

# **APPENDIX F**

## **Testimony and Exhibits of Austin O. Davis**



UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION

New York Power Authority ) Docket No. ER16-\_\_\_\_-000

PREPARED DIRECT TESTIMONY OF  
AUSTIN O. DAVIS

1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Austin O. Davis. My business address is 123 Main Street White Plains,  
4 New York 10601.

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

6 My position is Manager Plant and Cost Accounting for the New York Power  
7 Authority (“NYPA” or the “Authority”), a corporate municipal instrumentality and  
8 political subdivision of the State of New York.

9 **Q. What are your principle areas of responsibility?**

10 A. My responsibilities include maintaining the accuracy and timely reporting of  
11 utility plant and related accounts, and ensuring that the Authority’s accounting for  
12 fixed assets follows generally accepted accounting principles (“GAAP”) and the  
13 Federal Energy Regulatory Commission’s (“FERC”) Uniform System of  
14 Accounts. I am responsible for evaluating major expenditures to determine  
15 accounting treatment as capital or period expenses, and I work with project  
16 engineers and cost scheduling engineers to determine the useful lives of various  
17 assets. I also monitor NYPA’s asset retirement obligations and am responsible

1 for the appropriate FERC classifications of all Operation & Maintenance and  
2 Administrative & General Costs

3 **Q. Please describe your educational background and employment experience.**

4 A. I received a Master's Degree in Business Administration from Long Island  
5 University in 1999. I also have a Bachelor's degree in Accounting from Lehman  
6 College that I received in 1997. I have a certificate in the Principles of  
7 Accounting from the University of London Schools Examination Board. I have  
8 held various positions in the Authority's Accounting and Budget Departments  
9 from 1988 forward.

10 **Q. Have you had any formal training relating to depreciation and utility**  
11 **accounting?**

12 A. Yes. I have received specialized training in Public Utility Accounting, Work  
13 Order and Asset Management Accounting, and Advanced Public Utility  
14 Accounting from the American Public Power Association continuing professional  
15 education program in 2007.

16 **II. PURPOSE OF TESTIMONY**

17 **Q. What is the purpose of your testimony?**

18 A. The purpose of my testimony is to support the transmission and general plant  
19 depreciation rates included in the proposed formula rate ("Formula Rate") filed by  
20 the Authority in this proceeding. I corroborate the methodology which was used  
21 by Mr. Julius Breitling, P.E., in his depreciation study of NYPA's transmission  
22 assets dated September 30, 1996 (the "1996 Study"). My testimony confirms that  
23 NYPA adopted the recommendations of the 1996 Study by computing annual  
24 depreciation expense at the subaccount levels and maintaining the accumulated

1 depreciation at the same levels for its transmission and production plants. The  
2 1996 Study is attached as Exhibit No. PA-402, as the basis for NYPA's  
3 depreciation rates for its transmission assets for the St. Lawrence-FDR Power  
4 Project, the Niagara Power Project, the Blenheim-Gilboa Pumped Storage Project,  
5 the J.A. FitzPatrick Nuclear Power Project, the Massena-Marcy 765 kV  
6 transmission line, and the Marcy-South 345 kV transmission line. In addition to  
7 the 1996 Study, I also corroborate the methodology and procedures used in  
8 NYPA's 1982 depreciation study (the "1982 Study") that developed NYPA's  
9 general plant depreciation rates, which is attached as Exhibit No. PA-403. In my  
10 view, the depreciation rates have not changed materially since both studies were  
11 conducted. In particular, NYPA has not developed any new transmission assets  
12 since the 1996 Study was performed. Despite the fact that the Long Island Sound  
13 Cable was built prior to 1996, it was not included in the 1996 Study. Accordingly,  
14 I corroborate the depreciation rate for the Long Island Sound Cable used in this  
15 Formula Rate filing.

16 **Q. Have you previously testified on behalf of NYPA?**

17 A. Yes. In FERC Docket No. ER15-2102-000, in which NYPA's earlier formula  
18 rate proposal was rejected without prejudice for reasons unrelated to depreciation,  
19 I submitted the same testimony and exhibits that I am submitting today.

20 **III. DEFINITION OF DEPRECIATION**

21 **Q. Please explain the definition of depreciation as used in the 1996 Study.**

22 A. The definition of depreciation that was used in preparing the Study is the same  
23 that is used by FERC and the National Association of Regulatory Utility

1 Commissioners (“NARUC”):

2 Depreciation, as applied to depreciable electric plant, means the  
3 loss in service value not restored by current maintenance, incurred  
4 in connection with the consumption or prospective retirement of  
5 electric plant in the course of service from causes which are known  
6 to be in current operation and against which the utility is not  
7 protected by insurance. Among the causes to be given  
8 consideration are wear and tear, decay, action of the elements,  
9 inadequacy, obsolescence, changes in the art, changes in demand  
10 and requirements of public authorities.<sup>1</sup>

11 In the preceding definition, “service value” means the difference between  
12 original cost and the net salvage value. “Net salvage value” means the salvage  
13 value of the property retired less the cost of removal of the electric plant.<sup>2</sup>

14 **Q. Does the definition of depreciation in the 1996 Study differ from that which**  
15 **is applied NYPA’s general plant assets or to the Long Island Sound Cable?**

16  
17 A. No, the definition of depreciation is the same as that applied to the NYPA’s  
18 general plant assets and the Long Island Sound Cable.

19 **IV. 1996 DEPRECIATION STUDY OVERVIEW**

20 **Q. How were the depreciation rates for NYPA transmission assets calculated?**

21 A. The depreciation rates for NYPA transmission assets were determined by the  
22 Straight Line Method, Equal Life Group Procedure and the Remaining Life  
23 Technique, using a Location-Life basis for certain projects and Whole-Life basis  
24 for other projects. Straight Line Method is the simplest depreciation method and  
25 results in an equal amount of depreciation expense charged each period. Page II-5  
26 of Exhibit No. PA-402 describes how the Average Life Group Procedure and the  
27 Equal Life Group Procedure were used to develop NYPA’s Straight Line Method  
28 depreciation rates. Plant accounts and subaccounts where Location-Life basis

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<sup>1</sup> 18 C.F.R. part 101, Definition 12 (2014).

<sup>2</sup> *Id.* at Definition 37.

1 was used assumes that all vintages of property will be retired at a specific date.  
2 The accounts and sub-accounts using Whole-Life basis assumes that all vintages  
3 of property will live through a complete cycle as depicted by an Iowa Curve. Page  
4 II-6 of Exhibit No. PA-402 lists the projects using Location-Life basis and  
5 projects using Whole-Life basis.

6 **Q. Please explain how the composite annual depreciation rate by accounts by**  
7 **Equal Life Group Procedure using Whole-Life or Location-Life basis were**  
8 **used to calculate NYPA's depreciation accrual rates.**

9 A. Using NYPA's source data for 26 Iowa Curves, and generalized percent survivor  
10 curves, a computer program develops an annual depreciation rate for each  
11 vintage. As of the date of the study, the Equal Life Group Procedure was used to  
12 calculate a weighted composite rate for each group. In addition, in order to apply  
13 the Remaining Life Technique, the program also develops the average remaining  
14 life of the surviving property in each group. Calculations were made for both  
15 Location-Life Basis property and Whole-Life Basis property. The NYPA survivor  
16 curves were used to calculate the average service life for each account. The  
17 average service life along with the net salvage percentages were used in the  
18 calculation of the annual depreciation accrual rates for NYPA assets as follows:

19 **Annual Depreciation Accrual Rate = (100 – Net Salvage %) / Average Remaining**  
20 **Life.**

21 Pages II-7 through II-21 of Exhibit No. PA-402 show how the methods and  
22 procedures were used to generate the rates.

23 **Q. Are the methods and procedures used in the 1996 Study consistent with**  
24 **methods and procedures commonly used in the electric utility industry?**

25 A. Yes.

1 **V. GENERAL PLANT DEPRECIATION OVERVIEW**

2  
3 **Q. What is the basis for NYPA’s general plant asset depreciation rate?**

4 A. NYPA’s general plant depreciation rate was developed in accordance with the  
5 standards applied by the 1982 Study (Exhibit No. PA-403). This review included  
6 an investigation and analysis of NYPA’s historical plant data, together with an  
7 interpretation of past experience and future expectation to determine the average  
8 service life of assets at each account level. NYPA has made updates to the 1982  
9 depreciation rates, as GAAP requires continual updates to depreciation rates  
10 resulting from changes in assets’ useful lives. The changes, most notably, include  
11 the following: (i) Account 391 Office Furniture & Equipment; and (ii) Account  
12 392 Transportation Equipment. The current estimate of shorter average service  
13 lives for assets in Account 391 is the product of the advancement in technology.  
14 As a result, the predominant part of our office furniture and equipment is  
15 computer software and hardware, which has a significantly shorter life than  
16 traditional furniture. For Account 392, NYPA added an asset class with a five-  
17 year service life for certain small fleet assets to complement the existing ten-year  
18 average service life that applies to large vehicles. The stated depreciation rates  
19 for the aforementioned accounts in the Formula Rate represent the weighted  
20 average of the multiple asset classes.

21 **Q. How was the depreciation rate for NYPA’s general plant assets calculated?**

22 A. NYPA uses the Straight Line depreciation method for all general plant assets.  
23 The annual depreciation rate for each FERC Account is calculated as follows:

$$\text{Annual Depreciation Rate} = \frac{1}{\text{Average Estimated Service}} \times 100\%$$

Life

1 The Average Estimated Service Life in the above formula is the average of  
2 expected useful life for all depreciable assets which were not fully depreciated as  
3 of December 31, 2014 for each FERC Account.

4 **Q. Are the methods and procedures used in the 1982 Study consistent with**  
5 **methods and procedures commonly used in the electric utility industry?**

6 A. Yes.

7 **VI. LONG ISLAND SOUND CABLE DEPRECIATION RATE OVERVIEW**

8 **Q. What is the basis for the Long Island Sound Cable depreciation rate?**

9 A. NYPA has an agreement to recover the cost of the cable, through debt service,  
10 from the Long Island Power Authority (“LIPA”), which is credited against  
11 NYPA’s revenue requirement through the NYPA Transmission Adjustment  
12 Charge (“NTAC”) calculation. NYPA uses a 30-year depreciable life for the  
13 Long Island Sound Cable based on the 30-year term of the bonds purchased to  
14 construct the facility in 1991. The remaining life of the asset balance is between  
15 five and six years. The Long Island Sound Cable depreciation rate is listed in this  
16 filing’s “Schedule K – Depreciation and Amortization Rates” (Exhibit No. PA-  
17 102).

18 **VII. COST OF REMOVAL**

19 **Q. Generally, what is the “cost of removal” as applied to depreciation rates?**

20 A. Cost of removal is an estimate of how much it will cost the company to physically  
21 remove the assets from service. For example, this may take the form of the cost  
22 of securing unused or mothballed property, or the cost of an asset’s demolition.

23 **Q. Under what basis will NYPA recover its cost of removal under the proposed**  
24 **Formula Rate?**

1

2 A. Beginning in 2015, NYPA will base its cost of removal for the Formula Rate on  
3 the 1996 Study's estimates.

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

5 A. Yes.

UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION

New York Power Authority )

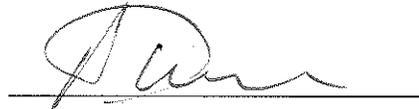
Docket No. ER16-\_\_\_-000

AFFIDAVIT OF AUSTIN O. DAVIS

State of New York )

County of Westchester )

I, Austin O. Davis, being duly sworn, depose and say that the statements contained in the Prepared Direct Testimony of Austin O. Davis served on behalf of the New York Power Authority in these proceedings are true and correct to the best of my knowledge, information and belief, and I hereby adopt said testimony as if given by me in formal hearing, under oath.



Austin O. Davis

SUBSCRIBED AND SWORN to before me

This 26 day of January, 2016



MARINA FELDMAN  
Notary Public, State of New York  
No. 01FE 6113819  
Qualified in Westchester County  
Commission Expires August 02, 2016

**NEW YORK POWER AUTHORITY**  
**DEPRECIATION STUDY**  
**OF**  
**CERTAIN TRANSMISSION PLANT IN SERVICE**  
**AT DECEMBER 31, 1995**

**JULIUS BREITLING, P. E., A.S.A.  
74 SUNNY WOOD DRIVE  
CENTERVILLE, MA 02632**

September 30, 1996

Mr. Robert J. McGevna  
Manager of Accounting  
Practices & Reports  
New York Power Authority  
123 Main Street  
White Plains, New York 10601

Dear Mr. McGevna:

According to your authorization, I have undertaken a depreciation study of certain of New York Power Authority's ("NYPA" or "Authority") depreciable Electric Transmission Plant in service at December 31, 1995. Excluded from this study are certain project plant accounts, or subaccounts which the Authority requested that they not be addressed in this study. The transmission plant excluded relates to the following projects:

Indian Point No. 3 Nuclear Power Plant  
Charles Poletti Power Project  
Long Island Sound Cable Project

The purpose of this depreciation study was primarily to recommend appropriate annual depreciation accrual rates for NYPA to use for its Transmission Plant properties until such time as another study is made. The depreciation rates recommended herein were developed using the Straight Line Method, Equal Life Group Procedure, Remaining Life Technique using both a Location-Life Basis and Whole- Life Basis, as applicable. It should be noted that this is the first depreciation study conducted for the NYPA's Transmission Plant. It is normally recommended that depreciation rates be reviewed at intervals not exceeding five years.

I submit herewith my recommendations resulting from this current study.

Mr. Robert J. McGevna

September 30, 1996

**SUMMARY OF RECOMMENDATIONS**

1. NYPA should adopt the depreciation rates recommended in this report shown in Section I, Page 1-7, Schedule III, Column V, for each plant account, or subaccount, for its Transmission Plant property which include the amortization of the differences between the calculated depreciation requirement and the accumulated depreciation per books as allocated.
  
2. NYPA should compute the annual depreciation expense at the account, or subaccount, level as indicated herein.
  
3. NYPA should maintain its Accumulated Provision for Depreciation at these same levels of detail.

The depreciation accrual rates recommended as a result of this study are based on depreciable Transmission Plant in service at December 31, 1995. The resulting normal annual depreciation accruals have been combined with the amortization to develop the effective depreciation rate and to indicate the total annual depreciation expense based on plant in service at December 31, 1995. The recommended effective annual depreciation rates and accruals are compared with NYPA's current annual depreciation rates and accruals, as applied to the December 31, 1995 plant balances, in Section I, Schedule III. The recommendations contained herein result in a decrease in annual depreciation accruals of about \$1,444,000 for the Authority's Transmission Plant property included in this study.

Section I of this report contains Schedules I, II, and III. Each schedule is preceded with an explanation of the information shown in each column.

Section II of this report contains further details and explanations of the methods and procedures used in conducting the study.

Appendix A contains the definitions of common depreciation accounting terms.

Mr. Robert J. McGevna

September 30, 1996

Appendix B contains examples of the analyses required as part of the investigations and studies necessary to reach the conclusions and recommendations with regard to the average life, Iowa Curve type and net salvage expected for each depreciable plant account, or subaccount, as discussed in Section II, as well as examples of the detailed computations which are summarized in Section I.

Appendix C contains Alternative Schedules I, II and III. These schedules were prepared at your request. They are based on the Straight Line Method, Average Life Group Procedure and Remaining Life Technique using the same bases indicated above and are comparable to the schedules shown in Section I.

Should you or any of the Authority's management have any questions about this study and report, I will be available to discuss them with you at your convenience.

Very truly yours,

A handwritten signature in cursive script that reads "Julius Breitling". The signature is written in dark ink and is positioned below the typed name "Julius Breitling".

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**SECTION I**

**DEPRECIATION OF CERTAIN TRANSMISSION PLANT**

**SECTION I****DEPRECIATION OF TRANSMISSION PLANT**

This section contains three schedules in which the final recommended annual depreciation rates, accruals and amortizations for each plant account, or subaccount, are developed, based on Transmission Plant in service at December 31, 1995 for certain of NYPA's Projects. Each schedule contains two pages; one page addresses Location-Life property and the second addresses Whole-Life property.

Schedule I indicates the average service life, mortality dispersion (Iowa Curve), and net salvage percent recommended for each account, or subaccount, and summarizes the normal annual depreciation rates developed in this study, and the normal annual depreciation accruals determined by applying these rates to the balances of plant in service at December 31, 1995.

Schedule II compares the calculated depreciation requirement, based on the average service life, mortality dispersion and net salvage percent recommended for each account, or subaccount, with the Accumulated Depreciation per Books, as allocated to each account within each Project, and computes the annual amount necessary to amortize the differences over the average remaining life of each account, or subaccount at December 31, 1995.

Schedule III combines the normal annual depreciation expense shown in Schedule I, with the annual amount necessary to amortize the differences between the calculated depreciation requirement and the Accumulated Depreciation per Books, as allocated, as shown in Schedule II. By relating the total depreciation amounts to the original costs at December 31, 1995, the effective annual depreciation rates are developed and compared with the Authority's current rates and accruals.

**SCHEDULES I and Ia****SUMMARY OF ANNUAL NORMAL DEPRECIATION RATES AT DECEMBER 31, 1995  
BY THE STRAIGHT LINE METHOD, EQUAL LIFE GROUP PROCEDURE**

- Column I Primary Plant Account, or Subaccount, Number.
- Column II Title of Account, or Subaccount.
- Column III Original Cost at December 31, 1995.
- Column IV Average Life and Iowa Curve.
- Column V Expected Future Net Salvage.
- Column VI Annual Normal Depreciation Rate Determined by the Straight Line Method, Equal Life Group Procedure, Location-Life Basis or Whole-Life Basis, reflecting Columns III, IV and V. Sample calculations appear in Appendix B, on Page B-8, for a Location-Life account and on Page B-9 for a Whole-Life Account.
- Column VII Annual Normal Depreciation Amount: Column III times Column IV.

SCHEDULE I

**NEW YORK POWER AUTHORITY  
RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT**  
Straight Line Method / Equal Life Group Procedure / Remaining Life Amortization / Location Life Basis  
Based on Depreciable Plant in Service at December 31, 1995

Account Number	Account Title	Original Cost Dec 31, 1995	Ret. Year Avg. Life Yrs Curve	Net Salvage Percent	Normal Annual Depreciation Rate	Annual Depreciation Amount
		III	IV	V	VI	VII
<b>St. Lawrence / FDR Project</b>						
352	Structures & Improvements	6,708,035	2043 75 R5	-25%	1.86%	124,607
353	Station Equipment	70,775,053	50 R5	-15%	2.35%	1,661,486
354	Towers & Fixtures	13,873,437	65 R5	-40%	2.31%	320,800
355	Poles & Fixtures	6,427,665	55 R4	-40%	2.64%	169,435
356	Overhead Conductors & Devices	15,472,585	55 R5	-20%	2.23%	345,683
357	Underground Conduit	61,047	75 R5	-5%	1.44%	881
358	Underground Conductors & Devices	1,186,661	50 R5	-15%	2.34%	27,718
359	Roads & Trails	193,299	100 SQ	0%	1.57%	3,037
	<b>Total</b>	<b>114,697,782</b>				<b>2,653,647</b>
<b>Niagara Project</b>						
352	Structures & Improvements	17,306,144	2047 75 R5	-25%	1.73%	299,659
353	Station Equipment	57,434,220	50 R5	-15%	2.34%	1,344,107
354	Towers & Fixtures	17,695,643	65 R5	-40%	2.20%	388,878
355	Poles & Fixtures	19,726	55 R4	-40%	2.59%	511
356	Overhead Conductors & Devices	28,672,315	55 R5	-20%	2.23%	638,315
359	Roads & Trails	42,797	100 SQ	0%	1.19%	509
	<b>Total</b>	<b>121,170,845</b>				<b>2,671,979</b>
<b>Blenheim - Gilboa Project</b>						
352	Structures & Improvements	3,971,097	2059 75 R5	-25%	1.71%	67,971
353	Station Equipment	11,607,709	50 R5	-15%	2.35%	272,466
354	Towers & Fixtures	22,612,274	65 R5	-40%	2.20%	497,269
355	Poles & Fixtures	1,937,519	55 R4	-40%	2.67%	51,806
356	Overhead Conductors & Devices	9,403,929	55 R5	-20%	2.23%	209,412
359	Roads & Trails	670,808	100 SQ	0%	1.23%	8,282
	<b>Total</b>	<b>50,203,336</b>				<b>1,107,206</b>
<b>J A FitzPatrick Project</b>						
352	Structures & Improvements	306,893	2014 75 R5	-25%	3.21%	9,837
353	Station Equipment	8,213,649	50 R5	-15%	2.97%	244,059
354	Towers & Fixtures	10,051,183	65 R5	-40%	3.59%	361,175
356	Overhead Conductors & Devices	5,926,677	55 R5	-20%	3.09%	182,983
359	Roads & Trails	80,335	100 SQ	0%	2.68%	2,149
	<b>Total</b>	<b>24,578,737</b>				<b>800,203</b>
	<b>Total Location Life Basis</b>	<b>310,650,700</b>				<b>7,233,035</b>

SCHEDULE Ia

**NEW YORK POWER AUTHORITY**  
**RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT**  
 Straight Line Method / Equal Life Group Procedure / Remaining Life Amortization / Whole Life Basis  
 Based on Depreciable Plant in Service at December 31, 1995

Account Number	Account Title	Original Cost Dec 31, 1995	Ret. Year Avg. Life Yrs	lowa Curve	Net Salvage Percent	Normal Annual Depreciation Rate	Annual Depreciation Amount
		III	IV		V	VI	VII
<b>Massena - Marcy Project</b>							
352	Structures & Improvements	33,034,480	N.A. 75 R5		-25%	1.70%	561,934
353	Station Equipment	129,038,582	50 R5		-15%	2.35%	3,029,128
354	Towers & Fixtures	64,465,654	65 R5		-40%	2.20%	1,417,148
355	Poles & Fixtures	19,615,058	55 R4		-40%	2.68%	525,268
356	Overhead Conductors & Devices	39,320,417	55 R5		-20%	2.23%	875,613
359	Roads & Trails	5,105,433	100 SQ		0%	1.00%	51,054
	<b>Total</b>	<b>290,579,624</b>					<b>6,460,145</b>
<b>Marcy-South Project</b>							
353	Station Equipment	19,236,000	N.A. 50 R5		-15%	2.35%	451,557
354	Towers & Fixtures	74,138,000	65 R5		-40%	2.20%	1,629,775
355	Poles & Fixtures	206,471,000	55 R4		-40%	2.70%	5,570,899
356	Overhead Conductors & Devices	103,974,000	55 R5		-20%	2.23%	2,315,362
357	Underground Conduit	43,193,000	75 R5		-5%	1.43%	617,178
358	Underground Conductors & Devices	12,102,000	50 R5		-15%	2.35%	284,090
359	Roads & Trails	22,035,000	100 SQ		0%	1.00%	220,350
	<b>Total</b>	<b>481,149,000</b>					<b>11,089,211</b>
	<b>Total Whole Life Basis</b>	<b>771,728,624</b>					<b>17,549,356</b>

## SCHEDULES II and IIa

### DETERMINATION OF THE ANNUAL AMOUNT NECESSARY TO AMORTIZE THE DIFFERENCE BETWEEN THE CALCULATED DEPRECIATION REQUIREMENT AND THE ACCUMULATED DEPRECIATION PER BOOKS, AS ALLOCATED, OVER THE AVERAGE REMAINING LIFE AT DECEMBER 31, 1995

- Column I Primary Plant Account, or Subaccount, Number.
- Column II Title of Account, or Subaccount.
- Column III Original Cost at December 31, 1995.
- Column IV Calculated Depreciation Requirement (Calculated Depreciation Reserve) at December 31, 1995 Determined by the Straight Line Method, Equal Life Group Procedure, using either a Location-Life Basis or a Whole-Life Basis. Sample calculations appear in Appendix B, on Page B-10, for a Location-Life account and on Page B-11 for a Whole-Life Account.
- Column V Accumulated Depreciation per Books (Depreciation Reserve) , as allocated to each plant account, or subaccount within each Project, on the basis of the Calculated Depreciation Requirement in Column IV.
- Column VI Difference Between the Calculated Depreciation Requirement and the Accumulated Depreciation per Books, as allocated. (Column IV minus Column V).
- Column VII Percentage Difference Between the Calculated Depreciation Requirement and the Accumulated Depreciation per Books as allocated. (Column VI divided by Column IV).
- Column VIII Remaining Life Amortization Period.
- Column IX Annual Amortization of the Difference. (Column VI divided by Column VIII). Where the percentage difference is less than the generally accepted limits of plus or minus five percent of the calculated depreciation requirement, no amortization is developed. When this amount is negative, as indicated by parenthesis, an excess exists in the book amounts, so the annual depreciation expense is reduced by this amount. Contrarily, when this amount is positive, a deficiency exists in the book amounts, so the annual depreciation expense is increased by this amount.

SCHEDULE II

NEW YORK POWER AUTHORITY  
 RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT  
 Straight Line Method / Equal Life Group Procedure / Remaining Life Amortization / Location Life Basis  
 Based on Depreciable Plant in Service at December 31, 1995

Account Number	Account Title	Original Cost Dec 31, 1995	Calculated Requirement	Accumulated Provision for Depreciation Per Books		Percent	Average Remaining Life (Yrs)	Annual Amortization of Difference
				Allocated	Difference Amount			
		III	IV	V	VI	VII	VIII	IX
<b>St. Lawrence / FDR Project</b>								
352	Structures & Improvements	6,708,035	3,280,231	3,432,258	(152,027)	-4.63%	41.3	0
353	Station Equipment	70,775,053	30,599,320	32,017,488	(1,418,168)	-4.63%	31.4	0
354	Towers & Fixtures	13,873,437	6,571,860	6,876,442	(304,582)	-4.63%	40.5	0
355	Poles & Fixtures	6,427,965	4,126,077	4,317,306	(191,229)	-4.63%	30.5	0
356	Overhead Conductors & Devices	15,472,585	6,408,165	6,705,160	(296,995)	-4.63%	36.1	0
357	Underground Conduit	61,047	31,262	32,711	(1,449)	-4.63%	38.5	0
358	Underground Conductors & Devices	1,186,661	747,893	782,555	(34,662)	-4.63%	23.1	0
359	Roads & Trails	193,299	49,052	51,325	(2,273)	-4.63%	47.5	0
	<b>Total</b>	<b>114,697,782</b>	<b>51,813,860</b>	<b>54,215,245</b>	<b>(2,401,385)</b>			<b>0</b>
<b>Niagara Project</b>								
352	Structures & Improvements	17,306,144	9,304,162	9,578,028	(273,866)	-2.94%	42.3	0
353	Station Equipment	57,434,220	30,312,564	31,204,809	(892,245)	-2.94%	27.4	0
354	Towers & Fixtures	17,695,643	12,366,713	12,730,725	(364,012)	-2.94%	33.2	0
355	Poles & Fixtures	19,726	15,613	16,073	(460)	-2.94%	25.5	0
356	Overhead Conductors & Devices	28,672,315	15,406,313	15,859,795	(453,482)	-2.94%	30.7	0
359	Roads & Trails	42,797	16,558	17,045	(487)	-2.94%	51.5	0
	<b>Total</b>	<b>121,170,845</b>	<b>67,421,923</b>	<b>69,406,475</b>	<b>(1,984,552)</b>			<b>0</b>
<b>Blenheim - Gilboa Project</b>								
352	Structures & Improvements	3,971,087	1,455,724	1,557,266	(101,542)	-6.98%	52.9	(1,920)
353	Station Equipment	11,607,709	5,541,899	5,928,465	(386,566)	-6.98%	29.7	(13,016)
354	Towers & Fixtures	22,612,274	9,182,216	9,822,706	(640,490)	-6.98%	46.5	(13,774)
355	Poles & Fixtures	1,937,519	906,694	969,939	(63,245)	-6.98%	37.6	(1,682)
356	Overhead Conductors & Devices	9,403,929	4,126,088	4,413,896	(287,808)	-6.98%	35.3	(8,153)
359	Roads & Trails	670,808	144,928	155,037	(10,109)	-6.98%	63.5	(159)
	<b>Total</b>	<b>50,203,336</b>	<b>21,357,549</b>	<b>22,847,309</b>	<b>(1,489,760)</b>			<b>(38,704)</b>
<b>J.A. FitzPatrick Project</b>								
352	Structures & Improvements	306,893	201,656	147,127	54,529	27.04%	18.5	2,947
353	Station Equipment	8,213,649	5,002,195	3,649,580	1,352,615	27.04%	18.3	73,913
354	Towers & Fixtures	10,051,183	7,396,012	5,396,098	1,999,914	27.04%	18.5	108,103
356	Overhead Conductors & Devices	5,926,677	3,747,750	2,734,342	1,013,408	27.04%	18.4	55,077
359	Roads & Trails	80,335	40,578	29,606	10,972	27.04%	18.5	593
	<b>Total</b>	<b>24,578,737</b>	<b>16,388,191</b>	<b>11,956,753</b>	<b>4,431,438</b>			<b>240,634</b>
	<b>Total Location Life Basis</b>	<b>310,650,700</b>	<b>156,981,523</b>	<b>158,425,782</b>	<b>(1,444,259)</b>			<b>201,930</b>

SCHEDULE 1 la

NEW YORK POWER AUTHORITY  
 RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT  
 Straight Line Method / Equal Life Group Procedure / Remaining Life Amortization / Whole Life Basis  
 Based on Depreciable Plant in Service at December 31, 1995

Account Number	Account Title	Original Cost Dec 31, 1995	Calculated Requirement	Accumulated Provision for Depreciation		Average Remaining Life (Yrs)	Annual Amortization of Difference
				Per Books Allocated	Amount		
	<u>Massena - Marcy Project</u>						
352	Structures & Improvements	33,034,480	9,124,278	10,025,447	(901,169)	58.8	(15,326)
353	Station Equipment	129,038,582	42,491,102	46,687,781	(4,196,679)	36.0	(116,574)
354	Towers & Fixtures	64,465,654	22,517,212	24,741,148	(2,223,936)	49.1	(45,294)
355	Poles & Fixtures	19,615,058	8,568,131	9,414,372	(846,241)	38.8	(21,810)
356	Overhead Conductors & Devices	39,320,417	14,267,679	15,676,841	(1,409,162)	38.7	(36,412)
359	Roads & Trails	5,105,433	823,791	905,154	(81,363)	83.9	(970)
	<b>Total</b>	<u>290,579,624</u>	<u>97,792,193</u>	<u>107,450,743</u>	<u>(9,658,550)</u>		<u>(236,387)</u>
	<u>Marcy-South Project</u>						
353	Station Equipment	19,236,000	3,374,097	4,000,746	(626,649)	42.5	(14,745)
354	Towers & Fixtures	74,138,000	12,096,929	14,343,611	(2,246,682)	57.6	(39,005)
355	Poles & Fixtures	206,471,000	41,604,153	49,331,017	(7,726,864)	47.6	(162,329)
356	Overhead Conductors & Devices	103,974,000	17,253,630	20,458,032	(3,204,402)	47.5	(67,461)
357	Underground Conduit	43,193,000	4,615,000	5,472,113	(857,113)	67.5	(12,698)
358	Underground Conductors & Devices	12,102,000	2,124,779	2,519,400	(394,621)	42.5	(9,285)
359	Roads & Trails	22,035,000	1,570,805	1,862,540	(291,735)	92.9	(5,140)
	<b>Total</b>	<u>481,149,000</u>	<u>82,639,393</u>	<u>97,987,460</u>	<u>(15,348,067)</u>		<u>(308,663)</u>
	<b>Total Whole Life Basis</b>	<u>771,728,624</u>	<u>180,431,586</u>	<u>205,438,203</u>	<u>(25,006,617)</u>		<u>(545,050)</u>

**SCHEDULES III and IIIa****DETERMINATION OF RECOMMENDED EFFECTIVE ANNUAL DEPRECIATION RATES  
AND COMPARISON WITH THE CURRENT DEPRECIATION RATES AND ACCRUALS  
BASED ON PLANT IN SERVICE AT DECEMBER 31, 1995**

- Column I Primary Plant Account, or Subaccount, Number.
- Column II Title of Account, or Subaccount.
- Column III Original Cost at December 31, 1995.
- Column IV Total Annual Depreciation Accrual. (Schedule I, Column VII plus Schedule II, Column IX).
- Column V Effective Annual Depreciation Rate. (Column IV divided by Column III).
- Column VI Authority's Current Annual Depreciation Rate.
- Column VII Authority's Current Annual Depreciation Amount based on Plant in Service at December 31, 1995. (Column VI times Column III).
- Column VIII Accrual Difference. Parenthesis indicates a reduction in accruals. Column IV minus Column VII).

SCHEDULE III

**NEW YORK POWER AUTHORITY**  
**RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT**  
 Straight Line Method / Equal Life Group Procedure / Remaining Life Amortization / Location Life Basis  
 Based on Depreciable Plant in Service at December 31, 1995

Account Number	Account Title	Original Cost Dec 31, 1995	Total Annual Depreciation Accrual (1)	Effective Annual Depreciation Rate - %	NYPAs Current Basis Annual Depreciation Rate - %	Annual Depreciation Accrual	Annual Difference (2)
	II	III	IV	V	VI	VII	VIII
<b>St. Lawrence / FDR Project</b>							
352	Structures & Improvements	6,708,035	124,607	1.86%	2.39%	160,322	(35,715)
353	Station Equipment	70,775,053	1,661,486	2.35%	1.61%	1,139,478	522,008
354	Towers & Fixtures	13,873,437	320,800	2.31%	1.40%	194,228	126,572
355	Poles & Fixtures	6,427,665	169,435	2.64%	2.06%	132,410	37,025
356	Overhead Conductors & Devices	15,472,585	345,683	2.23%	1.84%	284,696	60,987
357	Underground Conduit	61,047	881	1.44%	0.66%	403	478
358	Underground Conductors & Devices	1,186,661	27,718	2.34%	2.42%	28,717	(999)
359	Roads & Trails	193,299	3,037	1.57%	1.36%	2,668	369
	<b>Total</b>	<b>114,697,782</b>	<b>2,653,647</b>			<b>1,942,922</b>	<b>710,725</b>
<b>Niagara Project</b>							
352	Structures & Improvements	17,306,144	299,659	1.73%	2.46%	425,731	(126,072)
353	Station Equipment	57,434,220	1,344,107	2.34%	1.43%	821,309	522,798
354	Towers & Fixtures	17,695,643	388,878	2.20%	0.99%	175,187	213,691
355	Poles & Fixtures	19,726	511	2.59%	1.97%	389	122
356	Overhead Conductors & Devices	28,672,315	638,315	2.23%	1.97%	564,845	73,470
359	Roads & Trails	42,797	509	1.19%	0.76%	325	184
	<b>Total</b>	<b>121,170,845</b>	<b>2,671,979</b>			<b>1,987,786</b>	<b>684,193</b>
<b>Blenheim - Gilboa Project</b>							
352	Structures & Improvements	3,971,097	66,051	1.66%	2.20%	87,364	(21,313)
353	Station Equipment	11,607,709	259,450	2.24%	2.50%	290,193	(30,742)
354	Towers & Fixtures	22,612,274	483,495	2.14%	2.40%	542,695	(59,200)
355	Poles & Fixtures	1,937,519	50,124	2.59%	3.15%	61,032	(10,908)
356	Overhead Conductors & Devices	9,403,929	201,259	2.14%	2.33%	219,112	(17,853)
359	Roads & Trails	670,808	8,123	1.21%	2.00%	13,416	(5,293)
	<b>Total</b>	<b>50,203,336</b>	<b>1,068,502</b>			<b>1,213,811</b>	<b>(145,309)</b>
<b>J A FitzPatrick Project</b>							
352	Structures & Improvements	306,893	12,784	4.17%	2.20%	6,752	6,033
353	Station Equipment	8,213,649	317,972	3.87%	2.50%	205,341	112,631
354	Towers & Fixtures	10,051,183	469,278	4.67%	2.40%	241,228	228,050
356	Overhead Conductors & Devices	5,926,677	238,060	4.02%	2.33%	138,092	99,968
359	Roads & Trails	80,335	2,742	3.41%	2.00%	1,607	1,135
	<b>Total</b>	<b>24,578,737</b>	<b>1,040,837</b>			<b>593,020</b>	<b>447,817</b>
	<b>Total Location Life Basis</b>	<b>310,650,700</b>	<b>7,434,965</b>			<b>5,737,538</b>	<b>1,697,427</b>

(1) Schedule I, Column VII plus Schedule II, Column IX.  
 (2) Column IV minus Column VII.

SCHEDULE I 1a

**NEW YORK POWER AUTHORITY**  
**RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT**  
 Straight Line Method / Equal Life Group Procedure / Remaining Life Amortization / Whole Life Basis  
 Based on Depreciable Plant in Service at December 31, 1995

Account Number	Account Title	Original Cost Dec 31, 1995	Total Annual Depreciation Accrual (1)	Effective Annual Depreciation Rate - %	Annual Depreciation Rate - %	Annual Depreciation Accrual	Annual Difference (2)
	II	III	IV	V	VI	VII	VIII
<b>Massena - Marcy Project</b>							
352	Structures & Improvements	33,034,480	546,608	1.65%	2.20%	726,759	(180,151)
353	Station Equipment	129,038,582	2,912,554	2.26%	2.50%	3,225,965	(313,411)
354	Towers & Fixtures	64,465,654	1,371,854	2.13%	2.40%	1,547,176	(175,322)
355	Poles & Fixtures	19,615,058	503,458	2.57%	3.15%	617,874	(114,417)
356	Overhead Conductors & Devices	39,320,417	839,201	2.13%	2.33%	916,166	(76,965)
359	Roads & Trails	5,105,433	50,084	0.98%	2.00%	102,109	(52,024)
	<b>Total</b>	<b>290,579,624</b>	<b>6,223,758</b>			<b>7,136,048</b>	<b>(912,289)</b>
<b>Marcy-South Project</b>							
353	Station Equipment	19,236,000	436,812	2.27%	2.50%	480,900	(44,088)
354	Towers & Fixtures	74,138,000	1,590,770	2.15%	2.40%	1,779,312	(188,542)
355	Poles & Fixtures	206,471,000	5,408,570	2.62%	3.15%	6,503,837	(1,095,267)
356	Overhead Conductors & Devices	103,974,000	2,247,901	2.16%	2.33%	2,422,594	(174,693)
357	Underground Conduit	43,193,000	604,480	1.40%	2.50%	1,079,825	(475,345)
358	Underground Conductors & Devices	12,102,000	274,805	2.27%	2.50%	302,550	(27,745)
359	Roads & Trails	22,035,000	217,210	0.99%	2.00%	440,700	(223,490)
	<b>Total</b>	<b>481,149,000</b>	<b>10,780,548</b>			<b>13,009,718</b>	<b>(2,229,170)</b>
	<b>Total Whole Life Basis</b>	<b>771,728,624</b>	<b>17,004,306</b>			<b>20,145,765</b>	<b>(3,141,459)</b>

(1) Schedule Ia, Column VII plus Schedule Ia, Column IX.  
 (2) Column IV minus Column VII.

**SECTION II**

**METHODS AND PROCEDURES**

**SECTION II**  
**METHODS AND PROCEDURES**  
**A - INTRODUCTION**

**1. General**

This section contains a discussion of depreciation and depreciation accounting as it applies to the utility industry and the procedures that have evolved and been generally accepted over the years, up to the current state of the art. In addition, it contains a discussion of how these methods and procedures were specifically applied in this study to NYPA's depreciable transmission plant in service at December 31, 1995, covered by this study.

**2. Definition of Terms**

Some of the terms used in this and other sections of this report are defined in APPENDIX A - DEFINITIONS. While other definitions of some of the terms are available, the definitions in Appendix A are generally accepted by utilities and regulators, and satisfy the meaning of the terms as used in this report. The relevant definitions promulgated by regulatory bodies are repeated below:

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

**Service Value** - The difference between original cost and net salvage of utility plant.

**Net Salvage Value** - The salvage value of property retired less the cost of removal.

Note: Net Salvage value can be positive (e.g. salvage value exceeds cost of removal), negative (e.g. cost of removal exceeds salvage value) or zero (e. g. salvage value equals cost of removal).

**Salvage Value** - The amount received for property retired, less any expenses incurred in connection with the sale or in preparing the property for sale; or, if retained, the amount at which the material recoverable is chargeable to materials and supplies, or other appropriate account.

**Cost of Removal** - The cost of demolishing, dismantling, tearing down or otherwise removing utility plant, including the cost of transportation and handling incidental thereto.

**Service Life** - The time between the date utility plant is includible in utility plant in service, or utility plant leased to others, and the date of its retirement. If depreciation is accounted for on a production basis rather than on a time basis, then service life should be measured in terms of the appropriate unit of production.

### **3. Group Depreciation and Property Groups**

Usually depreciation of utility property is considered on a group basis. Under the group method, depreciation expense is accrued on the basis of the original cost of all property included in each depreciable plant group and upon retirement of any depreciable property, its full cost, less any net salvage realized, is charged to accumulated depreciation regardless of the age of the particular item retired. Also under this plan the dollars in each property group are considered as a separate group for the purposes of determining the average service life, mortality characteristics (survivor curve), net salvage percent and any other factor that might affect the depreciation rate of that group.

#### **a. NYPA's Current Practice:**

NYPA currently accrues its depreciation expense and maintains the accumulated depreciation at the primary plant account, or subaccount level for its Transmission Plant property, by Project.

#### **4. Purpose of Depreciation Study**

The primary purpose of a depreciation study can be briefly summarized as follows:

- a. To recommend appropriate depreciation rates based on estimates of expected average life, mortality characteristics, net salvage, and other factors (e. g., specific retirement dates where applicable) that will fully allocate the cost of the property adjusted for net salvage, no more, no less, during its expected life.
- b. To determine the adequacy of the Accumulated Depreciation per Books as of the date of the study by comparing it with a theoretical or calculated depreciation requirement based on the same expected average lives, mortality characteristics, net salvage and other factors used to determine the recommended depreciation rates.
- c. To devise some method to adjust future accruals for past over or under accruals as indicated by a comparison of the calculated depreciation requirement with the Accumulated Depreciation per Books, at the date of the study.

These were the primary purposes of the depreciation study for NYPA's Transmission Plant studied. The rest of this Section discusses how each of these items was addressed.

#### **5. Depreciation Study Procedure**

A depreciation study is generally made in two phases. Descriptions of each of these phases follows:

Phase I generally includes:

- a. An estimate of the expected average service life of property in each primary plant account, or other accounting group.

- b. An estimate of the expected mortality dispersion for each accounting group usually using the Iowa Curves as the basis.
- c. An estimate of the expected future net salvage (gross salvage less cost of removal) for assets in each plant accounting group.
- d. An estimate of the average remaining life for the assets in each accounting group.

Statistical studies are used as an aid in making some of the above estimates and to theoretically age any mass property account for which a company does not maintain its investment by vintage.

Phase II generally applies the estimates developed in Phase I to calculate the following:

- a. The annual normal depreciation rates for each plant account, or other accounting group.
- b. The depreciation requirement for each plant account, or other accounting group, to enable a comparison with the accumulated depreciation per books.
- c. The annual amount necessary to amortize the difference between the calculated depreciation requirement and the accumulated depreciation per books, should it be deemed necessary or desirable.
- d. The average remaining life for each plant account, or other accounting group.

## **6. Depreciation Methodology**

In order to determine the appropriate annual normal depreciation rates and the depreciation requirement, it is first necessary to decide on the methodology, procedure, technique and basis to be employed.

The rates recommended in this report were determined by the Straight Line Method, Equal Life Group Procedure and the Remaining Life Technique; using a Location-Life Basis for certain projects and a Whole-Life Basis for other projects.

A brief explanation of the meaning of these various terms as used in this report follows. Further details are contained in Phase II of this Section.

### Methods

Methods are generally divided into two basic classifications; a) Straight Line and b) Other. The "Other" classification includes many different types such as accelerated methods and interest bearing methods. For utilities, for accounting and rate setting purposes, the Straight Line Method is the method generally required by regulatory bodies.

### Procedures

Under the Straight Line Method two procedures for determining the normal annual depreciation rates have evolved.

- a. The Average Life Group Procedure.
- b. The Equal Life Group Procedure.

NYPAs current depreciation rates are based on the Straight Line Method, Average Life Group Procedure and Whole-Life Basis. The depreciation rates recommended in this report are based on the Straight Line Method, Equal Life Group Procedure, Remaining Life Technique, using both a Location-Life Basis and a Whole-Life Basis. Alternative depreciation rates based on the Straight Line Method, Average Life Group Procedure, Remaining Life Technique using both the Location-Life and Whole-Life bases have also been developed. They are presented in Appendix C, as an alternative. The difference in these two procedures and further explanation for the preference is discussed later.

Technique

To develop the effective rates, which are recommended herein and which include the annual amortization of the depreciation differences, the Remaining Life Technique was used. This simply means that the differences between the calculated depreciation requirement and the accumulated depreciation per books, is to be recovered over the average remaining life of the property within each depreciable group, as of the date of the study, rather than over some other specific period of time, say 5 or 10 years.

Basis

For certain of NYPA's Transmission Plant accounts and subaccounts covered by this study a Location-Life Basis was used. This basis assumes that all vintages of property will be retired at a specific date. For those accounts and subaccounts for which the Location-Life Basis was not used, the Whole Life Basis was used. This assumes that all vintages of property will live through a complete life cycle as depicted by an Iowa Curve, and that the retirement of any property, or vintage, will not be affected by the retirement of another property, or vintage, within the account. The Projects for which a Location-Life Basis was used and the expected retirement year used follow:

	<u>Project</u>	<u>Retirement Year</u>
1.	St. Lawrence-FDR Power Project	2043
2.	Niagara Power Project	2047
3.	Blenheim-Gilboa Pumped Storage Plant	2059
4.	J.A. Fitzpatrick Nuclear Power Plant	2014

These dates were provided by NYPA. For the Hydraulic Production Plant Projects it was assumed that the Authority would apply to the Federal Energy Regulatory Commission and obtain a forty year extension to the current license life. For the Nuclear Production Plant it was assumed that the plant would not be retired before the end of the existing license granted by the Nuclear Regulatory Commission. No license renewal was assumed for this plant.

The projects for which a Whole-Life Basis was used are as follow:

1. Massena-Marcy 765kv Transmission Line
2. Marcy South 345kv Transmission Line

**METHODS AND PROCEDURES****B - PHASE I****Selection of Average Life, Survivor Curve  
Net Salvage and Other Factors by Plant Accounting Groups**

The purpose of Phase I of the depreciation study is to make statistical studies of a company's past experience to aid in the selection of the expected average life, survivor curve, net salvage percentage and other factors for each plant accounting group which will be used in the determination of annual depreciation rate and the calculated depreciation requirement in Phase II. Aged surviving balances are necessary for all accounts for the depreciation computations made in Phase II. For some companies, aged account balances (total balance identified by years of original installation) are not always available from the company's property records and, therefore, need to be aged theoretically. NYPA maintains vintaged records for all of its property. Therefore, it was not necessary to age any of NYPA's accounts theoretically.

**1. Aging of Account Balances at Date of Study**

The aging of the original cost balance for each account at the date of the study was available from NYPA's books and records. That is, the balances at December 31, 1995 of the surviving original cost dollars, by year placed in service, for each account and subaccount, by Project, were obtained from the Authority's records.

**2. Iowa Type Survivor Curves and Their Application**

Most consultants and utilities use the Iowa Type Survivor Curves in their studies. The following is historical information about these curves. They are also discussed further, in Phase II.

In 1935 the Iowa Engineering Experiment Station of Iowa State College published Bulletin 125 entitled "Statistical Analysis of Industrial Property Requirements" by Robley Winfrey. This bulletin describes the development of 18 type survivor curves and their applicability to industrial property having a wide range of mortality characteristics. Since their publication in 1935 these curves have been frequently used by public utility companies for depreciation accounting for tax, rate and other

purposes and have been generally accepted by many regulatory bodies. These 18 basic curves consisted of three groups of curves, the L, S, and R curves, with each group further classified as follows:

L Group: L0, L1, L2, L3, L4, L5  
S Group: S0, S1, S2, S3, S4, S5, S6  
R Group: R1, R2, R3, R4, R5

Appendix B, pages B-1 through B-3, shows these retirement dispersion patterns.

Since 1935, interested parties, including the Depreciation Accounting Committees of the Edison Electric Institute and the American Gas Association, have expanded the classification within each group to include:

L Group: L0.5, L1.5  
S Group: S-0.5, S0.5, S1.5  
R Group: R0.5, R1.5, R2.5

These were basically classifications for property having the survivor characteristics between the original 18 curves. Briefly the L, S and R curves represent Left-moded, Symmetrical, and Right-moded retirement dispersion patterns respectively, with respect to average life. The numbers after the letters represent various degrees of dispersion about the average life, with the higher number indicating less dispersion.

Basic source data for the Iowa curves extends to all 26 types listed above, as well as the SC curve which reflects equal annual retirements and the SQ curve which reflects no dispersion of retirements, and consists of the generalized Percent Survivor data.

From the basic source data the computer programs used develop both Annual Depreciation Rates and Percent Depreciation factors at various ages for any combination of average life and curve shape selected. Percent Survivor factors represent that portion of an original installation that is theoretically still in service (surviving) at any particular age.

A graphic representation of a specific Iowa Type Survivor curve (R5) with various average lives appears on Page B-4, in Appendix B. On this page, the percent Surviving on the vertical axis has been plotted at the ages shown on the horizontal axis to get the smooth curve shown, for various average service lives. The Iowa Survivor Curves were used in the matching process by comparing them with the Authority's historical experience, as discussed later. Appendix B, Pages B5 and B-6 contain, as an example, the analysis and matching of a curve for Account 3530000-Station Equipment.

For each account, or subaccount, the normal annual depreciation rate was composited from the depreciation rates by age interval, as developed by the computer program using the Equal Life Group Procedure. An example for a Location-Life Basis property appears in Appendix B, on page B-8, for the Blenheim-Gilboa Project, Account 3533402-Station Equipment. An example for a Whole-Life Basis property appears in Appendix B, on Page B-9, for the Massena-Marcy Line Project, Account 3537601-Station Equipment. In both instances, the depreciation rate recommended appears in Column IV, on the Total line. For the alternative schedule contained in Appendix C, the depreciation rates were developed using the Average Life Group Procedure.

Percent Depreciation factors give the depreciated portion of the survivors at any age. These factors are also called Depreciation Reserve Ratios. The total depreciation requirement derived by the Equal Life Group Procedure, using a Location-Life Basis appears in Appendix B, on Page B-10 for the Blenheim-Gilboa Project for Account 3533402-Station Equipment. The depreciation requirement derived by the Equal Life Group Procedure, using a Whole-Life Basis appears on Page B-11 for the Massena-Marcy Line Project using a Whole-Life Basis, for Account 3537601-Station Equipment. The Depreciation Reserve Ratios are used in the determination of the depreciation requirement as discussed in Phase II. These Depreciation Reserve Ratios for each vintage, were developed by the computer program, by the Equal Life Group Procedure. For the alternative schedules contained in Appendix C, they were developed by the Average Life Group Procedure.

**3. Investigation of Average Service Life and Mortality Characteristics**

To aid in the selection of average life and Iowa type curve, studies of the Authority's actual mortality experience and comparison of this mortality experience with the mortality characteristics of the Iowa curves were made for each primary plant account on a system-wide basis.

In general, the investigation and selection of the service lives and mortality characteristics of the property in each account involve the following steps:

- a. Analysis of available past retirement experience from the Company's accounting records;
- b. Modification of the results of the analysis of such past retirement experience to reflect judgment that gives consideration to present and anticipated future system requirements; industry-wide experience and trends relating to future life expectancy of various classes of utility property; and, results of inspections of representative portions of the property.

**4. Methods Used For Analysis of Company Experience**

Two different methods are generally used to analyze a company's past mortality experience, depending on the nature of the available data. They are:

- a. Actuarial Method of Life Analysis
- b. Simulated Plant Record Method of Life Analysis: including,
  - Balances Method
  - Period Retirements Method

Most regulatory commissions consider these methods to have statistical validity and have accepted them as appropriate methods of life analysis. Explanations of the application of these methods as they apply to this study follow.

a. Actuarial Method of Life Analysis

This method of analyzing past experience represents the application to industrial property of statistical procedures developed in the life insurance field for investigating human mortality. It is distinguished from other methods of life

estimation by the requirement that it is necessary to know the installation date and date of retirement for each particular retirement and the date of installation for each particular survivor.

The application of the method involves the statistical procedure known as the "annual rate method" of analysis. This procedure relates the retirements during each age interval to the exposures at the beginning of the age interval, the ratio of these being the annual retirement ratio. Subtracting each retirement ratio from unity (1.0000) yields a sequence of survivor ratios from which a survivor curve, or observed life table, can be determined. This is accomplished by consecutive multiplication of the survivor ratios, starting with 1.0000 at age zero. The length of this curve depends primarily on the age of the oldest property. Normally if the period of years from the inception of the account is short in relation to the expected maximum life of the property, an incomplete life table, or stub curve, results. While there are a number of acceptable methods of smoothing and extending this stub survivor curve, in order to compute the area under it from which the average life is determined, the well-known Iowa Curve method was used.

By this procedure, instead of mathematically smoothing and projecting the stub survivor curve to determine the average life of the group, it was assumed that the stub curve would have the same mortality characteristics as the Iowa type curve to which it can be visually and/or mathematically compared. The selection of the appropriate type curve and average life was accomplished by displaying the Company's observed life table, or stub curve, on the computer screen and superimposing on it Iowa curves of the various types and average lives, drawn to the same scale, and then determining by judgment and/or mathematical fit which Iowa curve and average life combination best approximates the Company's observed life table, or stub curve.

As noted above, an example of the calculations involved in the Actuarial Method of Life Analysis is shown on page B-6 for Account 3530000-Station Equipment. Page B-6 shows the computation of the survivor curve (Observed Life Table) for the retirement experience band 1960 to 1995, inclusive. The resulting observed life table is plotted and matched on page B-5, as explained above.

This method is used for all accounts for which a company maintains the aged retirement and survivor data. Since NYPA could supply the required data for all of the accounts studied, the Actuarial Method was the only method used.

b. Simulated Plant Record Method

General

The "Simulated Plant Record" ("SPR") method designates a class of statistical analysis techniques which provide an estimate of the age distribution, mortality dispersion and average service life of property units whose recorded history provides no indication of the age of the property units when they were retired from service. For each such account the available property records usually only reveal the total annual gross additions, total annual retirements and annual year-end balances with no indication of the age of either the plant retirements, or annual plant balances.

Since NYPA maintains vintaged property for all of the accounts studied, as noted above, the SPR Method of Life Analysis was not used, and therefore, no further discussion of that method is included herein.

**5. Net Salvage**

When property is retired, there are usually both salvage and cost of removal involved. The net salvage gives consideration to both of these items and represents the gross salvage less the removal costs incurred. If the gross salvage exceeds the removal costs, the net salvage is considered positive. When the removal costs exceed the gross salvage the net salvage is negative. The effect of net salvage, whether positive or negative, must be considered in the calculation of depreciation rates and the depreciation requirement.

NYPA was able to provide historical data which included the original cost of retirements, gross salvage and removal costs at the plant account and subaccount level, for all of its property, for a period of years. Therefore, the net salvage percentages finally selected for each account, while based on my judgment and experience, gave consideration to the Authority's past experience for the 1960-1995 period. As noted above, the net salvage percentages are used in Phase II in

computing the annual depreciation rate for each primary plant account, or subaccount, which was applied to the balance in the account to calculate the annual accrual. The net salvage percentages are also reflected in the calculated depreciation requirement, as discussed, in Phase II.

The net salvage percentages used in this study are expressed as a percent of original cost and the final selection is based on my judgment of what future net salvage is expected to be. A sample Net Salvage Analysis appears in Appendix B, on Page B-7, for Account 3530000-Station Equipment.

**6. Final Selection of Average Life, Curve Type and Net Salvage**

It should be noted that although NYPA is not subject to regulation by the FERC or the New York State Public Service Commission it has adopted the FERC's Uniform System of Accounts (USofA) to maintain its books and records for its Electric Plant in Service. In doing so it has also adopted the maximum size property unit permitted by the FERC's USofA to account for the retirement of its property. As a result, NYPA's property records indicate that there were few retirements during the 35-year, 1960-1995 experience band which was used for this study. It also should be noted that these years reflect all the years for which NYPA's Transmission Plant has been placed in service. For certain of NYPA's Transmission plant accounts, no retirements had been made during this period. The accounts for which no retirements were made include:

Account 352-Structures and Improvements  
Account 357-Underground Conduit  
Account 359-Roads and Trails

Due to the absence of retirements for the accounts listed above and the limited number of retirements for the remainder of NYPA's Transmission Plant accounts, the final selection of average service life, curve type, and net salvage for each depreciable plant account was made based on judgment after giving due consideration to the results of all statistical studies of the Authority's past retirement history; present and future system requirements; depreciation statistics contained in a survey conducted by the American Gas Association and Edison Electric Institute which indicated, among other information, the average service life, curve type and net salvage used by utilities in the northeastern section of the United States,

including those investor-owned utilities in New York State which responded to the survey; NYPA's property unit size and the difference between the property unit size adopted by NYPA as compared with the property unit size adopted by most other investor-owned utilities; industry-wide experience; and, trends relating to future life, mortality dispersion and net salvage expectancies for the various classes of utility property studied.

The final selection of all pertinent factors necessary to compute the normal annual depreciation rate and depreciation requirement is shown for each account and subaccount, in Section I, on Schedule I and Schedule Ia, as follows:

Column IV - Average Life and Iowa Curve Type used for each account and subaccount. The retirement for Location-Life property is also indicated in this column where appropriate.

Column V - Net Salvage Percent. Where the net salvage is expected to be negative it is indicated by a minus sign.

The average remaining life used to amortize the difference between the calculated depreciation requirement and the Accumulated depreciation per Books, as allocated was based on these same factors and is shown in Schedule II and Schedule IIa, Column VIII.

**METHODS AND PROCEDURES****C - PHASE II****Computation of Annual Depreciation Rates,  
Calculated Depreciation Requirement and the  
Amortization of the Difference Between the Accumulated Depreciation  
per Books and the Calculated Depreciation Requirement**

Phase II of the depreciation study, as previously explained, consists of the application of the various depreciation factors selected for each depreciable group to develop annual depreciation rates and calculate the depreciation requirement. In addition, some method to amortize any difference between the accumulated depreciation per books and the calculated depreciation requirement must be considered, if deemed appropriate. If the Remaining Life Technique is to be used, the average remaining life must be determined. An example of the calculation of the average remaining life for a Location-Life property is contained in Appendix B, on Page B-12, for the Blenheim-Gilboa Project, Account 3533402-Station Equipment. An example of the calculation of the average remaining life for a Whole-Life property is shown on Page B-13, for the Massena-Marcy Transmission Line Project, Account 3537601-Station Equipment.

**1. Relationship of Iowa Curves and Depreciation Methods**

In 1935 the Iowa Engineering Experiment Station published Bulletin 125 entitled, "Statistical Analysis of Industrial Property Retirements" by Robley Winfrey explaining the use and development of the Iowa Curves.

In 1942, Iowa Engineering Experiment Station issued Bulletin 155 entitled, "Depreciation of Group Properties" by Robley Winfrey, which described various methods of calculating depreciation and the application of the Iowa Curves. Also, in 1942, Bulletin 156 - "Condition Percent Tables for Depreciation of Unit and Group Properties" by Robley Winfrey was published. The Condition Percent Tables Contained in Bulletin 156 for certain combinations of average life and Iowa Curve type were computed by a procedure known as the "Unit Summation" or "Equal Life Group Method".

The outgrowth of this original research for the regulated utility industry has been general acceptance of the Iowa Curves to represent mortality dispersion. Also, over the years two specific straight line procedures of computing depreciation using these Iowa Curves have evolved. One is the Average Life Group Procedure and the other is the Equal Life Group Procedure, or Unit Summation Method, as referred to by Mr. Winfrey in Bulletin 156. In a later book co-authored by Mr. Winfrey entitled, "Engineering Valuation and Depreciation" (page 237), the following statement was included about these two methods:

"When examined in the light of depreciation accounting, the unit summation method provides that each unit of the group build up its own reserve credit to 100 percent by its retirement date; the average life method depends on units surviving past average life to build up greater than 100 percent reserve to compensate for the failure of the earlier than average life retirements to build up their full reserve."

This means that the Equal Life Group Procedure attempts to fully allocate the cost of capital investment while the plant is in service, while under the Average Life Group Procedure customers are still paying a return on and return of the cost of plant after it has been retired.

Generally accepted accounting principles state that depreciation is the recovery of capital in a rational and uniform manner over the useful life of the plant. I believe that the Equal Life Group Procedure more equitably achieves the objectives of depreciation than does the Average Life Group Procedure, based on the definitions contained in the FERC's and other USofAs. As noted previously, the Equal Life Group Procedure was used in this study for all depreciation rate and depreciation requirement calculations. However, at the request of NYPA alternative depreciation rates and requirements were calculated using the Average Life Group Procedure. The resulting alternative recommendations using this procedure are contained in Appendix C.

## **2. Depreciation Calculations in the Study**

Source data for the 26 Iowa Curves and the two other curves are available and consist of the generalized Percent Survivor Curves. Using this source data, the computer program used develops the annual depreciation rate for each vintage when the Equal Life Group Procedure is used and develops the weighted composite

depreciation rate for each depreciable group, based on the surviving investment for each vintage, as of the date of the study. It also develops the Percent Reserve factors for the specific average life and Iowa Curve selected for each depreciable group in order to calculate the depreciation requirement for the vintaged surviving investment.

In addition, the Average Remaining Life of the surviving property in each of those groups was developed by the computer program so that the Remaining Life Technique could be applied.

These calculations were made for both Location-Life Basis property reflecting the expected retirement date for such property and for Whole-Life Basis property.

a. Determination of the Composite Annual Depreciation Rate by Accounts by the Equal Life Group Procedure Using a Whole Life or Location Life Basis

A characteristic of the Equal Life Group Procedure, for either the Whole-Life Basis, or the Location-Life Basis, is that for a particular average service life and Iowa Curve, the annual depreciation rate varies for each vintage of property and a composite rate must be developed for application to the depreciable account. The examples referred to above, in Appendix B, show the weighting procedure used for both a Location-Life Basis property and a Whole-Life Basis property. It should also be noted that using the Average Life Group Procedure for a Location-Life property also requires the development of a composite rate because each vintage will have its own average life.

In developing the composite depreciation rate for an account for the coming year, the beginning year vintaged balance is used. Consequently, the results may vary slightly from those obtained if the actual average monthly balances during the year are used. In most cases, the additions will exceed the retirements, therefore, the composite rate recommended is slightly understated.

An explanation of the computer printouts of the determination of the annual depreciation rate by the Equal Life Group Procedure, as contained in Appendix B, on Pages B-8 and B-9, follows:

Column I -Year of installation of the surviving dollars shown in Column III.

Column II-The Age Interval through which each year's property will pass during the following year.

Column III-Original Cost at the beginning of the next year (1996), by year installed.

Column IV-The Annual Depreciation Rate for each age interval for the average life and Iowa Curve used.

Column V-Original Cost Annual Depreciation accrual, or depreciation weighting for the year based on the beginning year's balance. The subtotal of this column is the summation of the accruals, or weightings, exclusive of net salvage and the total is inclusive of net salvage.

After the adjustment for the expected net salvage, the total accruals, or weightings is divided by the original cost in Column III to obtain the composite annual depreciation rate for the account as shown on the "Total" line in Column IV and if this rate is to be applied on a monthly basis, the monthly rate is also shown under Column IV.

b. Detailed Computation of the Depreciation Requirement as of the Date of the Study by Accounts by the Equal Life Group Procedure Using a Location-Life Basis or Whole-Life Basis

The depreciation requirement for each account is computed using the Percent Reserve Factors applied to the Original Cost surviving from each vintage. The computation is the same whether a Whole-Life Basis or a Location-Life Basis is used. However, the derivation of the Percent Reserve Factors differs.

The details for the computation of the depreciation reserve requirement at December 31, 1995 on the basis of the age of the property, and the same depreciation factors used to develop the annual depreciation rate, appear on Pages

B-10 for a Location-Life property and on B-11 for a Whole-Life property. They are explained as follows:

Column I -Year of installation of the surviving dollars shown in Column III.

Column II -Age of each year's installation at December 31, 1995 based on the conventional procedure that all property installed during any year is assumed to be installed at the midpoint of that year.

Column III -The surviving Original Cost at December 31, 1995 by year installed.

Column IV-The Depreciation Reserve Ratio for the selected average life and Iowa Curve shown in the heading, at the various ages shown in Column II. These ratios are computed by the Equal Life Group Procedure using either a Location-Life Basis or a Whole-Life Basis. When a Location-Life Basis is used, the retirement date is also shown in the heading.

Column V-Calculated Depreciation Reserve represents the multiplication of Column III and Column IV for each year. The subtotal of this column is the summation of the reserve requirement for all the vintages of surviving property as of the date of the study, exclusive of net salvage and the total is inclusive of net salvage. The total, adjusted for the expected net salvage, is the amount which is compared with the Accumulated Depreciation per Books to determine the adequacy of the accumulated depreciation.

Column VI -Original Cost Less Calculated Depreciation is the difference between Column III and Column V.

The weighted age, shown in the lower left corner, is the result of multiplying Column II by Column III and dividing the total of these products by the total of Column III.

The Average Remaining Life, also shown in the lower left corner, is the result of a direct expectancy weighting of the dollars of each age based on the average service life and curve selected. A sample of the Computation of the Average Remaining Life using the Location-Life Basis is shown for the Blenheim-Gilboa Project, Account 3533402-Station Equipment, in Appendix B, on Page B12; and using a Whole-Life

Basis is shown for the Massena-Marcy Transmission Line Project, Account 3537601-Station Equipment, in Appendix B on Page B-13.

c. Amortization of the Difference Between the Calculated Depreciation Requirement and the Accumulated Depreciation per Books by the Average Remaining Life Technique (or Basis)

The National Association of Railroad and Utility Commissioners of the United States (now National Association of Regulatory Utility Commissioners-NARUC), at their Sixty-Second Annual Convention held during November 1950 adopted a report submitted by the Committee on Depreciation entitled, "Remaining Life Basis of Accounting for Depreciation". Concerning the use of the Remaining Life Basis , the report contained the following comments:

"Use of the remaining life basis results in the inclusion in current and future charges for depreciation expense of the necessary adjustment for previous overages or underages in depreciation accruals."

"If we accept the proposition that, as far as practicable, depreciation reserves should conform with reserve requirements indicated by current estimates, then it is obvious that procedures should be embodied in depreciation accounting techniques so as to attain such results. When it is considered that depreciation charges must be based almost entirely on estimates of life and net salvage which may be changed from time to time, it is equally obvious that adjustments of depreciation reserve to keep it in line with requirements must be made. This indicates the desirability of a depreciation accounting procedure whereby any necessary adjustments of depreciation reserves are accomplished automatically with the amount of any adjustment and the period over which it will be affected being dictated by the depreciation estimates. This objective may be attained by the use of the remaining life basis of depreciation accounting."

Under the Remaining Life Technique, the difference between the calculated depreciation requirement (based on a depreciation study) and the accumulated depreciation per books is amortized over the average remaining life expectancy of the depreciable property in service as of the date that comparison is made.

Although NYPA maintains the accumulated depreciation in its books at the plant account and subaccount level, a comparison of the calculated depreciation requirement with the accumulated depreciation per books at that level indicated wide variations in overages and underages among the accounts. For this reason, and because this is the first depreciation study in which depreciation parameters and resultant depreciation rates are being recommended, it was deemed appropriate to reallocate the accumulated depreciation per books for the depreciable transmission plant accounts in each Project. This was accomplished as shown in Schedule II, by allocating the total accumulated depreciation per books for the Transmission Plant for each Project to each of the subaccounts within each Project, based on the calculated depreciation requirement. The application of the Remaining Life Technique to the property included in this study was accomplished as explained in Schedule B, in Section I.

The recommendation to amortize the difference between the Calculated Depreciation Requirement and the Accumulated Depreciation per Books, as allocated, was limited to those projects where the percentage difference exceeded the Calculated Depreciation Requirement by the generally accepted limits of plus or minus five percent. Therefore, when the percentage difference was less than five percent no amortization of the difference is included in the recommended effective depreciation rates.

This amortization of the difference is an amount to be accrued annually in addition to the normal annual accrual as determined by the application of the normal annual depreciation rates. It may be incorporated in the development of a composite effective depreciation rate as is shown in Schedule III and Schedule IIIa.

The effective depreciation rates are the depreciation rates recommended as a result of this study.

**APPENDIX A**

**DEFINITIONS**

### DEFINITIONS

**COST** - The amount of money actually paid for property or services. When the consideration given is other than cash, the value of such consideration shall be determined on a cash basis.

**ORIGINAL COST** - As applied to utility plant, means the cost of such property to the person first devoting it to public service.

**COST OF REMOVAL** - The cost of demolishing, dismantling, tearing down or otherwise removing utility plant, including the cost of transportation and handling incidental thereto.

**DEPRECIATION** - As applied to depreciable electric or gas plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities.

**SALVAGE VALUE** - The amount received for property retired, less any expenses incurred in connection with the sale or in preparing the property for sale; or, if retained, the amount at which the material recoverable is charged to materials and supplies, or other appropriate account.

**NET SALVAGE VALUE** - The salvage value of property retired less the cost of removal.

**SERVICE LIFE** - The time between the date utility plant is placed includible in utility plant in service, or utility plant leased to others, and the date of its retirement. If depreciation is accounted for on a production basis rather than on a time basis, then service life should be measured in terms of the appropriate unit of production.

**SERVICE VALUE** - The difference between original cost and net salvage value of electric plant.

**AGE INTERVAL** - A standard period of time, usually one year. A series of such consecutive intervals facilitates observing the pattern of survivors and developing a survivor curve. Age interval should not be confused with calendar year.

**AGING** - Identifying each survivor by its year of original installation to year of study ages the property for the study.

**BOOK OR ACTUAL DEPRECIATION RESERVE** - In terms of multiple asset plant accounts, it is the net accumulation of past accrued depreciation, retirements and net salvage. the reserve as it appears on the Company's books. (Also identified as the Accumulated provision for depreciation).

**CONDITION PERCENT** - The percent of survivors that are still undepreciated. It is 100 percent minus the depreciation reserve percent.

**DEPRECIATION RESERVE REQUIREMENT, CALCULATED RESERVE OR THEORETICAL RESERVE** - A calculated or estimated reserve, rather than actual, used to determine the adequacy of the book reserve.

**EXPECTANCY OR REMAINING LIFE** - The expected future service life of plant at any given age. For group property it is the average of the remaining lives of all units comprising the group.

**EXPERIENCE BAND** - The band of years of a company's experience analyzed in connection with statistical studies to determine average life and curve shape.

**EXPOSURES OR SURVIVORS** - The plant surviving at the beginning of an age interval and exposed to the risk of retirement during that interval. The plant balance also represents the survivors at any specific time.

**FUNCTIONAL PLANT GROUPS** - Following the Federal Energy Regulatory Commission's (FERC) or other Uniform System of Accounts for Plant in Service, those groups such as Steam Production Plant, Nuclear Production Plant, Hydraulic Production Plant, Other Production Plant, Transmission Plant, Distribution Plant, and General Plant and comparable functional groups for gas utilities. Each group is comprised of certain numbered primary plant accounts.

**OBSERVED LIFE TABLE OR COMPANY EXPERIENCE TABLE** - A table of plant experience relating (1) the percent survivors exposed to retirements at the beginning of each age interval to (2) the percent survivors exposed to retirement at the preceding age interval. The table may reflect all past experience or only a selected band of years (experience band).

**PERCENT SURVIVORS** - Survivors at any age expressed as percent of an original group or installation.

**PROBABLE LIFE** - The total expected service life for survivors at any given age; the sum of the age attained and the remaining life.

**RETIREMENT-FREQUENCY CURVE** - A graphical presentation of the retirement dispersion.

**AVERAGE SERVICE LIFE** - The weighted average of the lives for all units within a plant account or group.

**SURVIVOR CURVE** - A graphical presentation of survivors in percent at the beginning of each of a consecutive series of age intervals. The area under a complete curve represents the total dollar years or unit years of service. A stub survivor curve is one which does not extend to zero survivors. The curve is plotted from the life table.

**VINTAGE BAND** - The band of years from the earliest installation date (oldest property) to the latest installation date (newest property) that is exposed to retirement during the experience band.

APPENDIX B

EXAMPLES OF IOWA CURVES  
AND OF  
SAMPLE CALCULATIONS

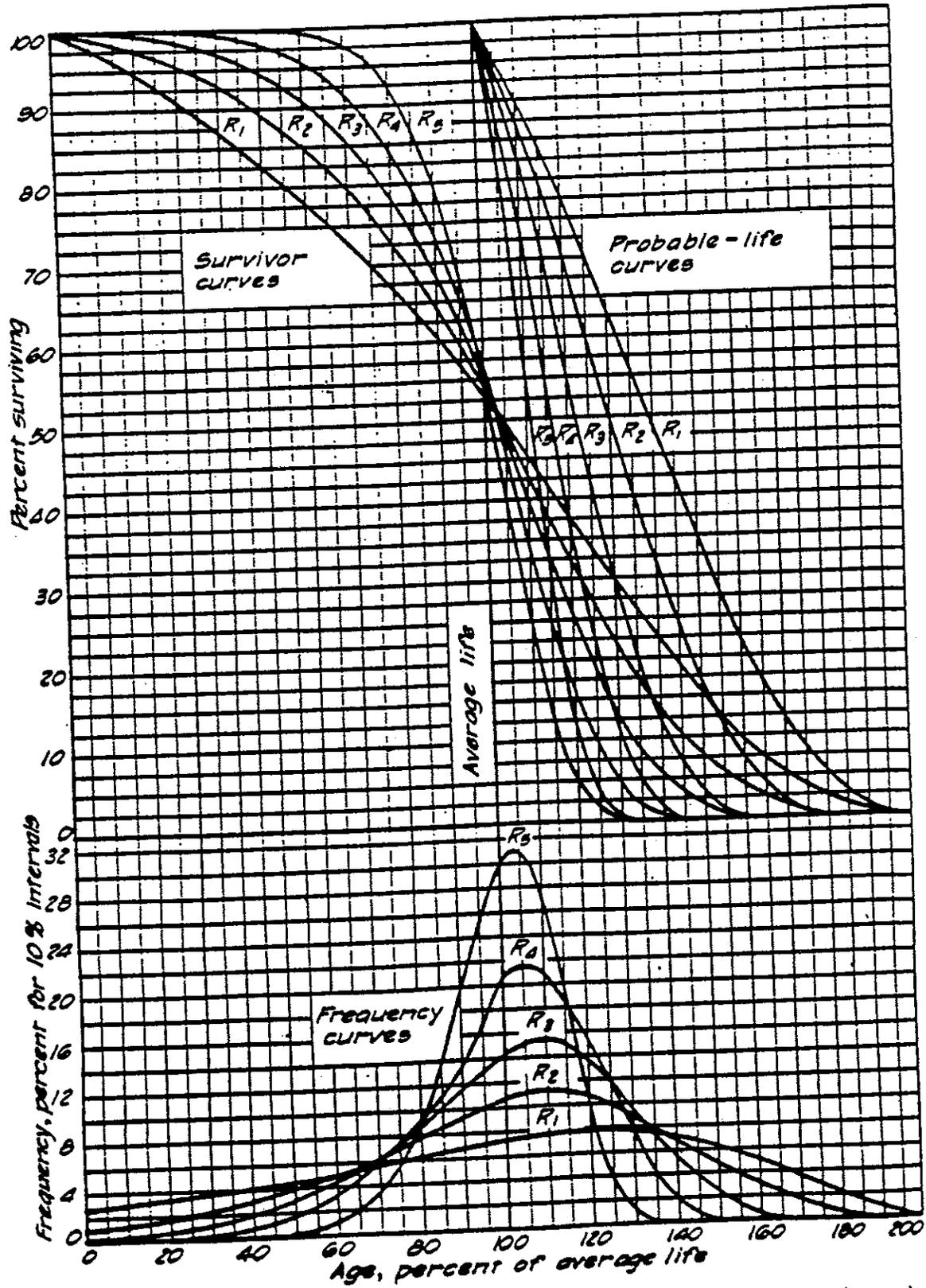


Fig. 23.—Final survivor, probable-life, and frequency curves for the right-modal types.

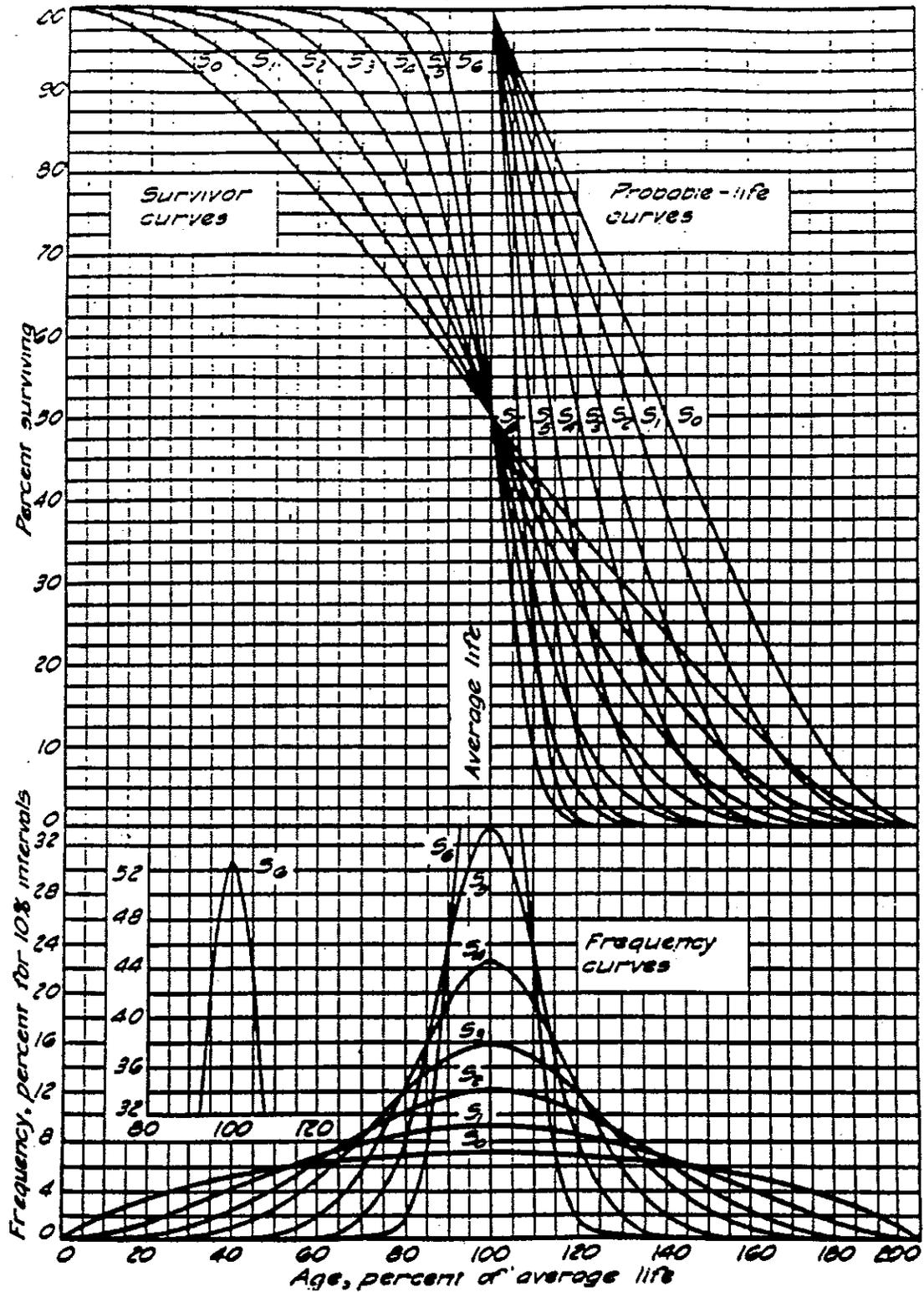


Fig. 22.—Final survivor, probable-life, and frequency curves for the symmetrical types.

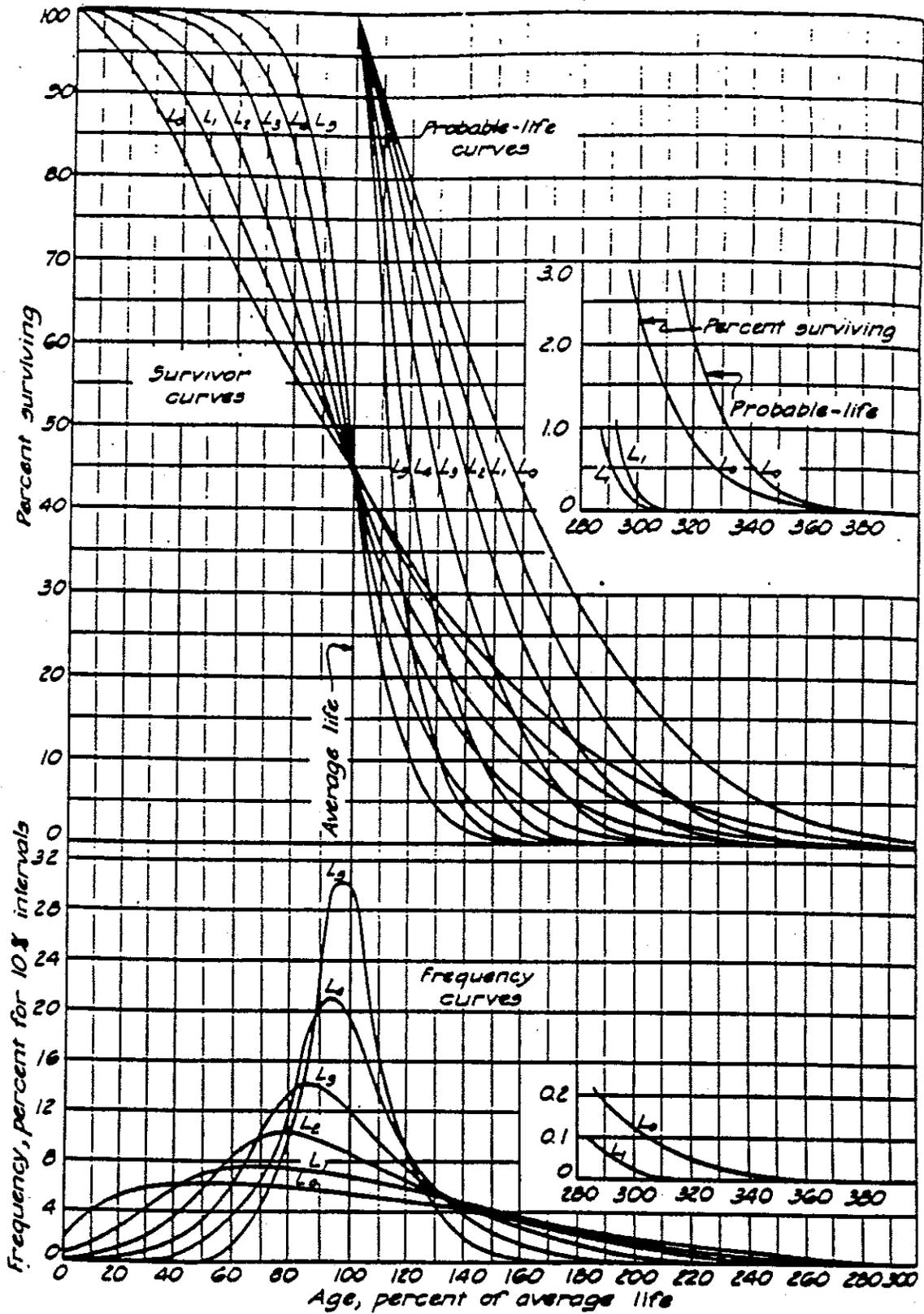
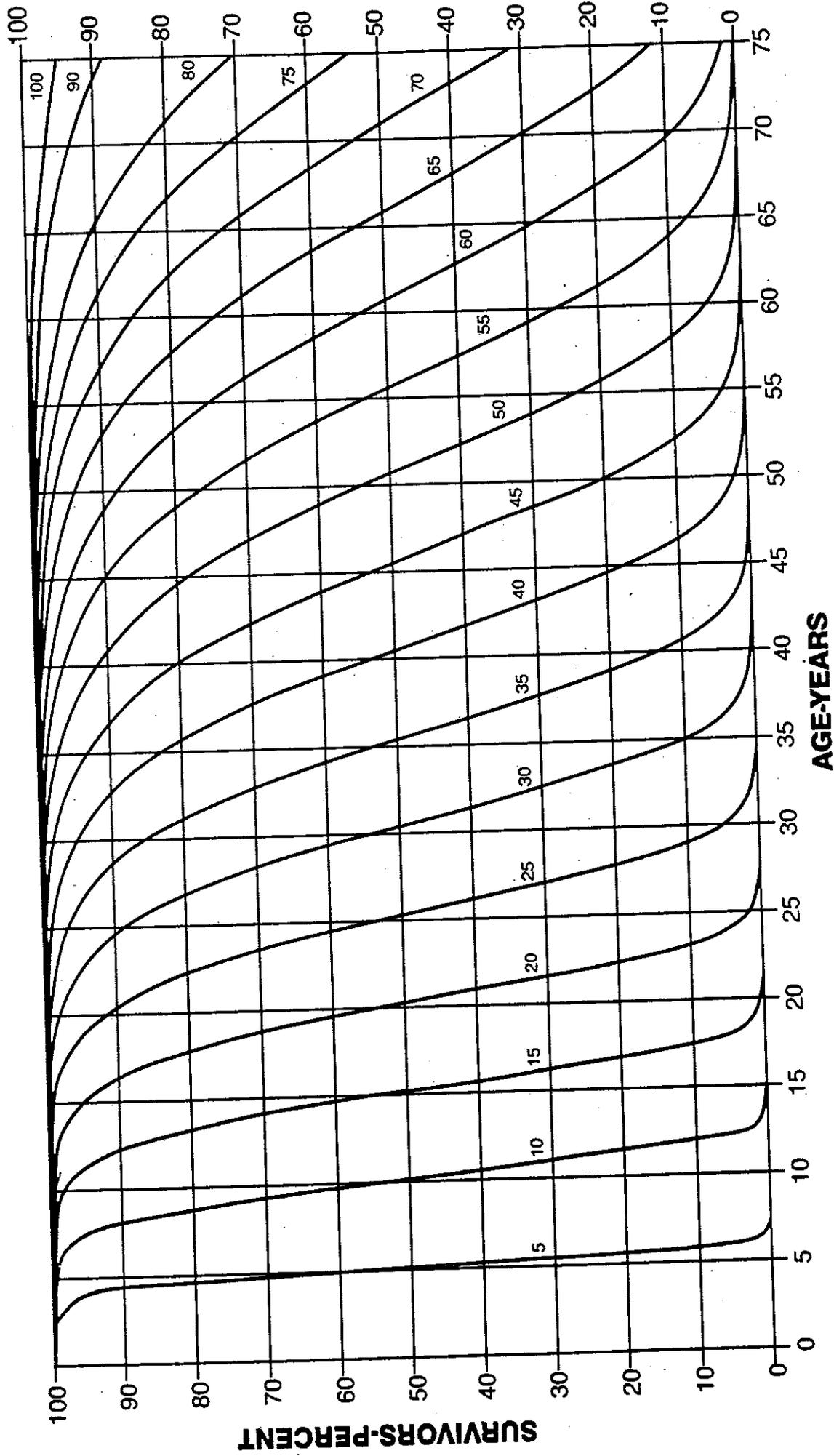
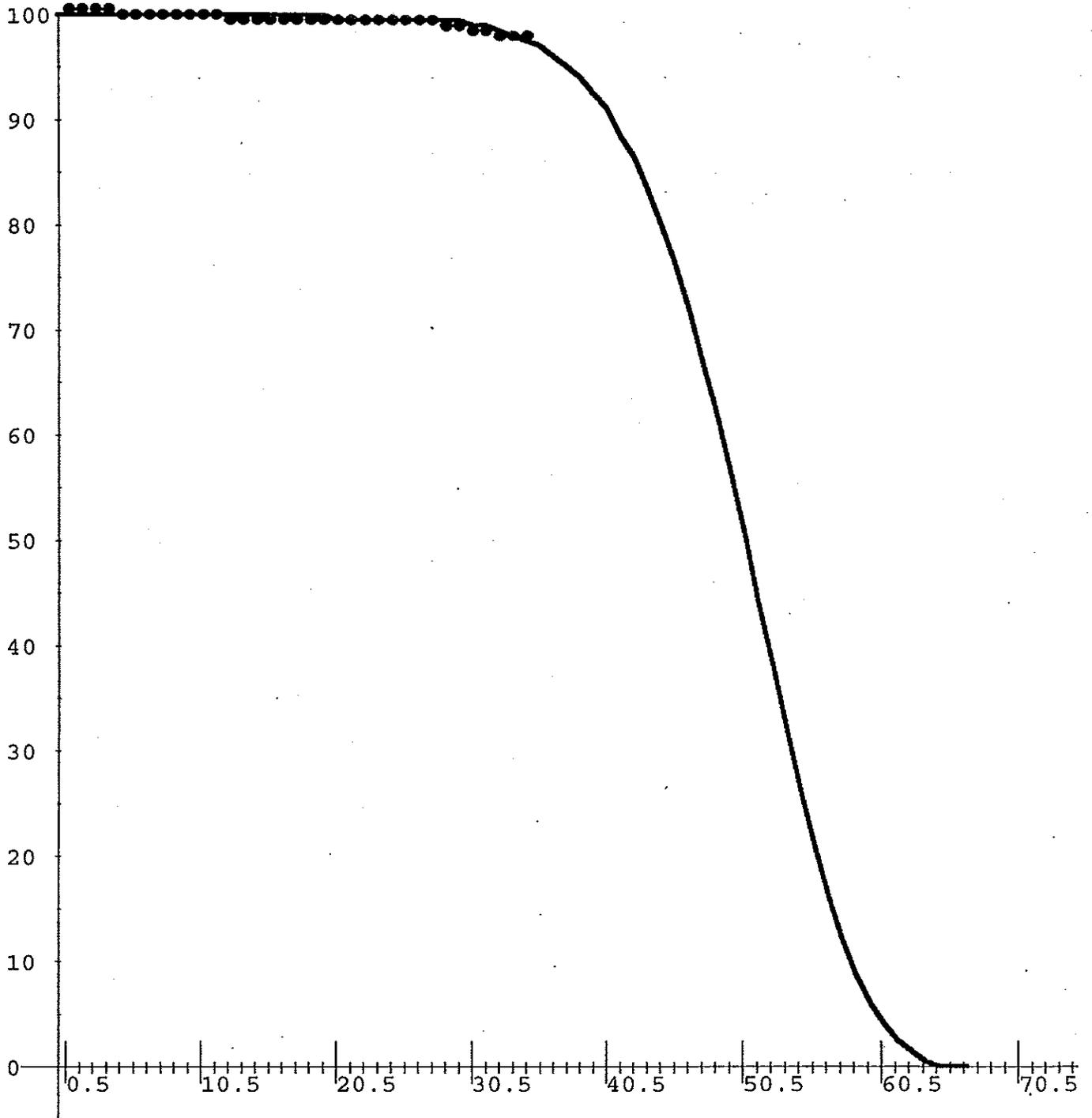


Fig. 21.—Final survivor, probable-life, and frequency curves for the left-modal types.



**R5 Type Survivor Curve at  
5 Year Intervals of Average Life**



Selection	ASL	Curve	Fitted Age	Diff SQ.
<u>1</u>	50.0	r5	34	0.001482

Y=Pct

X=Age

DEPRECIATION/VALUATION SYSTEM

NYPA-TRANSMISSION-123195

ACCOUNT NO.3530000

Station Equipmt-Total

DETERMINATION OF OBSERVED LIFE TABLE

EXPERIENCE BAND 1960 TO 1995

I	II	III	IV	V	VI
AGE IN YEARS	EXPOSURES (\$)	ACTUAL RETIREMENTS (\$)	RETIREMENT RATIOS	SURVIVORS RATIOS	OBSERVED LIFE TABLE
0.0	329052256.	0.	0.00000000	1.00000000	1.00000000
0.5	326799257.	0.	0.00000000	1.00000000	1.00000000
1.5	326799256.	0.	0.00000000	1.00000000	1.00000000
2.5	323528461.	0.	0.00000000	1.00000000	1.00000000
3.5	317902753.	7859.	0.00002472	0.99997528	1.00000000
4.5	317894893.	169224.	0.00053233	0.99946767	0.99997528
5.5	317660688.	14078.	0.00004432	0.99995568	0.99944296
6.5	316740356.	21948.	0.00006929	0.99993071	0.99939867
7.5	295103569.	40062.	0.00013576	0.99986424	0.99932942
8.5	289901085.	895511.	0.00308902	0.99691098	0.99919376
9.5	286465660.	0.	0.00000000	1.00000000	0.99610722
10.5	277612312.	0.	0.00000000	1.00000000	0.99610722
11.5	210094252.	276032.	0.00131385	0.99868615	0.99610722
12.5	209015032.	14167.	0.00006778	0.99993222	0.99479849
13.5	201942234.	0.	0.00000000	1.00000000	0.99473106
14.5	201792909.	448447.	0.00222231	0.99777769	0.99473106
15.5	159965927.	4967.	0.00003105	0.99996895	0.99252046
16.5	92630534.	6742.	0.00007278	0.99992722	0.99248964
17.5	92127946.	31939.	0.00034668	0.99965332	0.99241740
18.5	70907874.	4607.	0.00006497	0.99993503	0.99207335
19.5	69445965.	10606.	0.00015272	0.99984728	0.99200889
20.5	61053899.	4500.	0.00007371	0.99992629	0.99185739
21.5	50191145.	44945.	0.00089548	0.99910452	0.99178429
22.5	50086974.	0.	0.00000000	1.00000000	0.99089617
23.5	49650880.	21560.	0.00043423	0.99956577	0.99089617
24.5	48230632.	0.	0.00000000	1.00000000	0.99046589
25.5	47168226.	0.	0.00000000	1.00000000	0.99046589
26.5	46385886.	0.	0.00000000	1.00000000	0.99046589
27.5	46358417.	25000.	0.00053928	0.99946072	0.99046589
28.5	46303514.	0.	0.00000000	1.00000000	0.98993175
29.5	46266699.	280000.	0.00605187	0.99394813	0.98993175
30.5	44374034.	13148.	0.00029630	0.99970370	0.98394082
31.5	44313552.	363000.	0.00819162	0.99180838	0.98364927
32.5	14574597.	0.	0.00000000	1.00000000	0.97559159
33.5	14426166.	0.	0.00000000	1.00000000	0.97559159
34.5	13193422.	0.	0.00000000	1.00000000	0.97559159
TOTAL		2698342.			34.73295805

NYPA-TRANSMISSION-123195

ACCOUNT NO. 3530000.

Station Equipmt-Total

ADJUSTED: NO

NET SALVAGE ANALYSIS

YEAR	RETIREMENTS - AMOUNTS			NET SALVAGE - AMOUNTS			NET SALVAGE - PERCENT		
	ANNUAL	CUMULATIVE	5-YEAR BAND	ANNUAL	CUMULATIVE	5-YEAR BAND	ANNUAL	CUM.	5-YR BD
I	II	III	IV	V	VI	VII	VIII	IX	X
1960	0.	0.	0.	0.	0.	0.	0.	0.	0.
1961	0.	0.	0.	0.	0.	0.	0.	0.	0.
1962	0.	0.	0.	0.	0.	0.	0.	0.	0.
1963	0.	0.	0.	0.	0.	0.	0.	0.	0.
1964	0.	0.	0.	0.	0.	0.	0.	0.	0.
1965	0.	0.	0.	0.	0.	0.	0.	0.	0.
1966	0.	0.	0.	0.	0.	0.	0.	0.	0.
1967	17424.	17424.	17424.	0.	0.	0.	0.	0.	0.
1968	4531.	21955.	21955.	0.	0.	0.	0.	0.	0.
1969	0.	21955.	21955.	0.	0.	0.	0.	0.	0.
1970	4524.	26479.	26479.	0.	0.	0.	0.	0.	0.
1971	10236.	36715.	36715.	0.	0.	0.	0.	0.	0.
1972	935.	37650.	20226.	0.	0.	0.	0.	0.	0.
1973	2466.	40116.	18161.	0.	0.	0.	0.	0.	0.
1974	0.	40116.	18161.	0.	0.	0.	0.	0.	0.
1975	1140.	41256.	14777.	0.	0.	0.	0.	0.	0.
1976	11701.	52957.	16242.	0.	0.	0.	0.	0.	0.
1977	2581.	55538.	17088.	0.	0.	0.	0.	0.	0.
1978	0.	55538.	15422.	0.	0.	0.	0.	0.	0.
1979	9574.	65112.	24996.	0.	0.	0.	0.	0.	0.
1980	14767.	79879.	38623.	0.	0.	0.	0.	0.	0.
1981	36439.	116318.	63361.	0.	0.	0.	0.	0.	0.
1982	44945.	161263.	105725.	0.	0.	0.	0.	0.	0.
1983	4099.	165362.	109824.	3587.	3587.	3587.	88.	2.	3.
1984	21560.	186922.	121810.	0.	3587.	3587.	0.	2.	3.
1985	46325.	233247.	153368.	-7364.	-3777.	-3777.	-16.	-2.	-2.
1986	723057.	956304.	839986.	-264758.	-268535.	-268535.	-37.	-28.	-32.
1987	0.	956304.	795041.	0.	-268535.	-268535.	0.	-28.	-34.
1988	25000.	981304.	815942.	0.	-268535.	-272122.	0.	-27.	-33.
1989	0.	981304.	794382.	0.	-268535.	-272122.	0.	-27.	-34.
1990	0.	981304.	748057.	0.	-268535.	-264758.	0.	-27.	-35.
1991	13148.	994452.	38148.	0.	-268535.	0.	0.	-27.	0.
1992	0.	994452.	38148.	0.	-268535.	0.	0.	-27.	0.
1993	280000.	1274452.	293148.	0.	-268535.	0.	0.	-21.	0.
1994	0.	1274452.	293148.	0.	-268535.	0.	0.	-21.	0.
1995	363000.	1637452.	656148.	29001.	-239534.	29001.	8.	-15.	4.

NYPA-TRANSMISSION-123195

ACCOUNT NO. 3533402. STATION EQUIP -B/G

DETERMINATION OF DEPRECIATION RATE FOR 1996 BASED ON PLANT AT 12/31/95

DEPRECIATION: ELG LIFE: 50.0 YRS CURVE: IOWA R5 TERMINAL DATE 12/31/2059 O.C. SALVAGE %: -15.

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I	II	III	IV	V
YEAR	AGE INTERVAL	ORIGINAL COST 12/31/95	ANNUAL DEPRECIATION RATE	ORIGINAL COST ANNUAL DEPRECIATION
1995	0.50 - 1.50	0.	0.020414	0.
1994	1.50 - 2.50	0.	0.020413	0.
1993	2.50 - 3.50	0.	0.020413	0.
1992	3.50 - 4.50	0.	0.020413	0.
1991	4.50 - 5.50	0.	0.020413	0.
1990	5.50 - 6.50	0.	0.020413	0.
1989	6.50 - 7.50	0.	0.020413	0.
1988	7.50 - 8.50	0.	0.020413	0.
1987	8.50 - 9.50	0.	0.020413	0.
1986	9.50 - 10.50	0.	0.020413	0.
1985	10.50 - 11.50	1169192.	0.020413	23866.
1984	11.50 - 12.50	0.	0.020413	0.
1983	12.50 - 13.50	0.	0.020413	0.
1982	13.50 - 14.50	14303.	0.020413	292.
1981	14.50 - 15.50	0.	0.020413	0.
1980	15.50 - 16.50	4602.	0.020413	94.
1979	16.50 - 17.50	0.	0.020413	0.
1978	17.50 - 18.50	112950.	0.020413	2306.
1977	18.50 - 19.50	0.	0.020413	0.
1976	19.50 - 20.50	9002.	0.020413	184.
1975	20.50 - 21.50	0.	0.020412	0.
1974	21.50 - 22.50	10297660.	0.020411	210185.
SUBTOTAL :		11607709.	0.020411	236927.
NET SALVAGE: -15.0 %				35539.
TOTAL :		11607709.	0.023473	272466.

MONTHLY RATE: 0.001956

DEPRECIATION/VALUATION SYSTEM

NYPa-TRANSMISSION-123195

ACCOUNT NO. 3537601. STATION EQUIP -M/Mar

DETERMINATION OF DEPRECIATION RATE FOR 1996 BASED ON PLANT AT 12/31/95

DEPRECIATION: ELG LIFE: 50.0 YRS CURVE: IOWA

R5

O.C. SALVAGE %: -15.

I		II		III	IV	V
YEAR	AGE INTERVAL	ORIGINAL COST	12/31/95	ANNUAL DEPRECIATION RATE	ORIGINAL COST	ANNUAL DEPRECIATION
1995	0.50 - 1.50	0.	0.	0.020413	0.	0.
1994	1.50 - 2.50	0.	0.	0.020413	0.	0.
1993	2.50 - 3.50	1560563.	0.	0.020413	31855.	0.
1992	3.50 - 4.50	0.	0.	0.020413	0.	0.
1991	4.50 - 5.50	0.	0.	0.020413	0.	0.
1990	5.50 - 6.50	0.	0.	0.020413	0.	0.
1989	6.50 - 7.50	0.	0.	0.020413	0.	0.
1988	7.50 - 8.50	0.	0.	0.020413	0.	0.
1987	8.50 - 9.50	425000.	0.	0.020413	8675.	0.
1986	9.50 - 10.50	348305.	0.	0.020413	7110.	0.
1985	10.50 - 11.50	4872634.	0.	0.020413	99464.	0.
1984	11.50 - 12.50	48740741.	0.	0.020413	994930.	0.
1983	12.50 - 13.50	116260.	0.	0.020413	2373.	0.
1982	13.50 - 14.50	5985644.	0.	0.020413	122183.	0.
1981	14.50 - 15.50	0.	0.	0.020413	0.	0.
1980	15.50 - 16.50	0.	0.	0.020413	0.	0.
1979	16.50 - 17.50	66989435.	0.	0.020413	1367434.	0.
SUBTOTAL :		129038582.	0.020413	2634024.		
NET SALVAGE: -15.0 %				395104.		
TOTAL :		129038582.	0.023475	3029128.		

MONTHLY RATE: 0.001956

NYPA-TRANSMISSION-123195

ACCOUNT NO. 3533402. STATION EQUIP -B/G

DETERMINATION OF ORIGINAL COST VALUES AT 12/31/95

DEPRECIATION: ELG LIFE: 50.0 YRS CURVE: IOWA R5 TERMINAL DATE 12/31/2059 O.C. SALVAGE %: -15.

I	II	III	IV	V	VI
YEAR	AGE AT 12/31/95	ORIGINAL COST AT 12/31/95	DEPRECIATION RESERVE RATIO	CALCULATED DEPRECIATION RESERVE	ORIGINAL COST LESS CALCULATED DEPRECIATION
1995	0.50	0.	0.010207	0.	0.
1994	1.50	0.	0.030620	0.	0.
1993	2.50	0.	0.051032	0.	0.
1992	3.50	0.	0.071444	0.	0.
1991	4.50	0.	0.091857	0.	0.
1990	5.50	0.	0.112270	0.	0.
1989	6.50	0.	0.132682	0.	0.
1988	7.50	0.	0.153095	0.	0.
1987	8.50	0.	0.173508	0.	0.
1986	9.50	0.	0.193921	0.	0.
1985	10.50	1169192.	0.214333	250597.	918595.
1984	11.50	0.	0.234746	0.	0.
1983	12.50	0.	0.255159	0.	0.
1982	13.50	14303.	0.275571	3941.	10362.
1981	14.50	0.	0.295984	0.	0.
1980	15.50	4602.	0.316397	1456.	3146.
1979	16.50	0.	0.336809	0.	0.
1978	17.50	112950.	0.357222	40348.	72602.
1977	18.50	0.	0.377635	0.	0.
1976	19.50	9002.	0.398047	3583.	5419.
1975	20.50	0.	0.418454	0.	0.
1974	21.50	10297660.	0.438849	4519117.	5778543.
SUBTOTAL :			0.415159	4819042.	6788667.
NET SALVAGE: -15.0%				722856.	-722856.
TOTAL :		11607709.	0.477433	5541899.	6065810.

WEIGHTED AGE: 20.3 YEARS  
 REMAINING LIFE: 29.7 YEARS

NYPA-TRANSMISSION-123195

ACCOUNT NO. 3537601. STATION EQUIP -M/Mar

DETERMINATION OF ORIGINAL COST VALUES AT 12/31/95

DEPRECIATION: ELG LIFE: 50.0 YRS CURVE: IOWA R5

O.C. SALVAGE %: -15.

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I	II	III	IV	V	VI
	AGE	ORIGINAL	DEPRECIATION	CALCULATED	ORIGINAL COST
	AT	COST AT	RESERVE	DEPRECIATION	LESS CALCULATED
YEAR	12/31/95	12/31/95	RATIO	RESERVE	DEPRECIATION
-----					
1995	0.50	0.	0.010206	0.	0.
1994	1.50	0.	0.030619	0.	0.
1993	2.50	1560563.	0.051032	79638.	1480925.
1992	3.50	0.	0.071444	0.	0.
1991	4.50	0.	0.091857	0.	0.
1990	5.50	0.	0.112270	0.	0.
1989	6.50	0.	0.132682	0.	0.
1988	7.50	0.	0.153095	0.	0.
1987	8.50	425000.	0.173508	73741.	351259.
1986	9.50	348305.	0.193921	67543.	280762.
1985	10.50	4872634.	0.214333	1044367.	3828267.
1984	11.50	48740741.	0.234746	11441690.	37299051.
1983	12.50	116260.	0.255159	29665.	86595.
1982	13.50	5985644.	0.275571	1649472.	4336172.
1981	14.50	0.	0.295984	0.	0.
1980	15.50	0.	0.316397	0.	0.
1979	16.50	66989435.	0.336809	22562669.	44426766.
-----					
SUBTOTAL :			0.286339	36948785.	92089797.
NET SALVAGE: -15.0%				5542318.	-5542318.
-----					
TOTAL :		129038582.	0.329290	42491102.	86547480.
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WEIGHTED AGE: 14.0 YEARS  
 REMAINING LIFE: 36.0 YEARS

NYPA-TRANSMISSION-123195

ACCOUNT NO. 3533402. STATION EQUIP -B/G

## DETERMINATION OF AVERAGE REMAINING LIFE AT 12/31/95

LIFE: 50.0 YRS CURVE: IOWA R5 TERMINAL DATE 12/31/2059

I	II	III	IV	V
YEAR INSTALLED	AGE AT 12/31/95	ORIGINAL COST	AVERAGE REMAINING LIFE	WEIGHTED DOLLAR YEARS
1995	0.50	0.	49.5	0.
1994	1.50	0.	48.5	0.
1993	2.50	0.	47.5	0.
1992	3.50	0.	46.5	0.
1991	4.50	0.	45.5	0.
1990	5.50	0.	44.5	0.
1989	6.50	0.	43.5	0.
1988	7.50	0.	42.5	0.
1987	8.50	0.	41.5	0.
1986	9.50	0.	40.5	0.
1985	10.50	1169192.	39.5	46182698.
1984	11.50	0.	38.5	0.
1983	12.50	0.	37.5	0.
1982	13.50	14303.	36.5	522055.
1981	14.50	0.	35.5	0.
1980	15.50	4602.	34.5	158767.
1979	16.50	0.	33.5	0.
1978	17.50	112950.	32.5	3670838.
1977	18.50	0.	31.5	0.
1976	19.50	9002.	30.5	274558.
1975	20.50	0.	29.5	0.
1974	21.50	10297660.	28.5	293491960.
TOTAL:		11607709.	29.7	344300876.

NYPA-TRANSMISSION-123195

ACCOUNT NO. 3537601. STATION EQUIP -M/Mar

## DETERMINATION OF AVERAGE REMAINING LIFE AT 12/31/95

LIFE: 50.0 YRS CURVE: IOWA R5

I	II	III	IV	V
YEAR INSTALLED	AGE AT 12/31/95	ORIGINAL COST	AVERAGE REMAINING LIFE	WEIGHTED DOLLAR YEARS
1995	0.50	0.	49.5	0.
1994	1.50	0.	48.5	0.
1993	2.50	1560563.	47.5	74126228.
1992	3.50	0.	46.5	0.
1991	4.50	0.	45.5	0.
1990	5.50	0.	44.5	0.
1989	6.50	0.	43.5	0.
1988	7.50	0.	42.5	0.
1987	8.50	425000.	41.5	17637360.
1986	9.50	348305.	40.5	14106238.
1985	10.50	4872634.	39.5	192467435.
1984	11.50	48740741.	38.5	1876502447.
1983	12.50	116260.	37.5	4359712.
1982	13.50	5985644.	36.5	218474031.
1981	14.50	0.	35.5	0.
1980	15.50	0.	34.5	0.
1979	16.50	66989435.	33.5	2244123971.
TOTAL:		129038582.	36.0	4641797421.

APPENDIX C

**ALTERNATIVE SCHEDULES**

**SCHEDULE I**

**NEW YORK POWER AUTHORITY**  
**RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT**  
 Straight Line Method / Average Life Group Procedure / Remaining Life Amortization / Location Life Basis  
 Based on Depreciable Plant in Service at December 31, 1995

Account Number	Account Title	Original Cost Dec 31, 1995	Ret. Year Avg. Life Yrs Curve	Net Salvage Percent	Normal Annual Depreciation Rate	Annual Depreciation Amount
	II	III	IV	V	VI	VII
<b>St. Lawrence / FDR Project</b>						
352	Structures & Improvements	6,708,035	2043 75 R5	-25%	1.84%	123,267
353	Station Equipment	70,775,053	50 R5	-15%	2.31%	1,635,194
354	Towers & Fixtures	19,873,437	65 R5	-40%	2.29%	317,388
355	Poles & Fixtures	6,427,665	55 R4	-40%	2.58%	165,717
356	Overhead Conductors & Devices	15,472,585	55 R5	-20%	2.20%	339,781
357	Underground Conduit	61,047	75 R5	-5%	1.42%	866
358	Underground Conductors & Devices	1,186,661	50 R5	-15%	2.30%	27,293
359	Roads & Trails	193,299	100 SQ	0%	1.57%	3,037
	<b>Total</b>	<b>114,697,782</b>				<b>2,612,543</b>
<b>Niagara Project</b>						
352	Structures & Improvements	17,306,144	2047 75 R5	-25%	1.70%	294,823
353	Station Equipment	57,434,220	50 R5	-15%	2.31%	1,323,874
354	Towers & Fixtures	17,695,643	65 R5	-40%	2.15%	381,254
355	Poles & Fixtures	19,726	55 R4	-40%	2.55%	502
356	Overhead Conductors & Devices	28,672,315	55 R5	-20%	2.19%	627,257
359	Roads & Trails	42,797	100 SQ	0%	1.19%	509
	<b>Total</b>	<b>121,170,845</b>				<b>2,628,219</b>
<b>Blenheim - Gilboa Project</b>						
352	Structures & Improvements	3,971,097	2059 75 R5	-25%	1.68%	66,768
353	Station Equipment	11,607,709	50 R5	-15%	2.30%	266,979
354	Towers & Fixtures	22,612,274	65 R5	-40%	2.16%	487,320
355	Poles & Fixtures	1,937,519	55 R4	-40%	2.55%	49,319
356	Overhead Conductors & Devices	9,403,929	55 R5	-20%	2.18%	205,178
359	Roads & Trails	670,808	100 SQ	0%	1.23%	8,282
	<b>Total</b>	<b>50,203,336</b>				<b>1,083,846</b>
<b>J.A. FitzPatrick Project</b>						
352	Structures & Improvements	306,893	2014 75 R5	-25%	3.21%	9,837
353	Station Equipment	8,213,649	50 R5	-15%	2.97%	243,748
354	Towers & Fixtures	10,051,183	65 R5	-40%	3.59%	361,154
356	Overhead Conductors & Devices	5,926,677	55 R5	-20%	3.09%	182,897
359	Roads & Trails	80,335	100 SQ	0%	2.68%	2,149
	<b>Total</b>	<b>24,578,737</b>				<b>799,785</b>
	<b>Total Location Life Basis</b>	<b>310,650,700</b>				<b>7,124,393</b>

**SCHEDULE Ia**

**NEW YORK POWER AUTHORITY  
RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT  
Straight Line Method / Average Life Group Procedure / Remaining Life Amortization / Whole Life Basis  
Based on Depreciable Plant in Service at December 31, 1995**

Account Number	Account Title	Original Cost Dec 31, 1995	Ret. Year Avg. Life Yrs Curve	Net Salvage Percent	Normal Annual Depreciation Rate	Annual Depreciation Amount
		III	IV	V	VI	VII
<b>Massena - Marcy Project</b>						
352	Structures & Improvements	33,034,480	N.A. 75 R5	-25%	1.67%	550,578
353	Station Equipment	129,038,582	50 R5	-15%	2.30%	2,967,907
354	Towers & Fixtures	64,465,654	65 R5	-40%	2.15%	1,388,501
355	Poles & Fixtures	19,615,058	55 R4	-40%	2.55%	499,290
356	Overhead Conductors & Devices	39,320,417	55 R5	-20%	2.18%	857,906
359	Roads & Trails	5,105,433	100 SQ	0%	1.00%	51,054
	<b>Total</b>	<b>290,579,624</b>				<b>6,315,236</b>
<b>Marcy-South Project</b>						
353	Station Equipment	19,236,000	N.A. 50 R5	-15%	2.30%	442,431
354	Towers & Fixtures	74,138,000	65 R5	-40%	2.15%	1,596,380
355	Poles & Fixtures	206,471,000	55 R4	-40%	2.55%	5,255,597
356	Overhead Conductors & Devices	103,974,000	55 R5	-20%	2.18%	2,268,540
357	Underground Conduit	43,193,000	75 R5	-5%	1.40%	604,706
358	Underground Conductors & Devices	12,102,000	50 R5	-15%	2.30%	278,348
359	Roads & Trails	22,035,000	100 SQ	0%	1.00%	220,350
	<b>Total</b>	<b>481,149,000</b>				<b>10,666,352</b>
	<b>Total Whole Life Basis</b>	<b>771,728,624</b>				<b>16,981,588</b>

**NEW YORK POWER AUTHORITY**  
**RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT**  
 Straight Line Method / Average Life Group Procedure / Remaining Life Amortization / Location Life Basis  
 Based on Depreciable Plant in Service at December 31, 1995

**SCHEDULE 11**

Account Number	Account Title	Original Cost Dec 31, 1995	Calculated Requirement	Accumulated Provision for Depreciation		Average Remaining Life (Yrs)	Annual Amortization of Difference
				Per Books Allocated	Difference Amount		
	III	IV	V	VI	VII	VIII	IX
<b>St. Lawrence / FDR Project</b>							
352	Structures & Improvements	6,708,035	3,233,605	3,454,674	(221,069)	41.3	(5,353)
353	Station Equipment	70,775,053	29,999,791	32,050,760	(2,050,969)	31.4	(65,317)
354	Towers & Fixtures	13,873,437	6,481,214	6,924,309	(443,095)	40.5	(10,941)
355	Poles & Fixtures	6,427,665	3,929,988	4,198,666	(268,678)	30.5	(8,809)
356	Overhead Conductors & Devices	15,472,585	6,288,539	6,718,462	(429,923)	36.1	(11,909)
357	Underground Conduit	61,047	30,742	32,844	(2,102)	38.5	(55)
358	Underground Conductors & Devices	1,186,661	733,011	783,124	(50,113)	23.1	(2,169)
359	Roads & Trails	193,299	49,052	52,405	(3,353)	47.5	(71)
	<b>Total</b>	<b>114,697,782</b>	<b>50,745,942</b>	<b>54,215,245</b>	<b>(3,469,303)</b>		<b>(104,624)</b>
<b>Niagara Project</b>							
352	Structures & Improvements	17,306,144	9,147,524	9,603,819	(456,295)	42.3	0
353	Station Equipment	57,434,220	29,710,243	31,192,244	(1,482,001)	27.4	0
354	Towers & Fixtures	17,695,643	12,117,710	12,722,163	(604,453)	33.2	0
355	Poles & Fixtures	19,726	14,827	15,567	(740)	25.5	0
356	Overhead Conductors & Devices	28,672,315	15,101,984	15,955,296	(753,314)	30.7	0
359	Roads & Trails	42,797	16,558	17,384	(826)	51.5	0
	<b>Total</b>	<b>121,170,845</b>	<b>66,108,846</b>	<b>69,406,475</b>	<b>(3,297,629)</b>		<b>0</b>
<b>Blenheim - Gilboa Project</b>							
352	Structures & Improvements	3,971,097	1,429,913	1,563,045	(133,132)	52.9	(2,517)
353	Station Equipment	11,607,709	5,429,893	5,935,444	(505,551)	29.7	(17,022)
354	Towers & Fixtures	22,612,274	8,998,213	9,835,993	(837,790)	46.5	(18,017)
355	Poles & Fixtures	1,937,519	855,698	935,368	(79,670)	37.6	(2,119)
356	Overhead Conductors & Devices	9,403,929	4,042,647	4,419,038	(376,391)	35.3	(10,663)
359	Roads & Trails	670,808	144,928	158,422	(13,494)	63.5	(212)
	<b>Total</b>	<b>50,203,336</b>	<b>20,901,292</b>	<b>22,847,309</b>	<b>(1,946,017)</b>		<b>(50,549)</b>
<b>J.A FitzPatrick Project</b>							
352	Structures & Improvements	306,893	201,655	147,205	54,450	18.5	2,943
353	Station Equipment	8,213,649	4,995,715	3,646,783	1,348,932	18.3	73,712
354	Towers & Fixtures	10,051,163	7,398,580	5,398,641	1,996,939	18.5	107,943
356	Overhead Conductors & Devices	5,926,677	3,745,987	2,734,504	1,011,483	18.4	54,972
359	Roads & Trails	80,335	40,578	29,621	10,957	18.5	592
	<b>Total</b>	<b>24,578,737</b>	<b>16,379,515</b>	<b>11,956,753</b>	<b>4,422,762</b>		<b>240,162</b>
	<b>Total Location Life Basis</b>	<b>310,650,700</b>	<b>154,135,595</b>	<b>158,425,782</b>	<b>(4,290,187)</b>		<b>84,989</b>

**SCHEDULE I la**  
**NEW YORK POWER AUTHORITY**  
**RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT**  
 Straight Line Method / Average Life Group Procedure / Remaining Life Amortization / Whole Life Basis  
 Based on Depreciable Plant in Service at December 31, 1995

Account Number	Account Title	Original Cost Dec 31, 1995	Calculated Requirement	Accumulated Provision for Depreciation		Average Remaining Life (Yrs)	Annual Amortization of Difference
				Per Books Allocated	Difference Amount		
		III	IV	V	VI	VIII	IX
<b>Massena - Marcy Project</b>							
352	Structures & Improvements	33,034,480	8,939,902	10,056,469	(1,118,567)	58.8	(18,989)
353	Station Equipment	129,038,582	41,632,324	46,832,077	(5,199,753)	36.0	(144,438)
354	Towers & Fixtures	64,465,654	22,062,039	24,817,522	(2,755,483)	49.1	(56,120)
355	Poles & Fixtures	19,615,058	8,083,311	9,092,892	(1,009,581)	38.8	(26,020)
356	Overhead Conductors & Devices	39,320,417	13,979,149	15,725,103	(1,745,954)	38.7	(45,115)
359	Roads & Trails	5,105,433	823,791	926,860	(102,869)	83.9	(1,226)
	<b>Total</b>	<b>290,579,624</b>	<b>95,520,516</b>	<b>107,450,743</b>	<b>(11,930,227)</b>		<b>(291,908)</b>
<b>Marcy-South Project</b>							
353	Station Equipment	19,236,000	3,305,904	4,080,195	(774,291)	42.5	(18,219)
354	Towers & Fixtures	74,138,000	11,852,397	14,628,401	(2,776,004)	57.6	(48,195)
355	Poles & Fixtures	206,471,000	39,155,162	48,325,872	(9,170,710)	47.6	(192,662)
356	Overhead Conductors & Devices	103,974,000	16,904,715	20,864,046	(3,959,331)	47.5	(83,354)
357	Underground Conduit	43,193,000	4,521,744	5,580,802	(1,059,058)	67.5	(15,690)
358	Underground Conductors & Devices	12,102,000	2,081,836	2,569,432	(487,596)	42.5	(11,473)
359	Roads & Trails	22,035,000	1,570,805	1,938,710	(367,905)	92.9	(3,960)
	<b>Total</b>	<b>481,149,000</b>	<b>79,392,563</b>	<b>97,987,460</b>	<b>(18,594,897)</b>		<b>(373,552)</b>
	<b>Total Whole Life Basis</b>	<b>771,728,624</b>	<b>174,913,079</b>	<b>205,438,203</b>	<b>(30,525,124)</b>		<b>(665,460)</b>

**NEW YORK POWER AUTHORITY**  
**RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT**  
 Straight Line Method / Average Life Group Procedure / Remaining Life Amortization / Location Life Basis  
 Based on Depreciable Plant in Service at December 31, 1995

SCHEDULE III

Account Number	Account Title	Original Cost Dec 31, 1995	Total Annual Depreciation Accrual (1)	Effective Annual Depreciation Rate - %	NYPAs Current Basis		Annual Difference (2)
					Annual Depreciation Rate - %	Annual Depreciation Accrual	
	II	III	IV	V	VI	VII	VIII
<b>St. Lawrence / FDR Project</b>							
352	Structures & Improvements	6,708,035	117,914	1.76%	2.39%	160,322	(42,408)
353	Station Equipment	70,775,053	1,569,877	2.22%	1.61%	1,139,478	430,398
354	Towers & Fixtures	13,873,437	306,447	2.21%	1.40%	194,228	112,219
355	Poles & Fixtures	6,427,665	156,908	2.44%	2.06%	132,410	24,498
356	Overhead Conductors & Devices	15,472,585	327,872	2.12%	1.84%	284,686	43,176
357	Underground Conduit	61,047	811	1.33%	0.66%	403	408
358	Underground Conductors & Devices	1,186,661	25,124	2.12%	2.42%	28,717	(3,594)
359	Roads & Trails	193,299	2,966	1.53%	1.38%	2,668	299
	<b>Total</b>	<b>114,697,782</b>	<b>2,507,919</b>			<b>1,942,922</b>	<b>564,998</b>
<b>Niagara Project</b>							
352	Structures & Improvements	17,306,144	294,823	1.70%	2.46%	425,731	(130,908)
353	Station Equipment	57,434,220	1,323,874	2.31%	1.43%	821,309	502,565
354	Towers & Fixtures	17,695,643	381,254	2.15%	0.99%	175,187	206,067
355	Poles & Fixtures	19,726	502	2.54%	1.97%	389	113
356	Overhead Conductors & Devices	28,672,315	627,257	2.19%	1.97%	564,845	62,412
359	Roads & Trails	42,797	509	1.19%	0.76%	325	184
	<b>Total</b>	<b>121,170,845</b>	<b>2,628,219</b>			<b>1,987,786</b>	<b>640,433</b>
<b>Blenheim - Gilboa Project</b>							
352	Structures & Improvements	3,971,097	64,251	1.62%	2.20%	87,364	(23,113)
353	Station Equipment	11,607,709	249,957	2.15%	2.50%	290,193	(40,236)
354	Towers & Fixtures	22,612,274	469,303	2.08%	2.40%	542,695	(73,391)
355	Poles & Fixtures	1,937,519	47,200	2.44%	3.15%	61,032	(13,832)
356	Overhead Conductors & Devices	9,403,929	194,515	2.07%	2.33%	219,112	(24,596)
359	Roads & Trails	670,808	8,070	1.20%	2.00%	13,416	(5,347)
	<b>Total</b>	<b>50,203,336</b>	<b>1,033,297</b>			<b>1,213,811</b>	<b>(180,514)</b>
<b>JA FitzPatrick Project</b>							
352	Structures & Improvements	306,893	12,780	4.16%	2.20%	6,752	6,029
353	Station Equipment	8,213,649	317,460	3.87%	2.50%	205,341	112,119
354	Towers & Fixtures	10,051,183	469,097	4.67%	2.40%	241,228	227,868
356	Overhead Conductors & Devices	5,926,677	237,869	4.01%	2.33%	138,092	99,777
359	Roads & Trails	80,335	2,741	3.41%	2.00%	1,607	1,135
	<b>Total</b>	<b>24,578,737</b>	<b>1,039,947</b>			<b>593,020</b>	<b>446,928</b>
	<b>Total Location Life Basis</b>	<b>310,650,700</b>	<b>7,209,382</b>			<b>5,737,538</b>	<b>1,471,844</b>

(1) Schedule I, Column VII plus Schedule II, Column IX.  
 (2) Column IV minus Column VII.

**NEW YORK POWER AUTHORITY**  
**RECOMMENDED DEPRECIATION RATES - TRANSMISSION PLANT**  
 Straight Line Method / Average Life Group Procedure / Remaining Life Amortization / Whole Life Basis  
 Based on Depreciable Plant in Service at December 31, 1995

SCHEDULE IIIa

Account Number	Account Title	Original Cost Dec 31, 1995 III	Total Annual Depreciation Accrual (1) IV	Effective Annual Depreciation Rate - % V	NYPA's Current Basis		Annual Difference (2) VIII
					Annual Depreciation Rate - % VI	Annual Depreciation Accrual VII	
<b>Massena - Marcy Project</b>							
352	Structures & Improvements	33,034,480	531,589	1.61%	2.20%	726,759	(195,170)
353	Station Equipment	129,038,582	2,823,469	2.19%	2.50%	3,225,965	(402,495)
354	Towers & Fixtures	64,465,654	1,332,381	2.07%	2.40%	1,547,176	(214,795)
355	Poles & Fixtures	19,615,058	473,270	2.41%	3.15%	617,874	(144,604)
356	Overhead Conductors & Devices	39,320,417	812,791	2.07%	2.33%	916,166	(103,375)
359	Roads & Trails	5,105,433	49,828	0.98%	2.00%	102,109	(52,281)
	<b>Total</b>	<b>290,579,624</b>	<b>6,023,328</b>			<b>7,136,048</b>	<b>(1,112,720)</b>
<b>Marcy-South Project</b>							
353	Station Equipment	19,236,000	424,212	2.21%	2.50%	480,900	(56,688)
354	Towers & Fixtures	74,138,000	1,548,185	2.09%	2.40%	1,779,312	(231,127)
355	Poles & Fixtures	206,471,000	5,062,935	2.45%	3.15%	6,503,837	(1,440,901)
356	Overhead Conductors & Devices	103,974,000	2,185,186	2.10%	2.33%	2,422,594	(237,409)
357	Underground Conduit	43,193,000	589,016	1.36%	2.50%	1,079,825	(490,809)
358	Underground Conductors & Devices	12,102,000	266,875	2.21%	2.50%	302,550	(35,675)
359	Roads & Trails	22,035,000	216,390	0.98%	2.00%	440,700	(224,310)
	<b>Total</b>	<b>481,149,000</b>	<b>10,292,800</b>			<b>13,009,718</b>	<b>(2,716,918)</b>
	<b>Total Whole Life Basis</b>	<b>771,728,624</b>	<b>16,316,128</b>			<b>20,145,765</b>	<b>(3,829,638)</b>

(1) Schedule Ia, Column VII plus Schedule IIa, Column IX.  
 (2) Column IV minus Column VII.



**Gilbert/Commonwealth** engineers and consultants

GILBERT ASSOCIATES, INC., P. O. Box 1498, Reading, PA 19603/Tel. 215-775-2600/Cable Gilasoc/Telex 836-431

August 13, 1982

Mr. Alvin I. Becker  
Deputy Controller  
Power Authority of the  
State of New York  
10 Columbus Circle  
New York, New York 10019

Dear Mr. Becker:

We are pleased to submit herewith the report on the findings of our depreciation study of the Authority's Niagara and St. Lawrence hydroelectric generating facilities and related properties as of December 31, 1981.

The study was conducted in accordance with methods generally recognized and accepted in the utility industry. Although the study was conducted by our staff, we are most appreciative of the considerable assistance and cooperation provided us by the staff of the Authority.

A composite annual depreciation accrual rate of 1.81% is recommended for all depreciable investments in the hydroelectric generating facilities and related properties, to become effective as of December 31, 1981, and to continue thereafter, subject to the change of mix of the primary accounts making up the composite rate, until subsequent studies reveal that changes in the primary account rates are necessary. It is also recommended that a depreciation reserve in the amount of \$324,207,636 be established as of December 31, 1981, as a balance sheet account. The details of our study are discussed on the following pages, and tabular schedules which summarize our findings are attached.

I. METHODOLOGIES EMPLOYED

A. Hydraulic Production Plant

The average service lives of the Hydraulic Production Plant accounts are based on a Unit Summation FORECAST procedure. This procedure is applicable to specific location properties and equipment which may experience minor interim retirements throughout the life term and where all surviving investments are expected to be retired at one point in time.

The key element in the FORECAST analysis is the projected terminal retirement date for a given facility. Projected terminal retirement dates for this study were based on span lives of 100 years for all civil works: Account 331 - Structures and Improvements;

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Account 332 - Reservoirs, Dams, and Waterways; and Account 336 - Roads, Railroads and Bridges; and 60 years for all electrical and mechanical equipment; Account 333 - Water Wheels, Turbines and Generators; Account 334 - Accessory Electric Equipment; and Account 335 - Miscellaneous Power Plant Equipment.

Also an important element in the FORECAST analysis is the magnitude and timing of interim retirement activity; that is, retirements of portions of the facility predicted to occur prior to the complete and final retirement. Interim retirements for the PASNY hydraulic generating plants were estimated to be 0.14% of the current depreciable investment on an annual basis. The 0.14% annual interim retirement rate is based on our knowledge of other utilities, studies done within the industry, and the fact that it is the rate recommended by F.E.R.C. in its economic studies of hydroelectric power (Bulletin FPC P-35).

The FORECAST analytical technique employed by Gilbert Associates, Inc. (GAI) is a harmonically weighted procedure which calculates the dollar service life, annual accrual, and indicated reserve for each surviving investment of every age, based upon a life span of each vintage. If within a given vintage surviving investment, certain interim retirements are projected to occur, each portion having a different dollar service life is calculated individually. The sum of the annual accruals for each investment is related to the sum of the vintaged investments to obtain a harmonically weighted equivalent average dollar service life for the account.

B. Transmission and General Plant

The Transmission and General Plant accounts generally contain reasonably homogeneous groups of property or equipment which are often referred to as mass plant investments. Each year's addition of new equipment in a mass plant account usually consists of a relatively large number of units, without any specific geographic or directly-connected functional relationship to other units placed in service that same year, or to placements of prior vintage years. Each vintage of placements can be expected to experience a future retirement pattern similar to any other vintage, due to: (1) the similarity in the kind and type of equipment unit themselves, and (2) the similarity in the sources of influence which cause the retirement of such property. These characteristics of mass plant investments are in sharp contrast with the nature of specific location investments.

Because of these characteristics, the generalization is made that each year's additions will experience a particular pattern of retirement throughout its history, and that this pattern is

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approximately the same, on the average, for each vintage of additions. Thus, each vintage of additions of mass property is considered to be fairly independent of any other vintage, yet the average life of each vintage of additions is considered to be the same, as is the total time span from the original placement of each vintage to the time at which the last retirement from the vintage is expected to occur.

PASNY's plant accounting data are maintained in such a manner that the age of all surviving investments can be identified, and the age of all property retired also can be identified. When retirements occur, it is then possible to relate the amount of the retirement of a given age to the amount of original placements of that same age to develop a retirement ratio, or its complement, a survivor ratio. As these ratios develop vintage by vintage, a survivor curve can be plotted as an aid to calculate the average service life of the account. Most of PASNY's Transmission and General Plant accounts contain long-lived equipment which, with one or two exceptions, has not been in existence long enough to have experienced any significant retirement history. Thus, these retirement or survivor ratios are not in sufficient depth to provide any reliable average service life indications. In these instances GAI has selected an average service life for each primary account based on our judgment which reflects the extensive experience we have had in performing depreciation studies on similar properties and equipment both in the United States and abroad. The retirement dispersion patterns selected are those depicted by the so-called "Iowa" curves (developed by Iowa State University) because they are generally accepted in the industry and are referred to frequently in the various textbooks on the subject of depreciation.

## II. NET SALVAGE CONSIDERATIONS

Under standard quality accounting practices, the original cost of property retired and its costs of removal are debited to the depreciation reserve, and any gross salvage or other monies received are credited to the depreciation reserve. If the correct amount of depreciation is recognized during the life of the property, the depreciation reserve will be zero at the time when the final component of property in an account is retired and all of the gross salvage and removal costs are accounted for. This is accomplished by incorporating net salvage expectations into the annual depreciation accrual rates.

Positive net salvage occurs whenever gross salvage receipts are greater in amount than the costs of removal. In such cases the total investment to be depreciated is less than the original placement by the amount of the anticipated positive net salvage. Thus, the annual accrual rate

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is less than the reciprocal of the average service life. For example, the reciprocal of a 25-year average service life indicates a 4% accrual rate. If 10% positive net salvage is expected, the 4% accrual rate is reduced 10% to 3.6% (or, 90% of 4% equals 3.6%).

Negative net salvage occurs whenever removal costs are greater than the gross salvage receipts, indicating that the utility must recover over the life of the asset not only its original capital investment, but also the additional net cost which is expected at the date of retirement. The amount of additional cost is the amount of the difference between removal costs and gross salvage receipts. Thus, the annual accrual rate is larger than the reciprocal of the average service life. To illustrate again with the 25-year life and 4% annual rate referred to previously, if 10% negative net salvage is expected, the 4% accrual rate is increased 10% to 4.4% (or 110% of 4% equals 4.4%).

A schedule of recommended net salvage allowances is presented in Schedule IA at Column 6. In the Production Plant function, the negative net salvage estimates provide for the costs of making all structures, including the dams, safe and structurally sound so that they pose no public hazard when the plants can no longer generate electricity. The negative 10% allowance for Accounts 331 and 336 are typical allowances for the complete demolition and restoration of the sites. The negative 30% allowance for Account 332 reflects Niagara Mohawk Power Corporation's recent experience in retiring one of its hydroelectric plants. The negative allowances for Transmission Plant reflect current environmental attitudes. Several accounts have been assigned a zero percent net salvage to reflect the expectation that the cost of removal will be offset by gross salvage receipts.

### III. DEPRECIATION ACCRUAL RECOMMENDATIONS

#### A. Hydraulic Production Plant

The total depreciable investment in Hydraulic Production Plant is \$901,683,267. The classification of this amount by primary account is presented in Table 1. The composite average dollar service life of the investments in these facilities is 82.5 years. The reciprocal of this life indicates an annual accrual rate of 1.21%, but after adjustment for 19% negative net salvage expectations, the composite accrual rate is 1.44%.

#### Account 331.00 - Structures and Improvements

The investment in this account totals \$106,142,250. Its life assignment is 100 years, but the interim retirements contemplated reduce the average dollar service life to 91.2 years. It is expected that the cost of removal at the terminal retirement date

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will exceed the gross salvage receipts by 10%. The magnitude of the adjusted annual accrual including net salvage, therefore, is \$1,280,806, an annual rate of 1.21%.

Account 332.00 - Reservoirs, Dams, and Waterways

The total investment in this civil works account is \$593,103,816 which is expected to have a life span of 100 years. Because certain components of this investment are not expected to survive the full project life, the average dollar service life is somewhat less: 91.5 years. The annual depreciation accrual rate recommended is 1.42% including 30% negative net salvage. The magnitude of the accrual is \$8,418,482. ✓

Account 333.00 - Water Wheels, Turbines, and Generators

This account balance is \$132,408,805 and is expected to have a life span of 60 years. The average dollar service life is 58.2 years. The net salvage expectation is zero, which results in an annual accrual rate of 1.72%. The depreciation accrual resulting from this accrual rate is \$2,273,181.

Account 334.00 - Accessory Electric Equipment

The Accessory Electric Equipment plant balance is \$23,692,241. The span life expectation is 60 years and the average dollar service life is calculated to be 54.6 years. The corresponding depreciation accrual rate is 1.83% and the magnitude of the accrual is \$433,716, reflecting zero net salvage.

Account 335.00 - Miscellaneous Power Plant Equipment

This account typically contains such diverse components as air compressors and piping systems, ventilating equipment, fire extinguishing equipment, and cranes and hoisting equipment. The account balance is \$9,882,668. The life expectancy is 60 years, but the average dollar service life is 57.4 years. With a 5% positive net salvage expectation, the magnitude of the annual accrual is \$163,398 and the rate is 1.65%.

Account 336.00 - Roads, Railroads, and Bridges

The depreciable balance in this account is \$36,453,487. The average dollar service life is 91.2 years based on a span life of 100 years. The annual accrual rate, including an allowance for net salvage of negative 10%, is 1.21% and the magnitude of the accrual is \$440,001.



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B. Transmission Plant

The Authority's transmission properties relating to the hydro-electric generating facilities include 115 kV, 230 kV, 345 kV, and 765 kV lines and equipment. For the most part, the transmission lines associated with these generating facilities are overhead lines. There are, however, approximately \$1.3 million of transmission plant which is classified as underground.

The Transmission Plant accounts have been studied as mass plant accounts which require assignment of an average service life rather than the specificity of a forecast life. Transmission lines and equipment tend to have long lives and experience few retirements in the early period of life. For this reason, and recognizing the insignificant retirement activity experience to date, the Authority's transmission plant average service lives selected are based on engineering judgment and experience with other utilities.

The average service life and associated retirement dispersion curve (Iowa type) chosen for each plant account are presented on Schedule IA and described below.

The total depreciable investment in the Transmission Plant functional accounts is \$406,596.700. The composite average service life of this function is 43.6 years. This average service life represents an annual accrual rate of 2.29%. Adjusted for net salvage of negative 7%, the accrual rate is 2.44%. Thus, the magnitude of the annual accrual is \$9,935,011.

Account 352.00 - Structures and Improvements

Since no retirement activity has been recorded in this plant account, engineering judgment and our experience with other utilities was used as the basis for recommending an average service life of 50 years with an R 2.5 retirement dispersion. It is expected that the cost of removal will exceed gross salvage by 10%. These parameters result in an adjusted accrual rate of 2.20%. Based on an investment of \$53,620,961, the adjusted accrual is \$1,179,661.

Account 353.00 - Substation Equipment

The total depreciable investment in substation equipment is \$162,215,512. There has been some retirement activity in this account, mostly within the period 1967-1981, but not enough to perform a meaningful retirement mortality analysis. Again, using engineering judgment and experience from other utilities, our recommendation is an average service life of 40 years with an R 2.5 retirement dispersion.

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We also project zero net salvage, or cost of removal equaling gross salvage. With an accrual rate of 2.50%, the magnitude of the accrual is \$4,055,388.

Account 354.00 - Towers and Fixtures

The total plant balance of this account was \$88,034,343 at December 31, 1981. No retirements have been recorded. An average service life of 50 years with an R 3.0 retirement dispersion is recommended. Negative net salvage is expected to be quite high due to environmental concerns. We estimate it to be negative 20%. An equivalent annual accrual rate of 2.40% results, which, when applied to the account balance, results in an accrual, the magnitude of which is about \$2,112,824 per year.

Account 355.00 - Poles and Fixtures

This account balance was \$25,357,341 at December 31, 1981. Only one retirement has occurred since the account was first opened, which precluded any attempt of mortality analyses. An average service life of 35 years with an associated R 2.0 Iowa type retirement dispersion curve is recommended. It is expected that the cost of removal will exceed gross salvage by 10% of the original cost retired. The resulting adjusted accrual rate is 3.15% with the magnitude of the accrual being \$798,756.

Account 356.00 - Overhead Conductors and Devices

The depreciable investment in overhead conductors and devices is \$71,108,404. Since there has been no retirement activity, judgment was used in selecting an average service life and retirement dispersion curve. We recommend an R 2.5 curve with an average service life of 45 years. Cost of removal is expected to exceed gross salvage. We recommend a negative 5% allowance. An adjusted annual accrual rate of 2.33% is recommended. This rate applied to the depreciable balance is equal to \$1,656,826.

Account 357.00 - Underground Conduit

The depreciable balance of this account is \$61,047. There have been no retirements, so our recommendation of a 40-year average service life with an R 2.5 retirement dispersion is based solely on our engineering judgment and experience with other utilities. Net salvage is expected to be zero, therefore, the annual accrual rate is 2.50%. The magnitude of the accrual is \$1,526.

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Account 358.00 - Underground Conductors and Devices

The depreciable investment in underground conductors and devices is \$1,209,640. Since only one retirement has occurred, the recommended 40-year average service life and R 2.5 retirement dispersion is based on judgment. Net salvage also is expected to be zero. The magnitude of the annual accrual is \$30,241, which is derived from an annual accrual rate of 2.50% applied to the year-end balance of the account.

Account 359.00 - Roads and Trails

The total depreciable plant balance for this account is \$4,989,452. On the basis of engineering judgment, we recommend an R 3.0 retirement dispersion and an average service life of 50 years. Net salvage is expected to be zero. The annual accrual rate, accordingly, is 2.00% and the magnitude of the annual accrual is \$99,789.

C. General Plant

The total depreciable investment in General Plant associated with the Niagara and St. Lawrence hydroelectric generating facilities and related properties is \$25,722,236. In some of the General Plant accounts there was enough retirement activity to perform mortality analyses to be used as an aid to the selection of an average service life and retirement dispersion. The composite average service life of this functional group of accounts is 22.3 years. The net salvage is expected to approximate zero and the magnitude of the annual accrual is \$1,154,203. The recommended primary account rates are presented on Schedule IA and are described below.

Account 390.00 - Structures and Improvements

This account, with a plant balance of \$13,632,318, is the largest of the General Plant functional group of accounts. Nevertheless, there is not enough retirement history to warrant a mortality analysis. Based on the type of assets, we recommend a 50-year average service life with an R 3.0 retirement dispersion. The annual depreciation accrual rate, after being adjusted for 10% negative net salvage, is recommended to be 2.20%. The annual accrual amount will be on the order of \$299,911.

Account 391.00 - Office Furniture and Equipment

The depreciable investment in Account 391.00 is \$679,091. Mortality analyses were performed on the retirement history from 1965 through 1981. The results of these analyses aided us in

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our decision to recommend an average service life of 30 years with an S 2.0 retirement dispersion. Net salvage is expected to be positive 5%. The resulting accrual rate is 3.16%, and the accrual amount is of the magnitude of \$21,459.

Account 392.00 - Transportation Equipment

Of the \$3,352,047 depreciable balance in this plant account, over 23% was added in 1981. Most of the vehicles in this account are either passenger cars or pick-up trucks. Mortality analysis of retirement history was very useful in determining our recommendation of a 10-year average service life with an L 2.0 retirement dispersion. An adjusted accrual rate of 9.50% results, reflecting expected net salvage of positive 5%. The magnitude of the annual accrual adjusted for net salvage is \$318,444.

Account 393.00 - Stores Equipment

The depreciable balance of this plant account is \$232,423. There have been some retirements, but too few to draw any meaningful conclusions from mortality analyses. Using engineering judgment and experience with other utilities as a basis, we recommend an average service life of 30 years with an R 2.5 retirement dispersion. With zero net salvage expected, the annual accrual rate is 3.33%. The annual accrual using this rate will be on the order of \$7,740.

Account 394.00 - Tools, Shop, and Garage Equipment

The depreciable plant balance for this equipment is \$1,179,833. Mortality analyses were performed on the retirement history of this account, but they did not provide meaningful results. Considering the type of property, we used experience and judgment as the basis for the 20-year average service life and R 1.5 retirement dispersion recommendation. Reflecting zero net salvage, the annual accrual rate is 5.00%. The magnitude of the annual accrual based on the above investment is \$58,992.

Account 395.00 - Laboratory Equipment

The depreciable investment in laboratory equipment is \$608,660. Mortality analyses and judgment are the basis of our average service life recommendation of a 25-year S 3.0. With net salvage expected to be zero, the annual accrual rate is 4.00%. The annual accrual amount will be on the order of \$24,346.



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Account 396.00 - Power Operated Equipment

The depreciable investment in this account is \$1,332,596. Mortality analyses were not performed since too few retirements have been recorded. In light of the type of equipment, we recommend a 10-year average service life with an L 3.0 retirement dispersion. Net salvage is expected to be positive 5%. The magnitude of the annual accrual and the annual accrual rate adjusted for net salvage are \$126,597 and 9.50%, respectively.

Account 397.00 - Communication Equipment

The depreciable balance of this account as of December 31, 1981, is \$3,958,758. Too few retirements have been recorded to date to warrant mortality analyses, and the average service life recommendation of 15 years with an S 3.0 retirement dispersion is based on judgment. With net salvage estimated to be zero, the annual accrual rate is 6.67%. This accrual rate applied to the above investment is \$264,049.

Account 398.00 - Miscellaneous Equipment

Our curve and life recommendation of an S 2.0 and 25 years is supported by mortality analyses performed on the retirement history of the account from 1966 through 1981. The recommended net salvage is zero, resulting in an accrual rate of 4.00%. When applied to the depreciable investment of \$641,457, the accrual is \$25,658.

Account 399.00 - Other Tangible Equipment

The depreciable investment in this plant account is \$105,053. Since it is hard to determine the exact nature of the equipment in this account, we are recommending the investment be amortized over a period of 15 years -- a square dispersion pattern which does not recognize any interim retirements. This amount would be \$7,007 annually, or, based as a percentage of the depreciable investment, 6.67%.

IV. DEPRECIATION RESERVE RECOMMENDATIONS

At the present time, the Authority has no provision for accumulated depreciation charges. Accordingly, we recommend that a depreciation reserve for each primary account be established as of December 31, 1981. The amount of each of these reserves is shown on Schedule IA in the right hand column (Column 11). The total of all future depreciation accruals calculated at the rates recommended in Section III of



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this report, when added to these recommended reserves, will provide for the full retirement of the existing plant in service.

Should you desire clarification or explanation of any of the details of this report, we shall be pleased to meet with you at your convenience.

Respectfully submitted,

GILBERT ASSOCIATES, INC.

*G. Robert Faust*

G. Robert Faust  
Divisional Vice President

by

Robert M. Keith, Jr.  
Vice President

GRF:jnh  
Attachment

SCHEDULE I A

POWER AUTHORITY OF THE STATE OF NEW YORK  
SCHEDULE OF DEPRECIATION ACCRUAL RATES AT DECEMBER 31, 1981

PLANT ACCOUNT NUMBER	PLANT ACCOUNT DESCRIPTION	PLANT BALANCE @ 12/31/81	DISPOSITION TYPE	AVERAGE DOLLAR SERVICE LIFE	ANNUAL ACCRUAL WITHOUT NET SALVAGE (4)	NET SALVAGE % (6)	SALVAGE FACTOR (7)	ANNUAL ACCRUAL WITH NET SALVAGE (8)	ANNUAL ACCRUAL WITH NET SALVAGE (9)	THEORETICAL RESERVE WITH NET SALVAGE (11)
<b>HYDRAULIC PRODUCTION PLANT</b>										
11.00	STRUCTURES & IMPROVEMENTS	106,142,250	FORECAST	91.2	1.10	-10	1.10	1.21	1,280,806	24,783,276
12.00	RESERVOIRS, DAMS, WATERWAYS	593,103,816	FORECAST	91.5	1.09	-30	1.30	1.42	8,418,482	164,447,372
13.00	WATER WHEELS, TURBINES, & GEN.	132,408,805	FORECAST	58.2	1.72	0	1.00	1.72	2,273,181	43,900,151
14.00	ACCESSORY ELECTRIC EQUIPMENT	23,692,241	FORECAST	54.6	1.83	0	1.00	1.83	433,716	6,806,021
15.00	MISC. POWER PLANT EQUIPMENT	9,882,668	FORECAST	57.4	1.74	5	0.95	1.65	163,398	3,015,274
16.00	ROADS, RAILROADS, BRIDGES	36,453,487	FORECAST	91.2	1.10	-10	1.10	1.21	440,001	8,316,687
<b>TOTAL DEPREC. HYDRAULIC PLANT</b>		<b>901,683,267</b>		<b>82.5</b>	<b>1.21</b>	<b>-19</b>	<b>1.19</b>	<b>1.44</b>	<b>13,009,584</b>	<b>251,268,781</b>
<b>TRANSMISSION PLANT</b>										
52.00	STRUCTURES & IMPROVEMENTS	53,620,961	R 2.5	50.0	2.00	-10	1.10	2.20	1,179,661	9,482,262
53.00	STATION EQUIPMENT	162,215,512	R 2.5	40.0	2.50	0	1.00	2.50	4,055,388	26,955,405
54.00	TOWERS & FIXTURES	88,034,343	R 3.0	50.0	2.00	-20	1.20	2.40	2,112,824	13,098,149
55.00	POLES & FIXTURES	25,357,341	R 2.0	35.0	2.86	-10	1.10	3.15	798,756	3,249,806
56.00	OVERHEAD CONDUCTORS & DEVICE	71,108,404	R 2.5	45.0	2.22	-5	1.05	2.33	1,656,626	10,850,193
57.00	UNDERGROUND CONDUIT	61,047	R 2.5	40.0	2.50	0	1.00	2.50	30,241	28,611
58.00	UNDERGROUND CONDUCTORS & DEV	1,209,640	R 2.5	40.0	2.50	0	1.00	2.50	99,789	352,264
59.00	ROADS & TRAILS	4,989,452	R 3.0	50.0	2.00	0	1.00	2.00	99,789	264,719
<b>TOTAL DEPREC. TRANSMISSION</b>		<b>406,596,700</b>		<b>43.6</b>	<b>2.29</b>	<b>-7</b>	<b>1.07</b>	<b>2.44</b>	<b>9,935,011</b>	<b>64,281,409</b>
<b>GENERAL PLANT</b>										
190.00	STRUCTURES & IMPROVEMENTS	13,632,318	R 3.0	50.0	2.00	-10	1.10	2.20	299,911	4,424,776
191.00	OFFICE FURNITURE & EQUIPMENT	679,091	S 2.0	30.0	3.33	5	0.95	3.16	21,459	165,016
192.00	TRANSPORTATION EQUIPMENT	3,352,047	L 2.0	10.0	10.00	5	0.95	9.50	318,444	949,103
193.00	STORES EQUIPMENT	232,423	R 2.5	30.0	3.33	0	1.00	3.33	7,740	72,461
194.00	TOOLS, SHOP, GARAGE EQUIP.	1,179,833	R 1.5	20.0	5.00	0	1.00	5.00	58,992	338,199
195.00	LABORATORY EQUIPMENT	608,660	S 3.0	25.0	4.00	0	1.00	4.00	24,346	168,759
196.00	POWER OPERATED EQUIPMENT	1,332,596	L 3.0	10.0	10.00	5	0.95	9.50	126,597	516,912
197.00	COMMUNICATION EQUIPMENT	3,958,758	S 3.0	15.0	6.67	0	1.00	6.67	264,049	1,780,170
198.00	MISC. POWER PLANT PROPERTY	641,457	S 2.0	25.0	4.00	0	1.00	4.00	25,658	231,513
199.00	OTHER TANGIBLE PROPERTY	105,053	S 2.0	15.0	6.67	0	1.00	6.67	7,007	38,519
<b>TOTAL DEPREC. GENERAL PLANT</b>		<b>25,722,236</b>		<b>22.3</b>	<b>4.48</b>	<b>0</b>	<b>1.00</b>	<b>4.49</b>	<b>1,154,203</b>	<b>8,657,446</b>
<b>TOTAL ELECTRIC PLANT</b>		<b>1,334,002,203</b>		<b>62.3</b>	<b>1.60</b>	<b>-13</b>	<b>1.13</b>	<b>1.81</b>	<b>24,098,798</b>	<b>324,207,636</b>