In the Matter of the Application of Kansas Gas Service, A Division of ONEOK, Inc. for Adjustment of its Natural Gas Rates in the State of Kansas	)))))	DOCKET NO. 12-KGSG-~~835~~-RTS

DIRECT TESTIMONY

OF

DR. RONALD E. WHITE

ON BEHALF OF

KANSAS GAS SERVICE

A DIVISION OF ONEOK, INC

BEFORE THE
KANSAS CORPORATION COMMISSION

PREPARED DIRECT TESTIMONY OF
DR. RONALD E. WHITE
IN DOCKET NO. 12-KGSG____-RTS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Ronald E. White. My business address is 17595 S. Tamiami Trail, Suite 212, Fort Myers, Florida 33908.

Q. WHAT IS YOUR OCCUPATION?

A. I am Chairman and a Senior Consultant of Foster Associates, Inc.

I. QUALIFICATIONS

Q. WOULD YOU BRIEFLY DESCRIBE YOUR EDUCATIONAL TRAINING AND PROFESSIONAL BACKGROUND?

A. I received a B.S. degree in Engineering Operations and an M.S. degree and Ph.D. (1977) in Engineering Valuation from Iowa State University. I have taught graduate and undergraduate courses in industrial engineering, engineering economics, and engineering valuation at Iowa State University and previously served on the faculty for Depreciation Programs for public utility commissions, companies, and consultants, sponsored by Depreciation Programs, Inc., in cooperation with Western Michigan University. I also conduct courses in depreciation and public utility economics for clients of the firm.

I have prepared and presented a number of papers to professional organizations, committees, and conferences and have published several articles on matters relating to depreciation, valuation and economics. I am a past member of the Board of Directors of the Iowa State Regulatory Conference and an affiliate member of the joint American Gas Association (A.G.A.) – Edison Electric Institute (EEI) Depreciation Accounting Committee, where I previously served as chairman of a standing committee on capital recovery and its effect on corporate economics. I am also a member of the American Economic Association, the Financial Management Association, the

Midwest Finance Association, and a founding member of the Society of Depreciation Professionals.

Q. WHAT IS YOUR PROFESSIONAL EXPERIENCE?

A. I joined the firm of Foster Associates in 1979, as a specialist in depreciation, the economics of capital investment decisions, and cost of capital studies for ratemaking applications. Before joining Foster Associates, I was employed by Northern States Power Company (1968–1979) in various assignments related to finance and treasury activities. As Manager of the Corporate Economics Department, I was responsible for book depreciation studies, studies involving staff assistance from the Corporate Economics Department in evaluating the economics of capital investment decisions, and the development and execution of innovative forms of project financing. As Assistant Treasurer at Northern States, I was responsible for bank relations, cash requirements planning, and short–term borrowings and investments.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE A REGULATORY BODY?

A. Yes. I have testified in numerous proceedings before administrative and judicial bodies in over thirty jurisdictions, including several appearances in Kansas. I have also testified before the Federal Energy Regulatory Commission, the Federal Power Commission, the Alberta Energy Board, the Ontario Energy Board, and the Securities and Exchange Commission. I have sponsored position statements before the Federal Communications Commission and numerous local franchising authorities in matters relating to the regulation of telephone and cable television. A more detailed description of my professional qualifications is contained in Attachment REW–1.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. Foster Associates was engaged by Kansas Gas Service (KGS), a division of Oneok, Inc., to conduct a 2012 depreciation rate study for gas plant subject to the jurisdiction of the Kansas Corporation Commission (KCC). The purpose of my testimony is to

sponsor and describe the study conducted by Foster Associates. The scope, findings and recommendations of the study are contained in Exhibit REW–1.

III. Development of Depreciation Rates

Q. PLEASE EXPLAIN WHY DEPRECIATION STUDIES ARE NEEDED FOR ACCOUNTING AND RATEMAKING PURPOSES.

A. The goal of depreciation accounting is to charge to operations a reasonable estimate of the cost of the service potential of an asset (or group of assets) consumed during an accounting interval. The service potential (or future economic benefit) of an asset is the present value of future net revenue (*i.e.*, revenue less expenses exclusive of depreciation and other noncash expenses) or cash inflows attributable to the use of that asset alone. A number of depreciation systems have been developed to achieve this objective, most of which employ time as the apportionment base.

Implementation of a time–based (or age–life system) of depreciation accounting requires the estimation of several parameters or statistics related to a plant account. The average service life of a vintage, for example, is a statistic that will not be known with certainty until all units from the original placement have been retired from service. A vintage average service life, therefore, must be estimated initially and periodically revised as indications of the eventual average service life becomes more certain. Future net salvage rates and projection curves, which describe the expected distribution of retirements over time, are also estimated parameters of a depreciation system that are subject to future revisions. Depreciation studies should be conducted periodically to assess the continuing reasonableness of parameters and accrual rates derived from prior estimates.

The need for periodic depreciation studies is also a derivative of the ratemaking process which establishes prices for utility services based on costs. Absent regulation, deficient or excessive depreciation rates will produce no adverse consequence other than a systematic over or understatement of an accounting measurement of earnings. While a continuance of such practices may not comport with the goals of depreciation accounting, the achievement of capital recovery is not dependent upon

either the amount or the timing of depreciation expense for an unregulated firm. In the case of a regulated utility, however, recovery of investor–supplied capital is dependent upon allowed revenues, which are in turn dependent upon approved levels of depreciation expense. Periodic reviews of depreciation rates are, therefore, essential to the achievement of timely capital recovery for a regulated utility.

It is also important to recognize that revenue associated with depreciation is a significant source of internally generated funds used to finance plant replacements and new capacity additions. Given the same financing requirements and the same dividend payout ratio, an increase in internal cash generation will accelerate per–share growth in earnings, dividends, and book value over the business life of a firm. Financial theory provides that the marginal cost of external financing will be reduced by these enhanced measurements of financial performance. This is not to suggest that internal cash generation should be substituted for the goals of depreciation accounting. However, the potential for realizing a reduction in the marginal cost of external financing provides an added incentive for conducting periodic depreciation studies and adopting proper depreciation rates.

Q. WHAT ARE THE PRINCIPAL ACTIVITIES INVOLVED IN CONDUCTING A DEPRECIATION STUDY?

A. The first step in conducting a depreciation study is the collection of plant accounting data needed to conduct a statistical analysis of past retirement experience. Data are also collected to permit an analysis of the relationship between retirements and realized gross salvage and cost of removal. The data collection phase should include a verification of the accuracy of the plant accounting records and a reconciliation of the assembled data to the official plant records of the company.

The next step in a depreciation study is the estimation of service life statistics from an analysis of past retirement experience. The term *life analysis* is used to describe the activities undertaken in this step to obtain a mathematical description of the forces of retirement acting upon a plant category. The mathematical expressions used to describe these forces are known as survival functions or survivor curves.

Life indications obtained from an analysis of past retirement experience are blended with expectations about the future to obtain an appropriate projection life and curve descriptive of the parent population from which a plant account is viewed as a random sample. This step, called *life estimation*, is concerned with predicting the expected remaining life of property units still exposed to the forces of retirement. The amount of weight given to the analysis of historical data will depend upon the extent to which past retirement experience is considered descriptive of the future.

An estimate of the net salvage rate applicable to future retirements is most often obtained from an analysis of gross salvage and cost of removal realized in the past. An analysis of past experience (including an examination of trends over time) provides a baseline for estimating future salvage and cost of removal. Consideration, however, should be given to events that may cause deviations from net salvage realized in the past. Among the factors that should be considered are the age of plant retirements; the portion of retirements that will be reused; changes in the method of removing plant; the type of plant to be retired in the future; inflation expectations; the shape of the projection life curve; and economic conditions that may warrant greater or lesser weight to be given to the net salvage observed in the past.

A comprehensive depreciation study will also include an analysis of the adequacy of the recorded depreciation reserve. The purpose of such an analysis is to compare the current recorded reserve balance with the balance required to achieve the goals and objectives of depreciation accounting if the amount and timing of future retirements and net salvage are realized exactly as predicted. The difference between the required (or theoretical) reserve and the recorded reserve provides a measurement of the expected excess or shortfall that will remain in the depreciation reserve if corrective action is not taken to extinguish the reserve imbalance.

Although reserve records are typically maintained by various account classifications, the sum of all reserves is the most important indicator of the status of the company's depreciation practices. Differences between theoretical and recorded reserves will arise as a normal occurrence when service lives, dispersion patterns and net salvage estimates are adjusted in the course of depreciation reviews. Differences

will also arise due to plant accounting activity such as transfers and adjustments requiring an identification of reserves at a different level from that maintained in the accounting system. It is appropriate, therefore, and consistent with group depreciation theory, to periodically redistribute or rebalance recorded reserves among primary accounts based on the most recent estimates of retirement dispersion and net salvage rates. A redistribution of recorded reserves will provide an initial reserve balance for each primary account consistent with the estimates of retirement dispersion selected to describe mortality characteristics of the accounts and establish a baseline against which future comparisons can be made.

Finally, parameters estimated from service life and net salvage studies are integrated into an appropriate formulation of an accrual rate based upon a selected depreciation system. Three elements are needed to describe a depreciation system. The sub–elements most widely used in constructing a depreciation system are shown in Table 1 below.

Methods	Procedures	Techniques
Retirement	Total Company	Whole-Life
Compound-Interest	Broad Group	Remaining-Life
Sinking-Fund	Vintage Group	Probable-Life
Straight-Line	Equal-Life Group	
Declining Balance	Unit Summation	
Sum-of-Years'-Digits	Item	
Expensing		
Unit-of-Production		
Net Revenue		

Table 1. Elements of a Depreciation System

These elements (*i.e.*, method, procedure and technique) can be visualized as three dimensions of a cube in which each face describes a variety of sub–elements that can be combined to form a system. A depreciation system is therefore formed by selecting a sub–element from each face such that the system contains one method, one procedure and one technique.

IV. 2012 Depreciation Rate Study

Q. PLEASE DESCRIBE THE SOURCE OF DEPRECIATION RATES CURRENTLY USED BY KGS.

A. Depreciation rates currently used by KGS were adopted pursuant to a Stipulated Settlement Agreement in Docket No. 06–KGSG–1209–RTS (Order Approving Settlement Agreement dated November 16, 2006). The parties to the Agreement consented to adopt depreciation rates proposed by KGS in a 2006 depreciation study, based on December 31, 2005 plant and reserve balances.

Q. DID KGS PROVIDE FOSTER ASSOCIATES PLANT ACCOUNTING DATA FOR CONDUCTING THE 2012 DEPRECIATION STUDY?

A. Yes. The database used in conducting the current study was obtained by appending plant and net salvage transactions for activity years 2006–2011 and age distributions of surviving plant at December 31, 2011 to the database used in conducting the 2006 study. The accuracy and completeness of the assembled database was verified for activity years 2006 through 2011 by comparing the beginning plant balance, additions, retirements, transfers and adjustments, and the ending plant balance derived for each activity year to the official plant records of the Company. Activity years prior to 2006 were verified in the 2006 study. Age distributions of surviving plant at December 31, 2011 were reconciled to KGS's Continuing Property Record (CPR) system.

The database obtained from KGS was coded by Foster Associates. Transaction codes for plant additions, for example, were used to distinguish normal additions from acquisitions, purchases, reimbursements and adjustments. Similar transaction codes were used to distinguish normal retirements from sales, reimbursements, abnormal retirements and adjustments. Transaction codes were also assigned to transfers, capital leases, gross salvage, cost of removal and other accounting activity used in conducting a depreciation study.

Q. DID FOSTER ASSOCIATES CONDUCT STATISTICAL LIFE STUDIES FOR KGS PLANT AND EQUIPMENT?

A. Yes. As discussed in Exhibit REW–1, all plant accounts were analyzed using a technique in which first, second and third degree orthogonal polynomials were fitted to a set of observed retirement ratios. The resulting functions were expressed as survivorship functions and numerically integrated to obtain an estimate of the projection life of a plant category. The smoothed survivorship function was then fitted by a weighted least–squares procedure to the Iowa–curve family to obtain a mathematical description or classification of the dispersion characteristics of the data. Service life indications derived from the statistical analyses were blended with informed judgment and expectations about the future to obtain an appropriate projection life and curve for each plant category.

Q. DID FOSTER ASSOCIATES CONDUCT A NET SALVAGE ANALYSIS IN ESTIMATING DEPRECIATION RATES FOR KGS PLANT AND EQUIPMENT?

A. Yes. Five–year moving averages of the ratio of realized salvage and cost of removal to the associated retirements were used in the study to a) estimate realized net salvage rates; b) detect the emergence of historical trends; and c) establish a basis for estimating future net salvage rates. Cost of removal and salvage opinions obtained from KGS operating personnel were blended with judgment and historical net salvage indications in developing estimates of the future.

Average net salvage rates for depreciable plant accounts were estimated using direct dollar weighting of historical retirements with historical net salvage rates, and future retirements (*i.e.*, surviving plant) with estimated future net salvage rates.

Q. DID FOSTER ASSOCIATES CONDUCT AN ANALYSIS OF RECORDED DEPRECIATION RESERVES?

A. Yes. Statement C of Exhibit REW–1 provides a comparison of computed and recorded reserves for KGS at December 31, 2011. The sum of recorded reserve for transmission, distribution and general plant was $535,647,038 or 36.5 percent of the depreciable plant investment. The corresponding computed reserve is $528,798,477 or 36.0 percent of the depreciable plant investment. A proportionate amount of the

measured reserve excess of $6,848,561 will be amortized over the composite weighted–average remaining life of each rate category using the remaining life depreciation rates recommended in the 2012 study.

Q. IS FOSTER ASSOCIATES RECOMMENDING A REBALANCING OF DEPRECIATION RESERVES FOR KGS?

A. Yes. A redistribution of recorded reserves is again considered appropriate for KGS. Offsetting reserve imbalances attributable to both the passage of time and parameter adjustments recommended in the current study should be realigned among primary accounts to reduce offsetting imbalances and increase depreciation rate stability.

Reserve rebalancing is also needed to eliminate reserve imbalances derived from an initialization of amortization accounting recommended for distribution Accounts 376.40 and 381.50. Amortization periods proposed for these accounts were used to derive theoretical reserves that will replace the recorded reserves and permit a uniform treatment of embedded plant and future additions. Plant older than the proposed amortization periods will be retired from service and future retirements will be posted as each vintage achieves an age equal to the amortization period. Depreciation reserves for the distribution plant function were redistributed by setting the recorded reserves for the proposed amortization accounts equal to the theoretical reserves derived from the recommended amortization periods and distributing the residual imbalances to the remaining depreciable accounts in the distribution function.

A redistribution of the recorded reserve for all depreciable plant was achieved by multiplying the calculated reserve for each primary account within a function by the ratio of the function total recorded reserve to the function total calculated reserve. The sum of the redistributed reserves within a function is, therefore, equal to the function total recorded depreciation reserve before the redistribution.

Q. PLEASE DESCRIBE THE DEPRECIATION SYSTEM CURRENTLY APPROVED FOR KGS.

A. Current depreciation rates were developed for each primary account using a depreciation system composed of the straight–line method, vintage group procedure, re-

maining–life technique. The formulation of an account accrual rate using the currently approved system is given by:

$$\text{Accrual Rate} = \frac{1.0 - \text{Reserve Ratio} - \text{Future Net Salvage Rate}}{\text{Remaining Life}}.$$

A remaining–life rate is equivalent to the sum of a whole–life rate and an amortization of any reserve imbalance over the estimated remaining life of a rate category. Stated as an equation, a remaining–life accrual rate is equivalent to

$$\text{Accrual Rate} = \frac{1.0 - \text{Average Net Salvage}}{\text{Average Life}} + \frac{\text{Computed Reserve} - \text{Recorded Reserve}}{\text{Remaining Life}}$$

where both the computed reserve and the recorded reserve are expressed as ratios to the plant in service.

Q. IS FOSTER ASSOCIATES RECOMMENDING A CHANGE IN THE DEPRECIATION SYSTEM USED BY KGS?

A. No. Depreciation rates recommended in the 2012 study were developed using the currently approved system.[1] It is the opinion of Foster Associates that this system will remain appropriate for KGS, provided depreciation studies are conducted periodically and parameters are routinely adjusted to reflect changing operating conditions. Although the emergence of economic factors such as restructuring and performance based regulation may ultimately encourage abandonment of the straight–line method, no attempt was made in the current study to address this concern.

It is also the opinion of Foster Associates that amortization accounting currently approved for selected general support asset accounts and recommended for distribution Accounts 376.40 and 381.50 is consistent with the goals and objectives of depreciation accounting and remains appropriate for these plant categories.

[1]Depreciation rates recommended in the 2006 study for all depreciable plant categories were derived from a system composed of the straight–line method, vintage group procedure, remaining–life technique. This change in procedure from broad group to vintage group was recommended by Foster Associates (and approved by the KCC) to more nearly achieve the goals and objectives of depreciation accounting.

Q. PLEASE SUMMARIZE THE DEPRECIATION RATES AND ACCRUALS RECOMMENDED FOR KGS IN THE 2012 STUDY.

A. Table 2 below provides a summary of the changes in annual rates and accruals resulting from an application of the service life and net salvage parameters recommended in the 2012 study.

	Accrual Rate			2012 Annualized Accrual		
Function	Current	Proposed	Difference	Current	Proposed	Difference
A	B	C	D=C-B	E	F	G=F-E
Transmission	2.20%	2.52%	0.32%	$5,100,882	$5,831,538	$730,656
Distribution	2.71%	3.03%	0.32%	31,041,720	34,763,841	3,722,121
General Plant	5.50%	4.83%	-0.67%	4,899,645	4,298,650	(600,995)
Total	2.79%	3.06%	0.27%	$41,042,247	$44,894,029	$3,851,782

Table 2. Depreciation Rates and Accruals

The composite accrual rate recommended for KGS gas operations is 3.06 percent. The current equivalent rate is 2.79 percent. The recommended change in the composite rate is an increase of 0.27 percentage points.

A continued application of current rates would provide annualized depreciation expense of $41,042,247 compared with an annualized expense of $44,894,029 using the recommended accrual rates. The resulting 2012 expense increase is $3,851,782. The computed change in annualized accruals includes a reduction of $805,728 attributable to an amortization of a $6,848,561 reserve imbalance. The remaining portion of the change is attributable to adjustments in service life and net salvage statistics recommended in the 2012 study.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

VERIFICATION

STATE OF FLORIDA)
) ss.
COUNTY OF LEE)

Ronald E. White, being duly sworn upon his oath, deposes and states that he is Chairman of Foster Associates, Inc.; that he has read and is familiar with the foregoing Direct Testimony filed herewith; and that the statements made therein are true to the best of his knowledge, information, and belief.

Ronald E. White, Ph.D.

Subscribed and sworn to before me this11th day of May 2012.

NOTARY PUBLIC

My appointment Expires:

MARGARET E. LANGE
Notary Public, State of Florida
My Comm. Expires Oct. 19, 2013
Commission No. DD 913975

Foster Associates Inc.
17595 S. Tamiami Trail
Suite 212
Fort Myers, FL 33908

Phone (239) 267-1600
Fax (239) 267-5030
E-mail r.white@fosterfm.com

Ronald E. White, Ph.D.

Education

1961 - 1964 Valparaiso University
Major: Electrical Engineering

1965 Iowa State University
B.S., Engineering Operations

1968 Iowa State University
M.S., Engineering Valuation
Thesis: The Multivariate Normal Distribution and the Simulated Plant Record Method of Life Analysis

1977 Iowa State University
Ph.D., Engineering Valuation
Minor: Economics
Dissertation: A Comparative Analysis of Various Estimates of the Hazard Rate Associated With the Service Life of Industrial Property

Employment

2007 - Present Foster Associates, Inc.
Chairman

1996 - 2007 Foster Associates, Inc.
Executive Vice President

1988 - 1996 Foster Associates, Inc.
Senior Vice President

1979 - 1988 Foster Associates, Inc.
Vice President

1978 - 1979 Northern States Power Company
Assistant Treasurer

1974 - 1978 Northern States Power Company
Manager, Corporate Economics

1972 - 1974 Northern States Power Company
Corporate Economist

1970 - 1972 Iowa State University
Graduate Student and Instructor

1968 - 1970 Northern States Power Company
Valuation Engineer

1965 - 1968 Iowa State University
Graduate Student and Teaching Assistant

Publications

A New Set of Generalized Survivor Tables, Journal of the Society of Depreciation Professionals, October, 1992.

The Theory and Practice of Depreciation Accounting Under Public Utility Regulation, Journal of the Society of Depreciation Professionals, December, 1989.

Standards for Depreciation Accounting Under Regulated Competition, paper presented at The Institute for Study of Regulation, Rate Symposium, February, 1985.

The Economics of Price-Level Depreciation, paper presented at the Iowa State University Regulatory Conference, May, 1981.

Depreciation and the Discount Rate for Capital Investment Decisions, paper presented at the National Communications Forum - National Electronics Conference, October 1979.

A Computerized Method for Generating a Life Table From the 'h-System' of Survival Functions, paper presented at the American Gas Association - Edison Electric Institute Depreciation Accounting Committee Meeting, December, 1975.

The Problem With AFDC is ..., paper presented at the Iowa State University Conference on Public Utility Valuation and the Rate Making Process, May, 1973.

The Simulated Plant-Record Method of Life Analysis, paper presented at the Missouri Public Service Commission Regulatory Information Systems Conference, May, 1971.

Simulated Plant-Record Survivor Analysis Program (User's Manual), special report published by Engineering Research Institute, Iowa State University, February, 1971.

A Test Procedure for the Simulated Plant-Record Method of Life Analysis, Journal of the American Statistical Association, September, 1970.

Modeling the Behavior of Property Records, paper presented at the Iowa State University Conference on Public Utility Valuation and the Rate Making Process, May, 1970.

A Technique for Simulating the Retirement Experience of Limited-Life Industrial Property, paper presented at the National Conference of Electric and Gas Utility Accountants, May, 1969.

How Dependable are Simulated Plant-Record Estimates?, paper presented at the Iowa State University Conference on Public Utility Valuation and the Rate Making Process, April, 1968.

Testifying Witness

Alabama Public Service Commission, Docket No. 18488, General Telephone Company of the Southeast; testimony concerning engineering economy study techniques.

Alabama Public Service Commission, Docket No. 20208, General Telephone Company of the South; testimony concerning the equal-life group procedure and remaining-life technique.

Alberta Energy and Utilities Board, Application No. 1250392, Aquila Networks Canada; rebuttal testimony supporting proposed depreciation rates.

Alberta Energy and Utilities Board, Case No. RE95081, Edmonton Power Inc.; rebuttal evidence concerning appropriate depreciation rates.

Alberta Energy and Utilities Board, 1999/2000 General Tariff Application, Edmonton Power Inc.; direct and rebuttal evidence concerning appropriate depreciation rates.

Arizona Corporation Commission, Docket No. T-01051B-97-0689, U S West Communications, Inc.; testimony concerning appropriate depreciation rates.

Arizona Corporation Commission, Docket No. G-1032A-02-0598, Citizens Communications Company; testimony supporting proposed depreciation rates.

Arizona Corporation Commission, Docket No. E–01345A–08–0172, Arizona Public Service Company; testimony supporting proposed depreciation rates.

Arizona Corporation Commission, Docket No. E–0135A–03–0437, Arizona Public

Service Company; rebuttal testimony supporting net salvage rates.

Arizona Corporation Commission, Docket No. E–01345A–05–0816, Arizona Public Service Company; testimony supporting proposed depreciation rates.

Arizona Corporation Commission, Docket No. E–01345A–11–0224, Arizona Public Service Company; testimony supporting proposed depreciation rates.

Arizona Corporation Commission, Docket No. G–04204A–06–0463, UNS Gas, Inc.; testimony supporting proposed depreciation rates.

Arizona Corporation Commission, Docket No. E–04204A–06–0783, UNS Electric, Inc.; testimony supporting proposed depreciation rates.

Arizona Corporation Commission, Docket No. E–04204A–09–0206, UNS Electric, Inc, testimony supporting proposed depreciation rates.

Arizona State Board of Equalization, Docket No. 6302-07-2, Arizona Public Service Company; testimony concerning valuation and assessment of contributions in aid of construction.

California Public Utilities Commission, Case Nos. A.92-06-040, 92-06-042, GTE California Incorporated; rebuttal testimony supporting depreciation study techniques.

California Public Utilities Commission. Docket No. GRC A.05–12–002, Pacific Gas and Electric Company; testimony regarding estimation of net salvage rates.

California Public Utilities Commission. Docket No. GRC A.06–12–009/A.06–12–010, San Diego Gas & Electric Company and Southern California Gas Company; testimony regarding estimation of net salvage rates.

Public Utilities Commission of the State of Colorado, Application No. 36883-Reopened. U S WEST Communications; testimony concerning equal-life group procedure.

State of Connecticut Department of Public Utility Control, Docket No. 10–12–02, Yankee Gas Services Company; testimony supporting recommended depreciation rates.

State of Connecticut Department of Public Utility Control, Docket No. 09–12–05, The Connecticut Light and Power Company; testimony supporting recommended depreciation rates.

State of Connecticut Department of Public Utility Control, Docket No. 06–12PH01, Yankee Gas Services Company; testimony supporting recommended depreciation rates.

State of Connecticut Department of Public Utility Control, Docket No. 05–03–17, The Southern Connecticut Gas Company; testimony supporting recommended depreciation rates.

Delaware Public Service Commission, Docket No. 81-8, Diamond State Telephone Company; testimony concerning the amortization of inside wiring.

Delaware Public Service Commission, Docket No. 82-32, Diamond State Telephone Company; testimony concerning the equal-life group procedure and remaining-life technique.

Public Service Commission of the District of Columbia, Formal Case No. 842, District of Columbia Natural Gas; testimony concerning depreciation rates.

Public Service Commission of the District of Columbia, Formal Case No. 1016, Washington Gas Light Company - District of Columbia; testimony supporting proposed depreciation rates.

Public Service Commission of the District of Columbia, Formal Case No. 1054, Washington Gas Light Company - District of Columbia; testimony supporting proposed depreciation rates.

Public Service Commission of the District of Columbia, Formal Case No. 1093, Washington Gas Light Company - District of Columbia; testimony supporting proposed depreciation rates.

Federal Communications Commission, Prescription of Revised Depreciation Rates for AT&T Communications; statement concerning depreciation, regulation and competition.

Federal Communications Commission, Petition for Modification of FCC Depreciation Prescription Practices for AT&T; statement concerning alignment of depreciation expense used for financial reporting and regulatory purposes.

Federal Communications Commission, Docket No. *99*-117, Bell Atlantic; affidavit concerning revenue requirement and capital recovery implications of omitted plant retirements.

Federal Energy Regulatory Commission, Docket No. ER10-2110-000, ITC Midwest; testimony supporting proposed depreciation rates.

Federal Energy Regulatory Commission, Docket No. ER10-185-000, Michigan Electric Transmission Company; testimony supporting proposed depreciation rates.

Federal Energy Regulatory Commission, Docket No. ER09-1530-000, ITC*Transmission*; testimony supporting proposed depreciation rates.

Federal Energy Regulatory Commission, Docket No. ER95-267-000, New England Power Company; testimony supporting proposed depreciation rates.

Federal Energy Regulatory Commission, Docket No. ER11-3638-000, Arizona Public Service Company; testimony supporting proposed depreciation rates

Federal Energy Regulatory Commission, Docket No. RP89-248, Mississippi River Transmission Corporation; rebuttal testimony concerning appropriateness of net salvage component in depreciation rates.

Federal Energy Regulatory Commission, Docket No. ER91-565, New England Power Company; testimony supporting proposed depreciation rates.

Federal Energy Regulatory Commission, Docket No. ER78-291, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Federal Energy Regulatory Commission, Docket Nos. RP80-97 and RP81-54, Tennessee Gas Pipeline Company; testimony concerning offshore plant depreciation rates.

Federal Power Commission, Docket No. E-8252, Northern States Power Company; testimony concerning general financial requirements and measurements of financial performance.

Federal Power Commission, Docket No. E-9148, Northern States Power Company; testimony concerning general financial requirements and measurements of financial performance.

Federal Power Commission, Docket No. ER76-818, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Federal Power Commission, Docket No. RP74-80, *Northern* Natural Gas Company; testimony concerning depreciation expense.

Public Utilities Commission of the State of Hawaii, Docket No. 00-0309, The Gas Company; testimony supporting proposed depreciation rates.

Public Utilities Commission of the State of Hawaii, Docket No. 94-0298, GTE Hawaiian Telephone Company Incorporated; testimony concerning the need for shortened service lives and disclosure of asset impairment losses.

Idaho Public Utilities Commission, Case No. U-1002-59, General Telephone Company of the Northwest, Inc.; testimony concerning the remaining-life technique and the equal-life group procedure.

Illinois Commerce Commission, Case No. 04–0476, Illinois Power Company; testimony supporting proposed depreciation rates.

Illinois Commerce Commission, Docket No. 94-0481, Citizens Utilities Company of Illinois; rebuttal testimony concerning applications of the Simulated Plant-Record method of life analysis.

Iowa State Commerce Commission, Docket No. RPU 82-47, North Central Public Service Company; testimony on depreciation rates.

Iowa State Commerce Commission, Docket No. RPU 84-34, General Telephone Company of the Midwest; testimony concerning the remaining-life technique and the equal-life group procedure.

Iowa State Utilities Board, Docket No. DPU-86-2, Northwestern Bell Telephone Company; testimony concerning capital recovery in competition.

Iowa State Utilities Board, Docket No. RPU-84-7, Northwestern Bell Telephone Company; testimony concerning the deduction of a reserve deficiency from the rate base.

Iowa State Utilities Board, Docket No. DPU-88-6, U S WEST Communications; testimony concerning depreciation subject to refund.

Iowa State Utilities Board, Docket No. RPU-90-9, Central Telephone Company of Iowa; testimony concerning depreciation rates.

Iowa State Utilities Board, Docket No. RPU-93-9, U S WEST Communications; testimony concerning principles of depreciation accounting and abandonment of FASB 71.

Iowa State Utilities Board, Docket No. DPU-96-1, U S WEST Communications; testimony concerning principles of depreciation accounting and abandonment of FASB 71.

Iowa State Utilities Board, Docket No. RPU-05-2, Aquila Networks; testimony supporting recommended depreciation rates.

Kansas Corporation Commission, Docket No. 12-WSEE-112-RTS, Westar Energy, Inc.; testimony supporting proposed depreciation rates.

Kansas Corporation Commission, Docket No. 10–KCPE–415–RTS; Kansas City Power and Light; cross–answering testimony addressing the recording and treatment of third–party reimbursements in estimating net salvage rates.

Kansas Corporation Commission, Docket No. 04–AQLE–1065–RTS, Aquila Networks – WPE (Kansas); testimony supporting proposed depreciation rates.

Kansas Corporation Commission, Docket No. 03–KGSG–602–RTS, Kansas Gas Service, a Division of ONEOK, Inc.; rebuttal testimony supporting net salvage rates.

Kansas Corporation Commission, Docket No. 06–KGSG–1209–RTS, Kansas Gas Service, a Division of ONEOK, Inc.; testimony supporting proposed depreciation

rates.

Kentucky Public Service Commission, Case No. 97-224, Jackson Purchase Electric Cooperative Corporation; rebuttal testimony supporting proposed depreciation rates.

Maryland Public Service Commission, Case No. 8485, Baltimore Gas and Electric Company; testimony supporting proposed depreciation rates.

Maryland Public Service Commission, Case No. 9096, Baltimore Gas and Electric Company; testimony supporting proposed depreciation rates.

Maryland Public Service Commission, Case No. 7689, Washington Gas Light Company; testimony concerning life analysis and net salvage.

Maryland Public Service Commission, Case No. 8960, Washington Gas Light Company; testimony supporting proposed depreciation rates.

Maryland Public Service Commission, Case No. 9103, Washington Gas Light Company; rebuttal testimony supporting proposed depreciation rates.

Commonwealth of Massachusetts Department of Public Utilities, D.P.U. 10–70, Western Massachusetts Electric Company; testimony supporting proposed depreciation rates.

Commonwealth of Massachusetts Department of Telecommunications and Energy, D.T.E. 06–55, Western Massachusetts Electric Company; testimony supporting proposed depreciation rates.

Massachusetts Department of Public Utilities, Case No. DPU 91-52, Massachusetts Electric Company; testimony supporting proposed depreciation rates which include a net salvage component.

Michigan Public Service Commission, Case No. U–16991, The Detroit Edison Company; testimony supporting proposed depreciation rates.

Michigan Public Service Commission, Case No. U–16117, The Detroit Edison Company; testimony supporting proposed depreciation rates.

Michigan Public Service Commission, Case No. U–15699, Michigan Consolidated Gas Company; testimony supporting proposed depreciation rates.

Michigan Public Service Commission, Case No. U–13899, Michigan Consolidated Gas Company; testimony concerning service life estimates.

Michigan Public Service Commission, Case No. U-13393, Aquila Networks – MGU; testimony supporting proposed depreciation rates.

Michigan Public Service Commission, Case No. U-12395, Michigan Gas Utilities; testimony supporting proposed depreciation rates including amortization accounting and redistribution of recorded reserves.

Michigan Public Service Commission, Case No. U-6587, General Telephone Company of Michigan; testimony concerning use of a theoretical depreciation reserve with the remaining-life technique.

Michigan Public Service Commission, Case No. U-7134, General Telephone Company of Michigan; testimony concerning the equal-life group depreciation procedure.

Minnesota Public Service Commission, Docket No. E-611, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Minnesota Public Service Commission, Docket No. E-1086, Northern States Power Company; testimony concerning depreciation rates.

Minnesota Public Service Commission, Docket No. G-1015, Northern States

Power Company; testimony concerning rate of return and general financial requirements.

Public Service Commission of the State of Missouri, Case No. ER-2009-0090, KCP&L Greater Missouri Operations, rebuttal testimony concerning depreciation rates.

Public Service Commission of the State of Missouri, Case No. ER-2001-672, Missouri Public Service, a division of Utilicorp United Inc.; surrebuttal testimony regarding computation of income tax expense.

Public Service Commission of the State of Missouri, Case No. TO-82-3, Southwestern Bell Telephone Company; rebuttal testimony concerning the remaining-life technique and the equal-life group procedure.

Public Service Commission of the State of Missouri, Case No. GO-97-79, Laclede Gas Company; rebuttal testimony concerning adequacy of database for conducting depreciation studies.

Public Service Commission of the State of Missouri, Case No. GR-99-315, Laclede Gas Company; rebuttal testimony concerning treatment of net salvage in development of depreciation rates.

Public Service Commission of the State of Missouri, Case No. HR–2004–0024, Aquila Inc. d/b/a/ Aquila Networks–L & P; testimony supporting depreciation rates.

Public Service Commission of the State of Missouri, Case No. ER–2004–0034, Aquila Inc. d/b/a/ Aquila Networks–L & P and Aquila Networks–MPS; testimony supporting depreciation rates.

Public Service Commission of the State of Missouri, Case No. GR–2004–0072, Aquila Inc. d/b/a/ Aquila Networks–L & P and Aquila Networks–MPS; testimony supporting depreciation rates.

Public Service Commission of the State of Montana, Docket No. 88.2.5, Mountain State Telephone and Telegraph Company; rebuttal testimony concerning the equal-life group procedure and amortization of reserve imbalances.

Montana Public Service Commission, Docket No. D95.9.128, The Montana Power Company; testimony supporting proposed depreciation rates.

Nebraska Public Service Commission, Docket No. NG–0041, Aquila Networks (PNG Nebraska); testimony supporting proposed depreciation rates.

Public Service Commission of Nevada, Docket No. 92-7002, Central Telephone Company-Nevada; testimony supporting proposed depreciation rates.

Public Service Commission of Nevada, Docket No. 91-5054, Central Telephone Company-Nevada; testimony supporting proposed depreciation rates.

New Hampshire Public Utilities Commission, Docket No. DR95-169, Granite State Electric Company; testimony supporting proposed net salvage rates.

New Jersey Board of Public Utilities, Docket No. GR07110889, New Jersey Natural Gas Company; testimony supporting proposed depreciation rates.

New Jersey Board of Public Utilities, Docket No. GR 87060552, New Jersey Natural Gas Company; testimony concerning depreciation rates.

New Jersey Board of Regulatory Commissioners, Docket No. GR93040114J, New Jersey Natural Gas Company; testimony concerning depreciation rates.

New York Public Service Commission, Case No. 10–E–0050. Niagara Mohawk Power Corporation d/b/a National Grid; testimony supporting recommended depreciation rates.

North Carolina Utilities Commission, Docket No. E-7, SUB 487, Duke Power Company; rebuttal testimony concerning proposed depreciation rates.

North Carolina Utilities Commission, Docket No. P-19, SUB 207, General Telephone Company of the South; rebuttal testimony concerning the equal-life group depreciation procedure.

North Dakota Public Service Commission, Case No. 8860, Northern States Power Company; testimony concerning general financial requirements.

North Dakota Public Service Commission, Case No. 9634, Northern States Power Company; testimony concerning rate of return and general financial requirements.

North Dakota Public Service Commission, Case No. 9666, Northern States Power Company; testimony concerning rate of return and general financial requirements.

North Dakota Public Service Commission, Case No. 9741, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Oklahoma Corporation Commission, Cause No. PUD 200900110, Oklahoma Natural Gas Company; testimony supporting revised depreciation rates.

Ontario Energy Board, E.B.R.O. 385, Tecumseh Gas Storage Limited; testimony concerning depreciation rates.

Ontario Energy Board, E.B.R.O. 388, Union Gas Limited; testimony concerning depreciation rates.

Ontario Energy Board, E.B.R.O. 456, Union Gas Limited; testimony concerning depreciation rates.

Ontario Energy Board, E.B.R.O. 476-03, Union Gas Limited; testimony concerning depreciation rates.

Public Utilities Commission of Ohio, Case No. 81-383-TP-AIR, General Telephone Company of Ohio; testimony in support of the remaining-life technique.

Public Utilities Commission of Ohio, Case No. 82-886-TP-AIR, General Telephone Company of Ohio; testimony concerning the remaining-life technique and the equal-life group procedure.

Public Utilities Commission of Ohio, Case No. 84-1026-TP-AIR, General Telephone Company of Ohio; testimony in support of the equal-life group procedure and the remaining-life technique.

Public Utilities Commission of Ohio, Case No. 81-1433, The Ohio Bell Telephone Company; testimony concerning the remaining-life technique and the equal-life group procedure.

Public Utilities Commission of Ohio, Case No. 83-300-TP-AIR, The Ohio Bell Telephone Company; testimony concerning straight-line age-life depreciation.

Public Utilities Commission of Ohio, Case No. 84-1435-TP-AIR, The Ohio Bell Telephone Company; testimony in support of test period depreciation expense.

Public Utilities Commission of Oregon, Docket No. UM 204, GTE of the Northwest; testimony concerning the theory and practice of depreciation accounting under public utility regulation.

Public Utilities Commission of Oregon, Docket No. UM 840, GTE Northwest Incorporated; rebuttal testimony concerning principles of capital recovery.

Pennsylvania Public Utility Commission, Docket No. R-80061235, The Bell Telephone Company of Pennsylvania; testimony concerning the proper depreciation reserve to be used with an original cost rate base.

Pennsylvania Public Utility Commission, Docket No. R-811512, General

Telephone Company of Pennsylvania; testimony concerning the proper depreciation reserve to be used with an original cost rate base.

Pennsylvania Public Utility Commission, Docket No. R-811819, The Bell Telephone Company of Pennsylvania; testimony concerning the proper depreciation reserve to be used with an original cost rate base.

Pennsylvania Public Utility Commission, Docket No. R-822109, General Telephone Company of Pennsylvania; testimony in support of the remaining-life technique.

Pennsylvania Public Utility Commission, Docket No. R-850229, General Telephone Company of Pennsylvania; testimony in support of the remaining-life technique and the proper depreciation reserve to be used with an original cost rate base.

Pennsylvania Public Utility Commission, Docket No. C-860923, The Bell Telephone Company of Pennsylvania; testimony concerning capital recovery under competition.

Rhode Island Public Utilities Commission, Docket No. 2290, The Narragansett Electric Company; testimony supporting proposed net salvage rates and depreciation rates.

South Carolina Public Service Commission, Docket No. 91-216-E, Duke Power Company; testimony supporting proposed depreciation rates.

Public Utilities Commission of the State of South Dakota, Case No. F-3062, Northern States Power Company; testimony concerning general financial requirements and measurements of financial performance.

Public Utilities Commission of the State of South Dakota, Case No. F-3188, Northern States Power Company; testimony concerning rate of return and general financial requirements.

Securities and Exchange Commission, File No. 3-5749, Northern States Power Company; testimony concerning the financial and ratemaking implications of an affiliation with Lake Superior District Power Company.

Tennessee Public Service Commission, Docket No. 89-11041, United Inter-Mountain Telephone Company; testimony concerning depreciation principles and capital recovery under competition.

The Railroad Commission of Texas, GUD Docket No. 9988, Texas Gas Service, testimony supporting recommended depreciation rates.

State of Vermont Public Service Board, Docket No. 6596, Citizens Communications Company – Vermont Electric Division; testimony supporting recommended depreciation rates.

State of Vermont Public Service Board, Docket No. 6946 and 6988, Central Vermont Public Service Corporation; testimony supporting net salvage rates.

Commonwealth of Virginia State Corporation Commission, Case No. PUE-2002-00364, Washington Gas Light Company; testimony supporting proposed depreciation rates.

Public Service Commission of Wisconsin, Docket No. 2180-DT-3, General Telephone Company of Wisconsin; testimony concerning the equal-life group depreciation procedure.

Other Consulting Activities

Moran Towing Corporation. In Re: Barge TEXAS-97 CIV. 2272 (ADS) and Tug HEIDE MORAN – 97 CIV. 1947 (ADS), United States District Court, Southern District of New York.

John Reigle, et al. v. Baltimore Gas & Electric Co., et al., Case No. C-2001-73230-CN, Circuit Court for Anne Arundel County, Maryland.

SR International Business Insurance Co. vs. WTC Properties et. al., 01,CV–9291 (JSM) and other related cases.

BellSouth Telecommunications, Inc. v. Citizens Utilities Company d/b/a/ Louisiana Gas Service Company, CA No. 95-2207, United States District Court, Eastern District of Louisiana.

Affidavit on behalf of Continental Cablevision, Inc. and its operating cable television systems regarding basic broadcast tier and equipment and installation cost-of-service rate justification.

Office of Chief Counsel, Internal Revenue Service. In Re: Kansas City Southern Railway Co., et. al. Docket Nos. 971-72, 974-72, and 4788-73.

Office of Chief Counsel, Internal Revenue Service. In Re: Northern Pacific Railway Co., Docket No. 4489-69.

United States Department of Justice. In Re: Burlington Northern Inc. v. United States, Ct. Cl. No. 30-72.

Minnesota District Court. In Re: Northern States Power Company v. Ronald G. Blank, et. al. File No. 394126; testimony concerning depreciation and engineering economics.

Faculty

Depreciation Programs for public utility commissions, companies, and consultants, sponsored by Depreciation Programs, Inc., in cooperation with Western Michigan University. (1980 - 1999)

United States Telephone Association (USTA), Depreciation Training Seminar, November 1999.

Depreciation Advocacy Workshop, a three-day team-training workshop on preparation, presentation, and defense of contested depreciation issues, sponsored by Gilbert Associates, Inc., October, 1979.

Corporate Economics Course, Employee Education Program, Northern States Power Company. (1968 - 1979)

Perspectives of Top Financial Executives, Course No. 5-300, University of Minnesota, September, 1978.

Depreciation Programs for public utility commissions, companies, and consultants, jointly sponsored by Western Michigan University and Michigan Technological University, 1973.

Professional Associations

Advisory Committee to the Institute for Study of Regulation, sponsored by the American University and The University of Missouri-Columbia.

American Economic Association.

American Gas Association - Edison Electric Institute Depreciation Accounting Committee.

Board of Directors, Iowa State Regulatory Conference.

Edison Electric Institute, Energy Analysis Division, Economic Advisory Committee, 1976-1980.

Financial Management Association.

The Institute of Electrical and Electronics Engineers, Inc., Power Engineering Society, Engineering and Planning Economics Working Group.

Midwest Finance Association.

Society of Depreciation Professionals (Founding Member and Chairman, Policy Committee.

Moderator

Depreciation Open Forum, Iowa State University Regulatory Conference, May 1991.

The Quantification of Risk and Uncertainty in Engineering Economic Studies, Iowa State University Regulatory Conference, May 1989.

Plant Replacement Decisions with Added Revenue from New Service Offerings, Iowa State University Regulatory Conference, May 1988.

Economic Depreciation, Iowa State University Regulatory Conference, May 1987.

Opposing Views on the Use of Customer Discount Rates in Revenue Requirement Comparisons, Iowa State University Regulatory Conference, May 1986.

Cost of Capital Consequences of Depreciation Policy, Iowa State University Regulatory Conference, May 1985.

Concepts of Economic Depreciation, Iowa State University Regulatory Conference, May 1984.

Ratemaking Treatment of Large Capacity Additions, Iowa State University Regulatory Conference, May 1983.

The Economics of Excess Capacity, Iowa State University Regulatory Conference, May 1982.

New Developments in Engineering Economics, Iowa State University Regulatory Conference, May 1980.

Training in Engineering Economy, Iowa State University Regulatory Conference, May 1979.

The Real Time Problem of Capital Recovery, Missouri Public Service Commission, Regulatory Information Systems Conference, September 1974.

Speaker

Group Depreciation Practices of Regulated Utilities (IAS 16 Property, Plant and Equipment), Hydro One Networks, Inc., November 2008.

Economics, Finance and Engineering Valuation. Florida Gulf Coast University, April 2007.

Depreciation Studies for Regulated Utilities, Hydro One Networks, Inc., April 2006.

Depreciation Studies for Cooperatives and Small Utilities. TELERGEE CFO and Controllers Conference, November, 2004.

Finding the "D" in RCNLD (Valuation Applications of Depreciation), Society of Depreciation Professionals Annual Meeting, September 2001.

Capital Asset and Depreciation Accounting, City of Edmonton Value Engineering Workshop, April 2001.

A Valuation View of Economic Depreciation, Society of Depreciation Professionals Annual Meeting, October 1999.

Capital Recovery in a Changing Regulatory Environment, Pennsylvania Electric Association Financial-Accounting Conference, May 1999.

Depreciation Theory and Practice, Southern Natural Gas Company Accounting and Regulatory Seminar, March 1999.

Depreciation Theory Applied to Special Franchise Property, New York Office of

Real Property Services, March 1999.

Capital Recovery in a Changing Regulatory Environment, PowerPlan Consultants Annual Client Forum, November 1998.

Economic Depreciation, AGA Accounting Services Committee and EEI Property Accounting and Valuation Committee, May 1998.

Discontinuation of Application of FASB Statement No. 71, Southern Natural Gas Company Accounting Seminar, April 1998.

Forecasting in Depreciation, Society of Depreciation Professionals Annual Meeting, September 1997.

Economic Depreciation In Response to Competitive Market Pricing, 1997 TELUS Depreciation Conference, June 1997.

Valuation of Special Franchise Property, City of New York, Department of Finance Valuation Seminar, March 1997.

Depreciation Implications of FAS Exposure Draft 158-B, 1996 TLG Decommissioning Conference, October 1996.

Why Economic Depreciation?, American Gas Association Depreciation Accounting Committee Meeting, August 1995.

The Theory of Economic Depreciation, Society of Depreciation Professionals Annual Meeting, November 1994.

Vintage Depreciation Issues, G & T Accounting and Finance Association Conference, June 1994.

Pricing and Depreciation Strategies for Segmented Markets (Regulated and Competitive), Iowa State Regulatory Conference, May 1990.

Principles and Practices of Depreciation Accounting, Canadian Electrical Association and Nova Scotia Power Electric Utility Regulatory Seminar, December 1989.

Principles and Practices of Depreciation Accounting, Duke Power Accounting Seminar, September 1989.

The Theory and Practice of Depreciation Accounting Under Public Utility Regulation, GTE Capital Recovery Managers Conference, February 1989.

Valuation Methods for Regulated Utilities, GTE Capital Recovery Managers Conference, January 1988.

Depreciation Principles and Practices for REA Borrowers, NRECA 1985 National Accounting and Finance Conference, September 1985.

Depreciation Principles and Practices for REA Borrowers, Kentucky Association of Electric Cooperatives, Inc., Summer Accountants Association Meeting, June 1985.

Considerations in Conducting a Depreciation Study, NRECA 1984 National Accounting and Finance Conference, October 1984.

Software for Conducting Depreciation Studies on a Personal Computer, United States Independent Telephone Association, September 1984.

Depreciation—An Assessment of Current Practices, NRECA 1983 National Accounting and Finance Conference, September 1983

Depreciation—An Assessment of Current Practices, REA National Field Conference, September 1983.

An Overview of Depreciation Systems, Iowa State Commerce Commission,

October 1982.

Depreciation Practices for Gas Utilities, Regulatory Committee of the Canadian Gas Association, September 1981.

Practice, Theory, and Needed Research on Capital Investment Decisions in the Energy Supply Industry, workshop, sponsored by Michigan State University and the Electric Power Research Institute, November 1977.

Depreciation Concepts Under Regulation, Public Utilities Conference, sponsored by The University of Texas at Dallas, July 1976.

Electric Utility Economics, Mid-Continent Area Power Pool, May 1974.

Honors and Awards

The Society of Sigma Xi.

Professional Achievement Citation in Engineering, Iowa State University, 1993.

Exhibit REW–1

2012 Depreciation Rate Study

KANSAS GAS SERVICE

A DIVISION OF ONEOK

foster associates

CONTENTS

EXECUTIVE SUMMARY SECTION I

INTRODUCTION 1

SCOPE OF REVIEW 2

DEPRECIATION SYSTEM 2

RECOMMENDED DEPRECIATION RATES 3

COMPANY PROFILE SECTION II

GENERAL 4

GAS UTILITY OPERATIONS 4

CUSTOMER BASE 4

STUDY PROCEDURE SECTION III

INTRODUCTION 5

SCOPE 5

DATA COLLECTION 5

LIFE ANALYSIS AND ESTIMATION 6

NET SALVAGE ANALYSIS 9

DEPRECIATION RESERVE ANALYSIS 9

DEVELOPMENT OF ACCRUAL RATES 11

STATEMENTS SECTION IV

INTRODUCTION 13

STATEMENT A – REMAINING–LIFE ACCRUAL RATES 14

STATEMENT B – REMAINING–LIFE ACCRUALS 15

STATEMENT C – DEPRECIATION RESERVE SUMMARY 17

STATEMENT D – AVERAGE NET SALVAGE 19

STATEMENT E – PRESENT AND PROPOSED PARAMETERS 20

ANALYSIS SECTION V

INTRODUCTION 22

SCHEDULE A – GENERATION ARRANGEMENT 22

SCHEDULE B – AGE DISTRIBUTION 23

SCHEDULE C – PLANT HISTORY 24

SCHEDULE D – ACTUARIAL LIFE ANALYSIS 24

SCHEDULE E – GRAPHICS ANALYSIS 25

SCHEDULE F – NET SALVAGE HISTORY 25

TRANSMISSION

ACCOUNT 367.00 – MAINS

SCHEDULE A – GENERATION ARRANGEMENT 26

SCHEDULE B – AGE DISTRIBUTION 29

SCHEDULE C – PLANT HISTORY 32

SCHEDULE D – ACTUARIAL LIFE ANALYSIS 36

SCHEDULE E – GRAPHICS ANALYSIS 40

SCHEDULE F – NET SALVAGE HISTORY 43

EXECUTIVE SUMMARY

INTRODUCTION

This report presents findings and recommendations developed in a 2012 Depreciation Rate Study conducted by Foster Associates, Inc. (Foster Associates) for gas plant owned and operated by Kansas Gas Service (KGS), a division of Oneok, Inc. Work on the study commenced in October 2011 and progressed through mid–April 2012, at which time the project was completed.

Foster Associates is a public utility economic consulting firm headquartered in Rockville, Maryland offering economic research and consulting services on issues and problems arising from governmental regulation of business. Areas of specialization supported by our Fort Myers office include property service–life forecasting, depreciation estimation, and valuation of industrial property.

Foster Associates has undertaken numerous depreciation engagements for both public and privately owned business entities, including detailed statistical life studies, analyses of required net salvage rates, and the selection of depreciation systems that will most nearly achieve the goals of depreciation accounting under the constraints of either government regulation or competitive market pricing. Foster Associates is widely recognized for industry leadership in the development of depreciation systems, life analysis techniques and computer software for conducting depreciation and valuation studies.

Depreciation rates currently used by KGS were adopted pursuant to a Stipulated Settlement Agreement in Docket No. 06–KGSG–1209–RTS (Order Approving Settlement Agreement dated November 16, 2006). The parties to the Agreement consented to adopt depreciation rates proposed by Kansas Gas Service in a 2006 depreciation study, based on December 31, 2005 plant and reserve balances.

The principal findings and recommendations of the 2012 study are summarized in the Statements section of this report. Statement A provides a comparative summary of current and proposed annual depreciation rates for each rate category. Statement B provides a comparison of current and proposed annual depreciation accruals. Statement C provides a comparison of computed, recorded and rebalanced depreciation reserves for each rate category. Statement D provides a summary of the components used to obtain a weighted–average net salvage rate for each plant account. Statement E provides a comparative summary of present and proposed parameters and statistics including projection life, projection curve, average service life, average remaining life, and average and future net salvage rates.

SCOPE OF REVIEW

The principal activities undertaken in conducting the 2012 study included:

- Collection of plant and reserve data;
- Discussions with KGS plant accounting and operating personnel;
- Estimation of projection lives and retirement dispersion patterns;
- Analysis of gross salvage and cost of removal;
- Analysis and redistribution of recorded depreciation reserves; and
- Development of recommended accrual rates for each rate category.

DEPRECIATION SYSTEM

A depreciation rate is formed by combining the elements of a depreciation system. A depreciation system is composed of a method, a procedure and a technique. A depreciation method (*e.g.*, straight–line) describes the component of the system that determines the acceleration or deceleration of depreciation accruals in relation to either time or use. A depreciation procedure (*e.g.*, vintage group) identifies the level of grouping or sub–grouping of assets within a plant category. The level of grouping specifies the weighting used to obtain composite life statistics for an account. A depreciation technique (*e.g.*, remaining–life) describes the life statistic used in the system.

With the exception of selected general support asset categories for which amortization accounting has been approved, KGS is currently using a depreciation system composed of the straight–line method, vintage group procedure, remaining–life technique. Amortization accounting is used for general plant categories in which the unit cost of plant items is small in relation to the number of units classified in the account. Plant is retired (*i.e.,* credited to plant and charged to the reserve) as each vintage achieves an age equal to the amortization period. Any realized net salvage for amortizable accounts is netted against current–year vintage additions.

The matching and expense recognition principles of accounting provide that the cost of an asset (or group of assets) should be allocated to operations over an estimate of the economic life of the asset in proportion to the consumption of service potential. It is the opinion of Foster Associates that the objectives of depreciation accounting are being achieved using the currently approved vintage–group procedure, which distinguishes service lives among vintages, and the remaining–life technique, which provides cost apportionment over the estimated weighted–average remaining life of a rate category. It is also the opinion of Foster Associates that amortization accounting remains appropriate for the approved amortization categories.

In addition to revised depreciation rates, amortization accounting is recommended for distribution Account 376.40 (Mains – Cathodic Protection). Anodes classified in this account are replaced at intervals of approximately 12 years with difficulty in field reporting of retirements. Adoption of amortization accounting for this category will relieve KGS of the burden to maintain detailed plant records for numerous plant items in which the unit cost is small in relation to the cost of tracking the disposition of the assets. A 12–year amortization period is recommended for this account.

Amortization accounting is also recommended for distribution Account 381.50 (AMR Communication Devices). Property units classified in this account are communication modules (ERTs) attached to a gas meter that encode consumption and tamper information from the meter to a radio–equipped data sending device. ERTs are routinely replaced when batteries fail; units are destroyed by vandalism or when aging units are replaced by newer technology. A 15–year amortization period is recommended for this account.

RECOMMENDED DEPRECIATION RATES

Table 1 below provides a summary of the changes in annual rates and accruals resulting from an application of the service life and net salvage parameters recommended in the current study.

Function	Accrual Rate			2012 Annualized Accrual		
	Current	Proposed	Difference	Current	Proposed	Difference
A	B	C	D=C-B	E	F	G=F-E
Transmission	2.20%	2.52%	0.32%	$5,100,882	$5,831,538	$730,656
Distribution	2.71%	3.03%	0.32%	31,041,720	34,763,841	3,722,121
General Plant	5.50%	4.83%	-0.67%	4,899,645	4,298,650	(600,995)
Total	2.79%	3.06%	0.27%	$41,042,247	$44,894,029	$3,851,782

Table 1. Current and Proposed Rates and Accruals

The composite accrual rate recommended for gas operations is 3.06 percent. The current equivalent rate is 2.79 percent. The recommended change in the composite rate is an increase of 0.27 percentage points.

A continued application of current rates would provide annualized depreciation expense of $41,042,247 compared with an annualized expense of $44,894,029 using the recommended accrual rates. The resulting 2012 expense increase is $3,851,782. The computed change in annualized accruals includes a reduction of $805,728 attributable to an amortization of a $6,848,561 reserve imbalance. The remaining portion of the change is attributable to adjustments in service life and net salvage statistics recommended in the 2012 study.

COMPANY PROFILE

GENERAL

Kansas Gas Service, a division of ONEOK, Inc., is the largest natural gas distribution company in Kansas. ONEOK, Inc. is a diversified energy company and among the largest natural gas distributors in the United States, serving more than 2 million customers in Oklahoma, Kansas and Texas. ONEOK is the general partner of ONEOK Partners, L.P. (NYSE: OKS), one of the largest publicly traded master limited partnerships, which is a leader in the gathering, processing, storage and transportation of natural gas in the U.S. and owns one of the nation's premier natural gas liquids (NGL) systems, connecting NGL supply in the Mid–Continent and Rocky Mountain regions with key market centers. Energy services operations focus primarily on marketing natural gas and related services throughout the U.S. ONEOK is a Fortune 500 company.

GAS UTILITY OPERATIONS

As of December 31, 2011, Kansas Gas Service owned and operated approximately 11,200 miles of distribution mains and 1,500 miles of transmission mains. The distribution system consists of 5,711 miles of cathodically protected pipe, 329 miles of unprotected pipe, 109 miles of cast–iron pipe and 5,138 miles of plastic mains. The majority of the transmission system is cathodically protected.

At the end of 2011, Kansas Gas Service maintained more than 627,000 service lines consisting of 87,674 unprotected lines, 26,958 cathodically protected lines and 512,701 plastic lines.

CUSTOMER BASE

Kansas Gas Service provides natural gas service to more than 626,000 residential, commercial and industrial customers covering nearly two–thirds of the state. The combined population throughout the 338 communities served represents approximately 1,909,000 individuals.

Kansas Gas Service offers a variety of services and customer–choice programs for its customers. Kansas Gas Service transports natural gas for approximately 5,400 commercial and industrial customers who meet the minimum requirements to purchase natural gas from a third–party marketer.

STUDY PROCEDURE

INTRODUCTION

The purpose of a depreciation study is to analyze the mortality characteristics, net salvage rates and adequacy of the depreciation accrual and recorded depreciation reserve for each rate category. This study provides the foundation and documentation for recommended changes in depreciation rates used by Kansas Gas Service. The proposed rates are subject to approval by the Kansas Corporation Commission.

SCOPE

The steps involved in conducting a depreciation study can be grouped into five major tasks:

- Data Collection;
- Life Analysis and Estimation;
- Net Salvage Analysis;
- Depreciation Reserve Analysis; and
- Development of Accrual Rates.

The scope of the 2012 study included a consideration of each of these tasks as described below.

DATA COLLECTION

The minimum database required to conduct a statistical life study consists of a history of vintage year additions and unaged activity year retirements, transfers and adjustments. These data must be appropriately adjusted for transfers, sales and other plant activity that would otherwise bias the measured service life of normal retirements. The age distribution of surviving plant for unaged data can be estimated by distributing the plant in service at the beginning of the study year to prior vintages in proportion to the theoretical amount surviving from a projection or survivor curve identified in the life study. The statistical methods of life analysis used to examine unaged plant data are known as *semi–actuarial techniques*.

A far more extensive database is required to apply statistical methods of life analysis known as *actuarial techniques*. Plant data used in an actuarial life study most often include age distributions of surviving plant at the beginning of a study year and the vintage year, activity year, and dollar amounts associated with normal retirements, reimbursed retirements, sales, abnormal retirements, transfers, corrections, and extraordinary adjustments over a series of prior activity years. An actuarial database may include age distributions of surviving plant at the beginning of the earliest activity year, rather than at the beginning of the study year. Plant additions, however, must be included in a database containing an opening age distribution to derive aged survivors at the beginning of the study year. All activity year transactions with vintage year identification are coded and stored in a data file. The data are processed by a computer program and transaction summary

reports are created in a format reconcilable to the Company's official plant records. The availability of such detailed information is dependent upon an accounting system that supports aged property records. The Continuing Property Record (CPR) system currently used by KGS provides aged transactions over the period 2001–2011 for all plant accounts.

The database used in conducting the current study was obtained by appending plant and net salvage transactions for activity years 2006–2011 and age distributions of surviving plant at December 31, 2011 to the database used in conducting the 2006 study.[1] The accuracy and completeness of the assembled database was verified for activity years 2006 through 2011 by comparing the beginning plant balance, additions, retirements, transfers and adjustments, and the ending plant balance derived for each activity year to the official plant records of the Company. Activity years prior to 2006 were verified in the 2006 study. Age distributions of surviving plant at December 31, 2011 were reconciled to the CPR.

Reserve transactions recorded over the period 1978–2011 were used in the 2012 study to derive appropriate net salvage rates. Realized net salvage was blended with future net salvage estimates to derive average net salvage rates used in the computation of theoretical reserves.

LIFE ANALYSIS AND ESTIMATION

Life analysis and life estimation are terms used to describe a two–step procedure for estimating the mortality characteristics of a plant category. The first step (*i.e.*, life analysis) is largely mechanical and primarily concerned with history. Statistical techniques are used in this step to obtain a mathematical description of the forces of retirement acting upon a plant category and an estimate of the *projection life* of the account. The mathematical expressions used to describe these life characteristics are known as *survival functions* or *survivor curves*.

The second step (*i.e.*, life estimation) is concerned with predicting the expected remaining life of property units still exposed to forces of retirement. It is a process of blending the results of a life analysis with informed judgment (includ-

[1] The database used in the 2006 study was assembled by KGS from two sources and provided to Foster Associates in Microsoft Excel spreadsheets. The first source was the database used in conducting a 2001 depreciation study. Additions, aged retirements, salvage and cost of removal were provided for activity years 1970 through 2000.

The second source was from a PowerPlant asset management system implemented by KGS in 2002. PowerPlant was initially populated with age distributions of surviving plant at July 31, 2002. Plant and reserve activity for 2001 and the first six months of 2002 were subsequently uploaded to PowerPlant. Post–2000 plant, salvage and cost of removal transactions and age distributions of surviving plant at December 31, 2005 were available from the PowerPlant system.

The database obtained from Kansas Gas Service was coded by Foster Associates. A reverse flow process was used to derive adjusting additions for activity years 1970–2005, vintaged exposures and opening age distributions at December 31, 1969.

ing expectations about the future) to obtain an appropriate projection life and curve descriptive of the parent population from which a plant account is viewed as a random sample. The amount of weight given to a life analysis will depend upon the extent to which past retirement experience is considered descriptive of the future.

The analytical methods used in a life analysis are broadly classified as actuarial and semi–actuarial techniques. Actuarial techniques can be applied to plant accounting records that reveal the age of a plant asset at the time of its retirement from service. Stated differently, each property unit must be identifiable by date of installation and age at retirement. Semi–actuarial techniques can be used to derive service life and dispersion estimates when age identification of retirements is not maintained or readily available. Age identification of retirements was available for all plant accounts included in the 2012 KGS depreciation study.

An actuarial life analysis program designed and developed by Foster Associates was used in the 2012 study. The first step in an actuarial analysis involves a systematic treatment of the available data for the purpose of constructing an observed life table. A complete life table contains the life history of a group of property units installed during the same accounting period and various probability relationships derived from the data. A life table is arranged by age–intervals (usually defined as one year) and shows the number of units (or dollars) entering and leaving each age–interval and probability relationships associated with this activity. A life table minimally contains the age of each survivor and the age of each retirement from a group of property units installed in a given accounting year.

A life table can be constructed in any one of at least five methods. The annual–rate or retirement–rate method was used in this study. The mechanics of the annual–rate method require the calculation of a series of ratios obtained by dividing the number of units (or dollars) surviving at the beginning of an age interval into the number of units (or dollars) retired during the same interval. This so–called "retirement ratio" (or set of ratios) is an estimator of the hazard rate or conditional probability of retirement during an age interval. The cumulative proportion surviving is obtained by multiplying the retirement ratio for each age interval by the proportion of the original group surviving at the beginning of that age interval and subtracting this product from the proportion surviving at the beginning of the same interval. The annual–rate method is applied to multiple groups or vintages by combining the retirements and/or survivors of like ages for each vintage included in the analysis.

The second step in an actuarial analysis involves graduating or smoothing the observed life table and fitting the smoothed series to a family of survival functions. The functions used in the 2012 study are the Iowa–type curves mathematically described by the Pearson frequency curve family. Observed life tables were smoothed by a weighted least–squares procedure in which first, second and third

degree orthogonal polynomials were fitted to the observed retirement ratios. The resulting functions were expressed as survivorship functions and numerically integrated to obtain an estimate of the projection life of a plant category. The smoothed survivorship function was then fitted by a weighted least–squares procedure to the Iowa–curve family to obtain a mathematical description or classification of the dispersion characteristics of the data. Service life indications derived from the statistical analyses were blended with informed judgment and expectations about the future to obtain an appropriate projection life and curve for each plant category

The set of computer programs used in the Kansas Gas Service study provides multiple rolling–band and shrinking–band analyses of an account. Observation bands are defined for a "retirement era" that restricts the analysis to retirement activity of all vintages represented by survivors at the beginning of a selected era. In a rolling–band analysis, a year of retirement experience is added to each successive retirement band and the earliest year from the preceding band is dropped. A shrinking–band analysis begins with the total retirement experience available and the earliest year from the preceding band is dropped for each successive band. A progressive–band analysis adds a year of retirement activity to a previous band without dropping earlier years from the analysis. Rolling, shrinking and progressive band analyses are used to detect the emergence of trends in the behavior of the dispersion and projection life.

Options available in the actuarial life analysis program include the width and location of both placement and observation bands; the interval of years included in a selected band analysis; the estimator of the hazard rate (actuarial, conditional proportion retired, or maximum likelihood); the elements to include on the diagonal of a weight matrix (exposures, inverse of age, inverse of variance, or unweighted); and the age at which an observed life table is truncated. The program also provides tabular and graphics output and algorithms for calculating depreciation rates and accruals.

While actuarial and semi–actuarial statistical methods are well–suited to an analysis of plant categories containing a large number of homogeneous units (*e.g.*, mains and services), these methods are not well–suited to plant categories composed of major items of plant that will most likely be retired as a single unit. Property units retired from an integrated system prior to the retirement of the entire facility are more properly viewed as interim retirements that will be replaced in order to maintain the integrity of the system. Plant facilities may also be added to the existing system (*i.e.*, interim additions) to expand or enhance its productive capacity without extending the service life of the present system. A proper depreciation rate can be developed for an integrated system using a life–span method. All plant accounts were treated as full mortality categories in the KGS study.

NET SALVAGE ANALYSIS

Depreciation rates designed to achieve the goals and objectives of depreciation accounting will include a parameter for future net salvage and a variable for average net salvage reflecting both realized and future net salvage rates.

Estimates of net salvage rates applicable to future retirements are most often derived from an analysis of gross salvage and cost of removal realized in the past. An analysis of past experience (including an examination of trends over time) provides a basis for estimating future salvage and cost of removal. However, consideration should also be given to events that may cause deviations from net salvage realized in the past. Among the factors that should be considered are: the age of plant retirements; the portion of retirements likely to be reused; changes in the method of removing plant; the type of plant to be retired in the future; inflation expectations; the shape of the projection life curve; and economic conditions that may warrant greater or lesser weight to be given to net salvage rates observed in the past.

Special consideration should also be given to the treatment of insurance proceeds and other forms of third–party reimbursements credited to the depreciation reserve. A properly conducted net salvage study will exclude such activity from the estimate of future parameters and include the activity in the computation of realized and average net salvage rates.

A five–year moving average analysis of the ratio of realized salvage and removal expense to the associated retirements was used in the 2012 study for transmission, distribution and general plant categories to: a) estimate a realized net salvage rate; b) detect the emergence of historical trends; and c) establish a basis for estimating a future net salvage rate. Cost of removal and salvage opinions obtained from Company personnel were blended with judgment and historical net salvage indications in developing estimates of the future.

Average net salvage rates for an account or plant function are derived from a direct dollar weighting of a) historical retirements with historical (or realized) net salvage rates and b) future retirements *(i.e.*, surviving plant) with the estimated future net salvage rate. Average net salvage rates will change, therefore, as additional years of retirement and net salvage activity become available and as the weighting of future net salvage estimates changes from the installation of subsequent plant additions. The computation of estimated average net salvage rates is shown in Statement D.

DEPRECIATION RESERVE ANALYSIS

The purpose of a depreciation reserve analysis is to compare the current level of recorded reserves with the level required to achieve the goals or objectives of depreciation accounting if the amount and timing of future retirements and net salvage are realized as predicted. The difference between a required (or theoretical)

depreciation reserve and a recorded reserve provides a measurement of the expected excess or shortfall that will remain in the depreciation reserve if corrective action is not taken to eliminate the reserve imbalance.

Unlike a recorded reserve, which represents the net amount of depreciation expense charged to previous periods of operations, a theoretical reserve is a measurement of the implied reserve requirement at the beginning of a study year if the timing of future retirements and net salvage is in exact conformance with a survivor curve chosen to predict the probable life of property still exposed to the forces of retirement. Stated differently, a theoretical depreciation reserve is the difference between the recorded cost of plant presently in service and the sum of depreciation expense and net salvage that will be charged in the future if retirements are distributed over time according to a specified retirement frequency distribution.

The survivor curve used in the calculation of a theoretical depreciation reserve is intended to describe forces of retirement that will be operative in the future. However, retirements caused by forces such as accidents, physical deterioration and changing technology seldom, if ever, remain stable over time. It is unlikely, therefore, that a probability or retirement frequency distribution can be identified that will accurately describe the age of plant retirements over the complete life cycle of a vintage. It is for this reason that depreciation rates should be reviewed periodically and adjusted for observed or expected changes in the parameters chosen to describe the underlying forces of mortality.

Although reserve records are commonly maintained by various account classifications, the sum of all reserves is the most important indicator of the status of a company's depreciation practices. If statistical life studies have not been conducted or retirement dispersion has been ignored in setting depreciation rates, it is likely that some accounts will be over–depreciated and other accounts will be under–depreciated relative to a calculated theoretical reserve. Differences between theoretical and recorded reserves also will arise as a normal occurrence when service lives, dispersion patterns and net salvage estimates are adjusted in the course of depreciation reviews. It is appropriate, therefore, and consistent with group depreciation theory to periodically redistribute or rebalance recorded reserves among primary accounts based upon the most recent estimates of retirement dispersion and net salvage rates.

A redistribution of recorded reserves is again considered appropriate for KGS. Offsetting reserve imbalances attributable to both the passage of time and parameter adjustments recommended in the current study should be realigned among primary accounts to reduce offsetting imbalances and increase depreciation rate stability.

Reserve rebalancing is also needed to eliminate reserve imbalances derived

from an initialization of amortization accounting recommended for distribution Accounts 376.40 and 381.50. Amortization periods proposed for these accounts were used to derive theoretical reserves that will replace the recorded reserves and permit a uniform treatment of embedded plant and future additions. Plant older than the proposed amortization periods will be retired from service and future retirements will be posted as each vintage achieves an age equal to the amortization period. Depreciation reserves for the distribution plant function were redistributed by setting the recorded reserves for the proposed amortization accounts equal to the theoretical reserves derived from the recommended amortization periods and distributing the residual imbalances to the remaining depreciable accounts in the distribution function.

A redistribution of the recorded reserve for all depreciable plant was achieved by multiplying the calculated reserve for each primary account within a function by the ratio of the function total recorded reserve to the function total calculated reserve. The sum of the redistributed reserves within a function is, therefore, equal to the function total recorded depreciation reserve before the redistribution.

Statement C provides a comparison of computed, recorded and rebalanced reserves at December 31, 2011. The sum of recorded reserves was $535,647,038 or 36.5 percent of the depreciable plant investment. The corresponding computed reserve is $528,798,477 or 36.0 percent of the depreciable plant investment. A proportionate amount of the measured reserve excess of $6,848,561 will be amortized over the composite weighted–average remaining life of each rate category using the remaining life depreciation rates recommended in this study.

DEVELOPMENT OF ACCRUAL RATES

The goal or objective of depreciation accounting is cost allocation over the economic life of an asset in proportion to the consumption of service potential. Ideally, the cost of an asset—which represents the cost of obtaining a bundle of service units—should be allocated to future periods of operation in proportion to the amount of service potential expended during an accounting interval. The service potential of an asset is the present value of future net revenue (*i.e.*, revenue less expenses exclusive of depreciation and other non–cash expenses) or cash inflows attributable to the use of that asset alone.

Cost allocation in proportion to the consumption of service potential is often approximated by the use of depreciation methods employing time rather than net revenue as the apportionment base. Examples of time–based methods include sinking–fund, straight–line, declining balance, and sum–of–the–years' digits. The advantage of a time–based method is that it does not require an estimate of the remaining amount of service potential an asset will produce or the amount of service potential actually consumed during an accounting interval. Using a time–based allocation method, however, does not change the goal of depreciation ac-

counting. If it is reasonable to predict that the net revenue pattern of an asset will either decrease or increase over time, then an accelerated or decelerated time–based method should be used to approximate the rate at which service potential is actually consumed.

The time period over which the cost of an asset will be allocated to operations is determined by the combination of a procedure and a technique. A depreciation procedure describes the level of grouping or sub–grouping of assets within a plant category. The broad group, vintage group, equal–life group, and item (or unit) are a few of the more widely used procedures. A depreciation technique describes the life statistic used in a depreciation system. Whole–life and remaining–life (or expectancy) are the most common techniques.

Depreciation rates recommended in the 2012 study were developed using the currently approved system composed of the straight–line method, vintage group procedure, remaining–life technique. This formulation of the accrual rate is equivalent to a straight–line method, vintage group procedure, whole–life technique with amortization of reserve imbalances over the estimated remaining life of each rate category. It is the opinion of Foster Associates that this system will remain appropriate for KGS, provided depreciation studies are conducted periodically and parameters are routinely adjusted to reflect changing operating conditions. Although the emergence of economic factors such as restructuring and performance based regulation may ultimately encourage abandonment of the straight–line method, no attempt was made in the current study to address this concern.

It is also the opinion of Foster Associates that amortization accounting currently approved for selected general support asset accounts and recommended for distribution Accounts 376.40 and 381.50 is consistent with the goals and objectives of depreciation accounting and remains appropriate for these plant categories.

The treatment of amortization accounts in the current study was designed to produce annualized accruals equivalent to applying a rate equal to the reciprocal of an amortization period to plant balances after retirements have been recorded. Applying a rate equal to the reciprocal of the amortization period to plant balances prior to posting retirements would overstate the annualized amortization expense. Accrual rates contained in Statement A have been applied to plant balances containing vintages that will be retired upon approval of the proposed amortization periods. Accrual rates contained in Statement A should be applied to current plant balances. Accrual rates equal to the reciprocal of the amortization period should be applied to these categories after plant balances have been reduced by all vintages that have achieved an age equal to the amortization period.

STATEMENTS

INTRODUCTION

This section provides a comparative summary of depreciation rates, annual depreciation accruals, recorded and computed depreciation reserves, and current and proposed service life and net salvage statistics recommended for KGS. The content of these statements is briefly described below.

- Statement A provides a comparative summary of current and proposed annual depreciation rates using the vintage group procedure, remaining–life technique.
- Statement B provides a comparison of current and proposed annualized 2012 depreciation accruals derived from an application of the depreciation rates contained in Statement A.
- Statement C provides a comparison of recorded, computed and redistributed reserves for each rate category at December 31, 2011.
- Statement D provides a summary of the components used to obtain weighted average net salvage rates.
- Statement E provides a comparative summary of current and proposed parameters and statistics including projection life, projection curve, average service life, average remaining life and average and future net salvage rates.

Current depreciation accruals shown on Statement B are the product of the plant investment (Column B) and current depreciation rates shown on Statement A. These are the effective rates used by KGS for the mix of investments recorded at December 31, 2011. Similarly, proposed depreciation accruals shown on Statements B are the product of the plant investment and proposed depreciation rates shown on Statement A. Both current and proposed accrual rates are given by:

$$\text{Accrual Rate} = \frac{1.0 - \text{Reserve Ratio} - \text{Future Net Salvage Rate}}{\text{Remaining Life}}.$$

This formulation of the accrual rate is equivalent to

$$\text{Accrual Rate} = \frac{1.0 - \text{Average Net Salvage}}{\text{Average Life}} + \frac{\text{Computed Reserve} - \text{Recorded Reserve}}{\text{Remaining Life}}$$

where Average Net Salvage, Computed Reserve and Recorded Reserve are expressed in percent.

KANSAS GAS SERVICE Statement A

Comparison of Current and Proposed Accrual Rates
Current: VG Procedure / RL Technique
Proposed: VG Procedure / RL Technique

Account Description	Current (at 12/31/2011) Investment	Net Salvage	Total	Proposed (at 12/31/2011) Investment	Net Salvage	Total
A	B	C	D=B+C	E	F	G=E+F
TRANSMISSION PLANT						
365.20 Rights of Way	1.38%	-0.02%	1.36%	1.41%	-0.01%	1.40%
366.10 Compressor Station Structures	2.08%	0.80%	2.88%	2.14%	0.76%	2.90%
366.20 Meas. and Reg. Station Structures	1.66%	0.50%	2.16%	1.79%	0.53%	2.32%
367.00 Mains	1.74%	0.38%	2.12%	1.96%	0.44%	2.40%
368.00 Compressor Station Equipment	2.09%	0.76%	2.85%	2.75%	0.89%	3.64%
369.00 Meas. and Reg. Station Equipment	2.13%	0.61%	2.74%	2.45%	0.67%	3.12%
Total Transmission Plant	1.78%	0.42%	2.20%	2.04%	0.48%	2.52%
DISTRIBUTION PLANT						
374.20 Rights of Way	1.39%		1.39%	1.42%		1.42%
375.00 Structures and Improvements	3.73%	0.67%	4.40%	3.27%	0.53%	3.80%
376.10 Mains - Metallic	1.37%	0.40%	1.77%	1.40%	0.79%	2.19%
376.20 Mains - Plastic	2.15%	0.64%	2.79%	2.00%	1.02%	3.02%
376.40 Mains - Cathodic Protection	1.37%	0.40%	1.77%	← 12 Year Amortization →		7.15%
378.00 Meas. and Reg. Station Equip. - General	2.15%	0.36%	2.51%	2.01%	0.46%	2.47%
379.00 Meas. and Reg. Station Equip. - City Gate	1.75%	0.32%	2.07%	1.68%	0.31%	1.99%
380.10 Services - Metallic	2.13%	1.14%	3.27%	1.89%	0.88%	2.77%
380.20 Services - Plastic	2.36%	1.19%	3.55%	2.21%	1.28%	3.49%
381.00 Meters	2.54%	-0.01%	2.53%	2.61%		2.61%
381.50 AMR Communication Devices	2.54%	-0.01%	2.53%	← 15 Year Amortization →		6.67%
382.00 Meter Installations	2.16%	0.32%	2.48%	2.09%	1.05%	3.14%
383.00 House Regulators and Installations	1.74%	0.05%	1.79%	1.96%	0.08%	2.04%
386.00 Other Property - Customer Premises	9.79%		9.79%	9.71%		9.71%
Total Distribution Plant	2.05%	0.66%	2.71%	2.12%	0.91%	3.03%
GENERAL PLANT						
Depreciable						
390.10 Structures and Improvements	1.72%	0.04%	1.76%	1.57%	0.04%	1.61%
392.00 Transportation Equipment	8.50%	-1.42%	7.08%	6.22%	-1.19%	5.03%
396.00 Power Operated Equipment	9.09%	-1.11%	7.98%	7.06%	-0.86%	6.20%
Total Depreciable	5.36%	-0.66%	4.70%	4.14%	-0.54%	3.60%
Amortizable						
391.10 Office Furniture and Equipment	4.97%		4.97%	← 20 Year Amortization →		4.97%
391.25 Computer Equipment	14.16%		14.16%	← 7 Year Amortization →		14.16%
393.00 Stores Equipment	4.59%		4.59%	← 20 Year Amortization →		4.59%
394.00 Tools, Shop and Garage Equipment	6.66%		6.66%	← 15 Year Amortization →		6.66%
395.00 Laboratory Equipment	6.67%		6.67%	← 15 Year Amortization →		6.67%
397.00 Communication Equipment	4.15%	0.15%	4.30%	← 15 Year Amortization →		5.04%
398.00 Miscellaneous Equipment	5.00%		5.00%	← 20 Year Amortization →		5.00%
Total Amortizable	7.22%	0.05%	7.27%			7.49%
Total General Plant	5.94%	-0.44%	5.50%	5.20%	-0.37%	4.83%
TOTAL GAS UTILITY	2.24%	0.55%	2.79%	2.29%	0.76%	3.06%

KANSAS GAS SERVICE

Statement B

Comparison of Current and Proposed Accruals
Current: VG Procedure / RL Technique
Proposed: VG Procedure / RL Technique

Account Description	12/31/11 Investment	Current 2012 Annualized Accrual			Proposed 2012 Annualized Accrual			Difference
		Investment	Net Salvage	Total	Investment	Net Salvage	Total	
A	B	C	D	E=C+D	F	G	H=F+G	I=H-E
TRANSMISSION PLANT								
365.20 Rights of Way	$ 11,672,849	$ 161,085	$ (2,335)	$ 158,750	$ 164,587	$ (1,167)	$ 163,420	$ 4,670
366.10 Compressor Station Structures	4,140,389	86,120	33,123	119,243	88,604	31,467	120,071	828
366.20 Meas. and Reg. Station Structures	1,137,206	18,878	5,686	24,564	20,356	6,027	26,383	1,819
367.00 Mains	178,365,386	3,103,558	677,788	3,781,346	3,495,962	784,808	4,280,770	499,424
368.00 Compressor Station Equipment	20,994,536	438,786	159,558	598,344	577,350	186,851	764,201	165,857
369.00 Meas. and Reg. Station Equipment	15,278,632	325,435	93,200	418,635	374,326	102,367	476,693	58,058
Total Transmission Plant	$ 231,588,998	$ 4,133,862	$ 967,020	$ 5,100,882	$ 4,721,185	$ 1,110,353	$ 5,831,538	$ 730,656
DISTRIBUTION PLANT								
374.20 Rights of Way	$ 1,832,554	$ 25,473	$ -	$ 25,473	$ 26,022	$ -	$ 26,022	$ 549
375.00 Structures and Improvements	860,867	32,110	5,768	37,878	28,150	4,563	32,713	(5,165)
376.10 Mains - Metallic	260,956,707	3,575,107	1,043,827	4,618,934	3,653,394	2,061,558	5,714,952	1,096,018
376.20 Mains - Plastic	270,310,741	5,811,681	1,729,989	7,541,670	5,406,215	2,757,170	8,163,385	621,715
376.40 Mains - Cathodic Protection	23,205,016	317,909	92,820	410,729	1,659,338		1,659,338	1,248,609
378.00 Meas. and Reg. Station Equip. - General	21,366,421	459,378	76,919	536,297	429,465	98,286	527,751	(8,546)
379.00 Meas. and Reg. Station Equip. - City Gate	6,022,207	105,389	19,271	124,660	101,173	18,669	119,842	(4,818)
380.10 Services - Metallic	31,302,372	666,741	356,847	1,023,588	591,615	275,461	867,076	(156,512)
380.20 Services - Plastic	332,618,204	7,849,790	3,958,157	11,807,947	7,350,862	4,257,513	11,608,375	(199,572)
381.00 Meters	86,162,804	2,188,535	(8,616)	2,179,919	2,248,849		2,248,849	68,930
381.50 AMR Communication Devices	10,749,916	273,048	(1,075)	271,973	716,661		716,661	444,688
382.00 Meter Installations	87,849,167	1,897,542	281,117	2,178,659	1,836,048	922,416	2,758,464	579,805
383.00 House Regulators and Installations	14,639,701	254,731	7,320	262,051	286,938	11,712	298,650	36,599
386.00 Other Property - Customer Premises	224,125	21,942		21,942	21,763		21,763	(179)
Total Distribution Plant	$ 1,148,100,802	$ 23,479,376	$ 7,562,344	$ 31,041,720	$ 24,356,493	$ 10,407,348	$ 34,763,841	$ 3,722,121

KANSAS GAS SERVICE

Statement B

Comparison of Current and Proposed Accruals
Current: VG Procedure / RL Technique
Proposed: VG Procedure / RL Technique

Account Description	12/31/11 Investment	Current 2012 Annualized Accrual			Proposed 2012 Annualized Accrual			Difference
		Investment	Net Salvage	Total	Investment	Net Salvage	Total	
A	B	C	D	E=C+D	F	G	H=F+G	I=H-E
GENERAL PLANT								
Depreciable								
390.10 Structures and Improvements	$ 29,227,370	$ 502,711	$ 11,691	$ 514,402	$ 458,870	$ 11,691	$ 470,561	$ (43,841)
392.00 Transportation Equipment	20,489,619	1,741,618	(290,953)	1,450,665	1,274,454	(243,826)	1,030,628	(420,037)
396.00 Power Operated Equipment	11,203,107	1,018,362	(124,354)	894,008	790,939	(96,347)	694,592	(199,416)
Total Depreciable	$ 60,920,096	$ 3,262,691	$ (403,616)	$ 2,859,075	$ 2,524,263	$ (328,482)	$ 2,195,781	$ (663,294)
Amortizable								
391.10 Office Furniture and Equipment	$ 4,853,880	$ 241,325	$ -	$ 241,325	$ 241,325	$ -	$ 241,325	$ -
391.25 Computer Equipment	6,148,309	870,607		870,607	870,607		870,607	
393.00 Stores Equipment	357,584	16,399		16,399	16,399		16,399	
394.00 Tools, Shop and Garage Equipment	8,062,506	536,823		536,823	536,823		536,823	
395.00 Laboratory Equipment	72,377	4,825		4,825	4,825		4,825	
397.00 Communication Equipment	8,459,089	351,052	12,689	363,741	426,040		426,040	62,299
398.00 Miscellaneous Equipment	137,006	6,850		6,850	6,850		6,850	
Total Amortizable	$ 28,090,751	$ 2,027,881	$ 12,689	$ 2,040,570	$ 2,102,869	$ -	$ 2,102,869	$ 62,299
Total General Plant	$ 89,010,847	$ 5,290,572	$ (390,927)	$ 4,899,645	$ 4,627,132	$ (328,482)	$ 4,298,650	$ (600,995)
TOTAL GAS UTILITY	$ 1,468,700,647	$ 32,903,810	$ 8,138,437	$ 41,042,247	$ 33,704,810	$ 11,189,219	$ 44,894,029	$ 3,851,782

KANSAS GAS SERVICE

Statement C

Depreciation Reserve Summary
Vintage Group Procedure
December 31, 2011

Account Description	Plant Investment	Recorded Reserve Amount	Recorded Reserve Ratio	Computed Reserve Amount	Computed Reserve Ratio	Redistributed Reserve Amount	Redistributed Reserve Ratio
A	B	C	D=C/B	E	F=E/B	G	H=G/B
TRANSMISSION PLANT							
365.20 Rights of Way	$ 11,672,849	$ 2,716,142	23.27%	$ 1,931,499	16.55%	$ 1,988,339	17.03%
366.10 Compressor Station Structures	4,140,389	3,793,425	91.62%	1,652,668	39.92%	1,701,302	41.09%
366.20 Meas. and Reg. Station Structures	1,137,206	916,336	80.58%	539,647	47.45%	555,527	48.85%
367.00 Mains	178,365,386	43,491,211	24.38%	52,846,250	29.63%	54,401,393	30.50%
368.00 Compressor Station Equipment	20,994,536	15,235,772	72.57%	7,048,471	33.57%	7,255,892	34.56%
369.00 Meas. and Reg. Station Equipment	15,278,632	4,015,960	26.28%	4,144,433	27.13%	4,266,394	27.92%
Total Transmission Plant	$ 231,588,998	$ 70,168,847	30.30%	$ 68,162,968	29.43%	$ 70,168,847	30.30%
DISTRIBUTION PLANT							
374.20 Rights of Way	$ 1,832,554	$ 379,071	20.69%	$ 284,451	15.52%	$ 285,663	15.59%
375.00 Structures and Improvements	860,867	270,989	31.48%	147,873	17.18%	148,503	17.25%
376.10 Mains - Metallic	260,956,707	93,223,087	35.72%	88,632,035	33.96%	89,009,559	34.11%
376.20 Mains - Plastic	270,310,741	88,024,667	32.56%	98,632,366	36.49%	99,052,486	36.64%
376.40 Mains - Cathodic Protection	23,205,016			13,308,127	57.35%	13,308,127	57.35%
378.00 Meas. and Reg. Station Equip. - General	21,366,421	8,707,996	40.76%	6,755,647	31.62%	6,784,422	31.75%
379.00 Meas. and Reg. Station Equip. - City Gate	6,022,207	3,783,292	62.82%	2,347,175	38.98%	2,357,172	39.14%
380.10 Services - Metallic	31,302,372	28,729,595	91.78%	22,151,732	70.77%	22,246,086	71.07%
380.20 Services - Plastic	332,618,204	163,629,956	49.19%	138,369,762	41.60%	138,959,142	41.78%
381.00 Meters	86,162,804	17,611,474	20.44%	21,251,075	24.66%	21,341,593	24.77%
381.50 AMR Communication Devices	10,749,916	83,853	0.78%	2,591,462	24.11%	2,591,462	24.11%
382.00 Meter Installations	87,849,167	21,047,624	23.96%	30,408,711	34.61%	30,538,236	34.76%
383.00 House Regulators and Installations	14,639,701	6,288,302	42.95%	5,150,436	35.18%	5,172,374	35.33%
386.00 Other Property - Customer Premises	224,125	168,944	75.38%	153,372	68.43%	154,025	68.72%
Total Distribution Plant	$ 1,148,100,802	$ 431,948,851	37.62%	$ 430,184,224	37.47%	$ 431,948,851	37.62%

KANSAS GAS SERVICE

Statement C

Depreciation Reserve Summary
Vintage Group Procedure
December 31, 2011

Account Description	Plant Investment	Recorded Reserve Amount	Recorded Reserve Ratio	Computed Reserve Amount	Computed Reserve Ratio	Redistributed Reserve Amount	Redistributed Reserve Ratio
A	B	C	D=C/B	E	F=E/B	G	H=G/B
GENERAL PLANT							
Depreciable							
390.10 Structures and Improvements	$ 29,227,370	$ 9,586,117	32.80%	$ 6,636,566	22.71%	$ 7,855,535	26.88%
392.00 Transportation Equipment	20,489,619	9,451,433	46.13%	5,642,154	27.54%	6,678,474	32.59%
396.00 Power Operated Equipment	11,203,107	3,564,730	31.82%	4,479,474	39.98%	5,302,239	47.33%
Total Depreciable	$ 60,920,096	$ 22,602,281	37.10%	$ 16,758,194	27.51%	$ 19,836,249	32.56%
Amortizable							
391.10 Office Furniture and Equipment	$ 4,853,880	$ 1,440,752	29.68%	$ 1,882,296	38.78%	$ 1,882,296	38.78%
391.25 Computer Equipment	6,148,309	4,399,860	71.56%	2,483,091	40.39%	2,483,091	40.39%
393.00 Stores Equipment	357,584	98,884	27.65%	241,930	67.66%	241,930	67.66%
394.00 Tools, Shop and Garage Equipment	8,062,506	542,982	6.73%	3,322,751	41.21%	3,322,751	41.21%
395.00 Laboratory Equipment	72,377	(264,392)	-365.30%	12,586	17.39%	12,586	17.39%
397.00 Communication Equipment	8,459,089	4,633,067	54.77%	5,690,133	67.27%	5,690,133	67.27%
398.00 Miscellaneous Equipment	137,006	75,906	55.40%	60,304	44.02%	60,304	44.02%
Total Amortizable	$ 28,090,751	$ 10,927,059	38.90%	$ 13,693,091	48.75%	$ 13,693,091	48.75%
Total General Plant	$ 89,010,847	$ 33,529,340	37.67%	$ 30,451,285	34.21%	$ 33,529,340	37.67%
TOTAL GAS UTILITY	$ 1,468,700,647	$ 535,647,038	36.47%	$ 528,798,477	36.00%	$ 535,647,038	36.47%

KANSAS GAS SERVICE
Average Net Salvage

Statement D

Account Description	Plant Investment			Salvage Rate		Net Salvage			Average
	Additions	Retirements	Survivors	Realized	Future	Realized	Future	Total	Rate
A	B	C	D=B-C	E	F	G=E*C	H=F*D	I=G+H	J=I/B
TRANSMISSION PLANT									
365.20 Rights of Way	$ 11,732,444	$ 59,595	$ 11,672,849	139.5%		$ 83,135	$ -	$ 83,135	0.7%
366.10 Compressor Station Structures	5,074,521	934,132	4,140,389	-78.2%	-25.0%	(730,491)	(1,035,097)	(1,765,588)	-34.8%
366.20 Meas. and Reg. Station Structures	1,273,932	136,726	1,137,206	-28.3%	-30.0%	(38,693)	(341,162)	(379,855)	-29.8%
367.00 Mains	206,476,096	28,110,710	178,365,386	-6.1%	-25.0%	(1,714,753)	(44,591,347)	(46,306,100)	-22.4%
368.00 Compressor Station Equipment	27,411,418	6,416,882	20,994,536	-39.0%	-30.0%	(2,502,584)	(6,298,361)	(8,800,945)	-32.1%
369.00 Meas. and Reg. Station Equipment	18,347,419	3,068,787	15,278,632	-15.3%	-30.0%	(469,524)	(4,583,590)	(5,053,114)	-27.5%
Total Transmission Plant	$ 270,315,830	$ 38,726,832	$ 231,588,998	-13.9%	-24.5%	$ (5,372,911)	$ (56,849,556)	$ (62,222,467)	-23.0%
DISTRIBUTION PLANT									
374.20 Rights of Way	$ 1,832,626	$ 72	$ 1,832,554	-7.8%		$ (6)	$ -	$ (6)	
375.00 Structures and Improvements	1,150,616	289,749	860,867	-20.3%	-15.0%	(58,819)	(129,130)	(187,949)	-16.3%
376.10 Mains - Metallic	277,903,958	16,947,251	260,956,707	-158.2%	-50.0%	(26,810,551)	(130,478,354)	(157,288,905)	-56.6%
376.20 Mains - Plastic	275,776,410	5,465,669	270,310,741	-127.8%	-50.0%	(6,985,125)	(135,155,371)	(142,140,495)	-51.5%
376.40 Mains - Cathodic Protection	33,332,445	10,127,429	23,205,016						
378.00 Meas. and Reg. Station Equip. - General	23,832,785	2,466,364	21,366,421	-6.7%	-25.0%	(165,246)	(5,341,605)	(5,506,852)	-23.1%
379.00 Meas. and Reg. Station Equip. - City Gate	6,404,475	382,268	6,022,207	-2.6%	-20.0%	(9,939)	(1,204,441)	(1,214,380)	-19.0%
380.10 Services - Metallic	35,737,600	4,435,228	31,302,372	-25.7%	-50.0%	(1,139,854)	(15,651,186)	(16,791,040)	-47.0%
380.20 Services - Plastic	346,515,794	13,897,590	332,618,204	-250.0%	-50.0%	(34,743,975)	(166,309,102)	(201,053,077)	-58.0%
381.00 Meters	107,424,662	21,261,858	86,162,804	0.7%		148,833		148,833	0.1%
381.50 AMR Communication Devices	10,749,916		10,749,916						
382.00 Meter Installations	94,334,725	6,485,558	87,849,167	-54.2%	-50.0%	(3,515,172)	(43,924,584)	(47,439,756)	-50.3%
383.00 House Regulators and Installations	17,529,766	2,890,065	14,639,701	2.3%	-5.0%	66,471	(731,985)	(665,514)	-3.8%
386.00 Other Property - Customer Premises	224,125		224,125						
Total Distribution Plant	$ 1,232,749,903	$ 84,649,101	$ 1,148,100,802	-86.5%	-43.5%	$ (73,213,383)	$ (498,925,757)	$ (572,139,140)	-46.4%
GENERAL PLANT									
Depreciable									
390.10 Structures and Improvements	$ 32,225,043	$ 2,997,673	$ 29,227,370	15.3%	-5.0%	$ 458,644	$ (1,461,369)	$ (1,002,725)	-3.1%
392.00 Transportation Equipment	32,921,970	12,432,351	20,489,619	18.1%	20.0%	2,250,256	4,097,924	6,348,179	19.3%
396.00 Power Operated Equipment	21,965,898	10,762,791	11,203,107	13.3%	10.0%	1,431,451	1,120,311	2,551,762	11.6%
Total Depreciable	$ 87,112,911	$ 26,192,815	$ 60,920,096	15.8%	6.2%	$ 4,140,351	$ 3,756,866	$ 7,897,217	9.1%
Amortizable									
391.10 Office Furniture and Equipment	$ 6,724,390	$ 1,870,510	$ 4,853,880			$ -	$ -	$ -	
391.25 Computer Equipment	26,803,292	20,654,983	6,148,309						
393.00 Stores Equipment	927,889	570,305	357,584						
394.00 Tools, Shop and Garage Equipment	19,150,330	11,087,824	8,062,506						
395.00 Laboratory Equipment	1,071,414	999,037	72,377						
397.00 Communication Equipment	10,723,709	2,264,620	8,459,089						
398.00 Miscellaneous Equipment	316,952	179,946	137,006						
Total Amortizable	$ 65,717,976	$ 37,627,225	$ 28,090,751			$ -	$ -	$ -	
Total General Plant	$ 152,830,887	$ 63,820,040	$ 89,010,847	6.5%	4.2%	$ 4,140,351	$ 3,756,866	$ 7,897,217	5.2%
TOTAL GAS UTILITY	$ 1,655,896,620	$ 187,195,973	$ 1,468,700,647	-39.8%	-37.6%	$ (74,445,943)	$ (552,018,447)	$ (626,464,390)	-37.8%

KANSAS GAS SERVICE
Current and Proposed Parameters
Vintage Group Procedure

Statement E

Account Description	Current Parameters P-Life/ AYFR	Curve Shape	VG ASL	Rem. Life	Avg. Sal.	Fut. Sal.	Proposed Parameters P-Life/ AYFR	Curve Shape	VG ASL	Rem. Life	Avg. Sal.	Fut. Sal.
A	B	C	D	E	F	G	H	I	J	K	L	M
TRANSMISSION PLANT												
365.20 Rights of Way	70.00	R1.5	70.47	62.91	0.9		70.00	R1.5	70.62	59.35	0.7	
366.10 Compressor Station Structures	42.00	L1.5	43.29	30.02	-34.8	-25.0	45.00	L2	45.85	28.94	-34.8	-25.0
366.20 Meas. and Reg. Station Structures	55.00	S1.5	55.04	39.81	-30.0	-30.0	55.00	S1.5	54.91	34.92	-29.8	-30.0
367.00 Mains	53.00	S0	53.89	42.25	-22.7	-25.0	50.00	L1	50.63	39.45	-22.4	-25.0
368.00 Compressor Station Equipment	42.00	R1	43.37	30.78	-34.4	-30.0	35.00	SC	35.92	26.22	-32.1	-30.0
369.00 Meas. and Reg. Station Equipment	45.00	R0.5	45.29	39.39	-28.8	-30.0	40.00	L0	40.54	32.71	-27.5	-30.0
Total Transmission Plant									48.65	37.76	-23.0	-24.5
DISTRIBUTION PLANT												
374.20 Rights of Way	70.00	R1.5	70.38	60.55			70.00	R1.5	70.48	59.54		
375.00 Structures and Improvements	25.00	L0	25.83	19.94	-17.4	-15.0	30.00	L0	30.59	25.73	-16.3	-15.0
376.10 Mains - Metallic	70.00	R1.5	70.47	55.42	-29.3	-30.0	70.00	R1.5	71.42	52.92	-56.6	-50.0
376.20 Mains - Plastic	45.00	R2.5	45.16	35.95	-29.9	-30.0	50.00	R3	50.05	37.50	-51.5	-50.0
376.40 Mains - Cathodic Protection	70.00	R1.5	70.47	55.42	-29.3	-30.0	12.00	SQ	12.00	5.57		
378.00 Meas. and Reg. Station Equip. - General	45.00	L1.5	44.84	34.75	-17.3	-20.0	50.00	S0.5	49.79	37.77	-23.1	-25.0
379.00 Meas. and Reg. Station Equip. - City Gate	55.00	R2	54.76	40.76	-18.4	-20.0	60.00	R2.5	59.57	40.56	-19.0	-20.0
380.10 Services - Metallic	45.00	L1	43.84	28.34	-52.9	-50.0	50.00	R1.5	52.82	28.47	-47.0	-50.0
380.20 Services - Plastic	40.00	S3	40.05	27.89	-50.1	-50.0	45.00	R3	45.17	30.99	-58.0	-50.0
381.00 Meters	38.00	R3	37.79	28.40	0.4		38.00	R1.5	38.27	28.86	0.1	
381.50 AMR Communication Devices	38.00	R3	37.79	28.40	0.4		15.00	SQ	15.00	11.38		
382.00 Meter Installations	45.00	R1.5	45.07	36.83	-15.0	-15.0	48.00	R2.5	47.74	36.65	-50.3	-50.0
383.00 House Regulators and Installations	55.00	R3	54.61	38.20	-3.5	-5.0	50.00	R1.5	50.89	34.23	-3.8	-5.0
386.00 Other Property - Customer Premises	10.00	S3	10.00	8.50			10.00	S3	10.20	3.22		
Total Distribution Plant									46.58	33.46	-46.4	-43.5

KANSAS GAS SERVICE
Current and Proposed Parameters
Vintage Group Procedure

Statement E

Account Description	Current Parameters P-Life/ AYFR	Curve Shape	VG ASL	Rem. Life	Avg. Sal.	Fut. Sal.	Proposed Parameters P-Life/ AYFR	Curve Shape	VG ASL	Rem. Life	Avg. Sal.	Fut. Sal.
A	B	C	D	E	F	G	H	I	J	K	L	M
GENERAL PLANT												
Depreciable												
390.10 Structures and Improvements	55.00	R0.5	56.29	46.90	-2.5	-5.0	60.00	R1.5	60.75	48.49	-3.1	-5.0
392.00 Transportation Equipment	10.00	L1.5	10.29	5.73	16.3	15.0	14.00	L1.5	14.49	9.42	19.3	20.0
396.00 Power Operated Equipment	10.00	L3	9.79	5.75	11.7	10.0	12.00	L2	12.16	6.88	11.6	10.0
Total Depreciable									21.63	15.26	9.1	6.2
Amortizable												
391.10 Office Furniture and Equipment	20.00	SQ	20.00	13.58			20.00	SQ	20.00	12.24		
391.25 Computer Equipment	7.00	SQ	7.00	3.13			7.00	SQ	7.00	4.17		
393.00 Stores Equipment	20.00	SQ	20.00	6.63			20.00	SQ	20.00	6.47		
394.00 Tools, Shop and Garage Equipment	15.00	SQ	15.00	6.98			15.00	SQ	15.00	8.82		
395.00 Laboratory Equipment	15.00	SQ	15.00	3.40			15.00	SQ	15.00	12.39		
397.00 Communication Equipment	23.00	L1	23.00	17.77	-3.9	-5.0	15.00	SQ	15.00	6.50		
398.00 Miscellaneous Equipment	20.00	SQ	20.00	7.35			20.00	SQ	20.00	11.20		
Total Amortizable									12.47	6.79		
Total General Plant									17.56	11.50	5.2	4.2
TOTAL GAS UTILITY									42.60	30.83	-37.8	-37.6

ANALYSIS

INTRODUCTION

This section provides an explanation of the supporting schedules developed in the KGS study to estimate appropriate projection curves, projection lives and net salvage statistics for each rate category. The form and content of the schedules developed for an account depend upon the method of analysis adopted for the category.

This section also includes examples of the supporting schedules developed for transmission Account 367.00 (Mains). Documentation for all other plant accounts is contained in the study work papers. Supporting schedules developed in the Kansas Gas Service study include:

Schedule A – Generation Arrangement;

Schedule B – Age Distribution;

Schedule C – Plant History;

Schedule D – Actuarial Life Analysis;

Schedule E – Graphics Analysis; and

Schedule F – Net Salvage History.

The format and content of these schedules are briefly described below.

SCHEDULE A – GENERATION ARRANGEMENT

The purpose of this schedule is to obtain appropriate weighted–average life statistics for a rate category. The weighted–average remaining–life is the sum of Column H divided by the sum of Column I. The weighted average life is the sum of Column C divided by the sum of Column I.

It should be noted that the generation arrangement does not include parameters for net salvage. Computed Net Plant (Column H) and Accruals (Column I) must be adjusted for net salvage to obtain a correct measurement of theoretical reserves and annualized depreciation accruals.

The following table provides a description of each column in the generation arrangement.

Column	Title	Description
A	Vintage	Vintage or placement year of surviving plant.
B	Age	Age of surviving plant at beginning of study year.
C	Surviving Plant	Actual dollar amount of surviving plant.
D	Average Life	Estimated average life of each vintage. This statistic is the sum of the realized life and the unrealized life, which is the product of the remaining life (Column E) and the theoretical proportion surviving.
E	Remaining Life	Estimated remaining life of each vintage.
F	Net Plant Ratio	Theoretical net plant ratio of each vintage.
G	Allocation Factor	A pivotal ratio which determines the amortization period of the difference between the recorded and computed reserve.
H	Computed Net Plant	Plant in service less theoretical reserve for each vintage.
I	Accrual	Ratio of computed net plant (Column H) and remaining life (Column E).

Table 2. Generation Arrangement

SCHEDULE B – AGE DISTRIBUTION

This schedule provides the age distribution and realized life of surviving plant shown in Column C of the Generation Arrangement (Schedule A). The format of the schedule depends upon the availability of either aged or unaged data. Derived additions for vintage years older than the earliest activity year in an account for unaged data are obtained from the age distribution of surviving plant at the beginning of the earliest activity year. The amount surviving from these vintages is shown in Column D. The realized life (Column G) is derived from the dollar years of service provided by a vintage over the period of years the vintage has been in service. Plant additions for vintages older than the earliest activity year in an account are represented by the opening balances shown in Column D.

The computed proportion surviving (Column D) for unaged is derived from a computed mortality analysis. The average service life displayed in the title block is the life statistic derived for the most recent activity year, given the derived age distribution at the start of the year and the specified retirement dispersion. The realized life (Column F) is obtained by finding the slope of an SC retirement dispersion, which connects the computed survivors of a vintage (Column E) to the recorded vintage addition (Column B). The realized life is the area bounded by the SC dispersion, the computed proportion surviving and the age of the vintage.

SCHEDULE C – PLANT HISTORY

An Unadjusted Plant History schedule provides a summary of recorded plant data extracted from the continuing property records maintained by the Company. Activity year total amounts shown on this schedule for aged data are obtained from a historical arrangement of the data base in which all plant accounting transactions are identified by vintage and activity year. Activity year totals for unaged data are obtained from a transaction file without vintage identification. Information displayed in the unadjusted plant history is consistent with regulated investments reported internally by the Company.

An Adjusted Plant History schedule provides a summary of recorded plant data extracted from the continuing property records maintained by the Company with sales, transfers, and adjustments appropriately aged for depreciation study purposes. Activity year total amounts shown on this schedule for aged data are obtained from a historical arrangement of the data base in which all plant accounting transactions are identified by vintage and activity year. Aging of adjusting transactions is achieved using transaction codes that identify an adjusting year associated with the dollar amount of a transaction. Adjusting transactions processed in the adjusted plant history are not aged in the Company's records or in the unadjusted plant history.

SCHEDULE D – ACTUARIAL LIFE ANALYSIS

These schedules provide a summary of the dispersion and life indications obtained from an actuarial life analysis for a specified placement band. The observation band (Column A) is specified to produce a rolling–band, shrinking–band, or progressive–band analysis depending upon the movement of the end points of the band. The degree of censoring (or point of truncation) of the observed life table is shown in Column B for each observation band. The estimated average service life, best fitting Iowa dispersion, and a statistical measure of the goodness of fit are shown for each degree polynomial (First, Second, and Third) fitted to the estimated hazard rates. Options available in the analysis include the width and location of both the placement and observation bands; the interval of years included in a selected rolling, shrinking, or progressive band analysis; the estimator of the hazard rate (actuarial, conditional proportion retired, or maximum likelihood); the elements to include on the diagonal of a weight matrix (exposures, inverse of age, inverse of variance, or unweighted); and the age at which an observed life table is truncated.

Estimated projection lives (Columns C, F, and I) are flagged with an asterisk if negative hazard rates are indicated by the fitted polynomial. All negative hazard rates are set equal to zero in the calculation of the graduated survivor curve. The Conformance Index (Columns E, H, and K) is the square root of the mean sum–of–squared differences between the graduated survivor curve and the best fitting

Iowa curve. A Conformance Index of zero would indicate a perfect fit.

SCHEDULE E – GRAPHICS ANALYSIS

This schedule provides a graphics plot of a) the observed proportion surviving for a selected placement and observation band; b) the statistically best fitting Iowa dispersion and derived projection life; and c) the projection curve and projection life selected to describe future forces of mortality.

The graphics analysis also provides a plot of the observed hazard rates and graduated hazard function for a selected placement and observation band. The estimator of the hazard rates and weighting used in fitting orthogonal polynomials to the observed data are displayed in the title block of the displayed graph.

SCHEDULE F – NET SALVAGE HISTORY

An Unadjusted Net Salvage History contains recorded activity–year retirements, salvage, cost of removal and other depreciation reserve activity appropriately recognized in the computation of average net salvage rates. This schedule provides a moving–average analysis of the ratio of realized net salvage (Column I) to the associated retirements (Column B). The schedule also provides a moving–average analysis of the components of unadjusted net salvage related to retirements. The ratio of gross salvage to retirements is shown in Column D and the ratio of cost of removal to retirements is shown in Column G.

An Adjusted Net Salvage History contains recorded activity–year total retirements, salvage, cost of removal and other depreciation reserve activity appropriately adjusted in the estimation of future net salvage rates. The moving–average adjusted net salvage analysis and component analysis are displayed in columns corresponding to an unadjusted net salvage analysis.

KANSAS GAS SERVICE

Transmission Plant
Account: 367.00 Mains

Dispersion: 50 - L1
Procedure: Vintage Group

Generation Arrangement

Vintage	Age	December 31, 2011 Surviving Plant	Avg. Life	Rem. Life	Net Plant Ratio	Alloc. Factor	Computed Net Plant	Accrual
A	B	C	D	E	F	G	H=C*F*G	I=H/E
2011	0.5	22,192,721	50.00	49.53	0.9906	1.0000	21,983,546	443,853
2010	1.5	3,206,049	50.00	48.60	0.9719	1.0000	3,115,946	64,119
2009	2.5	2,793,353	50.00	47.68	0.9535	1.0000	2,663,365	55,862
2008	3.5	6,134,085	50.01	46.77	0.9354	1.0000	5,737,681	122,669
2007	4.5	4,682,088	49.79	45.89	0.9216	1.0000	4,315,019	94,036
2006	5.5	5,086,257	49.97	45.02	0.9009	1.0000	4,582,362	101,790
2005	6.5	5,623,207	50.02	44.17	0.8830	1.0000	4,965,530	112,423
2004	7.5	5,770,737	49.81	43.34	0.8701	1.0000	5,021,230	115,861
2003	8.5	8,885,296	49.53	42.53	0.8588	1.0000	7,630,268	179,407
2002	9.5	17,496,283	49.71	41.74	0.8398	1.0000	14,693,195	351,984
2001	10.5	347,239	50.13	40.98	0.8175	1.0000	283,864	6,927
2000	11.5	9,995,419	49.94	40.24	0.8058	1.0000	8,054,318	200,159
1999	12.5	15,930,090	50.11	39.52	0.7887	1.0000	12,563,883	317,892
1998	13.5	6,263,742	49.82	38.83	0.7794	1.0000	4,882,121	125,732
1997	14.5	970,308	50.32	38.16	0.7584	1.0000	735,910	19,285
1996	15.5	158,629	49.10	37.52	0.7641	1.0000	121,207	3,231
1995	16.5	3,975,251	49.66	36.89	0.7430	1.0000	2,953,468	80,053
1994	17.5	6,180,431	50.24	36.30	0.7225	1.0000	4,465,184	123,022
1993	18.5	4,444,106	49.98	35.72	0.7146	1.0000	3,175,949	88,910
1992	19.5	1,880,876	49.90	35.17	0.7048	1.0000	1,325,687	37,696
1991	20.5	2,569,578	50.17	34.64	0.6904	1.0000	1,774,002	51,217
1990	21.5	1,243,520	50.14	34.13	0.6806	1.0000	846,296	24,799
1989	22.5	3,218,248	50.03	33.64	0.6723	1.0000	2,163,544	64,323
1988	23.5	2,325,811	49.81	33.16	0.6658	1.0000	1,548,461	46,692
1987	24.5	1,614,672	49.68	32.71	0.6584	1.0000	1,063,142	32,504
1986	25.5	4,471,540	50.33	32.27	0.6412	1.0000	2,866,943	88,850
1985	26.5	586,758	49.40	31.84	0.6445	1.0000	378,171	11,877
1984	27.5	4,516,405	50.15	31.43	0.6267	1.0000	2,830,354	90,060
1983	28.5	2,066,501	50.15	31.02	0.6186	1.0000	1,278,262	41,203
1982	29.5	2,944,617	49.27	30.63	0.6216	1.0000	1,830,413	59,764
1981	30.5	862,347	47.05	30.24	0.6426	1.0000	554,169	18,328
1980	31.5	484,373	47.59	29.85	0.6272	1.0000	303,813	10,178
1979	32.5	700,036	49.67	29.47	0.5933	1.0000	415,327	14,094
1978	33.5	312,076	50.14	29.09	0.5802	1.0000	181,078	6,224
1977	34.5	106,634	38.89	28.72	0.7385	1.0000	78,749	2,742
1976	35.5	467,887	52.57	28.35	0.5392	1.0000	252,292	8,900

KANSAS GAS SERVICE

Transmission Plant
Account: 367.00 Mains

Dispersion: 50 - L1
Procedure: Vintage Group

Generation Arrangement

	December 31, 2011				Net			
Vintage	Age	Surviving Plant	Avg. Life	Rem. Life	Plant Ratio	Alloc. Factor	Computed Net Plant	Accrual
A	B	C	D	E	F	G	H=C*F*G	I=H/E
1975	36.5	40,802	43.08	27.98	0.6495	1.0000	26,502	947
1974	37.5	503,104	51.91	27.62	0.5321	1.0000	267,706	9,692
1973	38.5	89,616	48.15	27.26	0.5663	1.0000	50,747	1,861
1972	39.5	809,597	51.79	26.91	0.5196	1.0000	420,666	15,632
1971	40.5	6,272,640	55.67	26.56	0.4771	1.0000	2,992,667	112,672
1970	41.5	39,309	46.85	26.21	0.5596	1.0000	21,996	839
1969	42.5	425,510	54.19	25.87	0.4774	1.0000	203,149	7,852
1968	43.5	281,732	48.46	25.53	0.5269	1.0000	148,445	5,814
1967	44.5	491,422	54.24	25.20	0.4645	1.0000	228,280	9,059
1966	45.5	101,286	50.33	24.87	0.4941	1.0000	50,042	2,012
1965	46.5	242,938	51.02	24.54	0.4810	1.0000	116,849	4,762
1964	47.5	392,206	54.13	24.21	0.4473	1.0000	175,447	7,246
1963	48.5	599,342	58.53	23.89	0.4082	1.0000	244,637	10,240
1962	49.5	302,281	56.80	23.57	0.4150	1.0000	125,448	5,322
1961	50.5	20,843	45.23	23.26	0.5142	1.0000	10,718	461
1960	51.5	10,364	49.16	22.95	0.4668	1.0000	4,838	211
1959	52.5	115,835	55.54	22.64	0.4076	1.0000	47,211	2,086
1958	53.5	74,138	56.84	22.33	0.3929	1.0000	29,127	1,304
1957	54.5	33,212	45.26	22.03	0.4867	1.0000	16,165	734
1956	55.5	75,200	57.57	21.73	0.3774	1.0000	28,380	1,306
1955	56.5	216,559	61.06	21.43	0.3510	1.0000	76,013	3,547
1954	57.5	280,316	62.64	21.14	0.3374	1.0000	94,592	4,475
1953	58.5	1,801,370	63.79	20.85	0.3268	1.0000	588,699	28,240
1952	59.5	7,126	51.83	20.56	0.3967	1.0000	2,827	137
1951	60.5	307,330	61.43	20.27	0.3300	1.0000	101,413	5,003
1950	61.5	458,185	65.00	19.99	0.3075	1.0000	140,903	7,049
1949	62.5	3,576,874	67.05	19.71	0.2939	1.0000	1,051,288	53,343
1948	63.5	8,067	54.70	19.43	0.3552	1.0000	2,866	147
1947	64.5	909	45.82	19.16	0.4181	1.0000	380	20
1946	65.5	421	55.13	18.88	0.3425	1.0000	144	8
1945	66.5	59	58.59	18.61	0.3177	1.0000	19	1
1943	68.5	24,385	72.06	18.08	0.2509	1.0000	6,118	338
1941	70.5	14,519	60.60	17.55	0.2897	1.0000	4,206	240
1940	71.5	2,477	49.78	17.30	0.3475	1.0000	861	50
1938	73.5	1,824	76.76	16.79	0.2187	1.0000	399	24
1936	75.5	173	69.30	16.28	0.2350	1.0000	41	2

KANSAS GAS SERVICE

Transmission Plant
Account: 367.00 Mains

Dispersion: 50 - L1
Procedure: Vintage Group

Generation Arrangement

	December 31, 2011				Net			
Vintage	Age	Surviving Plant	Avg. Life	Rem. Life	Plant Ratio	Alloc. Factor	Computed Net Plant	Accrual
A	B	C	D	E	F	G	H=C*F*G	I=H/E
1935	76.5	15,307	69.16	16.04	0.2319	1.0000	3,550	221
1933	78.5	19,635	80.34	15.55	0.1935	1.0000	3,800	244
1932	79.5	2,086	76.11	15.31	0.2011	1.0000	419	27
1931	80.5	73,074	74.87	15.07	0.2012	1.0000	14,704	976
1930	81.5	78,703	68.98	14.83	0.2150	1.0000	16,919	1,141
1929	82.5	38,919	71.32	14.59	0.2046	1.0000	7,963	546
1928	83.5	8,522	70.82	14.36	0.2027	1.0000	1,728	120
Total	15.4	$178,365,386	50.63	39.45	0.7791	1.0000	$138,963,619	$3,522,616

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

Age Distribution

Vintage	Age as of 12/31/2011	Derived Additions	1970 Opening Balance	Experience to 12/31/2011 Amount Surviving	Proportion Surviving	Realized Life
A	B	C	D	E	F=E/(C+D)	G
2011	0.5	22,192,721		22,192,721	1.0000	0.5000
2010	1.5	3,206,049		3,206,049	1.0000	1.5000
2009	2.5	2,793,353		2,793,353	1.0000	2.5000
2008	3.5	6,143,358		6,134,085	0.9985	3.4962
2007	4.5	5,134,025		4,682,088	0.9120	4.2747
2006	5.5	5,181,128		5,086,257	0.9817	5.4428
2005	6.5	5,665,723		5,623,207	0.9925	6.4803
2004	7.5	6,049,354		5,770,737	0.9539	7.2535
2003	8.5	9,752,507		8,885,296	0.9111	7.9515
2002	9.5	18,477,936		17,496,283	0.9469	9.1083
2001	10.5	347,239		347,239	1.0000	10.5000
2000	11.5	10,590,119		9,995,419	0.9438	11.2720
1999	12.5	16,172,109		15,930,090	0.9850	12.4036
1998	13.5	7,014,118		6,263,742	0.8930	13.0606
1997	14.5	970,308		970,308	1.0000	14.5000
1996	15.5	230,839		158,629	0.6872	14.2172
1995	16.5	4,486,400		3,975,251	0.8861	15.7016
1994	17.5	6,460,799		6,180,431	0.9566	17.1980
1993	18.5	5,012,126		4,444,106	0.8867	17.8486
1992	19.5	2,188,907		1,880,876	0.8593	18.6547
1991	20.5	2,926,205		2,569,578	0.8781	19.8110
1990	21.5	1,417,890		1,243,520	0.8770	20.6552
1989	22.5	3,755,273		3,218,248	0.8570	21.4012
1988	23.5	2,893,182		2,325,811	0.8039	22.0247
1987	24.5	2,041,678		1,614,672	0.7909	22.7198
1986	25.5	5,552,456		4,471,540	0.8053	24.1886
1985	26.5	1,196,705		586,758	0.4903	24.0686
1984	27.5	5,779,914		4,516,405	0.7814	25.6014
1983	28.5	2,447,155		2,066,501	0.8445	26.3804
1982	29.5	4,858,751		2,944,617	0.6060	26.2562
1981	30.5	1,305,191		862,347	0.6607	24.7812
1980	31.5	766,321		484,373	0.6321	26.0500
1979	32.5	1,106,101		700,036	0.6329	28.8425
1978	33.5	558,161		312,076	0.5591	30.0091
1977	34.5	324,685		106,634	0.3284	19.4437
1976	35.5	528,644		467,887	0.8851	33.8001
1975	36.5	325,999		40,802	0.1252	24.9627

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

Age Distribution

Vintage	Age as of 12/31/2011	Derived Additions	1970 Opening Balance	Experience to 12/31/2011 Amount Surviving	Proportion Surviving	Realized Life
A	B	C	D	E	F=E/(C+D)	G
1974	37.5	647,718		503,104	0.7767	34.4315
1973	38.5	172,298		89,616	0.5201	31.2942
1972	39.5	1,410,584		809,597	0.5739	35.5490
1971	40.5	6,535,033		6,272,640	0.9598	40.0257
1970	41.5	123,445		39,309	0.3184	31.7838
1969	42.5		541,386	425,510	0.7860	39.6949
1968	43.5		596,140	281,732	0.4726	34.5165
1967	44.5		736,021	491,422	0.6677	40.8398
1966	45.5		241,018	101,286	0.4202	37.4516
1965	46.5		1,757,983	242,938	0.1382	38.6482
1964	47.5		694,850	392,206	0.5644	42.2566
1963	48.5		681,726	599,342	0.8792	47.1440
1962	49.5		586,462	302,281	0.5154	45.8840
1961	50.5		134,492	20,843	0.1550	34.7697
1960	51.5		96,397	10,364	0.1075	39.1399
1959	52.5		200,627	115,835	0.5774	45.9524
1958	53.5		185,546	74,138	0.3996	47.6693
1957	54.5		458,736	33,212	0.0724	36.4937
1956	55.5		228,192	75,200	0.3295	49.1992
1955	56.5		519,007	216,559	0.4173	53.0621
1954	57.5		980,574	280,316	0.2859	55.0107
1953	58.5		2,231,281	1,801,370	0.8073	56.5131
1952	59.5		33,450	7,126	0.2130	44.8943
1951	60.5		432,698	307,330	0.7103	54.8329
1950	61.5		914,162	458,185	0.5012	58.7199
1949	62.5		3,844,166	3,576,874	0.9305	61.0833
1948	63.5		296,850	8,067	0.0272	49.0266
1947	64.5		171,872	909	0.0053	40.4288
1946	65.5		7,173	421	0.0587	50.0184
1945	66.5		235	59	0.2493	53.7418
1944	67.5		1,175		0.0000	55.9259
1943	68.5		25,531	24,385	0.9551	67.7146
1942	69.5		35,863		0.0000	59.6223
1941	70.5		55,518	14,519	0.2615	56.7175
1940	71.5		447,364	2,477	0.0055	46.1098
1939	72.5		4,334		0.0000	61.4075
1938	73.5		1,824	1,824	1.0000	73.5000

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

Age Distribution

Vintage	Age as of 12/31/2011	Derived Additions	1970 Opening Balance	Experience to 12/31/2011 Amount Surviving	Proportion Surviving	Realized Life
A	B	C	D	E	F=E/(C+D)	G
1937	74.5		674		0.0000	54.4400
1936	75.5		36,853	173	0.0047	66.4121
1935	76.5		59,449	15,307	0.2575	66.4392
1934	77.5		2,980		0.0000	53.4619
1933	78.5		21,935	19,635	0.8951	77.9433
1932	79.5		4,044	2,086	0.5158	73.8702
1931	80.5		167,486	73,074	0.4363	72.7739
1930	81.5		969,403	78,703	0.0812	67.0160
1929	82.5		2,836,467	38,919	0.0137	69.4836
1928	83.5		323,707	8,522	0.0263	69.1105
1927	84.5		167,937		0.0000	71.7557
Total	15.4	$184,742,506	$21,733,590	$178,365,386	0.8639	

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

Unadjusted Plant History

Year	Beginning Balance	Additions	Retirements	Sales, Transfers & Adjustments	Ending Balance
A	B	C	D	E	F=B+C-D+E
1970	11,364,686	117,692			11,482,378
1971	11,482,378	889,015			12,371,393
1972	12,371,393	409,780			12,781,172
1973	12,781,172	158,388			12,939,561
1974	12,939,561	561,983			13,501,544
1975	13,501,544	324,239			13,825,783
1976	13,825,783	97,959			13,923,742
1977	13,923,742	297,813			14,221,556
1978	14,221,556	274,016			14,495,571
1979	14,495,571	808,978			15,304,549
1980	15,304,549	435,787	61,967		15,678,370
1981	15,678,370	1,137,682	54,083		16,761,969
1982	16,761,969	3,699,347	38,314		20,423,003
1983	20,423,003	750,353	519,195		20,654,160
1984	20,654,160	2,586,183	269,952		22,970,391
1985	22,970,391	1,169,339	803,283		23,336,447
1986	23,336,447	2,936,363	710,980		25,561,830
1987	25,561,830	953,574	1,664,985		24,850,419
1988	24,850,419	1,242,831	176,814		25,916,435
1989	25,916,435	2,174,262	376,320		27,714,377
1990	27,714,377	272,208	118,712		27,867,873
1991	27,867,873	2,683,825	993,076		29,558,622
1992	29,558,622	1,823,837	428,435		30,954,025
1993	30,954,025	1,637,021	(8,293)		32,599,339
1994	32,599,339	3,306,702			35,906,041
1995	35,906,041	3,273,816	247,870		38,931,987
1996	38,931,987	176,132	1,213,758		37,894,361
1997	37,894,361		34,171		37,860,191
1998	37,860,191	3,935,903	68,457		41,727,636
1999	41,727,636	3,309,628	47,277		44,989,987
2000	44,989,987	9,872,772	691,775		54,170,984
2001	54,170,984	2,577			54,173,561
2002	54,173,561	16,229,708	622,261	59,472,267	129,253,275
2003	129,253,275	11,902,377	597,653	997,766	141,555,765
2004	141,555,765	6,617,559	2,437,469		145,735,855
2005	145,735,855	3,462,048	1,340,155		147,857,747
2006	147,857,747	4,916,156	7,491,107	721,172	146,003,968
2007	146,003,968	5,476,542	801,405	(89,992)	150,589,114
2008	150,589,114	5,257,899	645,867		155,201,145
2009	155,201,145	3,284,609	4,037,486	(252,908)	154,195,360

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

Unadjusted Plant History

Year	Beginning Balance	Additions	Retirements	Sales, Transfers & Adjustments	Ending Balance
A	B	C	D	E	F=B+C-D+E
2010	154,195,360	3,809,947	423,315		157,581,992
2011	157,581,992	21,986,255	1,202,862		178,365,386

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

Adjusted Plant History

Year	Beginning Balance	Additions	Retirements	Sales, Transfers & Adjustments	Ending Balance
A	B	C	D	E	F=B+C-D+E
1970	11,364,686	117,692			11,482,378
1971	11,482,378	889,015			12,371,393
1972	12,371,393	409,780			12,781,172
1973	12,781,172	158,388			12,939,561
1974	12,939,561	561,983			13,501,544
1975	13,501,544	324,239			13,825,783
1976	13,825,783	97,959			13,923,742
1977	13,923,742	297,813			14,221,556
1978	14,221,556	274,016			14,495,571
1979	14,495,571	808,978			15,304,549
1980	15,304,549	435,787	61,967		15,678,370
1981	15,678,370	1,137,682	54,083		16,761,969
1982	16,761,969	3,699,347	38,314		20,423,003
1983	20,423,003	750,353	519,168		20,654,188
1984	20,654,188	2,586,183	269,980		22,970,391
1985	22,970,391	1,169,339	802,416		23,337,314
1986	23,337,314	2,936,363	711,847		25,561,830
1987	25,561,830	953,574	1,606,025		24,909,379
1988	24,909,379	1,242,831	168,294		25,983,916
1989	25,983,916	2,174,262	376,320		27,781,858
1990	27,781,858	272,208	118,331		27,935,735
1991	27,935,735	2,683,825	880,313		29,739,247
1992	29,739,247	1,823,837	413,387		31,149,698
1993	31,149,698	1,650,778	187,380		32,613,096
1994	32,613,096	3,306,702			35,919,798
1995	35,919,798	3,273,816	247,870		38,945,744
1996	38,945,744	176,132	1,213,758		37,908,118
1997	37,908,118		34,171		37,873,948
1998	37,873,948	3,935,903	68,457		41,741,393
1999	41,741,393	3,357,870	47,277		45,051,986
2000	45,051,986	9,897,760	691,775		54,257,971
2001	54,257,971	347,001			54,604,972
2002	54,604,972	17,232,597	622,261	59,472,267	130,687,575
2003	130,687,575	9,031,335	597,653	997,766	140,119,023
2004	140,119,023	6,048,276	2,437,469		143,729,831
2005	143,729,831	5,665,509	1,340,155		148,055,185
2006	148,055,185	5,181,128	7,491,107	721,172	146,466,377
2007	146,466,377	5,017,364	801,405	(89,992)	150,592,345
2008	150,592,345	6,143,356	645,867		156,089,833
2009	156,089,833	3,030,178	4,037,486	(252,908)	154,829,617

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

Adjusted Plant History

Year	Beginning Balance	Additions	Retirements	Sales, Transfers & Adjustments	Ending Balance
A	B	C	D	E	F=B+C-D+E
2010	154,829,617	2,969,224	423,315		157,375,526
2011	157,375,526	22,192,721	1,202,862		178,365,386

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

T-Cut: None

Placement Band: 1927-2011

Hazard Function: Proportion Retired

Weighting: Exposures

Rolling Band Life Analysis

Observation Band	Censoring	First Degree			Second Degree			Third Degree		
		Average Life	Dispersion	Conf. Index	Average Life	Dispersion	Conf. Index	Average Life	Dispersion	Conf. Index
A	B	C	D	E	F	G	H	I	J	K
1970-1974	100.0				No Retirements					
1971-1975	100.0				No Retirements					
1972-1976	100.0				No Retirements					
1973-1977	100.0				No Retirements					
1974-1978	100.0				No Retirements					
1975-1979	100.0				No Retirements					
1976-1980	92.5	146.0	R1.5 *	0.65	108.4	S2 *	0.98	81.2	R4 *	1.31
1977-1981	91.7	130.5	S0 *	0.64	113.9	S1 *	0.54	103.1	S1.5 *	0.53
1978-1982	89.7	126.3	S0 *	0.66	110.5	S1	0.62	170.0	R1.5 *	0.67
1979-1983	63.5	74.7	L0	4.26	60.9	R1.5	2.44	116.8	SC *	2.17
1980-1984	55.8	61.2	L0.5	5.54	55.6	R1	3.00	75.2	O3 *	3.05
1981-1985	31.4	45.5	O2	7.65	44.7	R0.5	4.49	53.3	O2 *	3.79
1982-1986	4.8	37.4	L0	13.94	38.1	SC	15.38	58.7	O4 *	13.93
1983-1987	1.3	27.7	L0	5.22	28.8	L0	6.77	28.7	L0	6.57
1984-1988	2.5	29.8	L0	5.92	30.9	L0	7.48	30.6	L0	7.07
1985-1989	3.3	29.8	L0.5	5.12	31.4	L0.5	6.55	31.0	L0	5.91
1986-1990	7.4	33.9	L0.5	5.78	34.8	L0.5	6.63	34.2	L0.5	5.73
1987-1991	2.4	33.2	L1	5.86	34.7	S-.5	7.99	34.1	L0.5	7.20
1988-1992	12.7	42.4	L1 *	4.23	43.1	S0	4.75	43.2	L1.5	4.61
1989-1993	12.7	43.0	L1 *	4.58	42.9	L1	4.54	51.6	O2 *	3.73
1990-1994	20.2	49.0	L1	8.21	54.4	O2 *	6.74	69.5	O4 *	5.23
1991-1995	7.4	47.0	L1.5 *	11.41	46.9	L1 *	10.46	59.6	O3 *	9.65
1992-1996	10.7	45.8	L1	7.69	46.0	L1	8.82	45.7	S-.5 *	10.32
1993-1997	23.4	52.1	L1	2.56	52.2	R1	4.94	52.3	R1 *	6.77
1994-1998	24.7	55.4	L1	3.72	54.9	R1.5	4.80	55.4	R1.5	7.02
1995-1999	27.8	55.4	L1	4.19	54.8	R1.5	3.64	55.1	R1.5	3.78
1996-2000	13.9	50.8	L1	3.90	51.1	R1	4.32	52.2	R1	5.93
1997-2001	48.6	80.6	L1	3.64	71.8	R2	2.87	70.0	R2.5	3.68
1998-2002	0.0	72.5	L1	13.59	67.3	R1.5	13.83	65.8	R2 *	16.76
1999-2003	4.1	70.9	L1	21.56	66.4	R1.5	22.18	64.8	R2	24.56
2000-2004	15.6	59.1	L0.5	8.34	57.5	S-.5	8.69	70.2	O3 *	8.01
2001-2005	21.0	64.3	L0	9.32	60.6	R0.5	9.93	87.5	O3 *	8.25
2002-2006	0.0	37.1	L0.5	5.88	38.9	R0.5	9.58	39.1	SC	10.70
2003-2007	0.1	37.0	L1	4.70	40.1	R1	10.63	40.5	S-.5	12.54
2004-2008	0.3	37.3	L1 *	4.60	40.5	R1	10.62	41.4	R0.5	13.05
2005-2009	0.3	35.7	L1	4.76	37.5	R0.5	9.26	38.5	SC *	11.86
2006-2010	0.1	37.1	L1.5 *	4.74	38.7	R1	9.40	40.3	SC *	13.25

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

T-Cut: None

Placement Band: 1927-2011

Hazard Function: Proportion Retired

Weighting: Exposures

Rolling Band Life Analysis

Observation Band	Censoring	First Degree			Second Degree			Third Degree		
		Average Life	Dispersion	Conf. Index	Average Life	Dispersion	Conf. Index	Average Life	Dispersion	Conf. Index
A	B	C	D	E	F	G	H	I	J	K
2007-2011	5.3	50.3	L1.5 *	6.31	49.9	R1.5	6.56	51.1	R1.5 *	6.70

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

T-Cut: None

Placement Band: 1927-2011

Hazard Function: Proportion Retired

Weighting: Exposures

Shrinking Band Life Analysis

Observation Band	Censoring	First Degree			Second Degree			Third Degree		
		Average Life	Dispersion	Conf. Index	Average Life	Dispersion	Conf. Index	Average Life	Dispersion	Conf. Index
A	B	C	D	E	F	G	H	I	J	K
1970-2011	1.7	46.0	L1	4.47	46.5	R1	4.62	46.8	R1	4.18
1972-2011	1.6	45.7	L1	4.23	46.3	R1	4.51	46.6	R1	4.26
1974-2011	1.6	45.3	L1	4.05	46.0	R1	4.41	46.3	R1	4.29
1976-2011	1.5	44.9	L1	3.71	45.6	R1	4.27	46.0	R1	4.40
1978-2011	1.5	44.5	L1	3.53	45.3	R1	4.16	45.7	R0.5	4.40
1980-2011	1.4	44.0	L1	3.46	44.8	R1	4.08	45.3	R0.5	4.32
1982-2011	1.4	43.6	L1	3.37	44.5	R1	4.09	44.9	R0.5	4.35
1984-2011	1.4	43.4	L1	3.45	44.3	R1	4.16	44.9	R0.5	4.37
1986-2011	1.4	43.6	L1	3.72	44.5	R1	4.37	45.1	R0.5 *	4.42
1988-2011	1.6	45.0	L1	4.24	45.9	R1	5.01	46.7	R1 *	5.00
1990-2011	1.6	44.9	L1	4.32	45.7	R1	5.21	46.6	R1 *	5.24
1992-2011	1.7	45.2	L1	4.68	46.0	R1	5.47	47.0	R1 *	5.37
1994-2011	1.8	45.1	L1	5.11	45.9	R1	5.77	47.0	R1 *	5.49
1996-2011	1.7	44.4	L1	4.63	45.3	R1	5.71	46.4	R1 *	5.84
1998-2011	1.9	44.7	L1	4.99	45.6	R1	6.41	46.6	R1 *	6.72
2000-2011	1.6	43.7	L1	4.29	44.7	R1	6.01	45.8	R0.5 *	6.65
2002-2011	1.5	43.1	L1	3.82	44.1	R1	5.83	45.2	R0.5 *	6.76
2004-2011	0.8	40.4	L1	3.08	41.7	R1	5.52	43.0	R0.5 *	7.21
2006-2011	0.2	38.8	L1.5 *	3.57	40.6	R1	8.27	42.5	R0.5 *	11.95
2008-2011	4.0	50.9	L1	5.80	53.0	L0.5 *	6.30	50.6	L1 *	5.94
2010-2011	32.6	57.9	L2 *	12.31	57.7	S2	11.42	57.8	R2.5	11.38

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

T-Cut: None
Placement Band: 1927-2011
Hazard Function: Proportion Retired
Weighting: Exposures

Progressing Band Life Analysis

Observation Band	Censoring	First Degree			Second Degree			Third Degree		
		Average Life	Dispersion	Conf. Index	Average Life	Dispersion	Conf. Index	Average Life	Dispersion	Conf. Index
A	B	C	D	E	F	G	H	I	J	K
1970-1971	100.0				No Retirements					
1970-1973	100.0				No Retirements					
1970-1975	100.0				No Retirements					
1970-1977	100.0				No Retirements					
1970-1979	100.0				No Retirements					
1970-1981	95.1	155.6	R1.5 *	0.45	121.1	S1.5	0.52	86.1	R4 *	0.63
1970-1983	77.0	112.1	S-.5	1.87	74.5	R2.5	2.36	68.8	R3	2.64
1970-1985	61.3	78.9	L0	4.68	60.4	R2	2.40	57.5	R2.5	2.62
1970-1987	29.7	51.0	L0.5	3.60	48.0	R1	3.54	46.1	R1	4.53
1970-1989	28.7	50.6	L0.5	4.67	48.8	R1	3.44	46.9	R1	3.57
1970-1991	23.6	48.5	L0.5	5.00	47.7	R1	2.90	46.2	R1	2.41
1970-1993	25.1	48.8	L0.5	4.24	48.0	R1	2.20	47.1	R1	1.95
1970-1995	14.2	50.7	L1	4.18	49.7	R1	2.36	49.0	R1	2.17
1970-1997	17.6	49.1	L0.5	4.35	48.6	R1	2.26	47.7	R1	1.88
1970-1999	21.0	51.5	L1	4.09	50.5	R1	2.24	50.0	R1	2.13
1970-2001	16.9	52.1	L1	4.32	51.2	R1	2.36	50.7	R1	2.21
1970-2003	10.7	55.2	L1	4.61	53.8	R1	3.39	53.3	R1	3.43
1970-2005	16.8	54.4	L0.5	4.40	53.0	S0	3.45	56.3	L1 *	3.17
1970-2007	0.4	44.6	L1	3.99	46.1	R1	4.56	46.0	R1	4.87
1970-2009	1.6	44.3	L1	3.33	44.9	R1	5.00	45.0	R0.5	5.05
1970-2011	1.7	46.0	L1	4.47	46.5	R1	4.62	46.8	R1	4.18

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

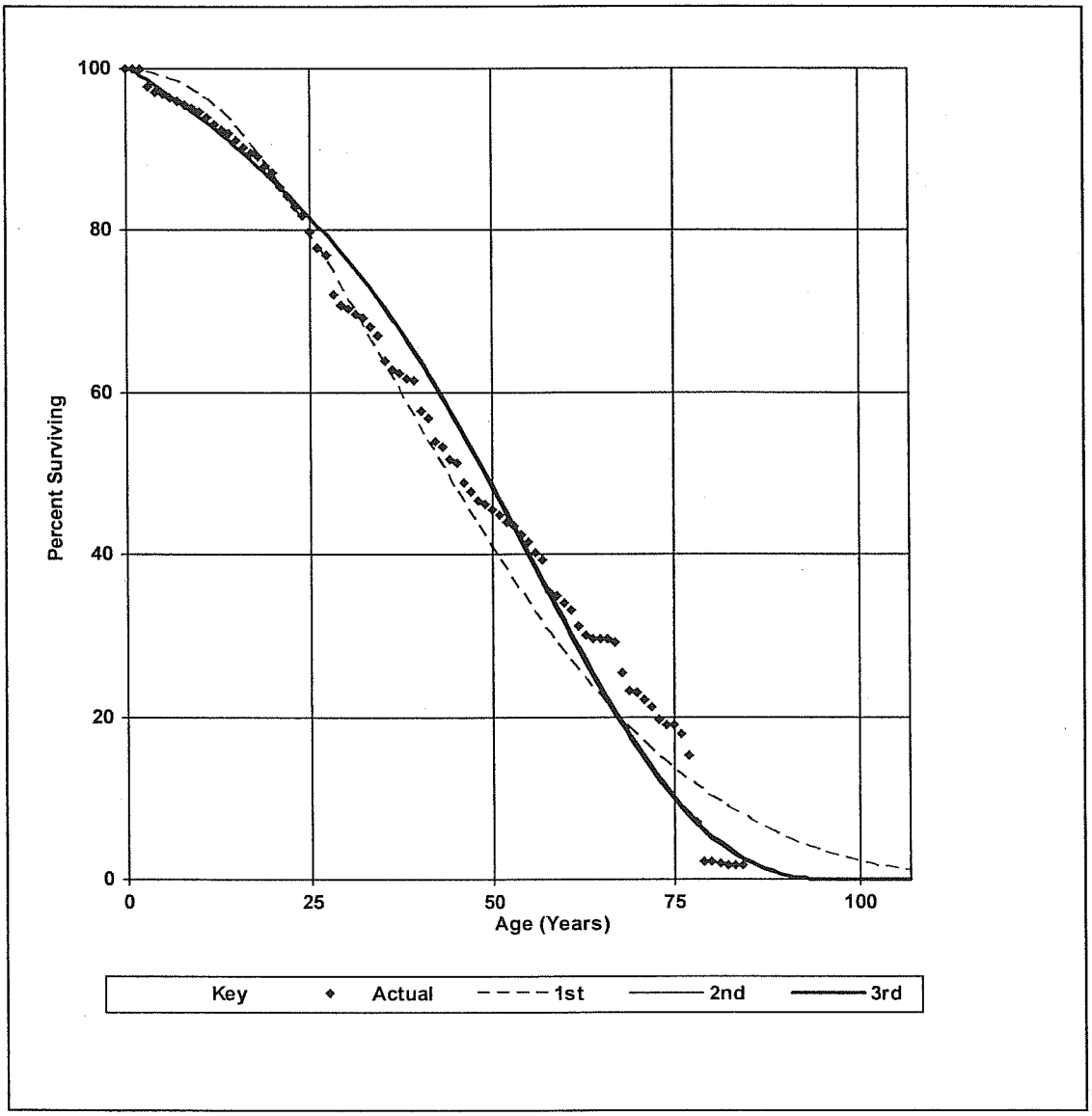
T-Cut: None

Placement Band: 1927-2011 Observation Band: 1970-2011

Hazard Function: Proportion Retired

Weighting: Exposures

Graphics Analysis 1st: 46.0-L1 2nd: 46.5-R1 3rd: 46.8-R1



KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

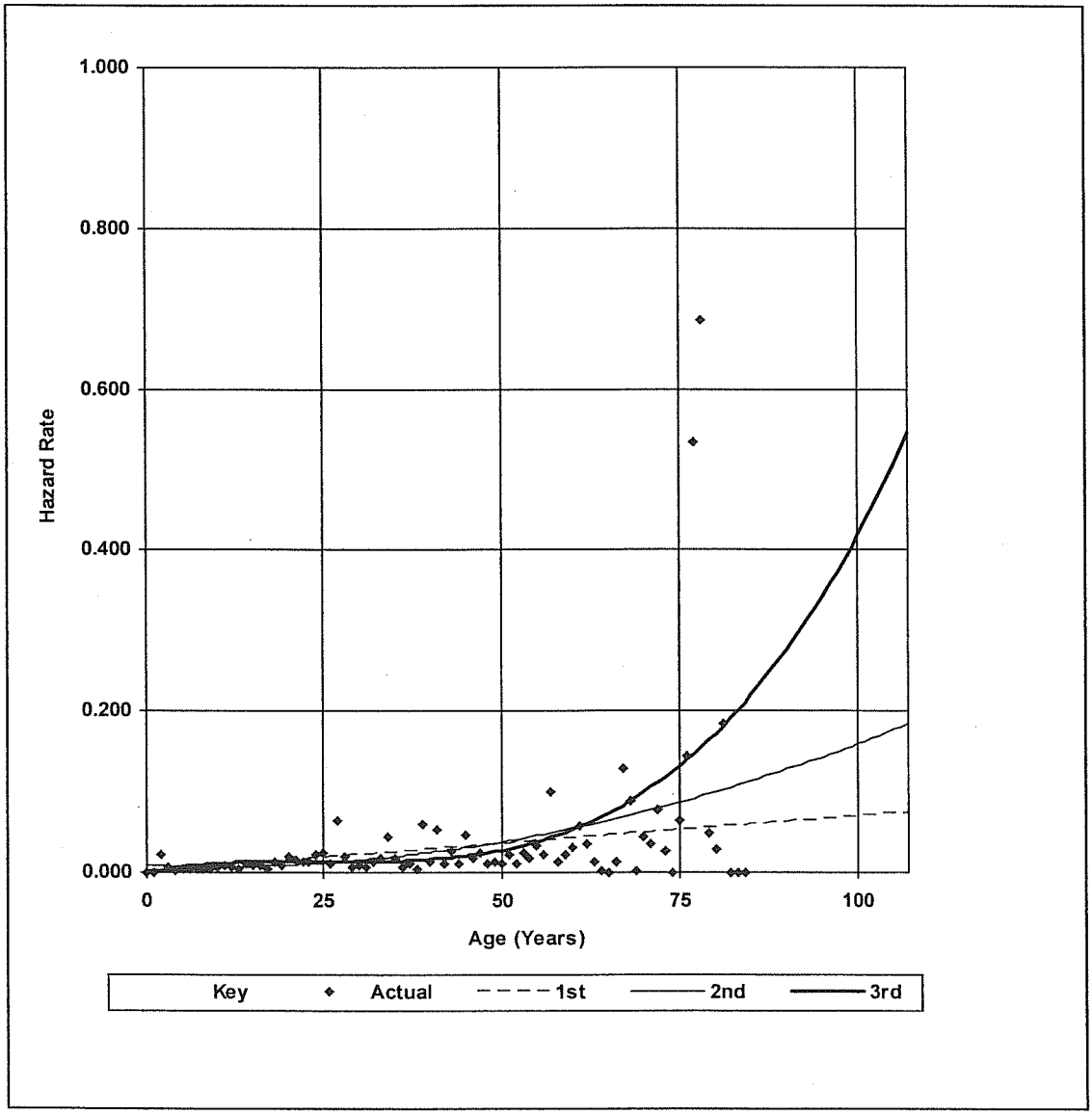
T-Cut: None

Placement Band: 1927-2011 Observation Band: 1970-2011

Hazard Function: Proportion Retired

Weighting: Exposures

Polynomial Hazard Function 1st: 46.0-L1 2nd: 46.5-R1 3rd: 46.8-R1



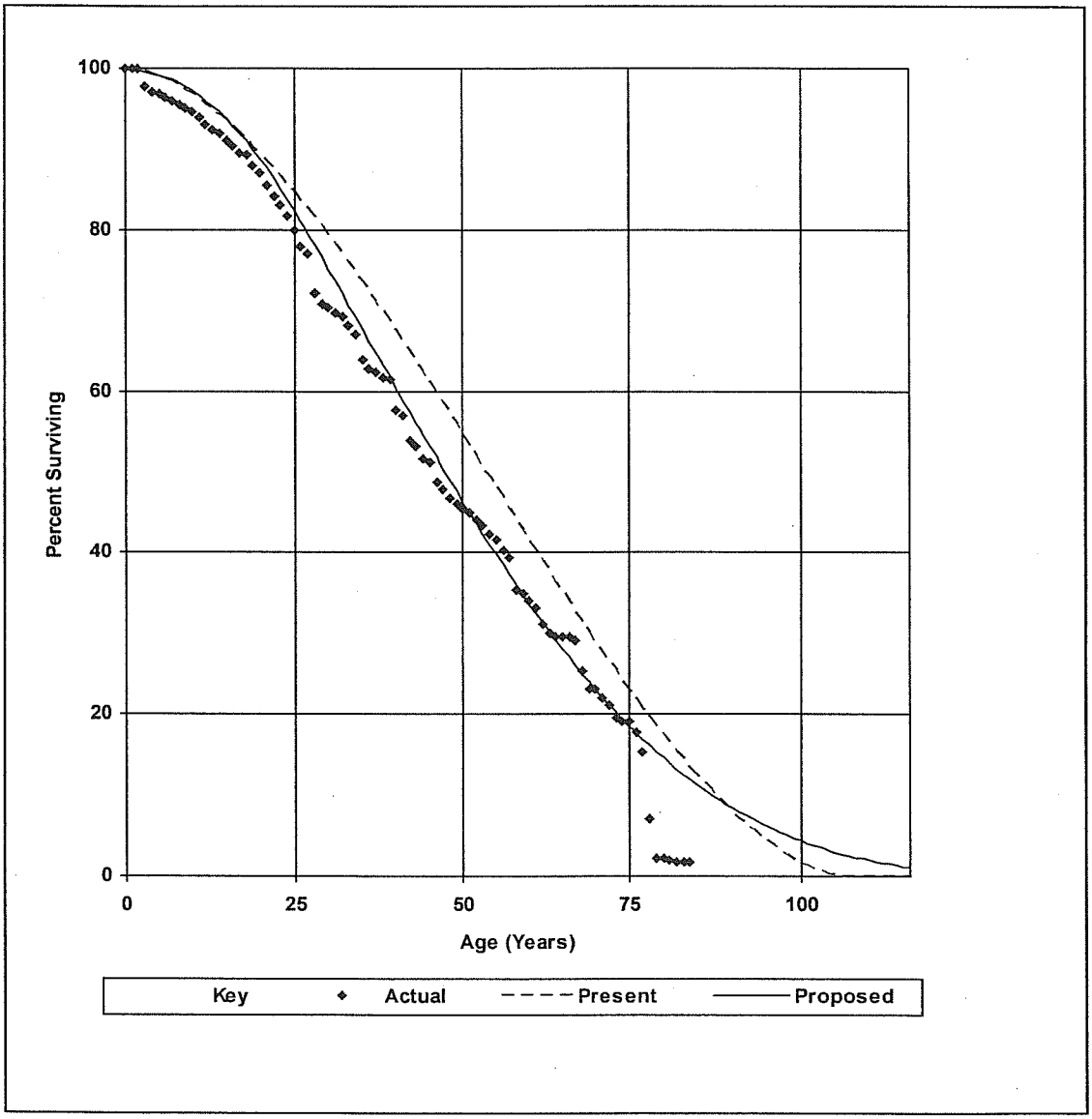
KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

T-Cut: None
Placement Band: 1927-2011
Observation Band: 1970-2011

Present and Proposed Projection Life Curves Present: 53.0-S0 Proposed: 50.0-L1



KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

Unadjusted Net Salvage History

		Gross Salvage			Cost of Retiring			Net Salvage		
Year	Retirements	Amount	Pct.	5-Yr Avg.	Amount	Pct.	5-Yr Avg.	Amount	Pct.	5-Yr Avg.
A	B	C	D=C/B	E	F	G=F/B	H	I=C-F	J=I/B	K
1978		61,434	0.0		38,332	0.0		23,102	0.0	
1979		21,108	0.0		27,260	0.0		(6,152)	0.0	
1980	61,967	54,569	88.1		42,756	69.0		11,813	19.1	
1981	54,083	(4,745)	-8.8		46,515	86.0		(51,260)	-94.8	
1982	38,314	(5,981)	-15.6	81.9	63,357	165.4	141.4	(69,338)	-181.0	-59.5
1983	519,195	352,794	68.0	62.0	276,899	53.3	67.8	75,895	14.6	-5.8
1984	269,952	242,667	89.9	67.8	273,435	101.3	74.5	(30,768)	-11.4	-6.7
1985	803,283	(39,190)	-4.9	32.4	104,539	13.0	45.4	(143,729)	-17.9	-13.0
1986	710,980	197,210	27.7	31.9	188,190	26.5	38.7	9,020	1.3	-6.8
1987	1,664,985	159,793	9.6	23.0	134,266	8.1	24.6	25,527	1.5	-1.6
1988	176,814	403,200	228.0	26.6	90,567	51.2	21.8	312,633	176.8	4.8
1989	376,320	94,714	25.2	21.9	130,157	34.6	17.4	(35,443)	-9.4	4.5
1990	118,712	431,953	363.9	42.2	148,251	124.9	22.7	283,702	239.0	19.5
1991	993,076	745,055	75.0	55.1	68,511	6.9	17.2	676,544	68.1	37.9
1992	428,435	73,570	17.2	83.5	226,383	52.8	31.7	(152,813)	-35.7	51.8
1993	(8,293)	31,934	-385.1	72.2	81,655	-984.6	34.3	(49,721)	599.5	37.8
1994		469,556	0.0	114.4	256,496	0.0	51.0	213,060	0.0	63.4
1995	247,870	31,786	12.8	81.4	38,187	15.4	40.4	(6,401)	-2.6	41.0
1996	1,213,758	(85,741)	-7.1	27.7	184,914	15.2	41.9	(270,655)	-22.3	-14.2
1997	34,171	642,234	2e+3	73.3	154,454	452.0	48.1	487,780	1e+3	25.1
1998	68,457	383,313	559.9	92.1	374,876	547.6	64.5	8,437	12.3	27.6
1999	47,277		0.0	60.3	4,719	10.0	47.0	(4,719)	-10.0	13.3
2000	691,775	100	0.0	45.7	265,527	38.4	47.9	(265,427)	-38.4	-2.2
2001			0.0	121.9	31,070	0.0	98.7	(31,070)	0.0	23.2
2002	622,261	18,524	3.0	28.1	25,593	4.1	49.1	(7,069)	-1.1	-21.0
2003	597,653	729,339	122.0	38.2	409,472	68.5	37.6	319,867	53.5	0.6
2004	2,437,469	1,042,405	42.8	41.2	1,744,729	71.6	56.9	(702,324)	-28.8	-15.8
2005	1,340,155	(34,971)	-2.6	35.1	186,375	13.9	48.0	(221,346)	-16.5	-12.8
2006	7,491,107		0.0	14.1	(184,435)	-2.5	17.5	184,435	2.5	-3.4
2007	801,405	440,099	54.9	17.2	434,174	54.2	20.4	5,925	0.7	-3.3
2008	645,867	479,097	74.2	15.2	327,774	50.7	19.7	151,323	23.4	-4.6
2009	4,037,486		0.0	6.2	733,791	18.2	10.5	(733,791)	-18.2	-4.3
2010	423,315	31,951	7.5	7.1	421,002	99.5	12.9	(389,051)	-91.9	-5.8
2011	1,202,862	575	0.0	13.4	1,326,778	110.3	45.6	(1,326,203)	-110.3	-32.2
Total	28,110,710	6,968,353	24.8		8,676,570	30.9		(1,708,217)	-6.1	

KANSAS GAS SERVICE

Transmission Plant

Account: 367.00 Mains

Adjusted Net Salvage History

		Gross Salvage			Cost of Retiring			Net Salvage		
Year	Retirements	Amount	Pct.	5-Yr Avg.	Amount	Pct.	5-Yr Avg.	Amount	Pct.	5-Yr Avg.
A	B	C	D=C/B	E	F	G=F/B	H	I=C-F	J=I/B	K
1978		51,234	0.0		38,332	0.0		12,902	0.0	
1979		4,720	0.0		27,260	0.0		(22,540)	0.0	
1980	61,967	19,455	31.4		42,756	69.0		(23,301)	-37.6	
1981	54,083	16,366	30.3		46,515	86.0		(30,149)	-55.7	
1982	38,314	38,796	101.3	84.6	63,357	165.4	141.4	(24,561)	-64.1	-56.8
1983	519,168	269,159	51.8	51.7	276,899	53.3	67.8	(7,740)	-1.5	-16.1
1984	269,980	206,009	76.3	58.3	273,435	101.3	74.5	(67,426)	-25.0	-16.2
1985	802,416	379,544	47.3	54.0	104,539	13.0	45.4	275,005	34.3	8.6
1986	711,847	198,104	27.8	46.6	188,190	26.4	38.7	9,914	1.4	7.9
1987	1,606,025	17,186	1.1	27.4	134,266	8.4	25.0	(117,080)	-7.3	2.4
1988	168,294	201,194	119.5	28.2	90,567	53.8	22.2	110,627	65.7	5.9
1989	376,320	3,002	0.8	21.8	130,157	34.6	17.7	(127,155)	-33.8	4.1
1990	118,331	332,398	280.9	25.2	148,251	125.3	23.2	184,147	155.6	2.0
1991	880,313	578,532	65.7	36.0	68,511	7.8	18.2	510,021	57.9	17.8
1992	413,387	40,021	9.7	59.0	226,383	54.8	33.9	(186,362)	-45.1	25.1
1993	187,380	(1,728)	-0.9	48.2	81,655	43.6	33.2	(83,383)	-44.5	15.0
1994		469,556	0.0	88.7	256,496	0.0	48.8	213,060	0.0	39.9
1995	247,870	4,265	1.7	63.1	38,187	15.4	38.8	(33,922)	-13.7	24.3
1996	1,213,758	(85,741)	-7.1	20.7	184,914	15.2	38.2	(270,655)	-22.3	-17.5
1997	34,171	643,513	2e+3	61.2	154,454	452.0	42.5	489,059	1e+3	18.7
1998	68,457	383,313	559.9	90.5	374,876	547.6	64.5	8,437	12.3	26.0
1999	47,277		0.0	58.7	4,719	10.0	47.0	(4,719)	-10.0	11.7
2000	691,775		0.0	45.8	265,527	38.4	47.9	(265,527)	-38.4	-2.1
2001			0.0	122.0	31,070	0.0	98.7	(31,070)	0.0	23.3
2002	622,261		0.0	26.8	25,593	4.1	49.1	(25,593)	-4.1	-22.3
2003	597,653		0.0	0.0	409,472	68.5	37.6	(409,472)	-68.5	-37.6
2004	2,437,469		0.0	0.0	1,744,729	71.6	56.9	(1,744,729)	-71.6	-56.9
2005	1,340,155		0.0	0.0	186,375	13.9	48.0	(186,375)	-13.9	-48.0
2006	7,491,107		0.0	0.0	(184,435)	-2.5	17.5	184,435	2.5	-17.5
2007	801,405	440,099	54.9	3.5	434,174	54.2	20.4	5,925	0.7	-17.0
2008	645,867	479,097	74.2	7.2	327,774	50.7	19.7	151,323	23.4	-12.5
2009	4,037,486		0.0	6.4	733,791	18.2	10.5	(733,791)	-18.2	-4.0
2010	423,315	31,951	7.5	7.1	421,002	99.5	12.9	(389,051)	-91.9	-5.8
2011	1,202,862	575	0.0	13.4	1,326,778	110.3	45.6	(1,326,203)	-110.3	-32.2
Total	28,110,710	4,720,621	16.8		8,676,570	30.9		(3,955,949)	-14.1	