Statement of Qualifications of Lori J. Mack

I hold a Bachelor of Science in Professional Accounting and Management from Northern State University (2005), an MBA from Colorado Technical University (2007), and a Master of Science in Accounting (2022). In 2024, I earned the Certified Management Accountant (CMA) designation.

My professional journey began in retail, where I gained extensive experience in both front and back-office operations. I progressed through roles of increasing responsibility, ultimately joining the management team. In this capacity, I oversaw front and back-office operations, safety, and theft reduction initiatives, audited stores across a three-state region, and trained managers in best practices.

In 2015, I transitioned to Black Hills Service Company as an Accountant in the Property Accounting department. My responsibilities included the creation, audit, and closure of capital work orders. I took on additional duties, such as reviewing team members' work and leading consolidation projects, which led to my promotion to Senior Accountant in 2018.

By 2021, I advanced to the role of Manager within the Property Accounting department, where I supervised a team of property accountants for the gas companies and service company. In 2023, I assumed my current position as Regulatory Manager for the Revenue Requirements and Reporting team. In this role, I oversee a team of analysts responsible for preparing annual reports, normalized earnings reports, FERC formula rate filings, and revenue requirement studies to support various rate base filings across multiple states.

2018 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION
ACCRUALS RELATED TO UTILITY PLANT
AS OF OCTOBER 31, 2018

Prepared by:

Gannett Fleming

Excellence Delivered As Promised

BLACK HILLS SERVICE COMPANY
Rapid City, South Dakota

2018 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION
ACCRUALS RELATED TO UTILITY PLANT
AS OF OCTOBER 31, 2018

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC
Harrisburg, Pennsylvania

Gannett Fleming

Excellence Delivered ***As Promised***

February 4, 2019

Black Hills Service Company
7001 Mr. Rushmore Road
Rapid City, SD 57702

Attention Mr. Frederic C. Stoffel
Director, Regulatory

Ladies and Gentlemen:

Pursuant to your request, we have conducted a depreciation study related to the utility plant of Black Hills Service Company as of October 31, 2018. The attached report presents a description of the methods used in the estimation of depreciation, the summary of annual depreciation accrual rates, the statistical support for the life and net salvage estimates and the detailed tabulations of annual depreciation.

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC.

John J. Spanos

JOHN J. SPANOS
President

JJS:mle

064663.000

Gannett Fleming Valuation and Rate Consultants, LLC
P.O. Box 67100 • Harrisburg, PA 17106-7100 | 207 Senate Avenue • Camp Hill, PA 17011
t: 717.763.7211 • f: 717.763.4590
www.gfvrc.com

TABLE OF CONTENTS

TABLE OF CONTENTS, cont.

BLACK HILLS SERVICE COMPANY

DEPRECIATION STUDY

EXECUTIVE SUMMARY

Pursuant to Black Hills Service Company ("BHSC" or "Company") request, Gannett Fleming Valuation and Rate Consultants, LLC ("Gannett Fleming") conducted a depreciation study related to the utility plant of BHSC as of October 31, 2018. The purpose of this study was to determine the annual depreciation accrual rates and amounts for book and ratemaking purposes of the consolidated companies.

The depreciation rates are based on the straight line method using the average service life ("ASL") procedure and were applied on a remaining life basis. The calculations were based on attained ages and estimated average service life and forecasted net salvage characteristics for each depreciable group of assets.

BHSC's accounting policy has not changed since the last study and depreciation rates were most recently established. However, there have been changes to the plant in service due to system improvements, as well as the consolidation of the service company and utility holdings assets. The consolidation has produced some changes in the life and salvage estimates which creates new depreciation rates as compared to what currently are utilized for the individual entities.

Gannett Fleming recommends the calculated annual depreciation accrual rates set forth herein apply specifically to utility plant in service as of October 31, 2018 as summarized by Table 1 of the study. Supporting analysis and calculations are provided within the study.

The study results set forth an annual depreciation expense of $21.7 million when applied to depreciable plant balances as of October 31, 2018. The results are summarized at the functional level as follows:

SUMMARY OF ORIGINAL COST, ACCRUAL RATES AND AMOUNTS

FUNCTION	ORIGINAL COST	PROPOSED RATE	ANNUAL ACCRUAL
ELECTRIC PLANT			
DISTRIBUTION	$ 2,838,926.62	5.55	$ 157,682
GENERAL	16,928,411.69	12.06	2,041,599
TOTAL ELECTRIC PLANT	**$19,767,338.31**	**11.13**	**$2,199,281**
GAS PLANT			
DISTRIBUTION	$ 7,705,095.06	5.66	$ 436,087
GENERAL	7,712,696.29	8.89	685,599
TOTAL GAS PLANT	**$15,417,791.35**	**7.28**	**$1,121,686**
COMMON PLANT	**$183,654,382.02**	**7.94**	**$14,574,450**
UNRECOVERED RESERVE			
ELECTRIC PLANT	-		$ 272,138
GAS PLANT	-		423,409
COMMON PLANT	-		3,117,661
TOTAL UNRECOVERED RESERVE			**$3,813,208**
TOTAL	**$218,839,511.68**	**9.92**	**$21,708,625**

PART I. INTRODUCTION

BLACK HILLS SERVICE COMPANY

DEPRECIATION STUDY

PART I. INTRODUCTION

SCOPE

This report sets forth the results of the depreciation study for Black Hills Service Company ("Company"), to determine the annual depreciation accrual rates and amounts for book purposes applicable to the original cost of utility plant as of October 31, 2018. The rates and amounts are based on the straight line remaining life method of depreciation. This report also describes the concepts, methods and judgments which underlie the recommended annual depreciation accrual rates related to utility plant in service as of October 31, 2018.

The service life and net salvage estimates resulting from the study were based on informed judgment which incorporated analyses of historical plant retirement data as recorded through October 2018, a review of Company practice and outlook as they relate to plant operation and retirement, and consideration of current practice in the gas and electric industries, including knowledge of service lives and net salvage estimates used for other gas and electric companies.

PLAN OF REPORT

Part I, Introduction, contains statements with respect to the plan of the report, and the basis of the study. Part II, Estimation of Survivor Curves, presents descriptions of the considerations and methods used in the service life study. Part III, Service Life Considerations, presents the results of the average service life analysis. Part IV, Net Salvage Considerations, presents the results of the net salvage study. Part V, Calculation of Annual and Accrued Depreciation, describes the procedures used in the calculation of group depreciation. Part VI, Results of Study, presents summaries by depreciable group

of annual depreciation accrual rates and amounts, as well as composite remaining lives. Part VII, Service Life Statistics presents the statistical analysis of service life estimates, Part VIII, Net Salvage Statistics sets forth the statistical indications of net salvage percents, and Part IX, Detailed Depreciation Calculations presents the detailed tabulations of annual depreciation.

BASIS OF THE STUDY

Depreciation

Depreciation, in public utility regulation, is the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among causes to be given consideration are wear and tear, deterioration, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and the requirements of public authorities.

Depreciation, as used in accounting, is a method of distributing fixed capital costs, less net salvage, over a period of time by allocating annual amounts to expense. Each annual amount of such depreciation expense is part of that year's total cost of providing gas and electric utility service. Normally, the period of time over which the fixed capital cost is allocated to the cost of service is equal to the period of time over which an item renders service, that is, the item's service life. The most prevalent method of allocation is to distribute an equal amount of cost to each year of service life. This method is known as the straight-line method of depreciation.

For most accounts, the annual depreciation was calculated by the straight line method using the average service life procedure and the remaining life basis. For certain General Plant accounts, the annual depreciation is based on amortization accounting.

Both types of calculations were based on original cost, attained ages, and estimates of service lives and net salvage.

The straight line method, average service life procedure is a commonly used depreciation calculation procedure that has been widely accepted in jurisdictions throughout North America. Gannett Fleming recommends its continued use. Amortization accounting is used for certain General Plant accounts because of the disproportionate plant accounting effort required when compared to the minimal original cost of the large number of items in these accounts. An explanation of the calculation of annual and accrued amortization is presented beginning on page V-4 of the report.

Service Life and Net Salvage Estimates

The service life and net salvage estimates used in the depreciation and amortization calculations were based on informed judgment which incorporated a review of management's plans, policies and outlook, a general knowledge of the gas and electric utility industries, and comparisons of the service life and net salvage estimates from our studies of other gas and electric utilities. The use of survivor curves to reflect the expected dispersion of retirement provides a consistent method of estimating depreciation for gas and electric plant. Iowa type survivor curves were used to depict the estimated survivor curves for the plant accounts not subject to amortization accounting.

The procedure for estimating service lives consisted of compiling historical data for the plant accounts or depreciable groups, analyzing this history through the use of widely accepted techniques, and forecasting the survivor characteristics for each depreciable group on the basis of interpretations of the historical data analyses and the probable future. The combination of the historical experience and the estimated future yielded estimated survivor curves from which the average service lives were derived.

PART II. ESTIMATION OF SURVIVOR CURVES

PART II. ESTIMATION OF SURVIVOR CURVES

The calculation of annual depreciation based on the straight line method requires the estimation of survivor curves and the selection of group depreciation procedures. The estimation of survivor curves is discussed below and the development of net salvage is discussed in later sections of this report.

SURVIVOR CURVES

The use of an average service life for a property group implies that the various units in the group have different lives. Thus, the average life may be obtained by determining the separate lives of each of the units, or by constructing a survivor curve by plotting the number of units which survive at successive ages.

The survivor curve graphically depicts the amount of property existing at each age throughout the life of an original group. From the survivor curve, the average life of the group, the remaining life expectancy, the probable life, and the frequency curve can be calculated. In Figure 1, a typical smooth survivor curve and the derived curves are illustrated. The average life is obtained by calculating the area under the survivor curve, from age zero to the maximum age, and dividing this area by the ordinate at age zero. The remaining life expectancy at any age can be calculated by obtaining the area under the curve, from the observation age to the maximum age, and dividing this area by the percent surviving at the observation age. For example, in Figure 1, the remaining life at age 30 is equal to the crosshatched area under the survivor curve divided by 29.5 percent surviving at age 30. The probable life at any age is developed by adding the age and remaining life. If the probable life of the property is calculated for each year of age, the probable life curve shown in the chart can be developed. The frequency curve presents the number of units retired in each age interval. It is derived by obtaining the differences between the amount of property surviving at the beginning and at the end of each interval.

This study has incorporated the use of Iowa curves developed from a retirement rate analysis of historical retirement history. A discussion of the concepts of survivor curves and of the development of survivor curves using the retirement rate method is presented below.

Iowa Type Curves

The range of survivor characteristics usually experienced by utility and industrial properties is encompassed by a system of generalized survivor curves known as the Iowa type curves. There are four families in the Iowa system, labeled in accordance with the location of the modes of the retirements in relationship to the average life and the relative height of the modes. The left moded curves, presented in Figure 2, are those in which the greatest frequency of retirement occurs to the left of, or prior to, average service life. The symmetrical moded curves, presented in Figure 3, are those in which the greatest frequency of retirement occurs at average service life. The right moded curves, presented in Figure 4, are those in which the greatest frequency occurs to the right of, or after, average service life. The origin moded curves, presented in Figure 5, are those in which the greatest frequency of retirement occurs at the origin, or immediately after age zero. The letter designation of each family of curves (L, S, R or O) represents the location of the mode of the associated frequency curve with respect to the average service life. The numbers represent the relative heights of the modes of the frequency curves within each family.

The Iowa curves were developed at the Iowa State College Engineering Experiment Station through an extensive process of observation and classification of the ages at which industrial property had been retired. A report of the study which resulted in the classification of property survivor characteristics into 18 type curves, which constitute three of the four families, was published in 1935 in the form of the Experiment Station's Bulletin 125.

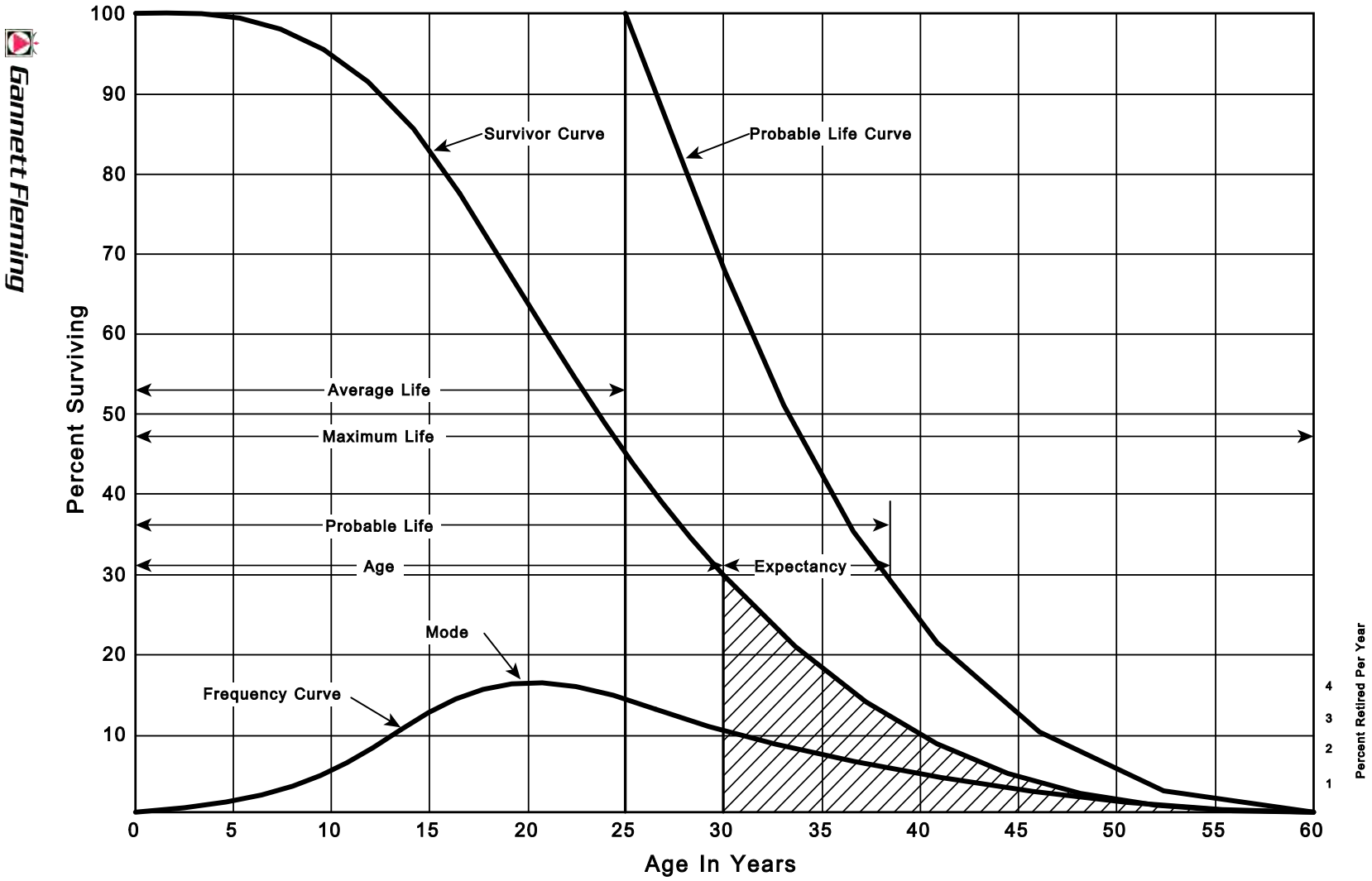


Figure 1. A Typical Survivor Curve and Derived Curves

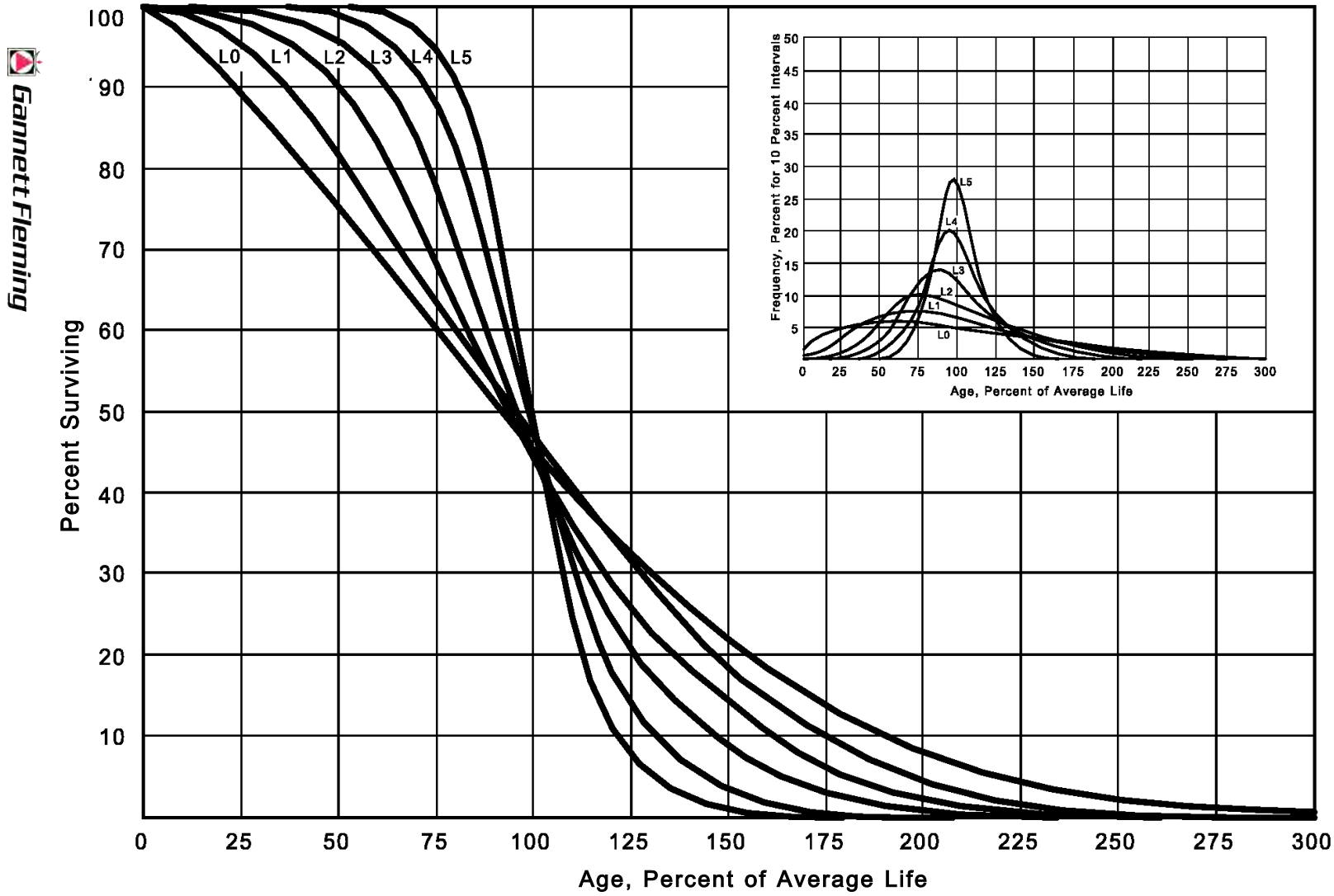


Figure 2. Left Modal or "L" Iowa Type Survivor Curves

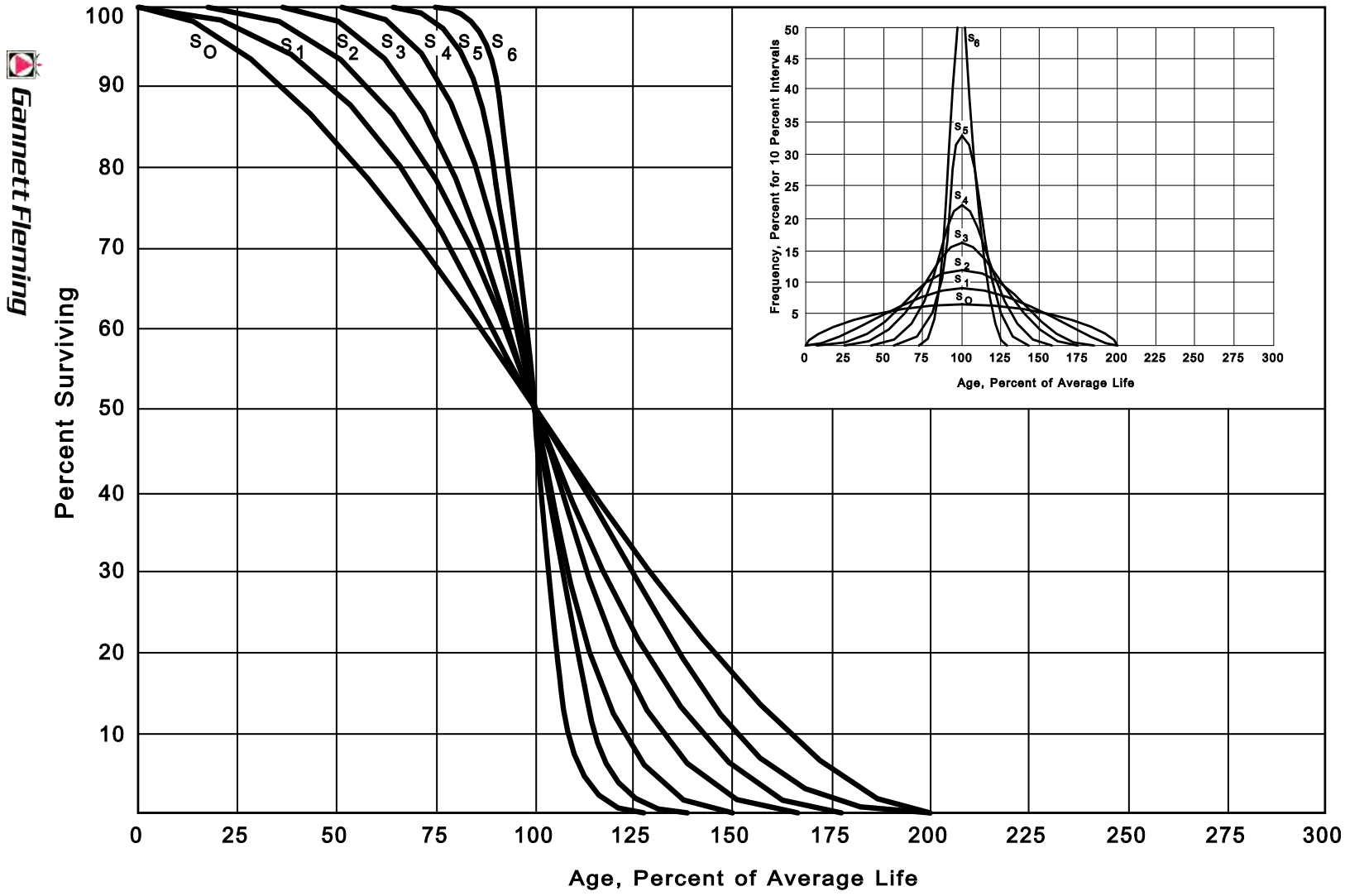


Figure 3. Symmetrical or "S" Iowa Type Survivor Curves

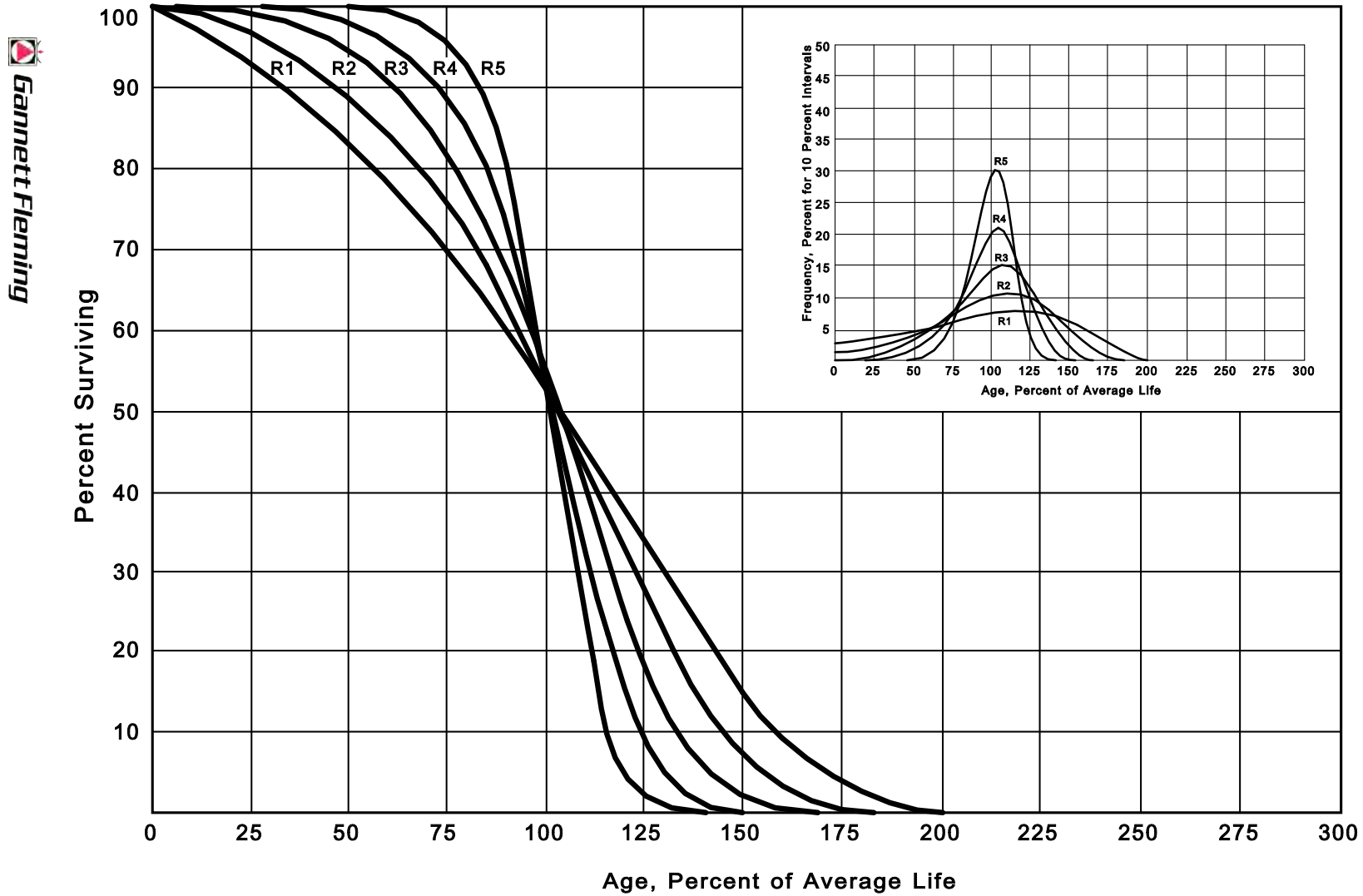


Figure 4. Right Modal or "R" Iowa Type Survivor Curves

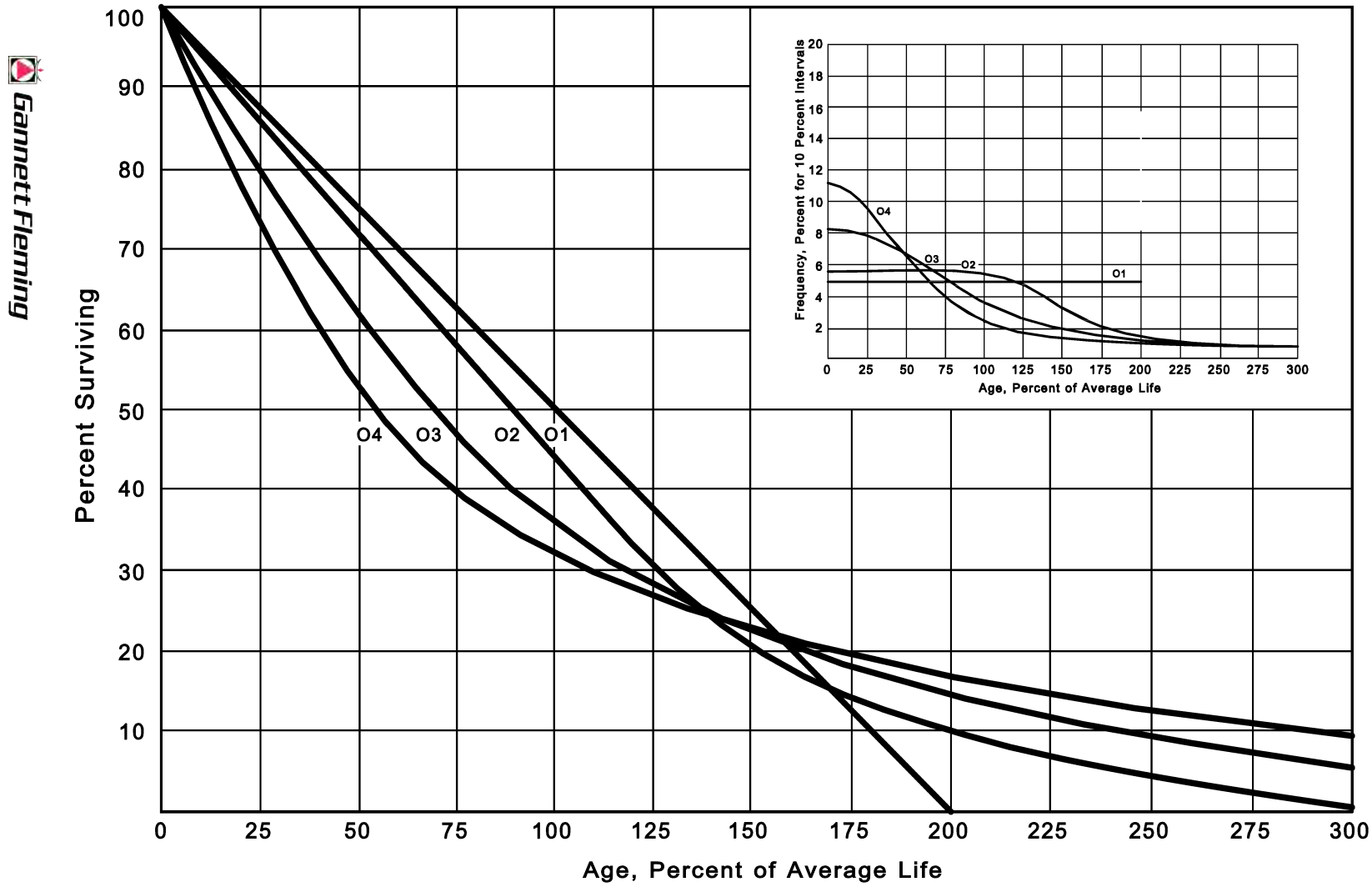


Figure 5. Origin Modal or "O" Iowa Type Survivor Curves

These curve types have also been presented in subsequent Experiment Station bulletins and in the text, "Engineering Valuation and Depreciation."[1] In 1957, Frank V. B. Couch, Jr., an Iowa State College graduate student submitted a thesis presenting his development of the fourth family consisting of the four O type survivor curves.

Retirement Rate Method of Analysis

The retirement rate method is an actuarial method of deriving survivor curves using the average rates at which property of each age group is retired. The method relates to property groups for which aged accounting experience is available and is the method used to develop the original stub survivor curves in this study. The method (also known as the annual rate method) is illustrated through the use of an example in the following text, and is also explained in several publications, including "Statistical Analyses of Industrial Property Retirements,"[2] "Engineering Valuation and Depreciation,"[3] and "Depreciation Systems."[4]

The average rate of retirement used in the calculation of the percent surviving for the survivor curve (life table) requires two sets of data: first, the property retired during a period of observation, identified by the property's age at retirement; and second, the property exposed to retirement at the beginning of the age intervals during the same period. The period of observation is referred to as the experience band, and the band of years which represent the installation dates of the property exposed to retirement during the experience band is referred to as the placement band. An example of the calculations used in the development of a life table follows. The example includes schedules of annual aged property transactions, a schedule of plant exposed to retirement, a life table and illustrations of smoothing the stub survivor curve.

[1]Marston, Anson, Robley Winfrey and Jean C. Hempstead. Engineering Valuation and Depreciation, 2nd Edition. New York, McGraw-Hill Book Company. 1953.
[2]Winfrey, Robley, Statistical Analyses of Industrial Property Retirements. Iowa State College. Engineering Experiment Station, Bulletin 125. 1935.
[3]Marston, Anson, Robley Winfrey, and Jean C. Hempstead, Supra Note 1.
[4]Wolf, Frank K. and W. Chester Fitch. Depreciation Systems. Iowa State University Press. 1994.

Schedules of Annual Transactions in Plant Records

The property group used to illustrate the retirement rate method is observed for the experience band 2009-2018 during which there were placements during the years 2004-2018. In order to illustrate the summation of the aged data by age interval, the data were compiled in the manner presented in Schedules 1 and 2 on pages II-11 and II-12. In Schedule 1, the year of installation (year placed) and the year of retirement are shown. The age interval during which a retirement occurred is determined from this information. In the example which follows, $10,000 of the dollars invested in 2004 were retired in 2009. The $10,000 retirement occurred during the age interval between 4½ and 5½ years on the basis that approximately one-half of the amount of property was installed prior to and subsequent to July 1 of each year. That is, on the average, property installed during a year is placed in service at the midpoint of the year for the purpose of the analysis. All retirements also are stated as occurring at the midpoint of a one-year age interval of time, except the first age interval which encompasses only one-half year.

The total retirements occurring in each age interval in a band are determined by summing the amounts for each transaction year-installation year combination for that age interval. For example, the total of $143,000 retired for age interval 4½-5½ is the sum of the retirements entered on Schedule 1 immediately above the stair step line drawn on the table beginning with the 2009 retirements of 2004 installations and ending with the 2018 retirements of the 2013 installations. Thus, the total amount of 143 for age interval 4½-5½ equals the sum of:

10 + 12 + 13 + 11 + 13 + 13 + 15 + 17 + 19 + 20.

SCHEDULE 1. RETIREMENTS FOR EACH YEAR 2009-2018
SUMMARIZED BY AGE INTERVAL

Experience Band 2009-2018 Placement Band 2004-2018

Year	Retirements, Thousands of Dollars During Year										Total During	Age
Placed	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Age Interval	Interval
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2004	10	11	12	13	14	16	23	24	25	26	26	13½-14½
2005	11	12	13	15	16	18	20	21	22	19	44	12½-13½
2006	11	12	13	14	16	17	19	21	22	18	64	11½-12½
2007	8	9	10	11	11	13	14	15	16	17	83	10½-11½
2008	9	10	11	12	13	14	16	17	19	20	93	9½-10½
2009	4	9	10	11	12	13	14	15	16	20	105	8½-9½
2010		5	11	12	13	14	15	16	18	20	113	7½-8½
2011			6	12	13	15	16	17	19	19	124	6½-7½
2012				6	13	15	16	17	19	19	131	5½-6½
2013					7	14	16	17	19	20	143	4½-5½
2014						8	18	20	22	23	146	3½-4½
2015							9	20	22	25	150	2½-3½
2016								11	23	25	151	1½-2½
2017									11	24	153	½-1½
2018										13	80	0-½
Total	53	68	86	106	128	157	196	231	273	308	1,606	

SCHEDULE 2. OTHER TRANSACTIONS FOR EACH YEAR 2009-2018
SUMMARIZED BY AGE INTERVAL

Experience Band 2009-2018 Placement Band 2004-2018

Year Placed	Acquisitions, Transfers and Sales, Thousands of Dollars During Year										Total During Age Interval	Age Interval
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2004	-	-	-	-	-	-	60[a]	-	-	-	-	13½-14½
2005	-	-	-	-	-	-	-	-	-	-	-	12½-13½
2006	-	-	-	-	-	-	-	-	-	-	-	11½-12½
2007	-	-	-	-	-	-	-	(5)[b]	-	-	60	10½-11½
2008	-	-	-	-	-	-	-	6[a]	-	-	-	9½-10½
2009	-	-	-	-	-	-	-	-	-	-	(5)	8½-9½
2010		-	-	-	-	-	-	-	-	-	6	7½-8½
2011			-	-	-	-	-	-	-	-	-	6½-7½
2012				-	-	-	-	(12)[b]	-	-	-	5½-6½
2013					-	-	-	-	22[a]	-	-	4½-5½
2014						-	-	(19)[b]	-	-	10	3½-4½
2015							-	-	-	-	-	2½-3½
2016								-	-	(102)[c]	(121)	1½-2½
2017									-	-	-	½-1½
2018											-	0-½
Total	-	-	-	-	-	-	60	(30)	22	(102)	(50)	

[a] Transfer Affecting Exposures at Beginning of Year
[b] Transfer Affecting Exposures at End of Year
[c] Sale with Continued Use
Parentheses Denote Credit Amount.

In Schedule 2, other transactions which affect the group are recorded in a similar manner. The entries illustrated include transfers and sales. The entries which are credits to the plant account are shown in parentheses. The items recorded on this schedule are not totaled with the retirements but are used in developing the exposures at the beginning of each age interval.

Schedule of Plant Exposed to Retirement

The development of the amount of plant exposed to retirement at the beginning of each age interval is illustrated in Schedule 3 on page II-14. The surviving plant at the beginning of each year from 2009 through 2018 is recorded by year in the portion of the table headed "Annual Survivors at the Beginning of the Year." The last amount entered in each column is the amount of new plant added to the group during the year. The amounts entered in Schedule 3 for each successive year following the beginning balance or addition are obtained by adding or subtracting the net entries shown on Schedules 1 and 2. For the purpose of determining the plant exposed to retirement, transfers-in are considered as being exposed to retirement in this group at the beginning of the year in which they occurred, and the sales and transfers-out are considered to be removed from the plant exposed to retirement at the beginning of the following year. Thus, the amounts of plant shown at the beginning of each year are the amounts of plant from each placement year considered to be exposed to retirement at the beginning of each successive transaction year. For example, the exposures for the installation year 2014 are calculated in the following manner:

Exposures at age 0	= amount of addition	= $750,000
Exposures at age ½	= $750,000 - $ 8,000	= $742,000
Exposures at age 1½	= $742,000 - $18,000	= $724,000
Exposures at age 2½	= $724,000 - $20,000 - $19,000	= $685,000
Exposures at age 3½	= $685,000 - $22,000	= $663,000

For the entire experience band 2009-2018, the total exposures at the beginning of an age interval are obtained by summing diagonally in a manner similar to the summing

SCHEDULE 3. PLANT EXPOSED TO RETIREMENT
JANUARY 1 OF EACH YEAR 2009-2018
SUMMARIZED BY AGE INTERVAL

Experience Band 2009-2018 Placement Band 2004-2018

Year Placed	Exposures, Thousands of Dollars Annual Survivors at the Beginning of the Year 2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total at Beginning of Age Interval	Age Interval
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2004	255	245	234	222	209	195	239	216	192	167	167	13½-14½
2005	279	268	256	243	228	212	194	174	153	131	323	12½-13½
2006	307	296	284	271	257	241	224	205	184	162	531	11½-12½
2007	338	330	321	311	300	289	276	262	242	226	823	10½-11½
2008	376	367	357	346	334	321	307	297	280	261	1,097	9½-10½
2009	420[a]	416	407	397	386	374	361	347	332	316	1,503	8½-9½
2010		460[a]	455	444	432	419	405	390	374	356	1,952	7½-8½
2011			510[a]	504	492	479	464	448	431	412	2,463	6½-7½
2012				580[a]	574	561	546	530	501	482	3,057	5½-6½
2013					660[a]	653	639	623	628	609	3,789	4½-5½
2014						750[a]	742	724	685	663	4,332	3½-4½
2015							850[a]	841	821	799	4,955	2½-3½
2016								960[a]	949	926	5,719	1½-2½
2017									1,080[a]	1,069	6,579	½-1½
2018										1,220[a]	7,490	0-½
Total	1,975	2,382	2,824	3,318	3,872	4,494	5,247	6,017	6,852	7,799	44,780	

[a]Additions during the year

of the retirements during an age interval (Schedule 1). For example, the figure of 3,789, shown as the total exposures at the beginning of age interval 4½-5½, is obtained by summing:

255 + 268 + 284 + 311 + 334 + 374 + 405 + 448 + 501 + 609.

Original Life Table

The original life table, illustrated in Schedule 4 on page II-16**,** is developed from the totals shown on the schedules of retirements and exposures, Schedules 1 and 3, respectively. The exposures at the beginning of the age interval are obtained from the corresponding age interval of the exposure schedule, and the retirements during the age interval are obtained from the corresponding age interval of the retirement schedule. The retirement ratio is the result of dividing the retirements during the age interval by the exposures at the beginning of the age interval. The percent surviving at the beginning of each age interval is derived from survivor ratios, each of which equals one minus the retirement ratio. The percent surviving is developed by starting with 100% at age zero and successively multiplying the percent surviving at the beginning of each interval by the survivor ratio, i.e., one minus the retirement ratio for that age interval. The calculations necessary to determine the percent surviving at age 5½ are as follows:

Percent surviving at age 4½	=	88.15				
Exposures at age 4½	=	3,789,000				
Retirements from age 4½ to 5½	=	143,000				
Retirement Ratio	=	143,000	÷	3,789,000	=	0.0377
Survivor Ratio	=	1.000	-	0.0377	=	0.9623
Percent surviving at age 5½	=	(88.15)	x	(0.9623)	=	84.83

The totals of the exposures and retirements (columns 2 and 3) are shown for the purpose of checking with the respective totals in Schedules 1 and 3. The ratio of the total retirements to the total exposures, other than for each age interval, is meaningless. The original survivor curve is plotted from the original life table (column 6, Schedule 4). When the curve terminates at a percent surviving greater than zero, it is called a stub survivor curve. Survivor curves developed from retirement rate studies generally are stub curves.

SCHEDULE 4. ORIGINAL LIFE TABLE
CALCULATED BY THE RETIREMENT RATE METHOD

Experience Band 2009-2018 Placement Band 2004-2018

(Exposure and Retirement Amounts are in Thousands of Dollars)

Age at Beginning of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retirement Ratio	Survivor Ratio	Percent Surviving at Beginning of Age Interval
(1)	(2)	(3)	(4)	(5)	(6)
0.0	7,490	80	0.0107	0.9893	100.00
0.5	6,579	153	0.0233	0.9767	98.93
1.5	5,719	151	0.0264	0.9736	96.62
2.5	4,955	150	0.0303	0.9697	94.07
3.5	4,332	146	0.0337	0.9663	91.22
4.5	3,789	143	0.0377	0.9623	88.15
5.5	3,057	131	0.0429	0.9571	84.83
6.5	2,463	124	0.0503	0.9497	81.19
7.5	1,952	113	0.0579	0.9421	77.11
8.5	1,503	105	0.0699	0.9301	72.65
9.5	1,097	93	0.0848	0.9152	67.57
10.5	823	83	0.1009	0.8991	61.84
11.5	531	64	0.1205	0.8795	55.60
12.5	323	44	0.1362	0.8638	48.90
13.5	167	26	0.1557	0.8443	42.24
14.5					35.66
Total	44,780	1,606			

Column 2 from Schedule 3, Column 12, Plant Exposed to Retirement.
Column 3 from Schedule 1, Column 12, Retirements for Each Year.
Column 4 = Column 3 Divided by Column 2.
Column 5 = 1.0000 Minus Column 4.
Column 6 = Column 5 Multiplied by Column 6 as of the Preceding Age Interval.

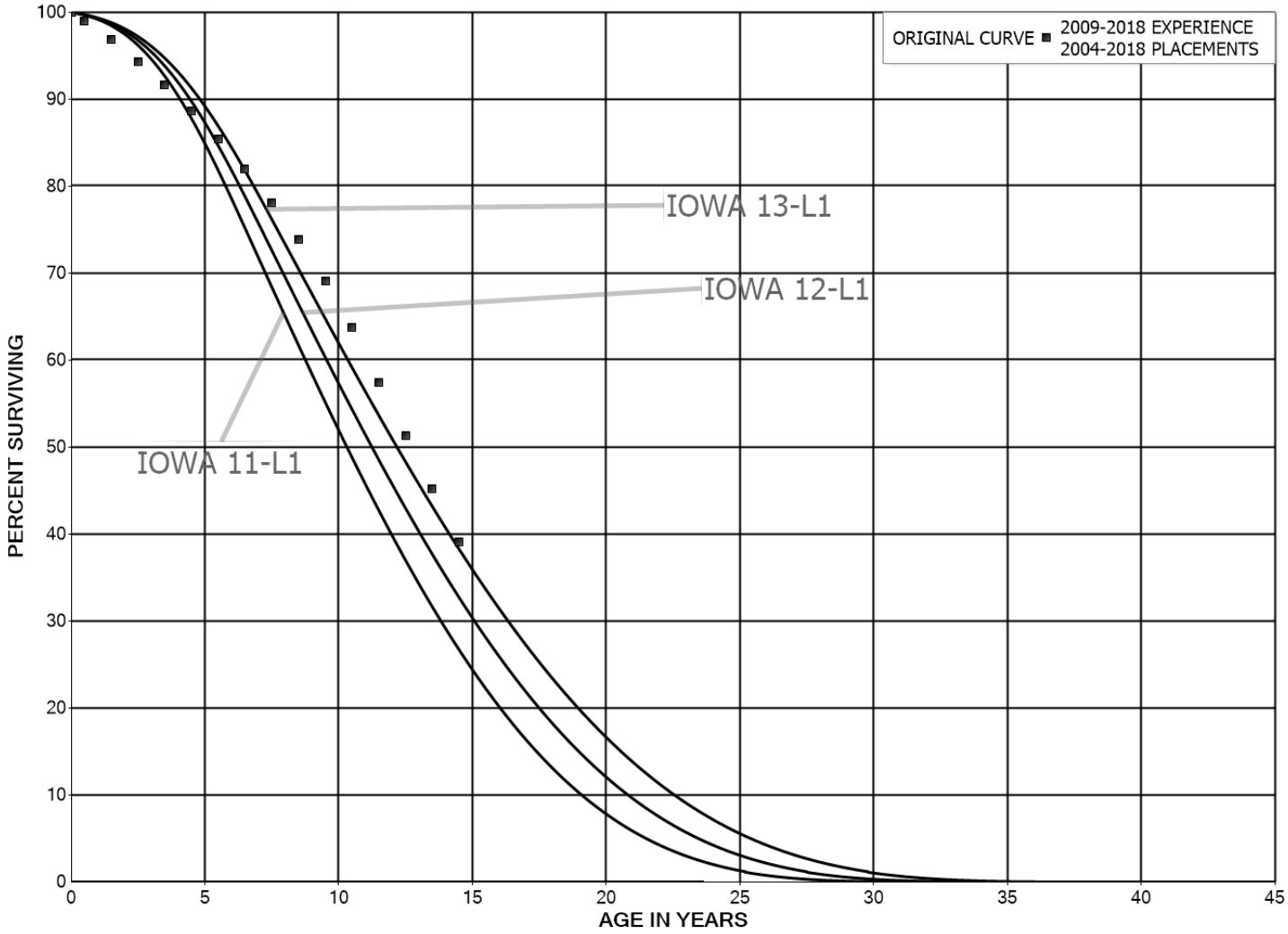
Smoothing the Original Survivor Curve

The smoothing of the original survivor curve eliminates any irregularities and serves as the basis for the preliminary extrapolation to zero percent surviving of the original stub curve. Even if the original survivor curve is complete from 100% to zero percent, it is desirable to eliminate any irregularities, as there is still an extrapolation for the vintages which have not yet lived to the age at which the curve reaches zero percent. In this study, the smoothing of the original curve with established type curves was used to eliminate irregularities in the original curve.

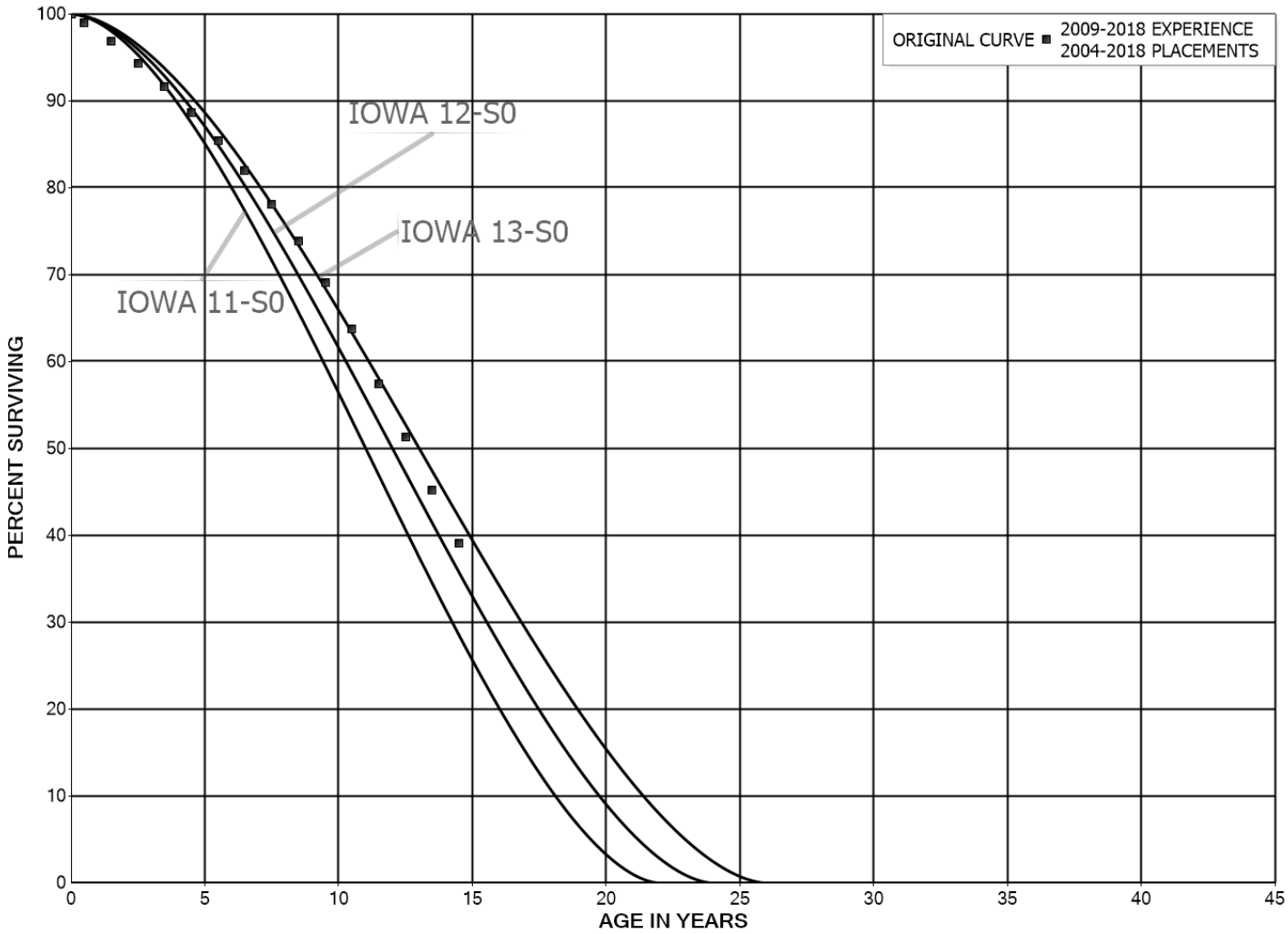
The Iowa type curves are used in this study to smooth those original stub curves which are expressed as percents surviving at ages in years. Each original survivor curve was compared to the Iowa curves using visual and mathematical matching in order to determine the better fitting smooth curves. In Figures 6, 7, and 8, the original curve developed in Schedule 4 is compared with the L, S, and R Iowa type curves which most nearly fit the original survivor curve. In Figure 6, the L1 curve with an average life between 12 and 13 years appears to be the best fit. In Figure 7, the S0 type curve with a 12-year average life appears to be the best fit and appears to be better than the L1 fitting. In Figure 8, the R1 type curve with a 12-year average life appears to be the best fit and appears to be better than either the L1 or the S0.

In Figure 9, the three fittings, 12-L1, 12-S0 and 12-R1 are drawn for comparison purposes. It is probable that the 12-R1 Iowa curve would be selected as the most representative of the plotted survivor characteristics of the group.

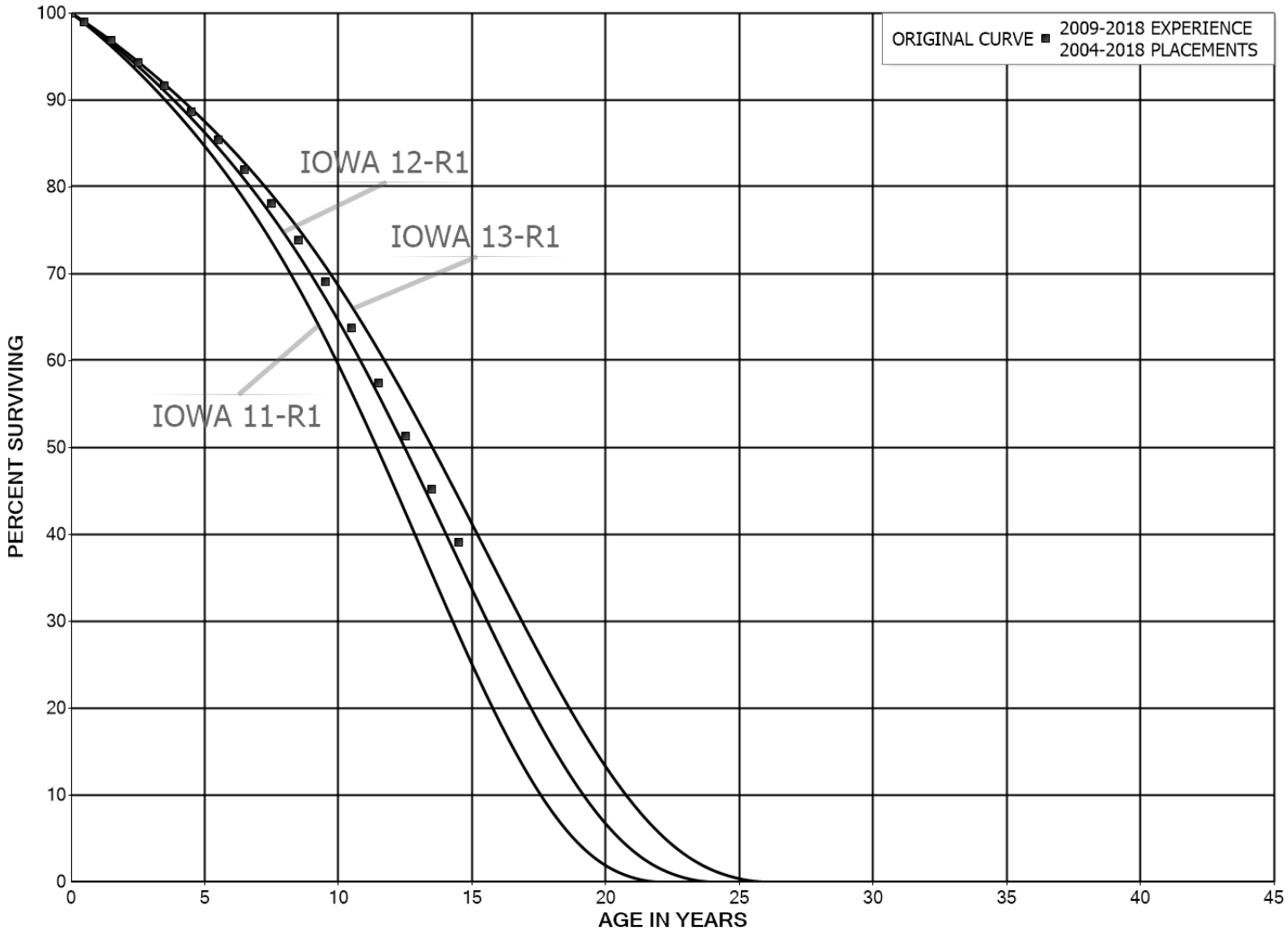
Gannett Fleming



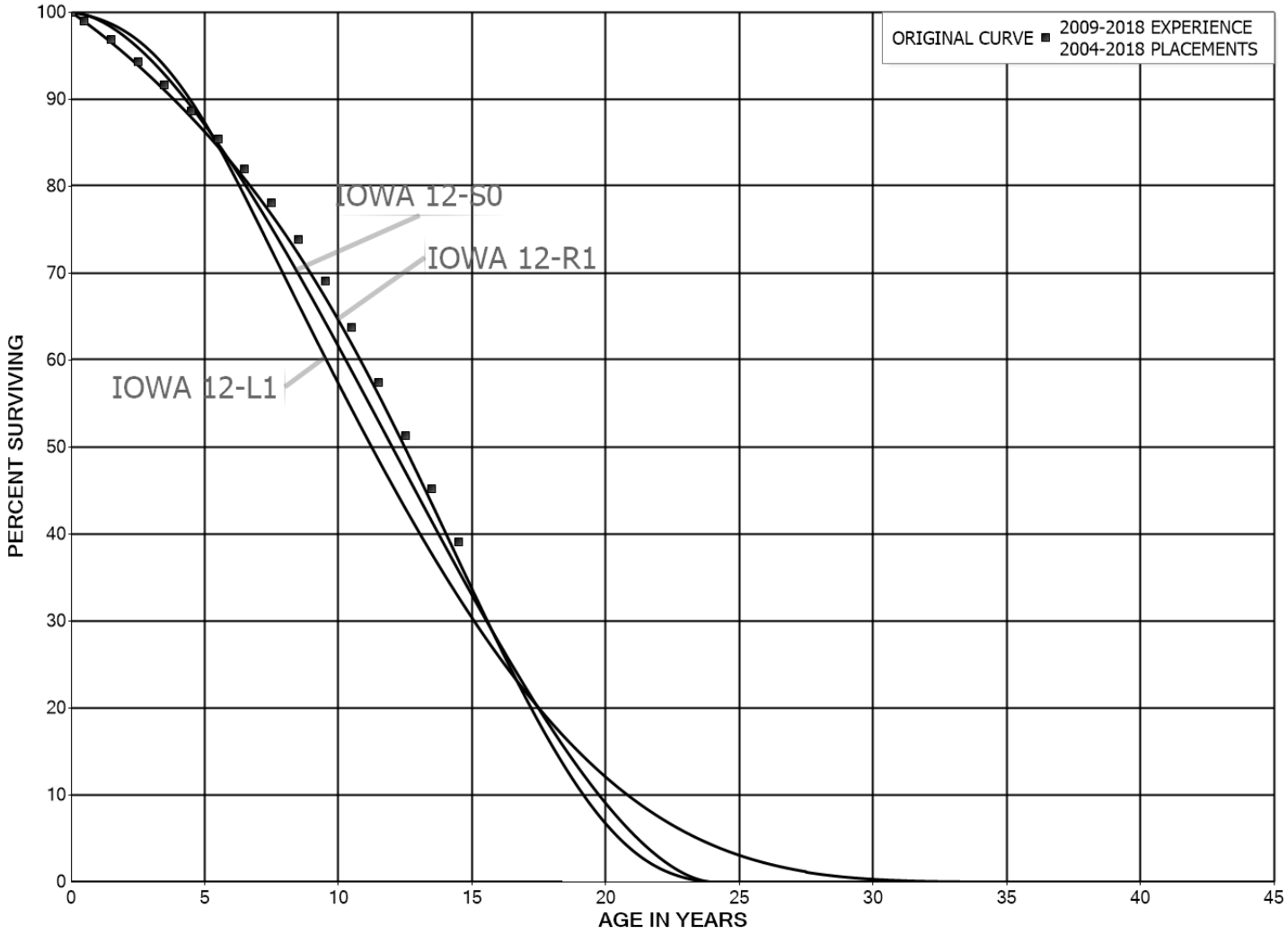
Gannett Fleming



Gannett Fleming



Gannett Fleming



PART III. SERVICE LIFE CONSIDERATIONS

PART III. SERVICE LIFE CONSIDERATIONS

SERVICE LIFE ANALYSIS

The service life estimates were based on informed judgment which considered a number of factors. The primary factors were the statistical analyses of data; current Company policies and outlook as determined during conversations with management; and the survivor curve estimates from previous studies of this company and other gas and electric companies.

For many of the plant accounts and subaccounts for which survivor curves were estimated, the statistical analyses using the retirement rate method resulted in good to excellent indications of the survivor patterns experienced. Generally, the information external to the statistics led to no significant departure from the indicated survivor curves for the accounts listed below. The statistical support for the service life estimates is presented in the section beginning on page VII-2.

DISTRIBUTION PLANT
- 378.00 Measuring and Regulating Station Equipment
- 381.00 Meters
- 381.01 Meters – ERTs
- 385.01 Industrial Measuring and Regulating Station Equipment
- 385.02 Industrial Measuring and Regulating Station Equipment – Industrial Meters
- 387.00 Other Equipment

GENERAL PLANT
- 390.01 Structures and Improvements – Owned
- 392.02 Transportation Equipment – Cars
- 392.03 Transportation Equipment – Light Trucks
- 392.04 Transportation Equipment – Medium Trucks
- 392.06 Transportation Equipment – Trailers

The estimated survivor curves for most of the mass property accounts are based on statistical analyses of plant accounting data and the range of lives and type curves used for other companies in the utility industry. The combined Account 390.01, Structures and Improvements – Owned, is one of the largest asset classification and is used to illustrate the manner in which the study was conducted for the groups using the retirement rate method. Aged retirement and other plant accounting data were compiled for the years 1986 through 2018. These data were coded in the course of the Company's normal recordkeeping according to plant account or subaccount, type of transaction, year in which the transaction took place, and year in which the utility plant was placed in service. The data were analyzed by the retirement rate method of life analysis. The survivor curve chart for the account is presented on page VII-25 and the life table for the experience band plotted on the chart follows it.

Typical service lives for the structures of this type for other utility companies range from 35 to 55 years. The Iowa 50-R2.5 survivor curve is estimated to represent the future, inasmuch as it is a reasonable interpretation of the significant portion of the stub survivor curve, reflects the outlook of management and is within the typical range of lives for this account.

The estimate for the combined Account 392.03, Transportation Equipment – Light Trucks, is based on the 2003-2018 experience band. The 9-L3 survivor curve is supported by the statistical analyses on page VII-30. The 9-year average service life is within the range of 7-12 years for other utility companies.

Another large account is gas Account 381, Meters. The estimate of survivor characteristics is based on the 1986-2018 experience band. As the survivor curve chart illustrates, the experience band represents life characteristics supported by the 31-R2

survivor curve. The 31-year average life is within the typical range of lives used by others in the industry.

Similar studies were performed for the remaining plant accounts. Each of the judgments represented a consideration of statistical analyses of aged plant activity, management's outlook for the future, and the typical range of lives used by other gas and electric companies.

The selected amortization periods for other General Plant accounts are described in the section "Calculated Annual and Accrued Amortization."

PART IV. NET SALVAGE CONSIDERATIONS

PART IV. NET SALVAGE CONSIDERATIONS

SALVAGE ANALYSIS

The estimates of net salvage by account were based in part on historical data compiled for the years 2005 and 2018. Cost of removal and salvage were expressed as percents of the original cost of plant retired, both on annual and three-year moving average bases. The most recent five-year average also was calculated for consideration. The net salvage estimates by account are expressed as a percent of the original cost of plant retired.

Net Salvage Considerations

The estimates of future net salvage are expressed as percentages of surviving plant in service, i.e., all future retirements. In cases in which removal costs are expected to exceed salvage receipts, a negative net salvage percentage is estimated. The net salvage estimates were based on judgment which incorporated analyses of historical cost of removal and salvage data, expectations with respect to future removal requirements and markets for retired equipment and materials.

The analyses of historical cost of removal and salvage data are presented in the section titled “Net Salvage Statistics” for the plant accounts for which the net salvage estimate relied partially on those analyses.

Statistical analyses of historical data for the period 2005 through 2018 was a major factor in determining net salvage estimates along with judgment and estimates of other gas and electric companies as the primary basis for each estimate.

The net salvage results for Account 381.00, Meters, will be used to illustrate the methods for estimating net salvage. The net salvage estimate for Account 381.00, Meters, is positive 2 percent and is based on the historical analysis of salvage percents

as shown in the tabulation on page VIII-4 and the typical range of net salvage estimates used by other gas utilities for meters. The historical indication for the period 2005 through 2018 is positive 2 percent. The range of estimates for other utility companies is positive 5 to negative 20 percent. Based on the statistical analysis and the range of estimates used by others, positive 2 percent net salvage is estimated for meters.

The net salvage estimates for the remaining accounts were estimated using the above-described process of historical indications, judgment and reviewing the typical range of estimates used by other gas and electric companies. The results of the net salvage for each plant account are presented in account sequence beginning in the section titled “Net Salvage Statistics”, page VIII-2.

Generally, the net salvage estimates for remaining general plant accounts were zero percent, consistent with amortization accounting.

PART V. CALCULATION OF ANNUAL AND ACCRUED DEPRECIATION

PART V. CALCULATION OF ANNUAL AND ACCRUED DEPRECIATION

GROUP DEPRECIATION PROCEDURES

A group procedure for depreciation is appropriate when considering more than a single item of property. Normally the items within a group do not have identical service lives but have lives that are dispersed over a range of time. There are two primary group procedures, namely, average service life and equal life group. In the average service life procedure, the rate of annual depreciation is based on the average life or average remaining life of the group, and this rate is applied to the surviving balances of the group's cost. A characteristic of this procedure is that the cost of plant retired prior to average life is not fully recouped at the time of retirement, whereas the cost of plant retired subsequent to average life is more than fully recouped. Over the entire life cycle, the portion of cost not recouped prior to average life is balanced by the cost recouped subsequent to average life.

Single Unit of Property

The calculation of straight line depreciation for a single unit of property is straightforward. For example, if a $1,000 unit of property attains an age of four years and has a life expectancy of six years, the annual accrual over the total life is:

$$\frac{\$1{,}000}{(4 + 6)} = \$100 \text{ per year.}$$

The accrued depreciation is:

$$\$1{,}000 \left(1 - \frac{6}{10}\right) = \$400.$$

Remaining Life Annual Accruals

For the purpose of calculating remaining life accruals as of October 31, 2018, the depreciation reserve for each plant account is allocated among vintages in proportion to the calculated accrued depreciation for the account. Explanations of remaining life accruals and calculated accrued depreciation follow. The detailed calculations as of October 31, 2018, are set forth in the Results of Study section of the report.

Average Service Life Procedure

In the average service life procedure, the remaining life annual accrual for each vintage is determined by dividing future book accruals (original cost less book reserve) by the average remaining life of the vintage. The average remaining life is a directly weighted average derived from the estimated future survivor curve in accordance with the average service life procedure.

The calculated accrued depreciation for each depreciable property group represents that portion of the depreciable cost of the group which would not be allocated to expense through future depreciation accruals if current forecasts of life characteristics are used as the basis for such accruals. The accrued depreciation calculation consists of applying an appropriate ratio to the surviving original cost of each vintage of each account based upon the attained age and service life. The straight line accrued depreciation ratios are calculated as follows for the average service life procedure:

$$Ratio = 1 - \frac{Average\ Remaining\ Life}{Average\ Service\ Life}.$$

CALCULATION OF ANNUAL AND ACCRUED AMORTIZATION

Amortization is the gradual extinguishment of an amount in an account by distributing such amount over a fixed period, over the life of the asset or liability to which it applies, or over the period during which it is anticipated the benefit will be realized. Normally, the distribution of the amount is in equal amounts to each year of the amortization period.

The calculation of annual and accrued amortization requires the selection of an amortization period. The amortization periods used in this report were based on judgment which incorporated a consideration of the period during which the assets will render most of their service, the amortization period and service lives used by other utilities, and the service life estimates previously used for the asset under depreciation accounting.

Amortization accounting is proposed for a number of accounts that represent numerous units of property, but a very small portion of depreciable utility plant in service. The accounts and their amortization periods are as follows:

Account		Amortization Period, Years
Electric Plant		
391,	Office Furniture and Equipment	
	Furniture and Equipment	20
	Hardware	5
	Software	7
	IPad Hardware	5
395,	Laboratory Equipment	20
397,	Communication Equipment	15
397.1,	Communication Equipment - Towers	25

	Account	Amortization Period, Years
Gas Plant		
391,	Office Furniture and Equipment	
	Furniture	20
	Hardware	5
	Software	7
394,	Tools, Shop and Garage Equipment	25
395,	Laboratory Equipment	20
397,	Communication Equipment	15
Common Plant		
391,	Office Furniture and Equipment	
	Furniture and Equipment	20
	Hardware	5
	Software	7
	IPad Hardware	5
	Platform Systems	10
	Other Software	10
394,	Tools, Shop and Garage Equipment	25
397,	Communication Equipment	15
398,	Miscellaneous Equipment	20

For the purpose of calculating annual amortization amounts as of October 31, 2018, the book depreciation reserve for each plant account or subaccount is assigned or allocated to vintages. The book reserve assigned to vintages with an age greater than the amortization period is equal to the vintage's original cost. The remaining book reserve is allocated among vintages with an age less than the amortization period in proportion to the calculated accrued amortization. The calculated accrued amortization is equal to the original cost multiplied by the ratio of the vintage's age to its amortization period. The annual amortization amount is determined by dividing the future amortizations (original cost less allocated book reserve) by the remaining period of amortization for the vintage.

PART VI. RESULTS OF STUDY

PART VI. RESULTS OF STUDY

QUALIFICATION OF RESULTS

The calculated annual and accrued depreciation are the principal results of the study. Continued surveillance and periodic revisions are normally required to maintain continued use of appropriate annual depreciation accrual rates. An assumption that accrual rates can remain unchanged over a long period of time implies a disregard for the inherent variability in service lives and salvage and for the change of the composition of property in service. The annual accrual rates were calculated in accordance with the straight line remaining life method of depreciation, using the average service life procedure based on estimates which reflect considerations of current historical evidence and expected future conditions.

The annual depreciation accrual rates are applicable specifically to the gas and electric plant in service as of October 31, 2018. For most plant accounts, the application of such rates to future balances that reflect additions subsequent to October 31, 2018, is reasonable for a period of three to five years.

DESCRIPTION OF STATISTICAL SUPPORT

The service life estimates were based on judgment that incorporated statistical analysis of retirement data, discussions with management and consideration of estimates made for other gas and electric utilities. The results of the statistical analysis of service life are presented in the section beginning on page VII-2, within the supporting documents of this report.

For each depreciable group analyzed by the retirement rate method, a chart depicting the original and estimated survivor curves followed by a tabular presentation of

the original life table(s) plotted on the chart. The survivor curves estimated for the depreciable groups are shown as dark smooth curves on the charts. Each smooth survivor curve is denoted by a numeral followed by the curve type designation. The numeral used is the average life derived from the entire curve from 100 percent to zero percent surviving. The titles of the chart indicate the group, the symbol used to plot the points of the original life table, and the experience and placement bands of the life tables which where plotted. The experience band indicates the range of years for which retirements were used to develop the stub survivor curve. The placements indicate, for the related experience band, the range of years of installations which appear in the experience.

The analyses of salvage data are presented in the section titled, “Net Salvage Statistics”. The tabulations present annual cost of removal and salvage data, three-year moving averages and the most recent five-year average. Data are shown in dollars and as percentages of original costs retired.

DESCRIPTION OF DETAILED TABULATIONS

A summary of the results of the study, as applied to the original cost of electric, gas and common plant at October 31, 2018, is presented on pages VI-5 through VI-8 of this report. The schedule sets forth the original cost, the book depreciation reserve, future accruals, the calculated annual depreciation rate and amount, and the composite remaining life related to electric, gas and common plant.

The tables of the calculated annual depreciation applicable to depreciable assets as of October 31, 2018 are presented in account sequence starting on page IX-2 of the supporting documents. The tables indicate the estimated survivor curve and net salvage

percent for the account and set forth, for each installation year, the original cost, the calculated accrued depreciation, the allocated book reserve, future accruals, the remaining life, and the calculated annual accrual amount.

BLACK HILLS SERVICE COMPANY

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, NET SALVAGE PERCENT, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION RATES AS OF OCTOBER 31, 2018

	ACCOUNT	SURVIVOR CURVE	NET SALVAGE PERCENT	ORIGINAL COST	BOOK DEPRECIATION RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)=(7)/(4)	(9)=(6)/(7)
	ELECTRIC PLANT								
	DISTRIBUTION PLANT								
370.01	METERS	25-R2.5	0	170,254.51	12,290	157,965	6,995	4.11	22.6
370.04	METERS - AMI	15-S2.5	0	2,668,672.11	664,841	2,003,831	150,687	5.65	13.3
	TOTAL DISTRIBUTION PLANT			**2,838,926.62**	**677,131**	**2,161,796**	**157,682**	**5.55**	
	GENERAL PLANT								
390.01	STRUCTURES AND IMPROVEMENTS - OWNED	50-R2.5	0	351,570.87	36,167	315,404	7,007	1.99	45.0
391.01	OFFICE FURNITURE AND EQUIPMENT - FURNITURE AND EQUIPMENT	20-SQ	0	34,267.54	10,725	23,543	1,713	5.00	13.7
391.03	OFFICE FURNITURE AND EQUIPMENT - HARDWARE								
	FULLY ACCRUED			49,687.50	49,688	0	0	-	-
	AMORTIZED	5-SQ	0	1,799,613.38	868,540	931,073	359,932	20.00	2.6
	TOTAL ACCOUNT 391.03			1,849,300.88	918,228	931,073	359,932	19.46	
391.04	OFFICE FURNITURE AND EQUIPMENT - SOFTWARE								
	FULLY ACCRUED			2,720,054.41	2,720,054	0	0	-	-
	AMORTIZED	7-SQ	0	11,413,950.38	6,975,530	4,438,420	1,631,608	14.29	2.7
	TOTAL ACCOUNT 391.04			14,134,004.79	9,695,584	4,438,420	1,631,608	11.54	
391.07	OFFICE FURNITURE AND EQUIPMENT - IPAD HARDWARE	5-SQ	0	10,790.04	905	9,885	2,158	20.00	4.6
	TOTAL ACCOUNT 391			16,028,363.25	10,625,442	5,402,921	1,995,411	12.45	
392.03	TRANSPORTATION EQUIPMENT - LIGHT TRUCKS	9-L3	20	320,383.96	85,995	170,312	27,690	8.64	6.2
395.00	LABORATORY EQUIPMENT	20-SQ	0	43,123.50	6,410	36,714	2,157	5.00	17.0
397.00	COMMUNICATION EQUIPMENT	15-SQ	0	72,585.43	16,115	56,470	4,839	6.67	11.7
397.10	COMMUNICATION EQUIPMENT - TOWERS	25-SQ	0	112,384.68	29,015	83,370	4,495	4.00	18.5
	TOTAL GENERAL PLANT			**16,928,411.69**	**10,799,144**	**6,065,191**	**2,041,599**	**12.06**	
	TOTAL ELECTRIC PLANT			**19,767,338.31**	**11,476,275**	**8,226,987**	**2,199,281**	**11.13**	
	GAS PLANT								
	DISTRIBUTION PLANT								
378.00	MEASURING AND REGULATING STATION EQUIPMENT	10-L0.5	(5)	130,774.05	7,980	129,333	15,550	11.89	8.3
381.00	METERS	31-R2	2	2,905,238.94	(310,940)	3,158,074	136,384	4.69	23.2
381.01	METERS - ERTs	12-R1.5	0	2,199,410.90	74,958	2,124,453	187,230	8.51	11.3
385.01	INDUSTRIAL MEASURING AND REGULATING STATION EQUIPMENT	30-R1.5	(5)	2,378,105.48	223,981	2,273,030	93,643	3.94	24.3
385.02	INDUSTRIAL MEASURING AND REGULATING STATION EQUIPMENT - INDUSTRIAL METERS	20-S0.5	0	52,440.31	17,151	35,289	1,794	3.42	19.7
387.00	OTHER EQUIPMENT	12-R3	0	39,125.38	25,353	13,772	1,486	3.80	9.3
	TOTAL DISTRIBUTION PLANT			**7,705,095.06**	**38,483**	**7,733,951**	**436,087**	**5.66**	

BLACK HILLS SERVICE COMPANY

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, NET SALVAGE PERCENT, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION RATES AS OF OCTOBER 31, 2018

	ACCOUNT	SURVIVOR CURVE	NET SALVAGE PERCENT	ORIGINAL COST	BOOK DEPRECIATION RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)=(7)/(4)	(9)=(6)/(7)
	GENERAL PLANT								
390.01	STRUCTURES AND IMPROVEMENTS - OWNED	50-R2.5	0	1,755,599.70	1,403,015	352,585	10,251	0.58	34.4
391.01	OFFICE FURNITURE AND EQUIPMENT - FURNITURE AND EQUIPMENT								
	FULLY ACCRUED			4,674.85	4,675	0	0	-	-
	AMORTIZIED	20-SQ	0	23,639.57	12,075	11,565	1,181	5.00	9.8
	TOTAL ACCOUNT 391.01			28,314.42	16,750	11,565	1,181	4.17	
391.03	OFFICE FURNITURE AND EQUIPMENT - HARDWARE								
	FULLY ACCRUED			5,751.83	5,752	0	0	-	-
	AMORTIZIED	5-SQ	0	1,096,194.97	634,425	461,770	219,186	20.00	2.1
	TOTAL ACCOUNT 391.03			1,101,946.80	640,177	461,770	219,186	19.89	
391.04	OFFICE FURNITURE AND EQUIPMENT - SOFTWARE								
	FULLY ACCRUED			586,261.94	586,262	0	0	-	-
	AMORTIZIED	7-SQ	0	2,413,404.55	1,563,510	849,895	344,991	14.29	2.5
	TOTAL ACCOUNT 391.04			2,999,666.49	2,149,772	849,895	344,991	11.50	
	TOTAL ACCOUNT 391			4,129,927.71	2,806,699	1,323,230	565,358	13.69	
392.03	TRANSPORTATION EQUIPMENT - LIGHT TRUCKS	9-L3	20	620,928.32	108,121	388,622	58,206	9.37	6.7
392.06	TRANSPORTATION EQUIPMENT - TRAILERS	20-S2	10	47,167.33	22,266	20,185	1,933	4.10	10.4
	TOTAL ACCOUNT 392			668,095.65	130,387	408,807	60,139	9.00	
394.00	TOOLS, SHOP AND GARAGE EQUIPMENT	25-SQ	0	877,701.29	333,520	544,181	35,065	4.00	15.5
395.00	LABORATORY EQUIPMENT	20-SQ	0	238,234.17	70,085	168,149	11,910	5.00	14.1
397.00	COMMUNICATION EQUIPMENT	15-SQ	0	43,137.77	19,820	23,318	2,876	6.67	8.1
	TOTAL GENERAL PLANT			**7,712,696.29**	**4,763,526**	**2,820,270**	**685,599**	**8.89**	
	TOTAL GAS PLANT			**15,417,791.35**	**4,802,009**	**10,554,221**	**1,121,686**	**7.28**	
	COMMON PLANT								
390.01	STRUCTURES AND IMPROVEMENTS - OWNED	50-R2.5	0	5,861,918.72	752,838	5,109,081	118,338	2.02	43.2
390.51	STRUCTURES AND IMPROVEMENTS - LEASED	20-S3	0	579,623.29	213,812	365,811	26,580	4.59	13.8
	TOTAL ACCOUNT 390			6,441,542.01	966,650	5,474,892	144,918	2.25	
391.01	OFFICE FURNITURE AND EQUIPMENT - FURNITURE AND EQUIPMENT	20-SQ	0	6,583,874.80	3,403,625	3,180,250	329,154	5.00	9.7
391.03	OFFICE FURNITURE AND EQUIPMENT - HARDWARE								
	FULLY ACCRUED			257,652.75	257,653	0	0	-	-
	AMORTIZED	5-SQ	0	23,124,733.99	13,669,630	9,455,104	4,624,800	20.00	2.0
	TOTAL ACCOUNT 391.03			23,382,386.74	13,927,283	9,455,104	4,624,800	19.78	

BLACK HILLS SERVICE COMPANY

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, NET SALVAGE PERCENT, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION RATES AS OF OCTOBER 31, 2018

	ACCOUNT	SURVIVOR CURVE	NET SALVAGE PERCENT	ORIGINAL COST	BOOK DEPRECIATION RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)=(7)/(4)	(9)=(6)/(7)	
391.04	OFFICE FURNITURE AND EQUIPMENT - SOFTWARE									
	FULLY ACCRUED			3,712,528.21	3,712,528	0	0	-	-	
	AMORTIZED	7-SQ	0	143,074.94	106,605	36,470	20,444	14.29	1.8	
	TOTAL ACCOUNT 391.04			3,855,603.15	3,819,133	36,470	20,444	0.53		
391.07	OFFICE FURNITURE AND EQUIPMENT - IPAD HARDWARE	5-SQ	0	18,447.49	4,905	13,542	3,690	20.00	3.7	
391.13	OFFICE FURNITURE AND EQUIPMENT - PLATFORM SYSTEMS									
	FULLY ACCRUED			47,463,579.95	47,463,580	0	0	-	-	
	AMORTIZED	10-SQ	0	32,506,271.70	8,652,655	23,853,617	3,250,628	10.00	7.3	
	TOTAL ACCOUNT 391.13			79,969,851.65	56,116,235	23,853,617	3,250,628	4.06		
391.18	OFFICE FURNITURE AND EQUIPMENT - OTHER SOFTWARE									
	FULLY ACCRUED			168,318.74	168,319	0	0	-	-	
	AMORTIZED	10-SQ	0	21,909,609.34	9,843,010	12,066,599	2,191,590	10.00	5.5	
	TOTAL ACCOUNT 391.18			22,077,928.08	10,011,329	12,066,599	2,191,590	9.93		
391.23	OFFICE FURNITURE AND EQUIPMENT - PLATFORM SYSTEMS	10-SQ	0	19,422,764.92	11,983,320	7,439,445	1,942,461	10.00	3.8	
391.28	OFFICE FURNITURE AND EQUIPMENT - OTHER SOFTWARE									
	FULLY ACCRUED			963,168.70	963,169	0	0	-	-	
	AMORTIZED	10-SQ	0	16,335,530.27	6,243,575	10,091,955	1,634,059	10.00	6.2	
	TOTAL ACCOUNT 391.28			17,298,698.97	7,206,744	10,091,955	1,634,059	9.45		
	TOTAL ACCOUNT 391			172,609,555.80	106,472,574	66,136,982	13,996,826	8.11		
392.02	TRANSPORTATION EQUIPMENT - CARS	8-S2	5	16,016.60	9,909	5,307	3,424	21.38	1.5	
392.03	TRANSPORTATION EQUIPMENT - LIGHT TRUCKS	9-L3	20	2,868,229.34	553,991	1,740,592	266,732	9.30	6.5	
392.04	TRANSPORTATION EQUIPMENT - MEDIUM TRUCKS	8-L4	20	1,165,497.06	555,502	376,896	127,976	10.98	2.9	
	TOTAL ACCOUNT 392			4,049,743.00	1,119,402	2,122,795	398,132	9.83		
394.00	TOOLS, SHOP AND GARAGE EQUIPMENT	25-SQ	0	67,088.99	15,485	51,604	2,683	4.00	19.2	
397.00	COMMUNICATION EQUIPMENT	15-SQ	0	454,128.04	102,590	351,538	30,275	6.67	11.6	
398.00	MISCELLANEOUS EQUIPMENT	20-SQ	0	32,324.18	8,070	24,254	1,616	5.00	15.0	
	TOTAL COMMON PLANT			**183,654,382.02**	**108,684,771**	**74,162,065**	**14,574,450**	**7.94**		
	RESERVE ADJUSTMENT FOR AMORTIZATION									
	ELECTRIC PLANT									
391.01	OFFICE FURNITURE AND EQUIPMENT - FURNITURE AND EQUIPMENT				247		(25)	*		
391.03	OFFICE FURNITURE AND EQUIPMENT - HARDWARE				(764,749)		76,475	*		
391.04	OFFICE FURNITURE AND EQUIPMENT - SOFTWARE				(1,813,388)		181,339	*		
391.07	OFFICE FURNITURE AND EQUIPMENT - IPAD HARDWARE				444		(44)	*		
395.00	LABORATORY EQUIPMENT				279		(28)	*		
397.00	COMMUNICATION EQUIPMENT				6,977		(698)	*		
397.10	COMMUNICATION EQUIPMENT - TOWERS				(151,187)		15,119	*		
	TOTAL ELECTRIC PLANT				**(2,721,377)**		**272,138**			

BLACK HILLS SERVICE COMPANY

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVES, NET SALVAGE PERCENT, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION RATES AS OF OCTOBER 31, 2018

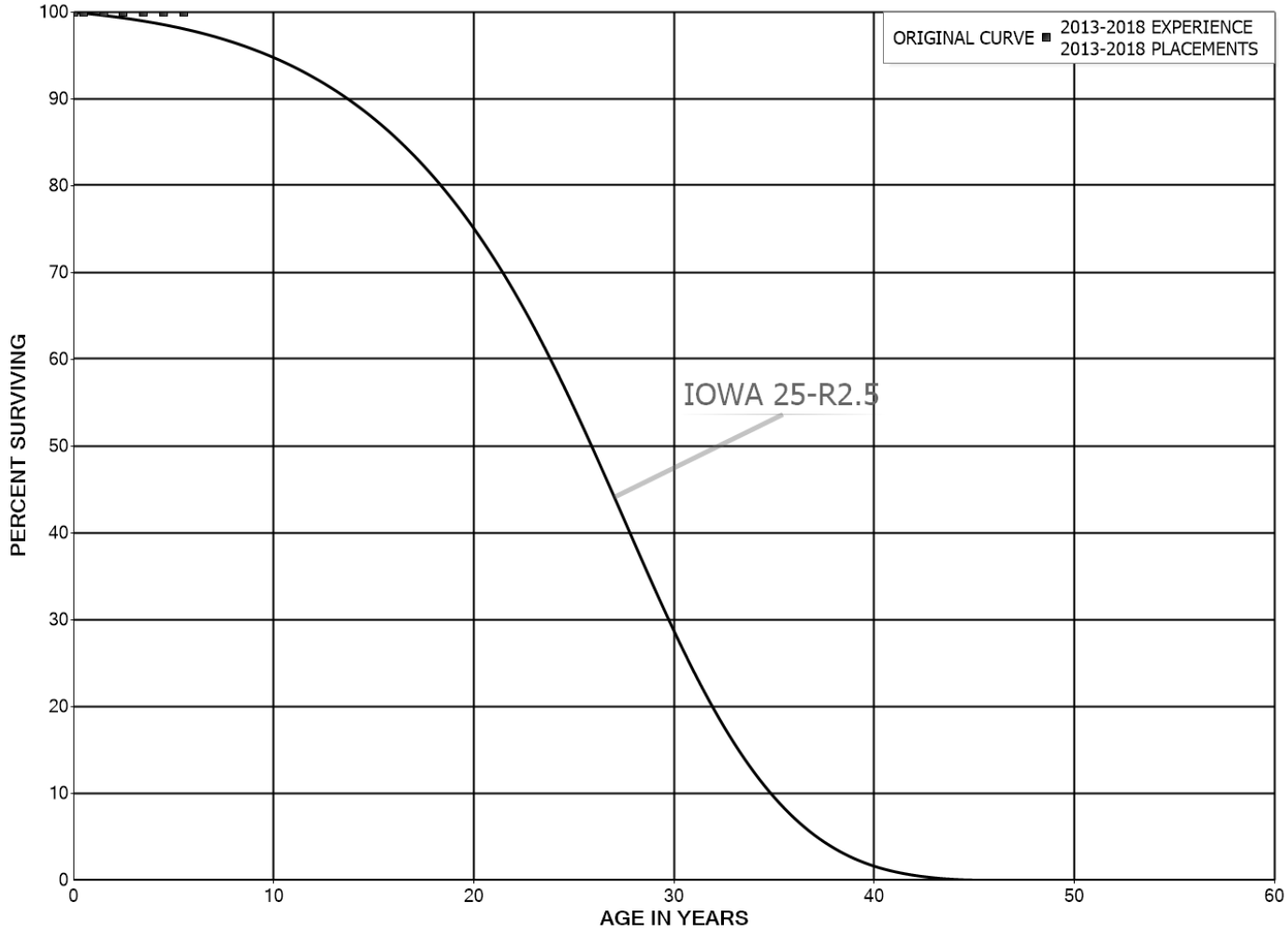
	ACCOUNT	SURVIVOR CURVE	NET SALVAGE PERCENT	ORIGINAL COST	BOOK DEPRECIATION RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)=(7)/(4)	(9)=(6)/(7)
	GAS PLANT								
391.01	OFFICE FURNITURE AND EQUIPMENT - FURNITURE AND EQUIPMENT				40,157		(4,016) *		
391.03	OFFICE FURNITURE AND EQUIPMENT - HARDWARE				(626,791)		62,679 *		
391.04	OFFICE FURNITURE AND EQUIPMENT - SOFTWARE				(2,501,030)		250,103 *		
394.00	TOOLS, SHOP AND GARAGE EQUIPMENT				(976,171)		97,617 *		
395.00	LABORATORY EQUIPMENT				(142,244)		14,224 *		
397.00	COMMUNICATION EQUIPMENT				(28,006)		2,801 *		
	TOTAL GAS PLANT				**(4,234,085)**		**423,409**		
	COMMON PLANT								
391.01	OFFICE FURNITURE AND EQUIPMENT				(163,525)		16,353 *		
391.03	OFFICE FURNITURE AND EQUIPMENT - HARDWARE				(18,285,991)		1,828,599 *		
391.04	OFFICE FURNITURE AND EQUIPMENT - SOFTWARE				1,141,382		(114,138) *		
391.05	OFFICE FURNITURE AND EQUIPMENT - COMPUTER HARDWARD/COMMUNICATION EQUIPMENT				(1,881,835)		188,184 *		
391.06	OFFICE FURNITURE AND EQUIPMENT - CUSTOMER ACCOUNT SYSTEM				(7,278,577)		727,858 *		
391.07	OFFICE FURNITURE AND EQUIPMENT - IPAD HARDWARE				(971,237)		97,124 *		
391.13	OFFICE FURNITURE AND EQUIPMENT - PLATFORM SYSTEMS				(5,063,954)		506,395 *		
391.18	OFFICE FURNITURE AND EQUIPMENT - OTHER SOFTWARE				(2,084,048)		208,405 *		
391.23	OFFICE FURNITURE AND EQUIPMENT - PLATFORM SYSTEMS				2,486,040		(248,604) *		
391.28	OFFICE FURNITURE AND EQUIPMENT - OTHER SOFTWARE				951,679		(95,168) *		
394.00	TOOLS, SHOP AND GARAGE EQUIPMENT				2,145		(215) *		
397.00	COMMUNICATION EQUIPMENT				(36,520)		3,652 *		
398.00	MISCELLANEOUS EQUIPMENT				7,828		(783) *		
	TOTAL COMMON PLANT				**(31,176,613)**		**3,117,661**		
	TOTAL RESERVE ADJUSTMENT FOR AMORTIZATION				**(38,132,075)**		**3,813,208**		
	TOTAL DEPRECIABLE PLANT			**218,839,511.68**	**86,830,980**	**92,943,273**	**21,708,625**	**9.92**	
	NONDEPRECIABLE PLANT								
	GAS PLANT								
374.01	LAND			76,939.63					
	TOTAL GAS PLANT			**76,939.63**					
	COMMON PLANT								
389.01	LAND			646,323.58					
	TOTAL COMMON PLANT			**646,323.58**					
	TOTAL NONDEPRECIABLE PLANT			**646,323.58**					
	TOTAL UTILITY PLANT			**219,562,774.89**	**86,830,980**	**92,943,273**	**21,708,625**		

* 10-year Amortization of Unrecovered Reserve related to Amortization Accounting.

PART VII. SERVICE LIFE STATISTICS

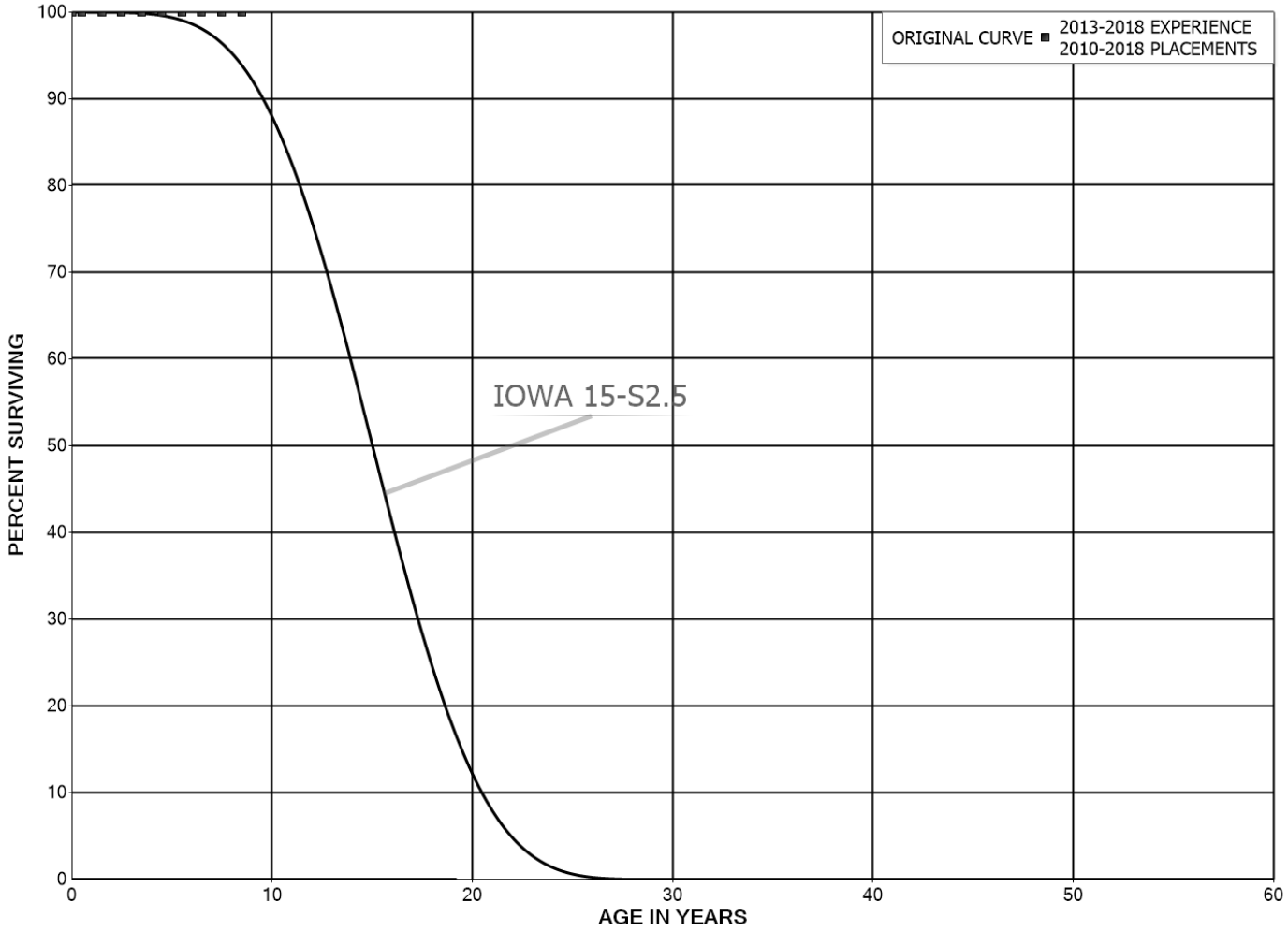
ELECTRIC PLANT

Gannett Fleming



PLACEMENT BAND 2013-2018			EXPERIENCE BAND 2013-2018		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	4,641,209		0.0000	1.0000	100.00
0.5	425,507		0.0000	1.0000	100.00
1.5	266,746		0.0000	1.0000	100.00
2.5	98,314		0.0000	1.0000	100.00
3.5	88,133		0.0000	1.0000	100.00
4.5	43,345		0.0000	1.0000	100.00
5.5					100.00

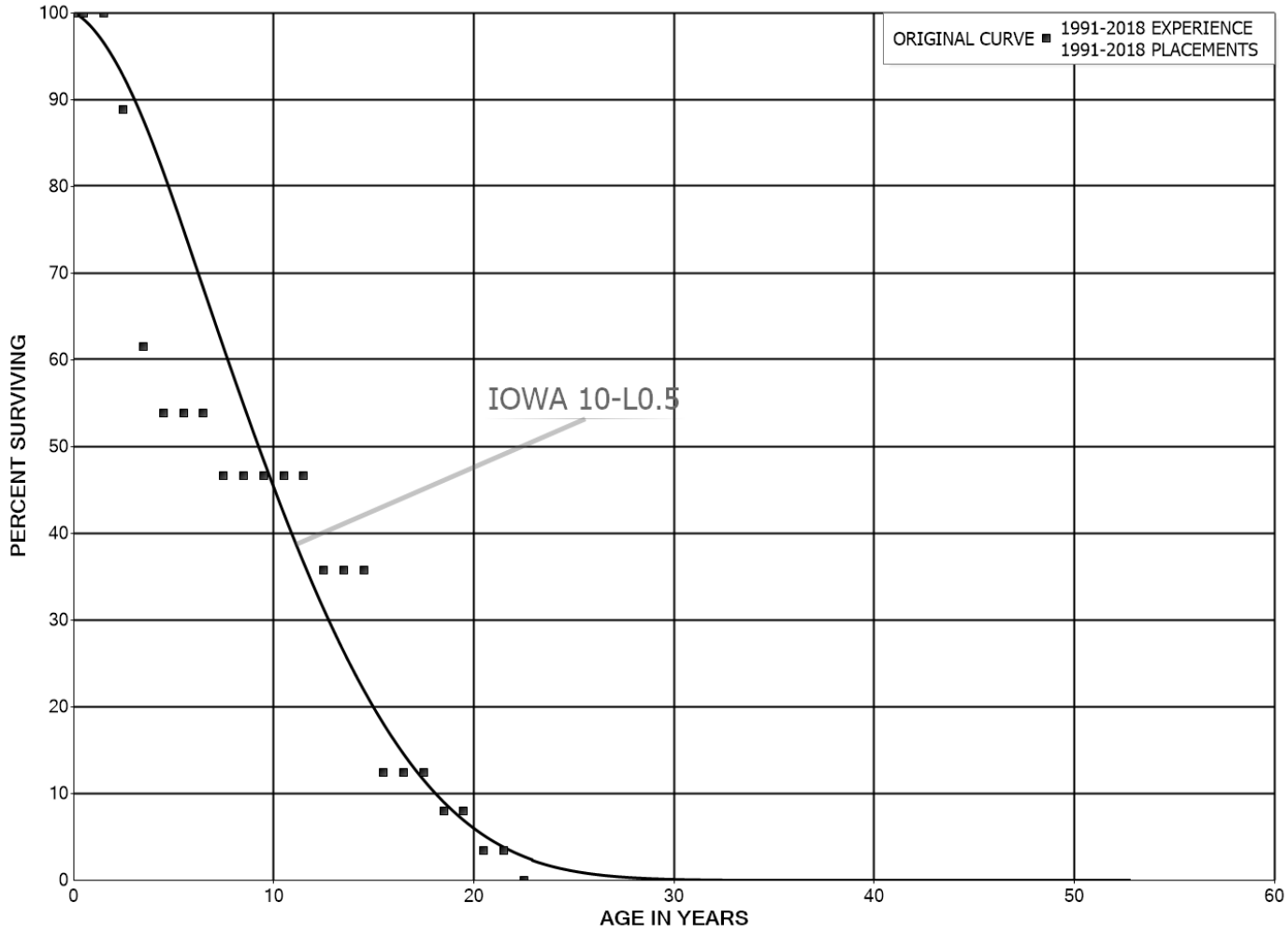
Gannett Fleming



PLACEMENT BAND 2010-2018			EXPERIENCE BAND 2013-2018		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	7,235,965		0.0000	1.0000	100.00
0.5	4,301,081		0.0000	1.0000	100.00
1.5	1,200,066		0.0000	1.0000	100.00
2.5	748,096		0.0000	1.0000	100.00
3.5	546,715		0.0000	1.0000	100.00
4.5	364,944		0.0000	1.0000	100.00
5.5	8,944		0.0000	1.0000	100.00
6.5	25,303		0.0000	1.0000	100.00
7.5	25,303		0.0000	1.0000	100.00
8.5					100.00

GAS PLANT

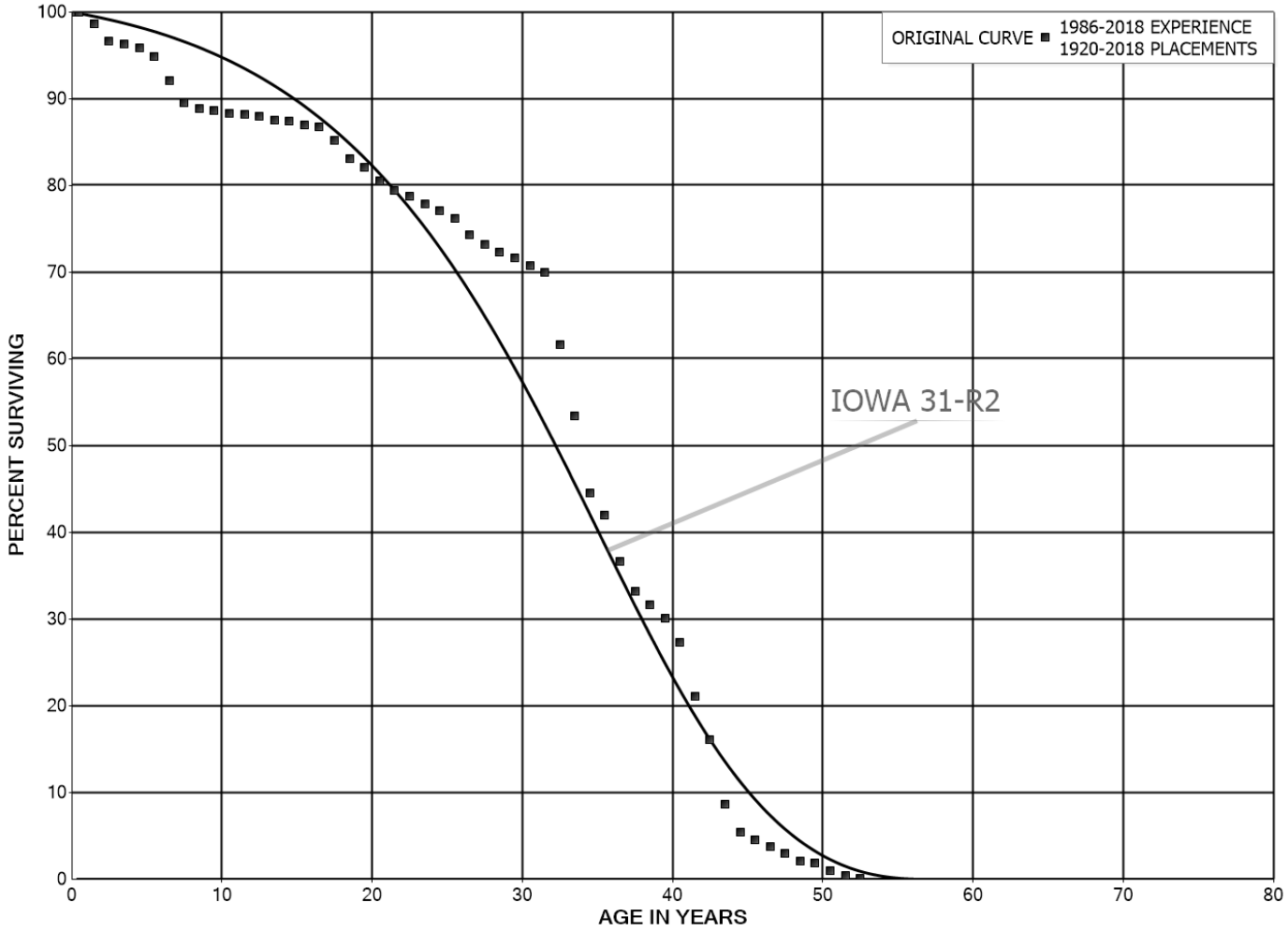
Gannett Fleming



PLACEMENT BAND 1991-2018 EXPERIENCE BAND 1991-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	241,104		0.0000	1.0000	100.00
0.5	218,264		0.0000	1.0000	100.00
1.5	163,083	18,137	0.1112	0.8888	100.00
2.5	127,132	39,197	0.3083	0.6917	88.88
3.5	87,935	10,974	0.1248	0.8752	61.48
4.5	72,759		0.0000	1.0000	53.80
5.5	60,187		0.0000	1.0000	53.80
6.5	45,754	6,085	0.1330	0.8670	53.80
7.5	39,670		0.0000	1.0000	46.65
8.5	40,763		0.0000	1.0000	46.65
9.5	40,763		0.0000	1.0000	46.65
10.5	43,984		0.0000	1.0000	46.65
11.5	43,984	10,264	0.2333	0.7667	46.65
12.5	33,720		0.0000	1.0000	35.76
13.5	33,720		0.0000	1.0000	35.76
14.5	33,720	21,983	0.6519	0.3481	35.76
15.5	11,737		0.0000	1.0000	12.45
16.5	11,737		0.0000	1.0000	12.45
17.5	11,737	4,202	0.3580	0.6420	12.45
18.5	7,535		0.0000	1.0000	7.99
19.5	7,535	4,314	0.5725	0.4275	7.99
20.5	3,221		0.0000	1.0000	3.42
21.5	3,221	3,221	1.0000		3.42
22.5					

Gannett Fleming



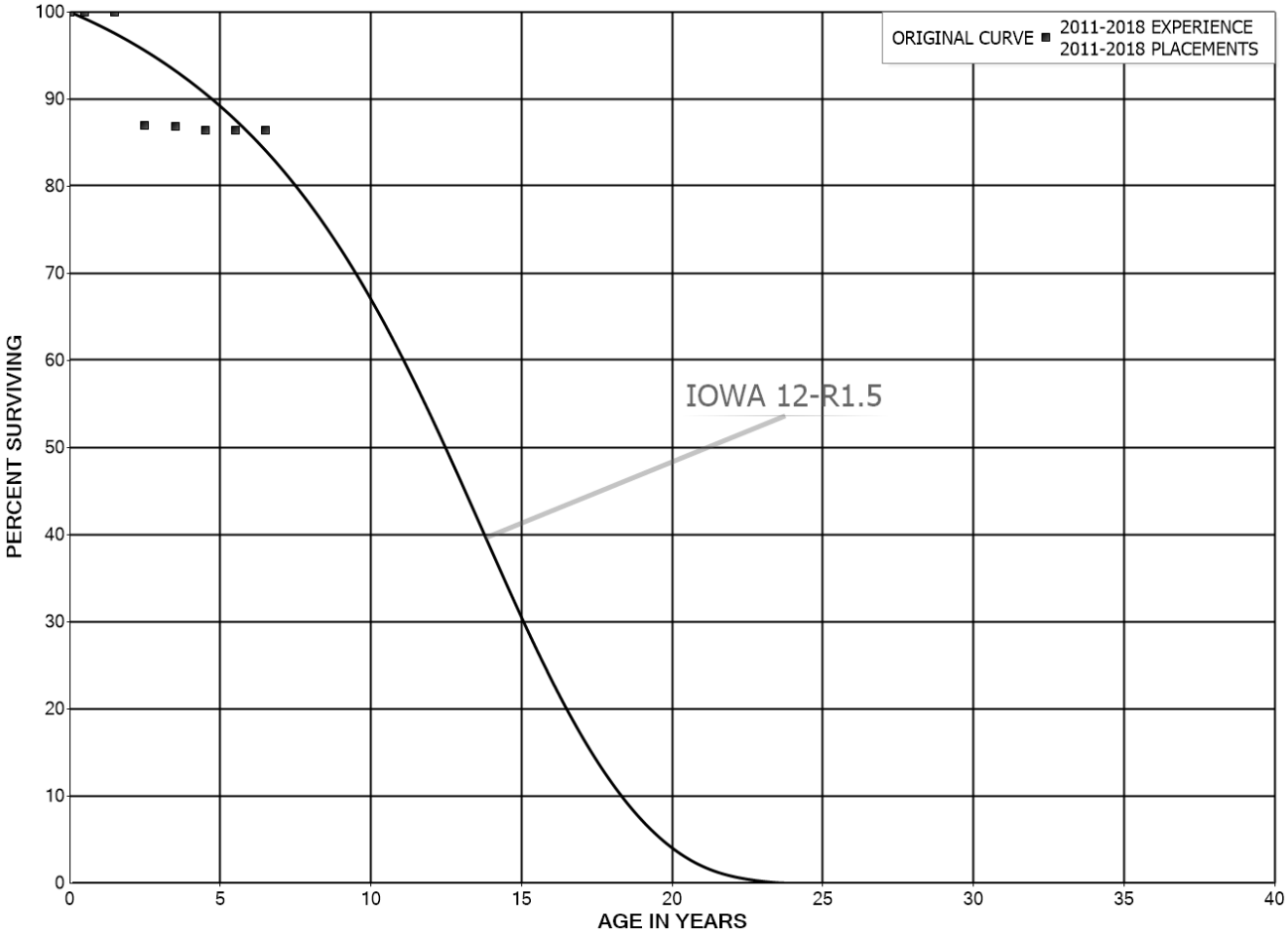
PLACEMENT BAND 1920-2018 EXPERIENCE BAND 1986-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	66,174,624	49,011	0.0007	0.9993	100.00
0.5	57,826,973	771,881	0.0133	0.9867	99.93
1.5	47,630,760	947,702	0.0199	0.9801	98.59
2.5	42,776,500	161,078	0.0038	0.9962	96.63
3.5	40,053,866	170,093	0.0042	0.9958	96.27
4.5	38,812,483	422,569	0.0109	0.9891	95.86
5.5	36,607,458	1,068,216	0.0292	0.9708	94.81
6.5	33,718,913	916,424	0.0272	0.9728	92.05
7.5	32,669,533	276,949	0.0085	0.9915	89.55
8.5	31,803,271	53,440	0.0017	0.9983	88.79
9.5	30,935,627	128,569	0.0042	0.9958	88.64
10.5	30,231,982	36,121	0.0012	0.9988	88.27
11.5	29,386,343	66,817	0.0023	0.9977	88.16
12.5	29,233,648	147,253	0.0050	0.9950	87.96
13.5	28,632,525	32,561	0.0011	0.9989	87.52
14.5	27,967,764	137,479	0.0049	0.9951	87.42
15.5	28,080,179	84,839	0.0030	0.9970	86.99
16.5	27,515,641	482,413	0.0175	0.9825	86.73
17.5	28,062,747	693,145	0.0247	0.9753	85.21
18.5	26,774,038	348,587	0.0130	0.9870	83.10
19.5	25,801,378	476,177	0.0185	0.9815	82.02
20.5	24,868,368	331,737	0.0133	0.9867	80.51
21.5	23,911,610	209,000	0.0087	0.9913	79.43
22.5	23,015,993	264,815	0.0115	0.9885	78.74
23.5	22,473,505	231,720	0.0103	0.9897	77.83
24.5	22,729,712	261,724	0.0115	0.9885	77.03
25.5	21,818,090	534,317	0.0245	0.9755	76.14
26.5	20,586,297	319,108	0.0155	0.9845	74.28
27.5	19,382,903	214,878	0.0111	0.9889	73.13
28.5	18,493,809	169,150	0.0091	0.9909	72.32
29.5	18,095,738	228,718	0.0126	0.9874	71.66
30.5	17,499,867	183,348	0.0105	0.9895	70.75
31.5	17,144,840	2,061,977	0.1203	0.8797	70.01
32.5	13,757,352	1,842,234	0.1339	0.8661	61.59
33.5	10,943,558	1,811,151	0.1655	0.8345	53.34
34.5	7,892,973	462,919	0.0586	0.9414	44.51
35.5	7,356,778	931,187	0.1266	0.8734	41.90
36.5	6,378,091	592,412	0.0929	0.9071	36.60
37.5	5,774,017	276,560	0.0479	0.9521	33.20
38.5	5,223,751	247,167	0.0473	0.9527	31.61

PLACEMENT BAND 1920-2018 EXPERIENCE BAND 1986-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	4,653,204	439,599	0.0945	0.9055	30.11
40.5	3,979,825	898,873	0.2259	0.7741	27.27
41.5	3,121,291	738,161	0.2365	0.7635	21.11
42.5	2,454,105	1,148,811	0.4681	0.5319	16.12
43.5	1,355,317	496,308	0.3662	0.6338	8.57
44.5	888,725	152,921	0.1721	0.8279	5.43
45.5	768,463	137,945	0.1795	0.8205	4.50
46.5	631,424	121,568	0.1925	0.8075	3.69
47.5	510,510	161,988	0.3173	0.6827	2.98
48.5	350,240	36,253	0.1035	0.8965	2.03
49.5	313,631	156,527	0.4991	0.5009	1.82
50.5	156,867	90,468	0.5767	0.4233	0.91
51.5	63,670	60,589	0.9516	0.0484	0.39
52.5	3,032	90	0.0297	0.9703	0.02
53.5	2,379	101	0.0426	0.9574	0.02
54.5	13,908		0.0000	1.0000	0.02
55.5	13,908		0.0000	1.0000	0.02
56.5	13,908	51	0.0036	0.9964	0.02
57.5	13,858		0.0000	1.0000	0.02
58.5	13,646	13,646	1.0000		0.02
59.5					
60.5					
61.5					
62.5	140		0.0000		
63.5	140		0.0000		
64.5	140		0.0000		
65.5	140		0.0000		
66.5	140		0.0000		
67.5	140	140	1.0000		
68.5					
69.5					
70.5					
71.5					
72.5					
73.5					
74.5	58,336		0.0000		
75.5	58,336		0.0000		
76.5	58,336		0.0000		
77.5	58,336		0.0000		
78.5	58,336	58,336	1.0000		
79.5					

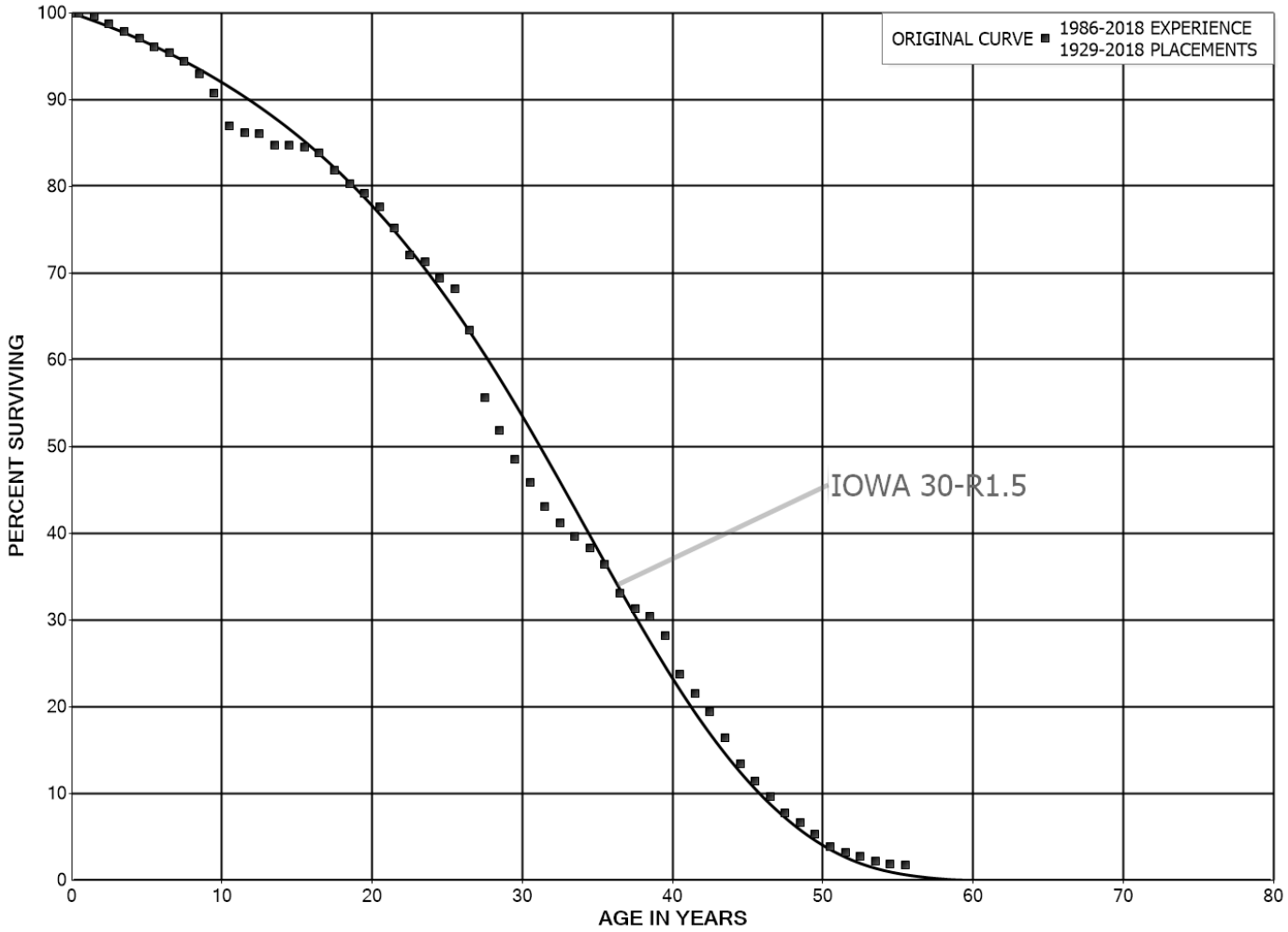
Gannett Fleming



PLACEMENT BAND 2011-2018 EXPERIENCE BAND 2011-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	11,301,357	101	0.0000	1.0000	100.00
0.5	9,547,738	4,735	0.0005	0.9995	100.00
1.5	2,807,144	366,681	0.1306	0.8694	99.95
2.5	1,379,814	1,092	0.0008	0.9992	86.89
3.5	598,664	2,880	0.0048	0.9952	86.82
4.5	391,047		0.0000	1.0000	86.41
5.5	241,180		0.0000	1.0000	86.41
6.5					86.41

Gannett Fleming



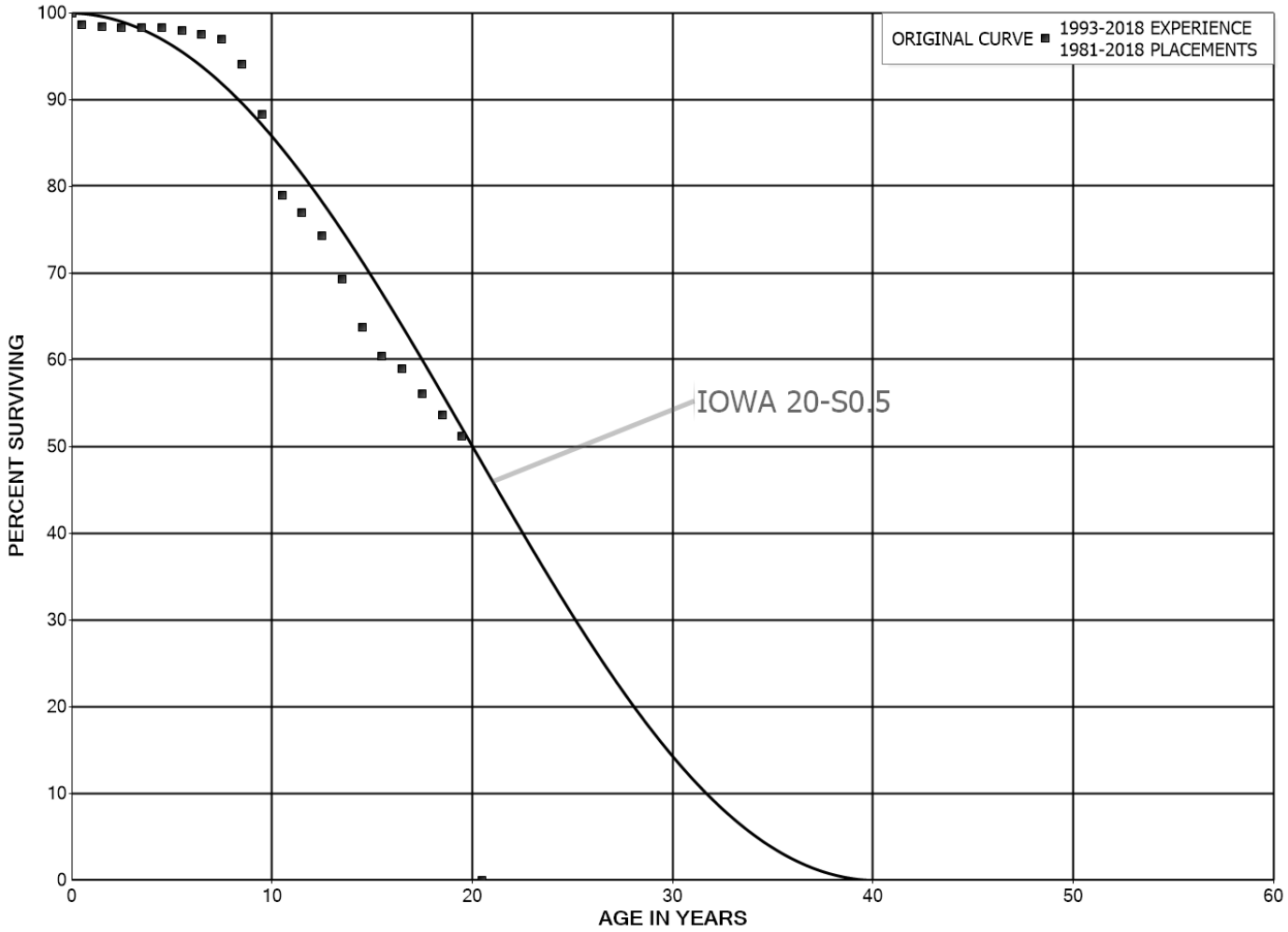
PLACEMENT BAND 1929-2018 EXPERIENCE BAND 1986-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	18,127,265	6,637	0.0004	0.9996	100.00
0.5	15,829,749	61,004	0.0039	0.9961	99.96
1.5	13,238,694	115,308	0.0087	0.9913	99.58
2.5	11,272,639	97,690	0.0087	0.9913	98.71
3.5	11,008,168	89,414	0.0081	0.9919	97.86
4.5	11,103,952	113,497	0.0102	0.9898	97.06
5.5	10,587,097	75,534	0.0071	0.9929	96.07
6.5	10,267,778	109,972	0.0107	0.9893	95.38
7.5	9,899,831	149,876	0.0151	0.9849	94.36
8.5	9,450,069	227,083	0.0240	0.9760	92.93
9.5	8,879,951	363,952	0.0410	0.9590	90.70
10.5	8,707,103	81,731	0.0094	0.9906	86.98
11.5	8,561,142	5,914	0.0007	0.9993	86.17
12.5	8,450,377	130,334	0.0154	0.9846	86.11
13.5	8,227,496	1,516	0.0002	0.9998	84.78
14.5	7,930,042	21,541	0.0027	0.9973	84.76
15.5	7,764,342	62,943	0.0081	0.9919	84.53
16.5	7,558,758	179,922	0.0238	0.9762	83.85
17.5	7,337,386	138,265	0.0188	0.9812	81.85
18.5	7,198,992	97,095	0.0135	0.9865	80.31
19.5	7,127,181	149,571	0.0210	0.9790	79.23
20.5	6,812,829	210,981	0.0310	0.9690	77.56
21.5	6,373,700	262,963	0.0413	0.9587	75.16
22.5	5,876,338	64,433	0.0110	0.9890	72.06
23.5	5,796,204	153,318	0.0265	0.9735	71.27
24.5	5,343,907	97,257	0.0182	0.9818	69.38
25.5	4,955,340	343,262	0.0693	0.9307	68.12
26.5	4,455,323	548,253	0.1231	0.8769	63.40
27.5	3,690,605	251,548	0.0682	0.9318	55.60
28.5	3,401,589	215,448	0.0633	0.9367	51.81
29.5	3,122,440	172,315	0.0552	0.9448	48.53
30.5	2,925,055	174,336	0.0596	0.9404	45.85
31.5	2,644,505	116,908	0.0442	0.9558	43.12
32.5	2,298,810	89,010	0.0387	0.9613	41.21
33.5	2,067,603	70,504	0.0341	0.9659	39.62
34.5	1,910,395	95,057	0.0498	0.9502	38.27
35.5	1,738,867	156,912	0.0902	0.9098	36.36
36.5	1,538,630	81,880	0.0532	0.9468	33.08
37.5	1,439,481	44,016	0.0306	0.9694	31.32
38.5	1,237,483	87,489	0.0707	0.9293	30.36

PLACEMENT BAND 1929-2018 EXPERIENCE BAND 1986-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	1,081,729	171,624	0.1587	0.8413	28.22
40.5	896,189	82,915	0.0925	0.9075	23.74
41.5	808,793	82,514	0.1020	0.8980	21.54
42.5	716,345	110,831	0.1547	0.8453	19.35
43.5	595,326	106,259	0.1785	0.8215	16.35
44.5	487,781	74,049	0.1518	0.8482	13.43
45.5	406,379	61,601	0.1516	0.8484	11.39
46.5	349,047	69,983	0.2005	0.7995	9.67
47.5	258,397	39,005	0.1510	0.8490	7.73
48.5	205,510	41,088	0.1999	0.8001	6.56
49.5	163,554	43,244	0.2644	0.7356	5.25
50.5	116,965	20,345	0.1739	0.8261	3.86
51.5	96,279	13,609	0.1413	0.8587	3.19
52.5	78,159	14,890	0.1905	0.8095	2.74
53.5	59,293	10,539	0.1777	0.8223	2.22
54.5	40,651	3,280	0.0807	0.9193	1.82
55.5	34,522	8,160	0.2364	0.7636	1.68
56.5	25,830	6,213	0.2405	0.7595	1.28
57.5	18,046	2,927	0.1622	0.8378	0.97
58.5	15,332	4,332	0.2826	0.7174	0.81
59.5	9,664	287	0.0297	0.9703	0.58
60.5	9,377	1,086	0.1158	0.8842	0.57
61.5	8,291	739	0.0892	0.9108	0.50
62.5	7,027	137	0.0195	0.9805	0.46
63.5	6,890	1,190	0.1728	0.8272	0.45
64.5	4,879	529	0.1085	0.8915	0.37
65.5	4,350	1,696	0.3898	0.6102	0.33
66.5	2,655	853	0.3214	0.6786	0.20
67.5	1,801	458	0.2540	0.7460	0.14
68.5	1,344	1,272	0.9469	0.0531	0.10
69.5	71	71	1.0000		0.01
70.5					

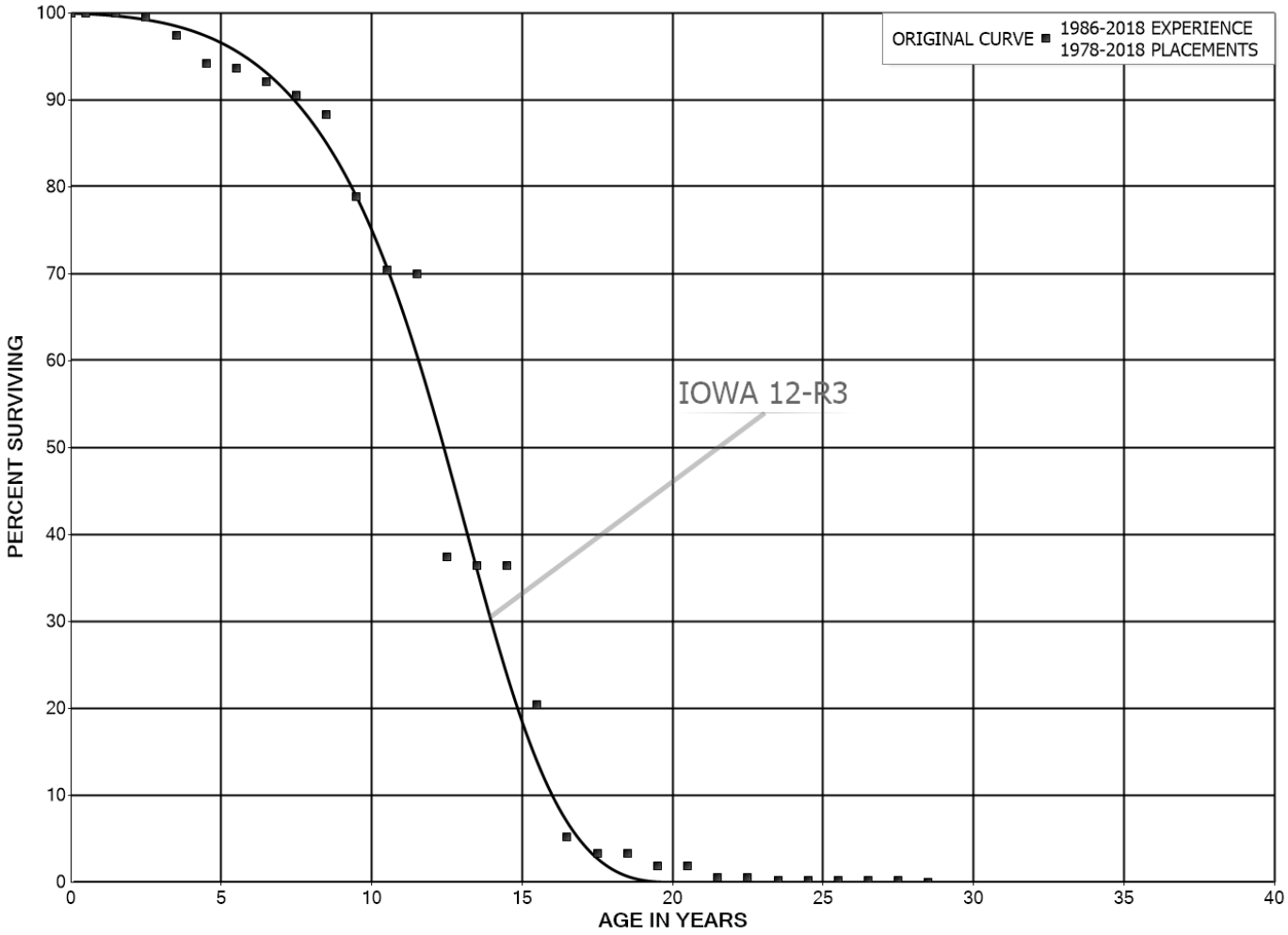
Gannett Fleming



PLACEMENT BAND 1981-2018 EXPERIENCE BAND 1993-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	4,531,185	64,824	0.0143	0.9857	100.00
0.5	4,064,893	8,521	0.0021	0.9979	98.57
1.5	3,995,903	2,396	0.0006	0.9994	98.36
2.5	3,870,471	1,888	0.0005	0.9995	98.30
3.5	3,860,816		0.0000	1.0000	98.26
4.5	3,707,002	11,994	0.0032	0.9968	98.26
5.5	3,559,969	16,308	0.0046	0.9954	97.94
6.5	2,718,751	13,907	0.0051	0.9949	97.49
7.5	2,704,843	81,794	0.0302	0.9698	96.99
8.5	2,567,944	158,502	0.0617	0.9383	94.06
9.5	2,196,225	230,291	0.1049	0.8951	88.25
10.5	1,732,786	44,937	0.0259	0.9741	79.00
11.5	1,355,621	47,228	0.0348	0.9652	76.95
12.5	1,229,511	81,777	0.0665	0.9335	74.27
13.5	1,000,899	80,356	0.0803	0.9197	69.33
14.5	920,543	48,056	0.0522	0.9478	63.76
15.5	871,086	21,051	0.0242	0.9758	60.43
16.5	493,709	24,803	0.0502	0.9498	58.97
17.5	229,477	9,736	0.0424	0.9576	56.01
18.5	25,970	1,175	0.0453	0.9547	53.63
19.5	5,198	5,198	1.0000		51.21
20.5					

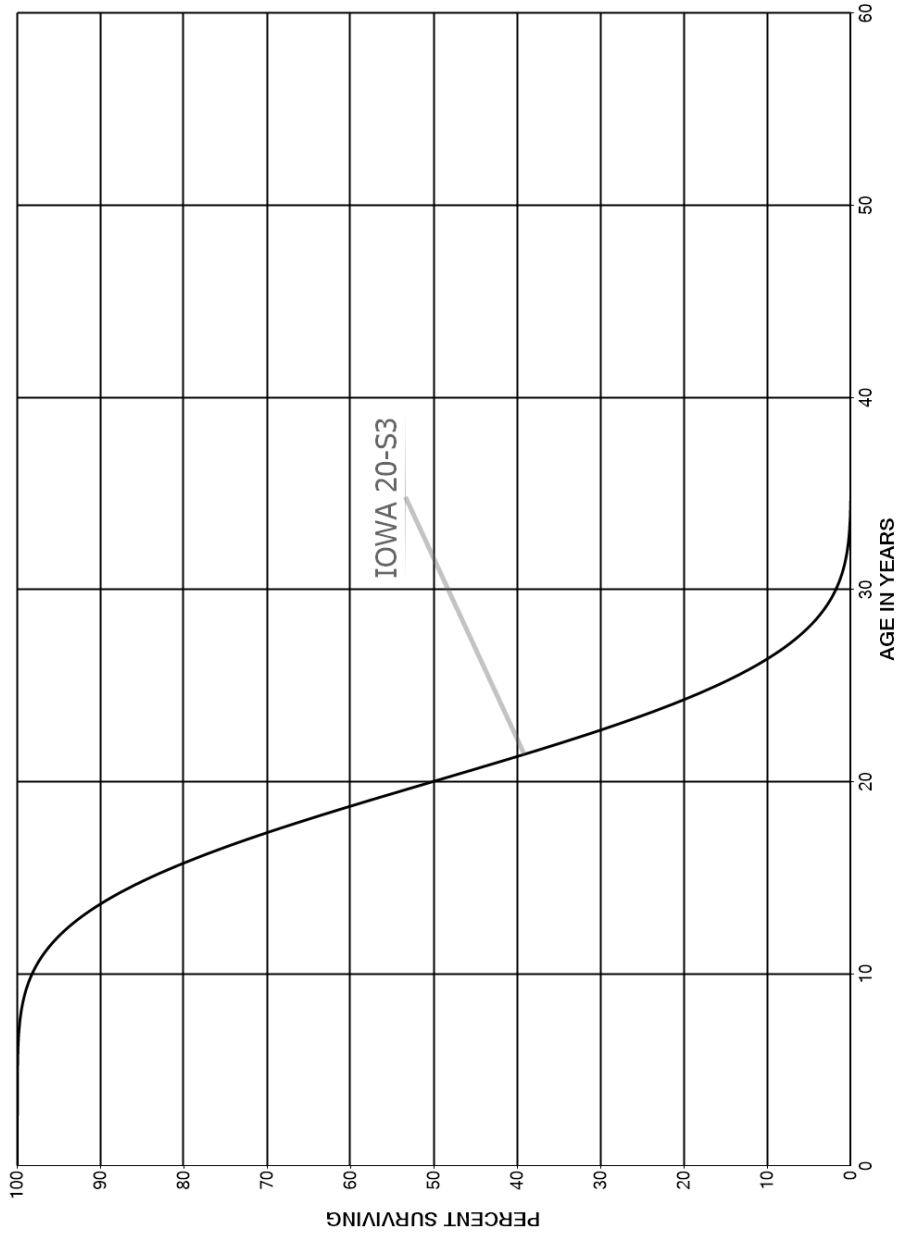
Gannett Fleming



PLACEMENT BAND 1978-2018 EXPERIENCE BAND 1986-2018

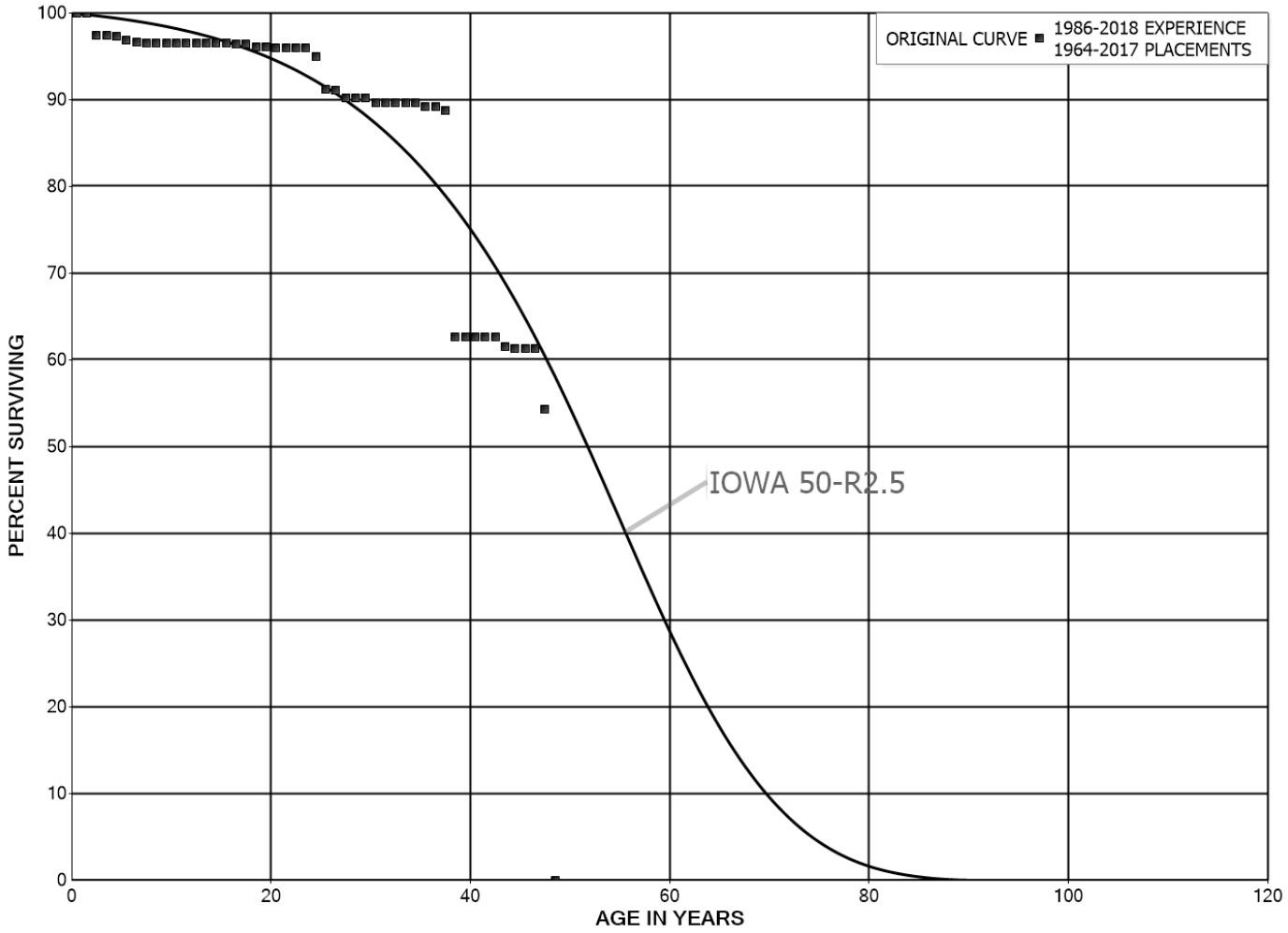
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	244,282		0.0000	1.0000	100.00
0.5	258,209		0.0000	1.0000	100.00
1.5	102,315	519	0.0051	0.9949	100.00
2.5	89,079	1,856	0.0208	0.9792	99.49
3.5	87,093	2,908	0.0334	0.9666	97.42
4.5	73,212	454	0.0062	0.9938	94.17
5.5	75,625	1,237	0.0164	0.9836	93.58
6.5	75,219	1,229	0.0163	0.9837	92.05
7.5	75,149	1,842	0.0245	0.9755	90.55
8.5	66,442	7,162	0.1078	0.8922	88.33
9.5	66,442	7,048	0.1061	0.8939	78.81
10.5	61,336	421	0.0069	0.9931	70.45
11.5	61,336	28,595	0.4662	0.5338	69.96
12.5	38,145	1,001	0.0262	0.9738	37.35
13.5	27,539		0.0000	1.0000	36.37
14.5	24,117	10,606	0.4398	0.5602	36.37
15.5	36,453	27,135	0.7444	0.2556	20.37
16.5	39,876	15,124	0.3793	0.6207	5.21
17.5	27,539		0.0000	1.0000	3.23
18.5	27,539	11,689	0.4245	0.5755	3.23
19.5	13,437		0.0000	1.0000	1.86
20.5	9,220	6,630	0.7192	0.2808	1.86
21.5	9,220		0.0000	1.0000	0.52
22.5	9,220	5,797	0.6288	0.3712	0.52
23.5	3,423		0.0000	1.0000	0.19
24.5	3,423		0.0000	1.0000	0.19
25.5	3,423		0.0000	1.0000	0.19
26.5	3,423		0.0000	1.0000	0.19
27.5	3,423	3,423	1.0000		0.19
28.5					

COMMON PLANT


IOWA 20-S3
PERCENT SURVIVING
100
90
80
70
60
50
40
30
20
10
0
AGE IN YEARS
0
10
20
30
40
50
60

ELECTRIC, GAS AND COMMON PLANT

Gannett Fleming



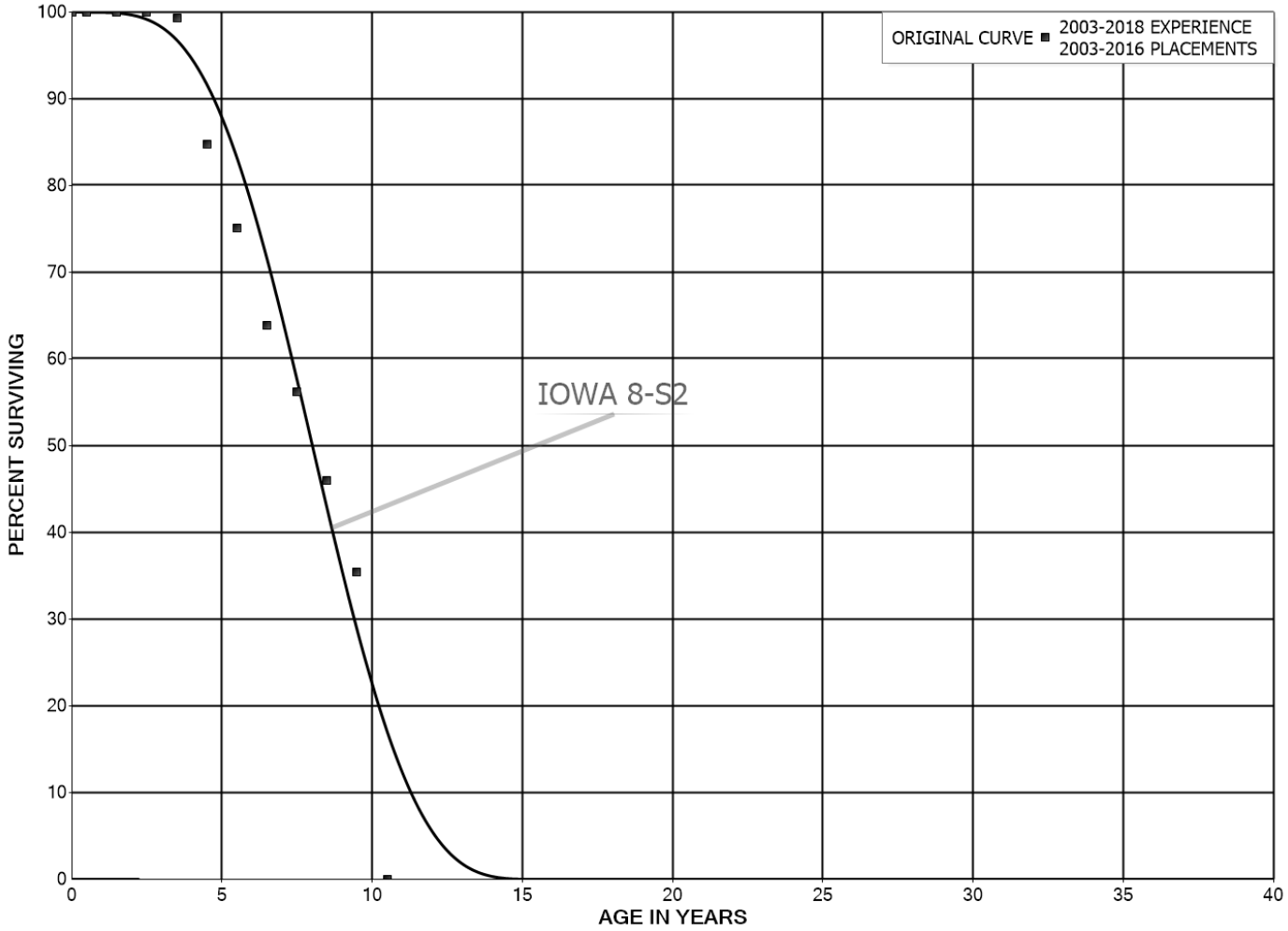
PLACEMENT BAND 1964-2017 EXPERIENCE BAND 1986-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	11,244,400		0.0000	1.0000	100.00
0.5	11,244,400		0.0000	1.0000	100.00
1.5	11,343,658	301,249	0.0266	0.9734	100.00
2.5	10,430,346		0.0000	1.0000	97.34
3.5	11,477,779	7,736	0.0007	0.9993	97.34
4.5	11,422,883	50,325	0.0044	0.9956	97.28
5.5	10,827,579	21,291	0.0020	0.9980	96.85
6.5	10,739,492	17,634	0.0016	0.9984	96.66
7.5	4,762,631	17	0.0000	1.0000	96.50
8.5	4,291,799		0.0000	1.0000	96.50
9.5	1,622,677		0.0000	1.0000	96.50
10.5	1,620,364		0.0000	1.0000	96.50
11.5	1,446,770		0.0000	1.0000	96.50
12.5	1,456,171		0.0000	1.0000	96.50
13.5	1,310,571		0.0000	1.0000	96.50
14.5	1,312,006		0.0000	1.0000	96.50
15.5	1,542,498	1,175	0.0008	0.9992	96.50
16.5	1,528,371		0.0000	1.0000	96.43
17.5	438,311	1,804	0.0041	0.9959	96.43
18.5	449,606		0.0000	1.0000	96.03
19.5	1,564,206	489	0.0003	0.9997	96.03
20.5	1,599,799	732	0.0005	0.9995	96.00
21.5	1,584,690		0.0000	1.0000	95.96
22.5	1,580,645	470	0.0003	0.9997	95.96
23.5	1,582,282	15,785	0.0100	0.9900	95.93
24.5	1,549,581	62,463	0.0403	0.9597	94.97
25.5	1,478,197	1,435	0.0010	0.9990	91.14
26.5	1,483,466	13,918	0.0094	0.9906	91.05
27.5	1,469,530		0.0000	1.0000	90.20
28.5	1,461,102		0.0000	1.0000	90.20
29.5	1,461,102	10,101	0.0069	0.9931	90.20
30.5	1,416,103		0.0000	1.0000	89.58
31.5	1,416,103		0.0000	1.0000	89.58
32.5	1,184,219		0.0000	1.0000	89.58
33.5	1,179,659		0.0000	1.0000	89.58
34.5	1,129,449	4,874	0.0043	0.9957	89.58
35.5	1,125,809	108	0.0001	0.9999	89.19
36.5	57,597	329	0.0057	0.9943	89.18
37.5	57,597	16,916	0.2937	0.7063	88.67
38.5	40,681		0.0000	1.0000	62.63

PLACEMENT BAND 1964-2017 EXPERIENCE BAND 1986-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	40,681		0.0000	1.0000	62.63
40.5	40,681		0.0000	1.0000	62.63
41.5	40,681		0.0000	1.0000	62.63
42.5	40,681	743	0.0183	0.9817	62.63
43.5	39,939	146	0.0037	0.9963	61.49
44.5	39,792		0.0000	1.0000	61.26
45.5	39,792		0.0000	1.0000	61.26
46.5	39,792	4,560	0.1146	0.8854	61.26
47.5	35,232	35,232	1.0000		54.24
48.5					

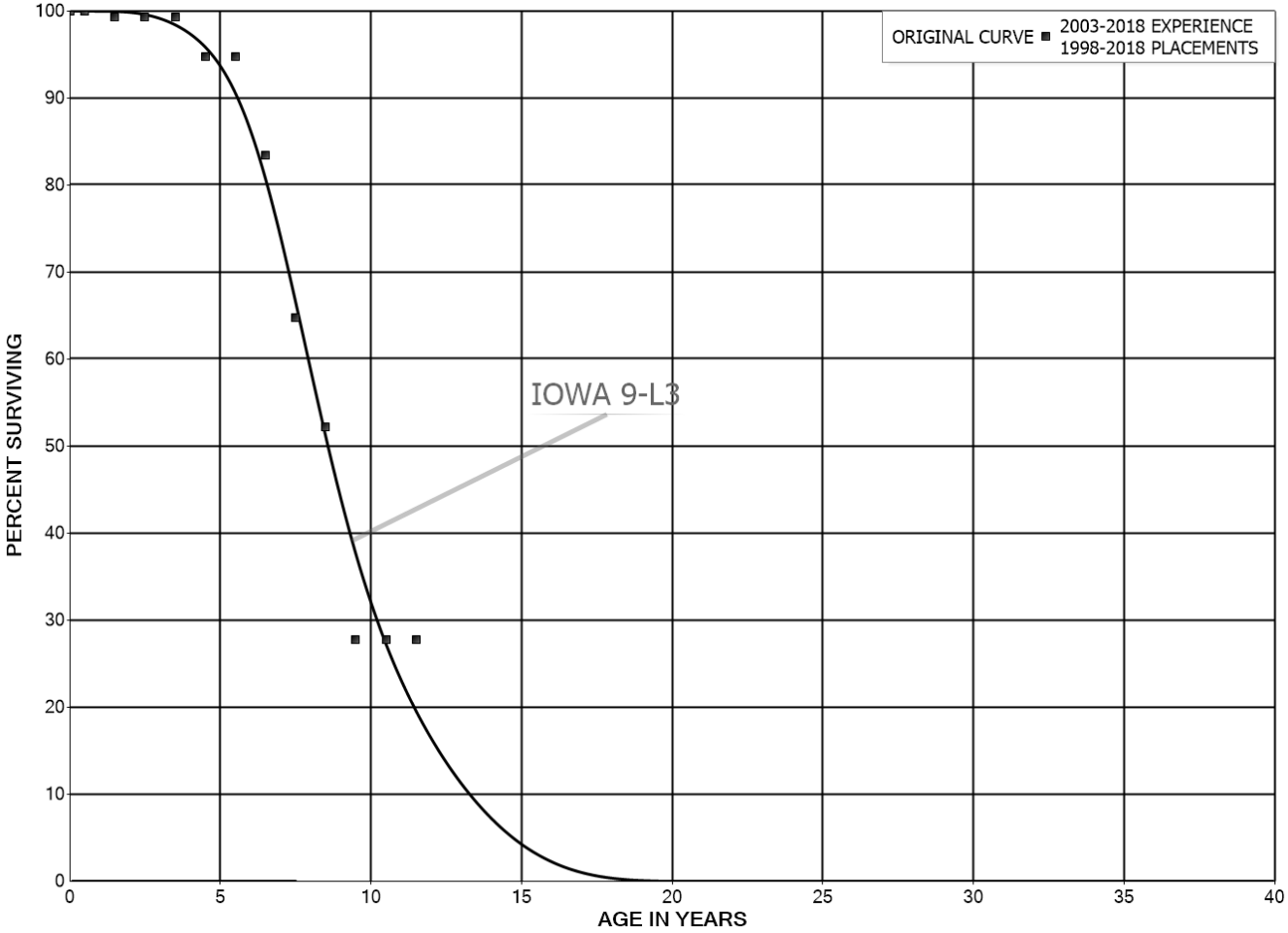
Gannett Fleming



PLACEMENT BAND 2003-2016 EXPERIENCE BAND 2003-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	246,593		0.0000	1.0000	100.00
0.5	329,339		0.0000	1.0000	100.00
1.5	325,490		0.0000	1.0000	100.00
2.5	356,927	2,450	0.0069	0.9931	100.00
3.5	426,813	62,738	0.1470	0.8530	99.31
4.5	409,973	46,504	0.1134	0.8866	84.72
5.5	412,599	61,785	0.1497	0.8503	75.11
6.5	141,911	17,109	0.1206	0.8794	63.86
7.5	105,019	18,995	0.1809	0.8191	56.16
8.5	86,024	19,825	0.2305	0.7695	46.00
9.5	51,013	51,013	1.0000		35.40
10.5					

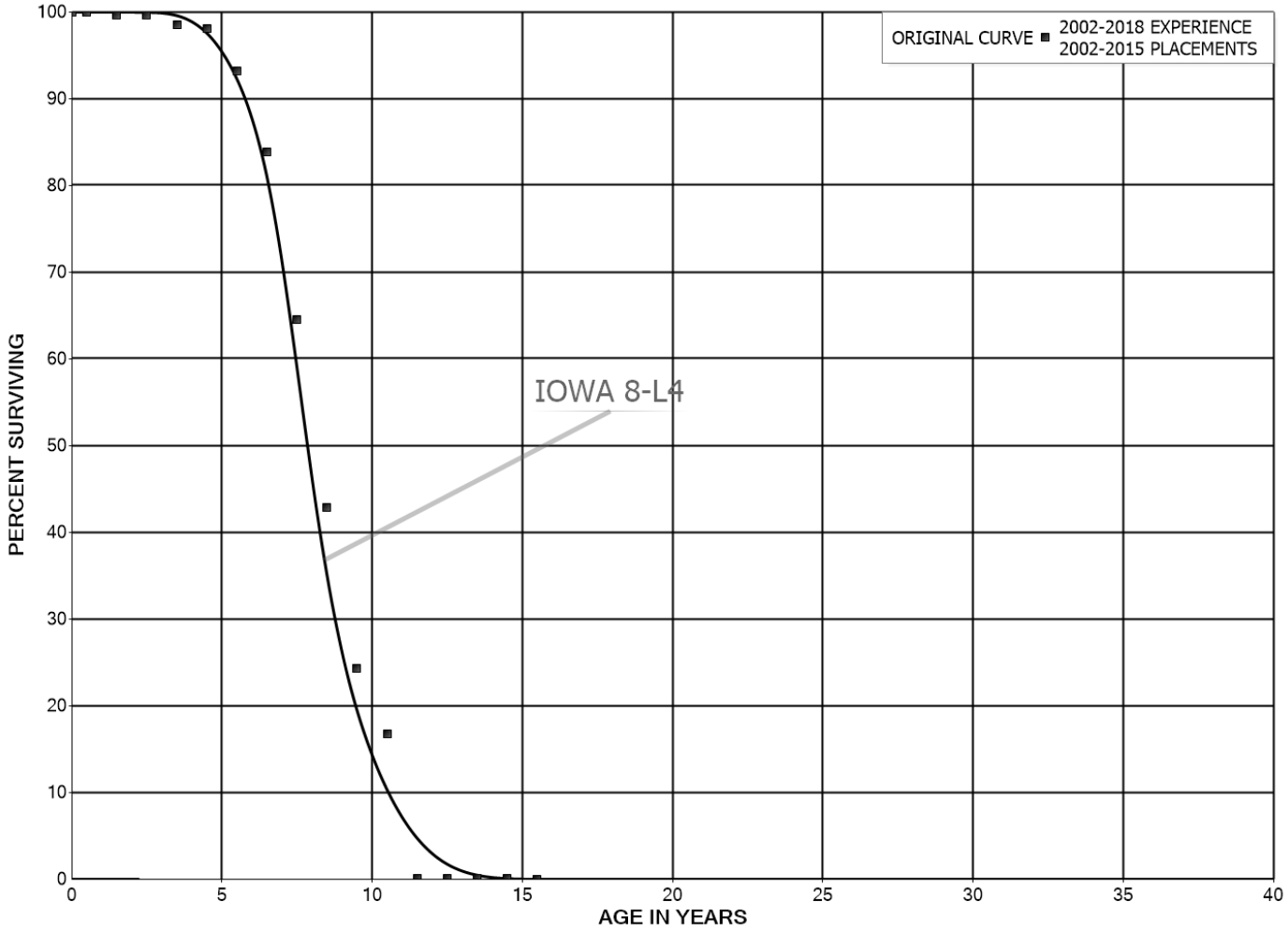
Gannett Fleming



PLACEMENT BAND 1998-2018 EXPERIENCE BAND 2003-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	3,937,369		0.0000	1.0000	100.00
0.5	3,445,357	25,188	0.0073	0.9927	100.00
1.5	2,734,615		0.0000	1.0000	99.27
2.5	1,827,988		0.0000	1.0000	99.27
3.5	976,674	44,884	0.0460	0.9540	99.27
4.5	816,101		0.0000	1.0000	94.71
5.5	589,131	70,507	0.1197	0.8803	94.71
6.5	280,022	62,739	0.2241	0.7759	83.37
7.5	152,146	29,449	0.1936	0.8064	64.69
8.5	196,211	91,970	0.4687	0.5313	52.17
9.5	41,262		0.0000	1.0000	27.72
10.5	41,262		0.0000	1.0000	27.72
11.5					27.72
12.5					
13.5	22,243	22,243	1.0000		
14.5					

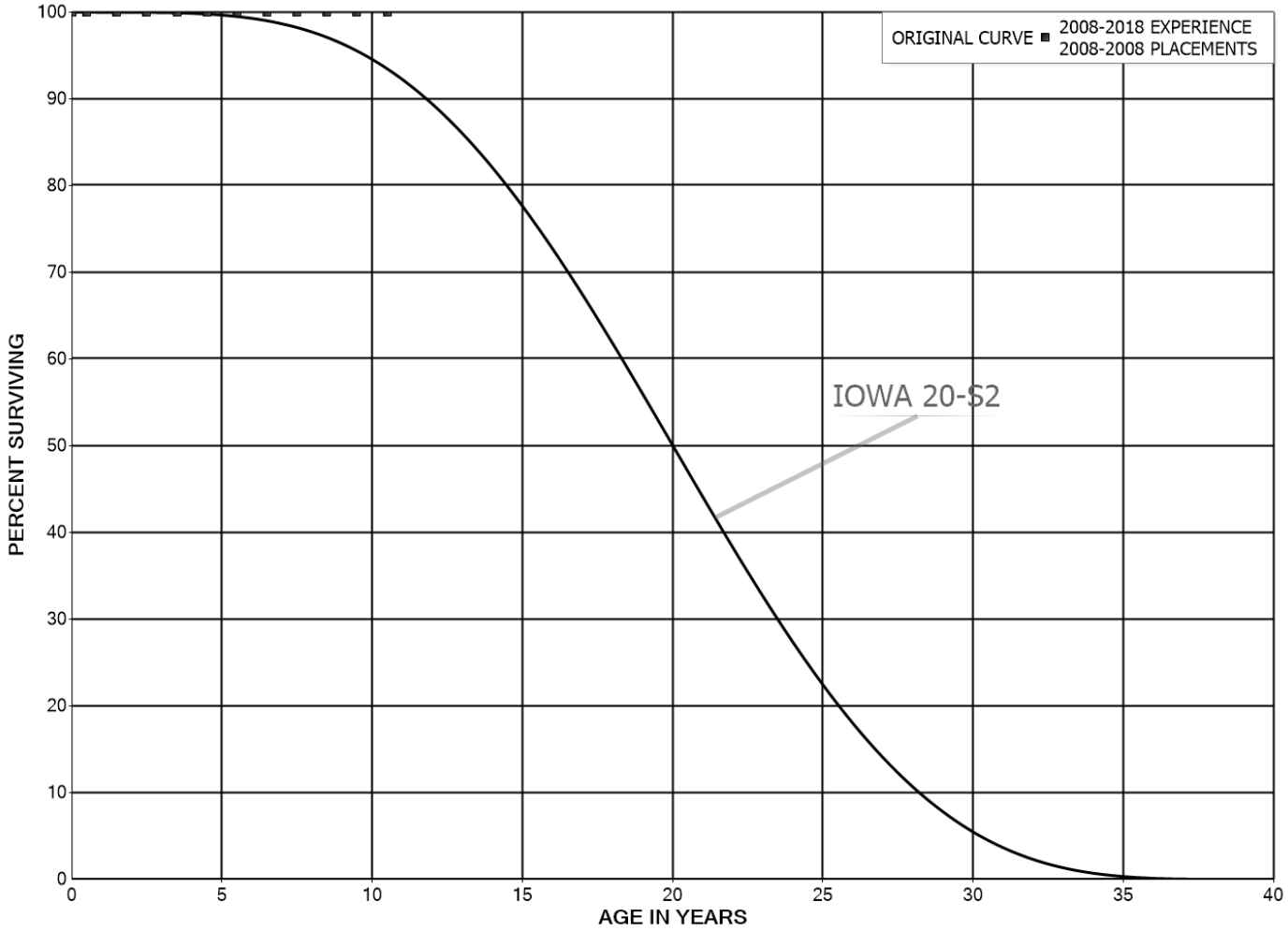
Gannett Fleming



PLACEMENT BAND 2002-2015 EXPERIENCE BAND 2002-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	1,968,285		0.0000	1.0000	100.00
0.5	1,968,285	8,147	0.0041	0.9959	100.00
1.5	2,007,580		0.0000	1.0000	99.59
2.5	2,007,580	21,319	0.0106	0.9894	99.59
3.5	2,051,542	10,761	0.0052	0.9948	98.53
4.5	1,549,824	76,497	0.0494	0.9506	98.01
5.5	1,169,973	117,298	0.1003	0.8997	93.17
6.5	1,063,743	245,342	0.2306	0.7694	83.83
7.5	605,081	203,228	0.3359	0.6641	64.50
8.5	417,097	181,041	0.4340	0.5660	42.83
9.5	235,226	72,937	0.3101	0.6899	24.24
10.5	88,641	88,097	0.9939	0.0061	16.73
11.5	41,806	15,514	0.3711	0.6289	0.10
12.5	12,777		0.0000	1.0000	0.06
13.5	12,777		0.0000	1.0000	0.06
14.5	12,777	12,777	1.0000		0.06
15.5					

Gannett Fleming



PLACEMENT BAND 2008-2008 EXPERIENCE BAND 2008-2018

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	42,990		0.0000	1.0000	100.00
0.5	42,990		0.0000	1.0000	100.00
1.5	42,990		0.0000	1.0000	100.00
2.5	42,990		0.0000	1.0000	100.00
3.5	47,167		0.0000	1.0000	100.00
4.5	47,167		0.0000	1.0000	100.00
5.5	47,167		0.0000	1.0000	100.00
6.5	47,167		0.0000	1.0000	100.00
7.5	47,167		0.0000	1.0000	100.00
8.5	47,167		0.0000	1.0000	100.00
9.5	47,167		0.0000	1.0000	100.00
10.5					100.00

PART VIII. NET SALVAGE STATISTICS

GAS PLANT

2013	118,376	0	0	0
2014				
2015				
2016				
2017				
2018				
TOTAL	118,376	0	0	0
THREE-YEAR MOVING AVERAGES				
13-15	39,459	0	0	0
14-16				
15-17				
16-18				
FIVE-YEAR AVERAGE				
14-18				

2005	1,162,308	30,568	3		0	30,568-	3-
2006	1,735,263	40,683	2		0	40,683-	2-
2007	1,338,077	25,333	2	21,627	2	3,706-	0
2008	1,577,062	50,262	3	550	0	49,712-	3-
2009	1,404,297	21,967	2		0	21,967-	2-
2010	1,470,046	365	0		0	365-	0
2011	2,003,753	47,373	2	21,446	1	25,927-	1-
2012	2,029,962	2,786	0	66,940	3	64,154	3
2013	1,679,470		0	63,171	4	63,171	4
2014	4,003,458		0	105,238	3	105,238	3
2015	16,922		0	58,731	347	58,731	347
2016	18,795		0	32,301	172	32,301	172
2017							
2018	224,294	366	0	175,943	78	175,577	78
TOTAL	18,663,707	219,703	1	545,948	3	326,244	2
THREE-YEAR MOVING AVERAGES							
05-07	1,411,883	32,195	2	7,209	1	24,986-	2-
06-08	1,550,134	38,759	3	7,392	0	31,367-	2-
07-09	1,439,812	32,521	2	7,392	1	25,128-	2-
08-10	1,483,802	24,198	2	183	0	24,014-	2-
09-11	1,626,032	23,235	1	7,149	0	16,086-	1-
10-12	1,834,587	16,841	1	29,462	2	12,621	1
11-13	1,904,395	16,720	1	50,519	3	33,799	2
12-14	2,570,964	929	0	78,450	3	77,521	3
13-15	1,899,950		0	75,713	4	75,713	4
14-16	1,346,392		0	65,424	5	65,424	5
15-17	11,906		0	30,344	255	30,344	255
16-18	81,030	122	0	69,415	86	69,293	86
FIVE-YEAR AVERAGE							
14-18	852,694	73	0	74,443	9	74,369	9

2013	431,722	466	0	0		466-	0
2014	1,203	20,783		3,277	272	17,506-	
2015	4,580	27,706	605	1,956	43	25,749-	562-
2016	2,829	0		3,544	125	3,544	125
2017							
2018	569	68,080		16,026-		84,106-	
TOTAL	440,904	117,035	27	7,249-	2-	124,284-	28-
THREE-YEAR MOVING AVERAGES							
13-15	145,835	16,318	11	1,744	1	14,574-	10-
14-16	2,871	16,163	563	2,926	102	13,237-	461-
15-17	2,470	9,235	374	1,833	74	7,402-	300-
16-18	1,133	22,693		4,161-	367-	26,854-	
FIVE-YEAR AVERAGE							
14-18	1,836	23,314		1,450-	79-	24,764-	

2005	370,842		0		0		0
2006	383,009	2,089	1		0	2,089-	1-
2007	295,783	2,834	1	2,138	1	697-	0
2008	1,530,815	604	0		0	604-	0
2009	388,324	42-	0		0	42	0
2010	510,219	467	0		0	467-	0
2011	150,232	479	0	207	0	272-	0
2012	549,895	14	0	2,318	0	2,304	0
2013	583,796		0	23,325	4	23,325	4
2014	242,724		0		0		0
2015	28,048		0	273	1	273	1
2016	2,133		0		0		0
2017							
2018	74		0		0		0
TOTAL	5,035,895	6,445	0	28,260	1	21,816	0
THREE-YEAR MOVING AVERAGES							
05-07	349,878	1,641	0	713	0	929-	0
06-08	736,536	1,843	0	713	0	1,130-	0
07-09	738,307	1,132	0	713	0	419-	0
08-10	809,786	343	0		0	343-	0
09-11	349,592	301	0	69	0	232-	0
10-12	403,449	320	0	841	0	522	0
11-13	427,974	164	0	8,616	2	8,452	2
12-14	458,805	5	0	8,548	2	8,543	2
13-15	284,856		0	7,866	3	7,866	3
14-16	90,969		0	91	0	91	0
15-17	10,061		0	91	1	91	1
16-18	736		0		0		0
FIVE-YEAR AVERAGE							
14-18	54,596		0	55	0	55	0

2008	8,236		0		0		0
2009	379,542	90-	0		0	90	0
2010	296,120		0		0		0
2011	70,464		0		0		0
2012	120,810		0	67	0	67	0
2013	13,431		0	2,212	16	2,212	16
2014							
2015							
2016							
2017							
2018							
TOTAL	888,604	90-	0	2,279	0	2,368	0
THREE-YEAR MOVING AVERAGES							
08-10	227,966	30-	0		0	30	0
09-11	248,709	30-	0		0	30	0
10-12	162,465		0	22	0	22	0
11-13	68,235		0	760	1	760	1
12-14	44,747		0	760	2	760	2
13-15	4,477		0	737	16	737	16
14-16							
15-17							
16-18							
FIVE-YEAR AVERAGE							
14-18							

2013	81,624	1,802	2	4,903	6	3,101	4
2014							
2015							
2016							
2017							
2018							
TOTAL	81,624	1,802	2	4,903	6	3,101	4
THREE-YEAR MOVING AVERAGES							
13-15	27,208	601	2	1,634	6	1,034	4
14-16							
15-17							
16-18							
FIVE-YEAR AVERAGE							
14-18							

2006	1,804	0		0		0
2007	13,246	0		0		0
2008	743	0		0		0
2009						
2010						
2011						
2012						
2013	177,066	0	100	0	100	0
2014	470	0		0		0
2015	19,791	0		0		0
2016						
2017	87,441	0		0		0
2018	3,141	0		0		0
TOTAL	303,702	0	100	0	100	0
THREE-YEAR MOVING AVERAGES						
06-08	5,264	0		0		0
07-09	4,663	0		0		0
08-10	248	0		0		0
09-11						
10-12						
11-13	59,022	0	33	0	33	0
12-14	59,179	0	33	0	33	0
13-15	65,776	0	33	0	33	0
14-16	6,754	0		0		0
15-17	35,744	0		0		0
16-18	30,194	0		0		0
FIVE-YEAR AVERAGE						
14-18	22,169	0		0		0

2015	36,229	0	2,233	6	2,233	6
2016						
2017						
2018						
TOTAL	36,229	0	2,233	6	2,233	6
THREE-YEAR MOVING AVERAGES						
15-17	12,076	0	744	6	744	6
16-18						

COMMON PLANT

2013		1,000-				1,000	
2014	10,000	5,000	50		0	5,000-	50-
2015	1,500	1,000	67		0	1,000-	67-
2016							
2017	252,630		0		0		0
2018	3,342,591	188,209	6	2,663,478	80	2,475,269	74
TOTAL	3,606,722	193,209	5	2,663,478	74	2,470,269	68
THREE-YEAR MOVING AVERAGES							
13-15	3,833	1,667	43		0	1,667-	43-
14-16	3,833	2,000	52		0	2,000-	52-
15-17	84,710	333	0		0	333-	0
16-18	1,198,407	62,736	5	887,826	74	825,090	69
FIVE-YEAR AVERAGE							
14-18	721,344	38,842	5	532,696	74	493,854	68

2012	11,575	0	1,845	16	1,845	16
2013	52,561	0	1,833	3	1,833	3
2014	62,738	0	1,855	3	1,855	3
2015	25,911	0	3,060	12	3,060	12
2016	58,624	0	3,595	6	3,595	6
2017	18,995	0	2,960	16	2,960	16
2018						
TOTAL	230,405	0	15,148	7	15,148	7
THREE-YEAR MOVING AVERAGES						
12-14	42,292	0	1,844	4	1,844	4
13-15	47,070	0	2,249	5	2,249	5
14-16	49,091	0	2,837	6	2,837	6
15-17	34,510	0	3,205	9	3,205	9
16-18	25,873	0	2,185	8	2,185	8
FIVE-YEAR AVERAGE						
14-18	33,254	0	2,294	7	2,294	7

2012	36,243	0	2,973	8	2,973	8
2013	13,600	0	1,795	13	1,795	13
2014						
2015	34,278	0	6,818	20	6,818	20
2016	29,449	0	2,900	10	2,900	10
2017	104,469	0	19,219	18	19,219	18
2018	67,523	0	26,003	39	26,003	39
TOTAL	285,562	0	59,708	21	59,708	21
THREE-YEAR MOVING AVERAGES						
12-14	16,614	0	1,589	10	1,589	10
13-15	15,959	0	2,871	18	2,871	18
14-16	21,242	0	3,239	15	3,239	15
15-17	56,065	0	9,646	17	9,646	17
16-18	67,147	0	16,041	24	16,041	24
FIVE-YEAR AVERAGE						
14-18	47,144	0	10,988	23	10,988	23

2011	33,388	0	4,464	13	4,464	13
2012	82,003	0	56,261	69	56,261	69
2013	36,876	0	12,977	35	12,977	35
2014	240,998	0	20,428	8	20,428	8
2015	133,466	0	41,771	31	41,771	31
2016	130,446	0	34,312	26	34,312	26
2017	261,450	0	42,265	16	42,265	16
2018	123,569	0	27,529	22	27,529	22
TOTAL	1,042,197	0	240,007	23	240,007	23
THREE-YEAR MOVING AVERAGES						
11-13	50,756	0	24,567	48	24,567	48
12-14	119,959	0	29,889	25	29,889	25
13-15	137,113	0	25,059	18	25,059	18
14-16	168,303	0	32,170	19	32,170	19
15-17	175,121	0	39,449	23	39,449	23
16-18	171,822	0	34,702	20	34,702	20
FIVE-YEAR AVERAGE						
14-18	177,986	0	33,261	19	33,261	19

PART IX. DETAILED DEPRECIATION CALCULATIONS

ELECTRIC PLANT

SURVIVOR CURVE.. IOWA 25-R2.5
NET SALVAGE PERCENT.. 0

2013	19,891.29	3,915	2,943	16,948	20.08	844
2014	7,049.75	1,134	852	6,198	20.98	295
2015	9,657.47	1,201	903	8,754	21.89	400
2016	111,318.85	9,752	7,330	103,989	22.81	4,559
2018	22,337.15	348	262	22,075	24.61	897
	170,254.51	16,350	12,290	157,965		6,995

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 22.6 4.11

SURVIVOR CURVE.. IOWA 15-S2.5
NET SALVAGE PERCENT.. 0

2010	25,303.17	13,225	24,432	871	7.16	122
2013	368,356.66	128,925	238,182	130,175	9.75	13,351
2014	84,598.89	24,252	44,804	39,795	10.70	3,719
2015	163,161.54	36,113	66,717	96,445	11.68	8,257
2016	306,041.70	47,537	87,822	218,220	12.67	17,223
2017	1,015,737.01	90,065	166,391	849,346	13.67	62,132
2018	705,473.14	19,753	36,493	668,980	14.58	45,883
	2,668,672.11	359,870	664,841	2,003,831		150,687

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 13.3 5.65

SURVIVOR CURVE.. IOWA 50-R2.5
NET SALVAGE PERCENT.. 0

2013	351,570.87	35,087	36,167	315,404	45.01	7,007
	351,570.87	35,087	36,167	315,404		7,007

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 45.0 1.99

SURVIVOR CURVE.. 20-SQUARE
NET SALVAGE PERCENT.. 0

2012	31,800.16	10,065	10,067	21,733	13.67	1,590
2013	2,467.38	658	658	1,809	14.67	123
	34,267.54	10,723	10,725	23,543		1,713

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 13.7 5.00

FULLY ACCRUED
NET SALVAGE PERCENT.. 0

2012	49,687.50	49,688	49,688			
	49,687.50	49,688	49,688			

AMORTIZED
SURVIVOR CURVE.. 5-SQUARE
NET SALVAGE PERCENT.. 0

2013	277,198.23	277,198	277,198			
2014	578,181.10	500,705	420,137	158,044	0.67	158,044
2015	103,086.98	68,656	57,609	45,478	1.67	27,232
2016	123,536.42	57,568	48,305	75,232	2.67	28,177
2017	96,332.74	25,625	21,502	74,831	3.67	20,390
2018	621,277.91	52,187	43,790	577,488	4.58	126,089
	1,799,613.38	981,939	868,540	931,073		359,932
	1,849,300.88	1,031,627	918,228	931,073		359,932

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 2.6 19.46

FULLY ACCRUED
NET SALVAGE PERCENT.. 0

2006	126,582.97	126,583	126,583			
2008	84,083.47	84,083	84,083			
2009	5,500.00	5,500	5,500			
2010	2,503,887.97	2,503,888	2,503,888			
	2,720,054.41	2,720,054	2,720,054			

AMORTIZED
SURVIVOR CURVE.. 7-SQUARE
NET SALVAGE PERCENT.. 0

2011	286,164.54	286,165	286,165			
2012	5,731,500.24	5,182,938	4,900,181	831,320	0.67	831,320
2013	235,368.33	179,217	169,440	65,929	1.67	39,478
2014	505,160.79	312,477	295,430	209,731	2.67	78,551
2015	777,131.75	369,689	349,520	427,611	3.67	116,515
2016	2,599,643.12	865,317	818,109	1,781,534	4.67	381,485
2017	684,521.36	130,059	122,964	561,558	5.67	99,040
2018	594,460.25	35,668	33,722	560,738	6.58	85,219
	11,413,950.38	7,361,530	6,975,530	4,438,420		1,631,608
	14,134,004.79	10,081,584	9,695,584	4,438,420		1,631,608

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 2.7 11.54

SURVIVOR CURVE.. 5-SQUARE
NET SALVAGE PERCENT.. 0

2018	10,790.04	906	905	9,885	4.58	2,158
	10,790.04	906	905	9,885		2,158

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 4.6 20.00

SURVIVOR CURVE.. IOWA 9-L3
NET SALVAGE PERCENT.. +20

2009	17,985.84	10,152	10,622	3,767	2.65	1,422
2013	46,830.85	20,397	21,341	16,124	4.10	3,933
2015	84,965.27	24,545	25,681	42,291	5.75	7,355
2016	125,526.58	25,775	26,968	73,453	6.69	10,980
2018	45,075.42	1,322	1,383	34,677	8.67	4,000
	320,383.96	82,191	85,995	170,312		27,690

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 6.2 8.64

SURVIVOR CURVE.. 20-SQUARE
NET SALVAGE PERCENT.. 0

2015	27,774.25	4,624	4,623	23,151	16.67	1,389
2016	15,349.25	1,788	1,787	13,562	17.67	768
	43,123.50	6,412	6,410	36,714		2,157

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 17.0 5.00

SURVIVOR CURVE.. 15-SQUARE
NET SALVAGE PERCENT.. 0

2015	72,585.43	16,114	16,115	56,470	11.67	4,839
	72,585.43	16,114	16,115	56,470		4,839

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 11.7 6.67

SURVIVOR CURVE.. 25-SQUARE
NET SALVAGE PERCENT.. 0

2010	45,194.16	15,059	15,058	30,136	16.67	1,808
2012	4,168.62	1,055	1,055	3,114	18.67	167
2013	49,658.62	10,587	10,587	39,072	19.67	1,986
2014	13,363.28	2,315	2,315	11,048	20.67	534
	112,384.68	29,016	29,015	83,370		4,495

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 18.5 4.00

GAS PLANT

SURVIVOR CURVE.. IOWA 10-L0.5
NET SALVAGE PERCENT.. -5

2012	18,634.80	6,985	2,584	16,983	6.43	2,641
2013	12,571.60	4,224	1,563	11,637	6.80	1,711
2016	17,814.70	3,217	1,190	17,515	8.28	2,115
2017	55,180.34	6,142	2,272	55,667	8.94	6,227
2018	26,572.61	1,004	371	27,530	9.64	2,856
	130,774.05	21,572	7,980	129,333		15,550

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 8.3 11.89

SURVIVOR CURVE.. IOWA 31-R2
NET SALVAGE PERCENT.. +2

1979	38,393.92	31,266	62,582-	100,208	5.24	19,124
1980	3,975.56	3,195	6,395-	10,291	5.58	1,844
1981	4,443.79	3,522	7,050-	11,405	5.93	1,923
1982	248.60	194	388-	632	6.30	100
1983	570.92	439	879-	1,439	6.69	215
1984	3,479.00	2,629	5,262-	8,671	7.10	1,221
1985	1,069.52	794	1,589-	2,637	7.52	351
1986	6,071.33	4,422	8,851-	14,801	7.96	1,859
1987	2,038.06	1,455	2,912-	4,909	8.42	583
1988	5,757.17	4,022	8,050-	13,692	8.90	1,538
1989	3,455.32	2,359	4,722-	8,108	9.40	863
1990	4,174.84	2,783	5,570-	9,661	9.91	975
1991	6,948.42	4,514	9,035-	15,844	10.45	1,516
1992	4,946.84	3,128	6,261-	11,109	11.00	1,010
1993	3,646.02	2,238	4,480-	8,053	11.58	695
1994	3,416.98	2,034	4,071-	7,420	12.17	610
1996	2,773.90	1,542	3,086-	5,804	13.41	433
1997	62,092.62	33,271	66,596-	127,447	14.05	9,071
1998	3,002.12	1,546	3,094-	6,036	14.71	410
1999	801.33	395	791-	1,576	15.39	102
2000	51.44	24	48-	98	16.08	6
2001	586.28	263	526-	1,101	16.79	66
2002	1,804.40	769	1,539-	3,307	17.51	189
2003	104.38	42	84-	186	18.24	10
2004	2,074.41	788	1,577-	3,610	18.99	190
2005	2,005.46	713	1,427-	3,392	19.76	172
2006	2,105.90	697	1,395-	3,459	20.53	168
2008	520.20	146	292-	802	22.12	36
2013	29,526.34	4,397	8,801-	37,737	26.29	1,435
2016	29,097.11	1,922	3,847-	32,362	28.91	1,119
2017	507,954.32	19,270	38,572-	536,367	29.80	17,999
2018	2,168,102.44	20,567	41,168-	2,165,908	30.70	70,551
	2,905,238.94	155,346	310,940-	3,158,074		136,384

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 23.2 4.69

SURVIVOR CURVE.. IOWA 12-R1.5
NET SALVAGE PERCENT.. 0

2017	1,025,684.05	92,312	58,284	967,400	10.92	88,590
2018	1,173,726.85	26,409	16,674	1,157,053	11.73	98,640
	2,199,410.90	118,721	74,958	2,124,453		187,230

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 11.3 8.51

SURVIVOR CURVE.. IOWA 30-R1.5
NET SALVAGE PERCENT.. -5

1954	820.16	861	861			
1956	788.44	828	828			
1963	2,043.47	2,028	1,096	1,050	1.65	636
1964	977.20	960	519	507	1.94	261
1973	599.21	542	293	336	4.16	81
1975	985.28	871	471	564	4.74	119
1980	1,729.33	1,434	775	1,041	6.31	165
1982	73.75	59	32	45	7.01	6
1986	2,255.19	1,689	912	1,456	8.60	169
1989	1,347.03	945	510	904	9.96	91
1990	4,739.61	3,243	1,752	3,225	10.45	309
1991	8,279.20	5,517	2,980	5,713	10.96	521
1992	6,244.01	4,047	2,186	4,370	11.48	381
1993	2,999.67	1,888	1,020	2,130	12.02	177
1994	1,808.84	1,103	596	1,303	12.58	104
1995	3,118.14	1,838	993	2,281	13.16	173
1996	4,705.75	2,676	1,446	3,495	13.75	254
1997	1,969.45	1,078	582	1,486	14.36	103
2002	209,753.55	91,032	49,176	171,065	17.60	9,720
2003	3,520.08	1,443	780	2,916	18.29	159
2004	122,403.75	47,168	25,480	103,044	18.99	5,426
2005	43,979.03	15,854	8,564	37,614	19.70	1,909
2006	73,791.12	24,742	13,366	64,115	20.42	3,140
2007	170,113.07	52,693	28,465	150,154	21.15	7,099
2008	70,183.44	19,921	10,761	62,932	21.89	2,875
2009	82,929.73	21,362	11,540	75,536	22.64	3,336
2010	153,183.04	35,438	19,144	141,698	23.39	6,058
2011	115,502.52	23,609	12,753	108,525	24.16	4,492
2012	93,948.55	16,671	9,006	89,640	24.93	3,596
2013	55,707.06	8,364	4,518	53,974	25.71	2,099
2015	7,057.74	669	361	7,050	27.29	258
2016	52,320.14	3,479	1,879	53,057	28.10	1,888
2017	240,211.44	9,163	4,950	247,272	28.91	8,553
2018	838,017.49	9,969	5,386	874,532	29.66	29,485
	2,378,105.48	413,184	223,981	2,273,030		93,643

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 24.3 3.94

SURVIVOR CURVE.. IOWA 20-S0.5
NET SALVAGE PERCENT.. 0

2018	52,440.31	865	17,151	35,289	19.67	1,794
	52,440.31	865	17,151	35,289		1,794

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 19.7 3.42

SURVIVOR CURVE.. IOWA 12-R3
NET SALVAGE PERCENT.. 0

2014	13,881.53	4,754	11,754	2,128	7.89	270
2015	13,377.67	3,567	8,820	4,558	8.80	518
2016	9,989.70	1,881	4,650	5,340	9.74	548
2018	1,876.48	52	129	1,747	11.67	150
	39,125.38	10,254	25,353	13,772		1,486

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 9.3 3.80

SURVIVOR CURVE.. IOWA 50-R2.5
NET SALVAGE PERCENT.. 0

1982	1,104,186.68	668,254	1,059,655	44,532	19.74	2,256
1983	2,996.98	1,773	2,811	186	20.42	9
1984	14,127.12	8,165	12,947	1,180	21.10	56
1986	232,030.43	127,570	202,289	29,741	22.51	1,321
1988	34,751.95	18,099	28,700	6,052	23.96	253
1990	8,428.04	4,138	6,562	1,866	25.45	73
1991	17.05	8	13	4	26.21	
1992	11,542.50	5,312	8,423	3,120	26.99	116
1993	8,920.00	3,966	6,289	2,631	27.77	95
1995	2,767.58	1,143	1,812	956	29.35	33
1996	4,045.00	1,605	2,545	1,500	30.16	50
1997	9,832.45	3,740	5,931	3,901	30.98	126
1999	3,979.16	1,382	2,191	1,788	32.63	55
2006	4,950.27	1,122	1,779	3,171	38.67	82
2007	68,366.22	14,275	22,636	45,730	39.56	1,156
2008	3,426.47	654	1,037	2,389	40.45	59
2009	6,384.00	1,104	1,751	4,633	41.35	112
2011	74,337.32	10,154	16,101	58,236	43.17	1,349
2012	40,917.11	4,836	7,669	33,248	44.09	754
2013	42,214.91	4,213	6,681	35,534	45.01	789
2014	11,913.69	967	1,533	10,381	45.94	226
2015	17,582.65	1,101	1,746	15,837	46.87	338
2017	47,882.12	1,207	1,914	45,968	48.74	943
	1,755,599.70	884,788	1,403,015	352,585		10,251

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 34.4 0.58

FULLY ACCRUED						
NET SALVAGE PERCENT.. 0						
1981	4,674.85	4,675	4,675			
	4,674.85	4,675	4,675			
AMORTIZED						
SURVIVOR CURVE.. 20-SQUARE						
NET SALVAGE PERCENT.. 0						
1998	746.74	747	747			
2004	2,149.64	1,540	1,500	649	5.67	114
2007	17,716.83	10,037	9,779	7,938	8.67	916
2018	3,026.36	50	49	2,978	19.67	151
	23,639.57	12,374	12,075	11,565		1,181
	28,314.42	17,049	16,750	11,565		1,181

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 9.8 4.17

FULLY ACCRUED						
NET SALVAGE PERCENT.. 0						
2012	5,751.83	5,752	5,752			
	5,751.83	5,752	5,752			
AMORTIZED						
SURVIVOR CURVE.. 5-SQUARE						
NET SALVAGE PERCENT.. 0						
2014	70,351.25	60,924	60,165	10,186	0.67	10,186
2015	619,724.41	412,736	407,595	212,129	1.67	127,023
2016	303,696.74	141,523	139,760	163,937	2.67	61,400
2017	102,422.57	27,244	26,905	75,518	3.67	20,577
	1,096,194.97	642,427	634,425	461,770		219,186
	1,101,946.80	648,179	640,177	461,770		219,186
COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 2.1 19.89						

FULLY ACCRUED
NET SALVAGE PERCENT.. 0

2002	144,657.97	144,658	144,658			
2004	212,896.28	212,896	212,896			
2005	133,714.95	133,715	133,715			
2006	87,992.74	87,993	87,993			
2008	7,000.00	7,000	7,000			
	586,261.94	586,262	586,262			

AMORTIZED
SURVIVOR CURVE.. 7-SQUARE
NET SALVAGE PERCENT.. 0

2012	106,794.22	96,573	95,868	10,926	0.67	10,926
2013	422,457.96	321,672	319,323	103,135	1.67	61,757
2014	1,823,156.74	1,127,750	1,119,515	703,642	2.67	263,536
2015	60,995.63	29,016	28,804	32,192	3.67	8,772
	2,413,404.55	1,575,011	1,563,510	849,895		344,991
	2,999,666.49	2,161,273	2,149,772	849,895		344,991

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 2.5 11.50

SURVIVOR CURVE.. IOWA 9-L3
NET SALVAGE PERCENT.. +20

2011	25,316.91	13,322	11,531	8,723	3.08	2,832
2014	46,517.75	17,077	14,781	22,433	4.87	4,606
2015	149,301.20	43,131	37,334	82,107	5.75	14,279
2016	107,167.19	22,005	19,047	66,687	6.69	9,968
2017	228,109.35	26,968	23,343	159,144	7.67	20,749
2018	64,515.92	2,409	2,085	49,528	8.58	5,772
	620,928.32	124,912	108,121	388,622		58,206

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 6.7 9.37

SURVIVOR CURVE.. IOWA 20-S2
NET SALVAGE PERCENT.. +10

2008	47,167.33	20,291	22,266	20,185	10.44	1,933
	47,167.33	20,291	22,266	20,185		1,933

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 10.4 4.10

SURVIVOR CURVE.. 25-SQUARE
NET SALVAGE PERCENT.. 0

1994	21,602.34	21,023	20,945	657	0.67	657
1995	14,996.68	13,995	13,943	1,054	1.67	631
1996	18,381.90	16,419	16,358	2,024	2.67	758
1997	44,610.01	38,061	37,920	6,690	3.67	1,823
1998	12,408.51	10,091	10,054	2,355	4.67	504
2000	13,150.28	9,642	9,606	3,544	6.67	531
2001	30,254.00	20,972	20,894	9,360	7.67	1,220
2006	42,448.19	20,935	20,857	21,591	12.67	1,704
2008	190,126.55	78,560	78,269	111,858	14.67	7,625
2009	34,573.64	12,903	12,855	21,719	15.67	1,386
2010	114,641.84	38,199	38,058	76,584	16.67	4,594
2011	99,995.98	29,319	29,210	70,786	17.67	4,006
2012	25,762.04	6,523	6,499	19,263	18.67	1,032
2014	61,365.17	10,628	10,589	50,776	20.67	2,457
2016	43,786.37	4,081	4,066	39,720	22.67	1,752
2017	43,108.15	2,293	2,284	40,824	23.67	1,725
2018	66,489.64	1,117	1,113	65,377	24.58	2,660
	877,701.29	334,761	333,520	544,181		35,065

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 15.5 4.00

SURVIVOR CURVE.. 20-SQUARE
NET SALVAGE PERCENT.. 0

2005	21,531.26	14,351	14,351	7,180	6.67	1,076
2006	41,664.10	25,686	25,686	15,978	7.67	2,083
2007	16,347.12	9,261	9,261	7,086	8.67	817
2009	742.18	346	346	396	10.67	37
2010	1,248.14	520	520	728	11.67	62
2012	56,274.36	17,811	17,812	38,462	13.67	2,814
2018	100,427.01	2,109	2,109	98,318	19.58	5,021
	238,234.17	70,084	70,085	168,149		11,910

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 14.1 5.00

SURVIVOR CURVE.. 15-SQUARE
NET SALVAGE PERCENT.. 0

2007	9,854.34	7,443	7,442	2,412	3.67	657
2010	2,182.47	1,212	1,212	970	6.67	145
2011	14,976.66	7,319	7,318	7,659	7.67	999
2014	13,097.94	3,781	3,781	9,317	10.67	873
2018	3,026.36	67	67	2,959	14.67	202
	43,137.77	19,822	19,820	23,318		2,876

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 8.1 6.67

COMMON PLANT

SURVIVOR CURVE.. IOWA 50-R2.5
NET SALVAGE PERCENT.. 0

2009	30,769.92	5,323	5,007	25,763	41.35	623
2010	11,076.25	1,715	1,613	9,463	42.26	224
2011	5,754,336.65	786,042	739,427	5,014,910	43.17	116,167
2012	35,775.20	4,229	3,978	31,797	44.09	721
2013	29,960.70	2,990	2,813	27,148	45.01	603
	5,861,918.72	800,299	752,838	5,109,081		118,338

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 43.2 2.02

SURVIVOR CURVE.. IOWA 20-S3
NET SALVAGE PERCENT.. 0

1998	7,106.72	5,746	6,328	779	3.83	203
2005	197,839.96	123,452	135,963	61,877	7.52	8,228
2007	65,212.86	35,671	39,286	25,927	9.06	2,862
2011	29,112.60	10,626	11,703	17,410	12.70	1,371
2017	280,351.15	18,643	20,532	259,819	18.67	13,916
	579,623.29	194,138	213,812	365,811		26,580

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 13.8 4.59

SURVIVOR CURVE.. 20-SQUARE
NET SALVAGE PERCENT.. 0

1999	487,028.25	470,713	466,872	20,156	0.67	20,156
2000	45,872.91	42,043	41,700	4,173	1.67	2,499
2001	667,931.26	578,762	574,039	93,892	2.67	35,166
2002	319,167.11	260,600	258,474	60,693	3.67	16,538
2003	28,309.77	21,699	21,522	6,788	4.67	1,454
2004	6,960.35	4,987	4,946	2,014	5.67	355
2005	91,315.73	60,862	60,365	30,951	6.67	4,640
2006	11,333.60	6,987	6,930	4,404	7.67	574
2007	214,872.03	121,725	120,732	94,140	8.67	10,858
2008	845,328.55	436,612	433,049	412,280	9.67	42,635
2009	1,449,600.17	676,238	670,720	778,880	10.67	72,997
2010	829,209.81	345,366	342,548	486,662	11.67	41,702
2011	352,220.99	129,089	128,036	224,185	12.67	17,694
2012	279,501.28	88,462	87,740	191,761	13.67	14,028
2013	237,400.19	63,267	62,751	174,649	14.67	11,905
2014	119,207.55	25,808	25,597	93,611	15.67	5,974
2015	573,365.39	95,465	94,686	478,679	16.67	28,715
2016	25,249.86	2,942	2,918	22,332	17.67	1,264
	6,583,874.80	3,431,627	3,403,625	3,180,250		329,154

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 9.7 5.00

FULLY ACCRUED
NET SALVAGE PERCENT.. 0

2006	8,740.51	8,741	8,741			
2009	15,818.86	15,819	15,819			
2010	28,476.82	28,477	28,477			
2012	204,616.56	204,617	204,617			
	257,652.75	257,654	257,653			

AMORTIZED
SURVIVOR CURVE.. 5-SQUARE
NET SALVAGE PERCENT.. 0

2013	2,397,670.58	2,397,671	2,397,671			
2014	5,033,641.04	4,359,133	3,934,195	1,099,446	0.67	1,099,446
2015	6,629,937.12	4,415,538	3,985,101	2,644,836	1.67	1,583,734
2016	6,525,963.41	3,041,099	2,744,646	3,781,318	2.67	1,416,224
2017	2,531,070.90	673,265	607,634	1,923,437	3.67	524,097
2018	6,450.94	426	384	6,066	4.67	1,299
	23,124,733.99	14,887,132	13,669,630	9,455,104		4,624,800
	23,382,386.74	15,144,786	13,927,283	9,455,104		4,624,800

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 2.0 19.78

FULLY ACCRUED
NET SALVAGE PERCENT.. 0

2000	3,275,849.35	3,275,849	3,275,849			
2004	93,353.21	93,353	93,353			
2006	5,496.11	5,496	5,496			
2007	11,109.97	11,110	11,110			
2008	292,757.62	292,758	292,758			
2009	3,697.55	3,698	3,698			
2010	30,264.40	30,264	30,264			
	3,712,528.21	3,712,528	3,712,528			

AMORTIZED
SURVIVOR CURVE.. 7-SQUARE
NET SALVAGE PERCENT.. 0

2011	108,233.09	108,233	108,233			
2012	14,573.32	13,179	1,058-	15,631	0.67	15,631
2015	11,400.06	5,423	435-	11,835	3.67	3,225
2017	8,868.47	1,685	135-	9,004	5.67	1,588
	143,074.94	128,520	106,605	36,470		20,444
	3,855,603.15	3,841,048	3,819,133	36,470		20,444

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 1.8 0.53

SURVIVOR CURVE.. 5-SQUARE
NET SALVAGE PERCENT.. 0

2017	18,447.49	4,907	4,905	13,542	3.67	3,690
	18,447.49	4,907	4,905	13,542		3,690

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 3.7 20.00

FULLY ACCRUED
NET SALVAGE PERCENT.. 0

1998	47,463,579.95	47,463,580	47,463,580			
	47,463,579.95	47,463,580	47,463,580			

AMORTIZED
SURVIVOR CURVE.. 10-SQUARE
NET SALVAGE PERCENT.. 0

2014	3,934,825.34	1,703,779	1,703,779	2,231,046	5.67	393,483
2015	14,298,029.50	4,761,244	4,761,245	9,536,785	6.67	1,429,803
2016	3,165,958.72	737,668	737,668	2,428,291	7.67	316,596
2017	10,807,140.27	1,437,350	1,437,350	9,369,790	8.67	1,080,714
2018	300,317.87	12,613	12,613	287,705	9.58	30,032
	32,506,271.70	8,652,654	8,652,655	23,853,617		3,250,628
	79,969,851.65	56,116,234	56,116,235	23,853,617		3,250,628

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 7.3 4.06

FULLY ACCRUED
NET SALVAGE PERCENT.. 0

2006	88,793.20	88,793	88,793			
2007	79,525.54	79,526	79,526			
	168,318.74	168,319	168,319			

AMORTIZED
SURVIVOR CURVE.. 10-SQUARE
NET SALVAGE PERCENT.. 0

2008	5,010,017.69	5,010,018	5,010,018			
2009	900,778.13	840,426	628,466	272,312	0.67	272,312
2010	868,137.12	723,158	540,774	327,363	1.67	196,026
2011	381,427.33	279,586	209,073	172,354	2.67	64,552
2012	271,078.33	171,593	128,316	142,762	3.67	38,900
2013	971,798.15	517,968	387,334	584,464	4.67	125,153
2014	178,763.49	77,405	57,883	120,880	5.67	21,319
2015	8,694,055.21	2,895,120	2,164,956	6,529,099	6.67	978,875
2016	3,706,235.74	863,553	645,761	3,060,475	7.67	399,019
2017	606,980.72	80,728	60,368	546,613	8.67	63,046
2018	320,337.43	13,454	10,061	310,277	9.58	32,388
	21,909,609.34	11,473,009	9,843,010	12,066,599		2,191,590
	22,077,928.08	11,641,328	10,011,329	12,066,599		2,191,590

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 5.5 9.93

SURVIVOR CURVE.. 10-SQUARE
NET SALVAGE PERCENT.. 0

2008	3,422,954.04	3,422,954	3,422,954			
2009	2,027,010.82	1,891,201	1,747,300	279,711	0.67	279,711
2010	6,366,773.49	5,303,522	4,899,977	1,466,796	1.67	878,321
2014	2,164,610.55	937,276	865,959	1,298,652	5.67	229,039
2015	477,931.34	159,151	147,041	330,890	6.67	49,609
2016	3,339,455.73	778,093	718,888	2,620,568	7.67	341,665
2017	1,405,653.88	186,952	172,727	1,232,927	8.67	142,206
2018	218,375.07	9,172	8,474	209,901	9.58	21,910
	19,422,764.92	12,688,321	11,983,320	7,439,445		1,942,461

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 3.8 10.00

FULLY ACCRUED
NET SALVAGE PERCENT.. 0

2007	963,168.70	963,169	963,169			
	963,168.70	963,169	963,169			

AMORTIZED
SURVIVOR CURVE.. 10-SQUARE
NET SALVAGE PERCENT.. 0

2008	841,802.21	841,802	841,802			
2009	153,127.92	142,868	133,640	19,488	0.67	19,488
2010	8,612.50	7,174	6,711	1,902	1.67	1,139
2011	677,984.57	496,963	464,864	213,121	2.67	79,821
2012	3,047,692.78	1,929,190	1,804,581	1,243,111	3.67	338,722
2013	1,994,153.74	1,062,884	994,231	999,923	4.67	214,116
2014	765,074.62	331,277	309,879	455,195	5.67	80,281
2015	2,074,258.69	690,728	646,113	1,428,146	6.67	214,115
2016	3,763,202.44	876,826	820,191	2,943,012	7.67	383,704
2017	1,213,821.36	161,438	151,011	1,062,811	8.67	122,585
2018	1,795,799.44	75,424	70,552	1,725,247	9.58	180,088
	16,335,530.27	6,616,574	6,243,575	10,091,955		1,634,059
	17,298,698.97	7,579,743	7,206,744	10,091,955		1,634,059

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 6.2 9.45

SURVIVOR CURVE.. IOWA 8-S2
NET SALVAGE PERCENT.. +5

2009	16,016.60	12,268	9,909	5,307	1.55	3,424
	16,016.60	12,268	9,909	5,307		3,424

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 1.5 21.38

SURVIVOR CURVE.. IOWA 9-L3
NET SALVAGE PERCENT.. +20

2009	44,993.06	25,396	22,931	13,063	2.65	4,929
2011	90,150.50	47,439	42,834	29,286	3.08	9,508
2012	90,643.72	44,395	40,086	32,429	3.49	9,292
2013	123,351.47	53,726	48,511	50,170	4.10	12,237
2014	140,833.43	51,702	46,684	65,983	4.87	13,549
2015	493,622.19	142,602	128,760	266,138	5.75	46,285
2016	752,525.82	154,521	139,523	462,498	6.69	69,133
2017	681,205.26	80,535	72,718	472,246	7.67	61,571
2018	450,903.89	13,228	11,944	348,779	8.67	40,228
	2,868,229.34	613,544	553,991	1,740,592		266,732

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 6.5 9.30

SURVIVOR CURVE.. IOWA 8-L4
NET SALVAGE PERCENT.. +20

2008	37,422.05	25,597	24,334	5,604	1.16	4,831
2011	141,471.89	88,703	84,326	28,852	1.73	16,677
2012	196,525.81	114,181	108,547	48,674	2.19	22,226
2013	317,840.84	161,781	153,798	100,475	2.91	34,527
2014	400,969.82	170,412	162,003	158,773	3.75	42,339
2015	71,266.65	23,661	22,494	34,519	4.68	7,376
	1,165,497.06	584,335	555,502	376,896		127,976

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 2.9 10.98

SURVIVOR CURVE.. 25-SQUARE
NET SALVAGE PERCENT.. 0

2012	29,553.46	7,483	7,483	22,070	18.67	1,182
2013	37,535.53	8,003	8,002	29,534	19.67	1,501
	67,088.99	15,486	15,485	51,604		2,683

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 19.2 4.00

SURVIVOR CURVE.. 15-SQUARE
NET SALVAGE PERCENT.. 0

2010	27,122.74	15,062	15,062	12,061	6.67	1,808
2015	317,990.18	70,594	70,595	247,395	11.67	21,199
2016	109,015.12	16,933	16,933	92,082	12.67	7,268
	454,128.04	102,589	102,590	351,538		30,275

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 11.6 6.67

SURVIVOR CURVE.. 20-SQUARE
NET SALVAGE PERCENT.. 0

2006	2,675.13	1,649	1,649	1,026	7.67	134
2014	29,649.05	6,419	6,421	23,228	15.67	1,482
	32,324.18	8,068	8,070	24,254		1,616

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 15.0 5.00