 311 is 115 years, the maximum life contemplated by the Iowa 115-R1.5 survivor curve recommended by the Staff and approved by the Commission in Case No. 2007-0002 is 231 years. That is, the current survivor curve estimate for Account 311, the 115-R1, assumes that certain property units will remain in service for *231 years*. Since Meramec Unit 1 was placed in service in 1953, we will not know *until the year 2184* if the estimate upon which the current depreciation rates are based is correct. Of course, the fact is that it is unreasonable to expect that these plant components will last an average of 115 years.

Q. Please comment on the depreciation rates that you have proposed for Steam Production Plant accounts.

A. The depreciation rates that I have proposed for this proceeding were calculated using the life span approach. The life span approach is widely recognized and used by most other electric companies and regulatory commissions for power plants since it produces more accurate results than the approach used by Staff in Case No. ER-2007-0002. The composite depreciation rate that I am recommending for Steam Production Plant is 3.10 percent. The 3.10 percent rate is within the typical range of composite depreciation rates used by other electric companies for Steam Production. Additionally, I believe the proposed depreciation rates for Steam Production are low vis-à-vis future depreciation rates for the four coal-fired power plants since: 1) terminal net salvage amounts (i.e., decommissioning costs) have been excluded from the determination of proposed depreciation rates; and 2) large future plant additions, such as pollution control equipment, with service lives shorter than existing plant investment are not included in the determination of proposed depreciation rates. However, future plant additions will occur and their costs will need to be depreciated over a shorter period of years than existing plant which will increase depreciation rates in the future.

Q. Please comment on the amortization amounts which the Company seeks recovery of related to the retired Venice II steam plant.

A. The Venice II steam plant produced electricity beginning in 1942 and continued operating until its retirement in 2002. At the time of its retirement the Company had some plant investment that was not fully depreciated. Additionally, since the plant's retirement in 2002, the Company has spent money to remove the chimney stacks which needed repair and presented a potential safety hazard. The Company did not prospectively recovered any amounts through depreciation expense while the Venice steam plant was in-service related to final decommissioning and dismantlement of the plant. In Case ER-2007-0002, the estimated decommissioning cost for the Venice steam plant ranged from $20 million to $40 million. Again, the Company does not seek recovery in the current case of **future** removal costs related to the steam plants. However, the total amount related to the Venice steam plant which the Company seeks recovery of in the current proceeding is approximately $1.76 million. The Company is proposing to amortize the $1.76 million over five years or $352,000 per year.

V. OUTLINE OF DEPRECIATION STUDY REPORT

Q. Does Schedule JFW-E1 accurately portray the results of your depreciation study as of December 31, 2008?

A. Yes.

Q. In preparing the depreciation study, did you follow generally accepted practices in the field of depreciation?

A. Yes.

Q. Please describe the contents of your report.

A. The depreciation study report consists of three parts. Part I, Introduction, includes brief descriptions of the basis of the study and a summary of the study results. Part II, Methods Used in the Estimation of Depreciation, presents detailed discussions of survivor curves, methods of life analysis including an example of the retirement rate method, group procedures for calculating annual and accrued depreciation including the true-up provision for monitoring the book accumulated depreciation. Part III, Results of Study, includes a qualification and description of the results, and summaries of the detailed depreciation calculations. Appendices A through C include graphs and tables that relate to the service life and net salvage analyses, and detailed depreciation calculations.

The tables on pages III-4 through III-21 present summaries of the depreciation calculations as of December 31, 2008. Appendix A presents the results of the retirement rate analyses prepared as the historical bases for the service life estimates. Appendix B presents the results of the net salvage analyses. Appendix C presents the detailed depreciation calculations related to surviving original cost as of December 31, 2008. The detailed depreciation calculations present the annual and accrued depreciation amounts by account and vintage year. The whole life annual accrual rate is also set forth on the tables in Appendix C.

Q. Are any aspects of your depreciation study supported by any other witness in this proceeding?

A. Yes. AmerenUE witness Larry W. Loos, P.E. of Black & Veatch is providing direct testimony in support of the estimated final year of retirement related to the four coal-fired steam plants owned by AmerenUE. I have incorporated Mr. Loos' estimates into my depreciation study.

Q. Please summarize your recommendations and their bases.

A. I recommend that the Commission approve the annual depreciation accrual rates presented in Schedule 1 of Schedule JFW-E1 and the remaining life amortization of the variance between the calculated accrued depreciation and the book accumulated depreciation that I have determined and presented in Schedule 2 of Schedule JFW-E1.

The annual depreciation accrual rates and the reserve variance amortization that I am recommending are based on standard professional and industry practices using estimates of survivor curves and net salvage percents. These estimates are based on informed judgment that incorporates statistical analyses of historical retirement data, field reviews of the property, discussions with management regarding the outlook for plant, and a review of the estimates made for other electric utilities. Further, my estimated survivor characteristics for Steam Production plant incorporate estimated dates of final retirement that are consistent with the conclusions of the Black & Veatch report, industry experience and the outlook of AmerenUE management.

VI. METHODS AND PROCEDURES USED IN THE STUDY

Q. What was the basis for determining the annual depreciation related to electric plant as of December 31, 2008?

A. A study of service life and net salvage was prepared which incorporated available historical data through 2008. The survivor curve and net salvage estimates resulting from the study are the bases of the calculated annual and accrued depreciation as of December 31, 2008. The straight line method, average service procedure and the average remaining life basis using the survivor curve and net salvage estimates and attained ages were applied by depreciable group to electric plant as of December 31, 2008 to calculate depreciation. Use of the remaining life basis recognizes the current status of the accumulated provision for depreciation and aims to allocate the previously unallocated service value over the remaining life.

Q. Please outline the steps you took to perform the depreciation study.

A. I reviewed the available sources of data, observed the electric plant during a field survey, and discussed past causes of retirement and the outlook for future retirements with AmerenUE engineering and operations management. I specified the data to be extracted and coded for the historical analyses, supervised the statistical analyses of data, and calculated depreciation.

Q. Briefly describe the steps you took to conduct the service life and net salvage study.

A. I assembled and compiled historical data from the continuing property and other records of AmerenUE; I analyzed the data to obtain historical trends of survivor and salvage characteristics; I obtained supplementary information from AmerenUE's management and operating personnel concerning past practices and future plans as they relate to plant operations; and I selected appropriate survivor curves and net salvage percents.

VII. STATISTICAL ANALYSES OF DATA

Q. What historical data did you analyze for the purpose of estimating the service lives and net salvage characteristics of AmerenUE's electric plant?

A. The service life data consisted of the entries made by AmerenUE to record electric plant transactions from the earliest available year through 2008. For most plant accounts, the plant accounting data comprised the period 1923 through 2008. The transactions included additions, retirements, transfers, acquisitions and the related balances. I classified data by depreciable group, type of transaction, the year in which the transaction took place, and the year in which the plant was installed.

The net salvage data consisted of the entries to accumulated depreciation. The transactions included retirements, cost of removal and gross salvage.

Q. What method did you use to analyze the service life data?

A. I used the retirement rate method. That method is the most appropriate when aged retirement data are available, because it develops the average rates of retirement actually experienced during the period of study. Other methods of life analysis infer the rates of retirement based on a selected type survivor curve. The retirement rate method is described in Part II of the depreciation study report.

Q. Please describe how you used the retirement rate method to analyze AmerenUE's service life data.

A. Each retirement rate analysis resulted in a life table which, when plotted, formed an original survivor curve. Each original survivor curve as plotted from the life table represents the average survivor pattern experienced by the several vintage groups during the experience band studied. The survivor patterns do not necessarily describe the life characteristics of the property group; therefore, interpretation of the original curves is required in order to use them as valid considerations in service life estimation. Iowa type survivor curves were used in these interpretations.

Q. Please explain briefly what an "Iowa type survivor curve" is and how you use it in estimating service life characteristics for each depreciable group.

A. Iowa type curves are a widely used group of survivor curves that contain the range of survivor characteristics usually experienced by utility and other industrial properties. The Iowa curves were developed at the Iowa State College Engineering Experiment Station through an extensive process of observation and classification of the ages at which industrial property had been retired.

Iowa type curves are used to smooth and extrapolate original survivor curves determined by the retirement rate method. The Iowa curves were used in this study to describe the forecasted rates of retirement based on the observed rates of retirement and the outlook for future retirements.

The estimated survivor curve designations for each depreciable group indicate the average service life, the family within the Iowa system and the relative height of the mode. For example, the Iowa 34-R2 indicates an average service life of thirty-four years for the depreciable group; a Right, or R, type curve (i.e., the mode occurs to the right of or after average life for right modal curves); and a relatively low height, 2, for the mode (possible modes for R type curves range of 0.5 to 5).

Q. What method of analysis was used in the study of net salvage?

A. The method of analysis for net salvage consisted of expressing annual amounts of gross salvage and cost of removal as percents of the related retirement amounts. The annual amounts and percents were smoothed through the use of a three-year moving average. The most recent five-year average also was computed.

Q. Did you prepare the schedules of net salvage amounts and percents presented in Appendix B of the depreciation study report?

A. Yes, I did.

VIII. SURVIVOR CURVE AND NET SALVAGE ESTIMATES

Q. What were the bases for your estimates of survivor curves and net salvage?

A. The survivor curve and net salvage estimates were based on my judgment which incorporated the analyses of historical data, a review of utility policies and outlook with engineering and operations management, and comparisons of survivor curve and net salvage estimates from studies of other electric utilities.

Q. Are the factors which you considered in the estimation of survivor curve and net salvage percents presented in the depreciation study report?

A. Yes. The factors which I considered in estimating survivor curves and net salvage percents are set forth in Part II of the report.

IX. CALCULATION OF DEPRECIATION

Q. What method of depreciation was used to calculate the annual depreciation as of December 31, 2008?

A. The straight line method, average service procedure and remaining life basis was used to calculate the annual and accrued depreciation.

Q. Why is this method and procedure appropriate for AmerenUE?

A. The straight line method is used throughout the regulated utility industry to describe the loss in service value of utility property. The average service life procedure is widely used throughout the electric industry and has been approved for AmerenUE by the Missouri Public Service Commission.

Q. Please describe the average service life procedure.

A. When considering more than a single item of property, a group procedure is appropriate because normally all of the items within a group do not have identical lives, but have lives that are dispersed over a range of time. In the average service life procedure, a constant accrual rate based on the average life of all property in the group is applied to the surviving property. The accrued depreciation is based on the average service life of the group and the average remaining life of each vintage within the group derived from the area under the survivor curve between the attained age of the vintage and the maximum age.

Q. Did you calculate the annual depreciation rates and accrued depreciation amounts?

Q. Would you comment on the reserve imbalance and your proposed adjustment to the book reserve amounts?

A. The Company has been using its current depreciation rates since 2008. Prior to 2008, AmerenUE used the same depreciation accrual rates since 1983 so it is not surprising that several large reserve variances have developed. As a matter of practice, I recommend that electric companies update their depreciation rates no less frequently than every five years in connection with complete depreciation study that includes a service life and net salvage study. Companies that update their depreciation studies every five years are less prone to having large reserve variances develop. Also, conducting a depreciation study every five years is accepted industry practice and is consistent with the regulations of the Missouri Public Service Commission.

XI. EXAMPLES OF PRESENTATION

Q. Please illustrate the procedure followed in your depreciation study and the manner in which it is presented in the depreciation study report using an account as an example.

A. I will use Account 355, Poles and Fixtures, to illustrate the manner in which the study was conducted. As the initial step of the service life study, aged plant account data were compiled for the years 1930 through 2008. These data have been coded in the course of AmerenUE's normal recordkeeping according to: 1) account or property group; 2) type of transaction; 3) year in which the transaction took place; and, 4) year in which the electric plant was placed in service. The retirements and other transactions were analyzed by the retirement rate method. The survivor curve estimate is based on the statistical analysis for the period 1930-2008. The original and smooth survivor curves are plotted on page A-78 of Appendix A in the depreciation study report. The original life table for the 1930-2008 experience band is set forth on pages A-79 and A-81. The net salvage estimate is based in part on the analysis of 1961 through 2008 removal cost and salvage experienced for Account 355 as shown on pages B-54 through B-56 of Appendix B in the depreciation study report.

The calculation of annual depreciation for the original cost of poles and pole fixtures at December 31, 2008 is presented by vintage, on pages C-77 and C-78 in the depreciation study report. The accrued depreciation was calculated by the average service life procedure using the Iowa 53-R4 survivor curve.

The total depreciation accrual on page C-78 of the depreciation study report was brought forward to column 7 of Schedule 1 on page III-7. The total calculated accrued depreciation on page C-78 was brought forward to column 4 of Schedule 2 on page III-13.

The calculated accrued depreciation was used to determine the reserve variance amortization in column 7 of Schedule 2 in the manner previously described. The reserve variance amortizations in column 7 of Schedule 2 were also presented in column 4 of Schedule 3, pages III-19 through, and added to whole-life annual accruals in column 3 to determine the total annual depreciation in column 5 of Schedule 3.

Q. **Does this conclude your direct testimony?**

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric Company d/b/a AmerenUE for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in the Company's Missouri Service Area.	)))))	Case No. ER-2010-

AFFIDAVIT OF JOHN F. WIEDMAYER

Commonwealth
~~STATE~~ OF PENNSYLVANIA)
) ss
COUNTY OF MONTGOMERY)

John F. Wiedmayer, being first duly sworn on his oath, states:

1. My name is John F. Wiedmayer. I work in Audubon, Pennsylvania and I am a Project Manager with the firm of Gannett Fleming, Inc.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Union Electric Company d/b/a AmerenUE consisting of 45 pages, and Schedules JFW-E1 through JFW-E7 all of which have been prepared in written form for introduction into evidence in the above-referenced docket.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct.

John F. Wiedmayer, Jr
John F. Wiedmayer

Subscribed and sworn to before me this 20th day of July, 2009.

Susan F. Warner
Notary Public

My commission expires:
July 5, 2012

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Susan F. Warner, Notary Public
Lower Providence Twp., Montgomery County
My Commission Expires July 5, 2012
Member, Pennsylvania Association of Notaries