2019 DEPRECIATION STUDY

Prepared for Gazifère Inc.
Gatineau, Quebec

Prepared March, 2020

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March 31, 2020

Gazifère Inc.
706 Boulevard Greber
Gatineau, Quebec
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Attention: Mr. Jean-Benoit Trahan

Dear Mr. Trahan

Pursuant to your request, we have conducted a review and assessment of the Natural Gas Distribution and General Plant assets for Gazifère. Our study presents a description of the methods used in the estimation of service life, as well as our recommendations for average service life estimates.

We gratefully acknowledge the assistance of Gazifère personnel in the completion of our review.

Should you have any questions or concerns, please do not hesitate to contact me directly at 587.997.6489

Yours truly,

Concentric Advisors, ULC

D R A F T

Larry E. Kennedy
Vice President

LEK/ta
Project no: 70066

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SECTION 1

1 STUDY HIGHLIGHTS

Pursuant to request of Gazifère Inc. ("Gazifère" or the "Company"), Concentric Advisors, ULC ("Concentric") completed a depreciation study related to natural gas Distribution and General Plant accounts. The purpose of the study is to determine the annual depreciation accrual rates and amounts applicable to the original cost of gas utility plant, as of December 31, 2018.

The depreciation rates are based on the Straight-Line method using the Average Life Group procedure and were applied on a Remaining Life basis. The calculations were based on attained ages, estimated average service life and forecasting net salvage characteristics for each depreciable group of assets. Variances between the calculated accrued depreciation and the book accumulated depreciation, as of December 31, 2018, are amortized over the composite remaining life of each account.

Concentric recommends the calculated annual depreciation accrual rates set forth herein apply specifically to natural gas plant in service, as of December 31, 2018, summarized in Table 1 on pages 5-2. Supporting data and calculations are also provided within this report.

Concentric's study results in an annual depreciation expense accrual of $7.4 million when applied to depreciable plant balances of $167.8 million, as of December 31, 2018. The report study results are summarized at an aggregate functional group level as follows:

SUMMARY OF ORIGINAL COST, ACCRUAL PERCENTAGES AND AMOUNTS

Plant Group / Accounts	Original Cost	Annual Accrual $	Annual Accrual
Depreciable Plant	$172,180,709	$7,390,517	4.29%
Contributions	-$4,355,369	-$7,243	0.17%
TOTAL	**$167,825,340**	**$7,383,274**	**4.40%**

SECTION 2

2 BASIS OF THE UPDATE

2.1 Scope

Concentric has been retained by Gazifère to develop reasonable and appropriate depreciation rates based on plant in service as of December 31, 2018. This report sets forth the results of the study and describes the process and procedures followed by Concentric in the development of the depreciation rates for the companies Natural Gas Distribution and General Plant assets. This report also defines the concepts, methods and judgments which underlie the recommended annual depreciation accrual rates, related to the Distribution Plants in service as of December 31, 2018. The annual depreciation accruals rates and amounts are based on the Straight-Line remaining life method of depreciation.

The Straight-Line method, Average Life Group ("ALG") procedure is a commonly used depreciation calculation procedure that has been widely accepted in jurisdictions throughout North America and for most regulated utilities in the province of Alberta. Concentric recommends its continued use. Amortization accounting is used for certain accounts because of the disproportionate plant accounting effort required for these accounts. Many regulated utilities in North America have received approval to adopt amortization accounting for these accounts.

2.2 Plan of Study

The report is presented in the following order:

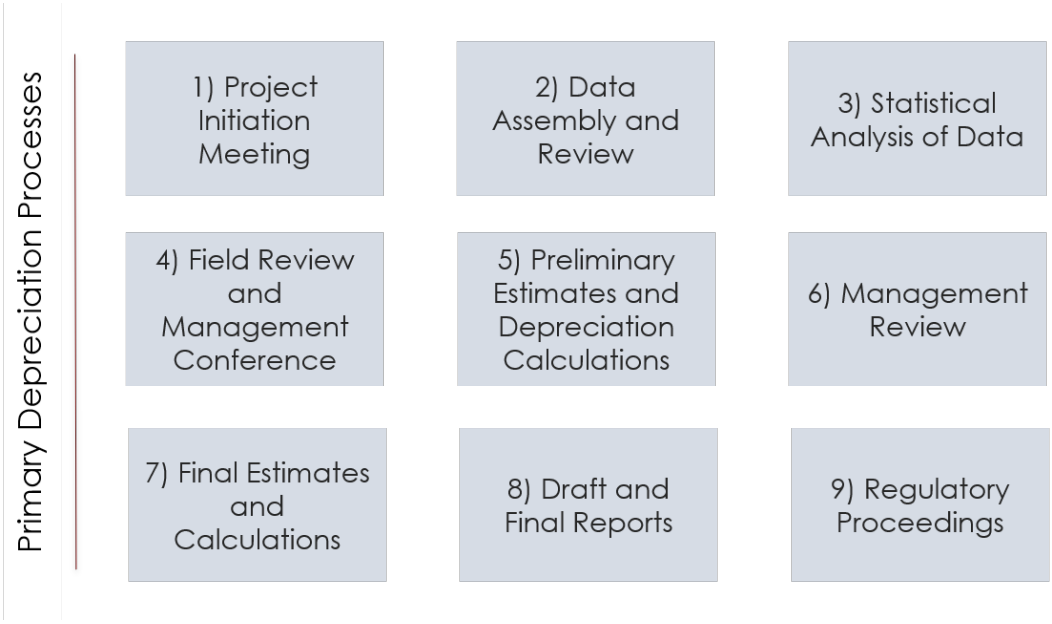
SECTION 1	Study Highlights presents a brief summary of the depreciation study and results
SECTION 2	Basis of the Update contains statements with respect to the plan and the basis of the study
SECTION 3	Development of the Required Depreciation Rates presents descriptions of the methods used and factors considered in the service life study
SECTION 4	Calculation of Annual and Accrued Depreciation presents the methods and procedures used in the calculation of depreciation
SECTION 5	Results of Study presents summaries by depreciable group of annual and accrued depreciation in Table 1
SECTION 6	Presents the results of the Retirement Rate Analysis
SECTION 7	Net Salvage Study
SECTION 8	Presents the results of the Detailed Depreciation Calculations
SECTION 9	Estimation of Survivor Curves is an overview of Iowa curves and the Retirement Rate Analysis

2.3 Depreciation

A full and comprehensive depreciation study includes the following components:

1. fully justified recommendations regarding Average Service Life estimates for each account;
2. fully justified recommendations regarding estimated Net Salvage requirements for each account;
3. selection of an appropriate grouping procedure;
4. detailed calculation of the depreciation rate utilizing the estimated Average Service Life and Net Salvage requirements; and
5. a document explaining the procedures followed and justifying the results in a format suitable for submission to senior management and regulatory authorities.

A diagram of the nine primary processes followed by Concentric in the development of the depreciation study is provided below. Each of the steps is undertaken by Concentric using proprietary software.



2.4 Information Provided by Gazifère

Gazifère has provided Concentric with the required information, as of December 31, 2018, for all accounts being studied. This information has been compiled from the plant accounting records and includes the following:

- current balances by vintage year for each account (aged balances). The balances provide the amount of investment sorted by installation year currently in operation. This file is only inclusive of current plant in service and does not include any retirement information;
- detailed retirement transactions for all accounts. The transactions include information regarding the transaction year of the retirement, the installation year of the asset being retired, and the original cost of the asset being retired;

- detailed cost of removal and gross salvage transactions for all accounts requiring the recovery of net salvage. The transactions include information regarding the transaction year of the retirement, the costs associated with the retirement, and any gross salvage proceeds from the sale or reuse of the property; and
- Accumulated Depreciation balances as of December 31, 2018 for account studies.

2.5 Data Reconciliation

The above data was reviewed and reconciled to Company control schedules to ensure accuracy and reasonableness in use of the calculations developed in this study. These checks include:

- that the surviving investment by account equals (or can be reconciled to) the Company's gross plant in service and accumulated depreciation ledger balances;
- that the surviving investment in each vintage is not negative. In other words, this check confirms that the sum of retirements from any given vintage have not exceeded the amount of plant additions to the vintage; and
- that any adjusting transactions are properly accounted for within the databases.

SECTION 3

3 DEVELOPMENT OF THE REQUIRED DEPRECIATION RATES

3.1 Depreciation

The development of the depreciation calculations requires the input of an Average Service Life, a retirement dispersion curve ("Survivor Curve" or "Iowa curve") and Net Salvage recommendations (the "depreciation parameters"). Additionally, to complete the depreciation calculations, the calculation methods must be established. Specifically, the selection of the depreciation method must establish three types of additional input:

1. the choice of a depreciation method;
2. a basis upon which to apply the method, and
3. in the case of group assets, a procedure to use in grouping the assets.

In this study, the depreciation rates for Gazifère have been calculated in accordance with the Straight-Line method, the ALG procedure and applied using the Remaining Life technique, with any accumulated depreciation variances trued-up over the composite remaining life of each account.

Depreciation in public utility regulation is the loss in service value, not restored by current maintenance, incurred with the consumption or prospective retirement of utility plant in 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.

When considering the action of the elements, the average service life and net salvage calculations have considered large catastrophic events that have occurred and impacted the life estimates of utilities across North America. The average service life of utilities has been influenced by events including:

- forest fires;
- earthquakes;
- tornadoes;
- ice storms;
- wind storms;
- large scale flooding;
- fires;
- intentional actions of third parties; and
- other natural forces of nature.

Depreciation, as used in accounting, is a method of distributing fixed capital costs, less net salvage, over a time period by allocating annual amounts to expense. Each annual amount of such depreciation expense is part of that year's total cost of providing natural gas utility service. Normally, the time over which the fixed capital cost is allocated to the cost of service, is equal to the 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.

The calculation of annual and accrued depreciation based on the Straight-Line method requires the estimation of survivor curves and is described in the following sections of this study. The development of the proposed depreciation rates also requires the selection of group depreciation procedures, as discussed below.

3.1.1 Depreciation Methods & Procedures

This study calculates the annual and accrued depreciation using the Straight-Line method and ALG procedure for most accounts. For certain accounts, the annual and accrued depreciation are based on amortization accounting. Both types of calculations were based on original cost, attained ages and estimates of service lives. Variances between the calculated accrued depreciation and the book accumulated depreciation are amortized over the composite remaining life of each account.

Continued monitoring and maintenance of the accumulated depreciation reserve at the account level is recommended. Concentric has determined an amortization amount to correct the present variance with the calculated accrued depreciation (theoretical reserve) over the composite remaining life of each account.

3.2 Estimation of Survivor Curves

3.2.1 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 using the retirement rate method of analysis.

The range of survivor characteristics usually experienced by utility and industrial properties is encompassed by a system of generalized survivor curves known as Iowa type curves. The Iowa curves *"...were sorted into three groups according to whether the mode was to the left, approximately coincident with, or to the right of the average-life ordinate. The curves in each of these three groups were then sub-classified in accordance with the height of the mode, taking also into consideration the distance of the mode to the left or right of the average life."* [1] The Iowa curves are described as L-type (i.e. left-moded), R-type (i.e. right-moded), and S-type (i.e. symmetrical). Further development resulted in the introduction of O-type (i.e. origin-moded curves) where the greatest frequency of retirement occurs at the origin, or immediately after age zero. Individual type curves are further depicted with numerical subscripts which represent the relative heights of the modes of the frequency curves within each family.

The program that is used by Concentric for statistical smooth curve fitting utilizes an internal "goodness-of-fit" criterion which is the Residual Measure. This Residual Measure is based on a least

[1] Robley Winfrey, Statistical Analyses of Industrial Property Retirements, Bulletin 125 revised (Engineering Research Institute, Iowa State University, 1935) 65

squares solution of the differences between the stub curve (or original data points) and smooth survivor curve which also requires a balancing of the differences above and below the stub curve.

The criterion of goodness-of-fit is the mean square of the differences between the points on the stub and fitted smooth survivor curves. The residual measure, or standard error of estimate, shown in the output format is the square root of this mean square. As such, the lower the Residual Measure the better the statistical fit between the analyzed Iowa curve and the observed data points. Concentric follows the widely-used practice of fitting Iowa curves up to 1% of the maximum exposures. This standard practice is utilized to minimize the influence of typically small retirements applied to similarly small exposures which may unduly affect the Iowa curve fitting process. However, Concentric will recognize the observed data points beyond the 1% of maximum exposures if it is determined that the additional data is a valid consideration for life recommendation.

A discussion of the general concept of survivor curves and retirement rate method is presented in Section 9.

3.2.2 Survivor Curve Judgments

The service life estimates used in the depreciation and amortization calculations were based on informed professional judgment which incorporated a review of management's plans, policies and outlook, a general knowledge of the natural gas transmission and distribution industries, and comparisons of the service life estimates from our studies of other natural gas distribution companies. The use of survivor curves to reflect the expected dispersion of retirement provides a consistent method of estimating depreciation for natural gas 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 and analyzing historical data for the plant accounts using widely accepted techniques and forecasting the survivor characteristics for each depreciable group based on interpretations of the historical data analyses and the probable future. This included discussions of upcoming projects and business cases, and operational staff interviews. The combination of historical experience and the estimated future yielded estimated survivor curves from which the average service lives were derived.

The following discussion, dealing with a number of accounts which comprise the majority of the investment analyzed, presents an overview of the factors considered by Concentric in the determination of the average service life and net salvage estimates. The survivor curve estimates for the remainder of the accounts not discussed in the following sections were based on similar considerations.

ACCOUNT 473.00 – SERVICES

Investment $	Investment %	Previously Approved Curves	Concentric Recommends Curves	Previously Approved Salvage	Concentric Recommends Salvage
$61,516,359	38.08%	50-R3	53-R3.5	-115%	-125%

The investment in Distribution Plant - Services is approximately $61.5 million representing 38.07 percent of the total depreciable plant studied. The current approved life parameter for this account is an Iowa 50-R3. The retirements, additions and other plant transactions, for the period 1961 through 2018, were analyzed by the retirement rate method. Retirements of $1,415,148 were recorded for the period 2009 through 2018, resulting in actual observed data points as depicted on page 6-4 of this report. The current Iowa 50-R3 has a related Residual Measure of 0.4761, which does not fit the historical data as well as the Iowa 53-R3.5 with a Residual Measure of 0.1400. Peer comparison of Canadian utilities produced a range from 40 to 57 years. As such, the Iowa 53-R3.5 is recommended for this account based on the fit to historic data, the review of Canadian peer natural gas utilities, and on the professional judgment of Concentric.

The first year of recorded net salvage activity for this account is 2000. The currently approved net salvage percentage is negative 115 percent. For the period 2000 to 2018, the net salvage ranged from negative 77 percent to negative 511 percent with a cumulative value of negative 161 percent. A three-year band analysis from 2000 forward produced a range from negative 31 percent to negative 378 percent. The most recent three-year bands (i.e. 2014-2016, 2015-2017 and 2016-2018) indicate values of negative 378 percent, negative 366 percent and negative 287 percent respectively. The most recent five-year band indicates negative 289 percent. A peer comparison of Canadian utilities indicated a range from negative 50 percent to negative 125 percent. Based on historical indications and the review of Canadian natural gas utilities, Concentric views that negative 125 percent best represents the net salvage expectation for the equipment in this account. If the current net salvage trend continues, then a more negative net salvage recommendation may be appropriate in the next depreciation study.

ACCOUNT 475.00 – MAINS

Investment $	Investment %	Previously Approved Curves	Concentric Recommends Curves	Previously Approved Salvage	Concentric Recommends Salvage
$86,054,727	53.27%	80-R3	80-R3	-74%	-90%

The investment in Distribution Plant - Mains is approximately $86.1 million representing 53.27 percent of the total depreciable plant studied. The current approved life parameter for this account is an Iowa 80-R3. The retirements, additions and other plant transactions, for the period 1960 through 2018, were analyzed by the retirement rate method. Retirements of $617,814.90 were recorded for the period 2009 through 2018, resulting in actual observed data points as depicted on page 6-7 of this report. The current Iowa 80-R3 has a related Residual Measure of 0.3633. Peer comparison of Canadian utilities produced a range from 40 to 66 years, resulting in Gazifère with the longest currently approved life. As such, the Iowa 80-R3 is recommended for this account based on the fit to historic data, the review of Canadian peer natural gas utilities, and on the professional judgment of Concentric.

The first year of recorded net salvage activity for this account is 2000. The currently approved net salvage percentage is negative 74 percent. For the period 2000 to 2018, the net salvage ranged from negative 11 percent to negative 3,964 percent with a cumulative value of negative 109 percent. A

three-year band analysis from 2000 forward produced a range from negative 17 percent to negative 542 percent. The most recent three-year bands (i.e. 2014-2016, 2015-2017 and 2016-2018) indicate values of negative 55 percent, negative 126 percent and negative 542 percent respectively. The most recent five-year band indicates negative 114 percent. Based on historical indications and the review of Canadian natural gas utilities, Concentric views that an increase from the currently approved negative 74 percent to negative 90 percent best represents the net salvage expectation for the equipment in this account.

ACCOUNT 477.00 – REGULATING EQUIPMENT

Investment $	Investment %	Previously Approved Curves	Concentric Recommends Curves	Previously Approved Salvage	Concentric Recommends Salvage
$3,859,669	2.39%	30-R4	30-R4	-5%	-10%

The investment in Distribution Plant – Regulating Equipment is approximately $3.9 million representing 2.39 percent of the total depreciable plant studied. The current approved life parameter for this account is an Iowa 30-R4. The retirements, additions and other plant transactions, for the period 2001 through 2018, were analyzed by the retirement rate method. Retirements of $50,333.35 were recorded for the period 2013 through 2018, resulting in actual observed data points as depicted on page 6-9 of this report. The current Iowa 30-R4 has a related Residual Measure of 0.5263. Peer comparison of Canadian utilities produced a range from 33 to 42 years. The currently approved Iowa 30-R4 is recommended for this account based on the review of Canadian peer natural gas utilities, and on the professional judgment of Concentric.

The first year of recorded net salvage activity for this account is 2012. The currently approved net salvage is negative five percent. For the period 2012 to 2018, the net salvage ranged from zero percent to negative eight percent with a cumulative value of negative 24 percent. The most recent five-year band indicates negative 43 percent. A peer comparison of Canadian utilities indicated a range from negative 12 percent to negative 30 percent. Based on historical indications and the review of Canadian natural gas utilities, Concentric views that the currently approved negative ten percent best represents the net salvage expectation for the equipment in this account.

ACCOUNT 478.00 – METERS

Investment $	Investment %	Previously Approved Curves	Concentric Recommends Curves	Previously Approved Salvage	Concentric Recommends Salvage
$5,815,080	3.60%	12-R0.5	18-R0.5	0%	0%

The investment in Distribution Plant – Regulating Equipment is approximately $3.9 million representing 2.39 percent of the total depreciable plant studied. The current approved life parameter for this account is an Iowa 12-R0.5. The retirements, additions and other plant transactions, for the period 1975 through 2018, were analyzed by the retirement rate method. Retirements of $2,677,340 were recorded for the period 2009 through 2018, resulting in actual observed data points as depicted on page 6-11 of this report. The current Iowa 12-R0.5 has a related Residual Measure of 1.5326,

which does not fit the historical data as well as the Iowa 18-R0.5 with a Residual Measure of 0.5079. Peer comparison of Canadian utilities produced a range from 18 to 26 years. As such, the Iowa 18-R0.5 is recommended for this account based on the fit to historic data, the review of Canadian peer natural gas utilities, and on the professional judgment of Concentric.

Other Accounts

The above analysis provides the consideration relating to over 91 percent of the depreciable plant. Many of the accounts related to the remaining nine percent of the depreciable plant studied as of December 31, 2018, are subjected to amortization accounting. This is proposed for a number of accounts that represent numerous units of property, but very small portions of depreciable gas plant in service.

SECTION 4

4 CALCULATION OF ANNUAL AND ACCRUED DEPRECIATION

4.1 Group Depreciation Procedures

When more than a single item of property is under consideration, a group procedure for depreciation is appropriate because (normally) all of 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, the Average Life Group and Equal Life Group procedures.

In the Average Life Group procedure (Also known as the Average Service Life procedure), the rate of annual depreciation is based on the average service life of the group - 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 the 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.

In the Equal Life Group procedure, also known as the unit summation procedure, the property group is subdivided according to service life. That is, each equal life group includes that portion of the property which experiences the life of that specific group. The relative size of each equal life group is determined from the property's life dispersion curve. The calculated depreciation for the property group is the summation of the calculated depreciation based on the service life of each equal life unit.

In the determination of the depreciation rates in this study, the use of the Average Life Group procedure has been continued. While the Equal Life Group procedure provides an enhanced matching of depreciation expense to the consumption of service value, the Average Life Group procedure was used in order to conform to past Company practices and approvals by the Régie.

4.2 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. The accounts and their amortization periods are as follows:

Account	Title	Amortization Period-Years
483.00	Office Furniture and Equipment	15
486.00	Tools and Work Equipment	10
490.01	Computer Equipment - Post 2008	4
491.00	Other Intangible Assets - Software Other	4
491.00	Other Intangible Assets – CIS	7
473.99	Contributions – Services	53
475.99	Contributions – Mains	80
477.99	Contributions – Regulating Equipment	30

For the purpose of calculating annual amortization amounts, as of December 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.

4.3 Monitoring of Book Accumulated Depreciation

The calculated accrued depreciation or amortization represents that portion of the depreciable cost which will not be allocated to expense through future depreciation accruals, if current forecasts of service life characteristics materialize and are used as a basis for depreciation accounting. Thus, the calculated accrued depreciation provides a measure of the book accumulated depreciation. The use of this measure is recommended in the amortization of book accumulated depreciation variances to insure complete recovery of capital over the life of the property.

The composite remaining life for use in the calculation of depreciation accruals is derived by developing the composite sum of the individual remaining lives in accordance with the following equation:

$$Composite\ Remaining\ Life = \frac{\sum(\frac{Book\ Cost}{Life}\ x\ Remaining\ Life)}{\sum\frac{Book\ Cost}{Life}} \qquad (1)$$

The book costs and lives of the several vintages, which are summed in the foregoing equation, are defined by the estimated future survivor curve. In as much as book cost divided by life equals the whole life annual accrual, the foregoing equation reduces to the following form:

$$Composite\ Remaining\ Life = \frac{\sum Whole\ Life\ Future\ Accruals}{\sum Whole\ Life\ Annual\ Accrual} \quad (2)$$

or

$$Composite\ Remaining\ Life = \frac{\sum \quad BookCost - Calc, Reserve}{\sum Whole\ Life\ Annual\ Accrual} \quad (3)$$

SECTION 5

5 RESULTS OF THE STUDY

5.1 Qualification of Results

The calculated annual and accrued depreciation are the principal results of the update. 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 and the accrued depreciation were calculated in accordance with the Straight-line method, using the ALG procedure based on estimates which reflect considerations of current historical evidence and expected future conditions.

5.2 Description of Detailed Tabulations

The following tables provides summaries by account of the original cost of investment, calculated and booked accumulated depreciation amounts, the required amount of annual depreciation expense, the required depreciation rate to be applied against the original cost of the account and the estimated composite remaining life of the surviving plant in service.

The detailed calculations of annual depreciation applicable to depreciable assets, as of December 31, 2018, are presented in account sequence starting in Section 5 – Page 5-2. The tables indicate the estimated average survivor curves used in the calculations. The tables set forth (for each installation year) the original cost, calculated accrued depreciation and the calculated annual accrual.

GAZIFÈRE INC.

TABLE 1 - ESTIMATED SURVIVOR CURVE, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO UTILITY PLANT AS OF DECEMBER 31, 2018
DEPRECIATION RELATED TO RECOVERY OF ORIGINAL COST OF INVESTMENT

Account	Account Description	Survivor Curve	Net Salvage	Original Cost as of Dec. 31, 2017	Book Depreciation Reserve	Future Accruals	Calculated Annual Accural Amount	Calculated Annual Accural Rate	Composite Remaining Life
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	8.00	9.00
DEPRECIABLE PLANT STUDIED									
473	Services	53-R3.5	-125	61,516,359	33,700,428	27,815,931	2,654,965	4.32	39.59
475	Mains	80-R3	-90	86,054,727	34,368,653	51,686,074	2,020,385	2.35	63.76
477	Regulating Equipment	30-R4	-10	3,859,669	2,166,381	1,693,288	112,856	2.92	17.40
478	Meters	18-R0.5	0	5,815,080	571,359	5,243,721	493,206	8.48	12.13
483	Office Furniture and Equipment	15-SQ	0	561,073	354,167	206,906	54,792	9.77	4.21
484	Transportation Equipment - Post 2005	13-R4	0	1,483,861	1,066,989	416,872	36,952	2.49	7.12
485.01	Heavy Work Equipment - Post 2006	15-S3	0	212,041	37,827	174,214	24,967	11.77	7.35
486	Tools and Work Equipment	10-SQ	0	371,067	158,839	212,228	37,605	10.13	5.67
488	Communication Equipment	7-S4	0	446,426	196,955	249,471	124,145	27.81	2.21
490.01	Computer Equipment - Post 2008	4-SQ	0	409,279	399,858	9,421	2,692	20.00	*
491	Other Intangible Assets - Software Other	4-SQ	0	1,779,830	650,422	1,129,408	444,958	25.00	*
491	Other Intangible Assets - CIS	7-SQ	0	9,671,298	7,736,790	1,934,508	1,382,996	14.30	*
TOTAL DEPRECIABLE PLANT STUDIED				**172,180,709**	**81,408,668**	**90,772,040**	**7,390,517**	**4.29**	
CONTRIBUTIONS**									
473	Services	53-SQ	0	-780,041	-575,618	-204,423	-4,500	0.58	35.22
475	Mains	80-SQ	0	-3,396,175	-3,385,310	-10,865	-149	0.00	46.99
477	Regulating Equipment	30-SQ	0	-179,153	-121,157	-57,996	-2,594	1.45	15.40
TOTAL CONTRIBUTIONS				**-4,355,369**	**-4,082,085**	**-273,284**	**-7,243**	**0.17**	
TOTAL PLANT				**167,825,340**	**77,326,583**	**90,498,756**	**7,383,274**	**4.40**	

* Amoritization Accounting Utilized for these accounts
** Contributions are amoritized over the life of the acount to which the contributions apply

SECTION 6

6 RETIREMENT RATE ANALYSIS

Gazifere

Account 473 - Services

Placement Band - 1961 - 2018 Experience Band - 2009 - 2018

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	62,931,506	84,528	0.0013	0.9987	100.00
0.5	60,130,624	43,543	0.0007	0.9993	99.87
1.5	56,327,367	36,133	0.0006	0.9994	99.80
2.5	53,368,000	27,001	0.0005	0.9995	99.74
3.5	50,549,131	29,579	0.0006	0.9994	99.69
4.5	47,582,077	25,204	0.0005	0.9995	99.63
5.5	45,462,738	29,326	0.0007	0.9994	99.58
6.5	43,182,973	21,926	0.0005	0.9995	99.52
7.5	41,311,589	24,668	0.0006	0.9994	99.47
8.5	39,327,170	17,631	0.0005	0.9996	99.41
9.5	37,396,980	24,911	0.0007	0.9993	99.37
10.5	35,560,471	32,767	0.0009	0.9991	99.30
11.5	33,376,615	34,316	0.0010	0.9990	99.21
12.5	31,463,281	47,039	0.0015	0.9985	99.11
13.5	29,161,517	42,269	0.0015	0.9986	98.96
14.5	26,755,362	75,069	0.0028	0.9972	98.82
15.5	24,824,004	45,011	0.0018	0.9982	98.54
16.5	23,172,243	30,864	0.0013	0.9987	98.36
17.5	21,608,701	36,460	0.0017	0.9983	98.23
18.5	19,459,229	31,586	0.0016	0.9984	98.06
19.5	17,772,224	30,627	0.0017	0.9983	97.90
20.5	15,875,725	39,686	0.0025	0.9975	97.73
21.5	14,233,791	35,858	0.0025	0.9975	97.49
22.5	12,825,051	42,273	0.0033	0.9967	97.24
23.5	11,402,919	23,558	0.0021	0.9979	96.92
24.5	9,679,133	28,881	0.0030	0.9970	96.72
25.5	8,110,958	26,844	0.0033	0.9967	96.43
26.5	6,619,379	28,221	0.0043	0.9957	96.11
27.5	5,388,059	22,788	0.0042	0.9958	95.70
28.5	4,771,871	22,804	0.0048	0.9952	95.30
29.5	4,290,363	28,299	0.0066	0.9934	94.84
30.5	3,959,421	22,896	0.0058	0.9942	94.21
31.5	3,627,178	13,817	0.0038	0.9962	93.67
32.5	3,235,633	17,913	0.0055	0.9945	93.31
33.5	2,618,299	24,095	0.0092	0.9908	92.79
34.5	2,180,675	36,894	0.0169	0.9831	91.94
35.5	1,717,228	30,645	0.0179	0.9822	90.38
36.5	1,428,385	8,215	0.0058	0.9943	88.77
37.5	1,238,504	10,083	0.0081	0.9919	88.26
38.5	1,105,039	5,175	0.0047	0.9953	87.54
39.5	993,412	16,675	0.0168	0.9832	87.13

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Account 473 - Services

Placement Band - 1961 - 2018 Experience Band - 2009 - 2018

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
40.5	917,734	9,023	0.0098	0.9902	85.67
41.5	847,764	21,128	0.0249	0.9751	84.83
42.5	716,299	25,609	0.0358	0.9643	82.72
43.5	565,147	14,280	0.0253	0.9747	79.76
44.5	418,841	4,156	0.0099	0.9901	77.74
45.5	338,678	3,421	0.0101	0.9899	76.97
46.5	281,300	6,828	0.0243	0.9757	76.19
47.5	273,353	19,925	0.0729	0.9271	74.34
48.5	233,668	8,930	0.0382	0.9618	68.92
49.5	216,105	18,387	0.0851	0.9149	66.29
50.5	187,229	8,008	0.0428	0.9572	60.65
51.5	174,052	7,853	0.0451	0.9549	58.06
52.5	152,161	4,751	0.0312	0.9688	55.44
53.5	144,385	2,314	0.0160	0.9840	53.71
54.5	137,345	719	0.0052	0.9948	52.85
55.5	63,845	2,377	0.0372	0.9628	52.57
56.5	25,375	1,358	0.0535	0.9465	50.61

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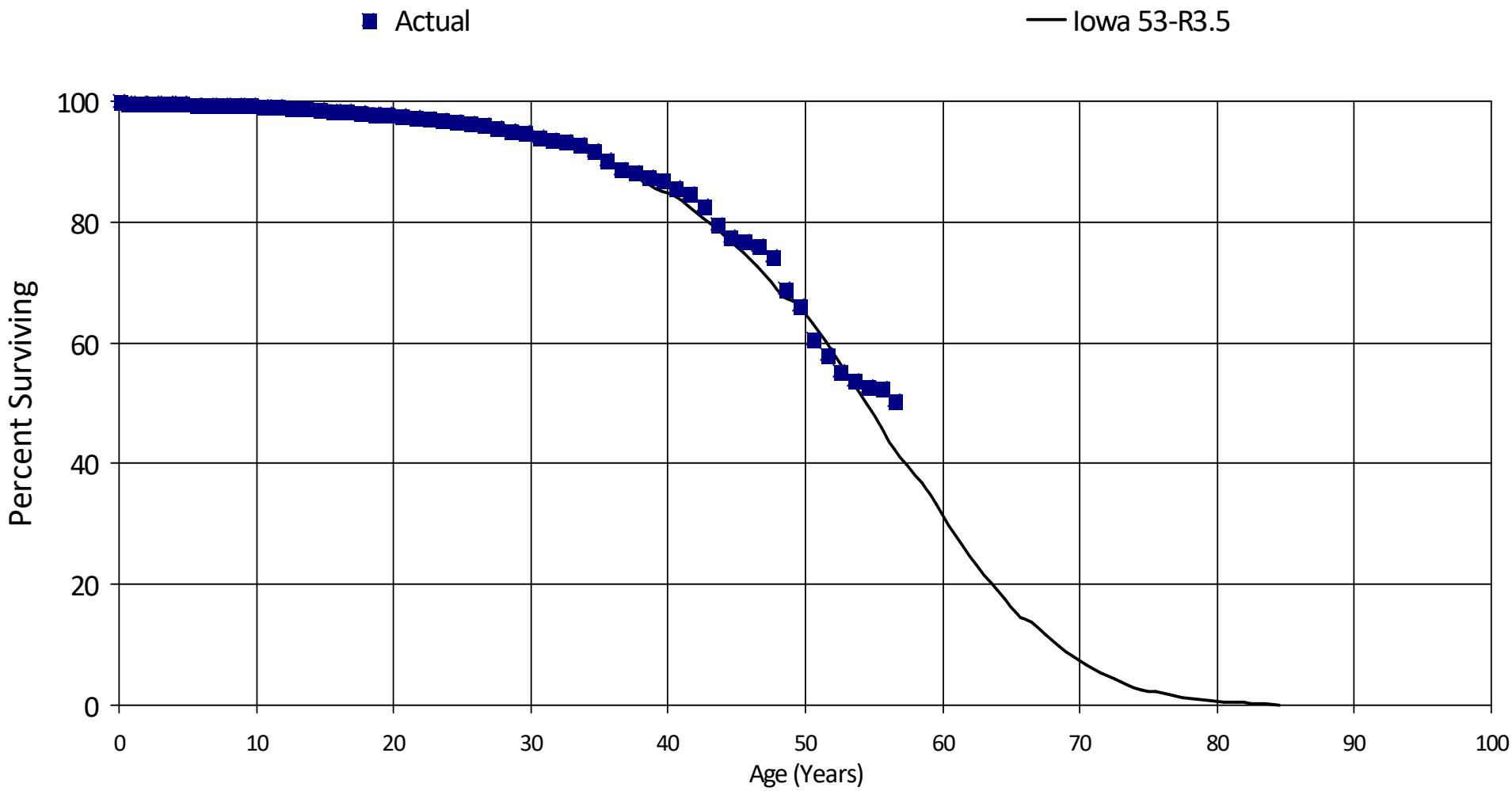
Account 473 - Services

Actual and Smooth Survivor Curves

Placement Band - 1961 - 2018 Experience Band - 2009 - 2018



Gazifere

Account 475 - Mains

Placement Band - 1960 - 2018 Experience Band - 2009 - 2018

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	86,672,542	0	0.0000	1.0000	100.00
0.5	84,180,757	133,123	0.0016	0.9984	100.00
1.5	78,013,329	654	0.0000	1.0000	99.84
2.5	75,043,137	167,040	0.0022	0.9978	99.84
3.5	71,898,612	13,749	0.0002	0.9998	99.62
4.5	69,426,691	15,320	0.0002	0.9998	99.60
5.5	67,325,747	16,071	0.0002	0.9998	99.58
6.5	64,675,251	140	0.0000	1.0000	99.56
7.5	59,553,789	0	0.0000	1.0000	99.56
8.5	57,041,639	0	0.0000	1.0000	99.56
9.5	55,476,295	0	0.0000	1.0000	99.56
10.5	53,232,515	8,281	0.0002	0.9998	99.56
11.5	51,030,164	16,919	0.0003	0.9997	99.54
12.5	48,773,820	1,590	0.0000	1.0000	99.51
13.5	46,424,799	943	0.0000	1.0000	99.51
14.5	43,637,618	18,430	0.0004	0.9996	99.51
15.5	41,536,026	4,271	0.0001	0.9999	99.47
16.5	40,163,816	2,084	0.0001	1.0000	99.46
17.5	38,832,552	11,767	0.0003	0.9997	99.46
18.5	35,722,591	479	0.0000	1.0000	99.43
19.5	34,876,458	4,855	0.0001	0.9999	99.43
20.5	28,060,087	47,774	0.0017	0.9983	99.42
21.5	26,933,223	8,842	0.0003	0.9997	99.25
22.5	19,120,740	11,681	0.0006	0.9994	99.22
23.5	17,700,062	2,624	0.0002	0.9999	99.16
24.5	16,485,653	341	0.0000	1.0000	99.15
25.5	14,997,140	4,649	0.0003	0.9997	99.15
26.5	13,769,287	4,369	0.0003	0.9997	99.12
27.5	12,314,919	440	0.0000	1.0000	99.09
28.5	11,934,474	4,136	0.0004	0.9997	99.09
29.5	11,386,541	0	0.0000	1.0000	99.06
30.5	11,008,194	67	0.0000	1.0000	99.06
31.5	10,605,224	3,166	0.0003	0.9997	99.06
32.5	9,850,881	0	0.0000	1.0000	99.03
33.5	8,205,231	133	0.0000	1.0000	99.03
34.5	7,435,656	1,009	0.0001	0.9999	99.03
35.5	6,487,076	462	0.0001	0.9999	99.02
36.5	6,250,433	487	0.0001	0.9999	99.01
37.5	6,164,446	42,662	0.0069	0.9931	99.00
38.5	6,019,430	415	0.0001	0.9999	98.31
39.5	5,942,226	2,038	0.0003	0.9997	98.30

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Account 475 - Mains

Placement Band - 1960 - 2018 Experience Band - 2009 - 2018

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
40.5	5,876,542	569	0.0001	0.9999	98.27
41.5	5,774,571	2,202	0.0004	0.9996	98.26
42.5	5,587,971	111	0.0000	1.0000	98.22
43.5	5,313,138	30	0.0000	1.0000	98.22
44.5	4,953,360	3,082	0.0006	0.9994	98.22
45.5	4,361,190	44	0.0000	1.0000	98.16
46.5	4,316,296	2,856	0.0007	0.9993	98.16
47.5	4,256,648	2,711	0.0006	0.9994	98.10
48.5	4,220,641	3,277	0.0008	0.9992	98.04
49.5	4,161,010	4,193	0.0010	0.9990	97.96
50.5	4,091,438	20,309	0.0050	0.9950	97.86
51.5	3,995,137	3,319	0.0008	0.9992	97.37
52.5	3,947,544	3,540	0.0009	0.9991	97.29
53.5	3,918,549	4,064	0.0010	0.9990	97.20
54.5	3,870,724	7,757	0.0020	0.9980	97.10
55.5	3,327,615	785	0.0002	0.9998	96.91
56.5	3,029,541	7,745	0.0026	0.9974	96.89
57.5	2,808,007	207	0.0001	0.9999	96.64

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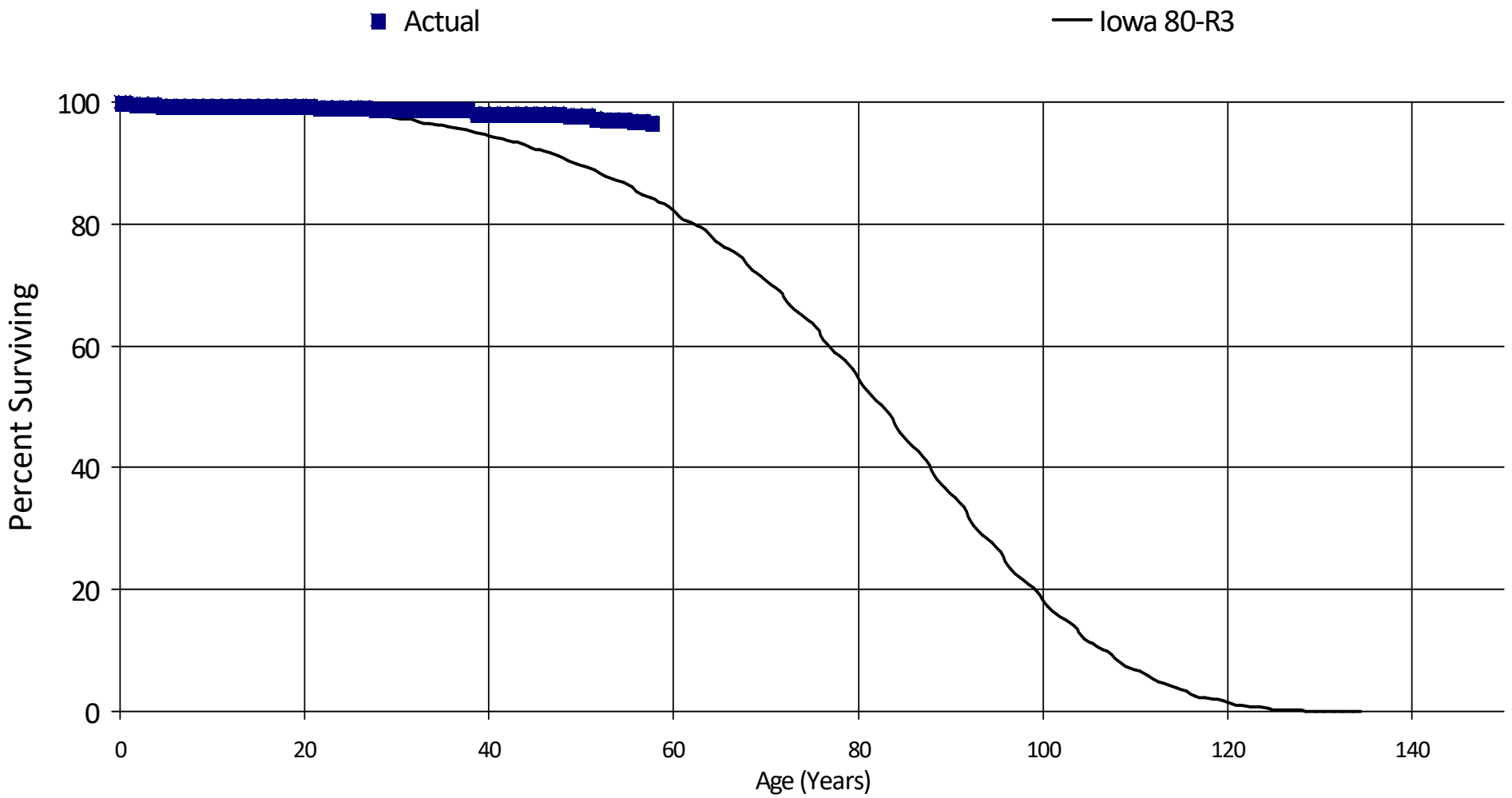
Account 475 - Mains

Actual and Smooth Survivor Curves

Placement Band - 1960 - 2018 Experience Band - 2009 - 2018



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Account 477 - Regulating Equipment

Placement Band - 2001 - 2018 Experience Band - 2013 - 2018

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	1,608,349	0	0.0000	1.0000	100.00
0.5	1,547,101	7,177	0.0046	0.9954	100.00
1.5	1,417,702	0	0.0000	1.0000	99.54
2.5	1,130,263	0	0.0000	1.0000	99.54
3.5	974,661	0	0.0000	1.0000	99.54
4.5	818,523	0	0.0000	1.0000	99.54
5.5	541,830	0	0.0000	1.0000	99.54
6.5	367,979	0	0.0000	1.0000	99.54
7.5	334,131	0	0.0000	1.0000	99.54
8.5	233,813	0	0.0000	1.0000	99.54
9.5	198,221	0	0.0000	1.0000	99.54
10.5	169,540	0	0.0000	1.0000	99.54
11.5	120,345	-28,771	-0.2391	1.2391	99.54
12.5	98,816	0	0.0000	1.0000	123.34
13.5	62,260	14,385	0.2311	0.7690	123.34
14.5	12,825	0	0.0000	1.0000	94.84
15.5	0	0	0.0000	0.0000	94.84

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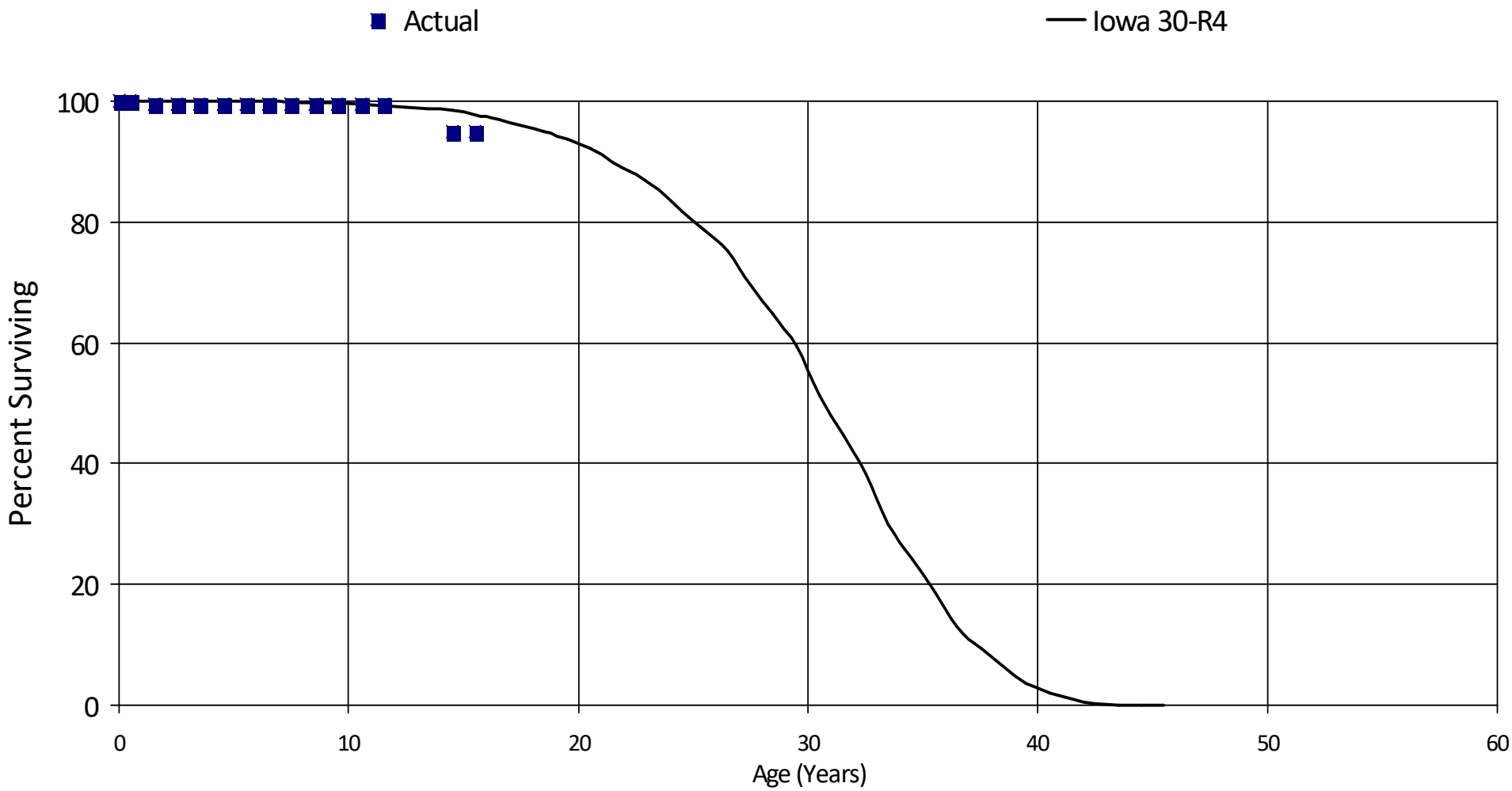
Account 477 - Regulating Equipment

Actual and Smooth Survivor Curves

Placement Band - 2001 - 2018 Experience Band - 2013 - 2018



Gazifere

Account 478 - Meters

Placement Band - 1975 - 2018 Experience Band - 2009 - 2018

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	8,492,421	52,863	0.0062	0.9938	100.00
0.5	8,394,784	194,940	0.0232	0.9768	99.38
1.5	8,077,367	162,743	0.0202	0.9799	97.07
2.5	7,566,248	141,722	0.0187	0.9813	95.11
3.5	6,945,907	133,661	0.0192	0.9808	93.33
4.5	6,373,009	183,386	0.0288	0.9712	91.53
5.5	5,615,412	180,449	0.0321	0.9679	88.90
6.5	4,817,301	142,812	0.0297	0.9704	86.04
7.5	4,374,233	136,327	0.0312	0.9688	83.49
8.5	3,955,484	127,572	0.0323	0.9678	80.89
9.5	3,543,618	116,089	0.0328	0.9672	78.28
10.5	3,159,138	99,225	0.0314	0.9686	75.72
11.5	2,787,585	94,645	0.0340	0.9661	73.34
12.5	2,491,195	61,781	0.0248	0.9752	70.85
13.5	2,421,054	81,400	0.0336	0.9664	69.09
14.5	2,160,283	84,869	0.0393	0.9607	66.77
15.5	1,855,521	102,691	0.0553	0.9447	64.15
16.5	1,595,792	106,610	0.0668	0.9332	60.60
17.5	1,301,851	78,126	0.0600	0.9400	56.55
18.5	1,098,744	50,290	0.0458	0.9542	53.16
19.5	992,563	72,114	0.0727	0.9274	50.73
20.5	823,130	46,857	0.0569	0.9431	47.04
21.5	733,377	28,126	0.0384	0.9617	44.36
22.5	664,208	36,306	0.0547	0.9453	42.66
23.5	579,612	70,816	0.1222	0.8778	40.33
24.5	442,785	31,008	0.0700	0.9300	35.40
25.5	281,032	11,275	0.0401	0.9599	32.92
26.5	189,519	12,685	0.0669	0.9331	31.60
27.5	126,624	3,931	0.0310	0.9690	29.49
28.5	93,028	6,481	0.0697	0.9303	28.57
29.5	55,827	4,931	0.0883	0.9117	26.58
30.5	38,576	2,601	0.0674	0.9326	24.23
31.5	28,484	6,347	0.2228	0.7772	22.60
32.5	19,009	601	0.0316	0.9684	17.56
33.5	14,791	202	0.0137	0.9863	17.00
34.5	14,589	388	0.0266	0.9734	16.77
35.5	14,201	640	0.0451	0.9549	16.32
36.5	13,561	478	0.0353	0.9648	15.58
37.5	10,231	9,353	0.9142	0.0859	15.03
38.5	0	0	0.0000	0.0000	1.29

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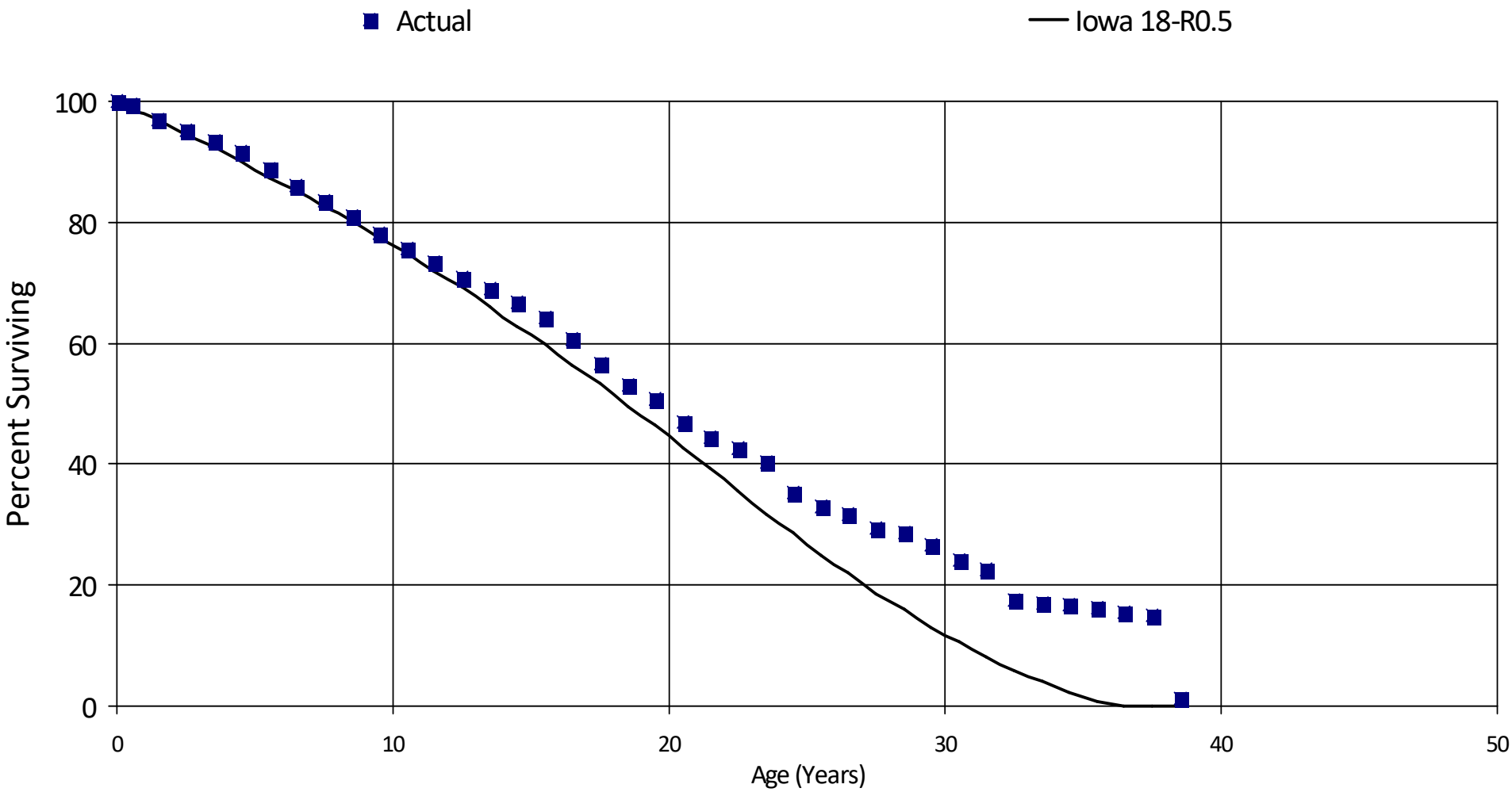
Account 478 - Meters

Actual and Smooth Survivor Curves

Placement Band - 1975 - 2018 Experience Band - 2009 - 2018



Gazifere

Account 484 - Transportation Equipment - Post 2005

Placement Band - 1998 - 2018 Experience Band - 2009 - 2018

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	1,647,257	0	0.0000	1.0000	100.00
0.5	1,570,161	0	0.0000	1.0000	100.00
1.5	1,150,464	0	0.0000	1.0000	100.00
2.5	1,150,464	0	0.0000	1.0000	100.00
3.5	1,150,464	0	0.0000	1.0000	100.00
4.5	1,150,464	17,098	0.0149	0.9851	100.00
5.5	932,386	7,713	0.0083	0.9917	98.51
6.5	857,855	0	0.0000	1.0000	97.70
7.5	783,866	0	0.0000	1.0000	97.70
8.5	572,972	0	0.0000	1.0000	97.70
9.5	546,461	31,842	0.0583	0.9417	97.70
10.5	331,853	106,743	0.3217	0.6783	92.01
11.5	30,042	0	0.0000	1.0000	62.41
12.5	0	0	0.0000	0.0000	62.41

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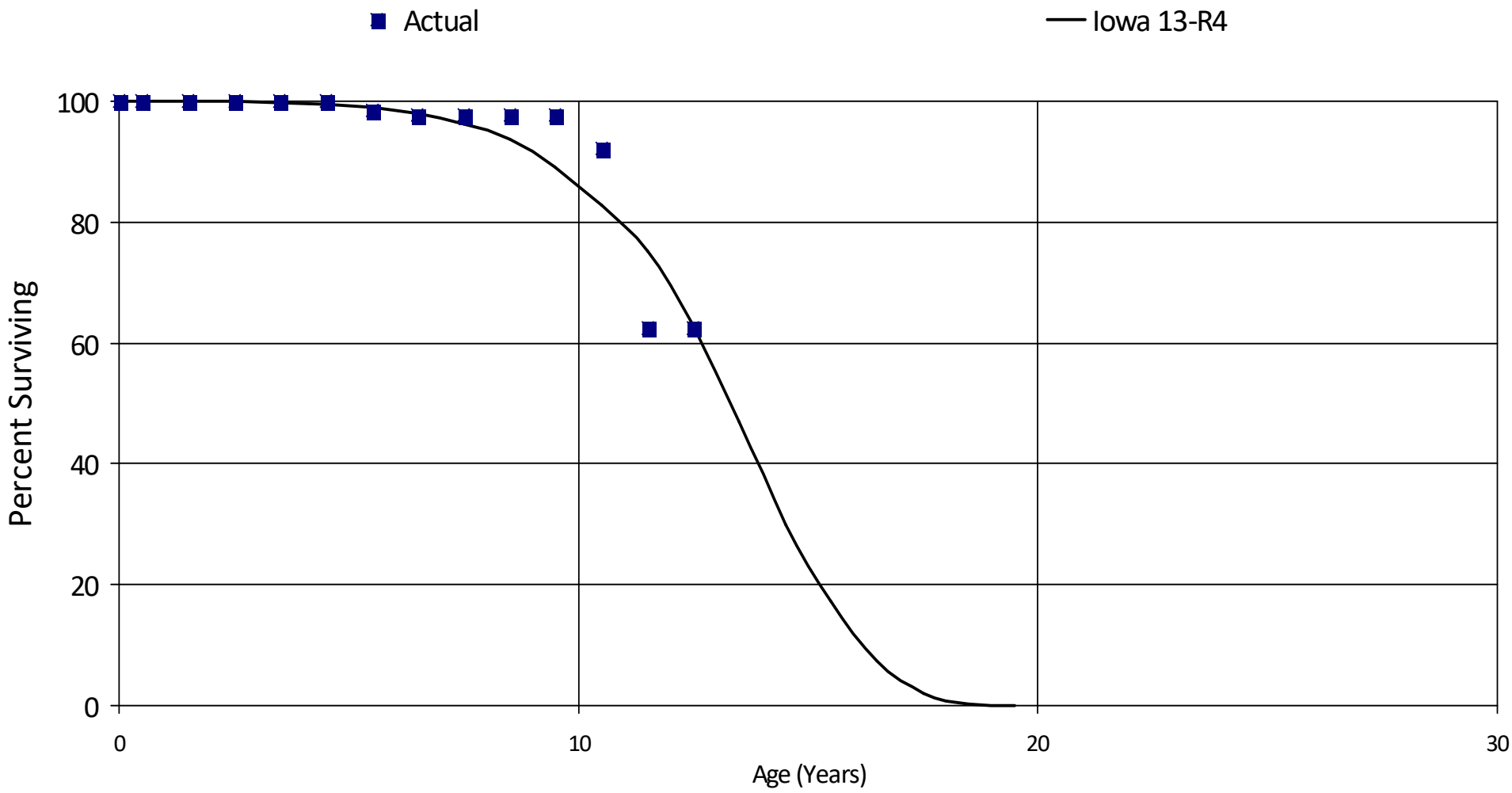
Account 484 - Transportation Equipment - Post 2005

Actual and Smooth Survivor Curves

Placement Band - 1998 - 2018 Experience Band - 2009 - 2018



Gazifere

Account 485 - Heavy Work Equipment

Placement Band - 1996 - 2018 Experience Band - 2018 - 2018

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	52,605	0	0.0000	1.0000	100.00
0.5	52,605	0	0.0000	1.0000	100.00
1.5	52,605	0	0.0000	1.0000	100.00
2.5	52,605	0	0.0000	1.0000	100.00
3.5	52,605	0	0.0000	1.0000	100.00
4.5	52,605	0	0.0000	1.0000	100.00
5.5	52,605	0	0.0000	1.0000	100.00
6.5	52,605	0	0.0000	1.0000	100.00
7.5	52,605	0	0.0000	1.0000	100.00
8.5	52,605	0	0.0000	1.0000	100.00
9.5	52,605	0	0.0000	1.0000	100.00
10.5	52,605	0	0.0000	1.0000	100.00
11.5	52,605	0	0.0000	1.0000	100.00
12.5	45,479	0	0.0000	1.0000	100.00
13.5	45,479	0	0.0000	1.0000	100.00
14.5	45,479	0	0.0000	1.0000	100.00
15.5	45,479	0	0.0000	1.0000	100.00
16.5	45,479	0	0.0000	1.0000	100.00
17.5	45,479	0	0.0000	1.0000	100.00
18.5	45,479	0	0.0000	1.0000	100.00
19.5	2,429	0	0.0000	1.0000	100.00
20.5	2,429	0	0.0000	1.0000	100.00
21.5	2,429	0	0.0000	1.0000	100.00

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Account 485.01 - Heavy Work Equipment - Post 2005

Placement Band - 2007 - 2018 Experience Band - 2018 - 2018

Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	212,041	0	0.0000	1.0000	100.00
0.5	212,041	0	0.0000	1.0000	100.00
1.5	212,041	0	0.0000	1.0000	100.00
2.5	202,260	0	0.0000	1.0000	100.00
3.5	202,260	0	0.0000	1.0000	100.00
4.5	202,260	0	0.0000	1.0000	100.00
5.5	180,265	0	0.0000	1.0000	100.00
6.5	180,265	0	0.0000	1.0000	100.00
7.5	58,209	0	0.0000	1.0000	100.00
8.5	58,209	0	0.0000	1.0000	100.00
9.5	43,209	0	0.0000	1.0000	100.00
10.5	43,209	0	0.0000	1.0000	100.00

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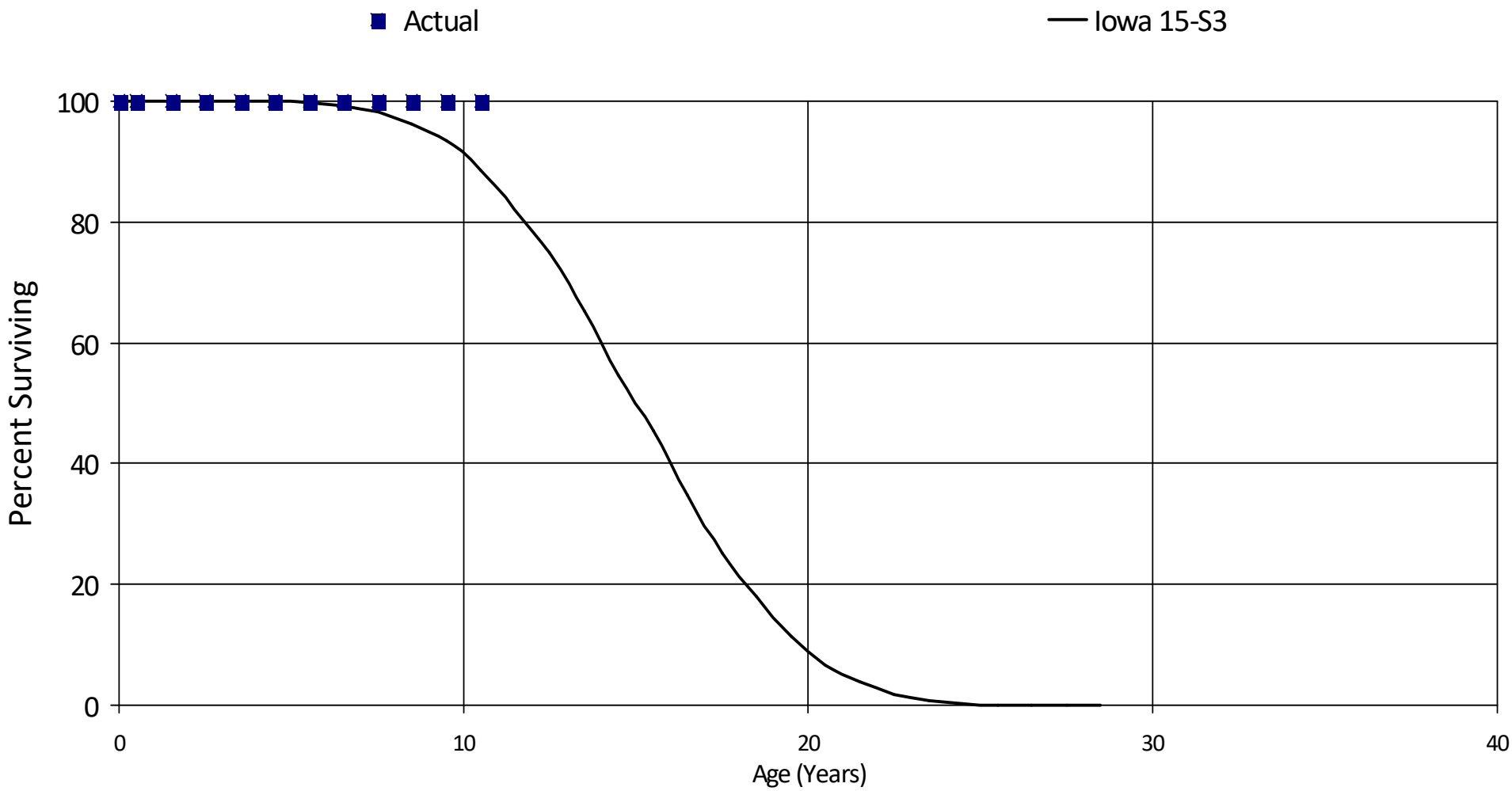
Account 485.01 - Heavy Work Equipment - Post 2005

Actual and Smooth Survivor Curves

Placement Band - 2007 - 2018 Experience Band - 2018 - 2018

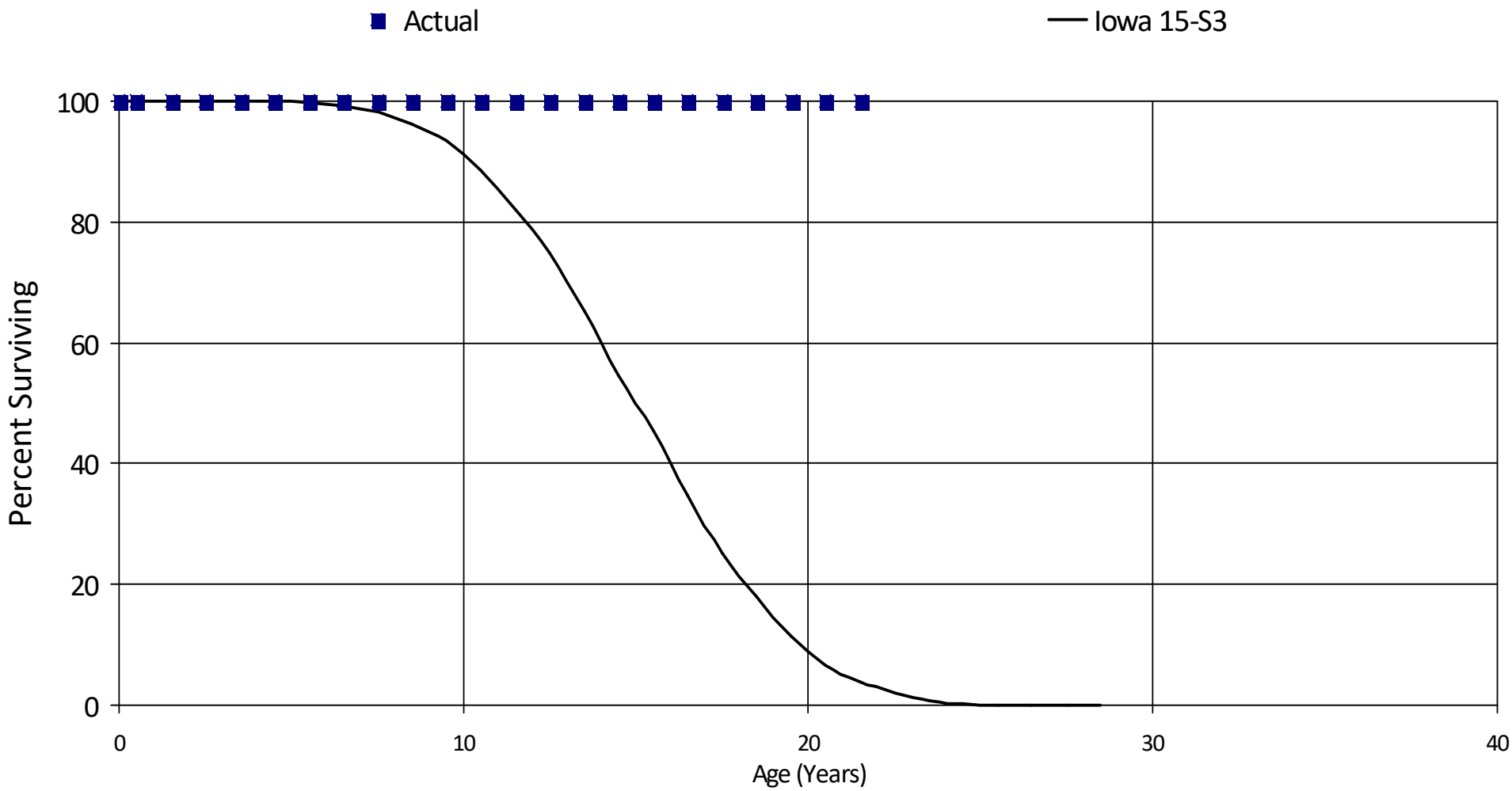


Gazifere

Account 485 - Heavy Work Equipment

Actual and Smooth Survivor Curves

Placement Band - 1996 - 2018 Experience Band - 2018 - 2018



Gazifere

Account 488 - Communication Equipment

Placement Band - 2001 - 2018 Experience Band - 2012 - 2018

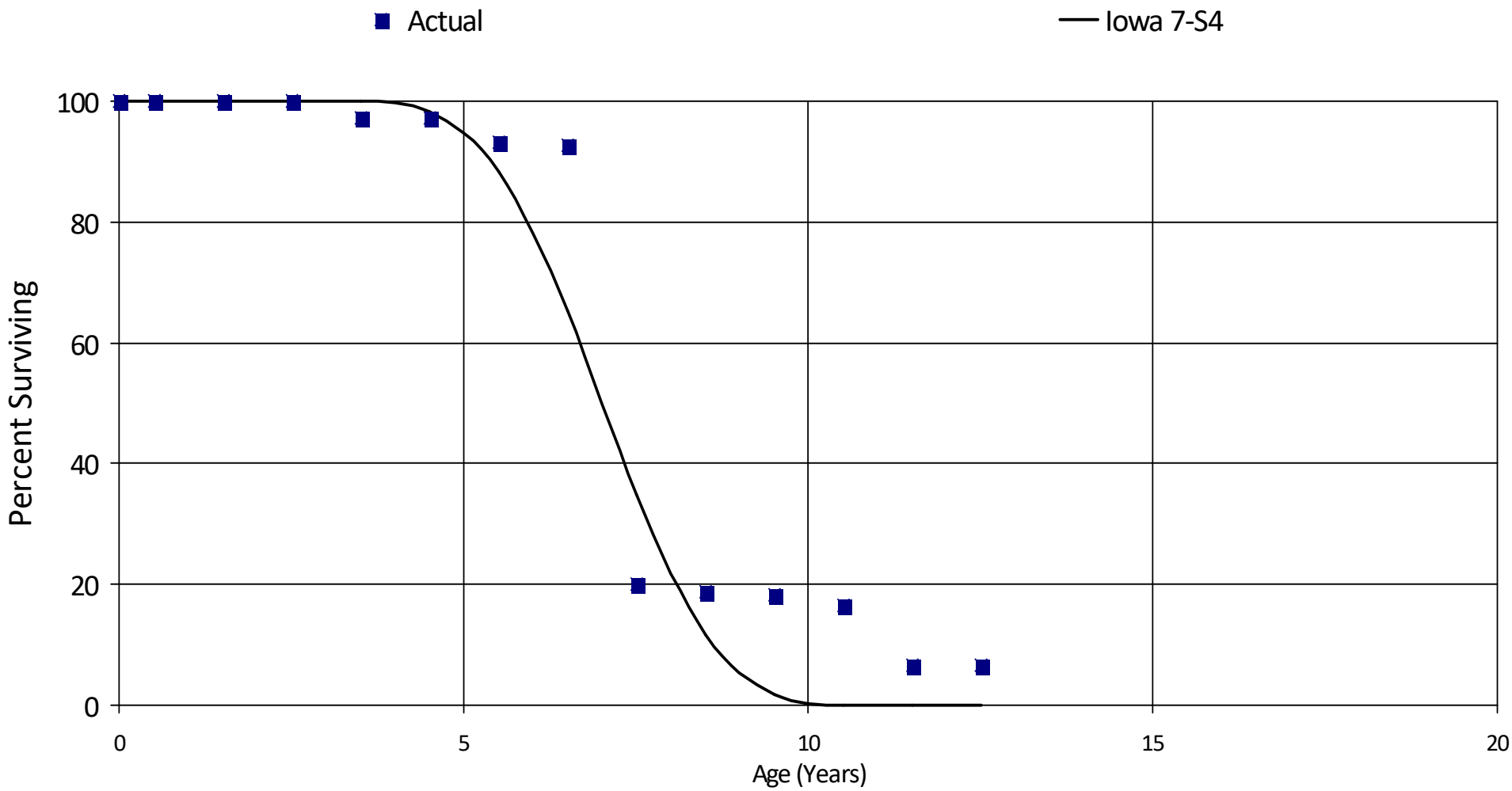
Age at Begin of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retmt Ratio	Survivor Ratio	% Surviving
0	598,928	0	0.0000	1.0000	100.00
0.5	598,704	0	0.0000	1.0000	100.00
1.5	548,674	0	0.0000	1.0000	100.00
2.5	543,908	15,248	0.0280	0.9720	100.00
3.5	516,738	553	0.0011	0.9989	97.20
4.5	515,577	20,661	0.0401	0.9599	97.10
5.5	137,778	816	0.0059	0.9941	93.21
6.5	134,794	105,673	0.7840	0.2160	92.66
7.5	29,121	1,932	0.0663	0.9337	20.02
8.5	27,189	651	0.0239	0.9761	18.69
9.5	10,952	988	0.0902	0.9098	18.24
10.5	9,964	5,981	0.6003	0.3998	16.59
11.5	3,983	0	0.0000	1.0000	6.63
12.5	0	0	0.0000	0.0000	6.63

Gazifere

Account 488 - Communication Equipment

Actual and Smooth Survivor Curves

Placement Band - 2001 - 2018 Experience Band - 2012 - 2018



SECTION 7

7 NET SALVAGE STUDY

GAZIFÈRE INC.

ACCOUNT 473

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1996	82,789	-	0		0	0	0						0
1997	55,846	-	0		0	0	0						0
1998	91,068	-	0		0	0	0	0	0				0
1999	87,719	-	0		0	0	0	0	0				0
2000	91,665	- 82,489	-90		0	-82,489	-90	-27,496	-31	-16,498	-20	-82,489	-20
2001	86,249	- 71,689	-83		0	-71,689	-83	-51,393	-58	-30,836	-37	-77,089	-31
2002	143,611	- 109,895	-77		0	-109,895	-77	-88,024	-82	-52,815	-53	-88,024	-41
2003	109,694	- 89,839	-82		0	-89,839	-82	-90,474	-80	-70,782	-68	-88,478	-47
2004	172,348	- 145,420	-84		0	-145,420	-84	-115,051	-81	-99,866	-83	-99,866	-54
2005	126,383	- 112,676	-89		0	-112,676	-89	-115,978	-85	-105,904	-83	-102,001	-58
2006	147,452	- 129,382	-88		0	-129,382	-88	-129,159	-87	-117,442	-84	-105,913	-62
2007	160,133	- 279,581	-175		0	-279,581	-175	-173,880	-120	-151,380	-106	-127,621	-75
2008	127,402	- 168,777	-132		0	-168,777	-132	-192,580	-133	-167,167	-114	-132,194	-80
2009	110,523	- 192,157	-174		0	-192,157	-174	-213,505	-161	-176,515	-131	-138,191	-87
2010	71,250	- 156,634	-220		0	-156,634	-220	-172,523	-167	-185,306	-150	-139,867	-92
2011	163,772	- 209,827	-128		0	-209,827	-128	-186,206	-162	-201,395	-159	-145,697	-96
2012	139,657	- 383,519	-275		0	-383,519	-275	-249,993	-200	-222,183	-181	-163,991	-108
2013	176,362	- 366,814	-208		0	-366,814	-208	-320,053	-200	-261,790	-198	-178,479	-117
2014	138,629	- 423,692	-306		0	-423,692	-306	-391,342	-258	-308,097	-223	-194,826	-128
2015	71,417	- 193,372	-271		0	-193,372	-271	-327,959	-255	-315,445	-229	-194,735	-132
2016	131,886	- 674,087	-511		0	-674,087	-511	-430,384	-378	-408,297	-310	-222,932	-152
2017	160,280	- 464,144	-290		0	-464,144	-290	-443,868	-366	-424,422	-313	-236,333	-161
2018	251,371	- 420,451	-167		0	-420,451	-167	-519,561	-287	-435,149	-289	-246,023	-161
TOTAL	**2,897,509**	**- 4,674,445**	**-**	**161**	**0**		**-4,674,445**	**-**	**161**				

GAZIFÈRE INC.

ACCOUNT 475

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
1996	2,942	-	0		0	0	0						0
1997	28,209	-	0		0	0	0						0
1998	25,991	-	0		0	0	0	0	0				0
1999	1,000	-	0		0	0	0	0	0				0
2000	73,950	- 18,203	-25		0	-18,203	-25	-6,068	-18	-3,641	-14	-18,203	-14
2001	76,773	- 8,244	-11		0	-8,244	-11	-8,816	-17	-5,289	-13	-13,224	-13
2002	226	- 8,947	-3,964		0	-8,947	-3,964	-11,798	-23	-7,079	-20	-11,798	-17
2003	29,480	- 14,219	-48		0	-14,219	-48	-10,470	-29	-9,923	-27	-12,403	-21
2004	62,962	- 22,878	-36		0	-22,878	-36	-15,348	-50	-14,498	-30	-14,498	-24
2005	26,135	- 9,332	-36		0	-9,332	-36	-15,476	-39	-12,724	-33	-13,637	-25
2006	45,213	- 55,424	-123		0	-55,424	-123	-29,211	-65	-22,160	-68	-19,607	-37
2007	7,610	- 44,588	-586		0	-44,588	-586	-36,448	-138	-29,288	-85	-22,729	-48
2008	93,268	- 79,622	-85		0	-79,622	-85	-59,878	-123	-42,369	-90	-29,051	-55
2009	30,147	- 104,499	-347		0	-104,499	-347	-76,236	-175	-58,693	-145	-36,596	-73
2010	16,650	- 67,651	-406		0	-67,651	-406	-83,924	-180	-70,357	-182	-39,419	-83
2011	29,031	- 79,962	-275		0	-79,962	-275	-84,037	-332	-75,264	-213	-42,797	-93
2012	16,508	- 70,333	-426		0	-70,333	-426	-72,649	-350	-80,413	-217	-44,916	-103
2013	50,985	- 61,381	-120		0	-61,381	-120	-70,559	-219	-76,765	-268	-46,092	-105
2014	143,215	- 52,884	-37		0	-52,884	-37	-61,533	-88	-66,442	-130	-46,544	-92
2015	249,579	- 44,582	-18		0	-44,582	-18	-52,949	-36	-61,828	-63	-46,422	-74
2016	50,856	- 144,634	-284		0	-144,634	-284	-80,700	-55	-74,763	-73	-52,199	-84
2017	16,229	- 209,500	-1,291		0	-209,500	-1,291	-132,905	-126	-102,596	-100	-60,938	-102
2018	14,615	- 88,565	-606		0	-88,565	-606	-147,566	-542	-108,033	-114	-62,392	-109
TOTAL	**1,091,573**	**- 1,185,448**	**-** **109**	**0**		**-1,185,448**	**-** **109**						

GAZIFÈRE INC.

ACCOUNT 477

SUMMARY OF BOOK SALVAGE

Year	Regular Retirements	Cost of Removal Amount	Cost of Removal Percent	Gross Salvage Amount	Gross Salvage Percent	Net Salvage Amount	Net Salvage Percent	3-Year Amount	3-Year Percent	5-Year Amount	5-Year Percent	Historical Amount	Historical Percent
2012	-	636				-636						-636	
2013	28,771	- 2,263	-8		0	-2,263	-8					-1,450	-10
2014	-	- 9,046				-9,046		-3,982	-42			-3,982	-42
2015	14,385		0		0	0	0	-3,770	-26			-3,982	-28
2016	-	- 228				-228		-3,091	-64			-3,043	-28
2017						0		-76	-2	-2,307	-27	-3,043	-28
2018	7,177		0		0	0	0	-76	-3	-1,855	-43	-3,043	-24
TOTAL	**50,333**	**- 12,173**	**24**	**0**		**-12,173**	**-**	**24**					

SECTION 8

8 DETAILED DEPRECIATION CALCULATIONS

Gazifere

Account #: 473.00 - Services

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: R3.5
ASL: 53
Net Salvage: -125%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1961	24,016.85	46,454	44,718	1.8620	9,320	7.44	1,253	57.5
1962	36,092.66	69,267	66,680	1.8475	14,529	7.79	1,864	56.5
1963	72,781.35	138,513	133,339	1.8320	30,419	8.17	3,723	55.5
1964	4,725.52	8,913	8,580	1.8157	2,052	8.57	239	54.5
1965	3,025.02	5,651	5,440	1.7982	1,367	9.00	152	53.5
1966	14,037.63	25,953	24,983	1.7797	6,601	9.45	698	52.5
1967	5,169.34	9,452	9,099	1.7601	2,532	9.93	255	51.5
1968	10,489.11	18,952	18,244	1.7393	5,356	10.44	513	50.5
1969	8,631.90	15,401	14,825	1.7175	4,597	10.97	419	49.5
1970	19,759.95	34,785	33,485	1.6946	10,975	11.53	952	48.5
1971	1,118.98	1,942	1,870	1.6707	648	12.12	53	47.5
1972	53,957.69	92,261	88,814	1.6460	32,591	12.72	2,562	46.5
1973	76,007.05	127,948	123,169	1.6205	47,847	13.35	3,585	45.5
1974	132,025.47	218,658	210,490	1.5943	86,567	13.99	6,189	44.5
1975	125,542.87	204,427	196,790	1.5675	85,681	14.64	5,851	43.5
1976	110,337.64	176,530	169,936	1.5401	78,324	15.31	5,115	42.5
1977	60,946.78	95,740	92,164	1.5122	44,967	16.00	2,811	41.5
1978	59,002.55	90,938	87,541	1.4837	45,215	16.69	2,708	40.5
1979	106,451.75	160,854	154,845	1.4546	84,671	17.41	4,864	39.5
1980	123,383.02	182,639	175,817	1.4250	101,795	18.13	5,614	38.5
1981	181,665.20	263,215	253,382	1.3948	155,365	18.87	8,233	37.5
1982	258,198.64	365,859	352,192	1.3640	228,755	19.62	11,658	36.5
1983	426,552.29	590,554	568,493	1.3328	391,249	20.39	19,190	35.5
1984	413,529.89	558,858	537,981	1.3009	392,461	21.17	18,542	34.5
1985	599,421.21	789,949	760,439	1.2686	588,258	21.96	26,791	33.5
1986	377,727.12	484,911	466,797	1.2358	383,089	22.76	16,831	32.5

Gazifere

Account #: 473.00 - Services

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: R3.5
ASL: 53
Net Salvage: -125%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1987	309,346.73	386,427	371,992	1.2025	324,038	23.58	13,745	31.5
1988	302,643.59	367,440	353,714	1.1687	327,234	24.40	13,411	30.5
1989	458,704.18	540,614	520,419	1.1345	511,665	25.24	20,273	29.5
1990	593,399.79	678,011	652,684	1.0999	682,466	26.09	26,162	28.5
1991	1,203,099.20	1,330,841	1,281,126	1.0649	1,425,847	26.94	52,920	27.5
1992	1,464,735.35	1,566,320	1,507,809	1.0294	1,787,845	27.81	64,286	26.5
1993	1,539,293.59	1,588,735	1,529,387	0.9936	1,934,024	28.69	67,416	25.5
1994	1,700,228.04	1,690,896	1,627,731	0.9574	2,197,782	29.57	74,315	24.5
1995	1,379,858.36	1,319,898	1,270,593	0.9208	1,834,089	30.47	60,197	23.5
1996	1,372,882.37	1,260,638	1,213,546	0.8839	1,875,439	31.37	59,784	22.5
1997	1,602,247.59	1,409,363	1,356,715	0.8468	2,248,342	32.28	69,651	21.5
1998	1,865,871.11	1,568,612	1,510,015	0.8093	2,688,195	33.20	80,977	20.5
1999	1,655,420.24	1,326,767	1,277,205	0.7715	2,447,491	34.12	71,730	19.5
2000	2,113,011.40	1,610,074	1,549,928	0.7335	3,204,348	35.05	91,419	18.5
2001	1,532,678.29	1,106,957	1,065,605	0.6953	2,382,921	35.99	66,216	17.5
2002	1,606,750.21	1,096,201	1,055,252	0.6568	2,559,936	36.93	69,320	16.5
2003	1,856,288.31	1,191,806	1,147,285	0.6181	3,029,363	37.88	79,980	15.5
2004	2,363,886.24	1,422,162	1,369,036	0.5791	3,949,708	38.83	101,722	14.5
2005	2,254,724.37	1,264,927	1,217,674	0.5401	3,855,455	39.79	96,907	13.5
2006	1,879,018.32	977,512	940,996	0.5008	3,286,795	40.75	80,666	12.5
2007	2,151,088.64	1,030,957	992,445	0.4614	3,847,504	41.71	92,243	11.5
2008	1,811,598.59	793,783	764,131	0.4218	3,311,966	42.68	77,602	10.5
2009	1,912,558.47	759,136	730,778	0.3821	3,572,478	43.65	81,843	9.5
2010	1,959,750.69	696,781	670,752	0.3423	3,738,687	44.62	83,780	8.5
2011	1,849,457.74	580,820	559,123	0.3023	3,602,157	45.60	78,991	7.5
2012	2,250,438.76	613,120	590,217	0.2623	4,473,270	46.58	96,029	6.5

Gazifere

Account #: 473.00 - Services

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: R3.5
ASL: 53
Net Salvage: -125%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2013	2,094,135.53	483,207	465,156	0.2221	4,246,649	47.56	89,281	5.5
2014	2,937,474.89	555,042	534,308	0.1819	6,075,011	48.55	125,131	4.5
2015	2,791,868.20	410,630	395,290	0.1416	5,886,413	49.54	118,832	3.5
2016	2,923,234.04	307,339	295,858	0.1012	6,281,419	50.52	124,327	2.5
2017	3,759,713.97	237,341	228,474	0.0608	8,230,882	51.51	159,783	1.5
2018	2,716,354.44	57,204	55,067	0.0203	6,056,731	52.50	115,358	0.5
TOTAL	61,516,358.72	35,008,188	33,700,428		104,711,379		2,654,965	

COMPOSITE ANNUAL ACCRUAL RATE	4.32%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.55
COMPOSITE AVERAGE AGE (YEARS)	13.99
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	39.59

Gazifere

Account #: 473.99 - Services - Contributions

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: SQ
ASL: 53
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1994	454,150.58	209,453	454,151	1.0000	0	28.56	0	24.5
2002	1,584.80	492	1,145	0.7225	440	36.56	12	16.5
2003	13,143.68	3,830	8,919	0.6785	4,225	37.56	112	15.5
2004	39,533.06	10,773	25,088	0.6346	14,445	38.56	375	14.5
2005	32,177.06	8,162	19,006	0.5907	13,171	39.56	333	13.5
2006	13,148.09	3,087	7,188	0.5467	5,960	40.56	147	12.5
2007	16,458.58	3,554	8,275	0.5028	8,183	41.56	197	11.5
2008	9,233.96	1,820	4,237	0.4589	4,997	42.56	117	10.5
2009	9,578.51	1,707	3,974	0.4149	5,604	43.56	129	9.5
2010	4,873.92	776	1,808	0.3710	3,066	44.56	69	8.5
2011	22,096.85	3,103	7,227	0.3270	14,870	45.56	326	7.5
2012	53,883.19	6,551	15,255	0.2831	38,629	46.56	830	6.5
2013	19,456.04	1,998	4,653	0.2392	14,803	47.56	311	5.5
2014	36,039.02	3,021	7,036	0.1952	29,003	48.56	597	4.5
2015	40,651.95	2,641	6,150	0.1513	34,502	49.56	696	3.5
2016	14,032.16	647	1,506	0.1074	12,526	50.56	248	2.5
TOTAL	780,041.45	261,614	575,618		204,423		4,500	

COMPOSITE ANNUAL ACCRUAL RATE	0.58%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.74
COMPOSITE AVERAGE AGE (YEARS)	17.83
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	35.22

Gazifere

Account #: 475.00 - Mains

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: R3
ASL: 80
Net Salvage: -90%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1960	2,807,799.24	3,411,676	3,532,920	1.2583	1,801,899	28.84	62,481	58.5
1961	213,789.00	256,204	265,309	1.2410	140,890	29.54	4,769	57.5
1962	297,288.57	351,251	363,734	1.2235	201,115	30.25	6,648	56.5
1963	535,352.14	623,392	645,546	1.2058	371,623	30.97	11,999	55.5
1964	43,760.87	50,203	51,987	1.1880	31,159	31.70	983	54.5
1965	25,454.94	28,758	29,780	1.1699	18,584	32.43	573	53.5
1966	44,273.47	49,239	50,989	1.1517	33,131	33.17	999	52.5
1967	75,992.47	83,163	86,118	1.1332	58,268	33.92	1,718	51.5
1968	65,378.35	70,373	72,874	1.1147	51,345	34.68	1,481	50.5
1969	56,354.02	59,637	61,757	1.0959	45,316	35.44	1,279	49.5
1970	33,295.79	34,626	35,856	1.0769	27,406	36.21	757	48.5
1971	56,792.14	58,012	60,073	1.0578	47,832	36.99	1,293	47.5
1972	44,850.85	44,979	46,577	1.0385	38,639	37.77	1,023	46.5
1973	589,087.55	579,697	600,298	1.0190	518,968	38.57	13,457	45.5
1974	359,747.94	347,192	359,531	0.9994	323,990	39.36	8,231	44.5
1975	274,721.54	259,885	269,120	0.9796	252,851	40.17	6,295	43.5
1976	184,399.04	170,890	176,963	0.9597	173,395	40.98	4,231	42.5
1977	101,401.76	92,005	95,275	0.9396	97,389	41.80	2,330	41.5
1978	63,646.18	56,503	58,511	0.9193	62,417	42.62	1,464	40.5
1979	76,788.65	66,657	69,026	0.8989	76,873	43.45	1,769	39.5
1980	102,353.65	86,818	89,903	0.8784	104,569	44.29	2,361	38.5
1981	85,500.57	70,813	73,329	0.8576	89,122	45.13	1,975	37.5
1982	236,181.08	190,851	197,634	0.8368	251,110	45.98	5,462	36.5
1983	947,570.62	746,492	773,021	0.8158	1,027,363	46.83	21,938	35.5
1984	769,441.03	590,462	611,446	0.7947	850,492	47.69	17,834	34.5
1985	1,645,650.71	1,229,045	1,272,722	0.7734	1,854,014	48.55	38,185	33.5

Gazifere

Account #: 475.00 - Mains

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: R3
ASL: 80
Net Salvage: -90%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1986	751,176.54	545,473	564,858	0.7520	862,378	49.42	17,448	32.5
1987	402,903.48	284,187	294,287	0.7304	471,230	50.30	9,368	31.5
1988	378,347.27	258,948	268,150	0.7087	450,709	51.18	8,806	30.5
1989	543,797.12	360,732	373,551	0.6869	659,663	52.07	12,669	29.5
1990	380,005.18	244,027	252,699	0.6650	469,311	52.96	8,861	28.5
1991	1,449,998.56	900,250	932,243	0.6429	1,822,754	53.86	33,843	27.5
1992	1,223,203.21	733,247	759,305	0.6208	1,564,781	54.76	28,575	26.5
1993	1,488,172.38	860,036	890,599	0.5985	1,936,928	55.67	34,795	25.5
1994	1,211,785.17	674,071	698,026	0.5760	1,604,366	56.58	28,357	24.5
1995	1,408,997.45	753,122	779,886	0.5535	1,897,209	57.49	32,998	23.5
1996	7,803,640.13	4,000,581	4,142,753	0.5309	10,684,163	58.41	182,903	22.5
1997	1,079,090.28	529,504	548,322	0.5081	1,501,950	59.34	25,311	21.5
1998	6,811,515.86	3,192,088	3,305,527	0.4853	9,636,353	60.27	159,891	20.5
1999	845,653.78	377,564	390,982	0.4623	1,215,760	61.20	19,865	19.5
2000	3,098,194.06	1,314,358	1,361,068	0.4393	4,525,501	62.14	72,830	18.5
2001	1,329,180.19	534,194	553,178	0.4162	1,972,264	63.08	31,267	17.5
2002	1,367,938.56	519,094	537,541	0.3930	2,061,542	64.02	32,200	16.5
2003	2,083,162.49	743,621	770,048	0.3697	3,187,961	64.97	49,068	15.5
2004	2,786,238.06	931,684	964,794	0.3463	4,329,058	65.92	65,671	14.5
2005	2,347,431.30	731,761	757,767	0.3228	3,702,353	66.87	55,363	13.5
2006	2,239,424.66	647,179	670,178	0.2993	3,584,728	67.83	52,847	12.5
2007	2,194,070.42	584,045	604,801	0.2757	3,563,933	68.79	51,807	11.5
2008	2,243,779.32	545,975	565,378	0.2520	3,697,803	69.75	53,012	10.5
2009	1,565,343.84	344,999	357,259	0.2282	2,616,894	70.72	37,004	9.5
2010	2,512,150.07	495,913	513,536	0.2044	4,259,549	71.69	59,418	8.5
2011	5,121,321.77	892,950	924,683	0.1806	8,805,828	72.66	121,195	7.5

Gazifere

Account #: 475.00 - Mains

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: R3
ASL: 80
Net Salvage: -90%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2012	2,634,425.07	398,487	412,648	0.1566	4,592,759	73.63	62,375	6.5
2013	2,085,623.47	267,190	276,686	0.1327	3,685,999	74.61	49,406	5.5
2014	2,458,171.67	257,885	267,050	0.1086	4,403,476	75.58	58,260	4.5
2015	2,977,484.48	243,159	251,800	0.0846	5,405,420	76.56	70,602	3.5
2016	2,969,538.52	173,367	179,528	0.0605	5,462,596	77.54	70,447	2.5
2017	6,034,305.31	211,537	219,055	0.0363	11,246,125	78.52	143,219	1.5
2018	2,491,784.97	29,132	30,168	0.0121	4,704,224	79.51	59,167	0.5
TOTAL	86,054,726.81	33,189,183	34,368,653		129,135,328		2,020,385	

COMPOSITE ANNUAL ACCRUAL RATE	2.35%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.40
COMPOSITE AVERAGE AGE (YEARS)	17.19
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	63.76

Gazifere

Account #: 475.99 - Mains - Contributions

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: SQ
ASL: 80
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1985	3,381,565.75	1,400,180	3,381,566	1.0000	0	46.88	0	33.5
2002	509.40	103	279	0.5472	231	63.88	4	16.5
2004	1,970.00	348	944	0.4793	1,026	65.88	16	14.5
2012	12,130.00	929	2,521	0.2079	9,609	73.88	130	6.5
TOTAL	3,396,175.15	1,401,559	3,385,310		10,865		149	

COMPOSITE ANNUAL ACCRUAL RATE	0.00%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	1.00
COMPOSITE AVERAGE AGE (YEARS)	33.39
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	46.99

Gazifere

Account #: 477.00 - Regulating Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: R4
ASL: 30
Net Salvage: -10%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2000	2,244,112.23	1,457,336	1,769,832	0.7887	698,691	12.29	56,855	18.5
2003	12,825.12	7,097	8,619	0.6720	5,489	14.91	368	15.5
2004	35,049.55	18,225	22,133	0.6315	16,422	15.82	1,038	14.5
2005	36,556.25	17,766	21,575	0.5902	18,637	16.75	1,113	13.5
2006	50,299.66	22,709	27,578	0.5483	27,752	17.69	1,569	12.5
2007	49,194.30	20,490	24,884	0.5058	29,230	18.64	1,568	11.5
2008	28,681.93	10,934	13,278	0.4629	18,272	19.60	932	10.5
2009	35,591.08	12,300	14,937	0.4197	24,213	20.58	1,177	9.5
2010	100,318.85	31,069	37,732	0.3761	72,619	21.55	3,369	8.5
2011	33,848.08	9,262	11,248	0.3323	25,985	22.54	1,153	7.5
2012	173,850.05	41,272	50,122	0.2883	141,113	23.53	5,998	6.5
2013	276,693.46	55,629	67,558	0.2442	236,805	24.52	9,659	5.5
2014	156,137.83	25,701	31,212	0.1999	140,539	25.51	5,509	4.5
2015	155,602.32	19,932	24,205	0.1556	146,957	26.51	5,544	3.5
2016	287,438.56	26,309	31,951	0.1112	284,231	27.50	10,334	2.5
2017	122,221.93	6,714	8,154	0.0667	126,290	28.50	4,431	1.5
2018	61,247.59	1,122	1,362	0.0222	66,010	29.50	2,238	0.5
TOTAL	3,859,668.79	1,783,866	2,166,381		2,079,255		112,856	

COMPOSITE ANNUAL ACCRUAL RATE	2.92%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.56
COMPOSITE AVERAGE AGE (YEARS)	13.08
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	17.40

Gazifere

Account #: 477.99 - Regulating Equipment - Contributions

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: SQ
ASL: 30
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1997	86,800.44	62,207	86,453	0.9960	348	8.50	41	21.5
2002	1,600.00	880	1,223	0.7644	377	13.50	28	16.5
2004	4,061.13	1,963	2,728	0.6717	1,333	15.50	86	14.5
2005	8,000.00	3,600	5,003	0.6254	2,997	16.50	182	13.5
2006	8,896.00	3,707	5,151	0.5791	3,745	17.50	214	12.5
2007	12,180.79	4,669	6,489	0.5327	5,692	18.50	308	11.5
2008	9,162.43	3,207	4,457	0.4864	4,706	19.50	241	10.5
2009	6,480.00	2,052	2,852	0.4401	3,628	20.50	177	9.5
2010	7,692.00	2,179	3,029	0.3938	4,663	21.50	217	8.5
2011	1,600.00	400	556	0.3474	1,044	22.50	46	7.5
2012	2,686.82	582	809	0.3011	1,878	23.50	80	6.5
2014	7,993.00	1,199	1,666	0.2085	6,327	25.50	248	4.5
2017	5,000.00	250	347	0.0695	4,653	28.50	163	1.5
2018	17,000.00	283	394	0.0232	16,606	29.50	563	0.5
TOTAL	179,152.61	87,179	121,157		57,996		2,594	

COMPOSITE ANNUAL ACCRUAL RATE	1.45%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.68
COMPOSITE AVERAGE AGE (YEARS)	14.60
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	15.40

Gazifere

Account #: 478.00 - Meters

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: R0.5
ASL: 18
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1980	878.76	879	265	0.3013	614	0.00	614	39.5
1981	2,851.02	2,851	859	0.3013	1,992	0.00	1,992	38.5
1985	3,618.22	3,366	1,014	0.2803	2,604	1.25	2,079	33.5
1986	3,127.66	2,834	854	0.2730	2,274	1.69	1,346	32.5
1987	7,490.60	6,611	1,992	0.2659	5,499	2.11	2,602	31.5
1988	12,320.48	10,593	3,191	0.2590	9,129	2.52	3,617	30.5
1989	30,719.70	25,728	7,751	0.2523	22,969	2.92	7,853	29.5
1990	29,664.48	24,193	7,288	0.2457	22,376	3.32	6,740	28.5
1991	50,210.19	39,850	12,005	0.2391	38,205	3.71	10,287	27.5
1992	80,238.12	61,921	18,654	0.2325	61,584	4.11	14,987	26.5
1993	130,744.67	98,001	29,523	0.2258	101,222	4.51	22,454	25.5
1994	66,011.34	47,995	14,459	0.2190	51,553	4.91	10,494	24.5
1995	48,289.74	34,004	10,244	0.2121	38,046	5.33	7,145	23.5
1996	41,044.04	27,941	8,417	0.2051	32,627	5.75	5,678	22.5
1997	42,895.69	28,174	8,487	0.1979	34,408	6.18	5,570	21.5
1998	97,319.64	61,527	18,535	0.1905	78,784	6.62	11,901	20.5
1999	55,890.61	33,925	10,220	0.1829	45,671	7.07	6,456	19.5
2000	124,980.63	72,624	21,878	0.1751	103,102	7.54	13,673	18.5
2001	187,331.02	103,869	31,291	0.1670	156,040	8.02	19,457	17.5
2002	157,037.77	82,780	24,938	0.1588	132,100	8.51	15,520	16.5
2003	219,893.88	109,746	33,061	0.1504	186,833	9.02	20,721	15.5
2004	179,370.97	84,362	25,414	0.1417	153,957	9.53	16,148	14.5
2005	8,359.20	3,685	1,110	0.1328	7,249	10.06	720	13.5
2006	201,744.51	82,867	24,964	0.1237	176,781	10.61	16,667	12.5
2007	272,328.14	103,489	31,176	0.1145	241,152	11.16	21,609	11.5
2008	268,391.97	93,591	28,194	0.1050	240,198	11.72	20,489	10.5

Gazifere

Account #: 478.00 - Meters

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: R0.5
ASL: 18
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2009	284,294.36	90,092	27,141	0.0955	257,154	12.30	20,914	9.5
2010	282,421.16	80,392	24,218	0.0858	258,203	12.88	20,053	8.5
2011	300,256.49	75,677	22,798	0.0759	277,459	13.46	20,609	7.5
2012	617,661.96	135,355	40,776	0.0660	576,886	14.06	41,044	6.5
2013	574,210.45	106,807	32,176	0.0560	542,035	14.65	36,994	5.5
2014	439,236.91	67,062	20,202	0.0460	419,034	15.25	27,474	4.5
2015	478,618.84	57,022	17,178	0.0359	461,441	15.86	29,103	3.5
2016	348,376.47	29,743	8,960	0.0257	339,416	16.46	20,617	2.5
2017	122,477.21	6,291	1,895	0.0155	120,582	17.08	7,062	1.5
2018	44,773.25	765	231	0.0052	44,543	17.69	2,518	0.5
TOTAL	5,815,080.15	1,896,614	571,359		5,243,721		493,206	

COMPOSITE ANNUAL ACCRUAL RATE	8.48%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.10
COMPOSITE AVERAGE AGE (YEARS)	10.20
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	12.13

Gazifere

Account #: 483.00 - Office Furniture and Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: SQ
ASL: 15
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1978	223.81	224	196	0.8778	27	0.00	27	41.5
1983	259.63	260	228	0.8778	32	0.00	32	36.5
1986	2,229.42	2,229	1,957	0.8778	272	0.00	272	33.5
1988	2,914.00	2,914	2,558	0.8778	356	0.00	356	31.5
1989	2,479.30	2,479	2,176	0.8778	303	0.00	303	30.5
1992	550.82	551	484	0.8778	67	0.00	67	27.5
1993	409.90	410	360	0.8778	50	0.00	50	26.5
1994	4,084.92	4,085	3,586	0.8778	499	0.00	499	25.5
2002	20,439.93	20,440	17,942	0.8778	2,498	0.00	2,498	17.5
2003	1,413.31	1,413	1,241	0.8778	173	0.00	173	16.5
2004	698.70	675	593	0.8485	106	0.50	106	14.5
2005	420.81	379	332	0.7900	88	1.50	59	13.5
2006	327,426.93	272,856	239,514	0.7315	87,913	2.50	35,165	12.5
2007	25,659.25	19,672	17,268	0.6730	8,391	3.50	2,397	11.5
2008	13,495.39	9,447	8,292	0.6145	5,203	4.50	1,156	10.5
2009	18,258.08	11,563	10,150	0.5559	8,108	5.50	1,474	9.5
2010	24,931.27	14,128	12,401	0.4974	12,530	6.50	1,928	8.5
2011	17,199.92	8,600	7,549	0.4389	9,651	7.50	1,287	7.5
2012	39,213.52	16,993	14,916	0.3804	24,297	8.50	2,858	6.5
2013	20,722.21	7,598	6,670	0.3219	14,053	9.50	1,479	5.5
2014	7,098.36	2,130	1,869	0.2633	5,229	10.50	498	4.5
2015	6,398.62	1,493	1,311	0.2048	5,088	11.50	442	3.5
2016	13,718.37	2,286	2,007	0.1463	11,711	12.50	937	2.5
2017	4,267.85	427	375	0.0878	3,893	13.50	288	1.5
2018	6,558.46	219	192	0.0293	6,367	14.50	439	0.5

Gazifere

Account #: 483.00 - Office Furniture and Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: SQ
ASL: 15
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
TOTAL	561,072.78	403,470	354,167		206,906		54,792	

COMPOSITE ANNUAL ACCRUAL RATE	9.77%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.63
COMPOSITE AVERAGE AGE (YEARS)	11.23
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	4.21

Gazifere

Account #: 484.00 - Transportation Equipment - Post 2005

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: R4
ASL: 13
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2006	30,042.15	25,029	30,042	1.0000	0	2.17	0	12.5
2007	195,068.19	153,815	195,068	1.0000	0	2.75	0	11.5
2008	182,765.31	134,708	182,765	1.0000	0	3.42	0	10.5
2009	26,510.85	18,060	26,511	1.0000	0	4.14	0	9.5
2010	210,894.31	130,951	210,894	1.0000	0	4.93	0	8.5
2011	73,989.46	41,161	73,989	1.0000	0	5.77	0	7.5
2012	66,818.16	32,600	66,818	1.0000	0	6.66	0	6.5
2013	200,979.96	83,698	174,161	0.8666	26,819	7.59	3,535	5.5
2017	419,697.50	48,335	100,577	0.2396	319,120	11.50	27,743	1.5
2018	77,095.27	2,962	6,163	0.0799	70,933	12.50	5,674	0.5
TOTAL	1,483,861.16	671,320	1,066,989		416,872		36,952	

COMPOSITE ANNUAL ACCRUAL RATE	2.49%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.72
COMPOSITE AVERAGE AGE (YEARS)	6.30
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	7.12

Gazifere

Account #: 485.00 - Heavy Work Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: S3
ASL: 15
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
1996	2,428.92	2,251	0	0.0000	2,429	1.10	2,207	22.5
1999	43,050.00	38,255	0	0.0000	43,050	1.67	25,766	19.5
2006	7,126.40	5,177	0	0.0000	7,126	4.10	1,737	12.5
TOTAL	52,605.32	45,682	0		52,605		29,709	

COMPOSITE ANNUAL ACCRUAL RATE	56.48%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.00
COMPOSITE AVERAGE AGE (YEARS)	18.69
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	1.97

Gazifere

Account #: 485.01 - Heavy Work Equipment - Post 2005

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: S3
ASL: 15
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2007	43,209.19	29,772	10,411	0.2410	32,798	4.66	7,031	11.5
2009	15,000.00	8,988	3,143	0.2095	11,857	6.01	1,972	9.5
2011	122,056.30	59,754	20,896	0.1712	101,160	7.66	13,212	7.5
2013	21,995.00	8,026	2,807	0.1276	19,188	9.53	2,014	5.5
2016	9,780.05	1,630	570	0.0583	9,210	12.50	737	2.5
TOTAL	212,040.54	108,170	37,827		174,214		24,967	

COMPOSITE ANNUAL ACCRUAL RATE	11.77%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.18
COMPOSITE AVERAGE AGE (YEARS)	8.02
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	7.35

Gazifere

Account #: 486.00 - Tools and Work Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: SQ
ASL: 10
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2009	1,305.70	1,240	1,227	0.9395	79	0.50	79	9.5
2010	28,117.67	23,900	23,635	0.8406	4,483	1.50	2,989	8.5
2011	46,923.84	35,193	34,802	0.7417	12,122	2.50	4,849	7.5
2012	31,540.95	20,502	20,274	0.6428	11,267	3.50	3,219	6.5
2013	42,694.89	23,482	23,221	0.5439	19,473	4.50	4,327	5.5
2014	43,559.05	19,602	19,384	0.4450	24,175	5.50	4,395	4.5
2015	20,966.10	7,338	7,257	0.3461	13,709	6.50	2,109	3.5
2016	89,648.80	22,412	22,163	0.2472	67,485	7.50	8,998	2.5
2017	36,378.56	5,457	5,396	0.1483	30,982	8.50	3,645	1.5
2018	29,931.28	1,497	1,480	0.0494	28,451	9.50	2,995	0.5
TOTAL	371,066.84	160,622	158,839		212,228		37,605	

COMPOSITE ANNUAL ACCRUAL RATE	10.13%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.43
COMPOSITE AVERAGE AGE (YEARS)	4.33
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	5.67

Gazifere

Account #: 488.00 - Communication Equipment

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: S4
ASL: 7
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2006	3,983.23	3,983	2,568	0.6447	1,415	0.00	1,415	13.5
2009	15,585.87	14,339	9,244	0.5931	6,342	0.56	6,342	9.5
2012	2,168.42	1,789	1,153	0.5318	1,015	1.23	828	6.5
2013	357,137.69	266,627	171,884	0.4813	185,253	1.77	104,425	5.5
2014	607.76	386	249	0.4091	359	2.56	140	4.5
2015	11,922.91	5,954	3,838	0.3219	8,085	3.50	2,307	3.5
2016	4,765.82	1,702	1,097	0.2302	3,669	4.50	815	2.5
2017	50,029.80	10,721	6,911	0.1381	43,119	5.50	7,840	1.5
2018	224.62	16	10	0.0460	214	6.50	33	0.5
TOTAL	446,426.12	305,517	196,955		249,471		124,145	

COMPOSITE ANNUAL ACCRUAL RATE	27.81%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.44
COMPOSITE AVERAGE AGE (YEARS)	5.18
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	2.21

Gazifere

Account #: 490.01 - Computer Equipment - Post 2005

CALCULATED ANNUAL ACCRUAL AND ACCRUED DEPRECIATION

BASED ON ORIGINAL COST AS OF December 31, 2018

ALG - Remaining Life
Survivor Curve: SQ
ASL: 4
Net Salvage: 0%
Truncation Year:

Year	Original Cost	Calculated Accumulated Depreciation	Allocated Actual Booked Amount	Accumulated Depreciation Factor	Net Book Value	ALG Remaining Life	Annual Accrual	Average Age
2015	86,612.27	75,786	86,612	1.0000	0	0.50	0	3.5
2016	183,138.44	114,462	183,138	1.0000	0	1.50	0	2.5
2017	89,334.54	33,500	89,335	1.0000	0	2.50	0	1.5
2018	50,193.56	6,274	40,773	0.8123	9,421	3.50	2,692	0.5
TOTAL	409,278.81	230,022	399,858		9,421		2,692	

COMPOSITE ANNUAL ACCRUAL RATE	0.66%
THEORETICAL ACCUMULATED DEPRECIATION FACTOR	0.98
COMPOSITE AVERAGE AGE (YEARS)	2.25
DIRECTED WEIGHTED ALG COMPOSITE REMAINING LIFE (YEARS)	1.75

SECTION 9

9 ESTIMATION OF SURVIVOR CURVES

9.1 Average Service Life

All assets have a service life, which is defined as "the period of time from its installation until it is retired from service" [2]. All account groups of property are made up of various assets with differing service lives and investment values. To calculate a depreciation rate, one must first calculate an average life for all assets in a single account. This can be done by ascertaining the age at retirement for every asset in an account and plotting it as a percentage of the units surviving at each age interval (a "Survivor Curve"). From the average life for each account, remaining lives can then be found which are then used to calculate the annual depreciation accruals and ultimately depreciation rate. A discussion of the general concept of survivor curves is presented and the Iowa type survivor curves are reviewed.

9.2 Survivor Curves

A survivor curve is defined as "a graph of the percent of units remaining in service expressed as a function of age" [3]. To calculate the average life of the group, the remaining life expectancy, the probable life and the frequency curve, one must first create a survivor curve. Figure 1 shows a typical 40-R4 smoothed survivor curve as well as the accompanying derived curves. The type 40-R4 refers to the Iowa type curve, whose designation will be explained in further detail in the next section

To calculate the average service life, one must calculate the area under the survivor curve and divide by the percent surviving at age zero. The remaining life is equal to the area under the survivor curve and to the right of the current age, divided by the percent surviving at the current age. In Figure 1, for example, the hatched area to the right of age 45 divided by 28.9 percent surviving balance represents the remaining life for an asset that has reached that age. The probable life is "the total life expectancy of the property surviving at any age and is equal to the remaining life plus the current age." [4] 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 is calculated by taking the difference between the percent surviving on successive years on the survivor curve[5]. Alternatively, frequency can be empirically determined by finding the amount of retirements at any given age. Plotting retirement frequency from the youngest to oldest ages and then taking the cumulative frequencies will generate percent surviving versus age.

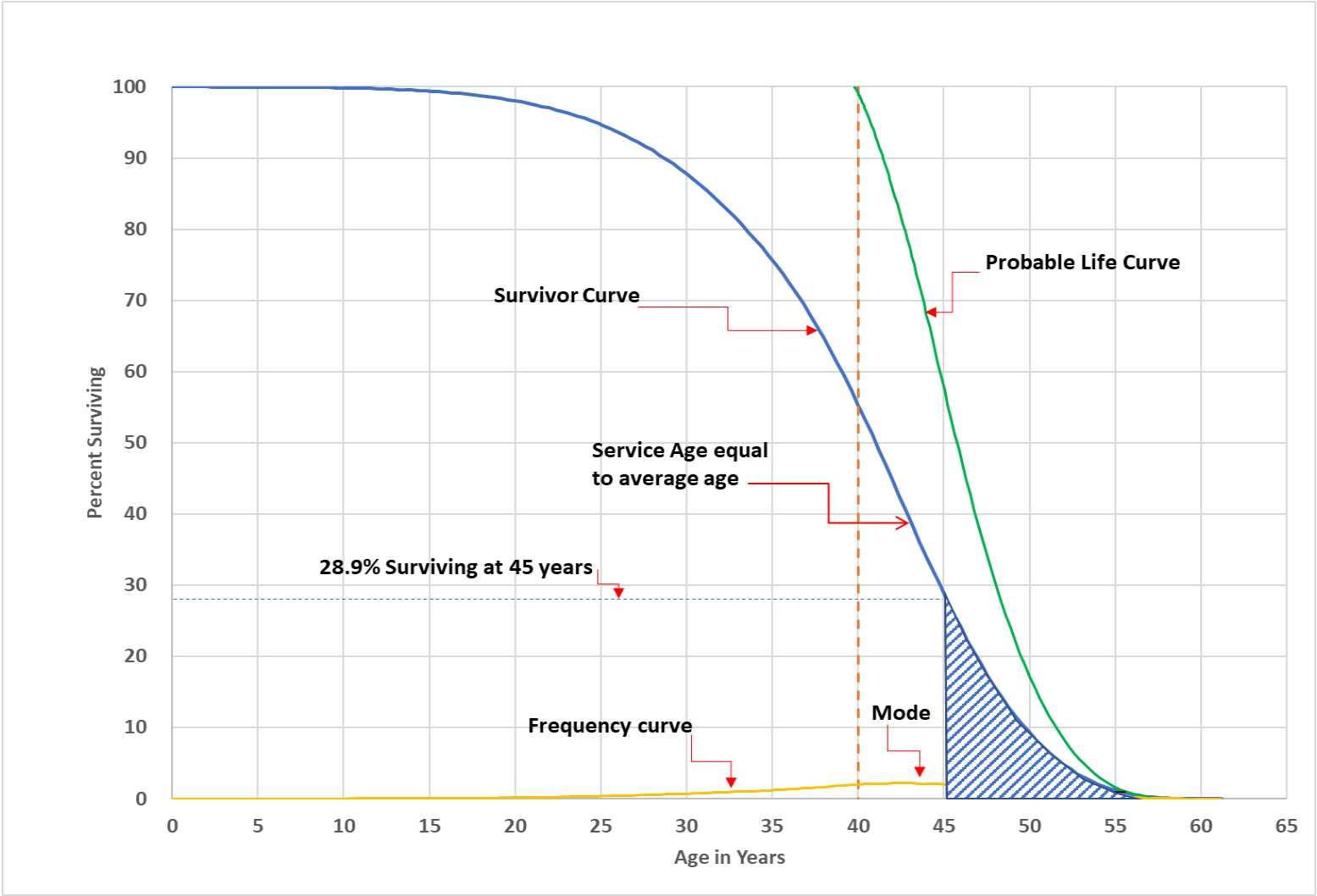
[2] Wolf, Frank K. and W. Chester Fitch, Depreciation Systems (Iowa State University Press, 1994), 21.

[3] *Ibid*, 23.

[4] *Ibid*, 29.

[5] *Ibid*, 23-24.

Figure 1: Typical Survivor Curve (40-R4) and Derived Curves



9.3 Iowa Type Curves

In 1931, Robley Winfrey and Edwin Kurtz of the Engineering Research Institute at Iowa State University published Bulletin 103, which laid the groundwork for what would eventually be known as the Iowa Curves. "The 13 type curves can be used as valuable aids in forecasting the probable future service lives of individual items and of groups of items of different kinds of physical equipment" [6]. The 13 curves described in Bulletin 103 eventually became a series of 22 generalized survivor curves which are used throughout the regulated utility industry. These 22 curves were described in Bulletin 125, published in 1967 by Harold A. Cowles, which became known as the Iowa curves.

The Iowa curves are organized with three variables: the average life of the plant; the location of the mode; and the variation of the life. All Iowa curves have both a letter and a number to represent the shape and height of the mode. The L curves, or left-moded curves, are used when the mode of the curve should be to the left of the average life. There are six L curves are presented in Figure 2. The R curves, or right-moded, are used when the mode of the curve should be to the right of the average life. There are five R curves, which are presented in Figure 3. The S curves, or symmetrically-moded, are used when the mode is equal to the average life. There are seven S curves, which are presented in Figure 4. The O curves, or origin curves, are used when the mode occurs at age 0. There are four O curves, which are presented in Figure 5. There are some occasions where it is appropriate to use a half curve. In these cases, the curve is assumed to be exactly half way between the two curves.

In addition to Bulletin 125, Iowa curves have also been presented in subsequent Experiment Station bulletins and in the text Engineering Valuation and Depreciation[7]. In 1957, Frank V. B. Couch, Jr., an Iowa State College graduate student, submitted a thesis[8] presenting his development of the fourth family consisting of the four O-type survivor curves.

[6] *Ibid*, 21

[7] Marston, Anson, Robley Winfrey and Jean C. Hempstead, Engineering Valuation and Depreciation (The Iowa State University Press, 1953)

[8] Couch, Frank V. B., Jr., Classification of Type O Retirement Characteristics of Industrial Property Unpublished M.S. Thesis (Engineering Valuation, Library, Iowa State College, Ames, Iowa, 1957)

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

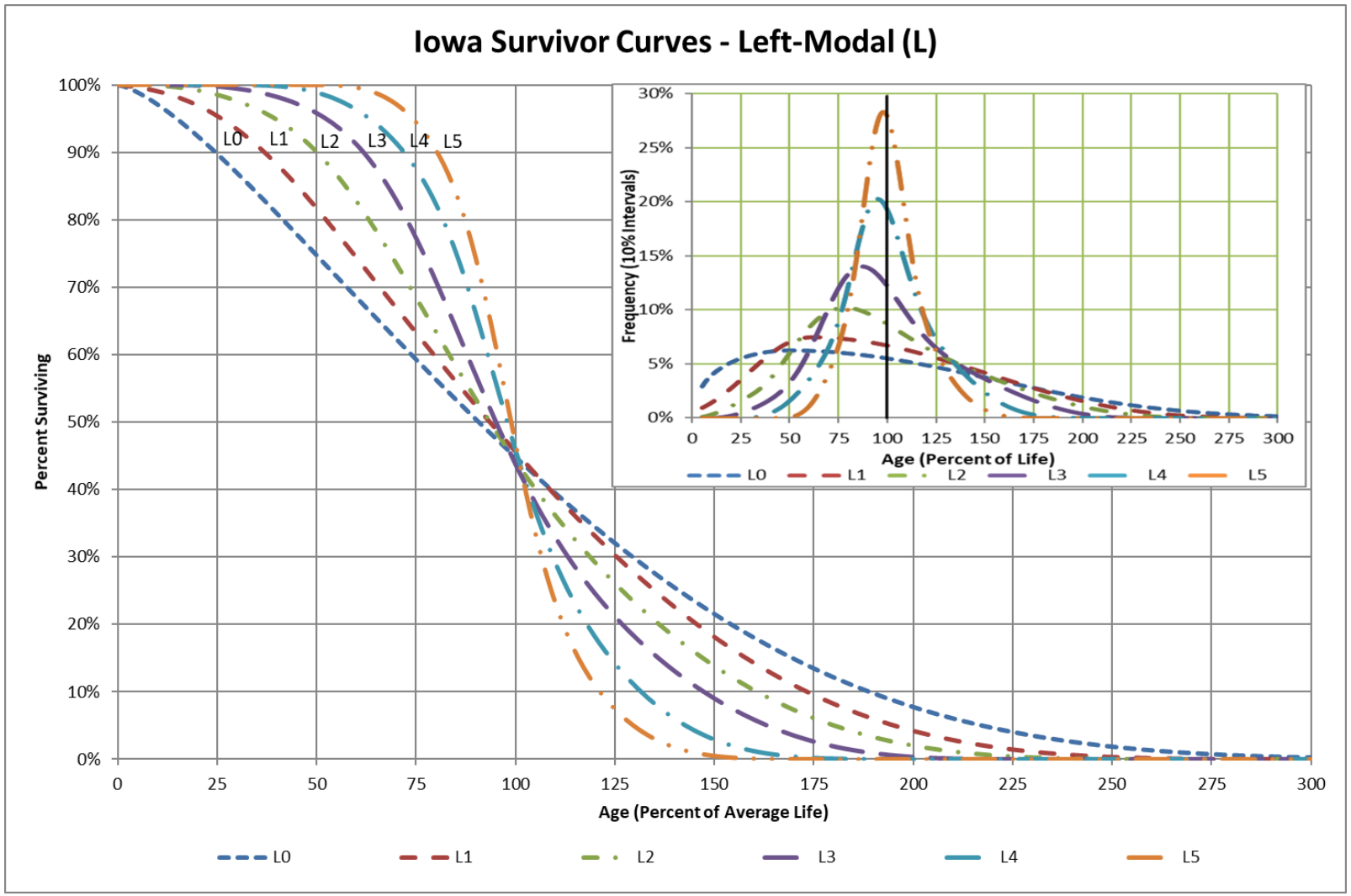


Figure 3: Right Modal or "R" Iowa Type Survivor Curves

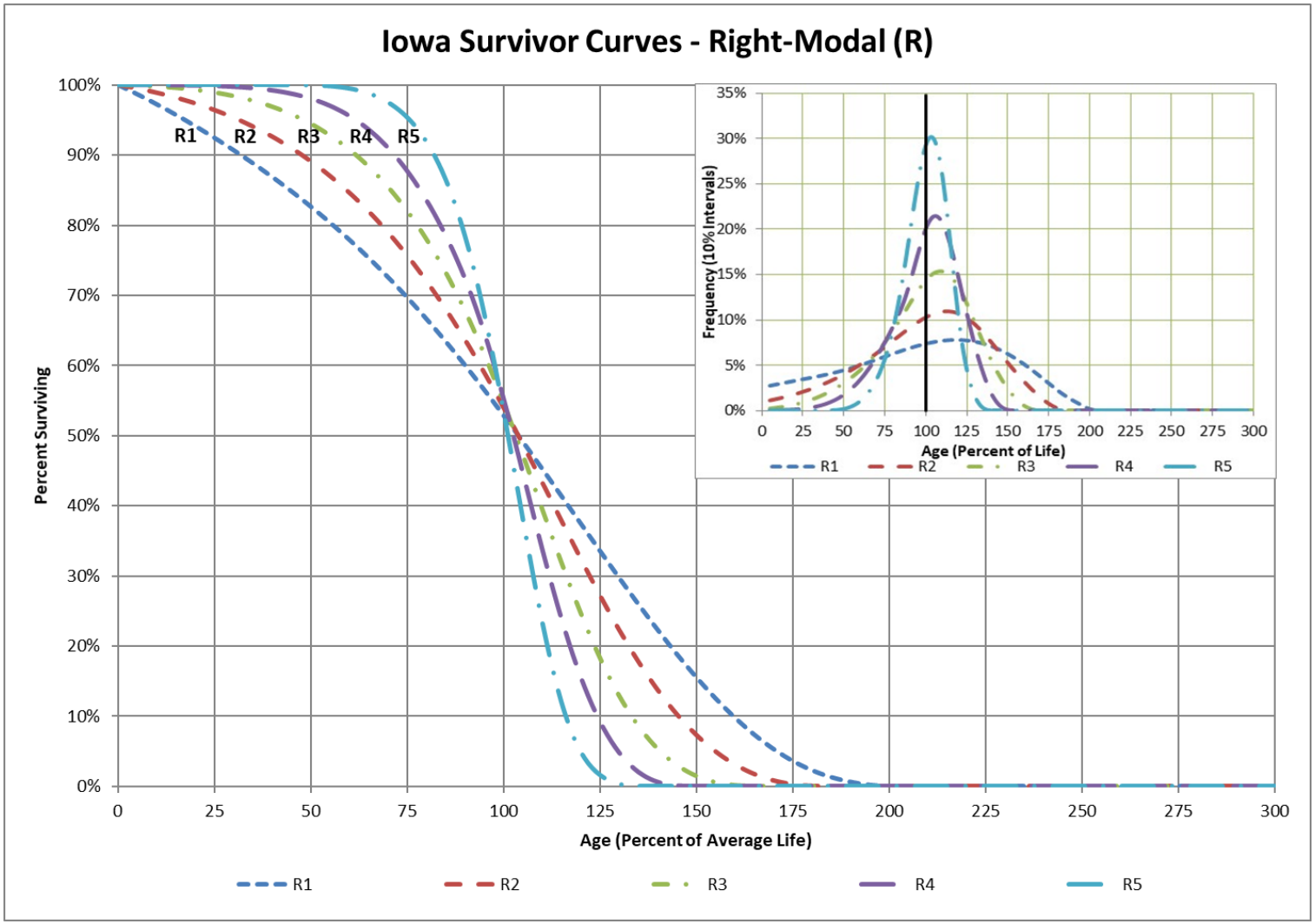


Figure 4: Symmetrical or "S" Iowa Type Survivor Curves

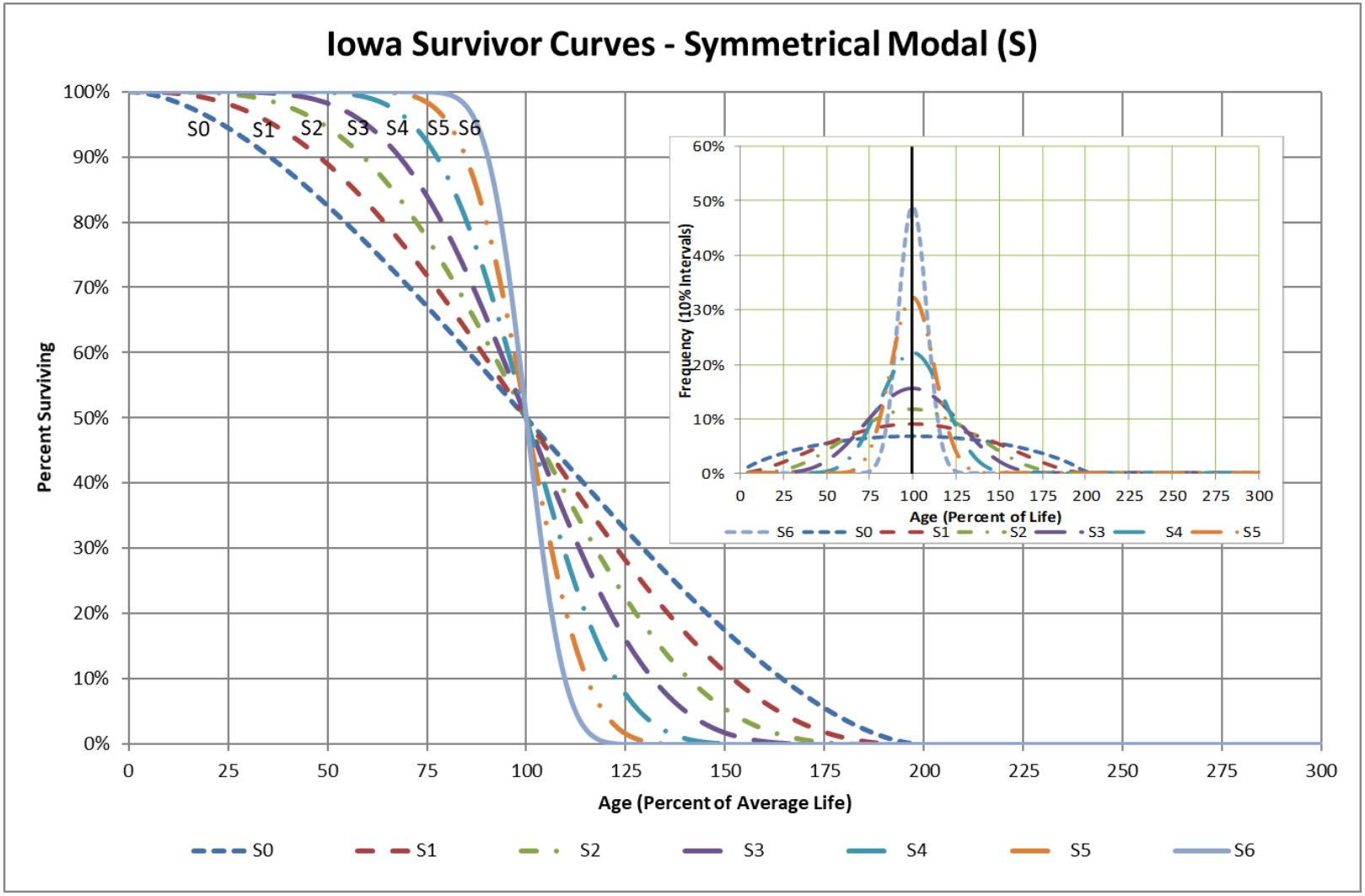
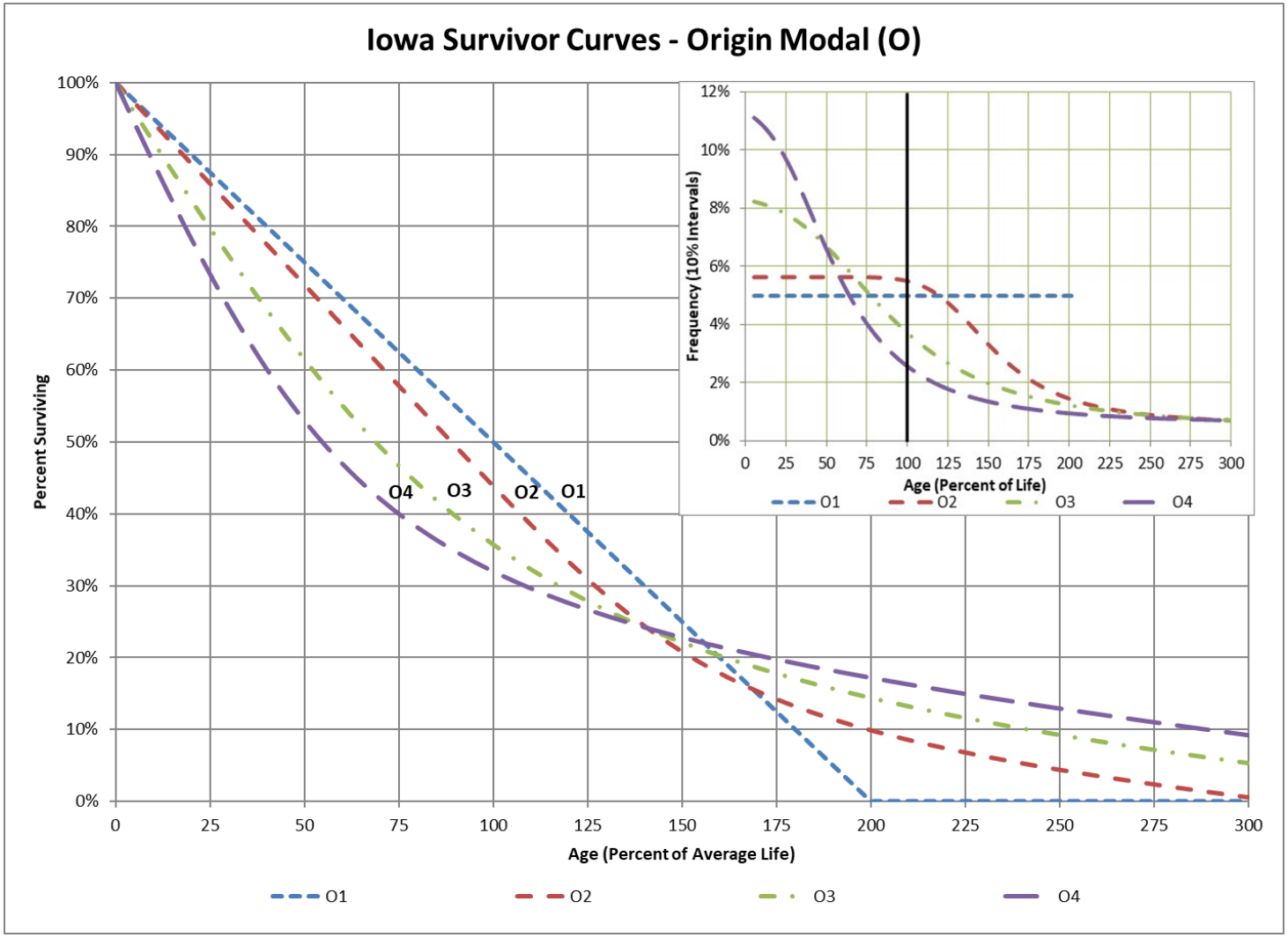


Figure 5: Origin Modal or "O" Iowa Type Survivor Curves



9.4 Retirement Rate Method of Analysis

The retirement rate method is a widely accepted actuarial method used to create survivor curves. This method is also referred to as an original life table. These survivor curves can then be used to determine the average service life of a plant account. The retirement rate method is thoroughly explained in several publications, including Statistical Analyses of Industrial Property Retirements, [9] Engineering Valuation and Depreciation [10] and Depreciation Systems. [11]

The retirement rate method is a subgroup of the placement and the experience band methods, as described in "Depreciation Systems". The placement band method creates a survivor curve which describes the life characteristics of assets placed into service during a selected timeframe. The experience band method creates a survivor curve which describes the life characteristics of assets removed from service during a selected time frame. The retirement rate method creates both placement and experience bands to give the most complete or representative data. 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.

9.5 Schedules of Annual Transactions in Plant Records

The property group used to illustrate the retirement rate method is observed for the experience band 2008-2017 during which there were placements during the years 2003-2017. In order to illustrate the summation of the aged data by age interval, the data was compiled in the manner presented in Schedules 1 and 2. In Schedule 1 (page 9-10), 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 asset invested in 2003 were retired in 2008. The $10,000 retirement occurred during the age interval between 4 ½ and 5 ½ years (2008 - 2003) on the basis that approximately one-half of the amount of property was installed prior to and after 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 2008 retirements of 2003 installations and ending with the 2016 retirements of the 2011 installations. Thus, the total amount of $143,000 for age interval 4½-5½ equals the sum of:

$$\$10 + \$12 + \$13 + \$11 + \$13 + \$13 + \$15 + \$17 + \$19 + \$20 = \$143\ k$$

[9] Anson, Winfrey & Hempstead, supra note 6

[10] Anson, Winfrey & Hempstead, supra note 6

[11] Wolf & Fitch, supra note 1

Other transactions which affect the group are recorded in a similar manner in Schedule 2 (page 9-11). 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 1. Retirements for each year 2008-2017 – summarized by age interval

Experience Band 2008-2017 Placement Band 2003-2017

Retirements (Thousands of Dollars)
Annual Survivors at the Beginning of the Year

Year Placed	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total Durring Age Interval	Age Interval
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2003	10	11	12	13	14	16	23	24	25	26	26	13½-14½
2004	11	12	13	15	16	18	20	21	22	19	44	12½-13½
2005	11	12	13	14	16	17	19	21	22	18	64	11½-12½
2006	8	9	10	11	11	13	14	15	16	17	83	10½-11½
2007	9	10	11	12	13	14	16	17	19	20	93	9½-10½
2008	4	9	10	11	12	13	14	15	16	20	105	8½-9½
2009		5	11	12	13	14	15	16	18	20	113	7½-8½
2010			6	12	13	15	16	17	19	19	124	6½-7½
2011				6	13	15	16	17	19	19	131	5½-6½
2012					7	14	16	17	19	20	143	4½-5½
2013						8	18	20	22	23	146	3½-4½
2014							9	20	22	25	150	2½-3½
2015								11	23	25	151	1½-2½
2016									11	24	153	½-1½
2017										13	80	0-½
Total	**53**	**68**	**86**	**106**	**128**	**157**	**196**	**231**	**273**	**308**	**1,606**	

Schedule 2. Other Transactions for Each year 2008-2017 – summarized by age interval

Experience Band 2008-2017 Placement Band 2003-2017

Acquisitions, Transfers and Sales (Thousands of Dollars)
Annual Survivors at the Beginning of the Year

Year Placed (1)	2008 (2)	2009 (3)	2010 (4)	2011 (5)	2012 (6)	2013 (7)	2014 (8)	2015 (9)	2016 (10)	2017 (11)	Total Durring Age Interval (12)	Age Interval (13)
2003	-	-	-	-	-	-	60[a]	-	-	-	-	13½-14½
2004	-	-	-	-	-	-	-	-	-	-	-	12½-13½
2005	-	-	-	-	-	-	-	-	-	-	-	11½-12½
2006	-	-	-	-	-	-	-	(5)[b]	-	-	60	10½-11½
2007	-	-	-	-	-	-	-	6[a]	-	-	-	9½-10½
2008	-	-	-	-	-	-	-	-	-	-	(5)	8½-9½
2009		-	-	-	-	-	-	-	-	-	-	7½-8½
2010			-	-	-	-	-	-	-	-	-	6½-7½
2011				-	-	-	-	(12)[b]	-	-	-	5½-6½
2012					-	-	-	-	22[a]	-	-	4½-5½
2013						-	-	(19)[b]	-	-	10	3½-4½
2014							-	-	-	-	-	2½-3½
2015								-	-	(102)[c]	(121)	1½-2½
2016									-	-	-	½-1½
2017												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.

9.6 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 (page 9-13). The surviving plant at the beginning of each year from 2007 through 2016 is recorded by year in the portion of the table titled "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 2013 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 2008-2018, the total exposures at the beginning of an age interval are obtained by summing diagonally in a manner similar to the summing 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 = $3,789k

Schedule 3 – Plant exposed to retirement at the beginning of each year, 2008 -2017 – summarized by age interval

Experience Band 2008 - 2017 Placement Band 2003-2017

Exposures (Thousands of Dollars)
Annual Survivors at the Beginning of the Year

Year Placed (1)	2008 (2)	2009 (3)	2010 (4)	2011 (5)	2012 (6)	2013 (7)	2014 (8)	2015 (9)	2016 (10)	2017 (11)	Total at Beginning of Age Interval (12)	Age Interval (13)
2003	255	245	234	222	209	195	239	216	192	167	167	13½-14½
2004	279	268	256	243	228	212	194	174	153	131	323	12½-13½
2005	307	296	284	271	257	241	224	205	184	162	531	11½-12½
2006	338	330	321	311	300	289	276	262	242	226	823	10½-11½
2007	376	367	257	346	334	321	307	267	280	261	1,097	9½-10½
2008	420[a]	416	407	397	386	374	361	347	332	316	1,503	8½-9½
2009		460[a]	455	444	432	419	405	390	374	356	1,952	7½-8½
2010			510[a]	504	492	479	464	448	431	412	2,463	6½-7½
2011				580[a]	574	561	546	530	501	482	3,057	5½-6½
2012					660[a]	653	639	623	628	609	3,789	4½-5½
2013						750[a]	742	724	685	663	4,332	3½-4½
2014							850[a]	841	821	799	4,955	2½-3½
2015								960[a]	949	923	5,719	1½-2½
2016									1,080[a]	1,069	6,579	½-1½
2017										1,220[a]	7,490	0-½
Total	**1,975**	**2,382**	**2,724**	**3,318**	**3,872**	**4,494**	**5,247**	**5,987**	**6,852**	**7,796**	**44,780**	

[a] *Additions during the year.*

1555	1922	2214	2738	3212	3744	4397	5027	5772	6576	44780
420	460	510	580	660	750	850	960	1080	1220	0
1975	2382	2724	3318	3872	4494	5247	5987	6852	7796	44780

9.7 Original Life Tables

The original life table, illustrated in Schedule 4 (page 9-15) 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 percent 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 2008-2017					Placement Band 2003-2017
Age at Beginning of Interval	**Exposures at Beginning of Age Interval**	**Retirements During Age Interval**	**Retirement Ratio**	**Survivor Ratio**	**% Surviving at Beginning of Age Interval**
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	55.6
12.5	323	44	0.1362	0.8638	48.9
13.5	167	26	0.1557	0.8443	42.24
					35.66
Total	**44,780**	**1,606**			

- Exposure and Retirement Amounts are in Thousands of Dollars
- 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.

9.8 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 percent 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 percentages 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.

Figure 6: Illustration of the Matching of an Original Survivor Curve with a L1 Iowa Type Curve Original and Smooth Survivor Curves

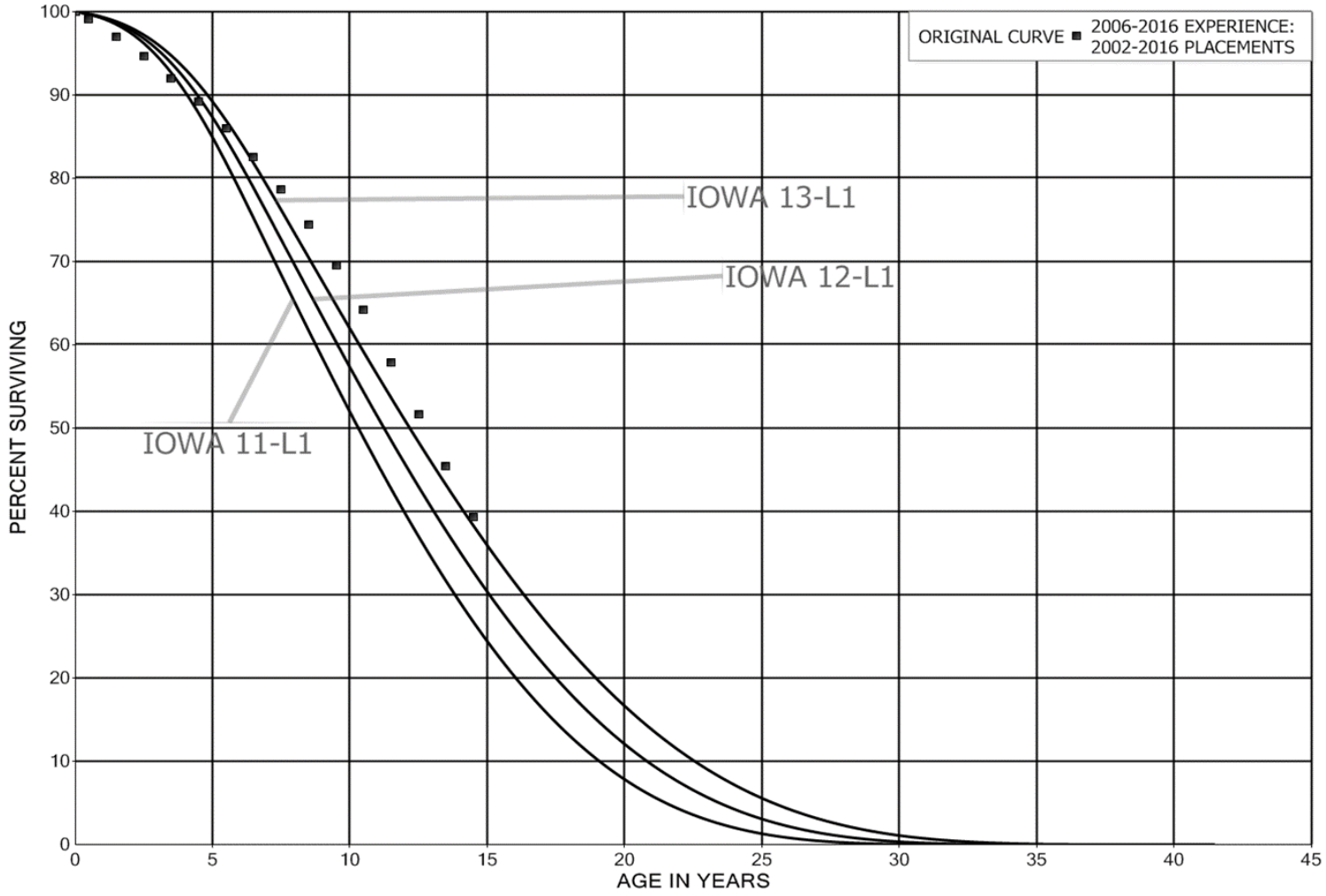


Figure 7: Illustration of the Matching of an Original Survivor Curve with a SO Iowa Type Curve Original and Smooth Survivor Curves

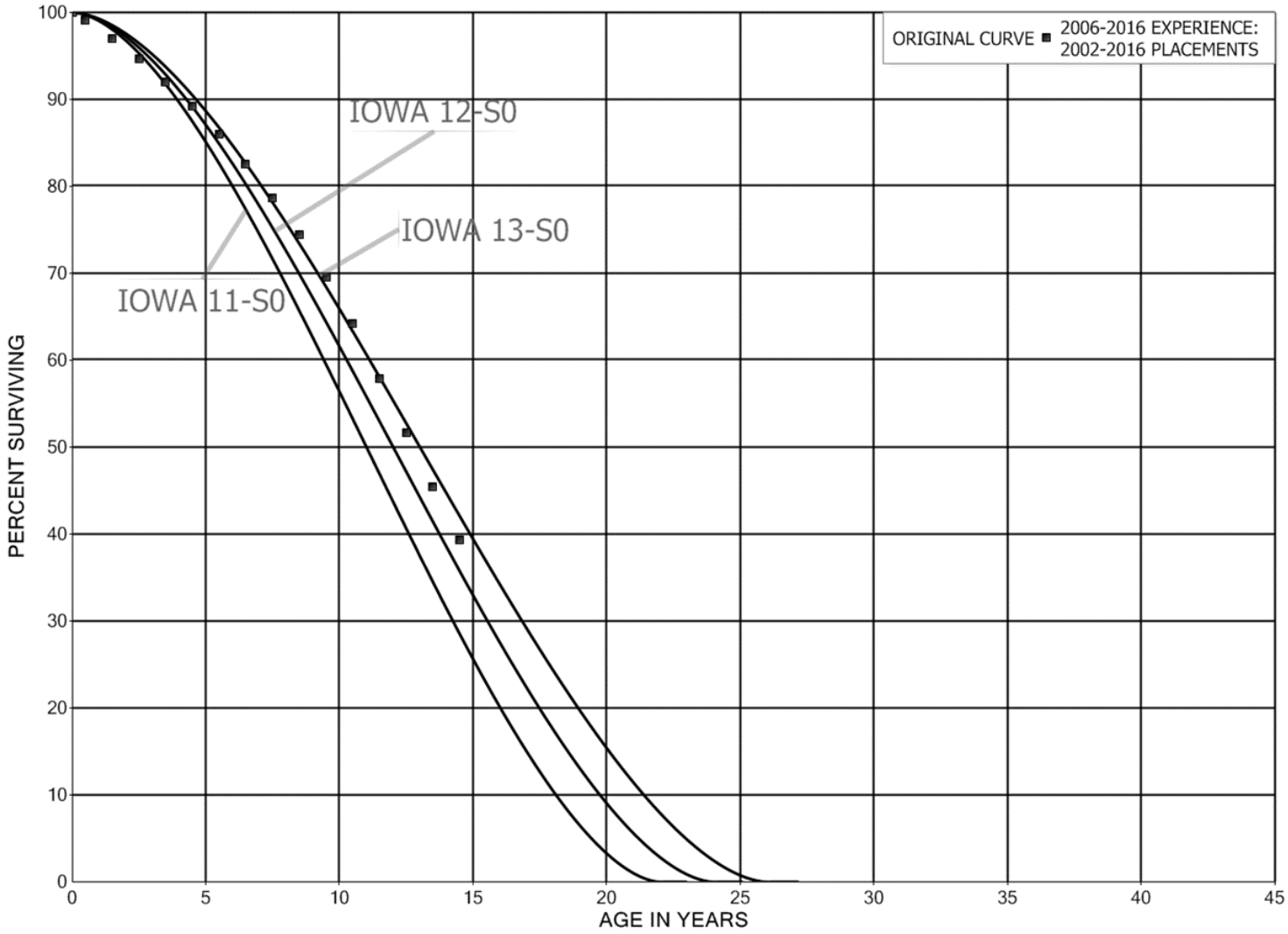


Figure 8: Illustration of the Matching of an Original Survivor Curve with a R1 Iowa Type Curve Original and Smooth Survivor Curves

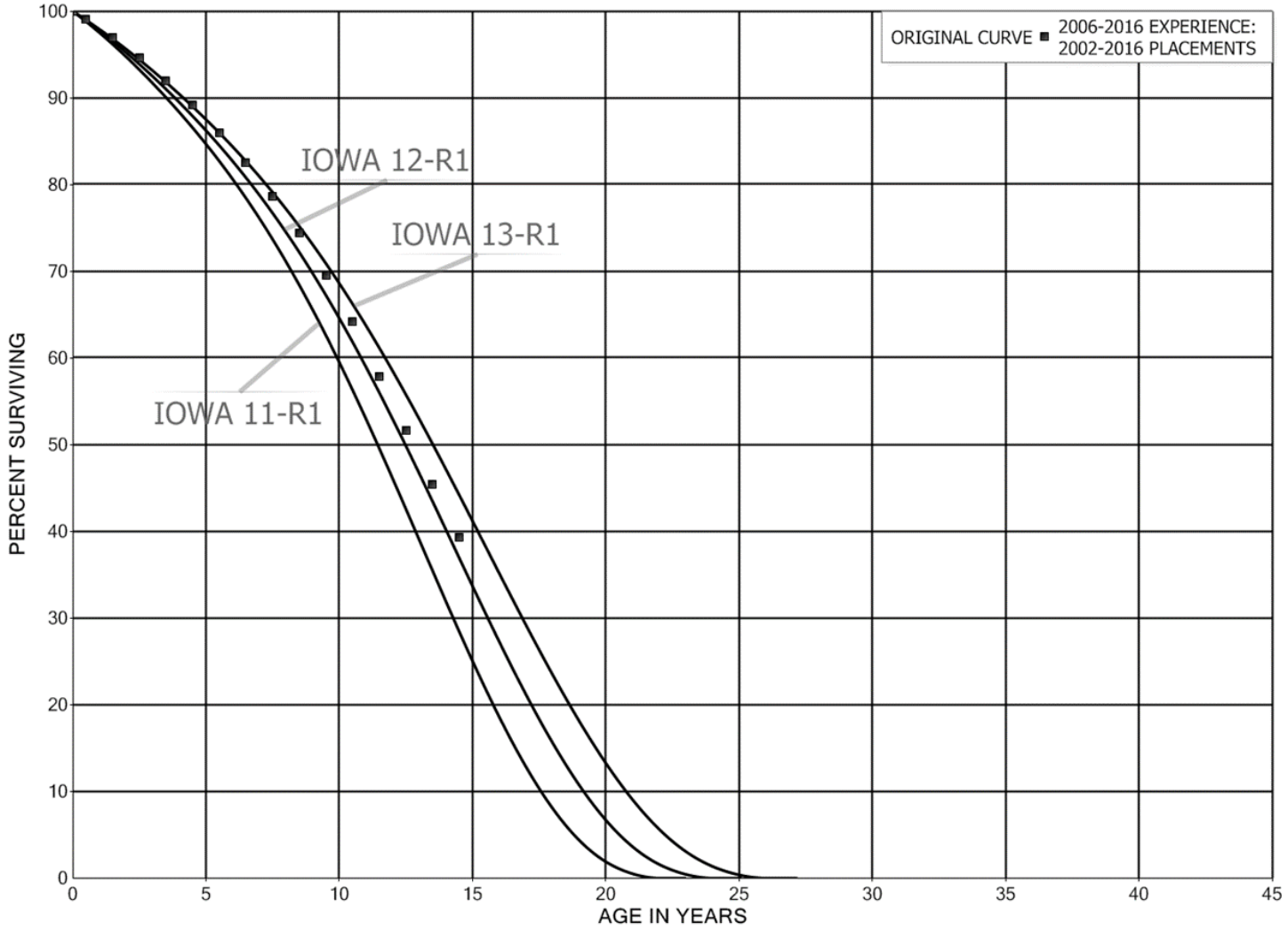
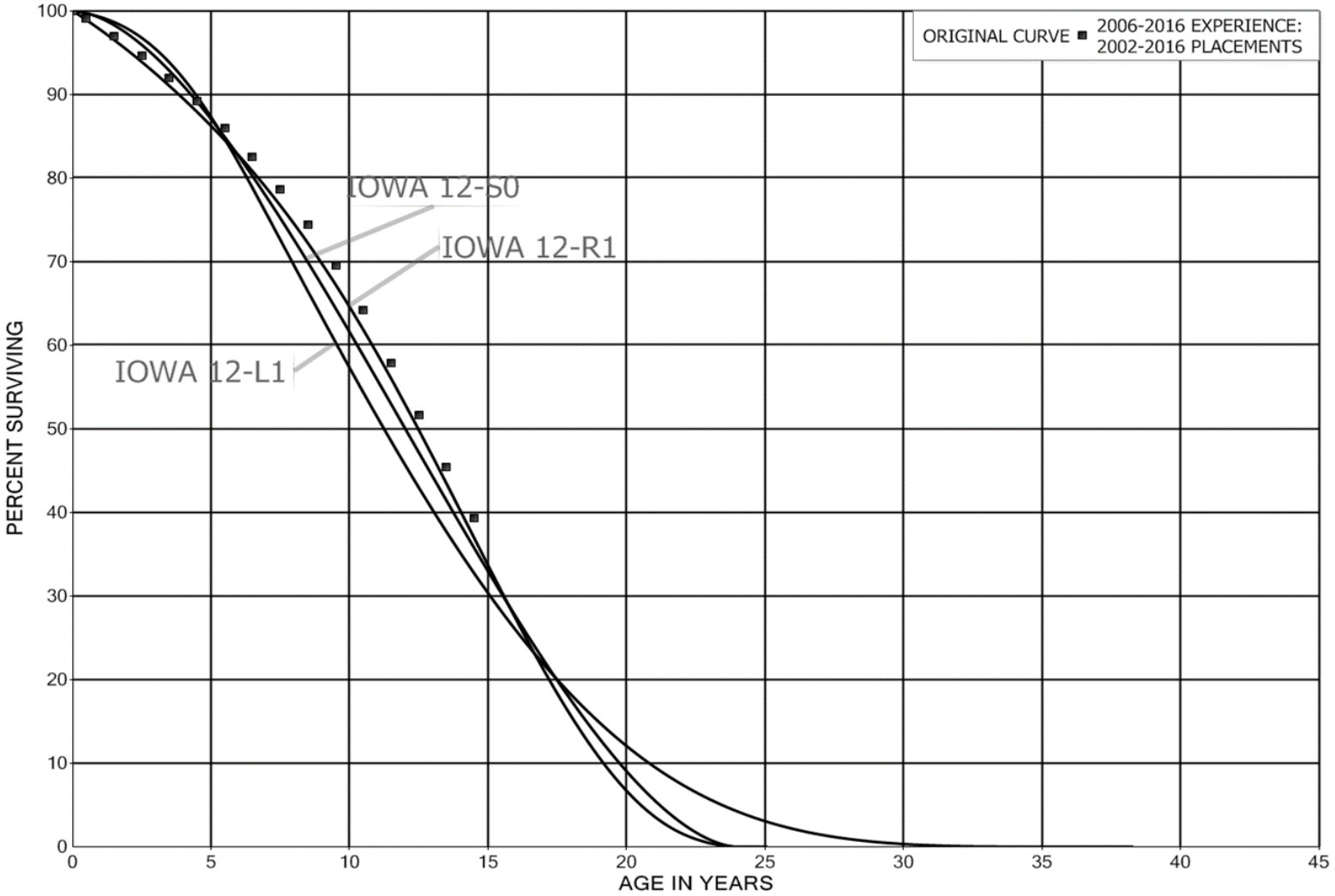


Figure 9: Illustration of the Matching of an Original Survivor Curve with a L1 Iowa Type Curve Original and Smooth Survivor Curves



SECTION 10

10 ESTIMATION OF NET SALVAGE

The estimates of net salvage were based primarily on the professional judgment of Concentric, based in part on historical data, and in part through a comparison to peer companies. The analysis of historic net salvage activity considered gross salvage and cost of removal as recorded to the depreciation reserve account Net salvages as a percentage of the cost of plant retired are calculated for each plant component on both annual and three-year moving average bases.

The net salvage percentages estimated is usually determined using the "Traditional Approach" for net salvage estimation. When a utility retires plant, the plant may be: (1) sold to a third party; (2) reused by the utility for additional service; (3) abandoned in place; or (4) physically removed. In the circumstances where the plant is sold or re-used, a salvage proceeds (or positive salvage amount) is normally recognized. In circumstances where the plant is abandoned in place or physically removed, a cost of removal expenditure (or negative salvage) is incurred. The net of these estimated gross salvage proceeds and the estimated costs of removal are expressed as a percentage of the account's original cost to determine a net salvage percentage. In the circumstances where the salvage proceeds exceed the costs of retirement, a net positive salvage percentage exists. In the circumstances where the costs of removal exceed the salvage proceeds, a net negative salvage as a percentage of the original cost is the result.

The estimation of the net salvage as a percentage of original cost as developed using the traditional approach, includes the following five steps.

1. The annual retirement, gross salvage and cost of removal transactions for the period of analysis is extracted from the plant accounting systems.
2. A net salvage amount (gross salvage proceeds less cost of retirement) is calculated for each historic year. Additionally, a net salvage amount is also calculated for each historic three-year rolling band and the most recent five-year rolling band.
3. The net salvage amount determined above is compared to the original booked costs retired for each period in the manner described, which results in a net salvage percentage of original costs retired for each year, in addition to three-year rolling bands and the most recent five-year rolling band. The annual, the three-year rolling average, and the most recent five-year rolling average net salvage percentages are analyzed to determine a reasonable estimated net salvage percentage. At this point the net salvage percentage is based purely upon statistical analysis.
4. Each account is then compared to the net salvage percentage currently approved, compared to peer companies, and discussed with company engineering staff. Based on the statistical analysis, the review of current and peer company net salvage percentages, and with the professional judgment of Concentric, a net salvage percentage is determined for each account.
5. The net salvage percentage is then used in the depreciation rate calculations in the technical update or report.