

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY OF MICHAEL J. MAJORAS  
DOCKET NUMBER 010949-EI

DECEMBER 27, 2001

Respectfully submitted,

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**GULF POWER COMPANY  
BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION  
PREPARED DIRECT  
TESTIMONY OF MICHAEL J. MAJOROS. JR.  
DOCKET NO. 010949-EL**

1 **INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

3 A. My name is Michael J. Majoros, Jr. I am Vice President of the economic consulting firm  
4 of Snavely King Majoros O'Connor & Lee, Inc. ("Snavely King"). My business address  
5 is 1220 L Street, N.W., Suite 410, Washington, D.C. 20005.

6 **Q. PLEASE DESCRIBE SNAVELY KING.**

7 A. Snavely King was originally founded in 1970 to conduct research on a consulting basis  
8 into the rates, revenues, costs and economic performance of regulated firms and  
9 industries. The firm has a professional staff of 10 economists, accountants, engineers and  
10 cost analysts. Most of the firm's work involves the development, preparation and  
11 presentation of expert witness testimony before Federal and State regulatory agencies.  
12 Over the course of the firm's 31-year history, its members have participated in over 500  
13 proceedings before almost all of the state commissions and Federal commissions that  
14 regulate utilities, telecommunications companies and transportation industries.

15 **Q. HAVE YOU PREPARED A SUMMARY OF YOUR QUALIFICATIONS AND  
16 EXPERIENCE?**

17 A. Yes. Appendix A is a summary of my qualifications and experience. It also contains a  
18 tabulation of my appearances as an expert witness before state and Federal regulatory  
19 agencies.

20 **Q. FOR WHOM ARE YOU APPEARING IN THIS PROCEEDING?**

1 A. I am appearing on behalf of the Florida Office of Public Counsel (“OPC”).

2 **Q. WHAT IS THE SUBJECT OF YOUR TESTIMONY?**

3 A. Depreciation is the subject of my testimony.

4 **Q. DO YOU HAVE ANY SPECIFIC EXPERIENCE IN THE FIELD OF PUBLIC**  
5 **UTILITY DEPRECIATION?**

6 A. Yes. I and other members of my firm are specialists in the field of public utility  
7 depreciation. We have appeared as expert witnesses on depreciation before the  
8 regulatory commission of almost every state in the country. I have testified in over 80  
9 proceedings on the subject of public utility depreciation and represented various clients in  
10 several other proceedings in which depreciation was an issue but was settled. I have also  
11 negotiated on behalf of clients in several of the Federal Communications Commissions’  
12 (“FCC”) Triennial Depreciation Represcription conferences.

13 **Q. HAVE YOU EVER APPEARED BEFORE THE FLORIDA PUBLIC SERVICE**  
14 **COMMISSION (“FPC”)?**

15 A. Yes. In the late 1980’s and early 1990’s I appeared on behalf of the OPC and more  
16 recently I appeared on behalf of AT&T and MCI. All of those prior appearances  
17 addressed telephone depreciation rates.

18 **Q. DOES YOUR EXPERIENCE SPECIFICALLY INCLUDE ELECTRIC**  
19 **COMPANY DEPRECIATION?**

20 A. Yes. I have testified in twenty proceedings on the subject of electric company  
21 depreciation, and I have prepared testimony in six electric proceedings in which  
22 depreciation was ultimately settled.

1 **OBJECTIVE OF TESTIMONY**

2 **Q. WHAT IS THE OBJECTIVE OF YOUR TESTIMONY?**

3 A. OPC requested that I review the reasonableness of Gulf Power Company's ("GPC")  
4 proposal to reduce the depreciable life for its Smith Unit 3 from 30 to 20 years. I will  
5 also provide my observations concerning certain elements in GPC's May 29, 2001  
6 depreciation study.

7 **SMITH UNIT 3 LIFE CHANGE**

8 **Q. PLEASE EXPLAIN GPC'S SMITH UNIT 3 LIFE CHANGE.**

9 A. Gulf Power is constructing a new 574-megawatt (MW) combined cycle unit at Plant  
10 Smith. Smith Unit 3 is expected to begin commercial operation on or before June 1,  
11 2002.<sup>1</sup> Mr. Labrato, GPC's Chief Financial Officer and Comptroller, presents GPC's  
12 financial forecast which is the basis of the projected data for the test period which in turn  
13 results in a revenue deficiency.<sup>2</sup> The revenue deficiency is driven primarily by the  
14 commencement of service by Smith Unit 3.

15 Mr. Labrato's Schedule 4 is the projected Income Statement for the Twelve  
16 Months ended May 31, 2003.<sup>3</sup> The totals from Schedule 4 are carried forward to Mr.  
17 Labrato's Schedule 8 which is his Summary of Net Operating Income for the Twelve  
18 Months ended Many 31, 2003. Mr. Labrato then posts adjustments to the projected  
19 figures. Adjustments 17 and 20 were made to reflect the Company's proposed  
20 depreciation rates and dismantlement accruals which were filed on May 29, 2001 in

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<sup>1</sup> Direct Testimony of Ronnie R. Labrato, Docket No. 010949-EL ("Labrato"), p. 4.

<sup>2</sup> Id., p. 2-3.

<sup>3</sup> Id., p. 11.

1 Docket No. 010789-EL.<sup>4</sup> According to Schedule 8 these adjustments would increase  
2 jurisdictional depreciation by \$795,000.<sup>5</sup>

3 The May 29, 2001 depreciation study proposed rates based on December 31, 2001  
4 balances, and therefore did not include Smith Unit 3 which is expected to go in-service in  
5 the Spring of 2002.<sup>6</sup> According to Mr. Labrato, the original forecasted depreciation  
6 expense for Smith Unit 3, included as part of his Schedule 4, was calculated using a 30-  
7 year depreciable life for Smith Unit 3.<sup>7</sup>

8 GPC now proposes to change the life from 30 to 20 years, thus increasing  
9 depreciation expense and the revenue deficiency. Subsequent to the development of its  
10 original financial forecast GPC requested an opinion from Deloitte & Touche, the firm  
11 that conducted the May 29, 2001 depreciation study. Deloitte & Touche recommended a  
12 20-year average service life.<sup>8</sup> Mr. Labrato's adjustment 21 reduces NOI consistent with  
13 Deloitte & Touche's recommendation.<sup>9</sup> This adjustment increases jurisdictional  
14 depreciation expense by \$3,383,000.<sup>10</sup>

15 **Q. WHAT WAS THE BASIS FOR THE ORIGINAL 30-YEAR LIFE MR. LABRATO**  
16 **USED FOR SMITH UNIT 3?**

17 A. Exhibit\_\_\_(MJM-1) is Mr. Labrato's response to Citizens 1-16 which states that "Mr.  
18 Labrato chose an estimated depreciable life of 30 years for Smith Unit 3 based on

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<sup>4</sup> Id., p. 19.

<sup>5</sup> Labrato Schedule 8, page 3.

<sup>6</sup> Labrato, p. 20.

<sup>7</sup> Id.

<sup>8</sup> Id.

<sup>9</sup> Id.

<sup>10</sup> Labrato Schedule 8, page 3.

1 estimated average service lives of other combined cycle projects within Southern  
2 Company.”<sup>11</sup>

3 **Q. HOW DOES THIS 30-YEAR AVERAGE LIFE COMPARE TO THE AVERAGE**  
4 **LIVES GPC USES FOR THE OTHER UNITS AT PLANT SMITH?**

5 A. Exhibit\_\_\_(MJM-2) is a two page exhibit taken from GPC’s May 29, 2001 depreciation  
6 study. These two pages summarize the Deloitte & Touche’s recommendations relating to  
7 the two steam units and the existing combustion turbine at Plant Smith.

8 Deloitte & Touche used the life-span method to calculate the depreciation rates.  
9 The life-span method is a procedure to calculate an average service life or average  
10 remaining life based on an assumed overall life span of a unit. A life span is the period  
11 between the commencement in service and final retirement of the unit. These life spans  
12 are then weighted for piece part interim retirements to calculate average service lives or  
13 average remaining lives.

14 Deloitte & Touche used 50-year life spans for the Plant Smith Steam Units 1 and  
15 2 to calculate an overall 29-year average service life. The significant difference between  
16 the 50-year life spans and the 29-year average service life results from the assumption of  
17 a substantial amount of interim retirements in the future.

18 Deloitte & Touche assumed a 35-year life span for the existing combustion  
19 turbine unit at Plant Smith. This unit is included in the “Other Production” function  
20 (account nos. 340-346) on GPC’s books.<sup>12</sup> Deloitte & Touche calculated a 30-year  
21 average service life based on the 35-year life span and assumed interim retirements for

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<sup>11</sup> Labrato Response to Citizens’ First Set of Interrogatories, Item No. 16 (“Citizens’ 1-16’),  
attached as Exhibit\_\_\_(MJM-1).

<sup>12</sup> Smith Unit 3 will also be recorded in Other Production function.

1 the combustion turbine. Hence, it is quite possible that Mr. Labrato was also aware of  
2 this 30-year average service when he originally prepared his Schedule No. 4 which  
3 included Smith Unit 3 depreciation expense based on a 30-year average service life.

4 **Q. IS THERE OTHER EVIDENCE AVAILABLE RELATING TO THE SMITH**  
5 **UNIT 3 LIFE?**

6 **Confidential Information Follows**

7 THIS INFORMATION IS DEEMED CONFIDENTIAL BY GULF POWER COMPANY.

16 **End of Confidential Information**

17 **Q. What is an economic life?**

1 A. The conventional NARUC definition of economic life is the “total revenue producing life  
2 of an asset.”<sup>13</sup> This definition would also suggest an average life of 30 to 40 years for  
3 Smith Unit 3, given the Design Life information described above. Smith Unit 3 is  
4 designed to last from 30 to 40 years and presumably will produce revenue throughout  
5 those years.

6 **Q. AT THE BOTTOM OF HIS RESPONSE TO CITIZEN’S 1-16, MR. LABRATO**  
7 **STATES “HOWEVER, CONSIDERING THE FACT THAT COMBINED CYCLE**  
8 **UNITS ARE RELATIVELY NEW TECHNOLOGY AND THAT PERIODIC**  
9 **MAINTENANCE AND CAPITAL ADDITIONS ARE EXPECTED, THERE WILL**  
10 **BE INTERIM RETIREMENTS INDICATING A SHORTER AVERAGE LIFE.”**  
11 **DO YOU AGREE?**

12 A. No. Since, the 30-year life is an average life, interim retirements are already assumed in  
13 the 30-year life, just as Deloitte & Touche’s 30-year life for the Other Production  
14 Function.

15 **Q. WHAT DO YOU CONCLUDE?**

16 A. I conclude that all available evidence within the Company supports a 30-year average  
17 service life for Smith Unit 3.<sup>14</sup> I also conclude that this is a minimum average service  
18 life. The Company’s own design criteria suggests that an longer life could be used.

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<sup>13</sup> National Association of Regulatory Public Utility Commissioner’s, Public Utility Depreciation Practices, August 1996 (“NARUC Manual”) p. 318.

<sup>14</sup> For example, a 30-year average service life would assume a fairly long life-span, say 45-55 years, with a substantial amount of interim retirements.



1 **NATIONAL LIFE STUDIES**

2 **Q. DO YOU HAVE ANY EMPIRICAL STUDIES FROM WHICH WE MAY DRAW**  
3 **INFERENCES CONCERNING THE REASONABLENESS OF GPC's 20-YEAR**  
4 **LIFE?**

5 A. Yes. Exhibit\_\_\_(MJM-4) is my firm's National Study of U.S. Steam Generating Unit  
6 lives – 50 MW and Greater (“National Study”). This study uses analytical techniques  
7 generally accepted in the utility industry and a data base maintained by the U.S.  
8 Department of Energy.<sup>15</sup> The study concludes that U. S. Steam Generating Units 50 MW  
9 or greater are experiencing in average life spans of approximately 55 years and that  
10 these spans are lengthening almost on a year-to-year basis.

11 **Q. HAS YOUR FIRM ALSO CONDUCTED NATIONAL STUDIES OF OTHER**  
12 **PRODUCTION UNIT RETIREMENTS?**

13 A. Yes. We have also studied national retirements of Other Production units. We employed  
14 Energy Information Administration Form 860 data from all units designated as Jet Engine  
15 (JE), Combustion Turbine (CT), Gas Turbine (GT) and Internal Combustion (IC). The  
16 following table shows the composition of the data base.

17

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<sup>15</sup> The study is an actuarial retirement rate analysis, using the Energy Information Agency's Form 860 database of aged generating unit retirements and exposures. A full band (1918-99) and both rolling and shrinking analyses were conducted.

	<u>Type of Peaking Unit</u>				<u>TOTAL</u>
	<u>JE</u>	<u>GT</u>	<u>IC</u>	<u>CT</u>	
Operable	129	1354	2814	107	4407
Retired	1	116	1443	0	1559
TOTAL	130	1470	4257	107	5963

9           These technologies are in various stages of introduction as evidenced by the  
10 virtual lack of unit retirements in the JE and CT classifications. What they have in  
11 common, however, is the way that they are used. All are used primarily to meet short-  
12 term peaks in demand. Our study is included as Exhibit\_\_\_(MJM-5). It is based on a full  
13 band (1899-1996) and a shrinking band analysis, and indicates lives of approximately 45  
14 years at a minimum which have lengthened in recent years to as long as 55 years.

15 **Q.   WHAT ARE YOUR CONCLUSIONS BASED ON YOUR NATIONAL LIFE**  
16 **STUDIES?**

17 A.   I conclude that the Company's original 30-year average life is far below, by 15 to 25  
18 years, the national average of life spans being experienced by the Steam Production and  
19 Other Production Plants in the United States. I recognize that the combined cycle units  
20 are considered to be new technology. That is why it is virtually impossible to conduct a  
21 National Study of Combined Cycle retirements. Smith 3 will not be used for the peaking  
22 function normally fulfilled by the units in the Other Production function but rather it will  
23 be used primarily as a base load unit.

24

1           Nevertheless, these national studies provide a range of reasonableness for the initial life  
2           assumptions for the state-of-the-art Smith 3 combined cycle unit.

3           One of the incentives to construct combined cycle plants is their relatively low  
4           capital costs compared to base load steam units. An arbitrary reduction from a 30-year  
5           life to a 20-year life effectively eliminates, from the customers perspective, any capital  
6           cost advantages of combined-cycle technology.

7   **Q.   HAVE YOU CONDUCTED ANY OTHER INVESTIGATIONS OF THE SMITH**  
8   **UNIT 3?**

9   A.   Yes. My associate, William M. Zaetz, has substantial experience in the building and  
10   maintenance of all types of steam and other production plants. Mr. Zaetz conducted  
11   research regarding combined cycle units and actually visited Smith Unit 3. Based on his  
12   experience, research and his physical observations, Mr. Zaetz concluded that he has  
13   found nothing that would lead him to assume that Plant Smith Unit 3 would have a  
14   shorter life than the 55 years resulting from our National Study of Steam Plants 50 MW  
15   and Greater.

16   **Q.   WHAT DO YOU RECOMMEND?**

17   A.   I recommend that the Company's original 30-year average life for Smith Unit 3 be  
18   retained. It is supported by the Company's own internal studies and planning, it is  
19   consistent with the proposals in the Company's depreciation study, it is quite  
20   conservative when considered in conjunction with our National Life Studies, and it is  
21   conservative based on Mr. Zaetz's experience, research and observations. To shorten the  
22   life merely creates an artificial increase to the Company's revenue requirements. If any  
23   changes are to be made, the 30 years should be lengthened, not shortened.

1 of these only five have been returned to their original "Greenfield" condition. Sixty-eight  
2 units, or 84 percent of the retired generating units remain in place without dismantlement.

3 **Q. WHAT DO YOU RECOMMEND?**

4 A. I recommend that the Commission reconsider the issue of dismantlement costs to  
5 determine whether such a liability actually exists. In the meantime the \$5.7 million  
6 included in current depreciation rates is excessive and provides a substantial buffer for  
7 the Company.

8 **Q. WHAT ARE YOUR OVERALL OBSERVATIONS CONCERNING THE**  
9 **COMPANY'S DEPRECIATION RATES?**

10 A. Based on Our National Studies, the Company's depreciation rates are excessive. That  
11 means that they result in excessive charges to ratepayers for existing plant.  
12 Consequently, I do not believe that the Company's need for a revenue increase is as  
13 severe as Mr. Labrato claims, and I certainly do not believe that a depreciation expense  
14 increase relating to Smith Unit 3 or any other plant is required or warranted.

15 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

16 A. Yes, it does.

## Experience

### **Snavelly King Majoros O'Connor & Lee, Inc.**

*Vice President and Treasurer (1988 to Present)*  
*Senior Consultant (1981-1987)*

Mr. Majoros provides consultation specializing in accounting, financial, and management issues. He has testified as an expert witness or negotiated on behalf of clients in more than one hundred thirty regulatory proceedings involving telephone, electric, gas, water and sewerage companies. Mr. Majoros has appeared before Federal and state agencies. His testimony has encompassed a wide variety of complex issues including taxation, divestiture accounting, revenue requirements, rate base, nuclear decommissioning, plant lives, and capital recovery. Mr. Majoros has also provided consultation to the U.S. Department of Justice.

Mr. Majoros has been responsible for developing the firm's consulting services on depreciation and other capital recovery issues into a major area of practice. He has also developed the firm's capabilities in the management audit area.

### **Van Scoyoc & Wiskup, Inc., Consultant (1978-1981)**

Mr. Majoros performed various management and regulatory consulting projects in the public utility field, including preparation of electric system load projections for a group of municipally and cooperatively owned electric systems; preparation of a system of accounts and reporting of gas and oil pipelines to be used by a state regulatory commission; accounting system analysis and design for rate proceedings involving electric, gas, and telephone utilities. Mr. Majoros also assisted in an antitrust proceeding involving a major electric utility. He submitted expert testimony in FERC Docket No. RP79-12 (El Paso Natural Gas Company). In addition, he co-authored a study entitled Analysis of Staff Study on Comprehensive Tax Normalization that was submitted to FERC in Docket No. RM80-42.

### **Handling Equipment Sales Company, Inc., Treasurer (1976-1978)**

Mr. Majoros' responsibilities included financial management, general accounting and reporting, and income taxes.

### **Ernst & Ernst, Auditor (1973-1976)**

Mr. Majoros was a member of the audit staff where his responsibilities included auditing, supervision, business systems analysis, report preparation, and corporate income taxes.

### **University of Baltimore - (1971-1973)**

Mr. Majoros was a full-time student in the School of Business. During this period Mr. Majoros worked consistently on a part-time basis in the following positions: Assistant Legislative Auditor – State of Maryland, Staff Accountant – Robert M. Carney & Co., CPA's, Staff Accountant – Naron & Wegad, CPA's, Credit Clerk – Montgomery Wards.

### **Central Savings Bank, (1969-1971)**

Mr. Majoros was an Assistant Branch Manager at the time he left the bank to attend college as a full-time student. During his tenure at the bank, Mr. Majoros gained experience in each department of the bank. In addition, he attended night school at the University of Baltimore.

## Education

University of Baltimore, School of Business, B.S. –  
Concentration in Accounting

## Professional Affiliations

American Institute of Certified Public Accountants  
Maryland Association of C.P.A.s  
Society of Depreciation Professionals

## Publications, Papers, and Panels

*"Analysis of Staff Study on Comprehensive Tax Normalization," FERC Docket No. RM 80-42, 1980.*

*"Telephone Company Deferred Taxes and Investment Tax Credits – A Capital Loss for Ratepayers," Public Utility Fortnightly, September 27, 1984.*

*"The Use of Customer Discount Rates in Revenue Requirement Comparisons," Proceedings of the 25th Annual Iowa State Regulatory Conference, 1986*

*"The Regulatory Dilemma Created By Emerging Revenue Streams of Independent Telephone Companies," Proceedings of NARUC 101st Annual Convention and Regulatory Symposium, 1989.*

*"BOC Depreciation Issues in the States," National Association of State Utility Consumer Advocates, 1990 Mid-Year Meeting, 1990.*

*"Current Issues in Capital Recovery" 30th Annual Iowa State Regulatory Conference, 1991.*

*"Impaired Assets Under SFAS No. 121," National Association of State Utility consumer Advocates, 1996 Mid-Year Meeting, 1996.*

*"What's 'Sunk' Ain't Stranded: Why Excessive Utility Depreciation is Avoidable," with James Campbell, Public Utilities Fortnightly, April 1, 1999.*

## Michael J. Majoros, Jr.

### Federal Regulatory Agencies

<u>Date</u>	<u>Agency</u>	<u>Docket</u>	<u>Utility</u>
1979	FERC-US <u>19/</u>	RR79-12	El Paso Natural Gas Co.
1980	FERC-US <u>19/</u>	RM80-42	Generic Tax Normalization
1996	CRTC-Canada <u>30/</u>	97-9	All Canadian Telecoms
1997	CRTC-Canada <u>31/</u>	97-11	All Canadian Telecoms
1999	FCC <u>32/</u>	98-137 (Ex Parte)	All LECs
1999	FCC <u>32/</u>	98-91 (Ex Parte)	All LECs
1999	FCC <u>32/</u>	98-177 (Ex Parte)	All LECs
1999	FCC <u>32/</u>	98-45 (Ex Parte)	All LECs
2000	EPA <u>35/</u>	CAA-00-6	Tennessee Valley Authority

### State Regulatory Agencies

1982	Massachusetts <u>17/</u>	DPU 557/558	Western Mass Elec. Co.
1982	Illinois <u>16/</u>	ICC81-8115	Illinois Bell Telephone Co.
1983	Maryland <u>8/</u>	7574-Direct	Baltimore Gas & Electric Co.
1983	Maryland <u>8/</u>	7574-Surrebuttall	Baltimore Gas & Electric Co.
1983	Connecticut <u>15/</u>	810911	Woodlake Water Co.
1983	New Jersey <u>1/</u>	815-458	New Jersey Bell Tel. Co.
1983	New Jersey <u>14/</u>	8011-827	Atlantic City Sewerage Co.
1984	Dist. Of Columbia <u>7/</u>	785	Potomac Electric Power Co.
1984	Maryland <u>8/</u>	7689	Washington Gas Light Co.
1984	Dist. Of Columbia <u>7/</u>	798	C&P Tel. Co.
1984	Pennsylvania <u>13/</u>	R-832316	Bell Telephone Co. of PA
1984	New Mexico <u>12/</u>	1032	Mt. States Tel. & Telegraph
1984	Idaho <u>18/</u>	U-1000-70	Mt. States Tel. & Telegraph
1984	Colorado <u>11/</u>	1655	Mt. States Tel. & Telegraph
1984	Dist. Of Columbia <u>7/</u>	813	Potomac Electric Power Co.
1984	Pennsylvania <u>3/</u>	R842621-R842625	Western Pa. Water Co.
1985	Maryland <u>8/</u>	7743	Potomac Electric Power Co.
1985	New Jersey <u>1/</u>	848-856	New Jersey Bell Tel. Co.
1985	Maryland <u>8/</u>	7851	C&P Tel. Co.
1985	California <u>10/</u>	I-85-03-78	Pacific Bell Telephone Co.
1985	Pennsylvania <u>3/</u>	R-850174	Phila. Surban Water Co.
1985	Pennsylvania <u>3/</u>	R850178	Pennsylvania Gas & Water Co.
1985	Pennsylvania <u>3/</u>	R-850299	General Tel. Co. of PA
1986	Maryland <u>8/</u>	7899	Delmarva Power & Light Co.
1986	Maryland <u>8/</u>	7754	Chesapeake Utilities Corp.
1986	Pennsylvania <u>3/</u>	R-850268	York Water Co.
1986	Maryland <u>8/</u>	7953	Southern Md. Electric Corp.
1986	Idaho <u>9/</u>	U-1002-59	General Tel. Of the Northwest

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1986	Maryland <u>8/</u>	7973	Baltimore Gas & Electric Co.
1987	Pennsylvania <u>3/</u>	R-860350	Dauphin Cons. Water Supply
1987	Pennsylvania <u>3/</u>	C-860923	Bell Telephone Co. of PA
1987	Iowa <u>6/</u>	DPU-86-2	Northwestern Bell Tel. Co.
1987	Dist. Of Columbia <u>7/</u>	842	Washington Gas Light Co.
1988	Florida <u>4/</u>	880069-TL	Southern Bell Telephone
1988	Iowa <u>6/</u>	RPU-87-3	Iowa Public Service Company
1988	Iowa <u>6/</u>	RPU-87-6	Northwestern Bell Tel. Co.
1988	Dist. Of Columbia <u>7/</u>	869	Potomac Electric Power Co.
1989	Iowa <u>6/</u>	RPU-88-6	Northwestern Bell Tel. Co.
1990	New Jersey <u>1/</u>	1487-88	Morris City Transfer Station
1990	New Jersey <u>5/</u>	WR 88-80967	Toms River Water Company
1990	Florida <u>4/</u>	890256-TL	Southern Bell Company
1990	New Jersey <u>1/</u>	ER89110912J	Jersey Central Power & Light
1990	New Jersey <u>1/</u>	WR90050497J	Elizabethtown Water Co.
1991	Pennsylvania <u>3/</u>	P900465	United Tel. Co. of Pa.
1991	West Virginia <u>2/</u>	90-564-T-D	C&P Telephone Co.
1991	New Jersey <u>1/</u>	90080792J	Hackensack Water Co.
1991	New Jersey <u>1/</u>	WR90080884J	Middlesex Water Co.
1991	Pennsylvania <u>3/</u>	R-911892	Phil. Suburban Water Co.
1991	Kansas <u>20/</u>	176, 716-U	Kansas Power & Light Co.
1991	Indiana <u>29/</u>	39017	Indiana Bell Telephone
1991	Nevada <u>21/</u>	91-5054	Central Tele. Co. – Nevada
1992	New Jersey <u>1/</u>	EE91081428	Public Service Electric & Gas
1992	Maryland <u>8/</u>	8462	C&P Telephone Co.
1992	West Virginia <u>2/</u>	91-1037-E-D	Appalachian Power Co.
1993	Maryland <u>8/</u>	8464	Potomac Electric Power Co.
1993	South Carolina <u>22/</u>	92-227-C	Southern Bell Telephone
1993	Maryland <u>8/</u>	8485	Baltimore Gas & Electric Co.
1993	Georgia <u>23/</u>	4451-U	Atlanta Gas Light Co.
1993	New Jersey <u>1/</u>	GR93040114	New Jersey Natural Gas. Co.
1994	Iowa <u>6/</u>	RPU-93-9	U.S. West – Iowa
1994	Iowa <u>6/</u>	RPU-94-3	Midwest Gas
1995	Delaware <u>24/</u>	94-149	Wilm. Suburban Water Corp.
1995	Connecticut <u>25/</u>	94-10-03	So. New England Telephone
1995	Connecticut <u>25/</u>	95-03-01	So. New England Telephone
1995	Pennsylvania <u>3/</u>	R-00953300	Citizens Utilities Company
1995	Georgia <u>23/</u>	5503-0	Southern Bell
1996	Maryland <u>8/</u>	8715	Bell Atlantic
1996	Arizona <u>26/</u>	E-1032-95-417	Citizens Utilities Company
1996	New Hampshire <u>27/</u>	DE 96-252	New England Telephone
1997	Iowa <u>6/</u>	DPU-96-1	U S West – Iowa
1997	Ohio <u>28/</u>	96-922-TP-UNC	Ameritech – Ohio
1997	Michigan <u>28/</u>	U-11280	Ameritech – Michigan

## Michael J. Majoros, Jr.

1997	Michigan <u>28/</u>	U-112 81	GTE North
1997	Wyoming <u>27/</u>	7000-ztr-96-323	US West – Wyoming
1997	Iowa <u>6/</u>	RPU-96-9	US West – Iowa
1997	Illinois <u>28/</u>	96-0486-0569	Ameritech – Illinois
1997	Indiana <u>28/</u>	40611	Ameritech – Indiana
1997	Indiana <u>27/</u>	40734	GTE North
1997	Utah <u>27/</u>	97-049-08	US West – Utah
1997	Georgia <u>28/</u>	7061-U	BellSouth – Georgia
1997	Connecticut <u>25/</u>	96-04-07	So. New England Telephone
1998	Florida <u>28/</u>	960833-TP et. al.	BellSouth – Florida
1998	Illinois <u>27/</u>	97-0355	GTE North/South
1998	Michigan <u>33/</u>	U-11726	Detroit Edison
1999	Maryland <u>8/</u>	8794	Baltimore Gas & Electric Co.
1999	Maryland <u>8/</u>	8795	Delmarva Power & Light Co.
1999	Maryland <u>8/</u>	8797	Potomac Edison Company
1999	West Virginia <u>2/</u>	98-0452-E-GI	Electric Restructuring
1999	Delaware <u>24/</u>	98-98	United Water Company
1999	Pennsylvania <u>3/</u>	R-00994638	Pennsylvania American Water
1999	West Virginia <u>2/</u>	98-0985-W-D	West Virginia American Water
1999	Michigan <u>33/</u>	U-11495	Detroit Edison
2000	Delaware <u>24/</u>	99-466	Tidewater Utilities
2000	New Mexico <u>34/</u>	3008	US WEST Communications, Inc.
2000	Florida <u>28/</u>	990649-TP	BellSouth -Florida
2000	New Jersey <u>1/</u>	WR30174	Consumer New Jersey Water
2000	Pennsylvania <u>3/</u>	R-0005212	Pennsylvania American Sewerage
2000	Connecticut <u>25/</u>	00-07-17	Southern New England Telephone
2001	Kentucky <u>36/</u>	2000-373	Jackson Energy Cooperative
2001	Kansas <u>38/39/40/</u>	01-WSRE-436-RTS	Western Resources
2001	South Carolina <u>22/</u>	2001-93-E	Carolina Power & Light Co.
2001	North Dakota <u>37/</u>	PU-400-00-521	Northern States Power/Xcel Energy
2001	Indiana <u>29/41/</u>	41746	Northern Indiana Power Company
2001	New Jersey <u>1/</u>	GR01050328	Public Service Electric and Gas
2001	Pennsylvania <u>3/</u>	R-00016236	York Water Company
2001	Pennsylvania <u>3/</u>	R-00016339	Pennsylvania America Water
2001	Pennsylvania <u>3/</u>	R-00016356	Wellsboro Electric Coop.



Michael J. Majoros, Jr.

PARTICIPATION AS NEGOTIATOR IN FCC DEPRECIATION  
RATE REPRESRIPTION CONFERENCES

<u>COMPANY</u>	<u>YEARS</u>	<u>CLIENT</u>
Diamond State Telephone Co. <u>24/</u>	1985 + 1988	Delaware Public Service Comm
Bell Telephone of Pennsylvania <u>3/</u>	1986 + 1989	PA Consumer Advocate
Chesapeake & Potomac Telephone Co. - Md. <u>8/</u>	1986	Maryland People's Counsel
Southwestern Bell Telephone - Kansas <u>20/</u>	1986	Kansas Corp. Commission
Southern Bell - Florida <u>4/</u>	1986	Florida Consumer Advocate
Chesapeake & Potomac Telephone Co.-W.Va. <u>2/</u>	1987 + 1990	West VA Consumer Advocate
New Jersey Bell Telephone Co. <u>1/</u>	1985 + 1988	New Jersey Rate Counsel
Southern Bell - South Carolina <u>22/</u>	1986 + 1989 + 1992	S. Carolina Consumer Advocate
GTE-North - Pennsylvania <u>3/</u>	1989	PA Consumer Advocate

Michael J. Majoros, Jr.

**PARTICIPATION IN PROCEEDINGS WHICH WERE  
SETTLED BEFORE TESTIMONY WAS SUBMITTED**

<u>STATE</u>	<u>DOCKET NO.</u>	<u>UTILITY</u>
Maryland <u>8/</u>	7878	Potomac Edison
Nevada <u>21/</u>	88-728	Southwest Gas
New Jersey <u>1/</u>	WR90090950J	New Jersey American Water
New Jersey <u>1/</u>	WR900050497J	Elizabethtown Water
New Jersey <u>1/</u>	WR91091483	Garden State Water
West Virginia <u>2/</u>	91-1037-E	Appalachian Power Co.
Nevada <u>21/</u>	92-7002	Central Telephone - Nevada
Pennsylvania <u>3/</u>	R-00932873	Blue Mountain Water
West Virginia <u>2/</u>	93-1165-E-D	Potomac Edison
West Virginia <u>2/</u>	94-0013-E-D	Monongahela Power
New Jersey <u>1/</u>	WR94030059	New Jersey American Water
New Jersey <u>1/</u>	WR95080346	Elizabethtown Water
New Jersey <u>1/</u>	WR95050219	Toms River Water Co.
Maryland <u>8/</u>	8796	Potomac Electric Power Co.
South Carolina <u>22/</u>	1999-077-E	Carolina Power & Light Co.
South Carolina <u>22/</u>	1999-072-E	Carolina Power & Light Co.
Pennsylvania <u>3/</u>	R-0016236	The York Water Company
Kentucky <u>36/</u>	2001-104 & 141	Kentucky Utilities, Louisville Gas and Electric

## Michael J. Majoros, Jr.

### Clients

- |   |  |
|---|--|
| <u>1/</u> New Jersey Rate Counsel/Advocate  | <u>20/</u> Kansas Corporation Commission                     |
| <u>2/</u> West Virginia Consumer Advocate   | <u>21/</u> Public Service Comm. – Nevada                     |
| <u>3/</u> Pennsylvania OCA                  | <u>22/</u> SC Dept. of Consumer Affairs                      |
| <u>4/</u> Florida Office of Public Advocate | <u>23/</u> Georgia Public Service Comm.                      |
| <u>5/</u> Toms River Fire Commissioner's    | <u>24/</u> Delaware Public Service Comm.                     |
| <u>6/</u> Iowa Office of Consumer Advocate  | <u>25/</u> Conn. Ofc. Of Consumer Counsel                    |
| <u>7/</u> D.C. People's Counsel             | <u>26/</u> Arizona Corp. Commission                          |
| <u>8/</u> Maryland's People's Counsel       | <u>27/</u> AT&T  |
| <u>9/</u> Idaho Public Service Commission   | <u>28/</u> AT&T/MCI  |
| <u>10/</u> Western Burglar and Fire Alarm   | <u>29/</u> IN Office of Utility Consumer Counselor           |
| <u>11/</u> U.S. Dept. of Defense            | <u>30/</u> Unitel (AT&T – Canada)                            |
| <u>12/</u> N.M. State Corporation Comm.     | <u>31/</u> Public Interest Advocacy Centre                   |
| <u>13/</u> City of Philadelphia             | <u>32/</u> U.S. General Services Administration              |
| <u>14/</u> Resorts International            | <u>33/</u> Michigan Attorney General                         |
| <u>15/</u> Woodlake Condominium Association | <u>34/</u> New Mexico Attorney General                       |
| <u>16/</u> Illinois Attorney General        | <u>35/</u> Environmental Protection Agency Enforcement Staff |
| <u>17/</u> Mass Coalition of Municipalities | <u>36/</u> Kentucky Attorney General                         |
| <u>18/</u> U.S. Department of Energy        | <u>37/</u> North Dakota Public Service Commission            |
| <u>19/</u> Arizona Electric Power Corp.     | <u>38/</u> Kansas Industrial Group                           |
|   | <u>39/</u> City of Wichita                                   |
|   | <u>40/</u> Kansas Citizens' Utility Rate Board               |
|   | <u>41/</u> NIPSCO Industrial Group                           |

Citizens' First Set of  
Interrogatories  
Docket No. 010949-EI  
GULF POWER COMPANY  
November 9, 2001  
Item No. 16  
Page 1 of 1

16. Smith Unit 3. Mr. Labrato states on page 20 that forecasted depreciation expense "was calculated assuming a depreciable life for Smith Unit 3 of 30 years." Explain what the basis was for this assumption and who made the initial determination to use 30 years.

ANSWER:

At the time the forecast was developed for the test year, Mr. Labrato chose an estimated depreciable life of 30 years for Smith Unit 3 based on estimated average service lives of other combined cycle projects within Southern Company. Since combined cycle technology is relatively new to the Southern electric system, a depreciation study which includes combined cycle units has not been performed by any of the operating companies at this time. For planning purposes, most companies have assumed a life of approximately 30 years. However, considering that combined cycle units are relatively new technology and that periodic maintenance and capital additions are expected, there will be interim retirements indicating a shorter average life.

ANALYSIS RESULTS  
Depreciable Property

Plant Smith Combustion Turbine				
Item	97 FPSC		Est. 2001	Change
Total Investment	4,251,269		4,341,531	90,262
Retirement Dates:				
Unit	MW	Fuel Type	In-Serv.	
A	40	Nat. Gas	1971	
			2006	2006
Life Span (Years):				
Unit 1			35	35
Study Method/Dispersion		Forecast	Forecast	
Average Service Life		32	30	
Theoretical Reserve		3,112,893	3,681,087	568,194
Book Reserve (excl dismantlement)		3,971,375	4,166,000	194,625
Reserve Variance		858,482	484,913	(373,569)
Book Reserve Ratio		93.42%	95.96%	
Gross Salvage		0%	0%	
Removal Cost excl Dismantlement		0%	0%	
Net Removal Cost		0%	0%	
		<u>Current (SL)</u>	<u>Est. 2001</u>	
Annual Dismantlement		9,845	11,259	1,414
Avg Whole Life Rate		3.1%	3.3%	
AWL 2001 Expense excl Dismantlement		131,789	143,271	11,482
Average Remaining Life		8.5	4.5	
ARL Rate		0.8%	0.9%	
ARL 2001 Expense excl Dismantlement		34,732	39,074	4,342

ANALYSIS RESULTS  
Depreciable Property

Plant Smith					
Item			1997 FPSC	Est. 2001	Change
Total Investment			105,150,825	115,890,000	10,739,175
Retirement Dates:					
Unit	MW	Fuel Type	In-Serv.		
1	125	Coal	1965	2015	2015
2	180	Coal	1967	2017	2017
Life Span (Years):					
Unit 1			50	50	
Unit 2			50	50	
Common			52	52	
Study Method/Dispersion			Forecast	Forecast	
Average Service Life			32	29	
Theoretical Reserve			53,501,785	65,820,138	12,318,353
Book Reserve (excl dismantlement)			53,868,085	66,104,000	12,235,915
Reserve Variance			366,300	283,862	(82,438)
Book Reserve Ratio			51.23%	57.04%	
Gross Salvage			1%	1%	
Removal Cost excl Dismantlement			5%	4%	
Net Removal Cost			4%	3%	
			<u>Current (SL)</u>	<u>Est. 2001</u>	
Annual Dismantlement			1,208,663	1,240,212	31,549
Avg Whole Life Rate			3.3%	3.6%	
AWL 2001 Expense excl Dismantlement			3,469,977	4,172,040	702,063
Average Remaining Life			16.6	14.0	
ARL Rate			3.2%	3.3%	
ARL 2001 Expense excl Dismantlement			3,708,480	3,824,370	115,890

The Average Remaining Life for Plant Smith needs to be adjusted to reflect the time remaining from 12/31/01 through the retirement date of each generating unit. The proposed ARL is a weighted average of all of Plant Smith's generating units adjusted for the effect of interim retirements (stratification).

Exhibit \_\_\_\_\_ (MJM-3)

**THIS INFORMATION IS DEEMED CONFIDENTIAL BY GULF POWER COMPANY**

**Snively King Majoros O'Connor & Lee, Inc.  
National Study of U.S. Steam Generating Unit Lives  
50 MW and Greater**

Snively King Majoros O'Connor & Lee, Inc. ("Snively King") performed a study of U.S. Steam Generating Units Lives, 50 MW and Greater using analytical techniques generally accepted in the utility industry and a database maintained by the U.S. Department of Energy ("DOE"). Snively King concludes that the lives of the U.S. Steam Generating Units (50 MW and Greater) are experiencing average life spans of approximately 55 years and these spans are lengthening almost on a year-to-year basis.

**Database**

The DOE's Energy Information Administration ("EIA") requires every owner of an electric utility generating plant to file a Form 860 describing the status of its generating facilities. From these reports, EIA maintains data on the installation and retirements of generating units around the country.

The data utilized in this study is available on the EIA's web site. The primary data used in Snively King's study is located in the Form 860-A database files. The Form 860-B data is also used to check the current status of units that have been sold to Non-Utility Generators ("NUG's"). The data was downloaded in several steps into a single Microsoft Access file and developed into inputs for Snively King's actuarial analysis program.

Various sorts were made to refine the data and to remove bad data. For example, plant with in-service dates of 1900 apparently had a Y2K problem. Some units listed as retired had no retirement dates indicated, etc.

**Analysis**

Snively King initially performed an analysis of the full band (1918-1999) and the most recent ten-year band (1990-1999) of data. The full band analysis had a best fit result of 54 L4, which indicates a 54-year life (See Schedule 1). The ten-year band best fit was a 59 L4, which indicates a 59-year life (See Schedule 2). This indicated that life spans for generating units are increasing, probably due to life-extension programs, and called for further analysis. Hence, additional analyses were performed: an expanded full band analysis, rolling band analysis and a shrinking band analysis. The results are discussed and set forth in tabular form below and displayed on life indication chart on Schedule 3.

**Expanded Full Band Analysis**

The expanded full band analysis held the initial year constant but cut-off dates of 1998, 1997, 1996 and 1995. The actuarial analyses yielded the following results.



Expanded Full Band Analysis		
Band	Life	Curve Type
1918-99	54	L4
1918-98	53	L4
1918-97	52	L5
1918-96	51	L5
1918-95	50	L5

The results indicate that large generating units are being kept operational longer.

### Rolling Band Analysis

The ten-year band analyses for these data sets provided a “rolling band” analysis. The results are summarized in the table below.

Band	Life	Curve Type
1990-99	59	L4
1989-98	59	L4
1988-97	55	L5
1987-96	55	L4
1986-95	53	L5

This indicates a similar rapid increase in lives of generating units probably coincident with the wide spread introduction of life extension programs and the reduction in investment by utilities in new base load generating units.

### Shrinking Band Analysis

Finally, Snavelly King did a “shrinking band” analysis, in which the final 1999 year was held constant and the bands were continually shrunk.

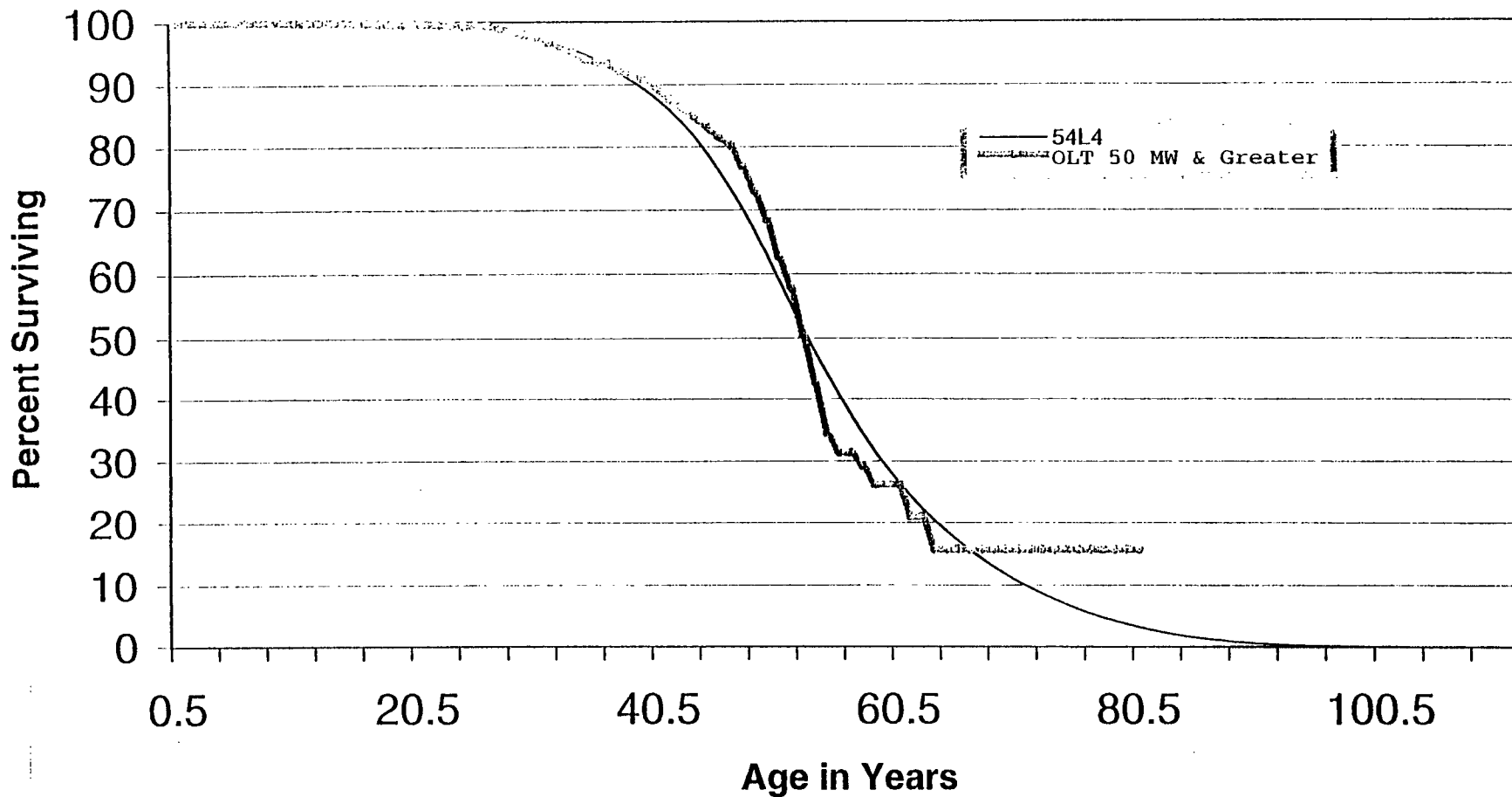
Band	Width	Life	Curve Type	Note
1995-99	5 years	69	S3	70 L3 very close
1994-00	6 years	70	L3	66 S3 very close
1993-99	7 years	63	L4	
1992-99	8 years	61	S3	
1991-99	9 years	60	L4	
1990-99	10 years	59	L4	
1985-99	15 years	59	L4	
1980-99	20 years	55	L4	
1975-99	25 years	54	L4	

The shrinking band analysis corroborated earlier results and conclusions. The average life span of steam units 50 MW and Greater is currently in the 55-year range and is getting longer.

# Actuarial Study of U.S. Generating Units

## Best Fit Iowa Curve

### Full Band 50 MW and Greater 1918-1999



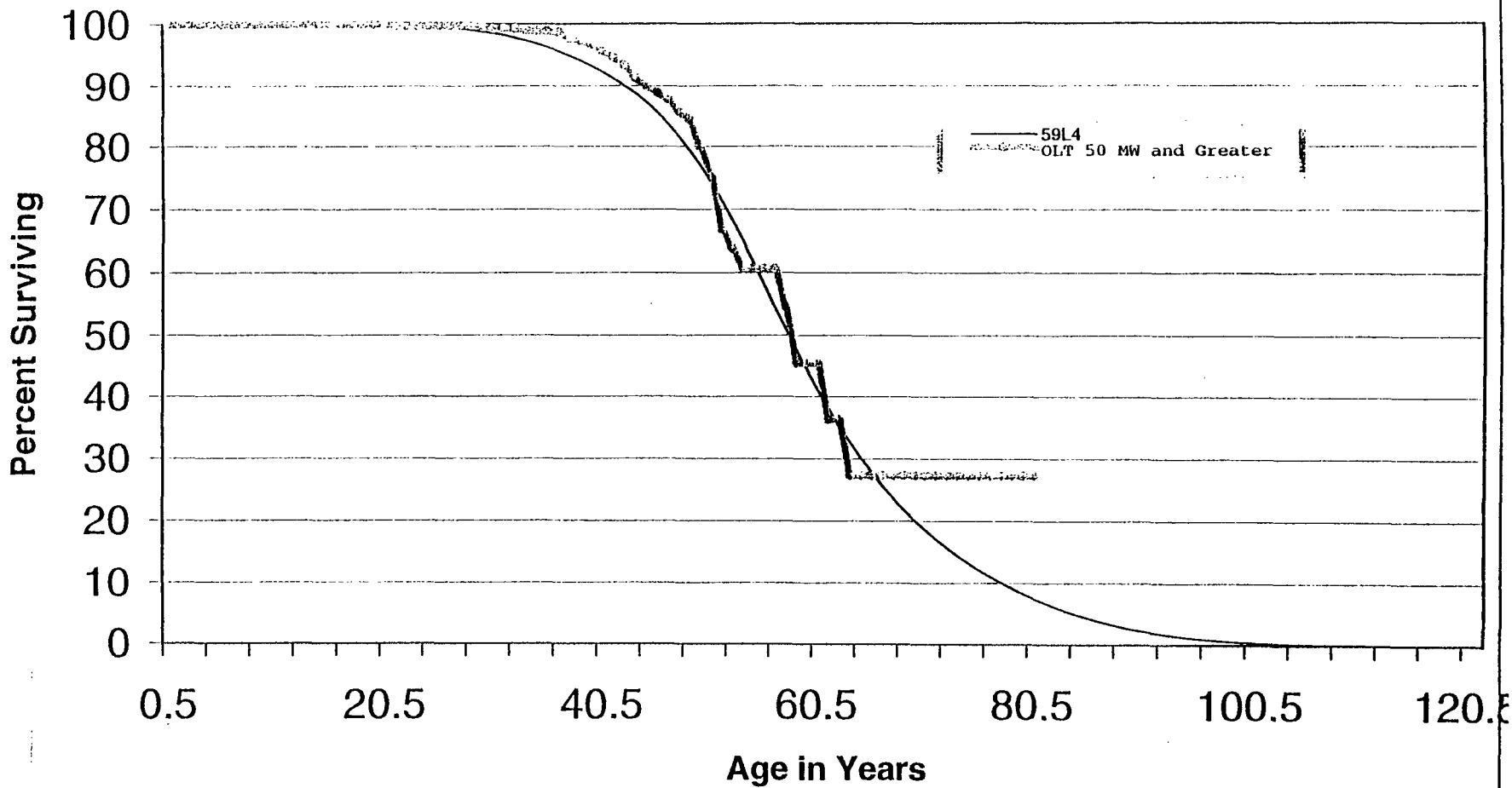
qqvqal ACTUARIAL ANALYSIS  
 CURVE FITTING RESULTS  
 ACCOUNT: 201999  
 BAND: 1918,1999

RANK	IOWA CURVE	AVERAGE SERVICE LIFE	SUM OF SQUARED DEVIATIONS
1	L4	54.00	631.43
2	S4	53.00	992.53
3	L5	53.00	1072.53
4	R4	52.00	1315.38
5	S3	53.00	1654.15
6	R5	53.00	2565.36
7	R3	52.00	2708.33
8	S5	53.00	3018.70
9	L3	56.00	3553.41
10	S2	53.00	4471.72
11	R2.5	52.00	4655.86
12	S1.5	53.00	6613.60
13	S6	53.00	6689.24
14	R2	51.00	7514.97
15	L2	57.00	3781.34
16	S1	54.00	9335.79
17	R1.5	52.00	10980.60
18	L1.5	58.00	11957.73
19	S0.5	54.00	12350.24
20	R1	52.00	15276.46
21	L1	59.00	15922.97
22	S0	55.00	15942.46
23	L0.5	61.00	19090.42
24	S0	53.00	20062.34
25	R0.5	54.00	20559.11
26	S-0.5	56.00	20615.37
27	L0	64.00	22638.96
28	O1	58.00	26015.32
29	O2	66.00	26051.56
30	O3	50.00	31454.13
31	O4	50.00	45976.49

# Actuarial Study of U.S. Generating Units

## Best Fit Iowa Curve

### Ten-year Band 50 MW and Greater 1990-1999



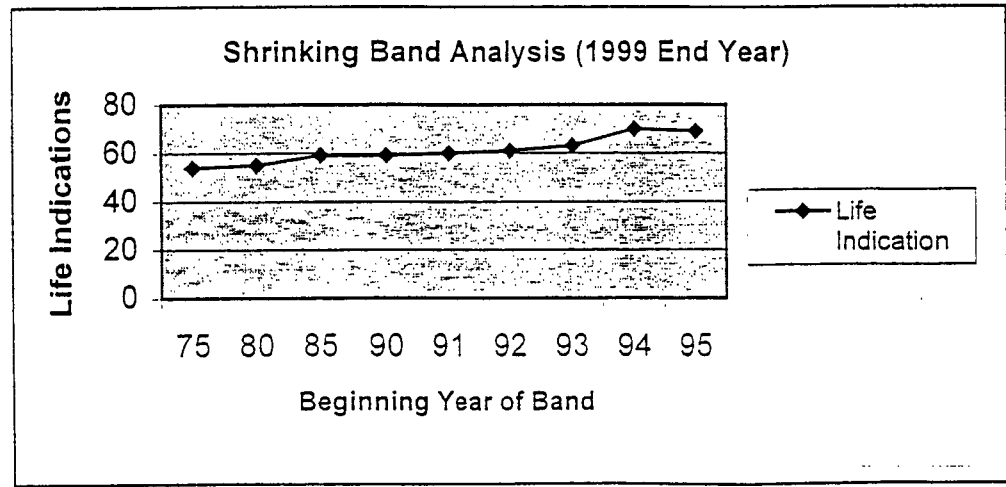
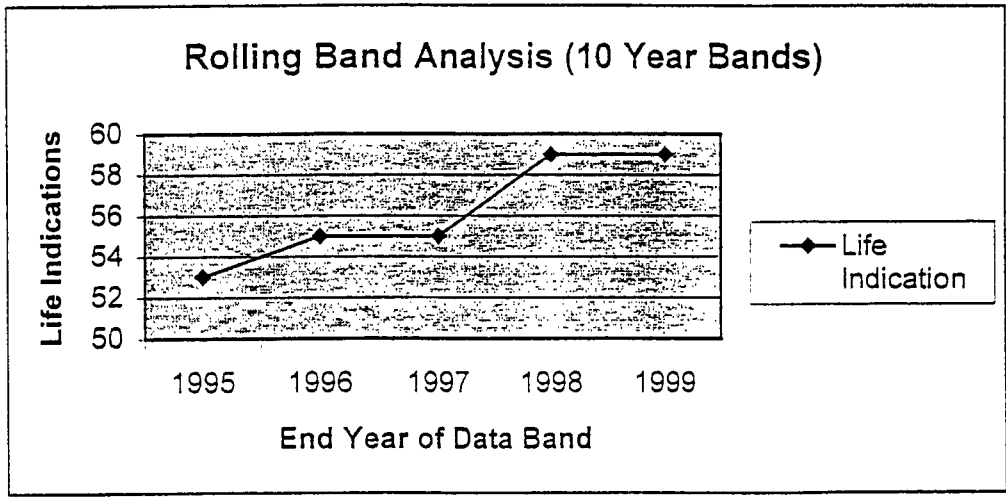
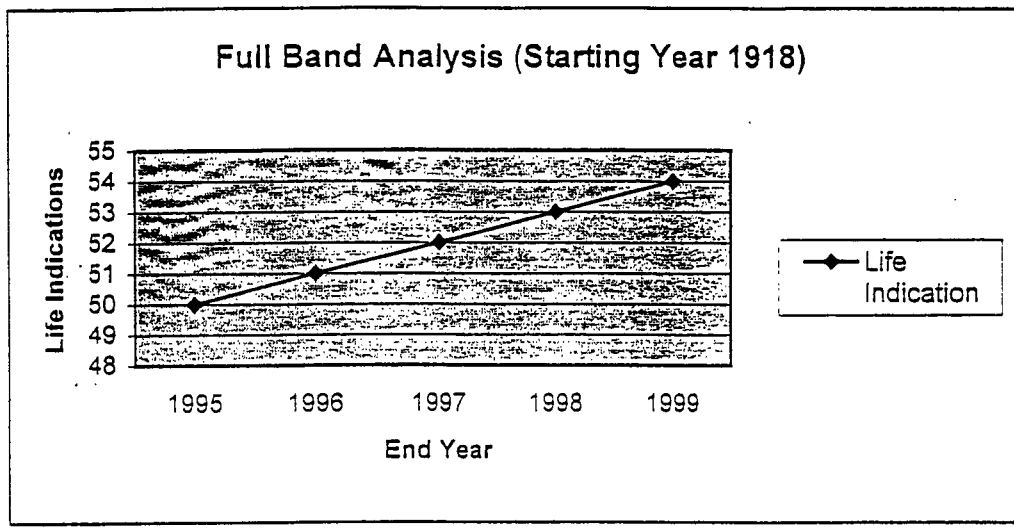
qqvqal ACTUARIAL ANALYSIS  
 CURVE FITTING RESULTS  
 ACCOUNT: 201999  
 BAND: 1990,1999

RANK	IOWA CURVE	AVERAGE SERVICE LIFE	SUM OF SQUARED DEVIATIONS
1	L4	59.00	461.54
2	S4	58.00	724.77
3	R4	58.00	976.26
4	S3	59.00	1073.69
5	L5	59.00	1435.81
6	L3	62.00	2094.16
7	R3	58.00	2415.24
8	R5	58.00	2595.41
9	S2	60.00	3390.06
10	S5	58.00	3505.83
11	R2.5	58.00	4216.59
12	S1.5	61.00	5171.71
13	L2	66.00	5918.36
14	R2	58.00	6708.60
15	S1	62.00	7313.08
16	L1.5	68.00	8531.20
17	S6	58.00	9982.03
18	R1.5	60.00	9704.19
19	S0.5	64.00	9748.55
20	L1	72.00	11492.93
21	S0	66.00	12451.65
22	R1	62.00	13128.24
23	L0.5	76.00	13993.35
24	S-0.5	70.00	16066.46
25	L0	80.00	16692.33
26	R0.5	67.00	16884.38
27	O1	78.00	19847.31
28	O2	80.00	20288.43
29	S0	58.00	25696.77
30	O3	80.00	32953.72
31	O4	80.00	55620.06

Snavely King Majoros O'Connor Lee, Inc.

**U.S. Steam Generating Plant Life Study  
 (50 MW and Greater)**

**Actuarial Life Indications\***



\* Based on Retirement Rate Analysis using EIA Form 860-A data band and Snavely King's Actuarial Analysis Program.

**Snavely King Majoros O'Connor & Lee, Inc.  
National Study of U.S. Other Production Unit Lives**

Snavely King Majoros O'Connor & Lee, Inc. ("Snavely King") performed a study of U.S. Other Production Units Lives using analytical techniques generally accepted in the utility industry and a database maintained by the U.S. Department of Energy ("DOE"). Snavely King concludes that U.S. Other Production Units are experiencing average life spans of approximately 45.5 years at a minimum, and that these spans have lengthened in recent years to as long as 55 years.

**Database**

The DOE's Energy Information Administration ("EIA") requires every owner of an electric utility generating plant to file a Form 860 describing the status of its generating facilities. From these reports, EIA maintains data on the installation and retirements of generating units around the country.

The data utilized in this study is available on the EIA's web site. The primary data used in Snavely King's study is located in the Form 860-A database files. The Form 860-B data is also used to check the current status of units that have been sold to Non-Utility Generators ("NUG's"). The data was downloaded in several steps into a single Microsoft Access file and developed into inputs for Snavely King's actuarial analysis program.

Various sorts were made to refine the data and to remove bad data. For example, plant with in-service dates of 1900 apparently had a Y2K problem. Some units listed as retired had no retirement dates indicated, etc.

**Analysis**

Snavely King performed an analysis of the full band (1899-1996) and a "shrinking band" analysis, in which the final year (1996) was held constant and the bands were continually shrunk. The results are discussed and set forth in tabular form below.

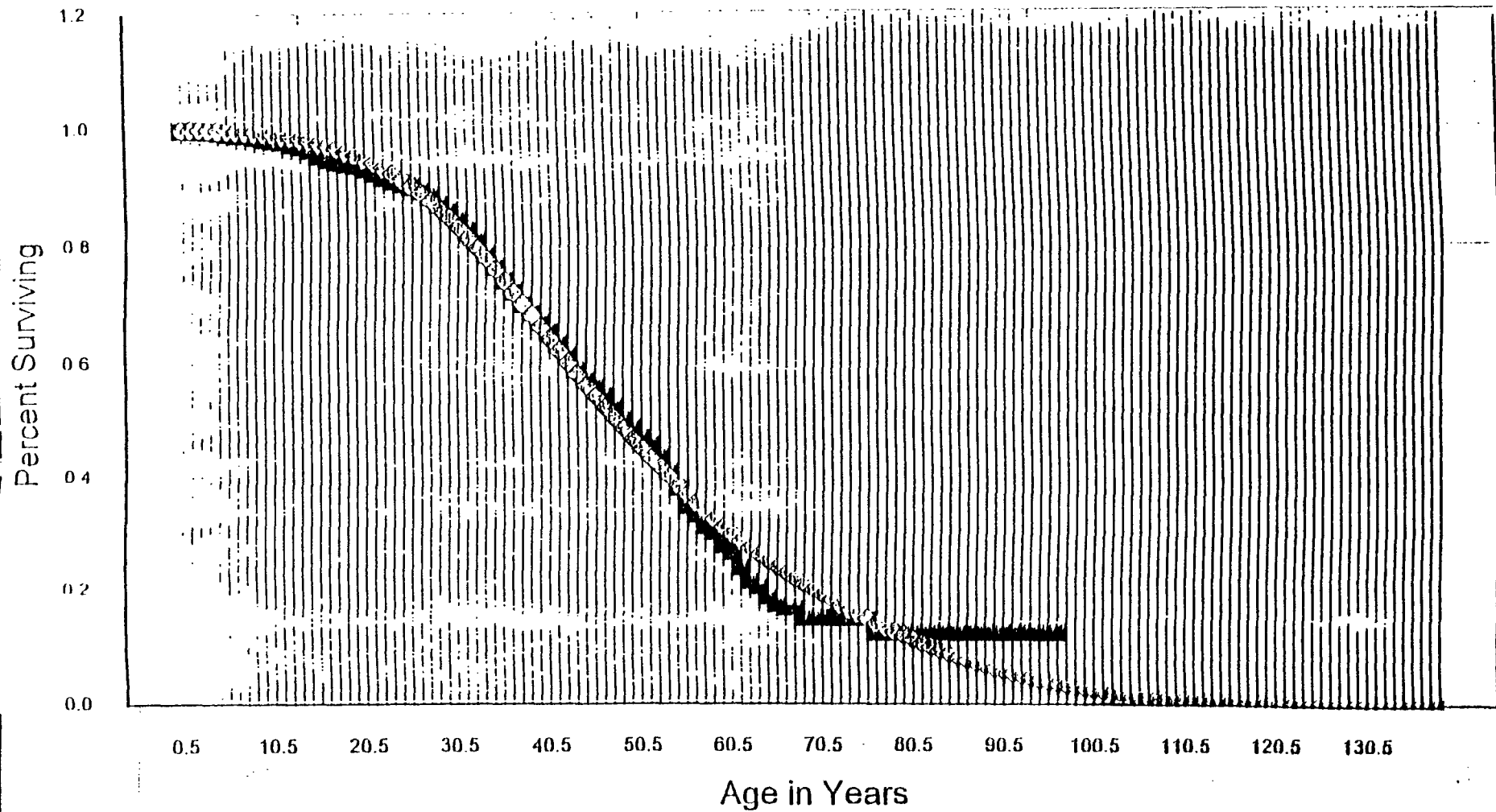
Band	Width	Life	Curve Type
1899-96	Full	51.0	L2.0
1977-96	20 years	45.5	L1.5
1982-96	15 years	46.5	L1.5
1987-96	10 years	51.5	L1.5
1992-96	5 years	55.0	L1.5

As the analysis indicates, the average life span for Other Production Units has lengthened in recent years.



# OBSERVED LIFE TABLE AND THE BEST FIT IOWA CURVE

## All US Other Production Units: Band 1899-1996



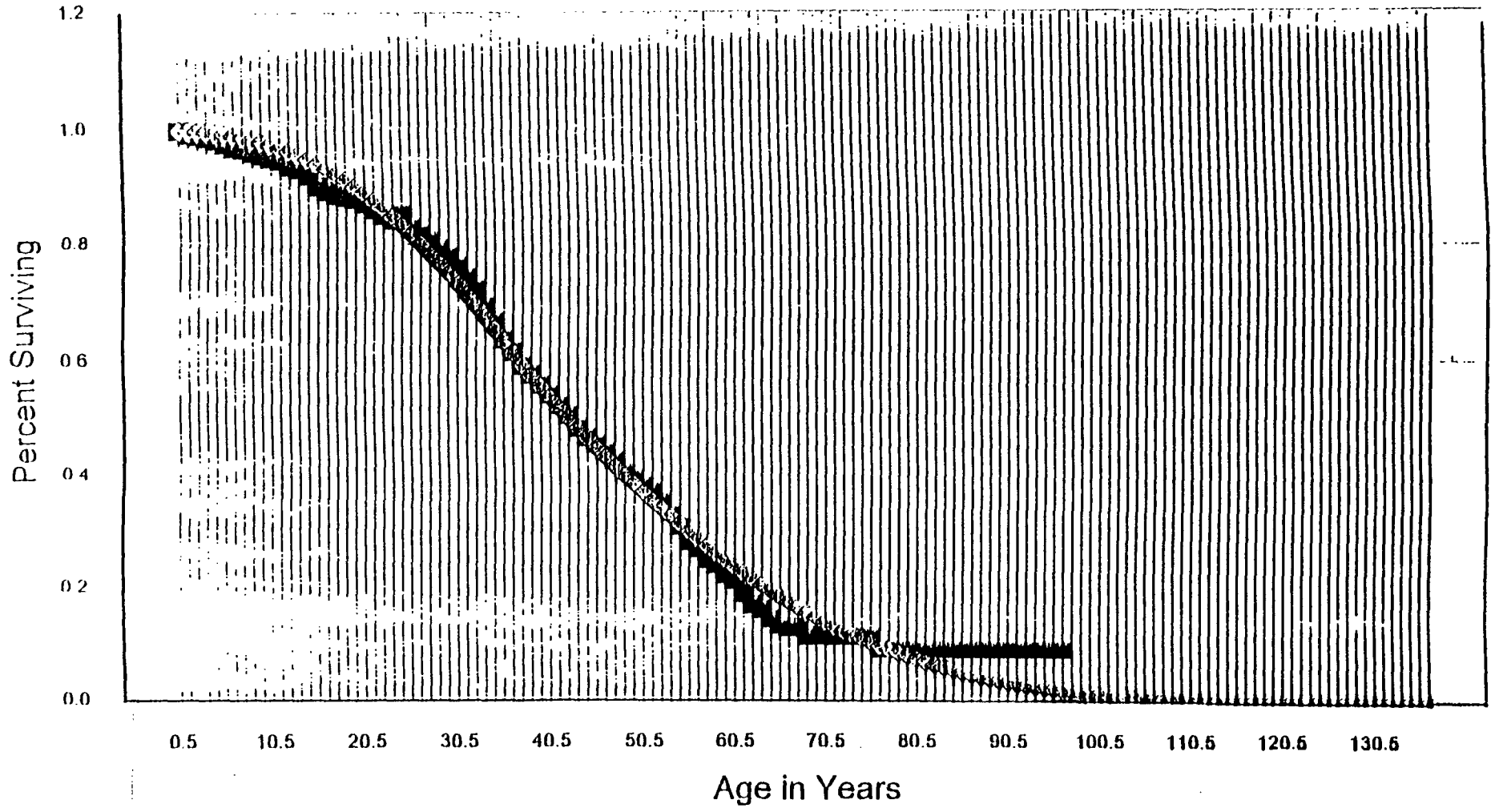
■ Observed Life Table    ◆ Iowa Curve - L2.0 - 51.0

ACTUARIAL ANALYSIS  
CURVE FITTING RESULTS  
ACCOUNT: 740000  
BAND: 1999-1996

RANK	ICAP CURVE	AVERAGE SERVICE LIFE	SUM OF SQUARED DEVIATIONS
1	U	51.00	1121.49
2	U.S	51.00	1201.11
3	U	49.00	1494.28
4	U.S	49.00	1697.38
5	U.S	49.00	1841.45
6	U	51.00	2101.01
7	U	50.00	2223.07
8	U.S	48.00	2321.00
9	U	48.00	2436.36
10	U	49.00	2567.00
11	U	48.00	2621.00
12	U	49.00	2684.01
13	U.S	49.00	2751.01
14	U.S	50.00	2821.00
15	U.S	48.00	2891.01
16	U.S	48.00	2961.01
17	U	49.00	3031.01
18	U	50.00	3101.01
19	U	49.00	3171.01
20	U	50.00	3241.01
21	U	51.00	3311.01
22	U	49.00	3381.01
23	U	49.00	3451.01
24	U	49.00	3521.01
25	U	50.00	3591.01
26	U	49.00	3661.01
27	U	49.00	3731.01
28	U	49.00	3801.01
29	U	49.00	3871.01

# OBSERVED LIFE TABLE AND THE BEST FIT IOWA CURVE

## All US Other Production Units: Band 1977-1996



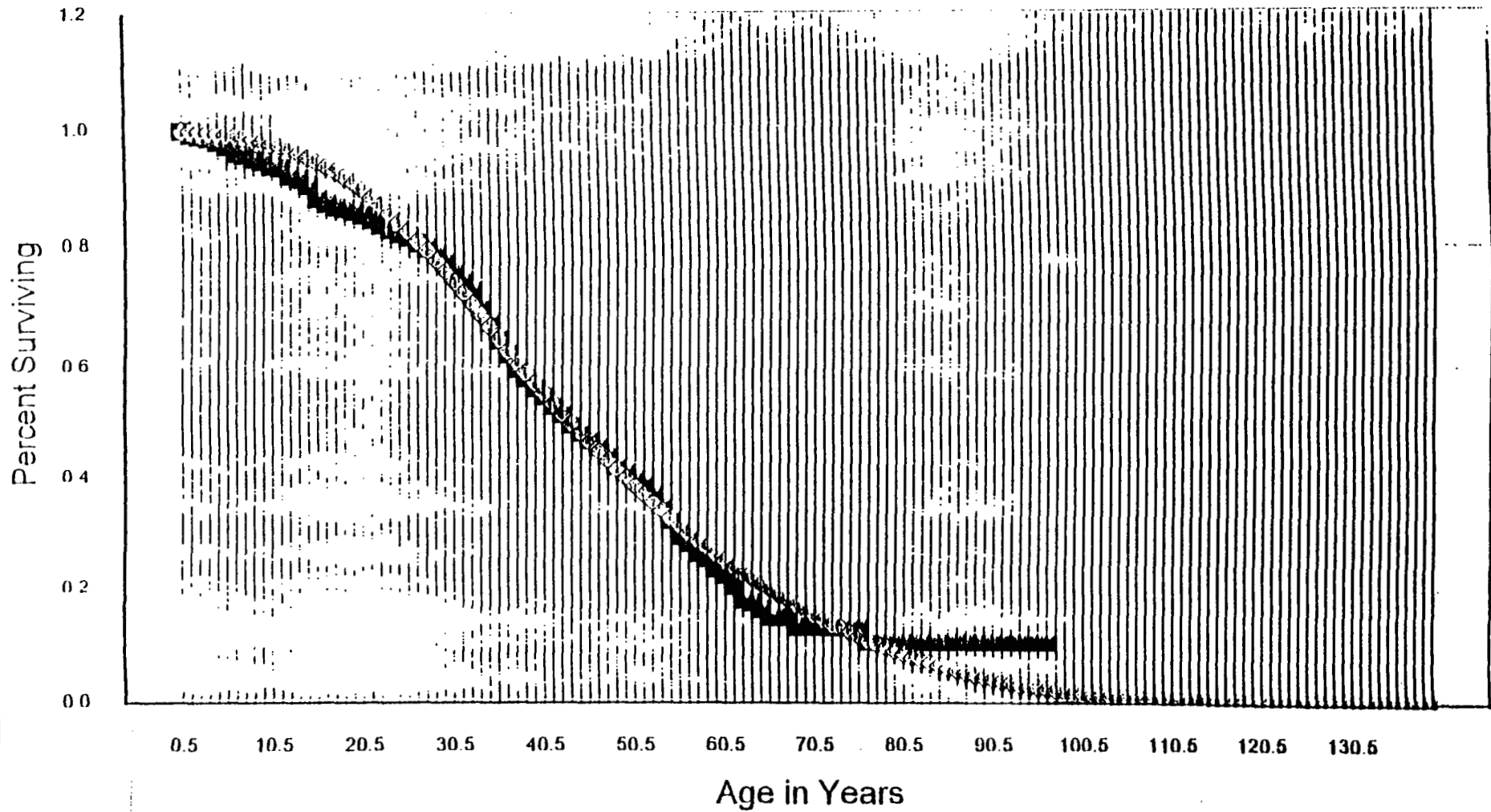
■ Observed Life Table    ◆ Iowa Curve - L1.5 - 45.5

ACTUARIAL ANALYSIS  
 CURVE FITTING RESULTS  
 ACCOUNT: 140000  
 BAND: 1977.1996

RANK	IDWA CLAVE	AVERAGE SERVICES LIFE	SUM OF SQUARED DEVIATIONS
1	11.5	45.50	300.88
2	11	45.50	1143.88
3	11	46.00	1050.11
4	20.5	46.50	1801.91
5	20	46.00	1989.24
6	10.5	45.50	1111.28
7	21	47.50	1168.16
8	21	46.50	2141.11
9	22.5	46.00	2488.18
10	20.5	47.00	1920.18
11	11.5	47.50	1111.28
12	21.5	46.50	1111.24
13	21	46.00	1111.11
14	11	45.50	2891.88
15	11	45.50	4709.88
16	22	46.00	1111.24
17	21	45.50	1111.11
18	21	47.50	1111.11
19	21.5	46.50	1871.88
20	21.5	44.50	2899.11
21	21.5	45.50	1014.88
22	11	45.50	1111.11
23	11	45.50	1111.11
24	22	45.50	1111.11
25	22	45.50	1111.11
26	22	45.50	1111.11
27	22	45.50	1111.11
28	22	45.50	1111.11
29	22	45.50	1111.11
30	22	45.50	1111.11
31	22	45.50	1111.11
32	22	45.50	1111.11
33	22	45.50	1111.11
34	22	45.50	1111.11
35	22	45.50	1111.11
36	22	45.50	1111.11
37	22	45.50	1111.11
38	22	45.50	1111.11
39	22	45.50	1111.11
40	22	45.50	1111.11
41	22	45.50	1111.11
42	22	45.50	1111.11
43	22	45.50	1111.11
44	22	45.50	1111.11
45	22	45.50	1111.11
46	22	45.50	1111.11
47	22	45.50	1111.11
48	22	45.50	1111.11
49	22	45.50	1111.11
50	22	45.50	1111.11
51	22	45.50	1111.11
52	22	45.50	1111.11
53	22	45.50	1111.11
54	22	45.50	1111.11
55	22	45.50	1111.11
56	22	45.50	1111.11
57	22	45.50	1111.11
58	22	45.50	1111.11
59	22	45.50	1111.11
60	22	45.50	1111.11
61	22	45.50	1111.11
62	22	45.50	1111.11
63	22	45.50	1111.11
64	22	45.50	1111.11
65	22	45.50	1111.11
66	22	45.50	1111.11
67	22	45.50	1111.11
68	22	45.50	1111.11
69	22	45.50	1111.11
70	22	45.50	1111.11
71	22	45.50	1111.11
72	22	45.50	1111.11
73	22	45.50	1111.11
74	22	45.50	1111.11
75	22	45.50	1111.11
76	22	45.50	1111.11
77	22	45.50	1111.11
78	22	45.50	1111.11
79	22	45.50	1111.11
80	22	45.50	1111.11
81	22	45.50	1111.11
82	22	45.50	1111.11
83	22	45.50	1111.11
84	22	45.50	1111.11
85	22	45.50	1111.11
86	22	45.50	1111.11
87	22	45.50	1111.11
88	22	45.50	1111.11
89	22	45.50	1111.11
90	22	45.50	1111.11
91	22	45.50	1111.11
92	22	45.50	1111.11
93	22	45.50	1111.11
94	22	45.50	1111.11
95	22	45.50	1111.11
96	22	45.50	1111.11
97	22	45.50	1111.11
98	22	45.50	1111.11
99	22	45.50	1111.11
100	22	45.50	1111.11

# OBSERVED LIFE TABLE AND THE BEST FIT IOWA CURVE

## All US Other Production Units: Band 1982-1996



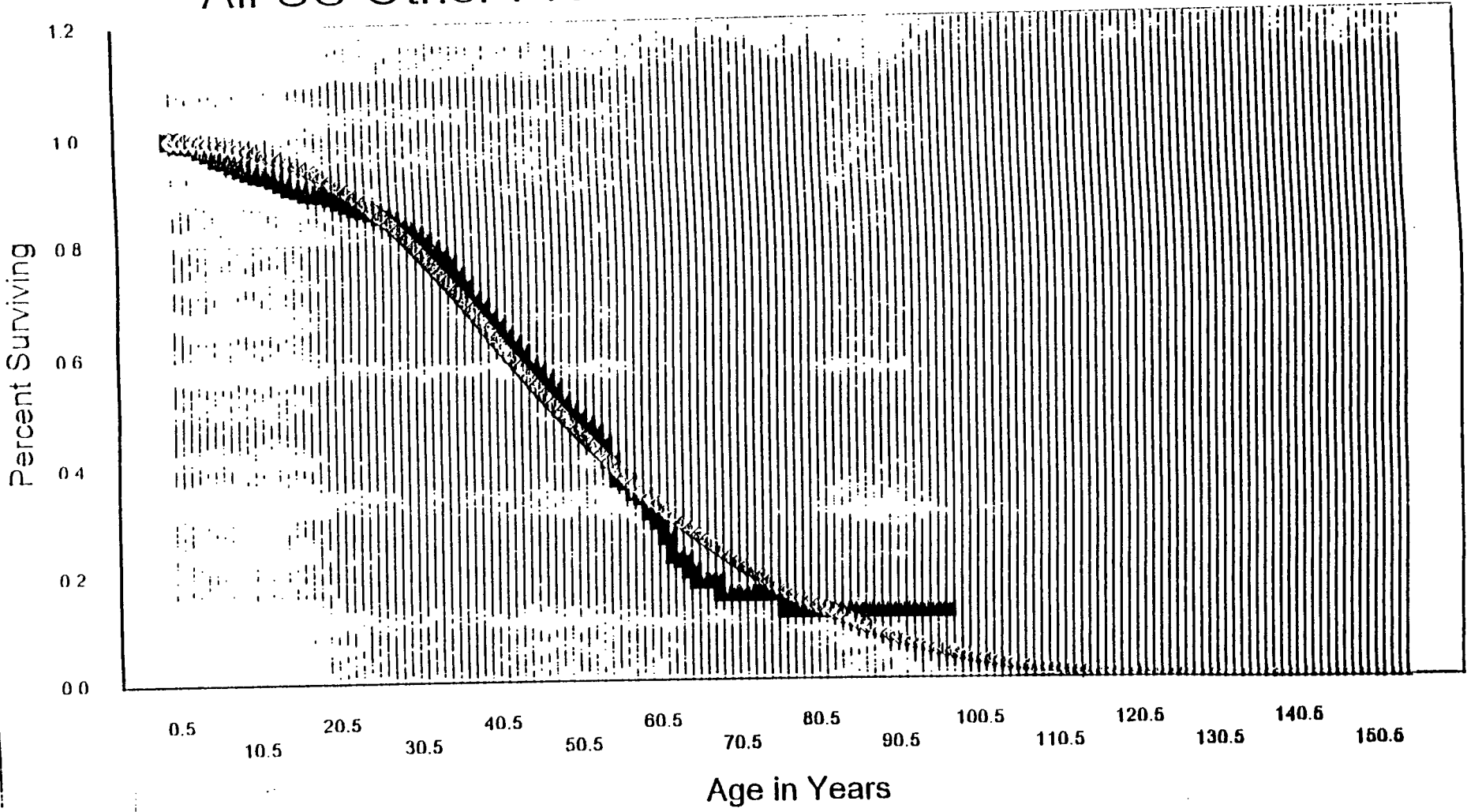
■ Observed Life Table ◆ Iowa Curve - I.1.5 - 46.5

ACTUARIAL ANALYSIS  
 CURVE FITTING RESULTS  
 ACCOUNT: SAC000  
 SINC: 1982.1996

	DOMA RANK CURVE	AVERAGE SERVICE LIFE	SUM OF SQUARES DEVIATIONS
1	L1.5	46.50	1334.36
2	L1	46.00	1352.03
3	L3.5	46.00	1755.11
4	L2	46.50	2068.33
5	S0	45.00	2111.77
6	S0.5	45.00	2155.34
7	R1	44.00	2361.71
8	R0.5	44.00	2371.11
9	S-0.5	44.50	2545.51
10	L0	46.00	2623.11
11	R1.5	44.50	2711.11
12	S1	45.50	2817.16
13	O1	47.00	2954.16
14	S1.5	45.50	2933.13
15	O1	47.50	2924.34
16	R2	46.00	2833.47
17	L1	46.50	3131.36
18	R1	46.50	3523.73
19	R2.5	46.00	3657.34
20	R2	46.50	4031.17
21	O1	48.00	4124.94
22	O1	48.50	4213.94
23	L4	46.00	4403.13
24	O4	50.50	4693.33
25	R4	46.50	4711.11
26	S4	46.50	4863.31
27	L3	46.50	4924.70
28	R3	46.50	5073.30
29	S3	46.50	5377.12
30	R3	46.50	5716.11
31	S3	47.50	5845.14

# OBSERVED LIFE TABLE AND THE BEST FIT IOWA CURVE

## All US Other Production Units: Band 1987-1996



■ Observed Life Table    ◆ Iowa Curve - L1.5 - 51.5

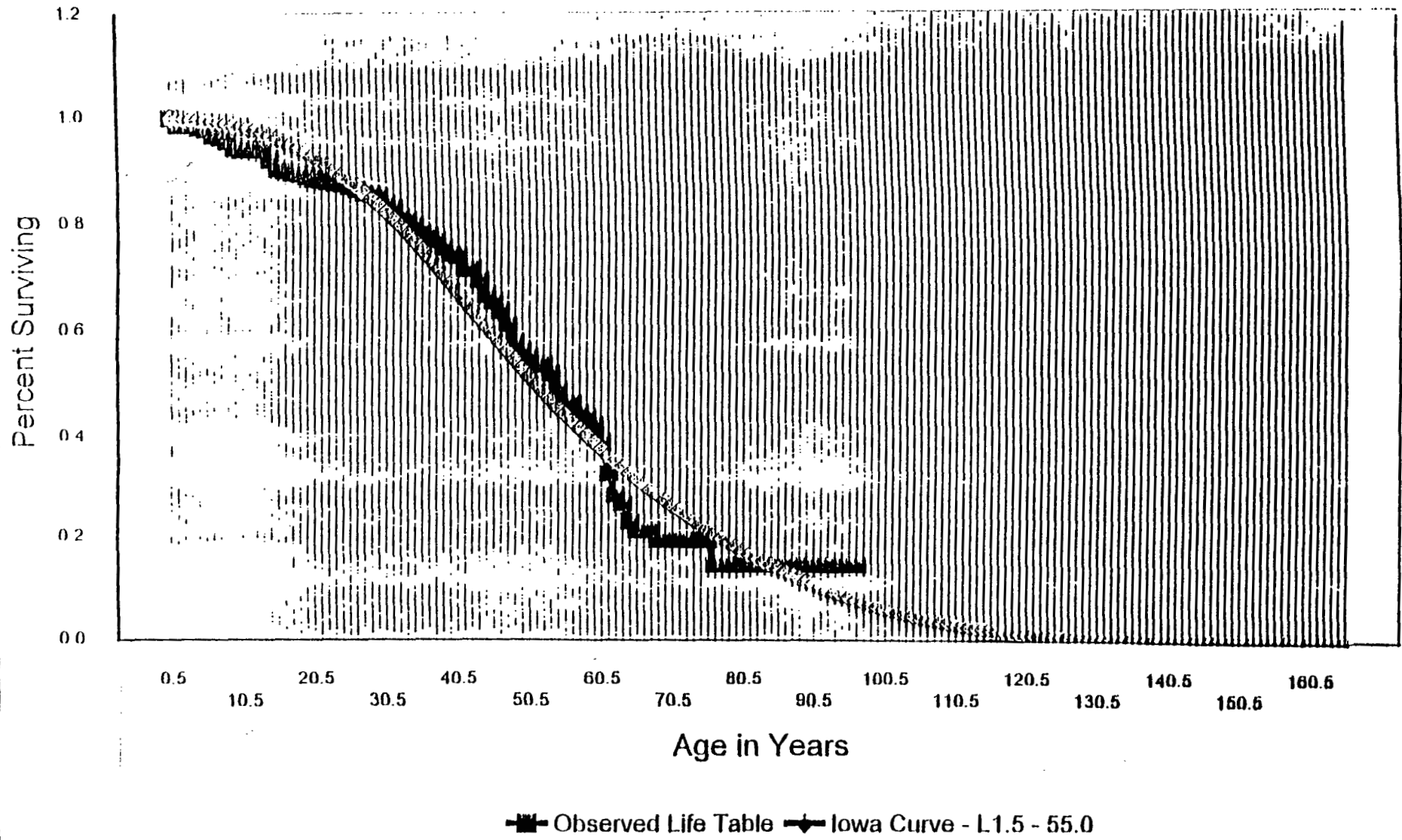
ACTUARIAL ANALYSIS  
 CURVE FITTING RESULTS  
 ACCOUNT: 240000  
 DNO: 1987.1996

RANK	IDIA CURVE	AVERAGE SERVICE LIFE	SUM OF SQUARES DEVIATIONS
1	11.5	51.50	1405.25
2	12	52.00	1692.00
3	11	51.00	2117.00
4	13.5	50.00	2211.00
5	10	50.00	2567.00
6	11.5	49.50	2711.00
7	11	49.00	2735.00
8	11	50.50	2800.75
9	13.5	51.00	3193.00
10	10.5	49.00	3602.00
11	11.5	49.50	3746.00
12	11.5	50.50	3715.00
13	11	49.50	3861.75
14	11	51.50	4729.00
15	11	51.50	5077.00
16	11	50.50	5577.00
17	11.5	50.00	5673.00
18	11	49.00	6107.00
19	11	52.00	6512.00
20	11	50.00	6474.00
21	11	50.50	10127.00
22	11	51.00	11835.75
23	11	50.50	14604.00
24	11	51.50	14675.00
25	11	50.50	17359.00
26	11	52.50	19711.00
27	11	51.00	20050.00
28	11	51.00	21729.75
29	11	51.00	25191.00
30	11	51.00	24629.00
31	11	49.50	31556.00



# OBSERVED LIFE TABLE AND THE BEST FIT IOWA CURVE

## All US Other Production Units: Band 1992-1996



ACTUARIAL ANALYSIS  
 CURVE FITTING RESULTS  
 ACCOUNT: 00000  
 DANC: 0000000

AGE	AVERAGE SERVICE LEFT	SUM OF SQUARES
0	0.00	0.00
1	0.00	0.00
2	0.00	0.00
3	0.00	0.00
4	0.00	0.00
5	0.00	0.00
6	0.00	0.00
7	0.00	0.00
8	0.00	0.00
9	0.00	0.00
10	0.00	0.00
11	0.00	0.00
12	0.00	0.00
13	0.00	0.00
14	0.00	0.00
15	0.00	0.00
16	0.00	0.00
17	0.00	0.00
18	0.00	0.00
19	0.00	0.00
20	0.00	0.00
21	0.00	0.00
22	0.00	0.00
23	0.00	0.00
24	0.00	0.00
25	0.00	0.00
26	0.00	0.00
27	0.00	0.00
28	0.00	0.00
29	0.00	0.00
30	0.00	0.00
31	0.00	0.00
32	0.00	0.00
33	0.00	0.00
34	0.00	0.00
35	0.00	0.00
36	0.00	0.00
37	0.00	0.00
38	0.00	0.00
39	0.00	0.00
40	0.00	0.00
41	0.00	0.00
42	0.00	0.00
43	0.00	0.00
44	0.00	0.00
45	0.00	0.00
46	0.00	0.00
47	0.00	0.00
48	0.00	0.00
49	0.00	0.00
50	0.00	0.00
51	0.00	0.00
52	0.00	0.00
53	0.00	0.00
54	0.00	0.00
55	0.00	0.00
56	0.00	0.00
57	0.00	0.00
58	0.00	0.00
59	0.00	0.00
60	0.00	0.00
61	0.00	0.00
62	0.00	0.00
63	0.00	0.00
64	0.00	0.00
65	0.00	0.00
66	0.00	0.00
67	0.00	0.00
68	0.00	0.00
69	0.00	0.00
70	0.00	0.00
71	0.00	0.00
72	0.00	0.00
73	0.00	0.00
74	0.00	0.00
75	0.00	0.00
76	0.00	0.00
77	0.00	0.00
78	0.00	0.00
79	0.00	0.00
80	0.00	0.00
81	0.00	0.00
82	0.00	0.00
83	0.00	0.00
84	0.00	0.00
85	0.00	0.00
86	0.00	0.00
87	0.00	0.00
88	0.00	0.00
89	0.00	0.00
90	0.00	0.00
91	0.00	0.00
92	0.00	0.00
93	0.00	0.00
94	0.00	0.00
95	0.00	0.00
96	0.00	0.00
97	0.00	0.00
98	0.00	0.00
99	0.00	0.00
100	0.00	0.00

**CERTIFICATE OF SERVICE  
DOCKET NO. 010949-EI**

I **HEREBY CERTIFY** that a true and correct copy of the foregoing Direct Testimony of Michael J. Majoras has been furnished by hand-delivery (\*) or U.S. Mail to the following parties on this 27<sup>th</sup> day of December, 2001.

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\_\_\_\_\_  
Stephen C. Burgess  
Deputy Public Counsel